Indian Point
3

Improved

Technical Specifications

Conversion Submittal

Volume II

New York Power
Authority

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.1:
"Main Steam Safety Valves (MSSVs)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.1 Main Steam Safety Valves (MSSVs)

LCO 3.7.1 The MSSVs shall be OPERABLE as specified in Table 3.7.1-1 and Table 3.7.1-2.

APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

------------------------------------NOTE------------------------------------
Separate Condition entry is allowed for each MSSV.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required MSSVs inoperable.	A.1 Reduce neutron flux trip setpoint to less than or equal to the applicable % RTP listed in Table 3.7.1-1.	4 hours
B. Required Action and associated Completion Time not met. OR One or more steam generators with less than two MSSVs OPERABLE.	B.1 Be in MODE 3. AND B.2 Be in MODE 4.	6 hours 12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	------------------NOTE------------------ Only required to be performed in MODES 1 and 2. -- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. Following testing, lift setting shall be within ±1%.	In accordance with the Inservice Testing Program

Table 3.7.1-1 (page 1 of 1)
OPERABLE Main Steam Safety Valves versus
Applicable Neutron Flux Trip Setpoint in Percent of RATED THERMAL POWER

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	APPLICABLE Neutron Flux Trip Setpoint (% RTP)
5	≤ 109
4	≤ 61
3	≤ 42
2	≤ 23

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

VALVE NUMBER				LIFT SETTING (psig ± 3%)
STEAM GENERATOR				
#31	#32	#33	#34	
MS-45-1	MS-45-2	MS-45-3	MS-45-4	1065
MS-46-1	MS-46-2	MS-46-3	MS-45-4	1080
MS-47-1	MS-47-2	MS-47-3	MS-47-4	1095
MS-48-1	MS-48-2	MS-48-3	MS-48-4	1110
MS-49-1	MS-49-2	MS-49-3	MS-49-4	1120

B 3.7 PLANT SYSTEMS

B 3.7.1 Main Steam Safety Valves (MSSVs)

BASES

BACKGROUND

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing a heat sink for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available.

Five MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves and non-return valves, as described in the FSAR, Section 10.2 (Ref. 1). The five code safety valves per steam generator consist of four 6 inch by 10 inch and one 6 inch by 8 in. These valves are set to open at 1065, 1080, 1095, 1110 and 1120 psig, respectively. The steam generator safety valve capacity is rated to remove the maximum calculated steam flow (normally 105% of the maximum guaranteed steam flow) from the steam generators without exceeding 110% of the steam system design pressure, (Ref. 2). The MSSV design includes staggered setpoints, according to Table 3.7.1-2 in the accompanying LCO, so that only the needed valves will actuate. Staggered setpoints reduce the potential for valve chattering that is due to steam pressure insufficient to fully open all valves following a turbine or reactor trip.

APPLICABLE SAFETY ANALYSES

The design basis for the MSSVs comes from Reference 2 and its purpose is to limit the secondary system pressure to ≤ 110% of design pressure when passing 100% of design steam flow. This design basis is sufficient to cope with any anticipated operational occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.

The events that challenge the relieving capacity of the MSSVs, and thus RCS pressure, are those characterized as decreased heat

BASES

APPLICABLE SAFETY ANALYSES (continued)

removal events, which are presented in the FSAR, Section 14 (Ref. 3). Of these, the full power loss of external electrical load without steam dump is the limiting AOO.

The transient response for loss of external electrical load without a direct reactor trip presents no hazard to the integrity of the RCS or the Main Steam System. If a minimum reactivity feedback is assumed, the reactor is tripped on high pressurizer pressure. In this case, the pressurizer safety valves open, and RCS pressure remains below 110% of the design value. The MSSVs also open to limit the secondary steam pressure.

If maximum reactivity feedback is assumed, the reactor is tripped on overtemperature ΔT. The departure from nucleate boiling ratio increases throughout the transient, and never drops below its initial value. Pressurizer relief valves and MSSVs are activated and prevent overpressurization in the primary and secondary systems.

The MSSVs satisfy Criterion 3 of 10 CFR 50.36.

LCO

The accident analysis requires five MSSVs per steam generator to provide overpressure protection for design basis transients occurring at 102% RTP. An MSSV will be considered inoperable if it fails to open on demand. The LCO requires that five MSSVs be OPERABLE in compliance with Reference 2. This is because operation with less than the full number of MSSVs requires limitations on allowable THERMAL POWER (to meet ASME Code requirements). These limitations are according to Table 3.7.1-1 in the accompanying LCO, and Required Action A.1.

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseat when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Program.

BASES

LCO (continued)

The lift settings, according to Table 3.7.1-2 in the accompanying LCO, correspond to ambient conditions of the valve at nominal operating temperature and pressure.

This LCO provides assurance that the MSSVs will perform their designed safety functions to mitigate the consequences of accidents that could result in a challenge to the RCPB.

APPLICABILITY

In MODE 1 above 23% RTP, the number of MSSVs per steam generator required to be OPERABLE must be according to Table 3.7.1-1 in the accompanying LCO. Below 23% RTP in MODES 1, 2, and 3, only two MSSVs per steam generator are required to be OPERABLE.

In MODES 4 and 5, there are no credible transients requiring the MSSVs. The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized; there is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each MSSV.

A.1

With one or more MSSVs inoperable, reduce neutron flux trip setpoint so that the available MSSV relieving capacity address the issues raised in Nuclear Safety Advisory Letter (NSAL) 94-001, Operation at Reduced Power Levels with Inoperable Main Steam Safety Valves (Ref. 6).

Operation with less than all five MSSVs OPERABLE for each steam generator is permissible, if THERMAL POWER is proportionally limited to the relief capacity of the remaining MSSVs. This is accomplished by reducing the neutron flux trip setpoint and reducing THERMAL POWER so that the energy transfer to the most

BASES

ACTIONS

A.1 (continued)

limiting steam generator is not greater than the available relief capacity in that steam generator.

Startup and power operation with up to three of the five MSSVs associated with each steam generator inoperable is permissible if the maximum allowed power level is below the heat removing capability of the operable MSSVs. Therefore, startup and power operation with inoperable main steam line safety valves is allowable if the neutron flux trip setpoints are restricted within the limits specified in Table 3.7.1-1. This ensures that reactor power level is limited so that the heat input from the primary side will not exceed the heat removing capability of the OPERABLE MSSVs of the most limiting steam generator. The reduction in reactor power level is achieved by reducing the power range neutron flux high setpoint. The reactor trip setpoint reductions are derived on the following basis:

$$Hi\phi = (100 / Q) [(wsh_{fg}N) / K]$$

Where:

$Hi\phi$ = Safety Analysis high neutron flux setpoint (% RTP);

Q = Nominal NSSS power rating of the plant (including reactor coolant pump heat) in Mwt (i.e.,3037 Mwt);

K = Conversion factor, 947.82 (Btu/sec)/Mwt;

ws = Minimum total steam flow rate capability of the operable MSSVs on any one steam generator at the highest MSSV opening pressure, including tolerance and accumulation, as appropriate, in lb/sec. (ws = 150 + 228.61 * (4 - V) lb/sec, where V = Number of inoperable safety valves in the steam line of the most limiting steam generator).

BASES

ACTIONS

A.1 (continued)

h_{fg} = Heat of vaporization for steam at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, Btu/lbm (i.e.,608.5 Btu/lbm).

N = Number of loops in plant (i.e., 4).

B.1 and B.2

If the MSSVs cannot be restored to OPERABLE status within the associated Completion Time, or if one or more steam generators have less than two MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoint in accordance with the Inservice Testing Program. The ASME Code, Section XI (Ref. 4), requires that safety and relief valve tests be performed in accordance with ANSI/ASME OM-1-1987 (Ref. 5). According to Reference 5, the following tests are required:

a. Visual examination;

b. Seat tightness determination;

c. Setpoint pressure determination (lift setting); and

d. Compliance with owner's seat tightness criteria.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1 (continued)

The ANSI/ASME Standard requires that all valves be tested every 5 years, and a minimum of 20% of the valves be tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7.1-2 allows a ± 3% setpoint tolerance for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift.

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. The MSSVs may be either bench tested or tested in situ at hot conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

REFERENCES

1. FSAR, Section 10.2.
2. ASME, Boiler and Pressure Vessel Code, Section III, 1971 Edition.
3. FSAR, Section 14.
4. ASME, Boiler and Pressure Vessel Code, Section XI.
5. ANSI/ASME OM-1-1987.
6. Nuclear Safety Advisory Letter (NSAL) 94-001, Operation at Reduced Power Levels with Inoperable Main Steam Safety Valves

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Technical Specification 3.7.1:
"Main Steam Safety Valves (MSSVs)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.4-1	92	92	No TSCRs	No TSCRs for this Page	N/A
3.4-3	151	151	No TSCRs	No TSCRs for this Page	N/A
3.4-4	1-18-95	1-18-95	No TSCRs	No TSCRs for this Page	N/A
T 3.4-1	151	151	No TSCRs	No TSCRs for this Page	N/A
T 4.1-3(1)	178 TSCR 97-156, 98-043	178 TSCR 97-156, 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated
T 4.1-3(1)	178 TSCR 97-156, 98-043	178 TSCR 97-156, 98-043	IPN 97-156	SR Freq for Main Turbine Stop and Control Valves	Incorporated

3.4 STEAM AND POWER CONVERSION SYSTEM

~~Applicability~~

~~Applies to the operating status of the Steam and Power Conversion System.~~ A.2

~~Objective~~

~~To define conditions of the turbine cycle steam-relieving capacity. Auxiliary Feedwater System operation is necessary to ensure the capability to remove decay heat from the core.~~

Specification

Mode 1, 2, 3 A.3

LCO 3.7.1 Applicability A. ~~The reactor shall not be heated above 350°F unless the following conditions are met.~~

LCO 3.7.1 Table 3.7.1-1 Table 3.7.1-2 ~~(1)~~ A minimum ASME Code approved steam-relieving capability of twenty (20) main steam valves shall be operable ~~(except for testing)~~. A.6 M.2
With up to three of the five main steam line safety valves per steam generator inoperable, heat-up above 350°F and power operation is permissible provided: A.5

LCO 3.0.2 Req. Act A.1 a) Within four hours,

~~the inoperable valve(s) is restored to operable status~~ A.4

~~or~~

the Power Range Neutron Flux High Trip Setpoint is reduced per Table ~~3.4-1~~. 3.7.1-1

Req. Act B.1 Req. Act B.2 ~~b)~~ Otherwise the reactor shall be in hot shutdown within the next six hours and ~~in cold shutdown within the following 30 hours~~.
Mode 4 in 12 hours L.1

~~SEE ITS 3.7.5 (2) Three out of three auxiliary feedwater pumps must be operable.~~

~~SEE ITS 3.7.6 (3) A minimum of 360,000 gallons of water in the condensate storage tank.~~

(4) ~~System piping and valves directly associated with the above components operable.~~ A.8

~~SEE ITS 3.7.2 (5) The main steam stop valves are operable and capable of closing in five seconds or less.~~

~~SEE ITS 3.7.5 (6) Two steam generators capable of performing their heat transfer function.~~

Amendment No. ~~29~~, ~~91~~, 92

Add Note allowing Separate Condition entry A.7

If the above action cannot be taken, then:

SEE ITS 3.7.5

a) maintain the plant in a safe stable mode which minimizes the potential for a reactor trip,

and

b) continue efforts to restore water supply to the auxiliary feedwater system,

and

c) notify the NRC within 24 hours regarding planned corrective action.

Basis

A reactor shutdown from power requires removal of core decay heat. Immediate decay heat removal requirements are normally satisfied by the steam bypass to the condensers. Thereafter, core decay heat can be continuously dissipated via the steam bypass to the condenser as feedwater in the steam generator is converted to steam by heat absorption. Normally, the capability to feed the steam generators is provided by operation of the turbine cycle feedwater system.

The twenty main steam safety valves have a total combined rated capability of 15,108,000 lbs/hr. The total full power steam flow is 12,974,500 lbs/hr.; therefore twenty (20) main steam safety valves will be able to relieve the total steam flow if necessary. The total relieving capacity of the twenty main steam line safety valves is 116% of the total secondary steam flow at 100% rated power (3025 Mwt). The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The operability of the twenty main steam line safety valves ensure that the secondary system pressure will be limited to within 110% of the design pressure of 1085 psig during the most severe anticipated system operational transient. A.1

Startup and/or power operation with inoperable main steam line safety valves is allowable within the limitation of Table 3.4-1. Operation with up to three of the five main steam line safety valves per steam generator inoperable is permissible if the maximum allowed power level is below the heat removing capability of the operable MSSVs. This is accomplished by restricting the reactor power level such that the heat input from the primary side will not exceed the heat removing capability of the operable MSSVs of the most limiting steam generator. The reduction in reactor power level is achieved by reducing the power range neutron flux high setpoint. The reactor trip setpoint reductions are derived on the following basis:

$$Hi\phi = (100 / Q) [(w_s h_{fg} N) / K]$$

A.1

Where:

Hiϕ - Safety Analysis power range high neutron flux setpoint, percent.

Q - Nominal NSSS power rating of the plant (including reactor coolant pump heat) in Mwt (3037 Mwt).

K - Conversion factor, 947.82 $\frac{\text{(Btu/sec)}}{\text{Mwt}}$

w_s - Minimum total steam flow rate capability of the operable MSSVs on any one steam generator at the highest MSSV opening pressure, including tolerance and accumulation, as appropriate, in lb/sec. (w_s = 150 + 228.61 * (4 - V) lb/sec, where V = Number of inoperable safety valves in the steam line of the most limiting steam generator).

h_{fg} - Heat of vaporization for steam at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, Btu/lbm (608.5 Btu/lbm).

N - Number of loops in plant (4).

In the unlikely event of complete loss of electrical power to the station, decay heat removal would continue to be assured by the availability of either the steam-driven auxiliary feedwater pump or one of the two motor-driven auxiliary steam generator feedwater pumps and steam discharge to the atmosphere via the main steam safety valves and atmospheric relief valves. One motor-driven auxiliary feedwater pump can supply sufficient feedwater for removal of decay heat from the plant. The minimum amount of water in the condensate storage tank is the amount needed for 24 hours at hot shutdown. When the condensate storage supply is exhausted, city water will be used.

The system piping and valves that are governed by Specification 3.4.A.(4) include the two (2) QA Category I, 100% cpacity breather valves installed on the dome of the Condensate Storage Tank (CST). The purpose of these valves is to ensure the CST pressure is within its design limits by providing both pressure relieving and vacuum break capability. Per Specification 3.4.B, if one (1) breather valve is inoperable, it must be returned to operability within 48 hours or the reactor must be shutdown and cooled to below 350°F using normal operating procedures.

Two steam generators capable of performing their heat transfer function will provide sufficient heat removal capability to remove core decay heat after a reactor shutdown.

TABLE 3.4-1 3.7.1-1

MAXIMUM ALLOWABLE POWER RANGE NEUTRON FLUX HIGH SETPOINT WITH INOPERABLE STEAM LINE SAFETY VALVES	
Number of Inoperable Safety Valves Per Limiting Steam Generator*	Maximum Allowable Power Neutron Flux High Set-Point (Percent of Rated Power)
1	61
2	42
3	23

Add Table 3.7.1-2 M.1

~~*Limiting Steam Generator is that Generator with greatest number of inoperable safety valves.~~ A.1

TABLE 4.1-3 (Sheet 1 of 2)

FREQUENCIES FOR EQUIPMENT TESTS

SEE CTS MASTER MARKUP

	Check	Frequency
1. Control Rods	Rod drop times of all control rods	24M
2. Control Rods	Movement of at least 10 steps in any one direction of all control rods	Every 31 days during reactor critical operations
3. Pressurizer Safety Valves	Set Point	24M*
4. Main Steam Safety Valves	Set Point Setpoint, Tolerence adjust	24M Per IST Program
5. Containment Isolation System	Automatic actuation	24M
6. Refueling System Interlocks	Functioning	Each refueling, prior to movement of core components
7. Primary System Leakage	Evaluate	5 days/week
8. Diesel Generators Nos. 31, 32 & 33 Fuel Supply	Fuel Inventory	Weekly
9. Turbine Steam Stop And Control Valves	Closure	Not to exceed 6 months**
10. L.P. Steam Dump System (6 lines)	Closure	Monthly
11. Service Water System	Each pump starts and operates for 15 minutes (unless already operating)	~~Monthly~~ Quarterly Amendment 178
12. City Water Connections to Charging Pumps and Boric Acid Piping	Temporary connections available and valves operable	24M

SR 3.7.1.1

L.2 LA.1 M.1

SEE CTS MASTER MARKUP

* ~~Pressurizer Safety Valve setpoint test due no later than May 1996 may be deferred until the next refueling outage but no later than May 31, 1997.~~ TSCR 97-156

** The turbine steam stop and control valves shall be tested at a frequency determined by the methodology presented in WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency," as updated by Westinghouse Report, WOG-TVTF-93-17, "Update of BB-95/96 Turbine Valve Failure Rates and Effect on Destructive Overspeed Probabilities." The maximum test interval for these valves shall not exceed six months. Surveillance interval extension as per Technical Specification 1.12 is not applicable to the maximum test interval.

TSCR 98-043

TSCR 97-156

Indian Point 3
Improved Technical Specifications (ITS)
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Technical Specification 3.7.1:
"Main Steam Safety Valves (MSSVs)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.1 - MAIN STEAM SAFETY VALVES (MSSVs)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.4.A establishes the Applicability for the main steam safety valves as whenever the reactor is heated above 350°F. ITS 3.7.1 maintains this Applicability by requiring that the main steam safety valves (MSSVs) be Operable in Modes 1, 2 and 3. This is an administrative change with no impact on safety because there is no change to the CTS Applicability.

A.4 CTS 3.4.A.1.a provides the option of restoring inoperable MSSVs to operable status within 4 hours when one or more MSSVs are inoperable. ITS 3.7.1 does not explicitly state this Option because LCO 3.0.2 specifies that if an LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated. Therefore, deletion of an explicit statement of this option in CTS 3.4.A.1.a is an administrative change with no impact on safety because there is no change to the existing CTS requirement.

A.5 CTS 3.4.A.1 specifies that heat-up above 350°F and power operation is permissible with up to three of the five main steam line safety valves per steam generator inoperable provided that the Actions (CTS 3.4.A.1.a)for one or more inoperable MSSVs are met (i.e., neutron flux trip setpoint is reduced in accordance with CTS Table 3.4-1).

LCO 3.7.1, Required Action A.1, maintains the same allowance because ITS Table 3.7.1-1 specifies that only two MSSVs per steam generator are required to be Operable when the neutron flux trip setpoint is reset to 23% Rated Thermal Power (RTP). Therefore, deletion of an explicit statement of this option in CTS 3.4.A.1 is an administrative change with no impact on safety because there is no change to the CTS requirement.

A.6 CTS 3.4.A.1 specifies that a minimum steam-relieving capability of twenty (20) main steam valves shall be operable. ITS LCO 3.7.1, Table 3.7.1-2, maintains the same requirement by listing each of the 20 MSSVs by valve number. This is an administrative change with no impact on safety because there is no change to the existing CTS requirement.

A.7 The Actions for inoperable MSSVs in ITS LCO 3.7.1 are preceded by a Note that specifies: "Separate Condition entry is allowed for each MSSV." This allowance provides explicit recognition that ITS LCO 3.7.1 Required Actions are designed to allow complete and separate re-entry into any Condition for each inoperable MSSV. This includes separate tracking of Completion Times based on this re-entry. This allowance is consistent with an unstated assumption in the CTS. Therefore, the addition of this

Note is an administrative change with no impact on safety.

A.8 CTS 3.4.A.4 specifies that system piping and valves directly associated with the MSSVs must be operable when the MSSVs are Operable. CTS 3.4.A.4 is deleted because it is a generic statement that does not provide any information or requirements specific to the MSSVs. Additionally, the information contained in CTS 3.4.A.4 fall within the ITS definition of Operability. This is an administrative change with no impact on safety because there is no change to the existing requirements.

MORE RESTRICTIVE

M.1 CTS 3.4.A establishes a requirement for a minimum of 20 main steam valves. ITS 3.7.1, Table 3.7.1-2, also establishes a requirement for 20 MSSVs with specific requirements for each of the following:

1) Lift setpoints;
2) Staggering of lift setpoints;
3) Setpoint tolerances (±3%) as a condition of Operability; and,
4) Setpoint adjustment tolerances of ±1% (ITS SR 3.7.1.1) .

These changes are needed for the following reasons:

1) lift setpoints are needed (in addition to the design capacity of the valve) because these setpoints limit the secondary system pressure to ≤ 110% of design pressure when passing 100% of design steam flow;
2) staggered lift setpoints are needed because staggered setpoints ensure that only the needed valves will actuate and to reduce the potential for valve chattering;
3) a setpoint tolerance of ±3% as a condition of Operability is needed to ensure assumptions about relieving capacity and maximum steam generator pressure are met; and,
4) setpoint adjustment tolerances of ±1% are needed to account for drift during the calibration interval.

Changes 1, 2 and 3 are acceptable because the lift setpoints and tolerances for Operability were used as the bases for an analysis that demonstrated that a total loss of load without a direct or immediate reactor trip presents no hazard to the integrity of the Reactor Coolant

System or the Main Steam System. No credit was taken for the pressurizer spray, pressurizer power operated relief valves, steam dump (atmospheric or condenser), or automatic control rod assembly insertion. Change 4 is acceptable because plant experience has shown that a setpoint adjustment tolerance of ±1% is sufficient to provide a high degree of assurance that the setpoint tolerance for Operability of ±3% is maintained throughout the normal surveillance test interval. These changes are acceptable because they do not introduce any operation which is un-analyzed while requiring more specific details regarding MSSV requirements in the Technical Specifications. Therefore, this change has no adverse impact on safety.

M.2 CTS 3.4.A provides an allowance indicating that the requirement for a minimum of 20 main steam valves is not applicable during testing. This is interpreted as allowing entry into Mode 3 prior to a verification of the lift setpoints which must be done with the valve at normal operating temperature and pressure. ITS SR 3.7.1.1, verification of MSSV lift setpoints, provides the same relaxation by a Note that requires the SR be performed in Modes 1 and 2 only. This means that the SR 3.7.1.1 must be completed only prior to entering Mode 2 even though ITS LCO 3.7.1 is Applicable in Modes 1, 2 and 3. This is a more restrictive change because the CTS 3.4.A allowance for a relaxation of MSSV requirements during testing could be interpreted as allowing a relaxation of all MSSV requirements during testing. This change is needed to eliminate the ambiguity in CTS 3.4.A regarding MSSV requirements during testing. This change, requiring verification of MSSV lift setpoints in Modes 1 and 2 only, is acceptable because of the following: one MSSV per steam generator is sufficient to provide overpressure protection in Mode 3 and at least one of the 5 MSSVs can reasonably be expected to lift within the required tolerance; the lift setpoint is set prior to entering Mode 3 if an MSSV is replaced; and, the events that challenge the MSSVs (i.e., loss of heat sink events such as turbine trip without high pressure steam dumps) present significant challenges to the MSSVs only when operating at power. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring more specific limits for MSSV testing. Therefore, this change has no adverse impact on safety.

DISCUSSION OF CHANGES
ITS SECTION 3.7.1 - MAIN STEAM SAFETY VALVES (MSSVs)

LESS RESTRICTIVE

L.1 CTS 3.4.A.1.b requires that the reactor be in cold shutdown within 36 hours if minimum requirements for MSSV reliving capacity cannot be met. Under the same conditions, ITS 3.7.1, Required Action B.2, requires that the reactor be in Mode 4 within 12 hours. This change is acceptable because both CTS 3.4.A and ITS 3.7.1 establish the Applicability for the main steam safety valves as Mode 1, 2, and 3 (i.e., whenever the reactor is heated above 350°F) (see 3.7.1, DOC A.3). Therefore, placing the plant in Mode 4 places the plant outside of the CTS and ITS Applicability for MSSVs. The Completion Time of 12 hours to reach Mode 4 in ITS versus 36 hours to reach cold shutdown in CTS is consistent with the change in the Required Action and is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Therefore, this change has no significant impact on safety.

L.2 CTS Table 4.1-3, Item 4, Main Steam Safety Valves, requires verification of the MSSV lift setpoints every 24 months. ITS SR 3.7.1.1 requires verification of the MSSV lift setpoints at a Frequency established by the Inservice Test Program (see 3.7.1, DOC LA.1). This is a less restrictive change because the Inservice Test Program will be modified to require that MSSVs be tested in accordance with ASME Code, Section XI, as stipulated in ANSI/ASME OM-1-1987. Adopting these standards will relax the CTS 24 month Frequency because the ANSI/ASME Standard requires that all valves be tested every 5 years, and a minimum of 20% of the valves be tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements including requirements for accelerated testing based on the results of the MSSVs tested at each refueling interval. This change has no impact on safety because of the demonstrated reliability of the MSSVs and because industry experience has demonstrated that the setpoint verification Frequencies specified in ASME Code, Section XI, as stipulated in ANSI/ASME OM-1-1987, are adequate to provide a high degree of assurance of MSSV Operability. Additionally, MSSV lift setpoints and relieving capacity are challenged by loss of heat sink events such as turbine trip without direct reactor trip or bypass with no credit taken for the pressurizer spray, pressurizer power operated relief valves, steam dump (atmospheric or condenser), or automatic control rod assembly insertion. All of these systems and the anticipatory reactor trip on turbine trip provide independent and diverse compensation for the failure of one or more MSSVs. Therefore, this change has no adverse impact on safety.

REMOVED DETAIL

LA.1 CTS Table 4.1-3, Item 4, Main Steam Safety Valves (MSSVs), requires verification of the MSSV lift setpoints every 24 months. ITS LCO 3.7.1. maintains the requirement that MSSVs must be Operable and maintains the requirement for periodic verification of the MSSV lift setpoints; however, ITS SR 3.7.1.1 specifies the Frequency for this verification will be established by the Inservice Test Program. This is acceptable because the existing CTS frequency is based on inservice testing requirements in of ASME Code Class 1, 2, and 3 components specified in Section XI of the ASME Boiler and Pressure Vessel Code and applicable Addenda.

ITS 5.5.7, Inservice Testing Program (IST), requires establishing and maintaining a program for inservice testing of ASME Code Class 1, 2, and 3 components at frequencies specified in Section XI of the ASME Boiler and Pressure Vessel Code. Additionally, 10 CFR 50.55a(f) already provides the regulatory requirements for this IST Program, and specifies that ASME Code Class 1, 2, and 3 pumps and valves are covered by an IST Program. Therefore, maintaining the requirement that MSSVs must be Operable in ITS 3.7.1 and maintaining the requirement for periodic testing of MSSVs in the IST Program required by ITS 5.5.7 provides a high degree of assurance that MSSVs will be tested and maintained to ensure MSSV Operability. Additionally, ITS 5.5.7, Inservice Testing Program (IST), requirements and 10 CFR 50.55a(f) ensure adequate change control and regulatory oversight for any changes to the existing requirements. Therefore, requirements to test MSSVs can be maintained in the IST program with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.1:
"Main Steam Safety Valves (MSSVs)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.1 - Main Steam Safety Valves (MSSVs)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change revises the Actions when minimum MSSV reliving capacity cannot be met from placing the reactor in cold shutdown (i.e., Mode 5) to placing the reactor in Mode 4. This change makes the Required Actions consistent with CTS and ITS Applicability requirements which are Mode 1, 2, and 3 (i.e., whenever the reactor is heated above 350°F). This change will not result in a significant increase in the probability or consequences of an accident previously evaluated because both CTS and ITS require Operable MSSVs in Mode 1, 2 and 3 only. Therefore, Actions that place the reactor in Mode 4 (versus cold shutdown) place the plant outside the Applicable conditions for MSSV Operability.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because both CTS and ITS require Operable MSSVs in Mode 1, 2 and 3 only. Therefore, Actions that place the reactor in Mode 4 (versus cold shutdown) place the plant outside the Applicable conditions for MSSV Operability.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.1 - Main Steam Safety Valves (MSSVs)

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change reduces the required Frequency for main steam safety valve (MSSV) testing from every 24 months to a Frequency established by the Inservice Test Program. The IST Program will require that all valves be tested every 5 years, and that a minimum of 20% of the valves be tested every 24 months. Currently, all valves are tested every 24 months.

   This change will not result in a significant increase in the probability or consequences of an accident previously evaluated because the status of MSSV testing Frequency has no effect on the initiators of any accident previously evaluated provided the MSSVs operate when required. Proper operation of MSSVs will not be affected because of the demonstrated reliability of the MSSVs and because industry experience has demonstrated that the setpoint verification Frequencies specified in ASME Code, Section XI, as stipulated in ANSI/ASME OM-1-1987 are adequate to provide a high degree of assurance of MSSV Operability. Additionally, MSSV lift setpoints and relieving capacity are challenged by loss of heat sink events such as turbine trip without direct reactor trip or bypass with no credit taken for the pressurizer spray, pressurizer power operated relief valves, steam dump (atmospheric or condenser), or automatic control rod assembly insertion. All of these systems and the anticipatory reactor trip on turbine trip provide independent and diverse compensation for the failure of one or more MSSVs.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because of the demonstrated reliability of the MSSVs and because industry experience has demonstrated that the setpoint verification Frequencies specified in ASME Code, Section XI, as stipulated in ANSI/ASME OM-1-1987 are adequate to provide a high degree of assurance of MSSV Operability. Additionally, MSSV lift setpoints and relieving capacity are challenged by loss of heat sink events such as turbine trip without direct reactor trip or bypass with no credit taken for pressurizer spray, pressurizer power operated relief valves, steam dump (atmospheric or condenser), or automatic control rod assembly insertion. All of these systems and the anticipatory reactor trip on turbine trip provide independent and diverse compensation for the failure of one or more MSSVs.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.1:
"Main Steam Safety Valves (MSSVs)"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.1

This ITS Specification is based on NUREG-1431 Specification No. **3.7.1**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
WOG-031		INCORPORATE A MSSV REQUIRED ACTION FOR UNITS LICENSED WITH A POSITIVE TEMPERATURE COEFFICIENT	Rejected by TSTF	Not Incorporated	N/A
WOG-083 R1		MSSV CHANGES	TSTF Review	Not Incorporated	N/A

3.7 PLANT SYSTEMS

<CTS> 3.7.1 Main Steam Safety Valves (MSSVs)

<3.4.A.1> LCO 3.7.1 The MSSVs shall be OPERABLE as specified in Table 3.7.1-1 and Table 3.7.1-2.

<3.4.A>
<DOC A.3> APPLICABILITY: MODES 1, 2, and 3.

ACTIONS

-----------------------------------NOTE-----------------------------------
<DOC A.7> Separate Condition entry is allowed for each MSSV.

	CONDITION	REQUIRED ACTION		COMPLETION TIME
<3.4.A.1a>	A. One or more required MSSVs inoperable.	A.1	Reduce power to less than or equal to the applicable % RTP listed in Table 3.7.1-1. neutron flux trip setpoint	4 hours
<3.4.A.1.b> <DOC L.1>	B. Required Action and associated Completion Time not met. OR One or more steam generators with less than [two] MSSVs OPERABLE.	B.1 AND B.2	Be in MODE 3. Be in MODE 4.	6 hours 12 hours

CLB.1

3.7.1-1
Typical

<CTS>
<Table 4.1-3 #4>
<Doc M.1>
<Doc L.2>
<Doc LA.1>
<Doc M.2>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.1.1	------------------NOTE------------------ Only required to be performed in MODES 1 and 2. --- Verify each required MSSV lift setpoint per Table 3.7.1-2 in accordance with the Inservice Testing Program. Following testing, lift setting shall be within ±1%.	In accordance with the Inservice Testing Program

<CTS>

<T 3.4-1>

Table 3.7.1-1 (page 1 of 1)
OPERABLE Main Steam Safety Valves versus
Applicable ~~Power~~ in Percent of RATED THERMAL POWER

CLB.1

MINIMUM NUMBER OF MSSVs PER STEAM GENERATOR REQUIRED OPERABLE	APPLICABLE POWER (% RTP)
5	≤ 100 109
4	≤ 80 61
3	≤ 60 42
2	≤ 40 23

Neutron Flux
Trip Setpoint

<CTS>
<3.4.A.1>
<DOC M.1>

Table 3.7.1-2 (page 1 of 1)
Main Steam Safety Valve Lift Settings

VALVE NUMBER				LIFT SETTING (psig ± ~~[~~3~~]~~%)
STEAM GENERATOR				
#31 ~~#1~~	#32 ~~#2~~	~~[#3]~~ #33	#34 ~~[#4]~~	
MS-45-1	MS-45-2	MS-45-3	MS-45-4	1065
MS-46-1	MS-46-2	MS-46-3	MS-46-4	1080
MS-47-1	MS-47-2	MS-47-3	MS-47-4	1095
MS-48-1	MS-48-2	MS-48-3	MS-48-4	1110
MS-49-1	MS-49-2	MS-49-3	MS-49-4	1120

B 3.7 PLANT SYSTEMS

B 3.7.1 Main Steam Safety Valves (MSSVs)

BASES

BACKGROUND

The primary purpose of the MSSVs is to provide overpressure protection for the secondary system. The MSSVs also provide protection against overpressurizing the reactor coolant pressure boundary (RCPB) by providing a heat sink for the removal of energy from the Reactor Coolant System (RCS) if the preferred heat sink, provided by the Condenser and Circulating Water System, is not available.

and non-return valves

DB.1

Five MSSVs are located on each main steam header, outside containment, upstream of the main steam isolation valves, as described in the FSAR, Section ~~10.3.1~~ 10.2 (Ref. 1). ~~The MSSV capacity criteria is 110% of rated steam flow at 110% of the steam generator design pressure. This meets the requirements of the ASME Code, Section III~~ (Ref. 2). The MSSV design includes staggered setpoints, according to Table 3.7.1-2 in the accompanying LCO, so that only the needed valves will actuate. Staggered setpoints reduce the potential for valve chattering that is due to steam pressure insufficient to fully open all valves following a turbine or reactor trip.

Insert: B3.7-1-01

PA.1

APPLICABLE SAFETY ANALYSES

The design basis for the MSSVs comes from Reference 2 and its purpose is to limit the secondary system pressure to ≤ 110% of design pressure when passing 100% of design steam flow. This design basis is sufficient to cope with any anticipated operational occurrence (AOO) or accident considered in the Design Basis Accident (DBA) and transient analysis.

DB.1

The events that challenge the relieving capacity of the MSSVs, and thus RCS pressure, are those characterized as decreased heat removal events, which are presented in the FSAR, Section ~~15.2~~ 14 (Ref. 3). Of these, the full power turbine trip loss of external electrical load without steam dump is the limiting AOO. ~~This event also terminates normal feedwater flow to the steam generators.~~

The transient response for turbine trip loss of external electrical load without a direct reactor trip presents no hazard to the integrity of the RCS

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.1 - Main Steam Safety Valves (MSSVs)

INSERT: B 3.7-1-01

The five code safety valves per steam generator consist of four 6 inch by 10 inch and one 6 inch by 8 in. These valves are set to open at 1065, 1080, 1095, 1110 and 1120 psig, respectively. The steam generator safety valve capacity is rated to remove the maximum calculated steam flow (normally 105% of the maximum guaranteed steam flow) from the steam generators without exceeding 110% of the steam system design pressure.

BASES

APPLICABLE SAFETY ANALYSES (continued)

or the Main Steam System. If a minimum reactivity feedback is assumed, the reactor is tripped on high pressurizer pressure. In this case, the pressurizer safety valves open, and RCS pressure remains below 110% of the design value. The MSSVs also open to limit the secondary steam pressure.

If maximum reactivity feedback is assumed, the reactor is tripped on overtemperature ΔT. The departure from nucleate boiling ratio increases throughout the transient, and never drops below its initial value. Pressurizer relief valves and MSSVs are activated and prevent overpressurization in the primary and secondary systems. ~~The MSSVs are assumed to have two active and one passive failure modes. The active failure modes are spurious opening, and failure to reclose once opened. The passive failure mode is failure to open upon demand~~ DB.2

10 CFR 50.36

The MSSVs satisfy Criterion 3 of ~~the NRC Policy Statement~~.

LCO

five

The accident analysis requires ~~four~~ MSSVs per steam generator to provide overpressure protection for design basis transients occurring at 102% RTP. An MSSV will be considered inoperable if it fails to open on demand. The LCO requires that five MSSVs be OPERABLE in compliance with Reference 2, ~~even though this is not a requirement of the DBA analysis.~~ This is because operation with less than the full number of MSSVs requires limitations on allowable THERMAL POWER (to meet ASME Code requirements). These limitations are according to Table 3.7.1-1 in the accompanying LCO, and Required Action ~~A.2~~.

A.1

The OPERABILITY of the MSSVs is defined as the ability to open within the setpoint tolerances, relieve steam generator overpressure, and reseat when pressure has been reduced. The OPERABILITY of the MSSVs is determined by periodic surveillance testing in accordance with the Inservice Testing Program.

The lift settings, according to Table 3.7.1-2 in the accompanying LCO, correspond to ambient conditions of the valve at nominal operating temperature and pressure.

(continued)

BASES

LCO (continued)

This LCO provides assurance that the MSSVs will perform their designed safety functions to mitigate the consequences of accidents that could result in a challenge to the RCPB.

APPLICABILITY

In MODE 1 above 40% RTP, the number of MSSVs per steam generator required to be OPERABLE must be according to Table 3.7.1-1 in the accompanying LCO. Below 40% RTP in MODES 1, 2, and 3, only two MSSVs per steam generator are required to be OPERABLE.

23%

CLB.1

In MODES 4 and 5, there are no credible transients requiring the MSSVs. The steam generators are not normally used for heat removal in MODES 5 and 6, and thus cannot be overpressurized; there is no requirement for the MSSVs to be OPERABLE in these MODES.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each MSSV.

A.1

neutron flux trip setpoint

CLB.1

With one or more MSSVs inoperable, reduce power so that the available MSSV relieving capacity ~~meets Reference 2 requirements for the applicable THERMAL POWER.~~

Insert: B3.7-3-01

Operation with less than all five MSSVs OPERABLE for each steam generator is permissible, if THERMAL POWER is proportionally limited to the relief capacity of the remaining MSSVs. This is accomplished by restricting THERMAL POWER so that the energy transfer to the most limiting steam generator is not greater than the available relief capacity in that steam generator. ~~For example, if one MSSV is inoperable in one steam generator, the relief capacity of that steam generator is reduced by approximately 20%. To offset this reduction in relief capacity, energy transfer to that steam generator must be similarly reduced by at least 20%. This is accomplished by reducing THERMAL POWER by at least 20%, which conservatively limits the energy transfer to all steam generators to approximately 80% of total capacity, consistent with the relief capacity of the most limiting steam generator.~~

reducing the neutron flux trip setpoint and reducing

Insert: B3.7-3-02

CLB.1

(continued)

INSERT: B 3.7-3-01

address the issues raised in Nuclear Safety Advisory Letter (NSAL) 94-001, Operation at Reduced Power Levels with Inoperable Main Steam Safety Valves (Ref. 6).

INSERT: B 3.7-3-02

Startup and power operation with up to three of the five MSSVs associated with each steam generator inoperable is permissible if the maximum allowed power level is below the heat removing capability of the operable MSSVs. Therefore, startup and power operation with inoperable main steam line safety valves is allowable if the neutron flux trip setpoints are restricted within the limits specified in Table 3.7.1-1. This ensures that reactor power level is limited so that the heat input from the primary side will not exceed the heat removing capability of the OPERABLE MSSVs of the most limiting steam generator. The reduction in reactor power level is achieved by reducing the power range neutron flux high setpoint. The reactor trip setpoint reductions are derived on the following basis:

$$Hi = (100 / Q) [(ws h_{fg} N) / K]$$

Where:

Hi	=	Safety Analysis high neutron flux setpoint (% RTP);
Q	=	Nominal NSSS power rating of the plant (including reactor coolant pump heat) in Mwt (i.e.,3037 Mwt);
K	=	Conversion factor, 947.82 (Btu/sec)/Mwt;
ws	=	Minimum total steam flow rate capability of the operable MSSVs on any one steam generator at the highest MSSV opening pressure, including tolerance and accumulation, as appropriate, in lb/sec. (ws = 150 + 228.61 * (4 - V) lb/sec, where V = Number of inoperable safety valves in the steam line of the most limiting steam generator).
h_{fg}	=	Heat of vaporization for steam at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, Btu/lbm (i.e.,608.5 Btu/lbm).
N	=	Number of loops in plant (i.e., 4).

BASES

ACTIONS

A.1 (continued)

CLB.1

For each steam generator, at a specified pressure, the fractional relief capacity (FRC) of each MSSV is determined as follows:

$$FRC = \frac{A}{B}$$

where:

A = the relief capacity of the MSSV; and

B = the total relief capacity of all the MSSVs of the steam generator.

The FRC is the relief capacity necessary to address operation with reduced THERMAL POWER.

The reduced THERMAL POWER levels in the LCO prevent operation at power levels greater than the relief capacity of the remaining MSSVs. The reduced THERMAL POWER is determined as follows:

$$RP = \left[1 - (N_1 \times FRC_1 + N_2 \times FRC_2 + \cdots + N_5 \times FRC_5)\right] \times 100\%$$

where:

RP = Reduced THERMAL POWER for the most limiting steam generator expressed as a percent of RTP;

N_1, N_2, ..., N_5 represent the status of the MSSV 1, 2, ..., 5, respectively,

= 0 if the MSSV is OPERABLE,
= 1 if the MSSV is inoperable;

FRC_1, FRC_2, ..., FRC_5 = the relief capacity of the MSSV 1, 2, ..., 5, respectively, as defined above.

(continued)

BASES

ACTIONS (continued)

B.1 and B.2

If the MSSVs cannot be restored to OPERABLE status within the associated Completion Time, or if one or more steam generators have less than two MSSVs OPERABLE, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1

This SR verifies the OPERABILITY of the MSSVs by the verification of each MSSV lift setpoint in accordance with the Inservice Testing Program. The ASME Code, Section XI (Ref. 4), requires that safety and relief valve tests be performed in accordance with ANSI/ASME OM-1-1987 (Ref. 5). According to Reference 5, the following tests are required:

a. Visual examination;

b. Seat tightness determination;

c. Setpoint pressure determination (lift setting); and

d. Compliance with owner's seat tightness criteria~~, and~~ .

~~e. Verification of the balancing device integrity on balanced valves.~~ DB.1

The ANSI/ASME Standard requires that all valves be tested every 5 years, and a minimum of 20% of the valves be tested every 24 months. The ASME Code specifies the activities and frequencies necessary to satisfy the requirements. Table 3.7.1-2 allows a ± [3]% setpoint tolerance for OPERABILITY; however, the valves are reset to ± 1% during the Surveillance to allow for drift.

This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. The MSSVs may be either bench tested or tested in situ at hot

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.1.1 (continued)

conditions using an assist device to simulate lift pressure. If the MSSVs are not tested at hot conditions, the lift setting pressure shall be corrected to ambient conditions of the valve at operating temperature and pressure.

REFERENCES

1. FSAR, Section ~~10.3.1~~. 10.2
2. ASME, Boiler and Pressure Vessel Code, Section III, ~~Article NC-7000, Class 2 Components~~. 1971 Edition
3. FSAR, Section ~~15.2~~. 14
4. ASME, Boiler and Pressure Vessel Code, Section XI.
5. ANSI/ASME OM-1-1987.

Insert B 3.7-6-01

6. Nuclear Safety Advisory Letter (NSAL) 94-001, Operation at Reduced Power Levels with Inoperable Main Steam Safety Valves.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.1:
"Main Steam Safety Valves (MSSVs)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.1 - Main Steam Safety Valves (MSSVs)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 IP3 LCO 3.7.1, Required Action A.1, Table 3.7.1-1 and the supporting Bases, differs from NUREG-1431, Rev 1, in order to address the issues raised in Nuclear Safety Advisory Letter (NSAL) 94-001, Operation at Reduced Power Levels with Inoperable Main Steam Safety Valves, issued by Westinghouse. IP3 CTS 3.4.A.1, Amendment 151 dated October 3, 1994, does address NSAL 94-01; therefore, the current licensing basis is maintained in the IP3 ITS. In addition to using the more conservative algorithm in NSAL 94-001 for calculating maximum allowable power level when one or more MSSVs are inoperable, IP3 maintains the more conservative practice of limiting the maximum power by reducing the high neutron flux trip setpoint. This change is needed because the generic change that implements the recommendations of NSAL 94-001, WOG-083, has not yet been approved. This change is acceptable because CTS 3.4.A.1, Amendment 151 dated October 3, 1994, does address NSAL 94-01 and is significantly more conservative than the limits that would be imposed by NUREG-1431, Rev 1. Therefore, this change has no adverse impact on safety.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DB.2 IP3 LCO 3.7.1, Applicable Safety Analysis, differs from NUREG-1431, Rev 1, in that the discussion of failure mechanism for safety valves is modified to eliminate the discussion of the failure mechanisms for MSSVs. This change is needed because in ASME Boiler and Pressure Vessel Code, Section III, Article NB-7611, Spring-Loaded Safety Valves, full credit is allowed for spring-loaded safety valves designed in accordance with the requirements of the ASME Boiler and Pressure Vessel Code (i.e., there is no need to assume a single random failure). This change is needed to support the IP3 Safety Analysis which assumes that all MSSVs function when required. This position is consistent with the clarification provided in Section 5.2.2 of the Standard Review Plan.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.2:
"Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.2 Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)

LCO 3.7.2 Four MSIVs and four MSCVs shall be OPERABLE.

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSIVs are closed.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more MSCVs inoperable.	A.1 Restore MSCVs to OPERABLE status.	48 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 2.	6 hours
	AND	
	B.2 Close all MSIVs.	14 hours
	AND	
	B.3 Verify all MSIVs closed.	Once per 7 days
C. One MSIV inoperable in MODE 1.	C.1 Restore MSIV to OPERABLE status.	48 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. Required Action and associated Completion Time of Condition C not met.	D.1	Be in MODE 2.	6 hours
E. ---------NOTE---------- Separate Condition entry is allowed for each MSIV. ---------------------- One or more MSIVs inoperable in MODE 2 or 3.	E.1	Close MSIV.	8 hours
	AND		
	E.2	Verify MSIV is closed.	Once per 7 days
F. One MSIV inoperable. AND One or more MSCVs inoperable.	F.1	Restore all MSCVs to OPERABLE status.	8 hours
	OR		
	F.2	Restore all MSIVs to OPERABLE status.	8 hours
G. Required Action and associated Completion Time of Condition B, E or F not met.	G.1	Be in MODE 3.	6 hours
	AND		
	G.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.2.1	-------------------NOTE-------------------- Only required to be performed in MODES 1 and 2. --- Verify closure time of each MSIV is ≤ 5.0 seconds on an actual or simulated actuation signal.	In accordance with the Inservice Testing Program
SR 3.7.2.2	Perform visual inspection of each MSCV.	In accordance with the Inservice Testing Program

B 3.7 PLANT SYSTEMS

B 3.7.2 Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)

BASES

BACKGROUND

The Main Steam System conducts steam from each of the four steam generators within the containment building to the turbine stop and control valves. The four steam lines are interconnected near the turbine. Each steam line is equipped with an isolation valve identified as the Main Steam Isolation Valve (MSIV) and a non-return valve identified as the Main Steam Check Valve (MSCV).

The MSIVs isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). MSIV closure terminates flow from the unaffected (intact) steam generators.

The MSIVs are swing disc type check valves that are aligned to prevent flow out of the steam generator. During normal operation, the free swinging discs in the MSIVs are held out of the main steam flow path by an air piston and the MSIVs close to prevent the release of steam from the SG when air is removed from the piston. The isolation valves are designed to and required to close in less than five seconds. The MSIV operators are supplied by instrument air and each MSIV is equipped with an air receiver to prevent spurious MSIV closure due to pressure transients in the instrument air system.

Each MSIV is equipped with a bypass valve used to warm up the steam line during unit startup which equalizes pressure across the valve allowing it to be opened. The bypass valves are manually operated and are closed during normal plant operation.

An MSIV closure signal is generated by the following signals:

High steam flow in any two out of the four steam lines coincident with low steam line pressure; or,

High steam flow in any two out of the four steam lines coincident with low Tavg; or,

BASES

BACKGROUND (continued)

Two sets of the two-of-three high-high containment pressure signals; or,

Manual actuation using a separate switch in the control room for each MSIV.

Note that a turbine trip is initiated whenever an MSIV is not fully open.

The MSCVs are swing disc type check valves that are aligned to prevent reverse flow of steam into an SG if an individual SG pressure falls below steamline pressure.

One MSIV and one MSCV are located in each main steam line outside but close to containment. The MSIVs are downstream from the main steam safety valves (MSSVs) and auxiliary feedwater (AFW) pump turbine steam supply to prevent MSSV and AFW isolation from the steam generators by MSIV closure. Closing the MSIVs isolates each steam generator from the others, and isolates the turbine, Steam Bypass System (High Pressure Steam Dump), and other auxiliary steam supplies from the steam generators.

A description of the MSIVs and MSCVs is found in the FSAR, Section 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the MSIVs is established by the containment analysis for the large steam line break (SLB) inside containment (Ref. 2) and the accident analysis of the SLB events presented in the FSAR, Sections 6.2 and 14.2 (References 2 and 3, respectively). The combination of MSIVs and MSCVs precludes the blowdown of more than one steam generator, assuming a single active component failure (e.g., the failure of one MSIV to close on demand). For a break upstream of an MSIV, either the MSIVs in the other three steam lines or the MSCV in the steam line with the faulted SG must close to prevent the blowdown of

BASES

APPLICABLE SAFETY ANALYSES (continued)

more than one SG. For a break downstream of an MSIV, the MSCVs are not required to function.

The limiting case for the containment analysis is the SLB inside containment, without a loss of offsite power and failure to close of the MSCV on the affected steam generator or the failure to close of the MSIV associated with any other SG. With either of these failures, only one SG blows down.

The limiting SLBs occur at low power or hot shutdown because the magnitude and duration of the RCS cooldown will be greater if the SLB is initiated from these conditions. This occurs because, at low power conditions, there is less stored energy in the fuel and the initial steam generator water inventory is greatest at no load. Additionally, the magnitude and duration of the RCS cooldown will be greater if RCPs continue to operate during the SLB. Therefore, an SLB without loss of offsite power is more limiting.

If it is assumed that the most reactive rod cluster control assembly is stuck in the fully withdrawn position, there is an increased possibility that the core will become critical and return to power. In the most limiting condition, the core is ultimately shut down by the boric acid injection delivered by the Emergency Core Cooling System.

The accident analysis compares several different SLB events against different acceptance criteria. The large SLB outside containment upstream of the MSIV is limiting for offsite dose, although a break in this short section of main steam header has a very low probability. The large SLB inside containment at hot zero power with offsite power available is the limiting case for a post trip return to power. The analysis includes scenarios with offsite power available, and with a loss of offsite power following turbine trip. With offsite power available, the reactor coolant pumps continue to circulate coolant through the steam generators, maximizing the Reactor Coolant System cooldown. With a loss of offsite power, the response of mitigating systems is delayed.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Significant single failures considered include:

1) failure of an MSIV or MSCV to close; 2) failure of a feedwater control or isolation valve to close; 3) failure of a diesel generator; and, 4) failure of auxiliary feedwater pump runout protection.

The MSIVs serve only a safety function and remain open during power operation. These valves operate under the following situations:

a. A HELB inside containment. In order to maximize the mass and energy release into containment, the analysis assumes that the MSCV in the affected steam generator remains open. For this accident scenario, steam is discharged into containment from all steam generators until the remaining MSIVs close. After MSIV closure, steam is discharged into containment only from the affected steam generator and from the residual steam in the main steam header downstream of the closed MSIVs in the unaffected loops. Closure of the MSIVs isolates the break from the unaffected steam generators.

b. A break outside of containment and upstream from the MSIVs. This case is not a containment pressurization concern. The uncontrolled blowdown of more than one steam generator must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the MSIVs isolates the break and limits the blowdown to a single steam generator.

c. A break downstream of the MSIVs. This case will be isolated by the closure of the MSIVs.

d. Following a steam generator tube rupture. In this case, closure of the MSIVs isolates the ruptured steam generator from the intact steam generators to minimize radiological releases.

BASES

APPLICABLE SAFETY ANALYSES (continued)

e. The MSIVs are also utilized during other events such as a feedwater line break. This event is less limiting so far as MSIV OPERABILITY is concerned.

The MSIVs satisfy Criterion 3 of 10 CFR 50.36.

LCO

This LCO requires that four MSIVs and four MSCVs in the steam lines be OPERABLE. The MSIVs are considered OPERABLE when the isolation times are within limits, and they close on an isolation actuation signal. The MSCVs are considered OPERABLE when inspections and testing required by the Inservice Test Program are completed at the specified FREQUENCY.

This LCO provides assurance that the MSIVs and MSCVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the 10 CFR 100 (Ref. 4) limits or the NRC staff approved licensing basis.

APPLICABILITY

The MSIVs and MSCVs must be OPERABLE in MODE 1, and in MODES 2 and 3 except when MSIVs are closed. These are the conditions when there is significant mass and energy in the RCS and steam generators. When the MSIVs are closed, they are already performing the safety function.

In MODE 4, the steam generator energy is low and the potential for and consequences of an SLB are significantly reduced.

In MODE 5 or 6, the steam generators do not contain much energy because their temperature is below the boiling point of water; therefore, the MSIVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

BASES

ACTIONS

A.1

With one or more MSCVs inoperable, action must be taken to restore OPERABLE status within 48 hours. In this condition, the MSIVs in the other three steam lines must close to prevent the blowdown of more than one SG following an SLB upstream of an MSIV. Having more than one MSCV inoperable will not increase the consequences of an SLB upstream of an MSIV because only the MSCV associated with the faulted SG needs to function to mitigate the failure of an MSIV associated with any of the other SGs. Additionally, an inoperable MSCV does not affect the consequences of an SLB downstream of the MSIV.

The 48 hour Completion Time is acceptable because of the following: all MSIVs are Operable, there is a low probability of the failure of an MSIV during the 48 hour period that one or more MSCVs are inoperable; and, there is a low probability of an accident that would require a closure of the MSCVs or MSIVs during this period.

B.1, B.2 and B.3

If the MSCVs cannot be restored to OPERABLE status within 48 hours, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and all MSIVs must be closed within 14 hours. The Completion Times are reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs or complete a plant cooldown to MODE 4 in an orderly manner and without challenging unit systems.

If an inoperable MSCVs cannot be restored to OPERABLE status within the specified Completion Time, then all MSIVs must be verified to be closed on a periodic basis while the plant is in MODE 2 or 3. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of MSIV status indications available in the control room, and other administrative controls, to ensure that these valves are in the closed position.

BASES

ACTIONS (continued)

C.1

With one MSIV inoperable in MODE 1, action must be taken to restore OPERABLE status within 48 hours. Some repairs to the MSIV can be made with the unit hot. The 48 hour Completion Time is acceptable because the four OPERABLE MSCVs prevent the blowdown of more than one SG following an SLB upstream of the MSIV even if more than one MSIV fails to close. Additionally, there is a low probability of the failure of an MSCV during the 48 hour period that the MSIV is inoperable; and, there is a low probability of an accident that would require a closure of the MSIVs occurring during this time period.

The 48 hour Completion Time is greater than that normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from most other containment isolation valves in that the closed system provides an additional means for containment isolation.

D.1

If the MSIV cannot be restored to OPERABLE status within 48 hours, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and Condition E would be entered. The Completion Times are reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs in an orderly manner and without challenging unit systems.

E.1 and E.2

Condition E is modified by a Note indicating that separate Condition entry is allowed for each MSIV.

Since the MSIVs are required to be OPERABLE in MODES 2 and 3, the inoperable MSIVs may either be restored to OPERABLE status or closed. When closed, the MSIVs are already in the position required by the assumptions in the safety analysis.

BASES

ACTIONS

E.1 and E.2 (continued)

The 8 hour Completion Time is reasonable, based on operating experience, to close the MSIVs after reaching MODE 2 or complete a plant cooldown to MODE 4 in an orderly manner and without challenging unit systems.

For inoperable MSIVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, the inoperable MSIVs must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of MSIV status indications available in the control room, and other administrative controls, to ensure that these valves are in the closed position.

F.1 and F.2

If one MSIV is inoperable when one or more MSCVs are inoperable, then more than one SG may blowdown following an SLB upstream of an MSIV and the plant is outside of the analysis assumptions. The plant remains within the analysis assumptions for an SLB downstream of an MSIV although the ability to tolerate the failure of a second MSIV is lost. In this condition, all MSCVs must be restored to OPERABLE status or all MSIVs must be restored to OPERABLE status within 8 hours.

The 8 hour Completion Time is acceptable because of the low probability of an accident that would require a closure of the MSCVs or MSIVs during this time period. The 8 hour Completion Time is greater than that normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from most other containment isolation valves in that the closed system provides an additional means for containment isolation.

G.1 and G.2

If the MSIVs or MSCVs cannot be restored to OPERABLE status or are not closed within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To

BASES

achieve this status, the unit must be placed at least in MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

This SR verifies that MSIV closure time is ≤ 5.0 seconds on an actual or simulated actuation signal. The MSIV closure time is assumed in the accident and containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage. The MSIVs are not tested at power because even a part stroke causes a turbine trip and valve closure. As the MSIVs are not tested at power, they are exempt from the ASME Code, Section XI (Ref. 5), requirements during operation in MODE 1 or 2.

The Frequency is in accordance with the Inservice Testing Program. The Frequency for valve closure time is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at this Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

This test is conducted in MODE 3 with the unit at operating temperature and pressure, as discussed in Reference 5. This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, to establish conditions consistent with those under which the acceptance criterion was generated.

SR 3.7.2.2

Each MSCV must be inspected to ensure that it closes properly with no steam flow as is required to perform its design function. This ensures that the safety analysis assumptions are met. The Frequency of this SR is based on Inservice Testing Program requirements and corresponds to the expected refueling cycle.

BASES

REFERENCES (continued)

REFERENCES

1. FSAR, Section 10.2.
2. FSAR, Section 6.
3. FSAR, Section 14.
4. 10 CFR 100.11.
5. ASME, Boiler and Pressure Vessel Code, Section XI.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.2:
"Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.4-1	92	92	No TSCRs	No TSCRs for this Page	N/A
3.4-2	92	92	No TSCRs	No TSCRs for this Page	N/A
4.7-1	133	133	No TSCRs	No TSCRs for this Page	N/A

Add Condition F and associated Req. Actions L.1

SEE ITS 3.7.5

(7) City water system piping and valves directly associated with providing backup supply to the auxiliary feedwater pumps are operable.

Req. Act C.1, Req. Act D.1, E.1, E.2

B. ~~Except as modified by E. below,~~ if during power operations any of the conditions ~~of 3.4-A above, except Items (1) and (2),~~ cannot be met for one MSIV within 48 hours, ~~the operator shall start to shutdown and cool the reactor below 350°F using normal operation procedures.~~ A.1 M.1 L.2 A.3

SEE ITS 3.7.5

C. If during power operations, the requirement of 3.4.A.2 is not satisfied, the following actions shall be taken:

1) With one auxiliary feedwater pump inoperable, restore the pump to operable status within 72 hours or be in hot shutdown within the next 12 hours.

2) With two auxiliary feedwater pumps inoperable, be in hot shutdown within 12 hours.

3) With three auxiliary feedwater pumps inoperable, maintain the plant in safe stable mode which minimizes the potential for a reactor trip and, immediately initiate corrective action to restore at least one auxiliary feedwater pump to operable status as soon as possible.

SEE RELOCATED

D. The gross turbine-generator electrical output at all times shall be within the limitation of Figure 3.4-1 or Figure 3.4-2 for the application conditions of turbine overspeed setpoint, number of operable low pressure steam dump lines, and condenser back pressure as noted thereon.

SEE ITS 3.7.6

E. The reactor shall not be heated above 350°F unless both valves in the single auxiliary feedwater supply line from the Condensate Storage Tank are open. If, during power operations, it is discovered that one or both of the valves are closed, the following action shall be taken:

1) Immediately place the auxiliary feedwater system in the manual mode,

2) Within one hour either:

a) reopen the closed valve(s),

or

b) open the valves to the alternate city water supply,

and

3) Once a water supply has been restored, return the system to the automatic mode.

3.4 STEAM AND POWER CONVERSION SYSTEM

A.2

~~**Applicability**~~

~~Applies to the operating status of the Steam and Power Conversion System.~~

~~**Objective**~~

~~To define conditions of the turbine cycle steam-relieving capacity. Auxiliary Feedwater System operation is necessary to ensure the capability to remove decay heat from the core.~~

Specification

L2

LCO 3.7.2

A. Mode 1 and 2 and 3 except when all MSIVs are closed ~~The reactor shall not be heated above 350°F unless the following conditions are met:~~

SEE ITS 3.7.1

(1) A minimum ASME Code approved steam-relieving capability of twenty (20) main steam valves shall be operable (except for testing). With up to three of the five main steam line safety valves per steam generator inoperable, heat-up above 350°F and power operation is permissible provided:

a) Within four hours,

the inoperable valve(s) is restored to operable status.

or

the Power Range Neutron Flux High Trip Setpoint is reduced per Table 3.4-1.

b) Otherwise the reactor shall be in hot shutdown within the next six hours and in cold shutdown within the following 30 hours.

SEE ITS 3.7.5 (2) Three out of three auxiliary feedwater pumps must be operable.

SEE ITS 3.7.6 (3) A minimum of 360,000 gallons of water in the condensate storage tank.

SEE ITS 3.7.1, 3.7.5, 3.7.6 (4) System piping and valves directly associated with the above components operable.

LCO 3.7.2 (5) FOUR ~~The~~ main steam stop valves MSIVs are operable ~~and capable of closing in~~ A.1

SR 3.7.21 five seconds or less.

SEE ITS 3.7.5 (6) Two steam generators capable of performing their heat transfer function.

Amendment No. ~~79~~, ~~91~~, 92

Add: LCO 3.7.2 – and four MSCVs are Operable L.1

Add Conditions A, B and F and associated Req. Actions

4.7 MAIN STEAM STOP VALVES

A.2

~~Applicability~~

~~Applies to periodic testing of the main steam stop valves.~~

~~Objective~~

~~To verify the ability of the main steam stop valves to close upon signal.~~

Specification

actual or simulated signal A.4

The main steam stop valves shall be tested ~~at least once per 24 months~~. Closure time of five seconds or less shall be verified.

IAW IST Program LA.1

~~Basis~~

~~The main steam stop valves serve to limit an excessive Reactor Coolant System cooldown rate and resultant reactivity insertion following a main steam break incident.[1] Their ability to close upon signal should be verified at least once per 24 months. A closure time of five seconds was selected as being consistent with expected response time for instrumentation as detailed in the steam line break incident analysis.[2]~~

A.1

~~References~~

~~(1) FSAR - Section 10.5~~

~~(2) FSAR - Section 14.2.5~~

A.1

Add Note to SR 3.7.2.1 M.2

Add SR 3.7.2.2 M.3

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.2:

"Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.4.B specifies that if requirements for MSIV Operability cannot be met within the specified Completion Time, then the operator shall start to shutdown and cool the reactor below 350°F using normal operating procedures. Under the same conditions, ITS LCO 3.7.2, Required Actions D.1, requires that the plant be in Mode 2 within 6 hours, and Required Actions G.1 and G.2, require that the plant be in Mode 3 in the following 6 hours and Mode 4 within the following 12 hours.

Establishment of specific Completion Times for plant shutdown and cool down is an administrative change because the ITS Completion Times were determined to provide a reasonable amount of time to reach the required Mode in an orderly manner and without challenging unit systems. Therefore, this change has no impact on safety.

A.4 CTS 4.7 requires that the MSIVs be tested to verify closure time is within specified acceptance criteria. ITS SR 3.7.2.1 maintains this requirement with the allowance that the test may be initiated by either an actual or simulated actuation signal to verify valve actuation. Use of an actual instead of a simulated or "test" signal will not affect the performance of the test since valve actuation cannot discriminate between an actual and simulated signal. This is an administrative change with no impact on safety because it is consistent with the intent of the CTS requirement.

MORE RESTRICTIVE

M.1 CTS 3.4.B allows all 4 MSIVs to be inoperable for up to 48 hours prior to requiring initiation of a plant shutdown. ITS LCO 3.7.2, Required Action C.1, allows only one MSIV to be inoperable for up to 48 hours prior to requiring initiation of a plant shutdown. If more than one MSIV is inoperable in Mode 1 (and not closed); ITS LCO 3.0.3 is immediately Applicable and a plant shutdown must be initiated within 1 hour.

This change, requiring immediate entry into ITS LCO 3.0.3 if more than one MSIV is inoperable, is needed because the failure of more than one MSIV will violate IP3 safety analysis assumptions by allowing more than one SG to blowdown if the break is downstream of the MSIV. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring that the reactor be shutdown promptly when operating outside accident analysis assumptions regarding the available MSIV and MSCV function following a steam line break. Therefore, this change has no adverse impact on safety.

Maintaining the 48 hour allowable out of service time (AOT) for one inoperable MSIV is more restrictive than the current licensing basis and is acceptable for the following reasons:

a) For a break upstream of an MSIV, the MSCV in the steam line with the faulted SG will prevent the blowdown of more than one SG even if multiple other MSIVs fail; and,
b) For a break downstream of an MSIV, blowdown of more than one SG will not occur if no other MSIVs fail.

Therefore, the 48 hour Completion Time for restoration of one inoperable MSIV is acceptable because the four OPERABLE MSCVs prevent the blowdown of more than one SG following an SLB upstream of the MSIV even if more than one MSIV fails to close. Additionally, there is a low probability of the failure of an MSCV during the 48 hour period that the MSIV is inoperable; and, there is a low probability of an accident that would require a closure of the MSIVs occurring during this time period. Therefore, this change has no significant adverse impact on safety.

M.2 CTS 4.7 requires that the MSIVs be tested to verify closure time is within specified acceptance criteria with the unstated assumption that this verification must be performed and met whenever MSIV Operability is required (i.e., whenever the reactor is heated above 350°F). ITS SR 3.7.2.1, MSIV stroke time verification, maintains this requirement except that a Note to ITS SR 3.7.2.1, provides an allowance that the SR must be performed only prior to entering Mode 2 even though ITS LCO 3.7.2 is Applicable in Modes 1, 2 and 3. This note allows the plant to enter Mode 3 prior to completion of the required verification of stroke time provided the MSIVs are otherwise Operable and there is a reasonable expectation that the SR will be successful when performed. This Note is needed because, in accordance with ASME, Boiler and Pressure Vessel Code, Section XI, MSIV stroke time verification must be performed with the valve at normal operating temperature and pressure (i.e., in at least Mode 3).

The addition of the Note to ITS SR 3.7.2.1 is more restrictive because CTS does not include an equivalent to SR 3.0.4 prohibiting entry into a Mode prior to completion of required SRs and CTS 3.4.B permits operation with all four MSIVs inoperable for up to 48 hours in Mode 1, 2 or 3; therefore, CTS allows MSIV stroke time verification in either Mode 2 or

Mode 3 (plant design prevents performance in Mode 1) as long as testing is completed within 48 hours. However, current practice is to perform MSIV stroke time verification in Mode 3. The Note to ITS SR 3.7.2.1, although allowing operation in Mode 3 for an unlimited period of time without performing stroke time verification, is acceptable because of the following: MSIVs are Operable other than verification of stroke time; there is a reasonable expectation that the SR will be successful when performed; and, the potential consequences of multiple MSIV failure during a steam line break in Mode 3 are significantly less than a failure in Modes 1 or 2. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring that MSIV stroke time verifications be completed prior to entering Mode 2. Therefore, this change has no adverse impact on safety.

M.3 CTS 3.4 and CTS 4.7 do not include explicit requirements for the Operability or testing of the MSCVs; however, MSCVs are currently tested in accordance with the requirements of the Inservice Test Program (IST) Program. ITS LCO 3.7.2 adds an explicit requirement for the Operability of the MSCVs (see ITS 3.7.2, DOC L.1) and ITS SR 3.7.2.2 adds an explicit requirement to perform a visual inspection of the MSCVs in accordance with the requirements of and at the Frequency specified by the IST Program. SR 3.7.2 will ensure that each MSCV is visually inspected to ensure that it closes properly to perform its design function. This ensures that the safety analysis assumptions are valid. The Frequency of this SR is based on Inservice Testing Program requirements and corresponds to the expected refueling cycle because the SR must be performed when the plant is shutdown.

This change, an explicit requirement for periodic verification of MSCV Operability, is needed because proper operation of the MSCVs cannot be assured without periodic verification. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification of MSCV Operability. Therefore, this change has no adverse impact on safety.

DISCUSSION OF CHANGES
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

LESS RESTRICTIVE

L.1 CTS 3.4.A.5 requires Operability of the MSIVs but does not include explicit requirements for the Operability of the MSCVs. Therefore, an inoperable MSCV requires an immediate plant shutdown because the MSCVs are described in the FSAR and the IP3 safety analysis assumes the Operability of the MSCVs to mitigate the failure of one or more MSIVs during a steam line break upstream of an MSIV.

ITS LCO 3.7.2 includes requirements for the Operability of both 4 MSIVs and 4 MSCVs. In conjunction with this change, ITS LCO 3.7.2 Conditions A, B and F and associated Required Actions are added to provide allowable out of service times (AOTs) for one or more inoperable MSCVs. This is a less restrictive change because the AOT for one or more inoperable MSCV eliminates the current requirement for an immediate shutdown if an MSCV is inoperable.

ITS LCO 3.7.2, Required Action A.1, establishes a new AOT of 48 hours if one or more MSCVs are inoperable. This change is acceptable because with one or more MSCVs inoperable, the MSIVs in the other three steam lines must close to prevent the blowdown of more than one SG following an SLB upstream of an MSIV. Having more than one MSCV inoperable will not increase the consequences of an SLB upstream of an MSIV because only the MSCV associated with the faulted SG needs to function to mitigate failure of an MSIV associated with any of the other SGs. Additionally, an inoperable MSCV does not affect the consequences of an SLB downstream of the MSIV. The 48 hour Completion Time for Required Action A.1 is acceptable because of the following: the low probability of the failure of an MSIV during the 48 hour period that one or more MSCVs are inoperable; and, low probability of an accident that would require a closure of the MSCVs or MSIVs during the AOT.

ITS LCO 3.7.2, Required Actions B.1, B.2 and B.3, establish the requirements to place the unit in a Mode in which the LCO does not apply if all MSCVs are not restored within 48 hours. Additionally, if this requirement is satisfied by closing the MSIVs while remaining in Mode 2 or 3, periodic verification that the MSIVs are closed is required. This change is acceptable because it ensures the unit is promptly placed in and remains in a Mode in which the LCO does not apply.

ITS LCO 3.7.2, Required Action F.1, establishes a new AOT of 8 hours if one MSIV is inoperable when one or more MSCVs are inoperable. This change is needed because this condition could allow more than one SG to blowdown following an SLB upstream of an MSIV. Therefore, the plant is outside of the analysis assumptions. The plant remains within the analysis assumptions for an SLB downstream of an MSIV although the ability to tolerate the failure of a second MSIV is lost. The 8 hour Completion Time is acceptable because of the low probability of an accident that would require a closure of the MSCVs or MSIVs during this period.

Based on the discussions above, this change which establishes AOTs for inoperable MSCVs, does not have a significant adverse impact on safety.

L.2 CTS 3.4.A establishes the Applicability for the main steam isolation valves (MSIVs) as whenever the reactor is heated above 350°F (i.e., Modes 1, 2 and 3).

ITS 3.7.2 relaxes this Applicability by requiring that the MSIVs and MSCVs (see ITS 3.7.2, DOC L.1) to be Operable in Mode 1, and Operable in Mode 2 and 3 except when all MSIVs are closed. In conjunction with this change in Applicability, ITS LCO 3.7.2, Required Actions D.1 and E.1, allow operation for an unlimited period of time with one or more MSIVs inoperable when in Mode 2 or 3 if the inoperable MSIVs are closed. Therefore, in accordance with the requirements of LCO 3.0.4, entry into Mode 2 or 3 is permitted even with one or more inoperable but closed MSIVs.

This change, a defacto Applicability that requires an MSIV to be Operable in Mode 2 or 3 only if the MSIV is open, is acceptable because an MSIV has already completed its required safety function when the MSIV is closed. Therefore, this change in Applicability has no impact on safety.

In conjunction with the change in Applicability that permits operation with an inoperable MSIV in Mode 2 and 3 if the MSIV is closed, ITS 3.7.2, Required Action B.2.2 and B.3, is added to permit closing an inoperable MSIV when in Mode 2 or 3 in lieu of a plant shutdown and/or cooldown to ≤ 350°F. As stated in the justification for the change in Applicability, allowing operation in Mode 2 and 3 with inoperable but closed MSIVs is acceptable because an MSIV has already completed its required safety function when the MSIV is closed. Therefore, this change in Applicability has no adverse impact on safety.

REMOVED DETAIL

LA.1 CTS 4.7 requires that the MSIVs be tested to verify closure time is within specified acceptance criteria at least once per 24 months.

ITS SR 3.7.2.1, MSIV stroke time verification, maintains the requirement that the MSIVs be tested to verify closure time is within specified acceptance criteria; however, the Frequency is specified as in accordance with the Inservice Test (IST) Program. The IST program requires that MSIVs are tested every 24 months.

This change is needed and is acceptable because the IST program is required by ITS 5.5.7 and provides controls for inservice testing of all ASME Code Class 1, 2, and 3 components. Specifically, ITS 5.5.7, Inservice Testing Program (IST), requires establishing and maintaining a program for inservice testing of ASME Code Class 1, 2, and 3 components at frequencies specified in Section XI of the ASME Boiler and Pressure Vessel Code. Additionally, 10 CFR 50.55a(f) already provides the regulatory requirements for this IST Program, and specifies that ASME Code Class 1, 2, and 3 pumps and valves are covered by an IST Program.

ITS LCO 3.7.2 will still require that MSIVs must be Operable and ITS SR 3.7.2.` will still require periodic verification of Operability by testing the closure time. These requirements, in conjunction with the IST Program required by ITS 5.5.7, provide a high degree of assurance that MSIVs will be tested and maintained to ensure MSIV Operability. Additionally, ITS 5.5.7, Inservice Testing Program (IST), requirements and 10 CFR 50.55a(f) ensure adequate change control and regulatory oversight for any changes to the existing requirements. Therefore, Frequency requirements for testing MSIVs can be maintained in the IST program with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.2:

"Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change adds an explicit requirements for Operability and provides allowable out of service times (AOTs) for inoperable Main Steam Check Valves (MSCVs). This is a less restrictive change because the AOT for one or more inoperable MSCV eliminates the current implicit requirement for an immediate shutdown if an MSCV is inoperable.

   This change will not result in a significant increase in the probability of an accident previously evaluated because the Operability of the MSCVs does not affect the initiators of any analyzed event. This change will not result in a significant increase in the consequences of an accident previously evaluated because the Conditions and Required Actions that govern an inoperable MSCV ensure that the safety function provided by MSIVs and MSCVs is not lost and limits the duration when the plant is not capable of tolerating the failure of an additional MSIV or MSCV. Additionally, the AOTs for inoperable MSCVs and MSIVs are limited such that there is a low probability of an accident that would require a closure of the MSCVs or MSIVs during this period.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the Conditions and Required Actions that govern an inoperable MSCV ensure that the safety function provided by MSIVs and MSCVs is not lost and limits the duration when the plant is not capable of tolerating the failure of an additional MSIV or MSCV. Additionally, the AOTs for inoperable MSCVs and MSIVs are limited such that there is a low probability of an accident that would require a closure of the MSCVs or MSIVs during this period.

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change relaxes this Applicability for main steam isolation valve (MSIV) Operability to allow entry into Modes 2 and 3 and unlimited operation in Modes 2 and 3 when one or more MSIVs are inoperable but closed. Additionally, this change allows shutting an inoperable MSIV in Modes 2 and 3 rather than requiring a plant shutdown. This change will not result in a significant increase in the probability or consequences of an accident previously evaluated because operation in Mode 2 and 3 with inoperable but closed MSIVs is acceptable because MSIVs have already completed the required safety function when the MSIVs are closed.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because operation in Mode 2 and 3 with inoperable but closed MSIVs is acceptable because MSIVs have already completed the required safety function when the MSIVs are closed.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.2:
"Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.2

This ITS Specification is based on NUREG-1431 Specification No. **3.7.2**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
WOG-032	102 R0	EXTEND THE PERIODIC VERIFICATION OF INOPERABLE MSIV AND MFIV CLOSURE TO 31 DAYS	Rejected by NRC	Not Incorporated	N/A
WOG-064 R1		MSIV AOT TO 72 HOURS	TSTF Review	Not Incorporated	N/A
WOG-098		SEPARATE CLOSURE TIME TESTING AND ACTUATION SIGNAL TESTING FOR MSIVS AND FWIVS	TSTF Review	Not Incorporated	N/A

3.7 PLANT SYSTEMS

<CTS>

3.7.2 Main Steam Isolation Valves (MSIVs) Insert: 3.7-5-01

DB.2

<3.4.A.5>
<DOC L.1>

LCO 3.7.2 ~~[Four]~~ MSIVs Insert: 3.7-5-02 shall be OPERABLE.

DB.2

<3.4.A>
<DOC L.2>

APPLICABILITY: MODE 1,
MODES 2 and 3 except when all MSIVs are closed ~~and [de-activated].~~

ACTIONS

Insert: 3.7-5-03

CONDITION	REQUIRED ACTION		COMPLETION TIME
~~A~~ C. One MSIV inoperable in MODE 1.	~~A~~ C.1	Restore MSIV to OPERABLE status.	~~[8]~~ 48 hours
~~B~~ D. Required Action and associated Completion Time of Condition ~~A~~ C not met.	~~B~~ D.1	Be in MODE 2.	6 hours
~~C~~ E. ---------NOTE--------- Separate Condition entry is allowed for each MSIV. ---------------------- One or more MSIVs inoperable in MODE 2 or 3.	~~C~~ E.1 AND ~~C~~ E.2	Close MSIV. Verify MSIV is closed.	~~[8]~~ hours Once per 7 days

<3.4.B> <DOC M.1>

<3.4.B> <DOC L.2> <DOC A.3>

<3.4.B> <DOC L.2> <DOC A.3>

Insert: 3.7-5-04

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: 3.7-5-01

<DOC L.1> and Main Steam Check Valves (MSCVs)

INSERT: 3.7-5-02

<DOC L.1> and four MSCVs

INSERT: 3.7-5-03 DB 2

A. <DOC L.1>	One or more MSCVs inoperable.	A.1	Restore MSCVs to OPERABLE status.	48 hours
B. <DOC L.1>	Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 2.	6 hours
		AND		
		B.2	Close all MSIVs.	14 hours
		AND		
		B.3	Verify all MSIVs closed.	Once per 7 days

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: 3.7-5-04

<DOC L.1>

F. One MSIV inoperable. AND One or more MSCVs inoperable.	F.1	Restore all MSCVs to OPERABLE status.	8 hours
	OR		
	F.2	Restore all MSIVs to OPERABLE status.	

<CTS>

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
~~D~~. G Required Action and associated Completion Time of Condition ~~C~~ B, E or F not met. <3.4.B> <DOC A3>	~~D~~G.1	Be in MODE 3.	6 hours
	AND		
	~~D~~G.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<Doc M.2> SR 3.7.2.1	-------------------NOTE------------------- Only required to be performed in MODES 1 and 2. --	
<3.4.A.5> <4.7> <DOC A.4>	Verify closure time of each MSIV is ≤ ~~[4.6]~~ 5.0 seconds on an actual or simulated actuation signal.	In accordance with the ~~[~~Inservice Testing Program ~~or [18] months]~~
Insert: 3.7-6-01		

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: 3.7-6-01

<DOC M.3>

SR 3.7.2.2 Perform visual inspection of each MSCV.	In accordance with the Inservice Testing Program

B 3.7 PLANT SYSTEMS

and Main Steam Check Valves

B 3.7.2 Main Steam Isolation Valves (MSIVs)

BASES

BACKGROUND

Insert: B 3.7-7-01

The MSIVs isolate steam flow from the secondary side of the steam generators following a high energy line break (HELB). MSIV closure terminates flow from the unaffected (intact) steam generators.

DB.1

Insert: B 3.7-7-02

and one MSCV

One MSIV ~~is~~ are located in each main steam line outside, but close to, containment. The MSIVs are downstream from the main steam safety valves (MSSVs) and auxiliary feedwater (AFW) pump turbine steam supply, to prevent MSSV and AFW isolation from the steam generators by MSIV closure. Closing the MSIVs isolates each steam generator from the others, and isolates the turbine, ~~Steam Bypass System~~ (High Pressure Steam Dump) and other auxiliary steam supplies from the steam generators.

~~The MSIVs close on a main steam isolation signal generated by either low steam generator pressure or high containment pressure. The MSIVs fail closed on loss of control or actuation power.~~

~~Each MSIV has an MSIV bypass valve. Although these bypass valves are normally closed, they receive the same emergency closure signal as do their associated MSIVs. The MSIVs may also be actuated manually.~~

and MSCVs

A description ~~of the MSIVs~~ is found in the FSAR, Section ~~10.3~~ 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the MSIVs is established by the containment analysis for the large steam line break (SLB) inside containment ~~discussed in the FSAR, Section 6.2~~ (Ref. 2) and ~~It is also affected by~~ the accident analysis of the SLB events presented in the FSAR ~~Section 15.1.5~~ (Ref. 3). The design precludes the blowdown of more than one steam generator, assuming a single active component failure (e.g., the failure of one MSIV to close on demand).

Insert: B 3.7-7-03

Insert: B 3.7-7-04

Insert: B 3.7-7-05

The limiting case for the containment analysis is the SLB inside containment, ~~with~~ a loss of offsite power ~~following turbine trip~~, and without failure of the MSIV MSCV to close on the affected steam

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: B 3.7-7-01

The Main Steam System conducts steam from each of the four steam generators within the containment building to the turbine stop and control valves. The four steam lines are interconnected near the turbine. Each steam line is equipped with an isolation valve identified as the Main Steam Isolation Valve (MSIV) and a non-return valve identified as the Main Steam Check Valve (MSCV).

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: B 3.7-7-02

The MSIVs are swing disc type check valves that are aligned to prevent flow out of the steam generator. During normal operation, the free swinging discs in the MSIVs are held out of the main steam flow path by an air piston and the MSIVs close to prevent the release of steam from the SG when air is removed from the piston. The isolation valves are designed to and required to close in less than five seconds. The MSIV operators are supplied by instrument air and each MSIV is equipped with an air receiver to prevent spurious MSIV closure due to pressure transients in the instrument air system.

Each MSIV is equipped with a bypass valve used to warm up the steam line during unit startup which equalizes pressure across the valve allowing it to be opened. The bypass valves are manually operated and are closed during normal plant operation.

An MSIV closure signal is generated by the following signals:

High steam flow in any two out of the four steam lines coincident with low steam line pressure; or,

High steam flow in any two out of the four steam lines coincident with low Tavg; or,

Two sets of the two-of-three high-high containment pressure signals; or,

Manual actuation using a separate switch in the control room for each MSIV..

Note that a turbine trip is initiated whenever an MSIV is not fully open.

The MSCVs are swing disc type check valves that are aligned to prevent reverse flow of steam into an SG if an individual SG pressure falls below steamline pressure.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: B 3.7-7-03

Sections 6.2 and 14.2 (References 2 and 3, respectively).

INSERT: B 3.7-7-04

combination of MSIVs and MSCVs

INSERT: B 3.7-7-05

For a break upstream of an MSIV, either the MSIVs in the other three steam lines or the MSCV in the steam line with the faulted SG must close to prevent the blowdown of more than one SG. For a break downstream of an MSIV, the MSCVs are not required to function.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Insert: B 3.7-8-01

Insert: B 3.7-8-02

In the most limiting condition,

with offsite power available

: 1)

or MSCV

Insert: B 3.7-8-03

generator ~~to close.~~ H ~~At lower powers, the steam generator inventory and temperature are at their maximum, maximizing the analyzed mass and energy release to the containment. Due to reverse flow and failure of the MSIV to close, the additional mass and energy in the steam headers downstream from the other MSIV contribute to the total release. With~~ the most reactive rod cluster control assembly assumed is stuck in the fully withdrawn position, there is an increased possibility that the core will become critical and return to power. The core is ultimately shut down by the boric acid injection delivered by the Emergency Core Cooling System.

The accident analysis compares several different SLB events against different acceptance criteria. The large SLB outside containment upstream of the MSIV is limiting for offsite dose, although a break in this short section of main steam header has a very low probability. The large SLB inside containment at hot zero power is the limiting case for a post trip return to power. The analysis includes scenarios with offsite power available, and with a loss of offsite power following turbine trip. With offsite power available, the reactor coolant pumps continue to circulate coolant through the steam generators, maximizing the Reactor Coolant System cooldown. With a loss of offsite power, the response of mitigating systems is delayed. Significant single failures considered include failure of an MSIV to close.

The MSIVs serve only a safety function and remain open during power operation. These valves operate under the following situations:

MSCV

a. An HELB inside containment. In order to maximize the mass and energy release into containment, the analysis assumes that the MSIV in the affected steam generator remains open. For this accident scenario, steam is discharged into containment from all steam generators until the remaining MSIVs close. After MSIV closure, steam is discharged into containment only from the affected steam generator and from the residual steam in the main steam header downstream of the closed MSIVs in the unaffected loops. Closure of the MSIVs isolates the break from the unaffected steam generators.

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: B 3.7-8-01

or the failure to close of the MSIV associated with any other SG. With either of these failures, only one SG blows down.

INSERT: B 3.7-8-02

The limiting SLBs occur at low power or hot shutdown because the magnitude and duration of the RCS cooldown will be greater if the SLB is initiated from these conditions. This occurs because, at low power conditions, there is less stored energy in the fuel and the initial steam generator water inventory is greatest at no load. Additionally, the magnitude and duration of the RCS cooldown will be greater if RCPs continue to operate during the SLB. Therefore, an SLB without loss of offsite power is more limiting.

If it is assumed that

INSERT: B 3.7-8-03

; 2) failure of a feedwater control or isolation valve to close; 3) failure of a diesel generator; and, 4) failure of auxiliary feedwater pump runout protection.

This case

BASES

APPLICABLE SAFETY ANALYSES (continued)

b. A break outside of containment and upstream from the MSIVs is not a containment pressurization concern. The uncontrolled blowdown of more than one steam generator must be prevented to limit the potential for uncontrolled RCS cooldown and positive reactivity addition. Closure of the MSIVs isolates the break and limits the blowdown to a single steam generator.

c. A break downstream of the MSIVs will be isolated by the closure of the MSIVs. This case

d. Following a steam generator tube rupture, closure of the MSIVs isolates the ruptured steam generator from the intact steam generators to minimize radiological releases. In this case

e. The MSIVs are also utilized during other events such as a feedwater line break. This event is less limiting so far as MSIV OPERABILITY is concerned.

The MSIVs satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36

LCO

This LCO requires that [four] MSIVs in the steam lines be OPERABLE. The MSIVs are considered OPERABLE when the isolation times are within limits, and they close on an isolation actuation signal. and four MSCVs Insert: B3.7-9-01

This LCO provides assurance that the MSIVs will perform their design safety function to mitigate the consequences of accidents that could result in offsite exposures comparable to the 10 CFR 100 (Ref. 4) limits or the NRC staff approved licensing basis. and MSCVs

Insert: B 3.7-9-02

APPLICABILITY

The MSIVs must be OPERABLE in MODE 1, and in MODES 2 and 3 except when closed ~~and deactivated~~ when there is significant mass and energy in the RCS and steam generators. When the MSIVs are closed, they are already performing the safety function. and MSCVs MSIVs are

In MODE 4, ~~normally most of the MSIVs are closed~~ and the steam generator energy is low.

Insert: B 3.7-9-03

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: B 3.7-9-01

The MSCVs are considered OPERABLE when inspections and testing required by the Inservice Test Program are completed at the specified FREQUENCY.

INSERT: B 3.7-9-02

These are the conditions

INSERT: B 3.7-9-03

and the potential for and consequences of an SLB are significantly reduced.

BASES

APPLICABILITY (continued)

In MODE 5 or 6, the steam generators do not contain much energy because their temperature is below the boiling point of water; therefore, the MSIVs are not required for isolation of potential high energy secondary system pipe breaks in these MODES.

ACTIONS

Insert: B 3.7-10-01

C ~~A~~.1

With one MSIV inoperable in MODE 1, action must be taken to restore OPERABLE status within 48 ~~[8]~~ hours. Some repairs to the MSIV can be made with the unit hot. ~~The [8] hour Completion Time is reasonable, considering the low probability of an accident occurring during this time period that would require a closure of the MSIVs.~~

Insert: B 3.7-10-02

The 48 ~~[8]~~ hour Completion Time is greater than ~~that~~ normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from most other containment isolation valves in that the closed system provides an additional means for containment isolation.

D ~~B~~.1

If the MSIV cannot be restored to OPERABLE status within 48 ~~[8]~~ hours, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and Condition E ~~C~~ would be entered. The Completion Times are reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs in an orderly manner and without challenging unit systems.

E ~~C~~.1 and E ~~C~~.2

Condition E ~~C~~ is modified by a Note indicating that separate Condition entry is allowed for each MSIV.

Since the MSIVs are required to be OPERABLE in MODES 2 and 3, the inoperable MSIVs may either be restored to OPERABLE status or closed. When closed, the MSIVs are already in the position required by the assumptions in the safety analysis.

(continued)

INSERT: B 3.7-10-01

A.1

With one or more MSCVs inoperable, action must be taken to restore OPERABLE status within 48 hours. In this condition, the MSIVs in the other three steam lines must close to prevent the blowdown of more than one SG following an SLB upstream of an MSIV. Having more than one MSCV inoperable will not increase the consequences of an SLB upstream of an MSIV because only the MSCV associated with the faulted SG needs to function to mitigate the failure of an MSIV associated with any of the other SGs. Additionally, an inoperable MSCV does not affect the consequences of an SLB downstream of the MSIV.

The 48 hour Completion Time is acceptable because of the following: all MSIVs are Operable, there is a low probability of the failure of an MSIV during the 48 hour period that one or more MSCVs are inoperable; and, there is a low probability of an accident that would require a closure of the MSCVs or MSIVs during this period.

B.1, B.2 and B.3

If the MSCVs cannot be restored to OPERABLE status within 48 hours, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 2 within 6 hours and all MSIVs must be closed within 14 hours. The Completion Times are reasonable, based on operating experience, to reach MODE 2 and to close the MSIVs or complete a plant cooldown to MODE 4 in an orderly manner and without challenging unit systems.

If an inoperable MSCVs cannot be restored to OPERABLE status within the specified Completion Time, then all MSIVs must be verified to be closed on a periodic basis while the plant is in MODE 2 or 3. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of MSIV status indications available in the control room, and other administrative controls, to ensure that these valves are in the closed position.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: B 3.7-10-02

The 48 hour Completion Time is acceptable because the four OPERABLE MSCVs prevent the blowdown of more than one SG following an SLB upstream of the MSIV even if more than one MSIV fails to close. Additionally, there is a low probability of the failure of an MSCV during the 48 hour period that the MSIV is inoperable; and, there is a low probability of an accident that would require a closure of the MSIVs occurring during this time period.

BASES

ACTIONS

E.1 and E.2 (continued)

The [8] hour Completion Time ~~is consistent with that allowed in Condition A~~

Insert: B3.7-11-01

For inoperable MSIVs that cannot be restored to OPERABLE status within the specified Completion Time, but are closed, the inoperable MSIVs must be verified on a periodic basis to be closed. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of MSIV status indications available in the control room, and other administrative controls, to ensure that these valves are in the closed position.

Insert: B3.7-11-02

G.1 and G.2

If the MSIVs or MSCVs cannot ~~be restored~~ to OPERABLE status or are not closed within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed at least in MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from MODE 2 conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1

This SR verifies that MSIV closure time is ≤ ~~[4.6]~~ 5.0 seconds on an actual or simulated actuation signal. ~~The MSIV closure time is assumed in the accident and containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage.~~ The MSIVs ~~should~~ are not ~~be~~ tested at power ~~since~~ because even a part stroke ~~exercise increases the risk of a~~ valve closure. ~~when the unit is generating power~~. As the MSIVs are not tested at power,, they are exempt from the ASME Code, Section XI (Ref. 5), requirements during operation in MODE 1 or 2.

Insert: B3.7-11-03

(continued)

INSERT: B 3.7-11-01

is reasonable, based on operating experience, to close the MSIVs after reaching MODE 2 or complete a plant cooldown to MODE 4 in an orderly manner and without challenging unit systems.

INSERT: B 3.7-11-02

F.1 and F.2

If one MSIV is inoperable when one or more MSCVs are inoperable, then more than one SG may blowdown following an SLB upstream of an MSIV and the plant is outside of the analysis assumptions. The plant remains within the analysis assumptions for an SLB downstream of an MSIV although the ability to tolerate the failure of a second MSIV is lost. In this condition, all MSCVs must be restored to OPERABLE status or all MSIVs must be restored to OPERABLE status within 8 hours.

The 8 hour Completion Time is acceptable because of the low probability of an accident that would require a closure of the MSCVs or MSIVs during this time period. The 8 hour Completion Time is greater than that normally allowed for containment isolation valves because the MSIVs are valves that isolate a closed system penetrating containment. These valves differ from most other containment isolation valves in that the closed system provides an additional means for containment isolation.

INSERT: B 3.7-11-03

causes a turbine trip and

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.2.1 (continued)

The Frequency is in accordance with the [Inservice Testing Program ~~or [18] months~~]. The [18] month Frequency for valve closure time is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at ~~the [18] month~~ this Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

This test is conducted in MODE 3 with the unit at operating temperature and pressure, as discussed in Reference 5. ~~exercising requirements.~~ This SR is modified by a Note that allows entry into and operation in MODE 3 prior to performing the SR. This allows a delay of testing until MODE 3, to establish conditions consistent with those under which the acceptance criterion was generated.

Insert: B 3.7-12-01

REFERENCES

1. FSAR, Section ~~[10.3]~~. 10.2
2. FSAR, Section ~~[6.2]~~. 6
3. FSAR, Section ~~[15.1.5]~~. 14
4. 10 CFR 100.11.
5. ASME, Boiler and Pressure Vessel Code, Section XI.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

INSERT: B 3.7-12-01

SR 3.7.2.2

Each MSCV must be inspected to ensure that it closes properly with no steam flow as is required to perform its design function. This ensures that the safety analysis assumptions are met. The Frequency of this SR is based on Inservice Testing Program requirements and corresponds to the expected refueling cycle.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.2:
"Main Steam Isolation Valves (MSIVs) and Main Steam Check Valves (MSCVs)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.2 - Main Steam Isolation Valves (MSIVs)
and Main Steam Check Valves (MSCVs)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DB.2 IP3 LCO 3.7.2 and the supporting Bases differ from NUREG-1431, Rev 1, because IP3 steam lines do not use stop-check valves to prevent blowdown of more than one SG during a steamline break (SLB). Instead, IP3 uses two check valves (an MSIV and MSCV) in each steam line. The MSIVs are swing disc type check valves that are aligned to prevent flow out of the steam generator. During normal operation, the free swinging discs in the MSIVs are held out of the main steam flow path by an air piston and the MSIVs close to prevent the release of steam from the SG when air is removed from the piston. The MSCVs are swing disc type check valves that are aligned to prevent reverse flow of steam into a SG if an individual SG pressure falls below steamline pressure.

The IP3 design differs from plants that use a single stop-check valve in each steam line because the SG stop function and the SG non-return function are independent. Therefore, explicit requirements for Operability and the associated Conditions, Required Actions and Completion Times for the MSIVs function and the MSCV function were established. Detailed descriptions and justifications for IP3 ITS LCO 3.7.2 are included in the ITS Bases and the discussions of changes between CTS and ITS. This change does not have a significant impact on safety except as identified and justified in the discussions of changes between CTS and ITS.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.3:

"Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.3 Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

LCO 3.7.3 Two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3 except when MBFPDVs, or MBFRVs and MBFRV low flow bypass valves are closed and de-activated or isolated by a closed manual valve.

ACTIONS

------------------------------------NOTE------------------------------------
Separate Condition entry is allowed for each valve.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or both MBFPDVs inoperable.	A.1 Close or isolate MBFPDV.	72 hours
	<u>AND</u>	
	A.2 Verify MBFPDV is closed or isolated.	Once per 7 days
B. One or more MBFRVs inoperable.	B.1 Close or isolate MBFRV.	72 hours
	<u>AND</u>	
	B.2 Verify MBFRV is closed or isolated.	Once per 7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One or more MBFRV low flow bypass valves inoperable.	C.1	Close or isolate bypass valve.	72 hours
	<u>AND</u>		
	C.2	Verify bypass valve is closed or isolated.	Once per 7 days
D. Two valves in series in the same flow path inoperable.	D.1	Isolate affected flow path.	8 hours
E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	E.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Verify each MBFPDV, MBFRV and MBFRV low flow bypass valve closes on an actual or simulated actuation signal within the following limits: a. MBFPDV closure time ≤ 122 seconds; b. MBFRV closure time ≤ 10 seconds; and, c. MBFRV Low Flow Bypass valve closure time ≤ 10 seconds.	In accordance with the Inservice Testing Program

B 3.7 PLANT SYSTEMS

B 3.7.3 Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

BASES

BACKGROUND

The MBFPDVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). The safety related function of the MBFRVs is to provide the second isolation of MFW flow to the secondary side of the steam generators following an HELB. Closure of the two MBFPDVs or four MBFRVs and four MBFRV low flow bypass valves terminates flow to the steam generators. The consequences of events occurring in the main steam lines or in the MFW lines downstream from the MBFPDVs will be mitigated by their closure. Closure of the MBFPDVs or MBFRVs and MBFRV low flow bypass valves, effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) or FWLBs inside containment, and reducing the cooldown effects for SLBs.

In the event of a secondary side pipe rupture inside containment, either the MBFPDVs or MBFRVs and MBFRV low flow bypass valves limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of auxiliary feedwater (AFW) to the intact loops.

One MBFPDV is located on the discharge of each of the two Main Boiler Feedpumps (MBFPs), and one MBFRV and MBFRV low flow bypass valve, is located on each of the four MFW lines, outside but close to containment. The MFIVs and MFRVs are located upstream of the AFW injection point so that AFW may be supplied to the steam generators following MBFPDV or MBFRV closure. The piping volume from these valves to the steam generators must be accounted for in calculating mass and energy releases, and refilled prior to AFW reaching the steam generator following either an SLB or FWLB.

The two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves will close on receipt of an ESFAS Safety Injection signal. An ESFAS Tavg-Low coincident with reactor trip will close the

BASES

BACKGROUND (Continued)

four MBFRVs and four MBFRV low flow bypass valves. A Steam Generator Hi-Hi level trip will close the MBFPDV and MBFRVs and MBFRV low flow bypass valves associated with the affected SG. They may also be closed manually. In addition to the two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves, a check valve outside containment is available. The check valve isolates the feedwater line to prevent blowdown of a SG if main or auxiliary feedwater pressure are lost.

A description of the MBFPDVs and MBFRVs is found in the FSAR, Section 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the MBFPDVs and MBFRVs is established by the analyses for the large SLB. Closure of the MBFPDVs, MBFRVs and MBFRV low flow bypass valves, may also be relied on to terminate an SLB for core response analysis and excess feedwater event upon the receipt of a steam generator water level – high high or a feedwater isolation signal. Feedwater isolation also occurs as a result of any safety injection signal.
Failure of an MBFPDV in conjunction with the failure of an MBFRV or MBFRV low flow bypass valve to close following an SLB can result in additional mass and energy being delivered to the steam generators, contributing to cooldown. This failure also results in additional mass and energy releases following an SLB or FWLB event.

The MBFPDVs and MBFRVs satisfy Criterion 3 of 10 CFR 50.36.

LCO

This LCO ensures that the MBFPDVs, MBFRVs and MBFRV low flow bypass valves will isolate MFW flow to the steam generators, following a main steam line break.

This LCO requires that two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves be OPERABLE. The MBFPDVs, MBFRVs and

BASES

LCO (continued)

MBFRV low flow bypass valves are considered OPERABLE when isolation times are within limits and they close on an isolation actuation signal.

Failure to meet the LCO requirements can result in additional mass and energy being released to containment following an SLB or FWLB inside containment. A feedwater isolation signal on a steam generator water level – high high signal and this function is relied on to terminate an excess feedwater flow event; therefore, failure to meet the LCO may result in the introduction of water into the main steam lines.

APPLICABILITY

The MBFPDVs, MBFRVs and MBFRV bypass valves must be OPERABLE whenever there is significant mass and energy in the Reactor Coolant System and steam generators. This ensures that, in the event of an HELB, a single failure cannot result in the blowdown of more than one steam generator. In MODES 1, 2, and 3, the MBFPDVs, MBFRVs and MBFRV bypass valves are required to be OPERABLE to limit the amount of available fluid that could be added to containment in the case of a secondary system pipe break inside containment. When the valves are closed and de-activated or isolated by a closed manual valve, they are already performing their safety function. A de-activated motor operated valve is considered to be a manual valve.

In MODES 4, 5, and 6, steam generator energy is low. Therefore, the MBFPDVs, MBFRVs and MBFRV bypass valves are normally closed since MFW is not required.

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each valve.

BASES

ACTIONS (continued)

A.1 and A.2

With one MFPDV in one or both flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within 72 hours. When these valves are closed or isolated, they are performing their required safety function.

The 72 hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves, the MBFP trip function, and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The 72 hour Completion Time is reasonable, based on industry operating experience.

Inoperable MBFPDVs that are closed or isolated must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

B.1 and B.2

With one MBFRV in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within 72 hours. When these valves are closed or isolated, they are performing their required safety function.

The 72 hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The 72 hour Completion Time is reasonable, based on industry operating experience.

Inoperable MBFRVs, that are closed or isolated, must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis

BASES

ACTIONS

B.1 and B.2 (continued)

remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of other administrative controls to ensure that the valves are closed or isolated.

C.1 and C.2

With one MBFRV low flow bypass valve in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within 72 hours. When these valves are closed or isolated, they are performing their required safety function.

The 72 hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The 72 hour Completion Time is reasonable, based on industry operating experience.

Inoperable associated bypass valves that are closed or isolated must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of the administrative controls that ensure that these valves are closed or isolated.

D.1

With two inoperable valves in series in the same flow path, there may be no redundant system to operate automatically and perform the required safety function. Under these conditions, affected valves in each flow path must be restored to OPERABLE status, or the affected flow path isolated within 8 hours. This action returns the system to the condition where at least one valve in each flow path is performing the required safety function. The 8 hour Completion Time is reasonable, based on operating experience, to complete the actions required to close the MBFPDV or MBFRV, or otherwise isolate the affected flow path.

BASES

ACTIONS (continued)

E.1 and E.2

If the MBFPDV(s), MBFRV(s), and MBFRV bypass valve(s) cannot be restored to OPERABLE status, or closed, or isolated within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 12 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

This SR verifies that the closure time of each MBFPDV(s), MBFRV(s), and MBFRV bypass valves is within required limits on an actual or simulated actuation signal. The closure times are assumed in the accident and containment analyses. The acceptance criteria for this SR do not include the 2 second delay associated with the ESFAS activation signal. This Surveillance is normally performed upon returning the unit to operation following a refueling outage. These valves can not be tested at power because valve closure or even a part stroke exercise increases the risk of a valve closure and MBFP trip. This is consistent with the ASME Code, Section XI (Ref. 2), quarterly stroke requirements during operation in MODES 1 and 2.

The Frequency for this SR is in accordance with the Inservice Testing Program. The required Frequency for valve closure is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the required Frequency.

BASES

REFERENCES

1. FSAR, Section 10.2.
2. ASME, Boiler and Pressure Vessel Code, Section XI.

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Technical Specification 3.7.3:

"Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.5-6	154	154	No TSCRs	No TSCRs for this Page	N/A
T 3.5-4(2)	151	151	No TSCRs	No TSCRs for this Page	N/A

3.5 INSTRUMENTATION SYSTEMS

Operational Safety Instrumentation

A.2

~~Applicability~~

~~Applies to plant instrumentation systems.~~

~~Objectives~~

~~To provide for automatic initiation of the Engineered Safety Features in the event that principal process variable limits are exceeded, and to delineate the conditions of the plant instrumentation and safety circuits necessary to ensure reactor safety.~~

Specification

add LCO 3.7.3 Applicability A.3

LCO 3.7.3 ~~3.5.1~~ ~~When the plant is not in the cold shutdown condition, the Engineered Safety Features initiation instrumentation setting limits shall be as stated in Table 3.5-1.~~

3.5.2 For instrumentation testing or instrumentation channel failure, plant operation shall be permitted to continue in accordance with Tables 3.5-2 through 3.5-4. No more than one channel of a particular protection channel set shall be tested at the same time. By definition, an instrumentation channel failure shall not be regarded as a channel being tested.

3.5.3 In the event the number of in-service channels of a particular function is less than the minimum number of Operable Channels (Col. 3), or the Minimum Degree of Redundancy (Col. 4) cannot be achieved, operation shall be limited according to the requirement shown in Column 5 of Tables 3.5-2 through 3.5-4.

SEE ITS 3.3.2

TABLE 3.5-4 (... 2 of 2)

No.	FUNCTIONAL UNIT	1 NO. OF CHANNELS	2 NO. OF CHANNELS TO TRIP	3 MIN. OPERABLE CHANNELS	4 MIN. DEGREE OF REDUNDANCY	5 OPERATOR ACTION IF CONDITIONS IN COLUMN 3 OR 4 CANNOT BE MET
3.	FEEDWATER LINE ISOLATION					
a.	Safety Injection	~~See~~	~~Item~~	~~No. 1~~	~~of~~	~~Table 3.5-3~~
4.	CONTAINMENT VENT AND PURGE					
a.	Containment Radioactivity High (R11 and R12 monitor)	2	1	1	0	close all containment vent and purge valves when above cold shutdown
5.	PLANT EFFLUENT RADIOIODINE/PARTICULATE SAMPLING (sample line common with monitor R13)	1	NA	1	0	(see note 3)
6.	Main Steam Line Radiation Monitors	1/line	NA	1/line	0	(see note 3)
7.	Wide Range Plant Vent Monitor (R27)	1	NA	1	0	(see note 3)

LCO 3.7.3

A.3

M.1

SEE ITS Section 3.3 and CTS RELOCATED

NOTES

1. If the conditions of Columns 3 or 4 cannot be met, the reactor shall be placed in the hot shutdown condition, utilizing normal operating procedures, within 4 hours of the occurrence. If the conditions are not met within 24 hours of the occurrence, the reactor shall be placed in the cold shutdown condition, or the alternate condition if applicable, within an additional 24 hours.

2. Main steam isolation valves may be closed in lieu of going to cold shutdown if the circuitry associated with closing the valves is the only portion inoperable.

3. If the plant vent sampling capability, the wide-range vent monitor or the main steam line radiation monitors is/are: determined to be inoperable when the reactor is above the cold shutdown condition, then restore the sampling/monitoring capability within 72 hours or:
   a) Initiate a pre-planned alternate sampling/monitoring capability as soon as practical, but no later than 72 hours after identification of the failures. If the capability is not restored to operable status within 7 days, then,
   b) Submit a Special Report to the NRC pursuant to Technical Specification 6.9.2 within 14 days following the event outlining the action taken, the cause of the inoperability and the plans and schedule for restoring the system.

ITS 3.7.3

A.1

Feedwater Line Isolation

The feedwater lines are isolated upon actuation of the Safety Injection System in order to prevent excessive cooldown of the reactor coolant system. This mitigates the effect of an accident such as steam break which in itself causes excessive coolant temperature cooldown. Feedwater line isolation also reduces the consequences of a steam line break inside the containment, by stopping the entry of feedwater.

Containment Vent and Purge

The containment vent and purge valves are isolated upon actuation of the Safety Injection System, Containment Spray System, or upon receipt of a high containment radiation signal. In the event of an accident, this action prevents a continuous radioactive release via the Containment Vent and Purge System.

Allowable Values

Table 3.5-1 provides the "allowable values" for Engineered Safety Features Instrumentation. The "allowable values" represent the limit placed on the "as-found" condition for an instrument loop. If the "as-found" condition measured during calibration is within the "allowable value," the instrument loop will satisfy the system and safety requirements.[6]

1. The Hi-Level containment pressure value is about 10% of containment design pressure. Initiation of Safety Injection protects against loss of coolant[2] or steam line break[3] accidents as discussed in the safety analysis.

2. The Hi-Hi Level containment pressure value is about 50% of containment design pressure. Initiation of Containment Spray and Steam Line Isolation protects against large loss of coolant[2] or steam line break accidents[3] as discussed in the safety analysis.

3. The pressurizer low pressure value is substantially below system operating pressure limits. However, it is sufficiently high to protect against a loss of coolant accident as shown in the safety analysis[2]. The trip is bypassed below 2000 psig to prevent inadvertent actuation of the Engineered Safeguards when the reactor is shutdown.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.3:

"Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES

ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.5.1 establishes the Applicability for Engineered Safety Features initiation instrumentation and, by default, the feedwater isolation function. CTS 3.5.1 requires Operability of the feedwater isolation function whenever the plant is not in the cold shutdown condition.

ITS 3.7.3 establishes a specific requirement for the isolation valves actuated by the feedwater isolation function (See Its 3.7.3, DOC M.1) and requires the valves associated with the feedwater isolation function operable in Mode 1 and in Modes 2 and 3 if any main boiler feedwater pump discharge valve (MBFPDV) or main boiler feedwater regulating valve (MBFRV), is not closed and deactivated or isolated by a closed manual valve. The Bases provide the clarification that a de-activated motor operated valve is considered to be a manual valve. Not requiring this Function in Mode 4 or in Modes 2 and 3 when MBFPDVs or MBFRVs are not closed or isolated by a closed manual valve is a less restrictive change which is justified with changes associated with ITS 3.3.2, Engineered Safety Features Actuation System (see ITS 3.3.2).

MORE RESTRICTIVE

M.1 CTS Table 3.5-4, Item 3.a, Feedwater Line Isolation, establishes the requirement for instrumentation that isolates the feedwater lines upon actuation of the Safety Injection System in order to prevent excessive cooldown of the reactor coolant system. CTS do not provide any specific requirements for the Operability or testing of the actuated devices for this function (other than testing associated with ESFAS initiation logic in CTS Table 4.1-1, Item 20.b). ITS 3.7.3, Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulating Valves (MBFRVs) and MBFRV Low Flow Bypass Valves, is added to require Operability of the MBFPDVs, MBFRVs and MBFRV Low Flow Bypass valves. The MBFPDVs, MBFRVs and MBFRV Low Flow Bypass valves are OPERABLE when isolation times are within limits and the valves will close on an isolation actuation signal.

This change adds the following requirements: two MBFPDVs and four MBFRVs must be Operable to ensure single failure tolerance for the feedwater isolation function; bypass valves associated with the MBFRVs are required to isolate the low flow bypass line; an allowable out of service time (AOT) of 72 hours is established for inoperable MBFPDVs, MBFRVs or bypass valves resulting in a loss of single failure tolerance but where the feedwater isolation function is maintained; and, an AOT of 8 hours is established for any combination of inoperable MBFPDVs, MBFRVs or bypass valves resulting in a loss of feedwater isolation function.

DISCUSSION OF CHANGES
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

The addition of specific requirements for two MBFPDVs and four MBFRVs (and associated AOTs) is a more restrictive change because CTS does not specifically identify these components and/or required level of redundancy and IP3 FSAR identifies only the MBFRV portion of this function as a requirement (which does not ensure that the actuated device has the same level of redundancy required of the actuation instrumentation). Therefore, CTS requirements could be interpreted as requiring Operability of the MBFRVs only.

Additionally, ITS SR 3.7.3.1 is added to verify that the closure time of each MBFPDV and MBFRV is within the limit assumed in the accident and containment analyses for a steam line break accident and excessive heat removal due to a feedwater system malfunction.

The addition of ITS LCO 3.7.3 is acceptable because it does not introduce any operation which is un-analyzed while requiring more specific details regarding MBFPDVs and four MBFRVs Operability requirements in the Technical Specifications. Therefore, this change has no adverse impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

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Technical Specification 3.7.3:

"Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.3:

"Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.3

This ITS Specification is based on NUREG-1431 Specification No. **3.7.3**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
WOG-032	102 R0	EXTEND THE PERIODIC VERIFICATION OF INOPERABLE MSIV AND MFIV CLOSURE TO 31 DAYS	Rejected by NRC	Not Incorporated	N/A
WOG-098		SEPARATE CLOSURE TIME TESTING AND ACTUATION SIGNAL TESTING FOR MSIVS AND FWIVS	TSTF Review	Not Incorporated	N/A

3.7 PLANT SYSTEMS

Insert: 3.7-7-02

3.7.3 ~~Main Feedwater Isolation Valves (MFIVs) and Main Feedwater Regulation Valves (MFRVs) [and Associated Bypass Valves]~~ DB.

LCO 3.7.3 ~~[Four] MFIVs, [four] MFRVs, [and associated bypass valves]~~ shall be OPERABLE.

Insert: 3.7-7-03

Insert: 3.7-7-04

<DOC A.3> APPLICABILITY: MODES 1, 2, [and 3] except when ~~MFIV, MFRV, [or associated bypass valve]~~ ~~is~~ are closed and [de-activated] [or isolated by a closed manual valve].

ACTIONS

---------------------------------------NOTE---------------------------------------

<DOC M.1> Separate Condition entry is allowed for each valve.

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC M.1>	A. One or ~~more~~ both ~~MFIVs~~ MBFPDVs inoperable.	A.1 Close or isolate ~~MFIV~~ MBFPDV. AND A.2 Verify ~~MFIV~~ MBFPDV is closed or isolated.	[72] hours Once per 7 days
<DOC M.1>	B. One or more ~~MFRVs~~ MBFRVs inoperable.	B.1 Close or isolate ~~MFRV~~ MBFRV. AND B.2 Verify ~~MFRV~~ MBFRV is closed or isolated.	[72] hours Once per 7 days

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Bypass Valves

<u>INSERT: 3.7-7-01</u>

MBFPDVs, MBFRVs and MBFRV Low Flow Bypass Valves

<u>INSERT: 3.7-7-02</u>

Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

<u>INSERT: 3.7-7-03</u>

Two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves

<u>INSERT: 3.7-7-04</u>

MBFPDVs or MBFRV and MBFRV low flow

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
⟨DOC M.1⟩ C. One or more ~~MFRV or preheater~~ MBFRV low flow bypass valves inoperable.	C.1	Close or isolate bypass valve.	[72] hours
	AND		
	C.2	Verify bypass valve is closed or isolated.	Once per 7 days
⟨DOC M.1⟩ ⟨DOC A.3⟩ D. Two valves in series in the same flow path inoperable.	D.1	Isolate affected flow path.	8 hours
⟨DOC M.1⟩ E. Required Action and associated Completion Time not met.	E.1	Be in MODE 3.	6 hours
	AND		
	E.2	Be in MODE 4.	12 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.3.1	Verify ~~the closure time of each MFIV, MFRV [, and associated bypass valve] is ≤ [7] seconds~~ Insert: 3.7-8-01 on an actual or simulated actuation signal. Insert: 3.7-8-02	In accordance with the [Inservice Testing Program ~~or [18] months~~]

NUREG-1431 Markup Inserts
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Bypass Valves

INSERT: 3.7-8-01

each MBFPDV, MBFRV and MBFRV low flow bypass valve closes

INSERT: 3.7-8-02

within the following limits:

a. MBFPDV closure time ≤ 122 seconds;

b. MBFRV closure time ≤ 10 seconds; and,

c. MBFRV Low Flow Bypass valve closure time ≤ 10 seconds.

B 3.7 PLANT SYSTEMS

Insert: B 3.7-13-02

B 3.7.3 ~~Main Feedwater Isolation Valves (MFIVs) and Main Feedwater Regulation Valves (MFRVs) [and Associated Bypass Valves]~~

BASES

BACKGROUND

MBFPDVs

MBFRVs

Insert: B 3.7-13-03

MBFPDVs

MBFRVs and MBFRV low flow

The MFIVs isolate main feedwater (MFW) flow to the secondary side of the steam generators following a high energy line break (HELB). The safety related function of the MFRVs is to provide the second isolation of MFW flow to the secondary side of the steam generators following an HELB. Closure of the ~~MFIVs and associated bypass valves or MFRVs and associated bypass valves~~ terminates flow to the steam generators. ~~terminating the event for feedwater line breaks (FWLBs) occurring upstream of the MFIVs or MFRVs.~~ The consequences of events occurring in the main steam lines or in the MFW lines downstream from the MFIVs will be mitigated by their closure. Closure of the MFIVs ~~and associated bypass valves~~, or ~~MFRVs and associated~~ bypass valves, effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks (SLBs) or FWLBs inside containment, and reducing the cooldown effects for SLBs.

~~The MFIVs and associated bypass valves, or MFRVs and associated bypass valves, isolate the nonsafety related portions from the safety related portions of the system.~~ In the event of a secondary side pipe rupture inside containment, the valves limit the quantity of high energy fluid that enters containment through the break, and provide a pressure boundary for the controlled addition of auxiliary feedwater (AFW) to the intact loops.

Insert: B 3.7-13-04

Insert: B 3.7-13-05

MBFRV and MBFRV low flow

MBFPDVs and MBFRVs

is   of the four

One ~~MFIV and associated bypass valve~~, and one ~~MFRV and its associated~~ bypass valve, ~~are~~ located on each MFW line, s outside but close to containment. The MFIVs and MFRVs are located upstream of the AFW injection point so that AFW may be supplied to the steam generators following ~~MFIV or MFRV~~ MBFPDV or MBFRV closure. The piping volume from these valves to the steam generators must be accounted for in calculating mass and energy releases, and refilled prior to AFW reaching the steam generator following either an SLB or FWLB.

Insert: B 3.7-13-06

~~The MFIVs and associated bypass valves, and MFRVs and associated bypass valves, close on receipt of a T_{avg} — Low coincident with reactor trip (P-4) or steam generator water~~

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Bypass Valves

INSERT: B 3.7-13-01

MBFPDVs, MBFRVs and MBFRV Low Flow Bypass Valves

INSERT: B 3.7-13-02

Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

INSERT: B 3.7-13-03

two MBFPDVs or four MBFRVs and four MBFRV low flow bypass valves

INSERT: B 3.7-13-04

either the MBFPDVs or MBFRVs and MBFRV low flow bypass valves

INSERT: B 3.7-13-05

MBFPDV is located on the discharge of each of the two Main Boiler Feedpumps (MBFPs)

INSERT: B 3.7-13-06

The two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves will close on receipt of an ESFAS Safety Injection signal. An ESFAS Tavg – Low coincident with reactor trip will close the four MBFRVs and four MBFRV low flow bypass valves. A Steam Generator Hi-Hi level trip will close the MBFPDV and MBFRVs and MBFRV low flow bypass valves associated with the affected SG.

BASES

BACKGROUND (continued)

~~level—high high signal~~. They ~~may~~ also be ~~actuated~~ Closed manually. In addition to the ~~MFIVs and associated bypass valves and the MFRVs and associated bypass valves~~ Insert: B3.7-14-01, a check valve ~~inside~~ outside containment is available. The check valve isolates the feedwater line~~, penetrating containment, and ensures that the consequences of events do not exceed the capacity of the containment heat removal systems~~ Insert: B3.7-14-02

A description of the ~~MFIVs and MFRVs~~ MBFPDVs and MBFRVs is found in the FSAR, Section ~~10.4.7~~ 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The design basis of the ~~MFIVs and MFRVs~~ MBFPDVs and MBFRVs is established by the analyses for the large SLB. ~~It is also influenced by the accident analysis for the large FWLB.~~ Closure of the ~~MFIVs and associated bypass valves, or MFRVs and associated bypass valves~~ Insert: B3.7-14-03 may also be relied on to terminate an SLB for core response analysis and excess feedwater event upon the receipt of a steam generator water level—high high ~~signal~~ or a feedwater isolation signal ~~on high steam generator level~~ Insert: B3.7-14-04.

Failure of ~~an MFIV, MFRV, or the associated bypass valves~~ Insert: B. 3.7-14-05 to close following an SLB ~~or FWLB~~ can result in additional mass and energy being delivered to the steam generators, contributing to cooldown. This failure also results in additional mass and energy releases following an SLB or FWLB event.

The ~~MFIVs and MFRVs~~ MBFPDVs and MBFRVs satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

LCO

This LCO ensures that the ~~MFIVs, MFRVs, and their associated bypass valves~~ Insert: B3.7-14-06 will isolate MFW flow to the steam generators, following ~~an FWLB or~~ main steam line break. ~~These valves will also isolate the nonsafety related portions from the safety related portions of the system.~~ (a)

This LCO requires that ~~[four] MFIVs and associated bypass valves and [four] MFRVs [and associated bypass valves] be OPERABLE. The MFIVs and MFRVs and the associated bypass valves~~ Insert: B3.7-14-07 are considered OPERABLE when isolation times are

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Bypass Valves

INSERT: B 3.7-14-01

two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves

INSERT: B 3.7-14-02

to prevent blowdown of a SG if main or auxiliary feedwater pressure are lost.

INSERT: B 3.7-14-03

MBFPDVs, MBFRVs and MBFRV low flow bypass valves

INSERT: B 3.7-14-04

Feedwater isolation also occurs as a result of any safety injection signal.

INSERT: B 3.7-14-05

an MBFPDV in conjunction with the failure of an MBFRV or MBFRV low flow bypass valve

INSERT: B 3.7-14-06

MBFPDVs, MBFRVs and MBFRV low flow bypass valves

INSERT: B 3.7-14-07

two MBFPDVs, four MBFRVs and four MBFRV low flow bypass valves be OPERABLE. The MBFPDVs, MBFRVs and MBFRV low flow bypass valves

BASES

LCO (continued)

within limits and they close on an isolation actuation signal.

Failure to meet the LCO requirements can result in additional mass and energy being released to containment following an SLB or FWLB inside containment. (1) a feedwater isolation signal on high steam generator level is relied on to terminate an excess feedwater flow event, failure to meet the LCO may result in the introduction of water into the main steam lines.

Insert: B 3.7-15-01

A

; Therefore,

APPLICABILITY

Insert: B 3.7-15-02

The MFIVs and MFRVs and the associated bypass valves must be OPERABLE whenever there is significant mass and energy in the ~~Reactor~~ Coolant System and steam generators. This ensures that, in the event of an HELB, a single failure cannot result in the blowdown of more than one steam generator. In MODES 1, 2, [and 3], the MFIVs and MFRVs and the associated bypass valves are required to be OPERABLE to limit the amount of available fluid that could be added to containment in the case of a secondary system pipe break inside containment. When the valves are closed and de-activated or isolated by a closed manual valve, they are already performing their safety function.

In MODES 4, 5, and 6, steam generator energy is low. Therefore, the MFIVs, MFRVs, and the associated bypass valves are normally closed since MFW is not required.

Insert B 3.7-15-03

ACTIONS

The ACTIONS table is modified by a Note indicating that separate Condition entry is allowed for each valve.

A.1 and A.2

MFPDV

both

With one MFIV in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within [72] hours. When these valves are closed or isolated, they are performing their required safety function.

~~(continued)~~

NUREG-1431 Markup Inserts

ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Bypass Valves

INSERT: B 3.7-15-01

a steam generator water level – high high signal and this function

INSERT: B 3.7-15-02

MBFPDVs, MBFRVs and MBFRV

INSERT: B 3.7-15-03

A de-activated motor operated valve is considered to be a manual valve.

BASES

ACTIONS

A.1 and A.2 (continued)

Insert: B 3.7-16-01

The [72] hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The [72] hour Completion Time is reasonable, based on industry operating experience.

MBFPDVs

Inoperable MFIVs that are closed or isolated must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of valve status indications available in the control room, and other administrative controls, to ensure that these valves are closed or isolated.

B.1 and B.2

MBFRV

With one MFRV in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within [72] hours. When these valves are closed or isolated, they are performing their required safety function.

The [72] hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The [72] hour Completion Time is reasonable, based on industry operating experience.

MBFRVs

Inoperable MFRVs, that are closed or isolated, must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of ~~valve status indications available in the control room, and~~ other administrative controls to ensure that the valves are closed or isolated.

~~(continued)~~

INSERT: B 3.7-16-01

, the MBFP trip function,

BASES

ACTIONS (continued)

C.1 and C.2

MBFRV low flow

With one ~~associated~~ bypass valve in one or more flow paths inoperable, action must be taken to restore the affected valves to OPERABLE status, or to close or isolate inoperable affected valves within ~~[~~72~~]~~ hours. When these valves are closed or isolated, they are performing their required safety function.

The ~~[~~72~~]~~ hour Completion Time takes into account the redundancy afforded by the remaining OPERABLE valves and the low probability of an event occurring during this time period that would require isolation of the MFW flow paths. The ~~[~~72~~]~~ hour Completion Time is reasonable, based on industry operating experience.

Inoperable associated bypass valves that are closed or isolated must be verified on a periodic basis that they are closed or isolated. This is necessary to ensure that the assumptions in the safety analysis remain valid. The 7 day Completion Time is reasonable, based on engineering judgment, in view of the ~~valve status indications available in the control room, and other~~ administrative controls ~~to~~ that ensure that these valves are closed or isolated.

D.1

With two inoperable valves in series in the same flow path, there may be no redundant system to operate automatically and perform the required safety function. ~~Although the containment can be isolated with the failure of two valves in parallel in the same flow path, the double failure can be an indication of a common mode failure in the valves of this flow path, and as such, is treated the same as a loss of the isolation capability of this flow path.~~ Under these conditions, affected valves in each flow path must be restored to OPERABLE status, or the affected flow path isolated within 8 hours. This action returns the system to the condition where at least one valve in each flow path is performing the required safety function. The 8 hour Completion Time is reasonable, based on operating experience, to complete the actions required to close the ~~MFIV or MFRV~~ MBFPDV or MBFRV, or otherwise isolate the affected flow path.

~~(continued)~~

BASES

ACTIONS (continued)

E.1 and E.2

Insert: B3.7-18-01

If the ~~MFIV(s) and MFRV(s) and the associated~~ bypass valve(s) cannot be restored to OPERABLE status, or closed, or isolated within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, ~~[~~and in MODE 4 within 12 hours~~]~~. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems~~.~~

SURVEILLANCE REQUIREMENTS

SR 3.7.3.1

Insert: B3.7-18-04

Insert: B 3.7-18-02

Insert: B3.7-18-03

This SR verifies that the closure time of each ~~MFIV, MFRV and associated~~ bypass valves is ~~≤ [7] seconds~~ on an actual or simulated actuation signal. The ~~MFIV and MFRV~~ closure times are assumed in the accident and containment analyses. This Surveillance is normally performed upon returning the unit to operation following a refueling outage. These valves ~~should~~ not be tested at power ~~since~~ even a part stroke exercise increases the risk of a valve closure ~~with the unit generating power~~. This is consistent with the ~~ASME Code, Section XI (Ref. 2), quarterly stroke requirements during~~ operation in MODES 1 and 2.

can

because valve closure on

and MBFP trip

allowance in

The Frequency for this SR is in accordance with the ~~[~~Inservice Testing Program ~~or [18] months]~~. The ~~[18] month~~ Frequency for valve closure is based on the refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the ~~[18] month~~ Frequency.

required

REFERENCES

1. FSAR, Section ~~[10.4.7]~~. 10.2
2. ASME, Boiler and Pressure Vessel Code, Section XI.

NUREG-1431 Markup Inserts

ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Bypass Valves

INSERT: B 3.7-18-01

MBFPDV(s), MBFRV(s) and MBFRV

INSERT: B 3.7-18-02

MBFPDV(s), MBFRV(s) and MBFRV

INSERT: B 3.7-18-03

within required limits

INSERT: B 3.7-18-04

The acceptance criteria for this SR do not include the 2 second delay associated with the ESFAS actuation signal.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.3:

"Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.3 - Main Boiler Feedpump Discharge Valves (MBFPDVs), Main Feedwater Regulation Valves (MBFRVs) and MBFRV Low Flow Bypass Valves

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

X.1 IP3 LCO 3.7.3, Condition D, differs from NUREG-1431, Rev 1, by the addition of the phrase "in series" so that Condition D reads: Two valves 'in series' in the same flow path inoperable. This change eliminates the requirement to take actions for a loss of function when the failure is two valves in parallel in the same flow path and safety function is not lost. Therefore, this change has no adverse impact on safety.

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Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.4:
"Atmospheric Dump Valves (ADVs)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Dump Valves (ADVs)

LCO 3.7.4 Three ADV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One required ADV line inoperable.	A.1	---------NOTE--------- LCO 3.0.4 is not applicable. --------------------- Restore required ADV line to OPERABLE status.	7 days
B. Two or more required ADV lines inoperable.	B.1	Restore all but one ADV line to OPERABLE status.	24 hours
C. Required Action and associated Completion Time not met.	C.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	C.2	Be in MODE 4 without reliance upon steam generator for heat removal.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each ADV.	24 months
SR 3.7.4.2	Verify one complete cycle of each ADV block valve.	24 months

B 3.7 PLANT SYSTEMS

B 3.7.4 Atmospheric Dump Valves (ADVs)

BASES

BACKGROUND

The ADVs provide a method for cooling the unit to residual heat removal (RHR) entry conditions should the preferred heat sink via the Steam Bypass System (High Pressure Steam Dump) to the condenser not be available, as discussed in the FSAR, Section 10.2 (Ref. 1). This is done in conjunction with the Auxiliary Feedwater System providing cooling water from the condensate storage tank (CST). The ADVs may also be required to meet the design cooldown rate during a normal cooldown when steam pressure drops too low for maintenance of a vacuum in the condenser to permit use of the High Pressure Steam Dump System.

One ADV line for each of the four steam generators is provided. Each ADV line consists of one ADV and an associated manually operated block valve.

The block valves are upstream of the ADVs to permit testing and maintenance at power, and to provide an alternate means of isolation. The ADVs are equipped with pneumatic controllers to permit control of the cooldown rate.

The ADVs are provided with a pressurized gas supply of bottled nitrogen that is needed to support manual operation of the atmospheric dump valves. The nitrogen supply is sized to provide the sufficient pressurized gas to operate the ADVs for the time required for Reactor Coolant System cooldown to RHR entry conditions.

A description of the ADVs is found in Reference 1.

APPLICABLE SAFETY ANALYSES

The design basis of the ADVs is established by the capability to cool the unit to RHR entry conditions. The total relief capacity of the four ADVs is approximately 10% of the

BASES

APPLICABLE SAFETY ANALYSES (continued)

rated steam flow. This is adequate to cool the unit to RHR entry conditions with only one steam generator and one ADV, utilizing the cooling water supply available in the CST.

In the accident analysis presented in Reference 1, the ADVs are assumed to be used by the operator to cool down the unit to RHR entry conditions for accidents accompanied by a loss of offsite power. Prior to operator actions to cool down the unit, the main steam safety valves (MSSVs) are assumed to operate automatically to relieve steam and maintain the steam generator pressure below the design value. For the recovery from a steam generator tube rupture (SGTR) event, the operator is also required to perform a limited cooldown to establish adequate subcooling as a necessary step to terminate the primary to secondary break flow into the ruptured steam generator. The time required to terminate the primary to secondary break flow for an SGTR is more critical than the time required to cool down to RHR conditions for this event and also for other accidents. Thus, the SGTR is the limiting event for the ADVs. The requirement that 3 of the 4 ADVs must be OPERABLE is established to ensure that at least one ADV line is available under local control to conduct a plant cooldown following an event in which one steam generator becomes unavailable due to the event (i.e., SGTR or SLB), accompanied by a single, active failure of a second ADV line on an unaffected steam generator.

The ADVs are equipped with block valves in the event an ADV spuriously fails open or fails to close during use.

The ADVs satisfy Criterion 3 of 10 CFR 50.36.

LCO

Three of the four ADV lines are required to be OPERABLE. One ADV line is required from each of three steam generators to ensure that at least one ADV line is available to conduct a unit cooldown following an SGTR, in which one steam generator becomes unavailable, accompanied by a single, active failure of a second ADV line on an unaffected steam generator. The block valves must be OPERABLE to isolate a failed open ADV line. A closed block

BASES

LCO (continued)

valve does not render it or its ADV line inoperable because operator action time to open the block valve is supported in the accident analysis.

Failure to meet the LCO can result in the inability to cool the unit to RHR entry conditions following an event in which the condenser is unavailable for use with the Turbine Steam Bypass System (High Pressure Steam Dump).

An ADV is considered OPERABLE when it is capable of providing controlled relief of the main steam flow and capable of fully opening and closing on demand (either remotely or under local control).

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal, the ADVs are required to be OPERABLE.

In MODE 5 or 6, an SGTR is not a credible event.

ACTIONS

A.1

With one required ADV line inoperable, action must be taken to restore OPERABLE status within 30 days. The 30 day Completion Time allows for the redundant capability afforded by the remaining OPERABLE ADV lines. Specifically, with one of the three required ADVs inoperable, at least one ADV line is available to conduct a plant cooldown following an event in which one steam generator becomes unavailable due to the event (i.e., SGTR or SLB), accompanied by a single, active failure of a second ADV line on an unaffected steam generator. Required Action A.1 is modified by a Note indicating that LCO 3.0.4 does not apply.

BASES

ACTIONS (continued)

B.1

With two or more required ADV lines inoperable, action must be taken to restore all but one ADV line to OPERABLE status. Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Bypass System (HP Steam Dump) and MSSVs, and the low probability of an event occurring during this period that would require the ADV lines.

C.1 and C.2

If the ADV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance upon steam generator for heat removal, within 18 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the ADVs must be able to be opened either remotely or locally and throttled through their full range. This SR ensures that the ADVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ADV during a unit cooldown may satisfy this requirement. Operating experience has shown that these components usually pass the Surveillance when performed at the specified Frequency and, therefore, is acceptable from a reliability standpoint.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.4.2

The function of the block valve is to isolate a failed open ADV. Cycling the block valve both closed and open demonstrates its capability to perform this function. Performance of inservice testing or use of the block valve during unit cooldown may satisfy this requirement. Operating experience has shown that these components usually pass the Surveillance when performed at the specified Frequency and, therefore, is acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section 10.2.

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Conversion Package

Technical Specification 3.7.4:
"Atmospheric Dump Valves (ADVs)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
None	N/A	N/A	No TSCRs	No TSCRs for this Page	N/A

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.4:
"Atmospheric Dump Valves (ADVs)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.4 - ATMOSPHERIC DUMP VALVES (ADVs)

ADMINISTRATIVE

None

MORE RESTRICTIVE

M.1 CTS does not establish any requirements for the Operability of the Atmospheric Dump Valves (ADVs). ITS LCO 3.7.4, Atmospheric Dump Valves (ADVs), is added to require that Operability of the ADV lines associated with any 3 of the 4 steam generators in Modes 1, 2, and 3, and in Mode 4, when a steam generator is being relied upon for heat removal.

A Technical Specification requirement for the ADVs is needed because using the ADVs, in conjunction with the auxiliary feedwater system, is the preferred method to cooldown to RHR entry conditions following an event in which the condenser is unavailable for use with the Steam Bypass System (i.e., High Pressure Steam Dump System) as would occur with the loss of offsite power.

The ITS LCO 3.7.4 requirement that 3 of the 4 ADVs must be Operable is acceptable because it ensures that at least one ADV line is available to conduct a unit cooldown following an event in which one steam generator becomes unavailable, accompanied by a single, active failure of a second ADV line on an unaffected steam generator. Additionally, LCO 3.7.4 requires that the ADV block valves must be Operable to isolate a failed open ADV line; however, a closed block valve does not render it or its ADV line inoperable if an operator can open the block valve to support the required cooldown.

In conjunction with this change, Allowable Out of Service Times are established for one or more inoperable ADVs. Additionally, surveillance test requirements are established to verify Operability of the ADVs and associated block valves.

The addition of ITS LCO 3.7.4 and the associated requirements is acceptable because the requirements created by ITS LCO 3.7.4 are consistent with operation of the ADVs as described in the FSAR and accident analysis. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability using the ADVs is available. The requirements established by ITS LCO 3.7.4 are consistent with current practice. Therefore, this change has no adverse impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.4:
"Atmospheric Dump Valves (ADVs)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.4 - ATMOSPHERIC DUMP VALVES (ADVs)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.4:
"Atmospheric Dump Valves (ADVs)"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.4

This ITS Specification is based on NUREG-1431 Specification No. **3.7.4**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
WOG-028	100 R0	REVISE ADV ACTION B TO STATE "RESTORE ALL BUT ONE ADV TO OPERABLE STATUS"	Approved by NRC	Incorporated	T.1
WOG-030	029 RO	REMOVE MODE 4 WHEN S/GS ARE RELIED UPON FROM THE MODES OF APPLICABILITY NRC REJECTS: TSTF ACCEPTS	Rejected by NRC	Not Incorporated	N/A

3.7 PLANT SYSTEMS

3.7.4 Atmospheric Dump Valves (ADVs)

<DOC M.1> LCO 3.7.4 [Three] ADV lines shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
<DOC M.1>	A. One required ADV line inoperable.	A.1 --------NOTE--------- LCO 3.0.4 is not applicable. -------------------- Restore required ADV line to OPERABLE status.	7 days	T.1
<DOC M.1>	B. Two or more required ADV lines inoperable.	B.1 Restore all but one ADV line to OPERABLE status.	24 hours	
<DOC M.1>	C. Required Action and associated Completion Time not met.	C.1 Be in MODE 3. AND C.2 Be in MODE 4 without reliance upon steam generator for heat removal.	6 hours [18] hours	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.4.1	Verify one complete cycle of each ADV.	~~[18]~~ months 24
[SR 3.7.4.2	Verify one complete cycle of each ADV block valve.	~~[18]~~ months 24]

B 3.7 PLANT SYSTEMS

B 3.7.4 Atmospheric Dump Valves (ADVs)

BASES

BACKGROUND

The ADVs provide a method for cooling the unit to residual heat removal (RHR) entry conditions should the preferred heat sink via the (High Pressure Steam Dump) ~~Steam Bypass System, to the condenser not be available, as discussed in the FSAR, Section [10.3]~~ 10.2 (Ref. 1). This is done in conjunction with the Auxiliary Feedwater System providing cooling water from the condensate storage tank (CST). The ADVs may also be required to meet the design cooldown rate during a normal cooldown when steam pressure drops too low for maintenance of a vacuum in the condenser to permit use of the High Pressure Steam Dump System.

One ADV line for each of the ~~[four]~~ steam generators is provided. Each ADV line consists of one ADV and an associated manually operated block valve.

DB.1

The ~~ADVs are provided with upstream~~ block valves are upstream of the ADVs to permit ~~their being tested~~ testing and maintenance at power, and to provide an alternate means of isolation. The ADVs are equipped with pneumatic controllers to permit control of the cooldown rate.

The ADVs are ~~usually~~ provided with a pressurized gas supply of bottled nitrogen ~~that, on a loss of pressure in the normal instrument air supply, automatically supplies nitrogen to operate the ADVs.~~ Insert. B3.7-19-01 The nitrogen supply is sized to provide the sufficient pressurized gas to operate the ADVs for the time required for Reactor Coolant System cooldown to RHR entry conditions.

A description of the ADVs is found in Reference 1. ~~The ADVs are OPERABLE with only a DC power source available. In addition, handwheels are provided for local manual operation.~~

APPLICABLE SAFETY ANALYSES

The design basis of the ADVs is established by the capability to cool the unit to RHR entry conditions. ~~The design rate of [75]°F per hour is applicable for two steam generators, each with one ADV.~~ Insert. B3.7-19-02 This rate is adequate to cool the unit to RHR entry conditions with only one steam

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.4 - ATMOSPHERIC DUMP VALVES (ADVs)

INSERT: B 3.7-19-01

that is needed to support manual operation of the atmospheric dump valves.

INSERT: B 3.7-19-02

The total relief capacity of the four ADVs is approximately 10% of the rated steam flow.

BASES

APPLICABLE SAFETY ANALYSES (continued)

generator and one ADV, utilizing the cooling water supply available in the CST.

In the accident analysis presented in Reference 1, the ADVs are assumed to be used by the operator to cool down the unit to RHR entry conditions for accidents accompanied by a loss of offsite power. Prior to operator actions to cool down the unit, the ~~ADVs and~~ main steam safety valves (MSSVs) are assumed to operate automatically to relieve steam and maintain the steam generator pressure below the design value. For the recovery from a steam generator tube rupture (SGTR) event, the operator is also required to perform a limited cooldown to establish adequate subcooling as a necessary step to terminate the primary to secondary break flow into the ruptured steam generator. The time required to terminate the primary to secondary break flow for an SGTR is more critical than the time required to cool down to RHR conditions for this event and also for other accidents. Thus, the SGTR is the limiting event for the ADVs. ~~The number of ADVs required to be OPERABLE to satisfy the SGTR accident analysis requirements depends upon the number of unit loops and consideration of any single failure assumptions regarding the failure of one ADV to open on demand.~~

Insert: B 3.7-20-01

The ADVs are equipped with block valves in the event an ADV spuriously fails ~~to~~ open or fails to close during use.

The ADVs satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

LCO

~~[Three]~~ of the four ADV lines are required to be OPERABLE. One ADV line is required from each of ~~[three]~~ steam generators to ensure that at least one ADV line is available to conduct a unit cooldown following an SGTR, in which one steam generator becomes unavailable, accompanied by a single, active failure of a second ADV line on an unaffected steam generator. The block valves must be OPERABLE to isolate a failed open ADV line. A closed block valve does not render it or its ADV line inoperable ~~if~~ because operator action time to open the block valve is supported in the accident analysis.

Failure to meet the LCO can result in the inability to cool the unit to RHR entry conditions following an event in which

~~(continued)~~

INSERT: B 3.7-20-01

The requirement that 3 of the 4 ADVs must be OPERABLE is established to ensure that at least one ADV line is available under local control to conduct a plant cooldown following an event in which one steam generator becomes unavailable due to the event (i.e., SGTR or SLB), accompanied by a single, active failure of a second ADV line on an unaffected steam generator.

BASES

Turbine

LCO (continued)

the condenser is unavailable for use with the Steam Bypass System.

(High Pressure Steam Dump)

An ADV is considered OPERABLE when it is capable of providing controlled relief of the main steam flow and capable of fully opening and closing on demand.

Insert: B 3.7-21-01

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal, the ADVs are required to be OPERABLE.

In MODE 5 or 6, an SGTR is not a credible event.

ACTIONS

A.1

30 30

With one required ADV line inoperable, action must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time allows for the redundant capability afforded ~~by the remaining OPERABLE ADV lines~~, a nonsafety grade backup in the Steam Bypass System, and MSSVs. Required Action A.1 is modified by a Note indicating that LCO 3.0.4 does not apply.

Insert: B3.7-21-02

(HP Steam Dump)

B.1

Required

With two or more ADV lines inoperable, action must be taken to restore all but one ADV line to OPERABLE status. Since the block valve can be closed to isolate an ADV, some repairs may be possible with the unit at power. The 24 hour Completion Time is reasonable to repair inoperable ADV lines, based on the availability of the Steam Bypass System and MSSVs, and the low probability of an event occurring during this period that would require the ADV lines.

C.1 and C.2

If the ADV lines cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least

~~(continued)~~

INSERT: B 3.7-21-01

(either remotely or under local control)

INSERT: B 3.7-21-02

Specifically, with one of the three required ADVs inoperable, at least one ADV line is available to conduct a plant cooldown following an event in which one steam generator becomes unavailable due to the event (i.e., SGTR or SLB), accompanied by a single, active failure of a second ADV line on an unaffected steam generator.

BASES

ACTIONS

C.1 and C.2 (continued)

MODE 3 within 6 hours, and in MODE 4, without reliance upon steam generator for heat removal, within [18] hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.4.1

To perform a controlled cooldown of the RCS, the ADVs must be able to be opened either remotely or locally and throttled through their full range. This SR ensures that the ADVs are tested through a full control cycle at least once per fuel cycle. Performance of inservice testing or use of an ADV during a unit cooldown may satisfy this requirement. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. ~~The Frequency~~ is acceptable from a reliability standpoint.

specified

and, therefore,

[SR 3.7.4.2

The function of the block valve is to isolate a failed open ADV. Cycling the block valve both closed and open demonstrates its capability to perform this function. Performance of inservice testing or use of the block valve during unit cooldown may satisfy this requirement. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. ~~The Frequency~~ is acceptable from a reliability standpoint.]

specified

REFERENCES

1. FSAR, Section ~~[10.3]~~. 10.2

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.4:
"Atmospheric Dump Valves (ADVs)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.4 - ATMOSPHERIC DUMP VALVES (ADVs)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-100 (WOG-28), Rev 0, which revises LCO 3.7.4, Required Action B.1, from "Restore one ADV line to Operable Status" to "Restore all but one ADV line to Operable Status." The revised Required Action B.1 will require restoration of all but one ADV and allow exiting Condition B, leaving Condition A to address the remaining inoperable line.

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.5:
"Auxiliary Feedwater (AFW) System"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.5 Auxiliary Feedwater (AFW) System

LCO 3.7.5 Three AFW trains shall be OPERABLE.

-----------------------------NOTE-----------------------------
Only one AFW train, which includes a motor driven pump capable of supporting the credited steam generator, is required to be OPERABLE in MODE 4.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One steam supply to turbine driven AFW pump inoperable.	A.1 Restore steam supply to OPERABLE status.	7 days AND 10 days from discovery of failure to meet the LCO
B. One AFW train inoperable in MODE 1, 2 or 3 for reasons other than Condition A.	B.1 Restore AFW train to OPERABLE status.	72 hours AND 10 days from discovery of failure to meet the LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Required Action and associated Completion Time for Condition A or B not met. OR Two AFW trains inoperable in MODE 1, 2, or 3.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours 18 hours
D. Three AFW trains inoperable in MODE 1, 2, or 3.	-------------NOTE------------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. ----------------------------- D.1 Initiate action to restore one AFW train to OPERABLE status.	 Immediately
E. Required AFW train inoperable in MODE 4.	E.1 Initiate action to restore AFW train to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.5.1	-------------------NOTE-------------------- Not applicable in MODE 4 when steam generator is relied upon for heat removal. -- Verify each AFW manual, power operated, and automatic valve in each water flow path, and in both steam supply flow paths to the steam turbine driven pump, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
SR 3.7.5.2	-------------------NOTE-------------------- Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 600 psig in the steam generator. -- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	In accordance with Inservice Testing Program
SR 3.7.5.3	-------------------NOTE-------------------- Not applicable in MODE 4 when steam generator is relied upon for heat removal. -- Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.7.5.4	-------------------NOTES------------------ 1. Not required to be performed for the turbine driven AFW pump until 24 hours after ≥ 600 psig in the steam generator. 2. Not applicable in MODE 4 when steamgenerator is relied upon for heat removal. --- Verify each AFW pump starts automatically on an actual or simulated actuation signal.	24 months

B 3.7 PLANT SYSTEMS

B 3.7.5 Auxiliary Feedwater (AFW) System

BASES

BACKGROUND

The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The AFW pumps take suction from the condensate storage tank (CST) (LCO 3.7.6) and pump to the steam generator secondary side that connect to the main feedwater (MFW) piping outside containment. The steam generators function as a heat sink for core decay heat. The heat load is dissipated by releasing steam to the atmosphere from the steam generators via the main steam safety valves (MSSVs) (LCO 3.7.1) or atmospheric dump valves (LCO 3.7.4). If the main condenser is available, steam may be released via the steam bypass (High Pressure Steam Dump) valves and recirculated to the CST.

The AFW System consists of two motor driven AFW pumps and one steam turbine driven pump configured into three trains. FSAR Section 10.2 (Ref. 1) describes this configuration as two pumping loops using two different types of motive power to the pumps. One auxiliary feedwater loop utilizes a steam turbine driven pump and the other utilizes two motor driven pumps. Technical specifications describe this configuration as three trains because each motor driven pump provides 100% of AFW flow capacity, and, depending on steam conditions, the turbine driven pump capacity approaches 200% of the required capacity to the steam generators, as assumed in the accident analysis. The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system. Each motor driven AFW pump is powered from an independent power supply and feeds two steam generators. The steam turbine driven AFW pump receives steam from two main steam lines upstream of the main steam isolation valves. Each of the steam feed lines will supply 100% of the requirements of the turbine driven AFW pump.

The AFW System is capable of supplying feedwater to the steam generators during normal unit startup, shutdown, and hot standby conditions.

BASES

BACKGROUND (Continued)

The turbine driven AFW pump supplies a common header capable of feeding all steam generators. Each of the steam generators can also be supplied by one of the two motor driven AFW pumps. Any of the three pumps at full flow is sufficient to remove decay heat and cool the unit to residual heat removal (RHR) entry conditions. Thus, the requirement for diversity in motive power sources for the AFW System is met.

The AFW System is designed to supply sufficient water to the steam generator(s) to remove decay heat with steam generator pressure at the setpoint of the MSSVs. Subsequently, the AFW System supplies sufficient water to cool the unit to RHR entry conditions, with steam released through the ADVs.

The motor driven pumps are actuated by any one of the following:

1) Low-low level in any steam generator;

2) Loss of voltage (Non SI blackout) on 480 VAC bus 2A/3A (starts AFW Pump 31) and loss of voltage (Non SI blackout) on 480 VAC bus 6A (starts AFW Pump 33);

3) Safety Injection signal;

4) Auto trip of either main boiler feed pump;

5) Manual actuation from the Control Room; and

6) Manual actuation locally at the pump room.

The steam turbine driven pump is actuated by any one of the following:

1) Low-low level in two of the four steam generators;

2) Loss of voltage (Non SI blackout) on 480 VAC busses 2A/3A or 6A;

3) Manual actuation from the Control Room; and

BASES

BACKGROUND (Continued)

4) Manual actuation locally at the pump room.

The steam driven AFW pump must be throttled manually in order to bring the unit up to speed after a start signal. In addition, the steam driven pump discharge flow control valves must be manually opened as necessary to provide adequate auxiliary feedwater flow.

The AFW System is discussed in the FSAR, Section 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The AFW System mitigates the consequences of any event with loss of normal feedwater.

The design basis of the AFW System is to supply water to the steam generator to remove decay heat and other residual heat by delivering at least the minimum required flow rate to the steam generators at pressures corresponding to the lowest steam generator safety valve set pressure plus accumulation.

In addition, the AFW System must supply enough makeup water to replace steam generator secondary inventory lost as the unit cools to MODE 4 conditions. Sufficient AFW System flow must also be available to account for flow losses such as pump recirculation and line breaks.

The limiting events that require the AFW System are as follows:

a. small break loss of coolant accident;

b. loss of AC sources; and

c. loss of feedwater.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The AFW turbine driven pump actuates automatically when required to ensure an adequate feedwater supply to the steam generators is available during loss of power. Power operated valves are provided for each AFW line to control the AFW flow to each steam generator.

The AFW System satisfies the requirements of Criterion 3 of 10 CFR 50.36.

LCO

This LCO provides assurance that the AFW System will perform its design safety function to mitigate the consequences of events that could result in overpressurization of the reactor coolant pressure boundary. Three independent AFW pumps are required to be OPERABLE to ensure the capability to maintian the plant in hot shutdown with a loss of offsite power and a single failure. This is accomplished by powering two of the pumps from independent emergency buses. The third AFW pump is powered by a steam driven turbine supplied with steam from a source that is not isolated by closure of the MSIVs.

The AFW System is configured into three trains. The AFW System is considered OPERABLE when the components and flow paths required to provide redundant AFW flow to the steam generators are OPERABLE. This requires that the two motor driven AFW pumps be OPERABLE, each supplying AFW to two separate steam generators. The turbine driven AFW pump is required to be OPERABLE with steam supplies from each of two main steam lines upstream of the MSIVs, and shall be capable of supplying AFW to all of the steam generators. The piping, valves, instrumentation, and controls in the required flow paths also are required to be OPERABLE.

The LCO is modified by a Note indicating that one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4. The motor driven AFW pump required to be OPERABLE in Mode 4 must be capable of supporting the SG being credited as the redundant decay heat removal path in accordance with LCO 3.4.6, RCS Loops - MODE 4. This requirement ensures the ability to

BASES

LCO (continued)

maintain the required level in the SG (and decay heat removal capacity) during extended periods in Mode 4 with or without offsite power. Requiring only one OPERABLE AFW pump is acceptable because of the reduced heat removal requirements and short period of time in MODE 4 during which the AFW is required and the insufficient steam available in MODE 4 to power the turbine driven AFW pump.

APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE in the event that it is called upon to function when the MFW is lost. In addition, the AFW System is required to supply enough makeup water to replace the steam generator secondary inventory needed to achieve and maintain MODE 4 conditions.

In MODE 4, a motor driven AFW pump may be needed to support heat removal via the steam generators.

In MODE 5 or 6, the steam generators are not normally used for heat removal, and the AFW System is not required.

ACTIONS

A.1

If one of the two steam supplies to the turbine driven AFW train is inoperable, action must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time is reasonable, based on the following reasons:

a. The redundant OPERABLE steam supply to the turbine driven AFW pump;

b. The availability of redundant OPERABLE motor driven AFW pumps; and

c. The low probability of an event occurring that requires the inoperable steam supply to the turbine driven AFW pump.

BASES

ACTIONS

A.1 (continued)

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The AND connector between 7 days and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

B.1

With one of the required AFW trains (pump or flow path) inoperable in MODE 1, 2, or 3 for reasons other than Condition A, action must be taken to restore OPERABLE status within 72 hours. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable, based on redundant capabilities afforded by the AFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The AND connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

C.1 and C.2

When Required Action A.1 or B.1 cannot be completed within the required Completion Time, or if two AFW trains are inoperable in MODE 1, 2, or 3, the unit must be placed in a MODE in which the

BASES

ACTIONS

C.1 and C.2 (continued)

LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within 18 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

In MODE 4 with two AFW trains inoperable, operation is allowed to continue because only one motor driven pump AFW train is required in accordance with the Note that modifies the LCO. Although not required, the unit may continue to cool down and initiate RHR.

D.1

If all three AFW trains are inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with nonsafety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status.

Required Action D.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW train is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition.

E.1

In MODE 4, either the reactor coolant pumps or the RHR loops can be used to provide forced circulation. This is addressed in LCO 3.4.6, "RCS Loops - MODE 4." With one required AFW train inoperable, action must be taken to immediately restore the inoperable train to OPERABLE status. The immediate Completion Time is consistent with LCO 3.4.6.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AFW System water and steam supply flow paths provides assurance that the proper flow paths will exist for AFW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

This SR is modified by a Note that states the SR is not required in MODE 4. Not performing this SR in MODE 4 is acceptable for the following reasons: AFW pumps are typically operated intermittently to keep the SGs filled when in MODE 4, the decay heat load is low; an RHR loop is required to be OPERABLE as the primary method of decay heat removal in Mode 4; and, the SG is required to be maintained at a level that ensures a significant inventory is available as a heat sink before the AFW pump is required to refill the SG. These factors ensure that a significant amount of time would be available to complete any valve realignments needed to refill a SG when in Mode 4.

SR 3.7.5.2

Verifying that each AFW pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrigufal pump performance required by Section XI of the ASME Code (Ref 2). Because it is undesirable to introduce cold AFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.2 (continued)

on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing discussed in the ASME Code, Section XI (Ref. 2) (only required at 3 month intervals) satisfies this requirement.

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions are established. This deferral is required because there is insufficient steam pressure to perform the test when SG pressure is < 600 psig.

SR 3.7.5.3

This SR verifies that AFW can be delivered to the appropriate steam generator in the event of any accident or transient that generates an ESFAS, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The 24 month Frequency is acceptable based on operating experience and the design reliability of the equipment.

This SR is modified by a Note that states the SR is not required in MODE 4. In MODE 4, the required AFW train is operated as necessary to maintain SG water level.

SR 3.7.5.4

This SR verifies that the AFW pumps will start in the event of any accident or transient that generates an ESFAS by demonstrating that each AFW pump starts automatically on an actual or simulated actuation signal in MODES 1, 2, and 3. In

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.4 (continued)

MODE 4, the required pump is operated as necessary and the autostart function is not required. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power.

This SR is modified by two Notes. Note 1 indicates that the SR be deferred until suitable test conditions are established. This deferral allows the test to be performed at rated conditions. Note 2 states that the SR is not required in MODE 4. In MODE 4, the required pump is operated as necessary to maintian SG water level and the autostart function is not required. In MODE 4, the heat removal requirements would be less providing more time for operator action to manually start the required AFW pump.

REFERENCES

1. FSAR, Section 10.2.

2. ASME, Boiler and Pressure Vessel Code, Section XI.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.5:
"Auxiliary Feedwater (AFW) System"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.4-1	92	92	No TSCRs	No TSCRs for this Page	N/A
3.4-2	92	92	No TSCRs	No TSCRs for this Page	N/A
3.4-3	151	151	No TSCRs	No TSCRs for this Page	N/A
4.8-1	178 TSCR 98-043	178 TSCR 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated
4.8-2	0	0	No TSCRs	No TSCRs for this Page	N/A

3.4 STEAM AND POWER CONVERSION SYSTEM

A.2

~~Applicability~~

~~Applies to the operating status of the Steam and Power Conversion System.~~

~~Objective~~

~~To define conditions of the turbine cycle steam-relieving capacity. Auxiliary Feedwater System operation is necessary to ensure the capability to remove decay heat from the core.~~

Specification

Mode 1, 2 and 3 and Mode 4 when SG relied upon for heat removal — M.1

LCO 3.7.5 Applicability

A. ~~The reactor shall not be heated above 350°F unless the following conditions are met:~~ Add Note To LCO 3.7.5 — M.1

SEE ITS 3.7.1

(1) A minimum ASME Code approved steam-relieving capability of twenty (20) main steam valves shall be operable (except for testing). With up to three of the five main steam line safety valves per steam generator inoperable, heat-up above 350°F and power operation is permissible provided:

a) Within four hours,

the inoperable valve(s) is restored to operable status.

or

the Power Range Neutron Flux High Trip Setpoint is reduced per Table 3.4-1.

b) Otherwise the reactor shall be in hot shutdown within the next six hours and in cold shutdown within the following 30 hours.

LCO 3.7.5

(2) Three out of three auxiliary feedwater ~~pumps~~ trains must be operable. A.3

SEE ITS 3.7.6

(3) A minimum of 360,000 gallons of water in the condensate storage tank.

LCO 3.7.5

(4) ~~System piping and valves directly associated with the above components operable.~~ trains A.3

SEE ITS 3.7.2

(5) The main steam stop valves are operable and capable of closing in five seconds or less.

(6) ~~Two steam generators capable of performing their heat transfer function.~~ A.6

Amendment No. 79, 97, 92

Add Condition E and associated Req. Act — M.1

ITS 3.7.5

A.1

Add Condition A and associated Req. Act — L.1 — M.2

SEE ITS 3.7.7

(7) City water system piping and valves directly associated with providing backup supply to the auxiliary feedwater pumps are operable.

SEE ITS 3.7.2 3.7.6 3.7.7

B. Except as modified by E. below, if during power operations any of the conditions of 3.4-A above, except Items (1) and (2), cannot be met within 48 hours, the operator shall start to shutdown and cool the reactor below 350°F using normal operation procedures.

~~C.~~ ~~If during power operations~~ the requirement of 3.4.A.2 is not satisfied, the following actions shall be taken: M.1 A.4

Req. Act B.1 ~~1)~~ With one auxiliary feedwater pump inoperable, OR 10 days in LCO restore the pump to operable status within 72 hours ~~or~~ be in ~~hot shutdown within the next 12 hours~~. M.2

Req. Act C.1, C.2

Mode 3 in 6 hrs, Mode 4 in 18 hrs — M.3

Req Act C.1, C.2 ~~2)~~ With two auxiliary feedwater pumps inoperable, be in ~~hot shutdown within 12 hours~~.

Note to Req Act D.1

Req. Act D.1 / Note to Req Act D.1 3) With three auxiliary feedwater pumps inoperable, ~~maintain the plant in safe stable mode which minimizes the potential for a reactor trip and~~, immediately initiate corrective action to restore at least one auxiliary feedwater pump to operable status as soon as possible. A.5

SEE RELOCATED CTS

D. The gross turbine-generator electrical output at all times shall be within the limitation of Figure 3.4-1 or Figure 3.4-2 for the application conditions of turbine overspeed setpoint, number of operable low pressure steam dump lines, and condenser back pressure as noted thereon.

LCO 3.7.5, E. / SR 3.7.5.1 / Cond D

The reactor shall not be heated above 350°F unless both valves in the single auxiliary feedwater supply line from the Condensate Storage Tank are open. If, ~~during power operations~~, it is discovered that one or both of the valves are closed, the following action shall be taken: M.1 A.4

1) ~~Immediately place the auxiliary feedwater system in the manual mode~~. LA.1

Req. Act D.1

2) ~~Within one hour~~ either: Initiate Action Immediately — A.1

a) reopen the closed valve(s),

or

b) open the valves to the alternate city water supply,

and

3) ~~Once a water supply has been restored, return the system to the automatic mode~~. LA.1

If the above action cannot be taken, then:

Note to Req Act D.1

a) ~~maintain the plant in a safe stable mode which minimizes the potential for a reactor trip,~~ A.5

and

Req. Act. D.1

b) continue efforts to restore water supply to the auxiliary feedwater system, A.1

~~and~~

c) ~~notify the NRC within 24 hours regarding planned corrective action.~~ A.9

Basis

A reactor shutdown from power requires removal of core decay heat. Immediate decay heat removal requirements are normally satisfied by the steam bypass to the condensers. Thereafter, core decay heat can be continuously dissipated via the steam bypass to the condenser as feedwater in the steam generator is converted to steam by heat absorption. Normally, the capability to feed the steam generators is provided by operation of the turbine cycle feedwater system.

The twenty main steam safety valves have a total combined rated capability of 15,108,000 lbs/hr. The total full power steam flow is 12,974,500 lbs/hr.; therefore twenty (20) main steam safety valves will be able to relieve the total steam flow if necessary. The total relieving capacity of the twenty main steam line safety valves is 116% of the total secondary steam flow at 100% rated power (3025 Mwt). The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The operability of the twenty main steam line safety valves ensure that the secondary system pressure will be limited to within 110% of the design pressure of 1085 psig during the most severe anticipated system operational transient.

Startup and/or power operation with inoperable main steam line safety valves is allowable within the limitation of Table 3.4-1. Operation with up to three of the five main steam line safety valves per steam generator inoperable is permissible if the maximum allowed power level is below the heat removing capability of the operable MSSVs. This is accomplished by restricting the reactor power level such that the heat input from the primary side will not exceed the heat removing capability of the operable MSSVs of the most limiting steam generator. The reduction in reactor power level is achieved by reducing the power range neutron flux high setpoint. The reactor trip setpoint reductions are derived on the following basis: A.1

$$Hi\phi = (100 / Q) [(w_s h_{fg} N) / K]$$

ITS 3.7.5

4.8 AUXILIARY FEEDWATER SYSTEM

Applicability

Applies to periodic testing requirements of the Auxiliary Feedwater System.

Objective

To verify the operability of the Auxiliary Feedwater System and its ability to respond properly when required.

Specification

1. a. Each auxiliary feedwater pump will be started manually from the control room at monthly intervals on a staggered test basis (i.e., one pump per month, so that each pump is tested once during a 3 month period) with full flow established to the steam generators at least once per 24 months.

   b. The auxiliary feedwater pumps discharge valves will be tested by operator action at intervals not greater than six months.

   c. Backup supply valves from the city water system will be tested at least once per 24 months. ~~(See Note A, Below)~~ - TSCR 98-043

2. Acceptance levels of performance shall be that the pumps start, reach their required developed head and operate for at least fifteen minutes.

3. At least once per 24 months,

   a. Verify that the recirculation valve will actuate to its correct position.

   b. Verify that each auxiliary feedwater pump will start as designated automatically upon receipt of an auxiliary feedwater actuation test signal.

Basis

The testing of the auxiliary feedwater pumps will verify their operability. The capacity of any one of the three auxiliary feedwater pumps is sufficient to meet decay heat removal requirements.

~~Note A: Testing of the backup supply valves may be deferred until the next refueling outage (RO9), but no later than May 31, 1997.~~

Deleted by TSCR 98-043

Amendment No. 38, 125, 128, 172,

TSCR 97-155 TSCR 98-043

Add SR 3.7.5.1 M.4

ITS 3.7.5

A.1

4.8 AUXILIARY FEEDWATER SYSTEM

~~Applicability~~

~~Applies to periodic testing requirements of the Auxiliary Feedwater System.~~ A.2

~~Objective~~

~~To verify the operability of the Auxiliary Feedwater System and its ability to respond properly when required.~~

~~Specification~~

IAW IST Program LA.2

1. a. Each auxiliary feedwater pump will be started manually from the control room at ~~monthly intervals on a staggered test basis (i.e., one pump per month, so that each pump is tested once during a 3 month period)~~ ~~with full flow established to the steam generators at least once per 24 months~~ L.3 — SR 3.7.5.2

b. The auxiliary feedwater pumps discharge valves will be tested by operator action at intervals not greater than six months. — SR 3.7.5.3

c. Backup supply valves from the city water system will be tested at least once per 24 months. ~~[See Note A, below]~~ — SEE ITS 3.7.7

~~2~~. Acceptance levels of performance shall be that the pumps start, reach their required developed head ~~and operate for at least fifteen minutes~~ A.7 — SR 3.7.5.2

3. At least once per 24 months,

each automatic M.5

a. Verify that the ~~recirculation~~ valve will actuate to its correct position. — SR 3.7.5.3

b. Verify that each auxiliary feedwater pump will start as designated automatically upon receipt of an auxiliary feedwater actuation ~~test~~ signal. — SR 3.7.5.4

actuation A.8

Add SR 3.7.5.4, Note 1 L.2

Add SR 3.7.5.4, Note 2 M.1

~~Basis~~

~~The testing of the auxiliary feedwater pumps will verify their operability. The capacity of any one of the three auxiliary feedwater pumps is sufficient to meet decay heat removal requirements.~~ A.1

~~Note A: Testing of the backup supply valves may be deferred until the next refueling outage (RO9), but no later than May 31, 1997.~~

Deleted by TSCR 98-043

~~Verification of correct operation will be made both from instrumentation within the main control room and direct visual observation of the pumps.~~

~~Reference~~

~~FSAR - Sections 10.4, 14.1.9 and 14.2.5 and response to Question 7.23.~~

A.1

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.5:
"Auxiliary Feedwater (AFW) System"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.4.A.2 requires 3 Operable auxiliary feedwater (AFW) "pumps" and CTS 3.4.A.4 establishes requirements for system piping and valves directly associated with AFW. The IP3 FSAR describes the AFW system as two pumping loops using two different types of motive power to the pumps with one loop consisting of a 200% capacity steam turbine-driven pump and the other loop consisting of two 100% capacity motor driven pumps. ITS LCO 3.7.5 establishes requirements for 3 auxiliary feedwater "trains" with each train consisting of one AFW pump and a flow path from the Condensate Storage Tank (or city water) to the steam generators. This is an administrative change with no impact on safety.

A.4 CTS 3.4.C and CTS 3.4.E establish Actions when one or more auxiliary feedwater (AFW) pumps are not Operable "during power operations" (i.e., Mode 1); however, no Actions are provided if AFW requirements are not met in Modes 2 and 3. Consistent with current IP3 practice, CTS 3.4.C is considered to establish Actions whenever AFW is required to be Operable by the Applicability in CTS 3.4.A (i.e., whenever the reactor is heated above 350°F). ITS 3.7.5 resolves this ambiguity. This is an administrative change with no impact on safety.

A.5 CTS 3.4.C.3 specifies that if 3 auxiliary feedwater pumps are inoperable then the plant must be "maintained in safe stable mode which minimizes the potential for a reactor trip." Similarly, CTS 3.4.E (CTS Page 3.4-3) specifies the same requirement if neither the CST nor city water can be aligned to support the AFW system (i.e., three AFW pumps inoperable).

Under the same conditions, ITS 3.7.5, Required Action D.1 Note, specifies that "LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status." Both the CTS and the ITS statements are intended to maintain the plant in a condition that minimizes the potential need for auxiliary feedwater for decay heat removal although the ITS statement is more explicit in allowing this requirement to override other Technical Specifications that may require plant shutdown. This is an administrative change with no impact on safety because the intent of both the CTS and ITS is to avoid forcing the unit into a less safe condition when no auxiliary feedwater pumps are to support decay heat removal.

A.6 CTS 3.4.A.6 requires two steam generators capable of performing their heat transfer function and CTS 3.4.A establishes the Applicability for the SG as whenever the reactor is heated above 350°F (i.e., Modes 1, 2 and 3). This requirement is located adjacent to requirements for auxiliary feedwater, minimum condensate storage and the availability of city water and is interpreted to be a requirement for minimum redundant decay heat removal capability. This requirement is deleted because it is redundant to ITS LCO 3.4.4, which requires four RCS loops Operable and in operation in Modes 1 and 2, and ITS LCO 3.4.5, which requires two RCS loops Operable in Mode 3. Although the requirements established in ITS LCO 3.4.4 and ITS LCO 3.4.5 are not intended to ensure minimum redundant decay heat removal capability, these Technical Specifications and associated Required Actions provide adequate assurance that the requirements of CTS 3.4.A.6 are satisfied at all times in Modes 1, 2 and 3. This is an administrative change with no impact on safety because there is no change to the existing CTS requirements.

A.7 CTS 4.8.1.a requires each auxiliary feedwater pump be started periodically and CTS 4.8.2 specifies the test acceptance criteria that each pump starts, reaches the required developed head and "operates for at least 15 minutes." ITS 3.7.5.2 maintains the same requirement; however, the acceptance criterion that the pump operate for at least 15 minutes is deleted. This change is acceptable because test procedures ensure that stable conditions are established prior to the verification of acceptance criteria and the requirement to operate for 15 minutes does not otherwise contribute to the verification of pump Operability. Therefore, this is an administrative change with no impact on safety.

A.8 CTS 4.8.3.b requires that the verification that each auxiliary feedwater pump will start automatically upon receipt of an auxiliary feedwater actuation test signal. ITS 3.7.5.2 maintains this requirement with the allowance that the test may be initiated by either an actual or simulated actuation signal. Use of an actual instead of a simulated or "test" signal will not affect the performance of the test since pump actuation cannot discriminate between an actual and simulated signal. This is an administrative change with no impact on safety because it is consistent with the intent of the CTS requirement.

A.9 CTS 3.4.E (CTS Page 3.4-3) requires that if all 3 auxiliary feedwater pumps are inoperable and cannot be restored within one hour, then the NRC must be notified within 24 hours regarding planned corrective action. ITS LCO 3.7.5 does not include an explicit requirement for NRC notification if all 3 auxiliary feedwater pumps are inoperable. This change is needed because requirements for reportable events are included in 10 CFR 50.72 and 10 CFR 50.73 and are not repeated in the ITS to avoid the potential for contradictions. This change is acceptable because there is no change to the existing requirements and future changes are appropriately controlled. Additionally, adequate administrative controls exist to ensure this requirement is understood and properly implemented. Therefore, this is an administrative change with no adverse impact on safety.

MORE RESTRICTIVE

M.1 CTS 3.4.A.2 requires 3 Operable Auxiliary Feedwater (AFW) pumps and CTS 3.4.A establishes the Applicability as whenever the reactor is heated above 350°F (i.e., Modes 1, 2 and 3). ITS LCO 3.7.5 maintains the requirement for 3 Operable AFW trains with an Applicability of Modes 1, 2 and 3; however, ITS LCO 3.7.5 establishes a new requirement that one of the motor driven AFW pumps must be Operable in Mode 4 when a steam generator is relied upon for heat removal. Additionally, the Note to LCO 3.7.5 specifies that the motor driven AFW pump required to be Operable in Mode 4 must be capable of supporting the SG being credited as the redundant decay heat removal path.

This change is needed because ITS LCO 3.4.6, which governs requirements for decay heat removal capability in Mode 4, requires that two loops consisting of any combination of RCS loops and residual heat removal (RHR) loops must be Operable and one of theses loops must be in operation at all times in Mode 4 to ensure that redundant decay heat removal capability is available. Although the ITS SR 3.4.6.2 requirement that an Operable SG must have a minimum water level which provides significant decay heat removal capability, the new requirement to have an Operable motor driven AFW pump ensures the ability to maintain the required level in the SG (and decay heat removal capacity) during extended periods in Mode 4 with or without offsite power.

In conjunction with the change, ITS 3.7.5, Required Action E, is added to require that action be initiated immediately to restore an inoperable required AFW pump in Mode 4.

In conjunction with the change, ITS SR 3.7.5.3, AFW valve lineup, and ITS SR 3.7.5.4, AFW autostart verification, are modified by Notes stating that these SRs are not required for Operability in Mode 4. The allowance provided by these Notes is acceptable because in Mode 4, SR 3.4.6.2 establishes a requirement for a minimum SG water inventory if a SG is being credited for heat removal. The combination of the SG water inventory and low heat removal requirements in Mode 4 provide sufficient time for operator action to lineup and manually start the required AFW pump. Additionally, in Mode 4, an AFW pump may be operating and the valve lineup and autostart verifications are not necessary. Finally, CTS has no requirement for Operability of AFW in Mode 4 even if a SG is credited for decay heat removal so ITS 3.7.5 Operability requirements are more restrictive even with these allowances for the deferral of testing in Mode 4.

These changes are acceptable because operation of a motor driven AFW pump in Mode 4 to feed a SG is consistent with operation of the AFW system as described in the FSAR. Therefore, this more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability in Mode 4 is maintained. Therefore, this change has no adverse impact on safety.

M.2 ITS 3.7.5, Required Action A.1 and B.1, governing one inoperable AFW pump in Mode 1, 2 or 3, include a supplementary Completion Time of 10 days from discovery of failure to meet the LCO. This new Completion Time establishes a limit on the maximum time allowed for an AFW pump to be inoperable from any combination of Conditions during any continuous failure to meet this LCO. This supplementary Completion Time is needed to place a reasonable limit on the amount of time that operation may continue with degraded AFW system capability consistent with the intent of the Allowable Out of Service Times (AOTs) for a single AFW train or other LCO 3.7.5 Condition. This change is acceptable because it does not introduce any operation which is un-analyzed while placing a reasonable limit on the amount of time that Operation may continue with degraded AFW system capability. Therefore, this change has no adverse impact on safety.

M.3 CTS 3.4.C.2 requires that the plant be in hot shutdown (i.e., Mode 3) within the next 12 hours if an inoperable AFW pump cannot be restored within 72 hours; and, CTS 3.4.C.3 requires that the plant be in hot shutdown (i.e., Mode 3) within 12 hours if two AFW pumps are inoperable. (Note that CTS 3.4.A establishes the Applicability for the AFW as whenever the reactor is heated above 350°F (i.e., Modes 1, 2 and 3) but CTS 3.4.C.2 and CTS 3.4.C.3 do not require that the plant be placed outside of the Applicable Mode.)

Under the same conditions, ITS 3.7.5, Required Action C.1 and C.2, require the plant be in Mode 3 in 6 hours and Mode 4 in 18 hours. The adoption of the ITS results in the following two more restrictive changes: shutdown to Mode 3 must be completed in 6 hours instead of 12 hours; and, the Required Actions specify that the plant is placed in Mode 4 (i.e., outside of the Applicable Mode). The first change is needed and is acceptable because shutdown to Mode 3 within 6 hours is consistent with other ITS Completion Times and is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. The second change is needed because the unit must be placed in a Mode in which the LCO does not apply. To achieve this status, the unit must be placed in at least Mode 4. The Completion Time of 18 hours to reach Mode 4 is not consistent with other ITS Completion Times because conducting the cooldown with minimum AFW capacity (one motor driven AFW pump) may require additional time. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring that the plant be placed outside the Applicable Mode in a timely manner when AFW system capability is degraded. Therefore, this change has no adverse impact on safety.

M.4 CTS 4.8 does not specifically require periodic verification that valves capable of being mispositioned are in the correct position. ITS SR 3.7.5.1 establishes a requirement for monthly verification of the correct alignment for manual, power operated, and automatic valves in the AFW System water and steam supply flow paths in order to provide assurance that the proper flow paths will exist for AFW operation. This SR is modified by a Note that specifies that these valve lineups are not applicable in Mode 4 even when steam generator is relied upon for heat removal. Not performing this SR in Mode 4 is acceptable for the following reasons: AFW pumps are typically operated intermittently to keep the SGs filled when in Mode 4, decay heat load is low; an RHR loop is required to be Operable as the primary method of decay in Mode 4; and, the SG is required to be maintained at a level that ensures a significant inventory is available as a heat sink before the AFW pump is required to refill the SG. These factors ensure that a significant amount of time would be available to complete any valve realignment needed to refill a SG when in Mode 4. The addition of ITS SR 3.7.5.1 is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification of a proper valve lineup at a Frequency consistent with good engineering practice. Therefore, this change has no adverse impact on safety.

M.5 CTS 4.8.3.a requires verification every 24 months that the recirculation valve will actuate to its correct position. ITS SR 3.7.5.3 maintains this requirement but expands the scope to include each AFW automatic valve that is not locked, sealed, or otherwise secured in position. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring verification of a proper valve lineup at a Frequency consistent with good engineering practice. Therefore, this change has no adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.4.C specifies Actions if one or more AFW pumps are inoperable; however, CTS 3.4.C does not specify any allowance for the redundancy in the steam supply to the steam driven AFW pump. Therefore, if either of the steam supplies to the steam driven AFW pump are not Operable, then the steam driven AFW pump is not Operable and restoration of the pump or initiation of a plant shutdown is required within 72 hours. Under the same conditions (one of the two steam supplies to AFW pump not Operable but steam driven AFW pump otherwise Operable), ITS 3.7.5, Required Action A.1, allows 7 days to restore the redundant steam supply before initiation of plant shutdown is required (versus 72 hours if the AFW pump was inoperable). This change is needed to provide an allowable out of service time (AOT) commensurate with the level of degradation resulting from the inoperability of one of the two redundant steam supply lines considering that the majority of events requiring AFW will not include loss of a steam line or the associated steam generator. This change is acceptable because of the following: the redundant Operable steam supply to the turbine driven AFW pump; the availability of redundant Operable motor driven AFW pumps; and, the low probability of an event occurring that would require functioning of the inoperable steam supply to the turbine driven AFW pump. Therefore, this change has no significant impact on safety.

L.2 CTS 4.8.1.a requires each auxiliary feedwater pump be started periodically and CTS 4.8.2 specifies the test acceptance criteria that each pump starts and reaches the required developed head. CTS 4.8.3.b requires verification that each auxiliary feedwater pump will start as designated automatically upon receipt of an auxiliary feedwater actuation test signal. ITS SR 3.7.5.2 and TS 3.7.5.4 maintain the same testing requirements; however, the ITS SRs are modified by a Note providing an allowance that the SRs are not required to be performed for the turbine driven AFW pump until 24 hours after pressure in the steam generator is ≥ 600 psig.

The ITS allowance permitting deferral of SRs associated the performance of the turbine driven AFW pump until 24 hours after steam generator pressure is ≥ 600 psig is an explicit recognition that the SRs cannot be initiated until minimum plant conditions are established and that some time is required to perform this test once conditions are established. This allowance is consistent with current practice. This allowance is acceptable for the following reasons: time in Mode 3 or above permitted by this allowance is typically significantly shorter than the normal AOT for one AFW pump; two 100% capacity motor driven pumps provide the substantial redundancy during this period; there is low decay heat load following a startup when the allowances associated with this test may be invoked; and, there is a low probability of an event during this period. Therefore, this allowance has no impact on safety.

L.3 CTS 4.8.1.a requires verification that each auxiliary feedwater pump establishes full flow to each SG every 24 months. ITS SR 3.7.5.2 maintains the requirement to verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head at a Frequency specified by the Inservice Test Program; however, the requirement to verify full flow to each SG every 24 months is deleted.

This change is acceptable because ITS 3.7.5.2 verifies AFW pump capacity at a more frequent interval (i.e., every 3 months). Additionally, IP3 uses AFW during normal startup and shutdown which independently verifies the adequacy of the flow path to each SG which is common for each of the AFW pumps. Therefore, deletion of the CTS 4.8.1.a requirement to verify each auxiliary feedwater pump establishes full flow to each SG every 24 months has no significant adverse impact on safety.

REMOVED DETAIL

LA.1 CTS 3.4.E.1 specifies that if it is discovered that one or both of the valves on the AFW suction are closed (i.e., ITS LCO 3.7.5, Condition D, loss of 3 AFW pumps), then immediately place auxiliary feedwater start in the manual mode. In conjunction with this requirement, CTS 3.4.E.3 requires restoration of AFW autostart capability once water to the pumps is restored.

ITS 3.7.5 maintains the requirement that water must be aligned to the AFW pump suctions as a condition of Operability; however, the requirement to immediately place auxiliary feedwater start in the manual mode when this condition exists is relocated to plant operating procedures. These requirements are not included in ITS 3.7.5 because these Actions are intended to protect the AFW pumps from damage if a start signal is received with no water supply aligned to the pump suctions. These CTS Actions are intended for equipment protection only and do not meet any of 10 CFR 50.36(c)(2)(ii) Criteria for explicit inclusion in Technical Specifications. These requirements are more appropriately controlled by plant operating procedures.

This change is acceptable because all three AFW pumps are already inoperable and the actions for inoperable AFW pumps are initiated if there is no water aligned to the pump suctions. Additionally, there is no change to the requirement to take actions to protect the AFW pumps from a dry start except it will be in plant operating procedures rather than Technical Specifications. The level of safety of facility operation is unaffected by the change because there is no change in the requirement to disable the autostart capability if there is no water aligned to the AFW pump suctions.

This change is a less restrictive administrative change with no impact on safety because ITS 3.7.5 maintains the requirements to have AFW Operable. Therefore, requirements intended to protect the AW pumps when they are not Operable can be moved to plant operating procedures with no adverse impact on safety.

LA.2 CTS 4.8.1.a (as modified by TSCR 97-155) and CTS 4.8.2 require a demonstration that each AFW pump is started and develops required discharge pressure at monthly intervals on a staggered test bases so that each pump is tested every 3 months. ITS 3.7.5.2 (as modified by TSTF-101 (WOG-29) maintains the same requirement except that the SR Frequency is established by the Inservice Testing Program. Similarly, CTS 4.8.1.b requires that auxiliary feedwater pumps discharge valves are tested by operator action at intervals not greater than six months. Cycling these valves are included in the Inservice Testing Program.

This change is acceptable because the IST Program provides controls for inservice testing of ASME Code Class 1, 2, and 3 components and is required by ITS 5.5.7. ITS 5.5.7, Inservice Testing Program (IST), requires establishing and maintaining a program for inservice testing of ASME Code Class 1, 2, and 3 components at frequencies specified in Section XI of the ASME Boiler and Pressure Vessel Code. Additionally, 10 CFR 50.55a(f) already provides the regulatory requirements for this IST Program, and specifies that ASME Code Class 1, 2, and 3 pumps and valves are covered by an IST Program. Therefore, maintaining the requirement that AFW trains must be Operable in ITS 3.7.5 and maintaining the requirement for periodic testing of pumps and valves in the IST Program required by ITS 5.5.7 provides a high degree of assurance that check valves will be tested and maintained to ensure AFW Operability. Additionally, ITS 5.5.7, Inservice Testing Program (IST), requirements and 10 CFR 50.55a(f) ensure adequate change control and regulatory oversight for any changes to the existing requirements. Therefore, requirements to test AFW train components can be maintained in the IST program with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.5:
"Auxiliary Feedwater (AFW) System"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change establishes an Allowable Out of Service Time (AOT) for the condition that one of the two steam supplies to the turbine driven AFW pump is not Operable but steam driven AFW pump is otherwise Operable. Specifically, ITS 3.7.5, Required Action A.1, allows 7 days to restore the redundant steam supply before initiation of plant shutdown is required (versus 72 hours if the AFW pump was inoperable). This change will not result in a significant increase in the probability of an accident previously evaluated because the status of the AFW pump redundant steam supply has no affect on the initiators of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because of the following: there is a redundant Operable steam supply to the turbine driven AFW pump; there are redundant Operable motor driven AFW pumps; and, there is a low probability of an event occurring that requires the inoperable steam supply to the turbine driven AFW pump.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because of the following: there is a redundant Operable steam supply to the turbine driven AFW pump; there are redundant Operable motor driven AFW pumps; and, there is a low probability of an event occurring that requires the inoperable steam supply to the turbine driven AFW pump.

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change provides an allowance that surveillance requirements for the auxiliary feedwater pumps are not required to be performed for the turbine driven AFW pump until 24 hours after pressure in the steam generator is ≥ 600 psig. This change provides explicit recognition that the SRs cannot be performed until minimum plant conditions for performing the SRs are established and that some time is required to perform this test once conditions are established. This change will not result in a significant increase in the probability of an accident previously evaluated because the status of the steam driven AFW pump when the plant is less than 600 psig has no effect on the initiators of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because of the following: the time in Mode 3 or above permitted by this allowance is typically significantly shorter than the normal AOT for one AFW pump and the two motor driven AFW pumps must be Operable prior to changing Modes; the two motor 100% capacity motor driven pumps provide substantial redundancy during this period; the low decay heat load following a startup; and, the low probability of an event during this period.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because of the following: the time in Mode 3 or above permitted by this allowance is typically significantly shorter than the normal AOT for one AFW pump and the two motor driven AFW pumps must be Operable prior to changing Modes; the two motor 100% capacity motor driven pumps provide substantial redundancy during this period; the low decay heat load following a startup; and, the low probability of an event during this period.

LESS RESTRICTIVE
<u>("L.3" Labeled Comments/Discussions)</u>

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change deletes the requirement to verify full flow from each AFW pump to each SG every 24 months. This change will not result in a significant increase in the probability of an accident previously evaluated because elimination of the performance of a formal demonstration of AFW flow to each SG has no effect on the initiators of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because ITS SR 3.7.5.2 maintains the requirement to verify AFW pump capacity in accordance with the Inservice Test Program (i.e., every 3 months). Additionally, IP3 uses AFW during normal startup and shutdown which independently verifies the adequacy of the flow path to each SG which is common for each of the AFW pumps. Therefore, the capacity of each AFW pump is still verified and the ability to establish an AFW flow path to each SG is demonstrated more frequently during normal operation.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because ITS SR 3.7.5.2 maintains the requirement to verify AFW pump capacity in accordance with the Inservice Test Program (i.e., every 3 months). Additionally, IP3 uses AFW during normal startup and shutdown which independently verifies the adequacy of the flow path to each SG which is common for each of the AFW pumps. Therefore, the capacity of each AFW pump is still verified and the ability to establish an AFW flow path to each SG is demonstrated more frequently during normal operation.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.5:
"Auxiliary Feedwater (AFW) System"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.5

This ITS Specification is based on NUREG-1431 Specification No. **3.7.5**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
WOG-029	**101 R0**	CHANGE AFW PUMP TESTING FREQUENCY TO BE "IN ACCORDANCE WITH THE INSERVICE TESTING PROGRAM" NRC APPROVES	Approved by NRC	Incorporated	**T.1**
WOG-030	**029 RO**	REMOVE MODE 4 WHEN S/GS ARE RELIED UPON FROM THE MODES OF APPLICABILITY NRC REJECTS: TSTF ACCEPTS	Rejected by NRC	Not Incorporated	**N/A**
WOG-096		REVISE THE FREQUENCY OF SR 3.7.5.5, AFW FLOW PATH VERIFICATION	TSTF Review	Not Incorporated	**N/A**
WOG-112		AFW TRAIN OPERABLE WHEN IN SERVICE	TSTF Review	Not Incorporated	**N/A**

3.7 PLANT SYSTEMS

<CTS>

3.7.5 Auxiliary Feedwater (AFW) System

<3.4.A.2>
<DOC M.1>
<DOC A.3>

LCO 3.7.5 [Three] AFW trains shall be OPERABLE.

-------------------------NOTE-------------------------
Only one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4.

Insert: 3.7-11-01

<3.4.A>
<3.4.E>
<DOC M.1>
<DOC A.4>

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC L.1> A. One steam supply to turbine driven AFW pump inoperable.	A.1 Restore steam supply to OPERABLE status.	7 days AND <DOC M.2> 10 days from discovery of failure to meet the LCO
<3.4.C.1> B. One AFW train inoperable in MODE 1, 2 or 3 [for reasons other than Condition A].	B.1 Restore AFW train to OPERABLE status.	72 hours AND <DOC M.2> 10 days from discovery of failure to meet the LCO

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

INSERT: 3.7-11-01

capable of supporting the credited steam generator

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<CTS>			
<3.4.C.1> <DOC M.3> <3.4.C.2> <DOC M.3>	C. Required Action and associated Completion Time for Condition A [or B] not met. OR Two AFW trains inoperable in MODE 1, 2, or 3.	C.1 Be in MODE 3. AND C.2 Be in MODE 4.	6 hours [18] hours
<3.4.C.3> <DOC A.5> <3.4.E.2> <3.4.E.2a,b> <DOC A.5>	D. [Three] AFW trains inoperable in MODE 1, 2, or 3.	D.1 ---------NOTE-------- LCO 3.0.3 and all other LCO Required Actions requiring MODE changes are suspended until one AFW train is restored to OPERABLE status. --------------------- Initiate action to restore one AFW train to OPERABLE status.	Immediately
<DOC M.1>	E. Required AFW train inoperable in MODE 4.	E.1 Initiate action to restore AFW train to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

<CTS>	SURVEILLANCE		FREQUENCY
<3.4.E> <DOC M.4>	SR 3.7.5.1 Insert: 3.7-13-01	Verify each AFW manual, power operated, and automatic valve in each water flow path, [and in both steam supply flow paths to the steam turbine driven pump,] that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days
<DOC L.2> <DOC LA.2> <4.8.1.a> <4.8.2> <DOC A.7>	SR 3.7.5.2	------------------NOTE------------------ Not required to be performed for the turbine driven AFW pump until [24 hours] after ≥ ~~[1000]~~ 600 psig in the steam generator. --- Verify the developed head of each AFW pump at the flow test point is greater than or equal to the required developed head.	T.1 In accordance with Inservice Testing Program ~~[31] days on a STAGGERED TEST BASIS~~
<DOC M.1> <4.8.3.a> <DOC M.5> <4.8.1.b>	SR 3.7.5.3	------------------NOTE------------------ Not applicable in MODE 4 when steam generator is relied upon for heat removal. --- Verify each AFW automatic valve that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	[~~18~~] months 24

(continued)

INSERT: B 3.7-13-01

-------------------NOTE--------------------
Not applicable in MODE 4 when steam
generator is relied upon for heat removal.

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.7.5.4	------------------NOTES------------------ 1. Not required to be performed for the turbine driven AFW pump until [24 hours] after ≥ ~~[1000]~~ 600 psig in the steam generator. 2. Not applicable in MODE 4 when steam generator is relied upon for heat removal. --- Verify each AFW pump starts automatically on an actual or simulated actuation signal.	~~[18]~~ 24 months
~~SR 3.7.5.5~~	~~Verify proper alignment of the required AFW flow paths by verifying flow from the condensate storage tank to each steam generator.~~	~~Prior to entering MODE 2, whenever unit has been in MODE 5 or 6 for > 30 days~~

<DOC L.2>

<DOC M.1>

<4.8.3.b>
<DOC A.8>

B 3.7 PLANT SYSTEMS

B 3.7.5 Auxiliary Feedwater (AFW) System

BASES

BACKGROUND

The AFW System automatically supplies feedwater to the steam generators to remove decay heat from the Reactor Coolant System upon the loss of normal feedwater supply. The AFW pumps take suction ~~through separate and independent suction lines~~ from the condensate storage tank (CST) (LCO 3.7.6) and pump to the steam generator secondary side ~~via separate and independent connections~~ that connect to the main feedwater (MFW) piping outside containment. The steam generators function as a heat sink for core decay heat. The heat load is dissipated by releasing steam to the atmosphere from the steam generators via the main steam safety valves (MSSVs) (LCO 3.7.1) or atmospheric dump valves (LCO 3.7.4). If the main condenser is available, steam may be released via the steam bypass (High Pressure Steam Dump) valves and recirculated to the CST.

The AFW System consists of [two] motor driven AFW pumps and one steam turbine driven pump configured into [three] trains. Insert: B 3.7-23-01 Each motor driven pump provides [100]% of AFW flow capacity, and the turbine driven pump ~~provides~~ Capacity approaches [200]% of the required capacity to the steam generators, depending on steam conditions, as assumed in the accident analysis. The pumps are equipped with independent recirculation lines to prevent pump operation against a closed system. Each motor driven AFW pump is powered from an independent Class 1E power supply and feeds [two] steam generators~~, although each pump has the capability to be realigned from the control room to feed other steam generators~~. The steam turbine driven AFW pump receives steam from two main steam lines upstream of the main steam isolation valves. Each of the steam feed lines will supply 100% of the requirements of the turbine driven AFW pump.

The AFW System is capable of supplying feedwater to the steam generators during normal unit startup, shutdown, and hot standby conditions.

The turbine driven AFW pump supplies a common header capable of feeding all steam generators ~~with DC powered control valves actuated to the appropriate steam generator by the Engineered Safety Feature Actuation System (ESFAS)~~. Insert: B 3.7-23-02 ~~One pump~~ Any of the three pumps at full flow is sufficient to remove decay heat and cool the unit to residual heat removal (RHR) entry

~~(continued)~~

Typical

INSERT: B 3.7-23-01

FSAR Section 10.2 (Ref. 1) describes this configuration as two pumping loops using two different types of motive power to the pumps. One auxiliary feedwater loop utilizes a steam turbine driven pump and the other utilizes two motor driven pumps. Technical specifications describe this configuration as three trains because DB.1

INSERT: B 3.7-23-02

Each of the steam generators can also be supplied by one of the two motor driven AFW pumps.

BASES

BACKGROUND (continued)

conditions. Thus, the requirement for diversity in motive power sources for the AFW System is met.

The AFW System is designed to supply sufficient water to the steam generator(s) to remove decay heat with steam generator pressure at the setpoint of the MSSVs. Subsequently, the AFW System supplies sufficient water to cool the unit to RHR entry conditions, with steam released through the ADVs.

Insert: B 3.7-24-01

~~The AFW System actuates automatically on steam generator water level—low-low by the ESFAS (LCO 3.3.2). The system also actuates on loss of offsite power, safety injection, and trip of all MFW pumps.~~

The AFW System is discussed in the FSAR, Section ~~10.4.9~~ 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The AFW System mitigates the consequences of any event with loss of normal feedwater.

The design basis of the AFW System is to supply water to the steam generator to remove decay heat and other residual heat by delivering at least the minimum required flow rate to the steam generators at pressures corresponding to the lowest steam generator safety valve set pressure plus 3% accumulation.

In addition, the AFW System must supply enough makeup water to replace steam generator secondary inventory lost as the unit cools to MODE 4 conditions. Sufficient AFW System flow must also be available to account for flow losses such as pump recirculation and line breaks.

The limiting ~~Design Basis Accidents (DBAs) and transients for~~ events that require the AFW System are as follows:

Insert: B 3.7-24-02

~~a. Feedwater Line Break (FWLB); and~~

~~b. Loss of MFW.~~

~~In addition, the minimum available AFW flow and system characteristics are serious considerations in the analysis of a small break loss of coolant accident (LOCA).~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

<u>INSERT: B 3.7-24-01</u>

The motor driven pumps are actuated by any one of the following:
1) Low-low level in any steam generator;
2) Loss of voltage (Non SI blackout) on 480 VAC bus 2A/3A (starts AFW Pump 31) and loss of voltage (Non SI blackout) on 480 VAC bus 6A (starts AFW Pump 33);
3) Safety Injection signal;
4) Auto trip of either main boiler feed pump;
5) Manual actuation from the Control Room; and
6) Manual actuation locally at the pump room.

The steam turbine driven pump is actuated by any one of the following:
1) Low-low level in two of the four steam generators;
2) Loss of voltage (Non SI blackout) on 480 VAC busses 2A/3A or 6A;
3) Manual actuation from the Control Room; and
4) Manual actuation locally at the pump room.

The steam driven AFW pump must be throttled manually in order to bring the unit up to speed after a start signal. In addition, the steam driven pump discharge flow control valves must be manually opened as necessary to provide adequate auxiliary feedwater flow.

<u>INSERT: B 3.7-24-01</u>

a. small break loss of coolant accident;

b. loss of AC sources; and

c. loss of feedwater.

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~The AFW System design is such that it can perform its function following an FWLB between the MFW isolation valves and containment, combined with a loss of offsite power following turbine trip, and a single active failure of the steam turbine driven AFW pump. In such a case, the ESFAS logic may not detect the affected steam generator if the backflow check valve to the affected MFW header worked properly. One motor driven AFW pump would deliver to the broken MFW header at the pump runout flow until the problem was detected, and flow terminated by the operator. Sufficient flow would be delivered to the intact steam generator by the redundant AFW pump.~~

actuates automatically

is available

~~The ESFAS automatically actuates~~ the AFW turbine driven pump ~~and associated power operated valves and controls~~ when required to ensure an adequate feedwater supply to the steam generators during loss of power. ~~DC~~ power operated valves are provided for each AFW line to control the AFW flow to each steam generator.

The AFW System satisfies the requirements of Criterion 3 of ~~the NRC Policy Statement~~. 10 CFR 50.36

LCO

events

This LCO provides assurance that the AFW System will perform its design safety function to mitigate the consequences of ~~accidents~~ that could result in overpressurization of the reactor coolant pressure boundary. [Three] independent AFW pumps ~~in [three] diverse trains~~ are required to be OPERABLE to ~~ensure the availability of RHR capability for all events accompanied by~~ a loss of offsite power and a single failure. This is accomplished by powering two of the pumps from independent emergency buses. The third AFW pump is powered by ~~a different means~~, a steam driven turbine supplied with steam from a source that is not isolated by closure of the MSIVs.

ensure the capability to maintain the plant in hot shutdown with

two

The AFW System is configured into [three] trains. The AFW System is considered OPERABLE when the components and flow paths required to provide redundant AFW flow to the steam generators are OPERABLE. This requires that the two motor driven AFW pumps be OPERABLE ~~in [two] diverse paths~~, each supplying AFW to separate steam generators. The turbine driven AFW pump is required to be OPERABLE with ~~redundant~~ steam supplies from each of [two] main steam lines upstream

(continued)

BASES

LCO (continued)

of the MSIVs, and shall be capable of supplying AFW to ~~any~~ all of the steam generators. The piping, valves, instrumentation, and controls in the required flow paths also are required to be OPERABLE.

The LCO is modified by a Note indicating that one AFW train, which includes a motor driven pump, is required to be OPERABLE in MODE 4. Insert: B3.7-26-01 ~~This is~~ because of the reduced heat removal requirements and short period of time in MODE 4 during which the AFW is required and the insufficient steam available in MODE 4 to power the turbine driven AFW pump.

APPLICABILITY

In MODES 1, 2, and 3, the AFW System is required to be OPERABLE in the event that it is called upon to function when the MFW is lost. In addition, the AFW System is required to supply enough makeup water to replace the steam generator secondary inventory needed to achieve and maintain ~~, lost as the unit cools to~~ MODE 4 conditions.

In MODE 4, a motor driven AFW pump may be needed to support ~~the AFW System may be used for~~ heat removal via the steam generators.

In MODE 5 or 6, the steam generators are not normally used for heat removal, and the AFW System is not required.

ACTIONS

A.1

If one of the two steam supplies to the turbine driven AFW train is inoperable, action must be taken to restore OPERABLE status within 7 days. The 7 day Completion Time is reasonable, based on the following reasons:

a. The redundant OPERABLE steam supply to the turbine driven AFW pump;

b. The availability of redundant OPERABLE motor driven AFW pumps; and

c. The low probability of an event occurring that requires the inoperable steam supply to the turbine driven AFW pump.

(continued)

INSERT: B 3.7-26-01

The motor driven AFW pump required to be OPERABLE in Mode 4 must be capable of supporting the SG being credited as the redundant decay heat removal path in accordance with LCO 3.4.6, RCS Loops - MODE 4. This requirement ensures the ability to maintain the required level in the SG (and decay heat removal capacity) during extended periods in Mode 4 with or without offsite power. Requiring only one OPERABLE AFW pump is acceptable

BASES

ACTIONS

[A.1 (continued)

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The AND connector between 7 days and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.]

B.1

With one of the required AFW trains (pump or flow path) inoperable in MODE 1, 2, or 3 [for reasons other than Condition A], action must be taken to restore OPERABLE status within 72 hours. This Condition includes the loss of two steam supply lines to the turbine driven AFW pump. The 72 hour Completion Time is reasonable, based on redundant capabilities afforded by the AFW System, time needed for repairs, and the low probability of a DBA occurring during this time period.

The second Completion Time for Required Action B.1 establishes a limit on the maximum time allowed for any combination of Conditions to be inoperable during any continuous failure to meet this LCO.

The 10 day Completion Time provides a limitation time allowed in this specified Condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The AND connector between 72 hours and 10 days dictates that both Completion Times apply simultaneously, and the more restrictive must be met.

C.1 and C.2

When Required Action A.1 [or B.1] cannot be completed within the required Completion Time, or if two AFW trains are

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

inoperable in MODE 1, 2, or 3, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4 within [18] hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

In MODE 4 with two AFW trains inoperable, operation is allowed to continue because only one motor driven pump AFW train is required in accordance with the Note that modifies the LCO. Although not required, the unit may continue to cool down and initiate RHR.

D.1

If all [three] AFW trains are inoperable in MODE 1, 2, or 3, the unit is in a seriously degraded condition with no safety related means for conducting a cooldown, and only limited means for conducting a cooldown with nonsafety related equipment. In such a condition, the unit should not be perturbed by any action, including a power change, that might result in a trip. The seriousness of this condition requires that action be started immediately to restore one AFW train to OPERABLE status.

Required Action D.1 is modified by a Note indicating that all required MODE changes or power reductions are suspended until one AFW train is restored to OPERABLE status. In this case, LCO 3.0.3 is not applicable because it could force the unit into a less safe condition.

E.1

In MODE 4, either the reactor coolant pumps or the RHR loops can be used to provide forced circulation. This is addressed in LCO 3.4.6, "RCS Loops—MODE 4." With one required AFW train inoperable, action must be taken to immediately restore the inoperable train to OPERABLE status. The immediate Completion Time is consistent with LCO 3.4.6.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.5.1

Verifying the correct alignment for manual, power operated, and automatic valves in the AFW System water and steam supply flow paths provides assurance that the proper flow paths will exist for AFW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

Insert: B 3.7-29-01

SR 3.7.5.2

Verifying that each AFW pump's developed head at the flow test point is greater than or equal to the required developed head ensures that AFW pump performance has not degraded during the cycle. Flow and differential head are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref 2). Because it is undesirable to introduce cold AFW into the steam generators while they are operating, this testing is performed on recirculation flow. This test confirms one point on the pump design curve and is indicative of overall performance. Such inservice tests confirm component OPERABILITY, trend performance, and detect incipient failures by indicating abnormal performance. Performance of inservice testing discussed in the ASME Code, Section XI (Ref. 2) (only required at 3 month intervals) satisfies this requirement. ~~The [31] day Frequency on a STAGGERED TEST BASIS results in testing each pump once every 3 months, as required by Reference 2.~~ T.1

This SR is modified by a Note indicating that the SR should be deferred until suitable test conditions are established. This deferral is required because there is insufficient steam pressure to perform the test. when SG pressure is < 600 psig.

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

INSERT: B 3.7-29-01

This SR is modified by a Note that states the SR is not required in MODE 4. Not performing this SR in MODE 4 is acceptable for the following reasons: AFW pumps are typically operated intermittently to keep the SGs filled when in MODE 4, the decay heat load is low; an RHR loop is required to be OPERABLE as the primary method of decay heat removal in Mode 4; and, the SG is required to be maintained at a level that ensures a significant inventory is available as a heat sink before the AFW pump is required to refill the SG. These factors ensure that a significant amount of time would be available to complete any valve realignments needed to refill a SG when in Mode 4.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.5.3

This SR verifies that AFW can be delivered to the appropriate steam generator in the event of any accident or transient that generates an ESFAS, by demonstrating that each automatic valve in the flow path actuates to its correct position on an actual or simulated actuation signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. The [18] month Frequency is acceptable based on operating experience and the design reliability of the equipment. 24

operated as necessary to maintain SG water level.

This SR is modified by a Note that states the SR is not required in MODE 4. In MODE 4, the required AFW train is ~~already aligned and operating~~.

SR 3.7.5.4

This SR verifies that the AFW pumps will start in the event of any accident or transient that generates an ESFAS by demonstrating that each AFW pump starts automatically on an actual or simulated actuation signal in MODES 1, 2, and 3. In MODE 4, the required pump is ~~already operating~~ and the autostart function is not required. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. 24

operated as necessary

allows the test to be performed at rated conditions

This SR is modified by ~~[a]~~ [two] Note[s]. [Note 1 indicates that the SR be deferred until suitable test conditions are established. This deferral ~~is required because there is insufficient steam pressure to perform the test.~~] ~~[The]~~ Note [2] states that the SR is not required in MODE 4. [In MODE 4, the required pump is ~~already operating~~ and the autostart function is not required.] [In MODE 4, the heat removal requirements would be less providing more time for operator action to manually start the required AFW pump.]

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.5.4 (continued)

[Reviewer's Note: Some plants may not routinely use the AFW for heat removal in MODE 4. The second justification is provided for plants that use a startup feedwater pump rather than AFW for startup and shutdown.]

[SR 3.7.5.5

This SR verifies that the AFW is properly aligned by verifying the flow paths from the CST to each steam generator prior to entering MODE 2 after more than 30 days in MODE 5 or 6. OPERABILITY of AFW flow paths must be verified before sufficient core heat is generated that would require the operation of the AFW System during a subsequent shutdown. The Frequency is reasonable, based on engineering judgement and other administrative controls that ensure that flow paths remain OPERABLE. To further ensure AFW System alignment, flow path OPERABILITY is verified following extended outages to determine no misalignment of valves has occurred. This SR ensures that the flow path from the CST to the steam generators is properly aligned. (This SR is not required by those units that use AFW for normal startup and shutdown.)]

REFERENCES

1. FSAR, Section ~~10.4.9~~. 10.2
2. ASME, Boiler and Pressure Vessel Code, Section XI.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.5:
"Auxiliary Feedwater (AFW) System"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-101 (WOG-29) which revises the auxiliary feedwater pump testing frequency to be "In accordance with the Inservice Testing Program." This change will the required Frequency for AFW Pump testing consistent with the ASME Code requirements and consistent with the testing frequencies for other pumps that are important to safety (e.g., safety injection pumps). ASME inservice tests confirm component Operability, trend performance, and detect incipient failures by indicating abnormal performance.

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.5 - Auxiliary Feedwater (AFW) System

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.6: "Condensate Storage Tank (CST)"

PART 1:

Indian Point 3 Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

LCO 3.7.6 The CST shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CST inoperable.	A.1	Verify by administrative means OPERABILITY of backup water supply.	Immediately AND Once per 12 hours thereafter
	AND		
	A.2	Restore CST to OPERABLE.	7 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 4, without reliance on steam generator for heat removal.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.6.1	Verify the CST level is ≥ 360,000 gal.	12 hours

B 3.7 PLANT SYSTEMS

B 3.7.6 Condensate Storage Tank (CST)

BASES

BACKGROUND

The CST provides a safety grade source of water to the steam generators for removing decay and sensible heat from the Reactor Coolant System (RCS). The CST provides a passive flow of water, by gravity, to the Auxiliary Feedwater (AFW) System (LCO 3.7.5). The steam produced is released to the atmosphere by the main steam safety valves or the atmospheric dump valves. The AFW steam driven pump operates with a continuous recirculation to the CST. The motor driven AFW pumps have recirculation controllers that recirculate flow to the CST, as necessary, to maintain a minimum required AFW pump flow.

When the main steam isolation valves are open, the preferred means of heat removal is to discharge steam to the condenser by the nonsafety grade path of the steam bypass (High Pressure Steam Dump) valves. The condensed steam is returned to the CST by the condensate pump. This has the advantage of conserving condensate while minimizing releases to the environment.

Because the CST is a principal component in removing residual heat from the RCS, it is designed to withstand earthquakes and other natural phenomena. The CST is designed to Seismic Class I to ensure availability of the auxiliary feedwater supply. Auxiliary feedwater is also available from city water.

The condensate makeup system connects the 600,000 gallon capacity condensate storage tank to the main condenser. The condensate makeup system automatically supplies makeup water from the CST to the condenser if there is a low level in the condenser hotwell. Redundant, Category I, isolating valves will close the condenser makeup when the condensate storage tank level decreases to 360,000 gallons to reserve the required volume of condensate available to the auxiliary feedwater pumps sufficient to hold the plant at hot shutdown for 24 hours following a trip at full power.

To ensure CST pressure is maintained within its design limits while limiting the amount of air in contact with the condensate,

BASES

BACKGROUND (continued)

two Category I, 100% capacity breather valves are installed on the dome of the CST. CST venting is required for the CST to perform both its normal and emergency function. The venting function can be met by either of the CST breather valves or equivalent venting capacity.

A description of the CST is found in the FSAR, Section 10.2 (Ref. 1).

APPLICABLE SAFETY ANALYSES

The CST provides cooling water to remove decay heat and the minimum amount of water in the condensate storage tank is the amount needed to maintain the plant for 24 hours at hot shutdown following a trip from full power. When the condensate storage tank supply is exhausted, city water will be used.

The CST satisfies Criteria 2 and 3 of 10 CFR 50.36.

LCO

To satisfy accident analysis assumptions, the CST must contain sufficient cooling water to remove decay heat while in MODE 3 for 24 hours following a reactor trip from 102% RTP. In doing this, it must retain sufficient water to ensure adequate net positive suction head for the AFW pumps during cooldown, as well as account for any losses from the steam driven AFW pump turbine. When the condensate storage tank supply is exhausted, city water will be used.

The CST level required is equivalent to a total volume of ≥ 360,000, which is based on holding the unit in MODE 3 for 24 hours. This basis is established in Reference 1. The CST total volume includes allowances for instrument accuracy and the unuseable volume in the CST.

The OPERABILITY of the CST is determined by maintaining the tank level at or above the minimum required level.

BASES

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when steam generator is being relied upon for heat removal, the CST is required to be OPERABLE.

In MODE 5 or 6, the CST is not required because the AFW System is not required.

ACTIONS

A.1 and A.2

If the CST is not OPERABLE, the OPERABILITY of the backup supply (city water) should be verified by administrative means immediately and once every 12 hours thereafter. OPERABILITY of the backup auxiliary feedwater supply means that LCO 3.7.7, City Water, is met. The CST must be restored to OPERABLE status within 7 days. The immediate Completion Time for verification of the OPERABILITY of the backup water supply ensures that Condition B is entered immediately if both the CST and City Water are inoperable. The 7 day Completion Time for restoration of the CST is reasonable, based on an OPERABLE backup water supply being available, and the low probability of an event occurring during this time period requiring the CST.

B.1 and B.2

If the CST cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance on the steam generator for heat removal, within 18 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

If Condition B is entered when both the CST and City Water are not Operable, Conditions and Required Actions for LCO 3.7.5, Auxiliary Feedwater System, may be appropriate.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

This SR verifies that the CST contains the required volume of cooling water. The 12 hour Frequency is based on operating experience and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. Also, the 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal deviations in the CST level.

REFERENCES

1. FSAR, Section 10.2.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.6:
"Condensate Storage Tank (CST)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.4-1	92	92	No TSCRs	No TSCRs for this Page	N/A
3.4-2	92	92	No TSCRs	No TSCRs for this Page	N/A
3.4-3	151	151	No TSCRs	No TSCRs for this Page	N/A
3.4-4	1-18-95	1-18-95	No TSCRs	No TSCRs for this Page	N/A

3.4 STEAM AND POWER CONVERSION SYSTEM

A.2

Applicability

Applies to the operating status of the Steam and Power Conversion System.

Objective

To define conditions of the turbine cycle steam-relieving capacity. Auxiliary Feedwater System operation is necessary to ensure the capability to remove decay heat from the core.

Specification

Mode 1, 2 and 3 and Mode 4 when SG relied upon — M.1

LCO 3.7.6 Applicability

A. The reactor shall not be heated above 350°F unless the following conditions are met:

SEE ITS 3.7.1

(1) A minimum ASME Code approved steam-relieving capability of twenty (20) main steam valves shall be operable (except for testing). With up to three of the five main steam line safety valves per steam generator inoperable, heat-up above 350°F and power operation is permissible provided:

a) Within four hours,

the inoperable valve(s) is restored to operable status.

or

the Power Range Neutron Flux High Trip Setpoint is reduced per Table 3.4-1.

b) Otherwise the reactor shall be in hot shutdown within the next six hours and in cold shutdown within the following 30 hours.

SEE ITS 3.7.5 (2) Three out of three auxiliary feedwater pumps must be operable.

LCO 3.7.6

SR 3.7.6.1 (3) A minimum of 360,000 gallons of water in the condensate storage tank. Verify every 12 hours — M.3

(4) System piping and valves directly associated with the above components operable. — A.4

SEE ITS 3.7.2 (5) The main steam stop valves are operable and capable of closing in five seconds or less.

SEE ITS 3.7.5 (6) Two steam generators capable of performing their heat transfer function.

Add Required Action A.1 — M.2

Add Required Action B.2 — M.1

ITS 3.7.6

A.1

SEE ITS 3.7.7

(7) City water system piping and valves directly associated with providing backup supply to the auxiliary feedwater pumps are operable.

LCO 3.7.6 ~~B.~~ ~~Except as modified by E below,~~ if during power operations any of the conditions ~~of 3.4-A~~ above, ~~except Items (1) and (2)~~ cannot be met within ~~48 hours~~ 7 days, the ~~operator shall start to shutdown and cool the reactor below 350°F using normal operation procedures.~~ Mode 3 in 6 hrs, Mode 4 in 18 hrs

Req. Act A.2

Req. Act B.1, B.2

L.1

A.3

SEE ITS 3.7.5

C. If during power operations, the requirement of 3.4.A.2 is not satisfied, the following actions shall be taken:

1) With one auxiliary feedwater pump inoperable, restore the pump to operable status within 72 hours or be in hot shutdown within the next 12 hours.

2) With two auxiliary feedwater pumps inoperable, be in hot shutdown within 12 hours.

3) With three auxiliary feedwater pumps inoperable, maintain the plant in safe stable mode which minimizes the potential for a reactor trip and, immediately initiate corrective action to restore at least one auxiliary feedwater pump to operable status as soon as possible.

SEE RELOCTED CTS

D. The gross turbine-generator electrical output at all times shall be within the limitation of Figure 3.4-1 or Figure 3.4-2 for the application conditions of turbine overspeed setpoint, number of operable low pressure steam dump lines, and condenser back pressure as noted thereon.

SEE ITS 3.7.5

E. The reactor shall not be heated above 350°F unless both valves in the single auxiliary feedwater supply line from the Condensate Storage Tank are open. If, during power operations, it is discovered that one or both of the valves are closed, the following action shall be taken:

1) Immediately place the auxiliary feedwater system in the manual mode,

2) Within one hour either:

a) reopen the closed valve(s),

or

b) open the valves to the alternate city water supply,

and

3) Once a water supply has been restored, return the system to the automatic mode.

SEE ITS 3.7.5

If the above action cannot be taken, then:

a) maintain the plant in a safe stable mode which minimizes the potential for a reactor trip,

and

b) continue efforts to restore water supply to the auxiliary feedwater system,

and

c) notify the NRC within 24 hours regarding planned corrective action.

Basis

A reactor shutdown from power requires removal of core decay heat. Immediate decay heat removal requirements are normally satisfied by the steam bypass to the condensers. Thereafter, core decay heat can be continuously dissipated via the steam bypass to the condenser as feedwater in the steam generator is converted to steam by heat absorption. Normally, the capability to feed the steam generators is provided by operation of the turbine cycle feedwater system.

The twenty main steam safety valves have a total combined rated capability of 15,108,000 lbs/hr. The total full power steam flow is 12,974,500 lbs/hr.; therefore twenty (20) main steam safety valves will be able to relieve the total steam flow if necessary. The total relieving capacity of the twenty main steam line safety valves is 116% of the total secondary steam flow at 100% rated power (3025 Mwt). The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The operability of the twenty main steam line safety valves ensure that the secondary system pressure will be limited to within 110% of the design pressure of 1085 psig during the most severe anticipated system operational transient.

A.1

Startup and/or power operation with inoperable main steam line safety valves is allowable within the limitation of Table 3.4-1. Operation with up to three of the five main steam line safety valves per steam generator inoperable is permissible if the maximum allowed power level is below the heat removing capability of the operable MSSVs. This is accomplished by restricting the reactor power level such that the heat input from the primary side will not exceed the heat removing capability of the operable MSSVs of the most limiting steam generator. The reduction in reactor power level is achieved by reducing the power range neutron flux high setpoint. The reactor trip setpoint reductions are derived on the following basis:

$$Hi\phi = (100 / Q) [(w_s h_{fg} N) / K]$$

A.1

Where:

Hiϕ - Safety Analysis power range high neutron flux setpoint, percent.

Q - Nominal NSSS power rating of the plant (including reactor coolant pump heat) in Mwt (3037 Mwt).

K - Conversion factor, 947.82 $\frac{(Btu/sec)}{Mwt}$

w_s - Minimum total steam flow rate capability of the operable MSSVs on any one steam generator at the highest MSSV opening pressure, including tolerance and accumulation, as appropriate, in lb/sec. (w_s = 150 + 228.61 * (4 - V) lb/sec, where V = Number of inoperable safety valves in the steam line of the most limiting steam generator).

h_{fg} - Heat of vaporization for steam at the highest MSSV opening pressure including tolerance and accumulation, as appropriate, Btu/lbm (608.5 Btu/lbm).

N - Number of loops in plant (4).

In the unlikely event of complete loss of electrical power to the station, decay heat removal would continue to be assured by the availability of either the steam-driven auxiliary feedwater pump or one of the two motor-driven auxiliary steam generator feedwater pumps and steam discharge to the atmosphere via the main steam safety valves and atmospheric relief valves. One motor-driven auxiliary feedwater pump can supply sufficient feedwater for removal of decay heat from the plant. The minimum amount of water in the condensate storage tank is the amount needed for 24 hours at hot shutdown. When the condensate storage supply is exhausted, city water will be used.

The system piping and valves that are governed by Specification 3.4.A.(4) include the two (2) QA Category I, 100% cpacity breather valves installed on the dome of the Condensate Storage Tank (CST). The purpose of these valves is to ensure the CST pressure is within its design limits by providing both pressure relieving and vacuum break capability. Per Specification 3.4.B, if one (1) breather valve is inoperable, it must be returned to operability within 48 hours or the reactor must be shutdown and cooled to below 350°F using normal operating procedures.

Two steam generators capable of performing their heat transfer function will provide sufficient heat removal capability to remove core decay heat after a reactor shutdown.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.6:
"Condensate Storage Tank (CST)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.6 - Condensate Storage Tank (CST)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.4.B requires the operator to shutdown and cool the reactor below 350°F (i.e., Mode 4) using normal operation procedures if requirements for Operability of the Condensate Storage Tank cannot be met within the specified Completion Time. Under the same conditions, ITS 3.7.6, Required Action B.1 and B.2, require that the plant be in Mode 3 in 6 hours and Mode 4 in 18 hours (see 3.7.6, DOC M.1 for expanded

Applicability that includes reliance on SG for heat removal). The ITS Completion Time to reach Mode 3 within 6 hours is consistent with other ITS Completion Times and is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. The Completion Time of 18 hours to reach Mode 4 is not consistent with other ITS Completion Times in that additional time is provided in recognition that this cooldown may be conducted when the Auxiliary Feedwater function is degraded by the unavailability of the condensate storage tank and/or city water. The addition of specific Completion Times for shutdown and cooldown when CST or CW are not Operable is an administrative change with no impact on safety because the ITS Completion Times are consistent with a reasonable interpretation of the existing CTS 3.4.B requirements.

A.4 CTS 3.4.A.4 establishes requirements for Operability of system piping and valves directly associated with the Condensate Storage Tank. Valve lineups and verification of the Operability of active components associated with the CST and the flow path to the AFW pump suctions are verified as part of ITS LCO 3.7.5, Auxiliary Feedwater System. CTS 3.4.A.4 is deleted because it is a generic statement that does not provide any information or requirements specific to the CST. This is an administrative change with no impact on safety.

MORE RESTRICTIVE

M.1 CTS 3.4.A.3 requires that the Condensate Storage Tank (CST) is Operable as the primary water supply for the Auxiliary Feedwater System (AFW). City Water is the backup source of water to AFW system. CTS 3.4.A establishes the Applicability for CST Operability as whenever the reactor is heated above 350°F (i.e., Modes 1, 2 and 3). ITS LCO 3.7.6 maintains the requirement for Operability of the CST with an Applicability of Modes 1, 2 and 3; however, ITS LCO 3.7.6 expands the Applicability to include Mode 4 when a steam generator is relied upon for heat removal.

This change is needed because CST and CW Operability are both required to support Auxiliary Feedwater System Operability; and, Applicability of ITS 3.7.5, Auxiliary Feedwater System, is expanded to include Mode 4 when a steam generator is relied upon for heat removal (see 3.7.5, DOC M.1). Therefore, the Applicability of ITS 3.7.6, Condensate Storage Tank, and ITS 3.7.7, City Water, must be expanded to include Mode 4 when a steam generator is relied upon for heat removal. The reasons and justification for the expanded Applicability of ITS 3.7.5 are addressed in ITS 3.7.5, Auxiliary Feedwater System, (see 3.7.5, DOC M.1).

In conjunction with this change, CTS 3.4.B requirements to shutdown and cool the reactor below 350°F (i.e., Mode 4) using normal operation procedures if requirements for Operability of City Water cannot be met is expanded in ITS 3.7.6, Required Action B.2, to require that the plant be placed in Mode 4, without reliance on steam generator for heat removal.

These changes are acceptable because operation of AFW in Mode 4 to feed a SG is consistent with operation of the AFW system as described in the FSAR. Therefore, operation and/or Operability of the supporting water supplies in the CST and CW are also consistent with operation of the AFW system as described in the FSAR. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability in Mode 4 is maintained. Therefore, this change has no adverse impact on safety.

M.2 CTS 3.4.A.3 and CTS 3.4.A.7 require that the Condensate Storage Tank and City Water are Operable in Modes 1, 2 and 3 (see 3.7.7, DOC M.1). When either the CST or CW or both are not Operable, CTS 3.4.B allows 48 hours (see 3.7.7, DOC L.1) to restore both water supplies to Operable before a plant shutdown is required (see exception identified and explained below). Under the same conditions, ITS 3.7.6, Condensate Storage Tank, and ITS, 3.7.7, City Water, will not allow both the CST and CW to be inoperable at the same time. ITS 3.7.6, Required Action A.1, and ITS, 3.7.7, Required Action A.1, prevent and enforce this prohibition of simultaneous inoperability of both CST and CW by requiring immediate verification of the Operability of the alternate source (either CST or CW) and once per 12 hours thereafter if either the CST or CW are not

Operable. This change is needed to ensure AFW Operability by ensuring that either CST or CW is capable of supporting the AFW system. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability is maintained. Therefore, this change has no adverse impact on safety.

CTS 3.4.E provides Actions for a specific situation where neither the CST nor CW is (or can be) aligned to the AFW suction header. Although this condition appears to be simultaneous inoperability of both CST and CW, CTS 3.4.E appropriately specifies actions for 3 inoperable AFW pumps. Under the same conditions, ITS 3.7.5 surveillance requirements for AFW valve lineups would not be met for all three AFW pumps; therefore, ITS would also require the actions for 3 inoperable AFW pumps. Under the same conditions, surveillance requirements for ITS 3.7.6 and ITS 3.7.7 could, in many instances, be met and would not require that water sources be declared inoperable. Therefore, CTS 3.4.E is addressed with ITS 3.7.5, Auxiliary Feedwater System.

M.3 Neither CTS 3.4 nor CTS 4.8 establish any requirements for the verification of the Operability of the Condensate Storage Tank (CST) other than an implied requirement in CTS 3.4.A.3 to periodically verify the CST volume. ITS SR 3.7.6.1 is added to require verification every 12 hours that the CST contains a reserve of condensate for the auxiliary feedwater pumps sufficient to hold the plant at hot shutdown for 24 hours following a trip at full power. This change is acceptable because CST level verification is a passive indication of CST availability that is not currently required. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability is maintained. Therefore, this change has no adverse impact on safety.

<u>LESS RESTRICTIVE</u>

L.1 CTS 3.4.A.3 and CTS 3.4.A.7 require that the Condensate Storage Tank and City Water are Operable in Modes 1, 2 and 3 (see 3.7.7, DOC M.1). When either the CST or CW or both are not Operable, CTS 3.4.B allows 48 hours to restore both water supplies to Operable before a plant shutdown is required. Under the same conditions, ITS 3.7.6, Condensate Storage Tank, and ITS, 3.7.7, City Water, will not allow both the CST and CW to be inoperable at the same time (see 3.3.7, DOC M.2): however, ITS 3.7.6, Required Action A.2, and ITS, 3.7.7, Required Action A.2, are, in part, less restrictive because the ITS extends the time that either the CST or CW (but not both) can be inoperable from 48 hours to 7 days.

Extending the allowable out of service time for an inoperable CST or CW supply (but not both) from 48 hours to 7 days is acceptable because either source of water is capable of meeting the minimum assumptions of the accident analysis although the CST with a safety grade source of water is the preferred source for feeding the SGs. The 7 day Completion Time for restoration of both the CST and CW recognizes that the CST is the preferred source of water to the SGs and should be restored promptly, the desirability of maintaining city water as a backup source to the CST, and the low probability of an event occurring during this time period requiring the AFW and the associated water supply. This change has no significant adverse impact on safety because, in conjunction with this change, ITS eliminates the CTS 3.4.B Actions that allow CST and CW to be inoperable simultaneously for up to 48 hours.

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.6:
"Condensate Storage Tank (CST)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.6 - Condensate Storage Tank (CST)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards considerations are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change extends the time that either the Condensate Storage Tank (CST) or City Water (CW) (but not both) can be inoperable from 48 hours to 7 days. The Condensate Storage Tank (CST) and City Water (CW) are the primary and backup source of water for the Auxiliary Feedwater System. This change will not result in a significant increase in the probability of an accident previously evaluated because the status of neither the CST nor CW has any affects on the initiators of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because the CST is maintained with a volume of water sufficient to hold the plant at hot shutdown for a minimum of 24 hours and CW is capable of providing sufficient water decay heat removal indefinitely. If an accident occurs when CW is not available and cannot be restored within 24 hours, the 24 hour supply of water in the CST provides sufficient time to either complete a plant cooldown (and establish RHR as the primary decay heat removal mechanism) or establish an alternate supply of water to the AFW suction. This change has no effect on safety because, in conjunction with this change, ITS eliminates the CTS 3.4.B Actions that allow CST and CW to be inoperable simultaneously for up to 48 hours.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

This change does not involve a significant reduction in a margin of safety because the CST is maintained with a volume of water sufficient to hold the plant at hot shutdown for a minimum of 24 hours and CW is capable of providing sufficient water indefinitely. If an accident occurs when CW is not available and cannot be restored within 24 hours, the 24 hour supply of water in the CST provides sufficient time to either complete a plant cooldown (and establish RHR as the primary decay heat removal mechanism) or establish an alternate supply of water to the AFW suction. This change has no significant adverse impact on safety because, in conjunction with this change, ITS eliminates the CTS 3.4.B Actions that allow CST and CW to be inoperable simultaneously for up to 48 hours.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.6:
"Condensate Storage Tank (CST)"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.6

This ITS Specification is based on NUREG-1431 Specification No. **3.7.6**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
CEOG-052 R1	**140 R1**	CORRECT CONDENSATE STORAGE TANK LCO AND CRITERIA	Approved by NRC	Incorporated	**T.1**
CEOG-079	**174 R0**	ADD BASES FOR LCO 3.7.6, ACTIONS A.1 AND A.2	Approved by NRC	Incorporated	**T.2**
WOG-030	**029 RO**	REMOVE MODE 4 WHEN S/GS ARE RELIED UPON FROM THE MODES OF APPLICABILITY NRC REJECTS: TSTF ACCEPTS	Rejected by NRC	Not Incorporated	**N/A**

3.7 PLANT SYSTEMS

3.7.6 Condensate Storage Tank (CST)

<3.4.A.3> <3.4.A.4> <Doc A.4>

LCO 3.7.6 The CST ~~level~~ shall be ~~≥ [110,000 gal]~~ OPERABLE. (T.1)

<3.4.A> <Doc M.1>

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
<Doc M.2>	A. CST ~~level not within limit~~ inoperable.	A.1	Verify by administrative means OPERABILITY of backup water supply.	~~4 hours~~ Immediately AND Once per 12 hours thereafter	(T.1) (DB.2)
		AND			
<3.4.B> <Doc L.1>		A.2	Restore CST ~~level~~ to ~~within limit~~ OPERABLE	7 days	(T.1)
<3.4.B> <Doc A.3>	B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours	
		AND			
<3.4.B> <Doc A.3> <Doc M.1>		B.2	Be in MODE 4, without reliance on steam generator for heat removal.	~~[~~18~~]~~ hours	

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
⟨3.4.A.3⟩ ⟨DOC M.3⟩	SR 3.7.6.1 Verify the CST level is ≥ ~~[110,000 gal]~~ {360,000 gal}.	12 hours

B 3.7 PLANT SYSTEMS

B 3.7.6 Condensate Storage Tank (CST)

BASES

BACKGROUND

The CST provides a safety grade source of water to the steam generators for removing decay and sensible heat from the Reactor Coolant System (RCS). The CST provides a passive flow of water, by gravity, to the Auxiliary Feedwater (AFW) System (LCO 3.7.5). The steam produced is released to the atmosphere by the main steam safety valves or the atmospheric dump valves. The AFW pumps operate with a continuous recirculation to the CST.

steam driven

Insert: B 3.7-32-01

A

When the main steam isolation valves are open, the preferred means of heat removal is to discharge steam to the condenser by the nonsafety grade path of the steam bypass valves. The condensed steam is returned to the CST by the condensate ~~transfer~~ pump. This has the advantage of conserving condensate while minimizing releases to the environment.

(High Pressure Steam Dump)

Because the CST is a principal component in removing residual heat from the RCS, it is designed to withstand earthquakes and other natural phenomena ~~including missiles that might be generated by natural phenomena~~. The CST is designed to Seismic ~~Category~~ I to ensure availability of the feedwater supply. Feedwater is also available from alternate sources.

city water

auxiliary

Insert: B3.7-32-02

Class

A description of the CST is found in the FSAR, Section ~~9.2.6~~ (Ref. 1).

10.2

APPLICABLE SAFETY ANALYSES

The CST provides cooling water to remove decay heat ~~and to cool down the unit~~ ~~following all events in the accident analysis as discussed in the FSAR, Chapters [6] and [15] (Refs. 2 and 3, respectively). For anticipated operational occurrences and accidents that do not affect the OPERABILITY of the steam generators, the analysis assumption is generally 30 minutes at MODE 3, steaming through the MSSVs, followed by a cooldown to residual heat removal (RHR) entry conditions at the design cooldown rate.~~

Insert: B 3.7-32-03

~~The limiting event for the condensate volume is the large feedwater line break coincident with a loss of offsite~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.6 - Condensate Storage Tank (CST)

INSERT: B 3.7-32-01

The motor driven AFW pumps have recirculation controllers that recirculate flow to the CST, as necessary, to maintain a minimum required AFW pump flow.

INSERT: B 3.7-32-02

The condensate makeup system connects the 600,000 gallon capacity condensate storage tank to the main condenser. The condensate makeup system automatically supplies makeup water from the CST to the condenser if there is a low level in the condenser hotwell. Redundant, Category I, isolating valves will close the condenser makeup when the condensate storage tank level decreases to 360,000 gallons to reserve the required volume of condensate available to the auxiliary feedwater pumps sufficient to hold the plant at hot shutdown for 24 hours following a trip at full power.

To ensure CST pressure is maintained within its design limits while limiting the amount of air in contact with the condensate, two Category I, 100% capacity breather valves are installed on the dome of the CST. CST venting is required for the CST to perform both is normal and emergency function. The venting function can be met by either of the CST breather valves or equivalent venting capacity.

INSERT: B 3.7-32-03

and the minimum amount of water in the condensate storage tank is the amount needed to maintain the plant for 24 hours at hot shutdown following a trip from full power. When the condensate storage tank supply is exhausted, city water will be used.

BASES

APPLICABLE SAFETY ANALYSES (continued)

power. Single failures that also affect this event include the following:

a. Failure of the diesel generator powering the motor driven AFW pump to the unaffected steam generator (requiring additional steam to drive the remaining AFW pump turbine); and

b. Failure of the steam driven AFW pump (requiring a longer time for cooldown using only one motor driven AFW pump).

These are not usually the limiting failures in terms of consequences for these events.

A nonlimiting event considered in CST inventory determinations is a break in either the main feedwater or AFW line near where the two join. This break has the potential for dumping condensate until terminated by operator action, since the Emergency Feedwater Actuation System would not detect a difference in pressure between the steam generators for this break location. This loss of condensate inventory is partially compensated for by the retention of steam generator inventory.

Criteria 2 and 3

10 CFR 50.36

The CST satisfies ~~Criterion 3~~ of ~~the NRC Policy Statement~~. T.1

LCO

while in Mode 3

To satisfy accident analysis assumptions, the CST must contain sufficient cooling water to remove decay heat for ~~[30 minutes]~~ following a reactor trip from 102% RTP, ~~and then to cool down the RCS to RHR entry conditions, assuming a coincident loss of offsite power and the most adverse single failure.~~ In doing this, it must retain sufficient water to ensure adequate net positive suction head for the AFW pumps during cooldown, as well as account for any losses from the steam driven AFW pump turbine, ~~or before isolating AFW to a broken line~~.

24 hours

Insert: B3.7-33-01

Total

360,000

The CST level required is equivalent to a ~~usable~~ volume of ≥ ~~[110,000 gallons]~~, which is based on holding the unit in MODE 3 for ~~[2]~~ hours, ~~followed by a cooldown to RHR entry conditions at [75]°F/hour~~. This basis is established in Reference ~~4~~ 1 ~~and exceeds the volume required by the accident analysis~~.

24

Insert: B3.7-33-02

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.6 - Condensate Storage Tank (CST)

INSERT: B 3.7-33-01

When the condensate storage tank supply is exhausted, city water will be used.

INSERT: B 3.7-33-02

The CST total volume includes allowances for instrument accuracy and the unuseable volume in the CST.

BASES

LCO (continued)

The OPERABILITY of the CST is determined by maintaining the tank level at or above the minimum required level.

APPLICABILITY

In MODES 1, 2, and 3, and in MODE 4, when steam generator is being relied upon for heat removal, the CST is required to be OPERABLE.

In MODE 5 or 6, the CST is not required because the AFW System is not required.

ACTIONS

A.1 and A.2

OPERABLE auxiliary T.1

If the CST level is not within limits, the OPERABILITY of the backup supply should be verified by administrative means ~~within 4 hours~~ and once every 12 hours thereafter. OPERABILITY of the backup feedwater supply ~~must include verification that the flow paths from the backup water supply to the AFW pumps are OPERABLE, and that the backup supply has the required volume of water available.~~ The CST must be restored to OPERABLE status within 7 days, ~~because the backup supply may be performing this function in addition to its normal functions. The 4 hour Completion Time is reasonable, based on operating experience, to verify the OPERABILITY of the backup water supply.~~ The 7 day Completion Time is reasonable, based on an OPERABLE backup water supply being available, and the low probability of an event occurring during this time period requiring the CST.

(City water)

immediately

Insert: B3.7-34-01

DB.1

Insert: B3.7-34-02

for restoration of the CST

B.1 and B.2

If the CST cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance on the steam generator for heat removal, within ~~[~~18~~]~~ hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

Insert: B 3.7-34-03

(continued)

INSERT: B 3.7-34-01

means that LCO 3.7.7, City Water, is met.

INSERT: B 3.7-34-02

T.2

The immediate Completion Time for verification of the OPERABILITY of the backup water supply ensures that Condition B is entered immediately if both the CST and City Water are inoperable.

INSERT: B 3.7-34-03

If Condition B is entered when both the CST and city Water are not Operable, Conditions and Required Actions for LCO 3.7.5, Auxiliary Feedwater System, may be appropriate.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.6.1

This SR verifies that the CST contains the required volume of cooling water. ~~(The required CST volume may be single value or a function of RCS conditions.)~~ The 12 hour Frequency is based on operating experience and the need for operator awareness of unit evolutions that may affect the CST inventory between checks. Also, the 12 hour Frequency is considered adequate in view of other indications in the control room, including alarms, to alert the operator to abnormal deviations in the CST level.

REFERENCES

1. FSAR, Section ~~[9.2.6]~~. 10.2

~~2. FSAR, Chapter [6].~~

~~3. FSAR, Chapter [15].~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.6 - Condensate Storage Tank (CST)

INSERT: B 3.7-35-01

2. IP3 Technical Requirements Manual.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.6: "Condensate Storage Tank (CST)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.6 - Condensate Storage Tank (CST)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DB.2 IP3 LCO 3.7.6, Required Action A.1 and the supporting Bases, differs from NUREG-1431, Rev 1, in that IP3 will require immediate (versus 4 hours allowed in NUREG 1431) verification of the Operability of the alternate water source if either the CST or CW are not Operable. This change is needed and is acceptable because IP3 has an LCO that governs Operability of the backup water source. Specifically, IP3 LCO 3.7.7, City Water, ensures the Operability of the backup water source whenever the CST is required to be Operable. Therefore, the immediate Completion Time for verification of the Operability of the backup water supply ensures that Condition B is entered immediately if neither the CST nor City Water is OPERABLE.

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.6 - Condensate Storage Tank (CST)

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-140 (CEOG-52) which revises LCO 3.7.6, "Condensate Storage Tank" from requiring a specific CST volume to requiring that the CST be operable. The 10 CFR 50.36.(c).(2).(ii) criteria are also corrected to be consistent with the LCO. This change is needed because LCO 3.7.6 requires that "The CST level shall be >= ([110,000) gal." This presentation is inconsistent with other ITS LCOs in that it does not address Operability. The LCO is revised to state, "The CST shall be OPERABLE." The details of what constitutes Operability are given in the Bases. The requirement to maintain and periodically verify CST level remains in SR 3.7.6.1 and continues to be an Operability requirement in accordance with SR 3.0.1. Action A is revised from "CST level not within limit" to "CST inoperable". This presentation is consistent with similar Specifications. The Applicable Safety Analysis section states that CST volume meets Criterion 3 (mitigation), when it also meets Criterion 2 (process variable assumed as an initial condition). This has also been corrected. These changes make the Specifications consistent with the ITS rules and presentation without making any change to the existing requirements.

T.2 This change incorporates Generic Change TSTF-174 (CEOG-79) which revises the Bases for 3.7.6 Actions A.1 and A.2 to describe the frequency for performing the backup water supply verification. This description was added to bring the Bases in compliance with the NUREG format.

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.7:
"City Water"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.7 City Water (CW)

LCO 3.7.7 CW shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. CW inoperable.	A.1	Verify by administrative means OPERABILITY of Condensate Storage Tank.	Immediately AND Once per 12 hours thereafter
	AND		
	A.2	Restore CW to OPERABLE.	7 days
B. Required Action and associated Completion Time not met.	B.1	Be in MODE 3.	6 hours
	AND		
	B.2	Be in MODE 4, without reliance on steam generators for heat removal.	18 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.7.1	Verify the CW header pressure is ≥ 30 psig.	12 hours
SR 3.7.7.2	Verify the Unit 3 City Water Header Supply Isolation Valve is open.	31 days
SR 3.7.7.3	Perform testing required by Inservice Testing Program for each valve needed to align CW to each AFW pump suction.	In accordance with the Inservice Testing Program

B 3.7 PLANT SYSTEMS

B 3.7.7 City Water (CW)

BASES

BACKGROUND

City Water is the backup to the Condensate Storage Tank (CST) as a water supply for the Auxiliary Feedwater System. The CST, the preferred source of water for the Steam Generators (SGs), is capable of holding up to 600,000 gallons and is sized to meet the normal operating and maintenance needs of the main steam system. LCO 3.7.6, Condensate Storage Tank, requires that a minimum water level is maintained in the CST that is sufficient to remove residual heat for 24 hours at hot shutdown conditions following a trip from full power. Only when the CST supply is exhausted, will city water be used to supply the Auxiliary Feedwater System.

When the main steam isolation valves are open, the preferred means of heat removal from the RCS is to discharge steam to the condenser via the non-safety grade turbine steam bypass valves (High Pressure Steam Dump) with water supplied from the CST to the SGs using the AFW System. The condensed steam is returned to the CST by the condensate pump. This configuration conserves condensate and minimizes releases to the environment. The CST is the preferred source of water for the SGs.

When the CST supply is exhausted, city water is used to supply the Auxiliary Feedwater System for decay heat removal and plant cooldown. CW, although aligned to the IP3 site, is normally isolated from the AFW pump suctions.

The City Water System includes the site city water header consisting of the 1.5 million gallon city water storage tank and the connection to the offsite water supply. A description of the CW system is found in FSAR, Section 10 (Ref. 1).

APPLICABLE SAFETY ANALYSES

CW can be used to provide cooling water to remove decay heat and to cool down the unit following all events in the accident analysis as discussed in the FSAR, Chapters 6 and 14 (Refs. 2

BASES

APPLICABLE SAFETY ANALYSES (continued)

and 3, respectively); however, CW is used only when the CST is not available or depleted.

CW satisfies Criterion 3 of 10 CFR 50.36.

LCO

This LCO requires that the CW supply header is aligned to the AFW pump suction headers except for the onsite isolation valves, which are normally closed. The City Water Storage Tank is not required to contain a specific volume of water; however, the static head on CW supply from the CW storage tank is used to indicate that the CW supply header and CW System are aligned to the IP3 site and available for use.

The OPERABILITY of the CW is determined by maintaining the supply header pressure at or above the minimum required pressure and periodic verification that the required lineups can be established.

APPLICABILITY

City Water is required to be OPERABLE in MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal. In MODE 5 or 6, CW is not required because the SGs are not normally used to remove decay heat when in these MODES.

ACTIONS

A.1 and A.2

If the CW header pressure is not within limits or system lineups are not as required, CW cannot be assumed to be available if needed as a backup water source for the CST. With CW not available, OPERABILITY of the CST must be verified by administrative means immediately and once every 12 hours thereafter. Operability of the CST means that LCO 3.7.6, Condensate Storage Tank, is met. The immediate Completion Time for verification of the OPERABILITY of the CST ensures that Condition B is entered immediately if both the CST and City Water

BASES

ACTIONS

A.1 and A.2 (continued)

are inoperable. This ensures that either the CST or CW is available for decay heat removal and to support a plant cooldown.

CW must be restored to OPERABLE status within 7 days because CW is assumed to be available to supply the Auxiliary Feedwater System when the CST supply is exhausted. The 7 day Completion Time for restoration of CW is acceptable because the CST is OPERABLE and the low probability of an event requiring CW during the 7 day Completion Time.

B.1 and B.2

If CW cannot be restored to OPERABLE within the Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance on the steam generator for heat removal, within 18 hours. The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

If Condition B is entered when both the CST and City Water are not Operable, Conditions and Required Actions for LCO 3.7.5, Auxiliary Feedwater System, may be appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

This SR verifies that CW header pressure is greater than 30 psig which provides a high degree of assurance that the offsite CW supply is available to the site and properly aligned. Operating experience has demonstrated that CW header pressure decays rapidly due to normal onsite consumption if the offsite supply is not properly aligned or pressurized. The 12 hour Frequency provides a high degree of assurance of rapid identification of the inoperability of CW.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.7.2

This SR verifies that the valve that isolates Unit 3 from the site city water supply and the city water storage tank is open. This isolation valve, CT-49, in the IP1 Utility Tunnel, is also identified as valve FP-1227. This SR may be performed by Consolidated Edison personnel. The 31 day Frequency is acceptable because the valve is sealed open and because periodic verification provided by SR 3.7.7.1 provides a high degree of assurance that the valve is positioned properly.

SR 3.7.7.3

This SR verifies the ability to cycle each valve between CW and the AFW pump suction. These are the only valves required to operate to align CW to the AFW pump suction. The testing requirements and Frequency for this SR are in accordance with the Inservice Testing Program.

REFERENCES

1. FSAR, Chapter 10.
2. FSAR, Chapter 6.
3. FSAR, Chapter 14.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.7:
"City Water"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.4-1	92	92	No TSCRs	No TSCRs for this Page	N/A
3.4-2	92	92	No TSCRs	No TSCRs for this Page	N/A
4.8-1	178 TSCR 98-043	178 TSCR 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated
4.8-2	0	0	No TSCRs	No TSCRs for this Page	N/A

A.1

3.4 STEAM AND POWER CONVERSION SYSTEM

A.2

~~Applicability~~

~~Applies to the operating status of the Steam and Power Conversion System.~~

~~Objective~~

~~To define conditions of the turbine cycle steam-relieving capacity. Auxiliary Feedwater System operation is necessary to ensure the capability to remove decay heat from the core.~~

~~Specification~~

M.1

Mode 1, 2 & 3 and Mode 4 when SG relied upon for heat removal

LCO 3.7.7 Applicability

A. The reactor shall not be heated above 350°F unless the following conditions are met:

SEE 3.7.1

~~(1)~~ A minimum ASME Code approved steam-relieving capability of twenty (20) main steam valves shall be operable (except for testing). With up to three of the five main steam line safety valves per steam generator inoperable, heat-up above 350°F and power operation is permissible provided:

~~a)~~ Within four hours,

the inoperable valve(s) is restored to operable status.

or

the Power Range Neutron Flux High Trip Setpoint is reduced per Table 3.4-1.

~~b)~~ Otherwise the reactor shall be in hot shutdown within the next six hours and in cold shutdown within the following 30 hours.

SEE 3.7.5 ~~(2)~~ Three out of three auxiliary feedwater pumps must be operable.

SEE 3.7.6 ~~(3)~~ A minimum of 360,000 gallons of water in the condensate storage tank.

SEE 3.7.1, 3.7.5, 3.7.6 ~~(4)~~ System piping and valves directly associated with the above components operable.

SEE 3.7.2 ~~(5)~~ The main steam stop valves are operable and capable of closing in five seconds or less.

SEE 3.7.5 ~~(6)~~ Two steam generators capable of performing their heat transfer function.

 A.1

Add Reg Act A.1 — M.2

Add Reg Act B.2 — M.1

LCO 3.7.7 ~~(7)~~ ~~City water system piping and valves directly associated with providing backup supply to the auxiliary feedwater pumps are~~ operable. — A.1

7 days — L.1

Reg Act A.2
Reg Act B.1

~~B.~~ ~~Except as modified by E. below,~~ if during power operations any of the conditions ~~of 3.4-A above, except Items (1) and (2)~~ cannot be met within 48 hours, the operator shall start to shutdown and cool the reactor below ~~350°F using normal operation procedures~~ ← Mode 3 in 6, Mode 4 in 18 — A.3

C. If during power operations, the requirement of 3.4.A.2 is not satisfied, the following actions shall be taken:

SEE ITS 3.7.5

1) With one auxiliary feedwater pump inoperable, restore the pump to operable status within 72 hours or be in hot shutdown within the next 12 hours.

2) With two auxiliary feedwater pumps inoperable, be in hot shutdown within 12 hours.

3) With three auxiliary feedwater pumps inoperable, maintain the plant in safe stable mode which minimizes the potential for a reactor trip and, immediately initiate corrective action to restore at least one auxiliary feedwater pump to operable status as soon as possible.

SEE RELOCATED CTS

D. The gross turbine-generator electrical output at all times shall be within the limitation of Figure 3.4-1 or Figure 3.4-2 for the application conditions of turbine overspeed setpoint, number of operable low pressure steam dump lines, and condenser back pressure as noted thereon.

E. The reactor shall not be heated above 350°F unless both valves in the single auxiliary feedwater supply line from the Condensate Storage Tank are open. If, during power operations, it is discovered that one or both of the valves are closed, the following action shall be taken:

SEE ITS 3.75

1) Immediately place the auxiliary feedwater system in the manual mode,

2) Within one hour either:

a) reopen the closed valve(s),

or

b) open the valves to the alternate city water supply,

and

3) Once a water supply has been restored, return the system to the automatic mode.

SEE
ITS 3.7.5

If the above action cannot be taken, then:

a) maintain the plant in a safe stable mode which minimizes the potential for a reactor trip,

and

b) continue efforts to restore water supply to the auxiliary feedwater system,

and

c) notify the NRC within 24 hours regarding planned corrective action.

Basis

A reactor shutdown from power requires removal of core decay heat. Immediate decay heat removal requirements are normally satisfied by the steam bypass to the condensers. Thereafter, core decay heat can be continuously dissipated via the steam bypass to the condenser as feedwater in the steam generator is converted to steam by heat absorption. Normally, the capability to feed the steam generators is provided by operation of the turbine cycle feedwater system.

The twenty main steam safety valves have a total combined rated capability of 15,108,000 lbs/hr. The total full power steam flow is 12,974,500 lbs/hr.; therefore twenty (20) main steam safety valves will be able to relieve the total steam flow if necessary. The total relieving capacity of the twenty main steam line safety valves is 116% of the total secondary steam flow at 100% rated power (3025 Mwt). The specified valve lift settings and relieving capacities are in accordance with the requirements of Section III of the ASME Boiler and Pressure Code, 1971 Edition. The operability of the twenty main steam line safety valves ensure that the secondary system pressure will be limited to within 110% of the design pressure of 1085 psig during the most severe anticipated system operational transient.

Startup and/or power operation with inoperable main steam line safety valves is allowable within the limitation of Table 3.4-1. Operation with up to three of the five main steam line safety valves per steam generator inoperable is permissible if the maximum allowed power level is below the heat removing capability of the operable MSSVs. This is accomplished by restricting the reactor power level such that the heat input from the primary side will not exceed the heat removing capability of the operable MSSVs of the most limiting steam generator. The reduction in reactor power level is achieved by reducing the power range neutron flux high setpoint. The reactor trip setpoint reductions are derived on the following basis:

$$Hi\phi = (100 / Q) [(w_s h_{fg} N) / K]$$

A.1

4.8 AUXILIARY FEEDWATER SYSTEM

~~Applicability~~

~~Applies to periodic testing requirements of the Auxiliary Feedwater System.~~

~~Objective~~

~~To verify the operability of the Auxiliary Feedwater System and its ability to respond properly when required.~~

~~Specification~~

A.2

SEE ITS 3.7.5

1. a. Each auxiliary feedwater pump will be started manually from the control room at monthly intervals on a staggered test basis (i.e., one pump per month, so that each pump is tested once during a 3 month period) with full flow established to the steam generators at least once per 24 months.

b. The auxiliary feedwater pumps discharge valves will be tested by operator action at intervals not greater than six months.

c. Backup supply valves from the city water system will be ~~tested~~ IAW IST Program ~~at least once per 24 months~~. ~~[See Note A, below]~~ LA.1

SEE ITS 3.7.5

2. Acceptance levels of performance shall be that the pumps start, reach their required developed head and operate for at least fifteen minutes.

3. At least once per 24 months,

a. Verify that the recirculation valve will actuate to its correct position.

b. Verify that each auxiliary feedwater pump will start as designated automatically upon receipt of an auxiliary feedwater actuation test signal.

Add SR 3.7.7.1 M.3

Add SR 3.7.7.2 M.4

~~Basis~~

~~The testing of the auxiliary feedwater pumps will verify their operability. The capacity of any one of the three auxiliary feedwater pumps is sufficient to meet decay heat removal requirements.~~ A.1

A.4

~~Note A: Testing of the backup supply valves may be deferred until the next refueling outage (RO9), but no later than May 31, 1997~~

Deleted by TSCR 98-043

Amendment No. ~~78~~, ~~125~~, ~~128~~, ~~172~~, 178

~~Verification of correct operation will be made both from instrumentation within the main control room and direct visual observation of the pumps.~~

~~Reference~~

~~FSAR - Sections 10.4, 14.1.9 and 14.2.5 and response to Question 7.23.~~

A.1

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.7:
"City Water"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.7 - City Water (CW)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.4.B requires the operator start to shutdown and cool the reactor below 350°F (i.e., Mode 4) using normal operation procedures if requirements for Operability of City Water cannot be met within the specified Completion Time. Under the same conditions, ITS 3.7.7, Required Action B.1 and B.2, require that the plant be in Mode 3 in 6 hours and Mode 4 in 18 hours (see 3.7.7, DOC M.1 for expanded Applicability that includes reliance on SG for heat removal). The ITS Completion Time to reach Mode 3 within 6 hours is consistent with other

ITS Completion Times and is reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. The Completion Time of 18 hours to reach Mode 4 is not consistent with other ITS Completion Times in that additional time is provided in recognition that this cooldown may be conducted when the Auxiliary Feedwater function is degraded by the unavailability of the condensate storage tank and/or city water, The ITS 3.7.7 Completion Times are consistent with the NUREG-1431, Rev. 1, Completion Times for inoperable Condensate Storage Tank (CST). The addition of specific Completion Times for shutdown and cooldown when CST and/or CW are not Operable is an administrative change with no impact on safety because the ITS Completion Times are consistent with a reasonable interpretation of the existing CTS 3.4.B requirements.

A.4 (Superceded by TSCR 98-043) CTS 4.8.1.c requires testing of the backup supply valves from the city water system every 24 months. CTS 4.8.1.c is modified by a note allowing one-time deferral of performance until refueling outage 09. ITS SR 3.7.7.3 retains the requirement for testing the city water system supply valves every 24 months; however, the note allowing deferral of performance until refueling outage 09 is deleted because the allowance will have lapsed prior to ITS implementation. This is an administrative change with no impact on safety.

MORE RESTRICTIVE

M.1 CTS 3.4.A.7 requires City Water to be Operable as a backup water supply for the Auxiliary Feedwater System. The Condensate Storage Tank is the primary source of water to AFW. CTS 3.4.A establishes the Applicability for CW Operability as whenever the reactor is heated above 350°F (i.e., Modes 1, 2 and 3). ITS LCO 3.7.7 maintains the requirement for Operability of CW with an Applicability of Modes 1, 2 and 3; however, ITS LCO 3.7.7 expands the Applicability to include Mode 4 when a steam generator is relied upon for heat removal.

This change is needed because CST and CW Operability are both required to support Auxiliary Feedwater System Operability; and, Applicability of ITS 3.7.5, Auxiliary Feedwater System, is expanded to include Mode 4 when a steam generator is relied upon for heat removal (see 3.7.5, DOC M.1). Therefore, the Applicability of ITS 3.7.6, Condensate Storage Tank, and ITS 3.7.7, City Water, must be expanded to include Mode 4 when a steam generator is relied upon for heat removal. The reasons and justification for the expanded Applicability of ITS 3.7.5 are addressed in ITS 3.7.5, Auxiliary Feedwater System, (see 3.7.5, DOC M.1).

In conjunction with this change, CTS 3.4.B requirements to shutdown and cool the reactor below 350°F (i.e., Mode 4) using normal operation procedures if requirements for Operability of City Water cannot be met is expanded in ITS 3.7.7, Required Action B.2, to require that the plant be placed in Mode 4, without reliance on steam generator for heat removal.

These changes are acceptable because operation of AFW in Mode 4 to feed a SG is consistent with operation of the AFW system as described in the FSAR. Therefore, operation and/or Operability of the supporting water supplies in the CST and CW are also consistent with operation of the AFW system as described in the FSAR. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability in Mode 4 is maintained. Therefore, this change has no adverse impact on safety.

M.2 CTS 3.4.A.3 and CTS 3.4.A.7 require that the Condensate Storage Tank (CST) and City Water (CW) are Operable in Modes 1, 2 and 3 (see 3.7.7, DOC M.1). When either the CST or CW or both are not Operable, CTS 3.4.B allows 48 hours (see 3.7.7, DOC L.1) to restore both water supplies to Operable before a plant shutdown is required (see exception identified and explained below). Under the same conditions, ITS 3.7.6, Condensate Storage Tank, and ITS, 3.7.7, City Water, will not allow both the CST and CW to be inoperable at the same time. ITS 3.7.6, Required Action A.1, and ITS, 3.7.7, Required Action A.1, prevent and enforce this prohibition of simultaneous inoperability of both CST and CW by requiring verification of the Operability of the alternate source (either CST or CW) immediately and once per 12 hours thereafter if either the CST or CW are not Operable. This change is needed to ensure AFW Operability by ensuring that either CST or CW is capable of supporting the AFW system. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability is maintained. Therefore, this change has no adverse impact on safety.

CTS 3.4.E provides Actions for a specific situation where neither the CST nor CW is (or can be) aligned to the AFW suction header. Although this condition appears to be simultaneous inoperability of both CST and CW, CTS 3.4.E appropriately specifies actions for 3 inoperable AFW pumps. Under the same conditions, ITS 3.7.5 surveillance requirements for AFW valve lineups would not be met for all three AFW pumps; therefore, ITS would also require the actions for 3 inoperable AFW pumps. Under the same conditions, surveillance requirements for ITS 3.7.6 and ITS 3.7.7 could be met and would not require that water sources be declared inoperable. Therefore, CTS 3.4.E is addressed with ITS 3.7.5, Auxiliary Feedwater System.

M.3 CTS 4.8 does not establish any requirements for the verification of the Operability of City Water (CW) other than testing the valves in the supply lines between city water and the AFW pump suctions every 24 months. ITS SR 3.7.7.1 is added to require verification that the CW header pressure is ≥ 30 psig every 12 hours. This change is needed to provide periodic verifications that valve lineups and/or water pressure (an indicator of city water availability) in those portions of the city water supply not under NYPA control indicate that city water is immediately available. This change is acceptable because city water header pressure provides a passive indication of city water availability not currently required. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability is maintained. Therefore, this change has no adverse impact on safety.

M.4 CTS 4.8 does not establish any requirements for the verification of the Operability of City Water (CW) other than testing the valves in the supply lines between city water and the AFW pump suctions every 24 months. ITS SR 3.7.7.2 is added to require verification that the valve that isolates Unit 3 from the site city water supply and the city water storage tank is open. This isolation valve, CT-49, in the IP1 Utility Tunnel, is also identified as valve FP-1227. This SR may be performed by Consolidated Edison personnel. The 31 day Frequency is acceptable because the valve is sealed open and because periodic verification provided by SR 3.7.7.1 provides a high degree of assurance that the valve is positioned properly. This more restrictive change does not introduce any operation which is un-analyzed while requiring added assurance that decay heat removal capability is maintained. Therefore, this change has no adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.4.A.3 and CTS 3.4.A.7 require that the Condensate Storage Tank (CST) and City Water (CW) are Operable in Modes 1, 2 and 3 (see 3.7.7, DOC M.1). When either the CST or CW or both are not Operable, CTS 3.4.B allows 48 hours to restore both water supplies to Operable before a plant shutdown is required. Under the same conditions, ITS 3.7.6, Condensate Storage Tank, and ITS, 3.7.7, City Water, will not allow both the CST and CW to be inoperable at the same time (see 3.3.7, DOC M.2): however, ITS 3.7.6, Required Action A.2, and ITS, 3.7.7, Required Action A.2, are, in part, less restrictive because the ITS extends the time that either the CST or CW (but not both) can be inoperable from 48 hours to 7 days.

Extending the allowable out of service time for an inoperable CST or CW supply (but not both) from 48 hours to 7 days is acceptable because either source of water is capable of meeting the minimum assumptions of the accident analysis although the CST with a safety grade source of water is the preferred source for feeding the SGs. The 7 day Completion Time for restoration of both the CST and CW recognizes that the CST is the preferred source of water to the SGs and should be restored promptly, the desirability of maintaining city water as a backup source to the CST, and the low probability of an event occurring during this time period requiring the AFW and the associated water supply. This change has no effect on safety because, in conjunction with this change, ITS eliminates the CTS 3.4.B Actions that allow CST and CW to be inoperable simultaneously for up to 48 hours.

DISCUSSION OF CHANGES
ITS SECTION 3.7.7 - City Water (CW)

REMOVED DETAIL

LA.1 CTS 4.8.1.c specifies that backup supply valves from the city water system (to the Auxiliary Feedwater System) will be tested at least once per 24 months.

ITS SR 3.7.7.3 maintains the requirement to verify the Operability of backup supply valves from the city water system to the Auxiliary Feedwater System; however, the specific test requirements and the Frequency are specified as in accordance with the Inservice Test (IST) Program. The IST program requires that backup supply valves from the city water system are tested every 24 months.

This change is needed and is acceptable because the IST program is required by ITS 5.5.7 and provides controls for inservice testing of all ASME Code Class 1, 2, and 3 components. Specifically, ITS 5.5.7, Inservice Testing Program (IST), requires establishing and maintaining a program for inservice testing of ASME Code Class 1, 2, and 3 components at frequencies specified in Section XI of the ASME Boiler and Pressure Vessel Code. Additionally, 10 CFR 50.55a(f) already provides the regulatory requirements for this IST Program, and specifies that ASME Code Class 1, 2, and 3 pumps and valves are covered by an IST Program.

ITS LCO 3.7.7 will still require that backup supply valves from the city water system must be operable and ITS SR 3.7.7.3 will still require periodic verification of Operability. These requirements, in conjunction with the IST Program required by ITS 5.5.7, provide a high degree of assurance that safety valves will be tested and maintained to ensure pressurizer safety valve Operability. Additionally, ITS 5.5.7, Inservice Testing Program (IST), requirements and 10 CFR 50.55a(f) ensure adequate change control and regulatory oversight for any changes to the existing requirements. Therefore, requirements to test backup supply valves from the city water system can be maintained in the IST program with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.7:
"City Water"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.7 - City Water (CW)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards considerations are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change extends the time that either the Condensate Storage Tank (CST) or City Water (CW) (but not both) can be inoperable from 48 hours to 7 days. The Condensate Storage Tank (CST) and City Water (CW) are the primary and backup source of water for the Auxiliary Feedwater System. This change will not result in a significant increase in the probability of an accident previously evaluated because the status of neither the CST nor CW has any affect on the initiators of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because the CST is maintained with a volume of water sufficient to hold the plant at hot shutdown for a minimum of 24 hours and CW is capable of providing sufficient water decay heat removal indefinitely. If an accident occurs when CW is not available and cannot be restored within 24 hours, the 24 hour supply of water in the CST provides sufficient time to either complete a plant cooldown (and establish RHR as the primary decay heat removal mechanism) or establish an alternate supply of water to the AFW suction. This change has no effect on safety because, in conjunction with this change, ITS eliminates the CTS 3.4.B Actions that allow CST and CW to be inoperable simultaneously for up to 48 hours.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

This change does not involve a significant reduction in a margin of safety because the CST is maintained with a volume of water sufficient to hold the plant at hot shutdown for a minimum of 24 hours and CW is capable of providing sufficient water indefinitely. If an accident occurs when CW is not available and cannot be restored within 24 hours, the 24 hour supply of water in the CST provides sufficient time to either complete a plant cooldown (and establish RHR as the primary decay heat removal mechanism) or establish an alternate supply of water to the AFW suction. This change has no effect on safety because, in conjunction with this change, ITS eliminates the CTS 3.4.B Actions that allow CST and CW to be inoperable simultaneously for up to 48 hours.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.7:
"City Water"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.7

This ITS Specification is based on NUREG-1431 Specification No. **IP3 ONLY**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
NA	NA	NOT APPLICABLE. THIS IS AN IP3 UNIQUE SPECIFICATION.	Not Applicable	N/A	N/A

3.7 PLANT SYSTEMS

<CTS>

3.7.7 City Water (CW)

<3.4.A.7>

LCO 3.7.7 CW shall be OPERABLE.

<3.4.A>
<DOC M.1>

APPLICABILITY: MODES 1, 2, and 3,
MODE 4 when steam generator is relied upon for heat removal.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC M.2> A. CW inoperable. <3.4.B> <DOC L.1>	A.1 Verify by administrative means OPERABILITY of Condensate Storage Tank. AND A.2 Restore CW to OPERABLE.	Immediately AND Once per 12 hours thereafter 7 days
<3.4.3> <DOC A.3> B. Required Action and associated Completion Time not met. <3.4.B> <DOC M.1>	B.1 Be in MODE 3. AND B.2 Be in MODE 4, without reliance on steam generators for heat removal.	6 hours 18 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
<DOC M.3>	SR 3.7.7.1	Verify the CW header pressure is ≥ [30 psig].	12 hours
<DOC M.4>	SR 3.7.7.2	Verify the Unit 3 City Water Header Supply Isolation Valve is open.	31 days
<4.8.1.c> <DOC LA1>	SR 3.7.7.3	Perform testing required by Inservice Testing Program for each valve needed to align CW to each AFW pump suction.	In accordance with the Inservice Testing Program

B 3.7 PLANT SYSTEMS

B 3.7.7 City Water (CW)

BASES

BACKGROUND	City Water is the backup to the Condensate ~~Water~~ Storage Tank (CST) as a water supply for the Auxiliary Feedwater System. The CST, the preferred source of water for the Steam Generators (SGs), is capable of holding up to 600,000 gallons and is sized to meet the normal operating and maintenance needs of the main steam system. LCO 3.7.6, Condensate Storage Tank, requires that a minimum water level is maintained in the CST that is sufficient to remove residual heat for 24 hours at hot shutdown conditions following a trip from full power. Only when the CST supply is exhausted, will city water be used to supply the Auxiliary Feedwater System. When the main steam isolation valves are open, the preferred means of heat removal from the RCS is to discharge steam to the condenser via the non-safety grade turbine steam bypass valves (High Pressure Steam Dump) with water supplied from the CST to the SGs using the AFW System. The condensed steam is returned to the CST by the condensate pump. This configuration conserves condensate and minimizes releases to the environment. The CST is the preferred source of water for the SGs. When the CST supply is exhausted, city water is used to supply the Auxiliary Feedwater System for decay heat removal and plant cooldown. CW, although aligned to the IP3 site, is normally isolated from the AFW pump suctions. The City Water System includes the site city water header consisting of the 1.5 million gallon city water storage tank and the connection to the offsite water supply. A description of the CW system is found in FSAR, Section 10 (Ref. 1).
APPLICABLE SAFETY ANALYSES	CW can be used to provide cooling water to remove decay heat and to cool down the unit following all events in the accident analysis as discussed in the FSAR, Chapters 6 and 14 (Refs. 2

BASES

and 3, respectively); however, CW is used only when the CST is not available or depleted.

CW satisfies Criterion 3 of 10 CFR 50.36.

LCO

This LCO requires that the CW supply header is aligned to the AFW pump suction headers except for the onsite isolation valves, which are normally closed. The City Water Storage Tank is not required to contain a specific volume of water; however, the static head on CW supply from the CW storage tank is used to indicate that the CW supply header and CW System are aligned to the IP3 site and available for use.

The OPERABILITY of the CW is determined by maintaining the supply header pressure at or above the minimum required pressure and periodic verification that the required lineups can be established.

APPLICABILITY

City Water is required to be OPERABLE in MODES 1, 2, and 3, and in MODE 4, when a steam generator is being relied upon for heat removal. In MODE 5 or 6, CW is not required because the SGs are not normally used to remove decay heat when in these MODES.

ACTIONS

A.1 and A.2

If the CW header pressure is not within limits or system lineups are not as required, CW cannot be assumed to be available if needed as a backup water source for the CST. With CW not available, OPERABILITY of the CST must be verified by administrative means immediately and once every 12 hours thereafter. Operability of the CST means that LCO 3.7.6, Condensate Storage Tank, is met. The immediate Completion Time for verification of the OPERABILITY of the CST ensures that Condition B is entered immediately if both the CST and City Water are inoperable. This ensures that either the CST or CW is available for decay heat removal and to support a plant cooldown.

BASES

CW must be restored to OPERABLE status within 7 days because CW is assumed to be available to supply the Auxiliary Feedwater System when the CST supply is exhausted. The 7 day Completion Time for restoration of CW is acceptable because the CST is OPERABLE and the low probability of an event requiring CW during the 7 day Completion Time.

B.1 and B.2

If CW cannot be restored to OPERABLE within the Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 4, without reliance on the steam generator for heat removal, within 18 hours. The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

If Condition B is entered when both the CST and City Water are not Operable, Conditions and Required Actions for LCO 3.7.5, Auxiliary Feedwater System, may be appropriate.

SURVEILLANCE REQUIREMENTS

SR 3.7.7.1

This SR verifies that CW header pressure is greater than 30 psig which provides a high degree of assurance that the offsite CW supply is available to the site and properly aligned. Operating experience has demonstrated that CW header pressure decays rapidly due to normal onsite consumption if the offsite supply is not properly aligned or pressurized. The 12 hour Frequency provides a high degree of assurance of rapid identification of the inoperability of CW.

BASES

SR 3.7.7.2

This SR verifies that the valve that isolates Unit 3 from the site city water supply and the city water storage tank is open. This isolation valve, CT-49, in the IP1 Utility Tunnel is also identified as valve FP-1227. This SR may be performed by Consolidated Edison personnel. The 31 day Frequency is acceptable because the valve is sealed open and because periodic verification provided by SR 3.7.7.1 provides a high degree of assurance that the valve is positioned properly.

SR 3.7.7.3

This SR verifies the ability to cycle each valve between CW and the AFW pump suction. These are the only valves required to operate to align CW to the AFW pump suction. The testing requirements and Frequency for this SR are in accordance with the Inservice Testing Program.

REFERENCES

1. FSAR, Chapter 10.
2. FSAR, Chapter 6.
3. FSAR, Chapter 14.

Indian Point 3
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Technical Specification 3.7.7:
"City Water"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.7 - City Water (CW)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

Not Applicable

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

Not Applicable

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 ITS 3.7.7, City Water, is added because the IP3 design and current licensing basis (as reflected in CTS 3.4.A.7 and FSAR, Section 10) require that both the Condensate Storage Tank (CST) (primary water source to AFW) and City Water (CW) (backup and long term water source to AFW) be Operable whenever Auxiliary Feedwater (AFW) is required to be Operable. This required an additional ITS LCO because NUREG-1431, Rev. 1, either does not require the Operability of the AFW backup water supply except when the Condensate Storage Tank is not Operable or ensures the Operability of the AFW backup water supply as part of the LCO requirements for Service Water Operability.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

Not Applicable

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

Not Applicable

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.8:
"Component Cooling Water (CCW) System"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.8 Component Cooling Water (CCW) System

LCO 3.7.8 Two CCW loops shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CCW loop inoperable.	A.1	---------NOTE--------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by CCW. --------------------- Restore CCW loop to OPERABLE status.	 72 hours
B. Required Action and associated Completion Time of Condition A not met.	B.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	B.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.8.1	-------------------NOTE-------------------- Isolation of CCW flow to individual components does not render the CCW System inoperable. --- Verify each CCW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	92 days
SR 3.7.8.2	Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months
SR 3.7.8.3	Verify each CCW pump starts automatically on an actual or simulated actuation signal.	24 months

B 3.7 PLANT SYSTEMS

B 3.7.8 Component Cooling Water (CCW) System

BASES

BACKGROUND

The Component Cooling Water (CCW) System is a closed-loop cooling system that provides cooling water for systems and components important to safety that are located in the Primary Auxiliary Building, the Fuel Storage Building, and the Containment Building. The CCW System transfers its heat load to the Service Water System via CCW heat exchangers. The Service Water System is a once through cooling system that transfers its heat load to the ultimate heat sink, the Hudson River.

The CCW System provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation, the CCW System also provides this function for various nonessential components including the spent fuel storage pool. The CCW System serves as a barrier to the release of radioactive byproducts between potentially radioactive systems and the Service Water System, and thus to the environment.

The CCW System consists of three pumps and two heat exchangers. These components are divided into two independent, full capacity cooling loops with each loop consisting of one pump and a heat exchanger. The third CCW pump can be aligned to replace the pump in either loop. Each of the three CCW pumps is powered from a separate safeguards power train.

The CCW loops are cross connected during normal and emergency operation; however, the cooling loads are divided between the two loops so that each loop is capable of supplying the necessary service to support continued containment sump and core recirculation following a LOCA while supplying normal loads. Operating CCW loops cross-connected allows use of either CCW heat exchanger to cool all normal and post accident heat loads. Any service water system pump can be used to support either or both CCW heat exchangers. Isolation valves allow each loop to be isolated and operated as an independent component cooling loop. This configuration facilitates detection of radioactivity

BASES

BACKGROUND (continued)

entering the loop for leak detection or isolation of a piping or component failure during an event. A surge tank in each loop ensures that sufficient net positive suction head is available.

CCW pumps continue to operate following a safety injection signal without loss of offsite power (LOOP); however, CCW pumps are stripped and must be started as needed following any event that includes a LOOP. Note that the CCW pumps are not re-started during the injection phase; therefore, the water volume of the CCW system must act as a heat sink during the injection phase when the CCW pumps are not running. This is acceptable even though safety injection pump bearings are cooled by CCW because the cooling water is circulated by a booster pump directly connected to the injection pump motor shaft. During the injection phase, the Recirculation Pumps are cooled by the Auxilliary Component Cooling Water pumps, which are not governed by this LCO.

Additional information on the design and operation of the system, along with a list of the components served, is presented in the FSAR, Section 9.3 (Ref. 1). The principal safety related function of the CCW System is the removal of decay heat from the reactor via the Residual Heat Removal (RHR) System. This may be during a normal or post accident cooldown and shutdown.

APPLICABLE SAFETY ANALYSES

The design basis of the CCW System is for one CCW loop to remove the post loss of coolant accident (LOCA) heat load from the containment sump during the recirculation phase. Any one of the three CCW pumps in conjunction with any one of the two CCW heat exchangers is sufficient to accommodate the normal and post accident heat load if the CCW system is operated as two cross connected loops. Either CCW pump in conjunction with either CCW heat exchanger or the third CCW pump in conjunction with either associated CCW heat exchanger is sufficient if the CCW loops are isolated.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Because the component cooling pumps do not run during the injection phase if the event is accompanied by a loss of offsite power, the water volume of the CCW system is used as a heat sink. This heat load causes a temperature rise of approximately 7°F per hour in the component cooling water with no credit taken for the water volume in the surge tank. With a minimum initial CCW temperature of 110°F at the start of the accident, 6 hours are available before the cooling water temperature reaches 150°F; 10 hours is available before reaching 180°F. Evaluations of the heat removal capability of the CCW system are contained in References 2 and 3.

The CCW System is designed to perform its function with a single failure of any active component, assuming a loss of offsite power.

The CCW System also functions to cool the unit from RHR entry conditions (T_{avg} < 350°F), to MODE 5 (T_{avg} < 200°F), during normal and post accident operations. The time required to cool from 350°F to 200°F is a function of the CCW and RHR flow rate, service water flow rate and UHS temperature. One CCW loop is sufficient to remove decay heat during subsequent operations with T_{avg} < 200°F. This assumes a maximum service water temperature of 95°F occurring simultaneously with the maximum heat loads on the system.

The CCW System satisfies Criterion 3 of 10 CFR 50.36.

LCO

The CCW loops are independent of each other to the degree that each has separate controls and power supplies and the operation of one does not depend on the other. In the event of a DBA, one CCW loop is required to provide the minimum heat removal capability assumed in the safety analysis for the systems to which it supplies cooling water. To ensure this requirement is met, two loops of CCW must be OPERABLE. At least one CCW loop will operate during the recirculation phase assuming the worst case single active failure occurs coincident with a loss of offsite power.

BASES

LCO (continued)

A CCW loop consists of any of the three CCW pumps in conjunction with a CCW heat exchanger.

A CCW loop is considered OPERABLE when:

a. The pump and associated surge tank are OPERABLE; and

b. The associated piping, valves, heat exchanger, and instrumentation and controls required to perform the safety related function are OPERABLE.

The isolation of CCW from components or systems may render those components or systems inoperable but does not affect the OPERABILITY of the CCW System.

Note that the auxiliary component cooling water pumps support the Containment Recirculation pumps only and are governed by LCO 3.5.2, ECCS - Operating.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CCW System is a normally operating system, which must be prepared to perform its post accident safety functions, primarily RCS heat removal, which is achieved by cooling the RHR heat exchanger.

In MODE 5 or 6, the OPERABILITY requirements of the CCW System are determined by the systems it supports.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops – MODE 4," be entered if an inoperable CCW loop results in an inoperable RHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

BASES

ACTIONS

A.1 (continued)

If one CCW loop is inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE CCW loop is adequate to perform the heat removal function. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE loop, and the low probability of a DBA occurring during this period.

B.1 and B.2

If the CCW loop cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1

This SR is modified by a Note indicating that the isolation of the CCW flow to individual components may render those components inoperable but does not affect the OPERABILITY of the CCW System.

Verifying the correct alignment for manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. Valves located inside containment are considered to be locked. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.8.1 (continued)

that those valves capable of being mispositioned are in the correct position. Valves that are throttled are verified by verification of required flow.

The 92 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.8.2

This SR verifies proper automatic operation of the CCW valves on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

SR 3.7.8.3

This SR verifies proper automatic operation of the CCW pumps on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

BASES

REFERENCES

1. FSAR, Section 9.3.
2. FSAR, Section 6.2.
3. WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increased to 95° at IP-3."

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.8:
"Component Cooling Water (CCW) System"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.3-9	132	132	No TSCRs	No TSCRs for this Page	N/A
3.3-10	145	145	No TSCRs	No TSCRs for this Page	N/A
3.3-18	145	145	No TSCRs	No TSCRs for this Page	N/A
3.3-21	179	179	No TSCRs	No TSCRs for this Page	N/A
T 4.1-2(1)	139	139	No TSCRs	No TSCRs for this Page	N/A

LCO 3.7.8 ~~E.~~ Component Cooling System

Mode 1, 2, 3 and 4 A.3

Applicability 1. The reactor shall not be brought above the cold shutdown condition unless the following requirements are met:

LCO 3.7.8 ~~a.~~ Two component cooling pumps, together with their associated piping and valves, are operable. loops LA.1

SEE : ITS 3.5.2 b. Two auxiliary component cooling pumps, one per each recirculation pump, together with their associated piping and valves, are operable.

LCO 3.7.8 ~~c.~~ Two component cooling heat exchangers, together with their associated piping and valves, are operable. loops LA.1 LA.1

Cond A ~~2.~~ The requirements of 3.3.E.1 may be modified to allow one of the following components to be inoperable at any one time: L.1

Add Note to Req Act A.1 A.4

Req Act A.1 a. One of the two operable component cooling pumps may be out of service, provided the pump is restored to operable status within 24 hours. 72 L.1

SEE ITS 3.5.2 b. Two auxiliary component cooling pumps serving the same recirculation pump may be out of service, provided at least one is restored to an operable status within 24 hours and at least one auxiliary component cooling pump serving the other recirculation pump is operable.

LA.1

Req Act A.1 c. One component cooling heat exchanger or other passive component may be out of service for a period not to exceed 48 hours, provided the system will still operate at design accident capability. 72 L.1 A.5

Add Note to SR 3.7.8.1 A.6

Add SR 3.7.8.1
SR 3.7.8.2
SR 3.7.8.3 M.2

Cond B.

3. If the Component Cooling System is not restored to meet the requirements of 3.3.E.1 within the time periods specified in 3.3.E.2, then:

Req. Act B.1
Req. Act B.2

a. If the reactor is critical, it shall be in the hot shutdown condition within ~~four~~ 6 hours and in the cold shutdown condition within ~~the following 24~~ 36 hours. L.2 L.2

Req. Act B.1
Req. Act B.2

b. ~~If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi respectively, over existing values. If the requirements of 3.3.E.1 are not satisfied within an additional 48 hours~~, the reactor shall be brought to the cold shutdown condition utilizing normal operating procedures. ~~The shutdown shall start no later than the end of the 48 hour period.~~ M.1 L.2 M.1

SEE ITS 3.7.9 and ITS 3.7.10

F. Service Water System/Ultimate Heat Sink

1. The reactor shall not be brought above cold shutdown unless:

a. Three service water pumps on the designated essential header and a minimum of two service water pumps on the designated non-essential header, together with their associated piping and valves, are operable.

b. The service water inlet temperature is less than or equal to 95°F.

2. When the reactor is above cold shutdown and if the requirements of 3.3.F.1.a cannot be met within twelve hours, the reactor shall be brought to the cold shutdown condition, starting no later than the end of the twelve hour period, utilizing normal operating procedures.

3. When the reactor is above cold shutdown and if the requirement of 3.3.F.1.b is exceeded, the reactor shall be placed in at least hot shutdown within seven hours, and in cold shutdown within the following thirty hours unless the service water inlet temperature decreases to within the requirement of 3.3.F.1.b.

A.1

Due to the distribution of the five fan cooler units and two containment spray pumps on the 480 volt buses, the closeness to which the combined equipment approaches minimum safeguards varies with which particular component is out of service. Accordingly, the allowable out of service periods vary according to which component is out of service. Under no conditions do the combined equipment degrade below minimum safeguards.

The seven day out of service period for the Weld Channel and Penetration Pressurization System and the Isolation Valve Seal Water System is consistent with W Standardized Technical Specifications. This is allowable because no credit has been taken for operation of these systems in the calculation of off-site accident doses should an accident occur. No other safeguards systems are dependent on operation of these systems.[11] The minimum pressure settings for the IVSWS and WC & PPS during operation assures effective performance of these systems for the maximum containment calculated peak accident pressure of 42.42 psig.[15] A WC & PPS zone is considered that portion of piping downstream of the air receiver discharge check valve up to the last component pressurized by that system portion.

Some portions of the Weld Channel Pressurization System (WCPS) piping would not be practicably accessible for repair if they became inoperable. A section of WCPS piping is considered to be inoperable if it brings the air consumption of the WC & PPS above the required 0.2% of the containment volume per day or if the section can not maintain a pressure above the required 43 psig. If it is determined, by written evaluation, that an inoperable section of piping is not practicably accessable for repair, then that portion of the WCPS may be disconnected from the system. Inoperable sections of WCPS piping which can be considered for disconnection will satisfy one of the following criteria: 1) the piping is covered by concrete and repairs of the piping would involve the removal of some portion of the containment structure; or 2) the piping is located behind plant equipment in the containment building and repairs of the piping would involve the relocation of the equipment. The integrity of the welds associated with any disconnected portions of the WCPS is verified by integrated leak rate testing. The provision that allows for the disconnection of portions of the WCPS piping does not apply to any other WC & PPS piping.

The Component Cooling System is not required during the injection phase of a loss-of-coolant accident. The component cooling pumps are located in the Primary Auxiliary Building and are accessible for repair after a loss-of-coolant accident.[6] During the recirculation phase following a loss-of-coolant accident, only one of the three component cooling pumps is required for minimum safeguards.[7]

These toxic gas monitoring systems are designed to alarm in the control room upon detection of the short term exposure limit (STEL) value. The operability of the toxic gas monitoring systems provides assurance that the control room operators will have adequate time to take protective action in the event of an accidental toxic gas release. Selection of the gases to be monitored are based on the results described in the Indian Point Unit 3 Habitability Study for the Control Room, dated July, 1981. The alarm setpoints will be in accordance with industrial ventilation standards as defined by the American Conference of Governmental Industrial Hygienists.[16]

The RHR suction line is required to be isolated from the RCS when temperature is above 350°F. This protects the RHR system from overpressurization when the SI system is required to be in service. The requirement to prevent safety injection pumps from being able to feed the RCS under specific conditions prevents overpressurization of the RHR system or the RCS beyond the capacity of the OPS to mitigate. These conditions include when OPS is required to be in service and when RHR is in service. Special allowances are made for pump testing, loss of RHR cooling (during which time an SI pump may be required to recirculate coolant to the core), or emergency boration. Two SI pumps may be energized and aligned to feed the RCS when situations prevail that could not result in overpressurization. This is satisfied when the RCS is vented with an opening greater than or equal to the size of one code pressurizer safety flange or when the pressurizer level is low enough (indicating 0%) and the plant is vented in accordance with Technical Specification 3.1.A.8.c.1 to ensure at least a ten minute operator response time on inadvertent SI actuation without the pressurizer completely filling. Alternate methods and instrumentation may be used to confirm actual RCS elevation. Methods to ensure that an SI pump is unable to feed the RCS include placing the SI pump switches in the trip pull-out position, or by closing and locking (if manual) or de-energizing (if motor operated) at least one valve in the flow path from these pumps to the RCS.

References

1) FSAR Section 9
2) FSAR Section 6.2
3) FSAR Section 6.2
4) FSAR Section 6.3
5) FSAR Section 14.3.5
6) FSAR Section 1.2
7) FSAR Section 8.2
8) FSAR Section 9.6.1
9) FSAR Section 14.3
10) FSAR Section 6.8
11) FSAR Section 6.5
12) Response to Question 14.6, FSAR Volume 7
13) FSAR Appendix 14C
14) Response to Question 9.35, FSAR Volume 7
15) WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increased to 95° at IP-3"
16) American Conference of Governmental Industrial Hygienists 1982 Industrial Ventilation, 19th Edition
17) NYPA calculation IP3-CALC-SI-00725, Rev. 0, "Instrument Loop Accuracy/Setpoint Calc./RWST Level."
18) Nuclear Safety Evaluation 93-3-162-SI, Rev. 0, Adequate Post-LOCA Coolant Inventory.

TABLE 4.1-2 (Sheet 1 of 2)

FREQUENCIES FOR SAMPLING TESTS

Sample	Analysis	Frequency	Maximum Time Between Analysis
1. Reactor Coolant	Gross Activity(1)	5 days/week(1)(4)	3 days(4)
	Tritium Activity	Weekly(1)	10 days
	Boron concentration	2 days/week	5 days
	Radiochemical (gamma)(2) Spectral Check	Monthly	45 days
	Oxygen and Chlorides Concentration	3 times per 7 days	3 days
	Fluorides Concentration	Weekly	10 days
	Ē Determination (3)	Semi-Annually	30 weeks
	Isotopic Analysis for I-131, I-133, I-135	Once per 14 days(5)	20 days
2. Boric Acid Tank	Boron Concentration, Chlorides	Weekly	10 days
3. Spray Additive Tank	NaOH Concentration	Monthly	45 days
4. Accumulators	Boron Concentration	Monthly	45 days
5. Refueling Water Storage Tank	Boron Concentration pH, Chlorides	Monthly	45 days
	Gross Activity	Quarterly	16 weeks
6. Secondary Coolant	I-131 Equivalent (Isotopic Analysis)	Monthly	45 days
	Gross Activity	3 times per 7 days	3 days
LCO 3.7.8 7. ~~Component Cooling Water~~	~~Gross Activity, Corrosion Inhibitor and pH~~	~~Monthly~~	~~45 days~~ LA.2
8. Spent Fuel Pool (when fuel stored)	Gross Activity Boron Concentration, Chlorides	Monthly	45 days

ITS 3.7.8

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"Component Cooling Water (CCW) System"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.8 - Component Cooling Water (CCW) System

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.3.E.1 specifies the Applicability for Component Cooling System as whenever the reactor is above cold shutdown (i.e., Modes 1, 2, 3 and 4). ITS 3.7.8 maintains this Applicability by requiring that the Component Cooling Water (CCW) System be Operable in Modes 1, 2, 3 and 4. This is an administrative change with no impact on safety because there is no change to the existing CTS Applicability.

A.4 CTS 3.3.E includes requirements for component cooling water (CCW) pumps and heat exchangers and CTS 3.1.A.1.c includes requirements for the RHR decay heat removal capability in Mode 4. If an inoperable CCW loop caused an RHR loop to be inoperable when RHR is required for decay heat removal, CTS would require that both CCW and the affected RHR heat exchanger be declared inoperable. Under the same conditions (inoperability of CCW loop causes RHR inoperability), ITS LCO 3.0.6 specifies that only Required Actions for an inoperable CCW loop are required. Therefore, ITS 3.7.8, Required Action A.1, is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops – Mode 4," must be entered if an inoperable CCW loop results in an inoperable RHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. This is an administrate change with no impact on safety because both CTS and ITS are designed to ensure that appropriate actions are taken if an inoperable CCW loop causes RHR to be inoperable if RHR is being relied upon for decay heat removal. This is an administrative change with no impact on safety because there is no change to the existing requirements.

A.5 CTS 3.3.E.2.c specifies that a CCW heat exchanger or other passive component may be out of service for 48 hours if "the system will still operate at design accident capability." This statement is deleted because ITS 3.7.8 is designed to ensure that CCW is operated consistent with the assumptions of the FSAR and WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increased to 95°F at IP3," regarding minimum heat removal capability even when redundant capability is not Operable. Removal of this statement is needed because Technical Specifications are designed to ensure that operators are not required to make a determination that "the system will still operate at design accident capability." This is an administrative change with no impact on safety because operating within the restrictions established by LCO and associated Required Actions ensures that "the system will still operate at design accident capability."

A.6 CTS 3.3.E does not include any requirements or guidance regarding the affect on CCW Operability of isolation of CCW flow to individual components. ITS SR 3.7.8.1, the requirement for monthly valve lineups, is modified by a Note indicating that the isolation of the CCW flow to individual components may render those components inoperable but does not affect the Operability of the CCW System (i.e., only the affected component is inoperable). This is an administrative change with no impact on safety because it is a reasonable interpretation of the existing CTS requirements.

MORE RESTRICTIVE

M.1 CTS 3.3.E.3.a specifies that if requirements for CCW are not met when the reactor is critical and CCW is not restored to Operable within the specified restoration time, then a shutdown to the cold shutdown condition must be initiated immediately. However, CTS 3.3.E.3.b specifies that if requirements for CCW are not met when the reactor is subcritical and CCW is not restored to Operable within the specified restoration time, then plant shutdown to Mode 5 may be delayed an additional 48 hours as long as the reactor coolant system temperature and pressure are not increased more than 25°F and 100 psi, respectively, over existing values.

Under the same conditions, ITS LCO 3.7.8, Required Actions B.1 and B.2, require an immediate plant shutdown to Mode 5 regardless of the status of the reactor (critical or subcritical) when the inoperability with CCW is identified. This change is needed because CTS 3.3.E.3.a and CTS 3.3.E.3.b, are ambiguous and potentially contradictory. Specifically, prior to the completion of CTS 3.3.E.3.a, plant operators could exit CTS 3.3.E.3.a Actions by entering CTS 3.3.E.3.b Actions and have an additional 48 hour to complete the shutdown. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring a prompt shutdown when minimum CCW capacity and/or redundancy cannot be restored within the specified completion time. Therefore, this change has no adverse impact on safety.

M.2 CTS 3.3.E includes requirements for CCW Operability; however, there are no explicit requirements for periodic verification of the key aspects to CCW Operability. ITS SR 3.7.8.1, a requirement for valve lineups every 92 days; SR 3.7.8.2, a requirement to verify proper automatic operation of the CCW valves every 24 months; and, SR 3.7.8.3, a requirement to verify automatic operation of the CCW pumps every 24 months are added to ensure that CCW will respond as required during an accident. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification that pumps will start (if not already running) and periodic verification that flow paths exist for CCW operation. Therefore, this change has no adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.3.E.2, CTS 3.3.E.2.a and CTS 3.3.E.2.c allow either (but not both) one CCW pump or one CCW heat exchanger to be inoperable with an Allowable Out of Service Time (AOT) of 24 hours for a pump and 48 hours for a heat exchanger or other passive component. Although CCW is normally operated cross connected, ITS LCO 3.7.8 establishes requirements for two CCW loops with a loop consisting of one pump and one heat exchanger. In conjunction with this change, ITS LCO 3.7.8 will allow both a pump and/or heat exchanger in the same loop to be inoperable at the same time and will extend the AOT for a pump and/or heat exchanger to 72 hours. This change is acceptable because one CCW pump and one CCW heat exchanger are adequate to perform the post accident heat removal function in accordance with WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increased to 95° at IP-3". Additionally, since CCW pumps and heat exchangers are running during normal plant operation, a failure of the remaining CCW pump would be promptly identified and appropriate actions taken. Therefore, this change does not have a significant impact on safety.

L.2 CTS 3.3.E.3.a specifies that if requirements for CCW are not met and CCW is not restored to Operable within the specified restoration time, then the plant must be in hot shutdown (Mode 3) within 4 hours and in cold shutdown (Mode 5) within the following 24 hours (i.e., 28 hours after discovery of failure to meet requirements). Under the same conditions, ITS LCO 3.7.8, Required Actions B.1 and B.2, allow 6 hours to reach Mode 3 and 36 hours to reach Mode 5. This change is acceptable because these times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Additionally, there is a low probability of a DBA occurring during the additional 8 hours allowed to reach Mode 5. Finally, the ITS Completion Times allowed to achieve cold shutdown (Mode 5) are more restrictive than the allowances provided by CTS 3.3.E.3.b which can be interpreted as adding 48 hours to the CTS 3.3.E.3.a requirements for reaching Mode 5 (see 3.7.8, DOC M.1). Therefore, this change has no impact on safety.

REMOVED DETAIL

LA.1 CTS 3.3.E.1.a and CTS 3.3.E.1.c define the requirements for Operability of the CCW System and require 2 (of 3) CCW pumps, 2 CCW heat exchangers, and associated piping and valves. ITS LCO 3.7.8 maintains this requirement by requiring the Operability of 2 CCW loops; however, the details about what constitutes a loop are relocated to ITS 3.7.8 Bases and system descriptions are found in the FSAR.

This change is acceptable because LCO 3.7.8 maintains the existing requirement for the Operability of two loops of CCW; therefore, there is no change to the existing requirements and no change to the level of safety of facility operation.

This change, which allows the description of the design of the CCW system to be maintained in the FSAR and the detailed description of the requirements for Operability of these systems to be maintained in the ITS Bases, is consistent with the approach used in NUREG-1431 for all Limiting Conditions for Operation (LCOs). This approach is acceptable because the requirements of 10 CFR 50.59, Changes, Tests and Experiments, and ITS 5.5.13, Technical Specifications (TS) Bases Control Program, are designed to assure that changes to the FSAR and ITS Bases do not result in changes to the Technical Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement FSAR changes in accordance with 10 CFR 50.59 and ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of FSAR and Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate levels of regulatory oversight are maintained for the information being relocated out of the Technical Specifications.

LA.2 CTS Table 4.1-2, Item 7, requires monthly verification of CCW levels of gross activity, pH and corrosion inhibitor. ITS LCO 3.7.8 maintains the requirements for CCW Operability; however, requirements for periodic verification of CCW levels of gross activity, pH and corrosion inhibitor are relocated to the Technical Requirements Manual (TRM).

This change is acceptable because CCW chemistry requirements do not meet any of the 10 CFR 50.36 criteria for retention in the Technical Specifications. Specifically, CCW gross activity is monitored as an early and sensitive indicator of CCW system leakage and low levels of gross activity have no direct impact on CCW Operability. CCW pH and corrosion inhibitor levels are monitored because maintaining CCW water chemistry reduces long term degradation of system materials. CCW pH and corrosion inhibitor levels have no direct impact on CCW Operability.

The Quality Assurance Plan will be revised to specify that requirements in the TRM are part of the facility as described in the FSAR and that changes to the TRM can be made only in accordance with the requirements of 10 CFR 50.59. Therefore, this change is acceptable because there is no change to the existing requirements by the relocation of requirements to the TRM and future changes to the TRM will be controlled in accordance with 10 CFR 50.59.

This change is a less restrictive administrative change with no impact on safety because ITS 3.7.8 maintains the requirements to have CCW Operable and maintains the requirements to perform periodic verification that demonstrates CCW Operability. Therefore, maintaining CCW chemistry requirements in the TRM has no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.8:
"Component Cooling Water (CCW) System"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.8 - Component Cooling Water (CCW) System

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change will allow both a Component Cooling Water (CCW) pump and/or heat exchanger to be inoperable at the same time and will extend the (AOT) for a pump and/or heat exchanger to 72 hours from the current 24 hours for a pump and 48 hours for a heat exchanger or other passive component. This change will not result in a significant increase in the probability of an accident previously evaluated because CCW status is not assumed as the initiator of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because one CCW pump and one CCW heat exchanger are adequate to perform the post accident heat removal function in accordance with WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increased to 95° at IP-3". Additionally, since CCW pumps and heat exchangers are running during normal plant operation, a failure of the reaming CCW pump would be promptly identified and appropriate actions taken.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because one CCW pump and one CCW heat exchanger are adequate to perform the post accident heat removal function in accordance with WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increased to 95° at IP-3".

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change extends the time allowed to complete a plant shutdown when requirements for Component Cooling Water (CCW) are not met from 4 hours to 6 hours to reach Mode 3 and from 28 hours to 36 hours to reach Mode 5. This change will not result in a significant increase in the probability of an accident previously evaluated because the amount of time allowed to perform a controlled shutdown when requirements are not met is not assumed as the initiator of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because extending the amount of time allowed to shutdown has no effect on any system used to mitigate an accident and the additional 8 hours is a relatively small amount of additional time to reach the shutdown condition.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because extending the amount of time allowed to shutdown has no effect on any system used to mitigate an accident and the additional 2 hours is a relatively small amount of additional time to reach the shutdown condition.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.8:
"Component Cooling Water (CCW) System"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.8

This ITS Specification is based on NUREG-1431 Specification No. 3.7.7
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
N/A	N/A	NO GENERIC CHANGES ARE POSTED AGAINST THIS SPECIFICATION.	Not Applicable	Not Applicable	N/A

3.7 PLANT SYSTEMS

<CTS>

3.7.~~7~~ 8 Component Cooling Water (CCW) System

<3.3.E.1.a>
<3.3.E.1.c>

LCO 3.7.~~7~~ 8 Two CCW ~~trains~~ loops shall be OPERABLE.

<3.3.E.1>
(DOC A.3>

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.3.E.2.a> <DOC L.1> <3.3.E.2.c> <DOC L.1> <DOC A.4> A. One CCW train loop inoperable.	A.1 ---------NOTE--------- Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," for residual heat removal loops made inoperable by CCW. --------------------- Restore CCW train loop to OPERABLE status.	72 hours
<3.3.E.3.a> <3.3.E.3.b> <DOC L.2> <DOC M.1> B. Required Action and associated Completion Time of Condition A not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.~~7~~.1 8	------------------NOTE------------------ Isolation of CCW flow to individual components does not render the CCW System inoperable. ---	
	~~Verify each CCW manual, power operated~~, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	~~31~~ days 92
SR 3.7.~~7~~.2 8	Verify each CCW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	~~18~~ months 24
SR 3.7.~~7~~.3 8	Verify each CCW pump starts automatically on an actual or simulated actuation signal.	~~[18]~~ months 24

<DOC A.6>

<DOC M.2>

<DOC M.2>

<DOC M.2>

B 3.7 PLANT SYSTEMS

B 3.7.~~7~~ 8 Component Cooling Water (CCW) System

BASES

BACKGROUND

Insert: B3.7-36-01

The CCW System provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation, the CCW System also provides this function for various nonessential components ~~as well as~~ including the spent fuel storage pool. The CCW System serves as a barrier to the release of radioactive byproducts between potentially radioactive systems and the Service Water System, and thus to the environment.

DB.1

Insert: B3.7-36-02

~~A typical CCW System is arranged as two independent, full capacity cooling loops, and has isolatable nonsafety related components. Each safety related train includes a full capacity pump, surge tank, heat exchanger, piping, valves, and instrumentation. Each safety related train is powered from a separate bus.~~ A~~n~~ ~~open~~ surge tank in ~~the system~~ each loop ~~provides pump trip protective functions to~~ ensure~~s~~ that sufficient net positive suction head is available. ~~The pump in each train is automatically started on receipt of a safety injection signal, and all nonessential components are isolated.~~

H

Insert: B 3.7-36-03

Additional information on the design and operation of the system, along with a list of the components served, is presented in the FSAR, Section ~~9.2.2~~ 9.3 (Ref. 1). The principal safety related function of the CCW System is the removal of decay heat from the reactor via the Residual Heat Removal (RHR) System. This may be during a normal or post accident cooldown and shutdown.

APPLICABLE SAFETY ANALYSES

The design basis of the CCW System is for one CCW ~~train~~ loop to remove the post loss of coolant accident (LOCA) heat load from the containment sump during the recirculation phase. ~~with a maximum CCW temperature of [120]°F (Ref. 2). The Emergency Core Cooling System (ECCS) LOCA and containment OPERABILITY LOCA each model the maximum and minimum performance of the CCW System, respectively. The normal temperature of the CCW is [80]°F, and, during unit cooldown to MODE 5 (T_{cold} < [200]°F), a maximum temperature of 95°F is~~

Insert: B 3.7-36-04

DB.1

(continued)

INSERT: B 3.7-36-01

The Component Cooling Water (CCW) System is a closed-loop cooling system that provides cooling water for systems and components important to safety that are located in the Primary Auxiliary Building, the Fuel Storage Building, and the Containment Building. The CCW System transfers its heat load to the Service Water System via CCW heat exchangers. The Service Water System is a once through cooling system that transfers its heat load to the ultimate heat sink, the Hudson River.

INSERT: B 3.7-36-02

The CCW System consists of three pumps and two heat exchangers. These components are divided into two independent, full capacity cooling loops with each loop consisting of one pump and a heat exchanger. The third CCW pump can be aligned to replace the pump in either loop. Each of the three CCW pumps is powered from a separate safeguards power train.

The CCW loops are cross connected during normal and emergency operation; however, the cooling loads are divided between the two loops so that each loop is capable of supplying the necessary service to support continued containment sump and core recirculation following a LOCA while supplying normal loads. Operating CCW loops cross-connected allows use of either CCW heat exchanger to cool all normal and post accident heat loads. Any service water system pump can be used to support either or both CCW heat exchangers. Isolation valves allow each loop to be isolated and operated as an independent component cooling loop. This configuration facilitates detection of radioactivity entering the loop for leak detection or isolation of a piping or component failure during an event.

INSERT: B 3.7-36-03

CCW pumps continue to operate following a safety injection signal without loss of offsite power (LOOP); however, CCW pumps are stripped and must be started as needed following any event that includes a LOOP. Note that the CCW pumps are not re-started during the injection phase; therefore, the water volume of the CCW system must act as a heat sink during the injection phase when the CCW pumps are not running. This is acceptable even though safety injection pump bearings are cooled by CCW because the cooling water is circulated by a booster pump directly connected to the injection pump motor shaft. During the injection phase, the Recirculation pumps are cooled by the auxiliary component cooling water pumps, which are not governed by this LCO.

INSERT: B 3.7-36-04

Any one of the three CCW pumps in conjunction with any one of the two CCW heat exchangers is sufficient to accommodate the normal and post accident heat load if the CCW system is operated as two cross connected loops. Either CCW pump in conjunction with either CCW heat exchanger or the third CCW pump in conjunction with either associated CCW heat exchanger is sufficient if the CCW loops are isolated.

Because the component cooling pumps do not run during the injection phase if the event is accompanied by a loss of offsite power, the water volume of the CCW system is used as a heat sink. This heat load causes a temperature rise of approximately 7°F per hour in the component cooling water with no credit is taken for the water volume in the surge tank. With a maximum initial CCW temperature of 110°F at the start of the accident, 6 hours are available before the cooling water temperature reaches 150°F; 10 hours is available before reaching 180°F. Evaluations of the heat removal capability of the CCW System are contained in References 2 and 3.

BASES

APPLICABLE SAFETY ANALYSES (continued)

~~assumed. This prevents the containment sump fluid from increasing in temperature during the recirculation phase following a LOCA, and provides a gradual reduction in the temperature of this fluid as it is supplied to the Reactor Coolant System (RCS) by the ECCS pumps.~~

The CCW System is designed to perform its function with a single failure of any active component, assuming a loss of offsite power.

The CCW System also functions to cool the unit from RHR entry conditions (T_{cold} < [350]°F), to MODE 5 (T_{cold} < [200]°F), during normal and post accident operations. The ~~time required to cool from [350]°F to [200]°F is a function of the number of~~ CCW and RHR ~~trains operating~~. One CCW train is sufficient to remove decay heat during subsequent operations with T_{cold} < [200]°F. This assumes a maximum service water temperature of [95]°F occurring simultaneously with the maximum heat loads on the system.

avg

avg

flowrate, service water flow rate and UHS temperature

loop

avg

The CCW System satisfies Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36

LCO

loops

The CCW trains are independent of each other to the degree that each has separate controls and power supplies and the operation of one does not depend on the other. In the event of a DBA, one CCW train is required to provide the minimum heat removal capability assumed in the safety analysis for the systems to which it supplies cooling water. To ensure this requirement is met, two trains of CCW must be OPERABLE. At least one CCW train will operate during the recirculation phase assuming the worst case single active failure occurs coincident with a loss of offsite power.

Insert: B3.7-37-01

A CCW train is considered OPERABLE when:

loop

a. The pump and associated surge tank are OPERABLE; and

b. The associated piping, valves, heat exchanger, and instrumentation and controls required to perform the safety related function are OPERABLE.

The isolation of CCW from ~~other~~ components or systems ~~not required for safety~~ may render those components or systems

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.8 - Component Cooling Water (CCW) System

INSERT: B 3.7-37-01

A CCW loop consists of any of the three CCW pumps in conjunction with a CCW heat exchanger.

Insert B 3.7-38-01

BASES

LCO (continued)

inoperable but does not affect the OPERABILITY of the CCW System.

APPLICABILITY

In MODES 1, 2, 3, and 4, the CCW System is a normally operating system, which must be prepared to perform its post accident safety functions, primarily RCS heat removal, which is achieved by cooling the RHR heat exchanger.

In MODE 5 or 6, the OPERABILITY requirements of the CCW System are determined by the systems it supports.

ACTIONS

A.1

loop

Required Action A.1 is modified by a Note indicating that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," be entered if an inoperable CCW train results in an inoperable RHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.

loop

If one CCW train is inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition, ~~the remaining OPERABLE CCW train is adequate to perform the heat removal function. The 72 hour Completion Time is reasonable, based on the redundant capabilities afforded by the OPERABLE train~~ and the low probability of a DBA occurring during this period.

B.1 and B.2

loop

If the CCW train cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

~~(continued)~~

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.~~7~~.1 8

This SR is modified by a Note indicating that the isolation of the CCW flow to individual components may render those components inoperable but does not affect the OPERABILITY of the CCW System.

Verifying the correct alignment for manual, power operated, and automatic valves in the CCW flow path provides assurance that the proper flow paths exist for CCW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these valves are verified to be in the correct position prior to locking, sealing, or securing. This SR also does not apply to valves that cannot be inadvertently misaligned, such as check valves. This Surveillance does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position.

Insert: B 3.7-39-01

Insert: B 3.7-39-02

92

The ~~31~~ day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.~~7~~.2 8

This SR verifies proper automatic operation of the CCW valves on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

24

24

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.8 - Component Cooling Water (CCW) System

INSERT: B 3.7-39-01

Valves located inside containment are considered to be locked.

INSERT: B 3.7-39-02

Valves that are throttled are verified by verification of required flow.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.~~7~~8.3

This SR verifies proper automatic operation of the CCW pumps on an actual or simulated actuation signal. The CCW System is a normally operating system that cannot be fully actuated as part of routine testing during normal operation. The ~~18~~ 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. ~~Operating experience has shown that these components usually pass the Surveillance when performed at the 18 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

REFERENCES

1. FSAR, Section ~~[9.2.2]~~ 9.3.
2. FSAR, Section ~~[~~6.2~~]~~.

Insert: B 3.7-40-01

NUREG-1431 Markup Inserts

ITS SECTION 3.7.8 - Component Cooling Water (CCW) System

INSERT: B 3.7-40-01

3. WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increased to 95° at IP-3."

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.8:
"Component Cooling Water (CCW) System"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.8 - Component Cooling Water (CCW) System

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3

Improved

Technical Specifications

Conversion Submittal

Volume 12

New York Power Authority

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.9:
"Service Water System (SWS)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.9 Service Water System (SW)

LCO 3.7.9 Three pumps and required flow path for the essential SW header shall be Operable;

<u>AND</u>,

Two pumps and required flow path for the nonessential SW header shall be Operable.

APPLICABILITY: MODES 1, 2, 3, and 4.

------------------------------------NOTES------------------------------------

1. Separate Condition entry is allowed for each SW header.

2. If LCO 3.7.9 will be met after the essential and non-essential header are swapped, then LCO 3.0.3 is not applicable for 8 hours while swapping the essential SW header with the nonessential SW header.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required SW pump on essential header inoperable; <u>OR</u> One required SW pump on nonessential header inoperable.	A.1 Restore SW pump to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One SW to EDG ESFAS valve inoperable.	B.1	Restore both SW to EDG ESFAS valves to OPERABLE status.	12 hours
C. One SW to FCU ESFAS valve inoperable.	C.1	Restore both SW to FCU ESFAS valves to OPERABLE status.	12 hours
D. Required Action and associated Completion Time of Condition A or B or C not met.	D.1	Be in MODE 3	6 hours
	<u>AND</u>		
	D.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.9.1	-------------------NOTE------------------- Isolation of SW flow to individual components does not render the SW header inoperable. -- Verify each SW manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	92 days
SR 3.7.9.2	Verify each SW automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	24 months
SR 3.7.9.3	Verify each SW pump starts automatically on an actual or simulated actuation signal.	24 months

B 3.7 PLANT SYSTEMS

B 3.7.9 Service Water System (SW)

BASES

BACKGROUND

The SW provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation, and a normal shutdown, the SW also provides this function for various safety related and nonsafety related components. The safety related function is covered by this LCO.

The SW consists of two separate, 100% capacity, safety related, cooling water headers. Each header is supplied by three pumps and includes the piping up to and including the isolation valves on individual components cooled by the SW. Each of the 6 SW pumps is equipped with rotary strainers and isolation valves.

SW heat loads are designated as either essential or nonessential. The essential SW heat loads are those which must be supplied with cooling water immediately in the event of a LOCA and/or loss of offsite power (LOOP). Examples of essential loads are the emergency diesel generators (EDGs), containment fan cooler units (FCUs) and control room air conditioning system (CRACS). The nonessential SW heat loads are those which are required only following the switch over to the recirculation phase following a postulated LOCA. Examples of nonessential loads are the component cooling water (CCW) heat exchangers.

The FCUs are connected in parrallel to the essential SW header. Normal SW flow to the FCUs is controlled by TCV-1103. Required ESFAS flow to all five FCUs is initiated when either of the redundant SW to FCU ESFAS valves (TCV-1104 or TCV-1105) opens automatically in response to an ESFAS actuation signal.

The EDGs are connected in parrallel to the essential SW header. Required ESFAS flow to all three EDGs is initiated when either of the redundant SW to EDG ESFAS valves (FCV-1176 or FCV-1176A) opens automatically in response to an ESFAS actuation which starts the EDGs.

BASES

BACKGROUND (continued)

The CRACS are connected in parrallel to the essential SW header. Required ESFAS flow to both CRACS is provided continuously because the redundant SW to CRACS valves (TCV-1310/1311 and TCV-1312/1313) have been modified to provide the required flow at all times.

Either of the two SW headers can be aligned to supply the essential heat loads or the nonessential SW heat loads. Both the essential and nonessential SW headers are operated to support normal plant operation and the plant response to accidents and transients. The SW pumps associated with the SW header designated as the essential header will start automatically. The SW pumps associated with the SW header designated as the nonessential header must be manually started when required following a LOCA.

The essential SW heat loads can be cooled by any two of the three service water pumps on the essential header. The nonessential SW heat loads can be cooled by any one of the three service water pumps on the nonessential header. To ensure adequate flow to the essential header, the essential and nonessential headers may be cross connected only as necessary while swapping the essential SW header with the non essential SW header.

Service water pump suctions are located below the mean sea level in the Hudson River, the ultimate heat sink. This configuration ensures adequate submergence of the SW pump suctions.

Additional information about the design and operation of the SW, along with a list of the components served, is presented in the FSAR, Section 9.6, (Ref. 1). The principal safety related function of the SW is the removal of decay heat from the reactor via the CCW System.

BASES

APPLICABLE SAFETY ANALYSES

The design basis of the SW is as follows: post accident essential SW heat loads can be cooled by any two of the three service water pumps on the designated essential header; and, post accident nonessential SW heat loads can be cooled by any one of the three service water pumps on the designated nonessential header. With the minimum number of pumps operating, the essential and nonessential headers of the SW have the required capacity to remove core decay heat following a design basis LOCA as discussed in References 1, 2 and 3. This prevents the containment sump fluid from increasing in temperature during the recirculation phase following a LOCA and provides for a gradual reduction in the temperature of this fluid as it is supplied to the Reactor Coolant System by the ECCS pumps. The Service Water System was designed to fulfill required safety functions while sustaining: (a) the single failure of any active component used during the injection phase of a postulated LOCA with or without a LOOP, or (b) the single failure of any active or passive component used during the long-term recirculation phase with or without a LOOP.

The operating modes of the IP3 SW are as follows: a) normal mode; b) post-LOCA injection mode; and, c) post-LOCA recirculation mode. The postulated failure conditions of the SW must include consideration of the limiting case for each operating mode of the system which are as follows:

a. Loss of the 10 inch turbine building service water supply header during normal operation and a seismic event;
b. Loss of instrument air, during the post-LOCA injection phase concurrent with single active component failure.
c. Loss of a SW pump on both the essential and nonessential headers (resulting from an EDG failure) during the post-LOCA recirculation phase.

The SW, in conjunction with the CCW System, also cools the unit from residual heat removal (RHR) entry conditions to MODE 5 during normal and post accident operations. The time required for this evolution is a function of CCW and RHR system flow, SW flow and UHS temperature. This assumes a maximum SW temperature

BASES

APPLICABLE SAFETY ANALYSES (continued)

of 95°F occurring simultaneously with maximum heat loads on the system (Ref. 3).

The SW satisfies Criterion 3 of 10 CFR 50.36.

LCO

Three of the three SW pumps associated with the SW header designated as the essential header; and, two of the three SW pumps associated with the SW header designated as the nonessential header must be OPERABLE to provide the required redundancy to ensure that the system functions to remove post accident heat loads, while sustaining: (a) the single failure of any active component used during the injection phase of a postulated LOCA with or without a LOOP, or (b) the single failure of any active or passive component used during the long-term recirculation phase with or without a LOOP.

An SW header is considered OPERABLE during MODES 1, 2, 3, and 4 when:

a. The required number of pumps, consistent with the header's designation as the essential or nonessential header, are OPERABLE; and

b. The essential and nonessential headers are isolated from each other by at least one closed valve except as specified by NOTE 2 to the ACTIONS;

c. The associated piping, valves, instrumentation and controls required to perform the safety related function are OPERABLE.

The SW to FCU valves (TCV-1104 or TCV-1105) and SW to EDG valves (FCV-1176 or FCV-1176A) are OPERABLE when they open automatically in response to ESFAS actuation signal or are blocked open.

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, the SW is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the SW and required to be OPERABLE in these MODES.

In MODES 5 and 6, the OPERABILITY requirements of the SW are determined by the systems it supports.

ACTIONS

The ACTIONS are modified by two Notes. Note 1 specifies that separate condition entry is allowed for the SW header designated as essential and for the SW header designated as nonessential. This allows completely separate re-entry into any Condition for the essential SW header and the nonessential SW header. Separate condition entry includes separate tracking of Completion Times based on this re-entry. This is acceptable because the accident analysis assumptions regarding the available number of SW pumps on the essential and nonessential SW headers are independent.

Note 2 specifies that LCO 3.0.3 is not applicable for 8 hours while swapping the essential SW header with the nonessential SW header but only if LCO 3.7.9 will be met after the essential and non-essential header are swapped. This means that the essential and nonessential SW headers may be cross-connected for up to 8 hours during transfer of the designated essential SW header to the alternate SW header. This is acceptable because the transfer is performed infrequently (i.e., approximately every 90 days) and the low probability of an event while the headers are cross connected.

A.1

If one of the three required SW pumps on the essential SW header is inoperable, three Operable pumps must be restored to the essential SW header within 72 hours. Likewise, if one of the two required SW pumps on nonessential SW header is inoperable, the header must be restored so that there are two Operable pumps for the nonessential SW header within 72 hours. With one required SW pump inoperable on either or both SW headers, the remaining OPERABLE SW pumps are adequate to perform the heat removal function. However, the overall reliability is reduced because a

BASES

ACTIONS

A.1 (contdinued)

single failure in an OPERABLE SW pump could result in loss of SW function. The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE pump(s) in the same header, and the low probability of a DBA occurring during this time period.

B.1 and C.1

Required ESFAS flow to all three EDGs is initiated when either of the redundant SW to EDG valves (FCV-1176 or FCV-1176A) opens automatically in response to an ESFAS actuation which starts the EDGs. Similarly, required ESFAS flow to all five FCUs is initiated when either of the redundant SW to FCU valves (TCV-1104 or TCV-1105) opens automatically in response to an ESFAS actuation signal. The SW to FCU valves and SW to EDG valves are OPERABLE when they open automatically in response to an ESFAS actuation signal or are blocked open.

If one of the redundant SW to EDG valves is inoperable, a single failure of the redundant valve could result in the failure of all three EDGs shortly after the initiation of an event. If one of the redundant SW to FCU valves is inoperable, a single failure of the redundant valve could result in the failure of all five FCUs. Therefore, a Completion Time of 12 hours is established to restore the required redundancy.

A 12 hour Completion Time is acceptable for the SW to EDG valves because SW to the EDGs is still available and the low probability of an event with a loss of offsite power during this period. A 12 hour Completion Time is acceptable for the SW to FCU valves because SW to the FCUs is still available, the avialability of Containment Spray, and the low probability of an event during this period.

If both SW to EDG valves or both SW to FCU valves are inoperable, entry into LCO 3.0.3 is required.

BASES

ACTIONS (continued)

D.1 and D.2

If more than one required SW pump in either the essential or the nonessential header is inoperable; or, if the flow path associated with either header is not capable of performing its safety function (e.g., both SW to EDG valves or both SW to FCU valves are inoperable), then the unit must be placed in a MODE in which the LCO does not apply.

Additionally, if an SW header cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply.

To achieve the required status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1

This SR is modified by a Note indicating that the isolation of the SW components or systems may render those components inoperable, but does not affect the OPERABILITY of the SW.

Verifying the correct alignment for manual, power operated, and automatic valves in the SW flow path provides assurance that the proper flow paths exist for SW operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since they are verified to be in the correct position prior to being locked, sealed, or secured. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1 (continued)

The 92 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

SR 3.7.9.2

This SR verifies proper automatic operation of the SW valves on an actual or simulated actuation signal. The SW is a normally operating system that cannot be fully actuated as part of normal testing. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

SR 3.7.9.3

This SR verifies proper automatic operation of the SW pumps on an actual or simulated actuation signal. The SW is a normally operating system that cannot be fully actuated as part of normal testing during normal operation. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

BASES

REFERENCES

1. FSAR, Section 9.6.
2. FSAR, Section 6.2.
3. WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increase to 95°F at Indian Point 3."

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.9:
"Service Water System (SWS)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.3-10	145	145	No TSCRs	No TSCRs for this Page	N/A
3.3-10a	98	98	No TSCRs	No TSCRs for this Page	N/A
3.3-19	145 IPN 97-175	145 IPN 97-175	IPN 97-175	Changes to Bases Pages	
T 4.1-3(1)	178 TSCR 97-156, 98-043	178 TSCR 97-156, 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated
T 4.1-3(1)	178 TSCR 97-156, 98-043	178 TSCR 97-156, 98-043	IPN 97-156	SR Freq for Main Turbine Stop and Control Valves	Incorporated

SEE ITS 3.7.8

3. If the Component Cooling System is not restored to meet the requirements of 3.3.E.1 within the time periods specified in 3.3.E.2, then:

a. If the reactor is critical, it shall be in the hot shutdown condition within four hours and in the cold shutdown condition within the following 24 hours.

b. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values. If the requirements of 3.3.E.1 are not satisfied within an additional 48 hours, the reactor shall be brought to the cold shutdown condition utilizing normal operating procedures. The shutdown shall start no later than the end of the 48 hour period.

F. Service Water System/~~Ultimate Heat Sink~~ SEE ITS 3.7.10

LCO 3.7.9 Applicability

1. ~~The reactor shall not be brought above cold shutdown unless~~ Mode 1, 2, 3 & 4 A.3

LCO 3.7.9

a. Three service water pumps on the designated essential header and a minimum of two service water pumps on the designated non-essential header, ~~together with their associated piping and valves~~, are operable. A.1

SEE ITS 3.7.10

b. The service water inlet temperature is less than or equal to 95°F.

Req. Act B.1, C.1
Req. Act D.1
Req. Act D.2

2. ~~When the reactor is above cold shutdown and~~ if the requirements of 3.3.F.1.a cannot be met within twelve hours, the reactor shall be brought to the cold shutdown condition, starting no later than the end of the twelve hour period, ~~utilizing normal operating procedures~~ Mode 3 in 6 hrs; Mode 5 in 36 hrs A.3 M.2 A.4

SEE ITS 3.7.10

3. When the reactor is above cold shutdown and if the requirement of 3.3.F.1.b is exceeded, the reactor shall be placed in at least hot shutdown within seven hours, and in cold shutdown within the following thirty hours unless the service water inlet temperature decreases to within the requirement of 3.3.F.1.b.

Add LCO 3.7.9, Actions, Note 1: Separate Cond entry A.5

Add Condition and and associated Req Act. A.1 M.1 L.1

Add Condition E and Req Action D.1 M.1 M.2

LA.1

LCO 3.7.9 Note 2

4. ~~Isolation shall be maintained between the essential and non-essential headers at all times when above cold shutdown conditions~~ except that for a period of eight hours the headers may be connected while another essential header is being placed in service as described in F.2 above. A.7

SEE ITS 3.7.10

5. At least two service water inlet temperature monitoring instruments (any combination of installed or portable instruments) shall be operable when the reactor is above 350°F and service water inlet temperature exceeds 90°F.

6. If the requirements of 3.3.F.5 cannot be met, the reactor shall be placed in the hot shutdown condition within the next seven hours and subsequently cooled below 350°F using normal operating procedures.

7. Service water inlet temperature shall be the average of two or more service water inlet temperature monitoring instrument readings per 3.3.F.5 taken within a five minute interval (instantaneous).

8. When the reactor is above 350°F and service water inlet temperature per 3.3.F.7 exceeds 90°F, service water inlet temperature monitoring shall commence at a frequency of once per hour.

Add SR 3.7.9.1 M3

Add Note to SR 3.7.9.1 A.6

Add SR 3.7.9.2 M.4

Add SR 3.7.9.3 M.5

A.1

~~A total of six service water pumps are installed. Only two of the set of three service water pumps on the header designated the essential header are required immediately following a postulated loss-of-coolant accident.[8] During the recirculation phase of the accident, two service water pumps on the non-essential header will be manually started to supply cooling water for one component cooling system heat exchanger, one control room air conditioner, and one diesel generator; the other component cooling system heat exchanger, the other control room air conditioner, the two other diesel generators and remaining safety related equipment are cooled by the essential service water header.[14] During the recirculation phase of the accident, both control room air conditioner units may be cooled by the essential service water header.~~

~~The operability requirements on service water temperature monitoring instrumentation and the frequency of service water temperature monitoring insures that appropriate action can be taken to preclude operation beyond established limits. The locations selected for monitoring river water temperature are typically at the circulating or service water inlets, at the circulating water inlet boxes to the condenser hotwells or at the service water supply header to the fan cooler units. Temperature measurements at each of these locations are representative of the river water temperature supplied to cool plant heat loads. Alternate locations may be acceptable on this basis. The limit on the service water maximum inlet temperature insures that the service water and component cooling water systems will be able to dissipate the heat loads generated in the limiting design basis accident[15]. This restriction allows up to seven hours for river water temperature transients which may temporarily increase the service water inlet temperature due to tidal effects to dissipate.~~

~~The operability of the equipment and systems required for the control of hydrogen gas ensures that this equipment is available to maintain the hydrogen concentration within containment below the flammable limit during post-LOCA conditions. Hydrogen concentration exceeding the flammable limit could potentially result in a containment wide hydrogen burn. This could lead to overpressurization of containment, a breach of CONTAINMENT INTEGRITY, containment leakage, unacceptably high offsite doses, and damage to safety-related equipment located in containment. Two full rated recombiner units are provided in order to control the hydrogen evolved in containment following a loss-of-coolant accident. Each unit is capable of preventing the hydrogen concentration from exceeding the flammable limit. Each recombiner is installed such that independence is maintained and redundancy is assured. Each hydrogen recombiner system consists of a recombiner located inside containment, and a separate power supply, and control panel located outside containment such that they are accessible following a design basis accident.~~

TSCR 97-175

SEE CTS MASTER MARKUP

TABLE 4.1-3 (Sheet 1 of 2)

FREQUENCIES FOR EQUIPMENT TESTS

	Check	Frequency
1. Control Rods	Rod drop times of all control rods	24M
2. Control Rods	Movement of at least 10 steps in any one direction of all control rods	Every 31 days during reactor critical operations
3. Pressurizer Safety Valves	Set Point	24M*
4. Main Steam Safety Valves	Set Point	24M
5. Containment Isolation System	Automatic actuation	24M
6. Refueling System Interlocks	Functioning	Each refueling, prior to movement of core components
7. Primary System Leakage	Evaluate	5 days/week
8. Diesel Generators Nos. 31, 32 & 33 Fuel Supply	Fuel Inventory	Weekly
9. Turbine Steam Stop And Control Valves	Closure	Not to exceed 6 months**
10. L.P. Steam Dump System (6 lines)	Closure	Monthly
LCO 3.7.9 11. Service Water System	~~Each pump starts and operates for 15 minutes (unless already operating)~~	~~Monthly~~ Quarterly TSCR LA.2
12. City Water Connections to Charging Pumps and Boric Acid Piping	Temporary connections available and valves operable	24M

SEE CTS MASTER MARKUP

* ~~Pressurizer Safety Valve setpoint test due no later than May 1996 may be deferred until the next refueling outage but no later than May 31, 1997.~~ TSCR 97-156

** The turbine steam stop and control valves shall be tested at a frequency determined by the methodology presented in WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency," as updated by Westinghouse Report, WOG-TVTF-93-17, "Update of BB-95/96 Turbine Valve Failure Rates and Effect on Destructive Overspeed Probabilities." The maximum test interval for these valves shall not exceed six months. Surveillance interval extension as per Technical Specification 1.12 is not applicable to the maximum test interval.

TSCR 98-043

TSCR 97-156

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.9:
"Service Water System (SWS)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.9 - Service Water System (SWS)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.3.F specifies the Applicability for Service Water System/Ultimate Heat Sink as whenever the reactor is above cold shutdown (i.e., Modes 1, 2, 3 and 4). ITS 3.7.9 and ITS LCO 3.7.10 maintain this Applicability by requiring that the Service Water System and Ultimate Heat Sink be Operable in Modes 1, 2, 3 and 4. This is an administrative change with no impact on safety because there is no change to the CTS Applicability.

A.4 CTS 3.3.F.2 specifies that if requirements for Service Water System Operability are not met and not restored within the specified time, then the reactor must be placed in cold shutdown (Mode 5) utilizing normal operating procedures. Under the same conditions, ITS 3.7.9, Required Actions D.1 and D.2, require that the plant be in Mode 3 in 6 hours and Mode 5 in 36 hours. This change is acceptable because these times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. Allowing 36 hours to reach Mode 5 when there is less than the full service water capacity is acceptable because there is a low probability of a DBA occurring during the time allowed to reach Mode 5. This is an administrative change with no impact on safety because it is a reasonable interpretation of existing requirements.

A.5 The Actions for ITS 3.7.9, Service Water System, are preceded by a Note that specifies: "Separate Condition entry is allowed for the essential SWS header and the nonessential SWS header." This allowance provides explicit recognition that the ITS is designed to allow completely separate re-entry into any Condition for the essential SWS header and the nonessential SWS header when either or both are addressed by the same Condition. This includes separate tracking of Completion Times based on this re-entry.

This change is acceptable because the essential SWS header supplies cooling water to those loads that must be supplied immediately in the event of a loss of offsite power and/or LOCA and the nonessential SWS header supplies cooling water to those loads that do not require immediate cooling and where the SWS pump can be manually started when needed (e.g., CCW heat exchangers are nonessential SWS loads because cooling to a CCW water heat exchanger is not required during the injection phase of a LOCA).

The addition of this Note is an administrative change with no impact on safety because the accident analysis assumptions regarding the availability of the essential and nonessential SWS headers are independent. Additionally, this change represents an explicit statement of a reasonable interpretation of the existing requirement.

A.6 CTS 3.3.F does not include any specific requirements or guidance related to the affect on SWS Operability when components or systems supported by SWS are isolated. SR 3.7.9.1 is modified by a Note indicating that the isolation of the SWS components or systems may render those components inoperable, but does not affect the Operability of the SWS. This is an administrative change with no impact on safety because it is an explicit statement of a reasonable interpretation of the existing requirement.

A.7 CTS 3.3.F.4 specifies that isolation must be maintained between the essential and nonessential headers at all times (See ITS 3.7.9, DOC LA.1) except that for a period of eight hours the headers may be connected while another essential header is being placed in service. ITS LCO 3.7.9, Note 2, maintains and clarifies this requirement as follows: "If LCO 3.7.9 will be met after the essential and non-essential header are swapped, then LCO 3.0.3 is not applicable for 8 hours while swapping the essential SWS header with the nonessential SWS header." The ITS clarification, if LCO 3.7.9 will be met after the essential and non-essential header are swapped, ensures that the Note is not used to circumvent Service Water system allowable out of service times. This is an administrative change with no adverse impact on safety because it is a reasonable interpretation of the CTS requirement.

MORE RESTRICTIVE

M.1 CTS 3.3.F.1 requires 3 service water pumps on the essential SWS header because 2 pumps are required in the accident analysis; CTS 3.3.F.1 requires 2 service water pumps on the nonessential SWS header because 1 pump is required in the accident analysis. If one or more pumps on either or both headers are inoperable, CTS 3.3.F.2 allows 12 hours for restoration. Note that CTS 3.3.F.2 permits the same Allowable Out of Service Times (AOTs) for a loss of function or a loss of redundancy on the essential and/or nonessential service water headers.

ITS LCO 3.7.9, Required Action A.1, revise CTS 3.3.F.2 to differentiate between a loss of function and a loss of redundancy on the essential and/or nonessential service water headers when a SW pump is inoperable.

ITS LCO 3.7.9, Required Action A.1, establishes an AOT of 72 hours (See ITS 3.7.9, DOC L.1) when one inoperable essential and/or nonessential SW pump causes a loss of SW redundancy on the essential and/or nonessential service water headers but both the essential and nonessential SW function are maintained (i.e., at least two essential and one nonessential SW pumps are Operable). If there is a loss of minimum required essential and/or nonessential SW function, ITS LCO 3.7.9, Required Action D.1, requires that the plant is promptly placed in a Mode in which the LCO does not apply. This is a more restrictive change because CTS 3.3.F.2 would allow operation with a loss of minimum required essential and/or nonessential SW function to continue for 12 hours before a plant shutdown is required.

The reasons more restrictive requirements are needed and are acceptable are as follows:

ITS LCO 3.7.9, Condition D and Required Action D.1, are Applicable whenever either SWS header inoperable for reasons other than Condition A (i.e., one essential and/or nonessential SW pump inoperable), Condition B (i.e., redundant SW to FCU valve inoperable) or Condition C (i.e., redundant SW to EDG valve inoperable). Because all other components associated with the Operability of an SWS header are passive components, in almost all cases entry into Condition D will be the result of multiple inoperable pumps on an SWS header or loss of SW to all FCUs or all EDGs. This places the plant outside the design basis; therefore, prompt plant shutdown is warranted. This more restrictive change does not introduce any operation which is un-analyzed while establishing appropriate requirements when the plant is operating outside of the design basis. Therefore, this change has no adverse impact on safety.

M.2 CTS 3.3.F.1 requires that the required number of essential SW pumps are operable "together with their associated piping and valves." CTS 3.3.F.2 allows 12 hours for restoration of inoperable SW piping and valves. This 12 hour AOT would apply if one or both of the parallel (redundant) automatic valves that supply SW to Fan Cooler Units (FCUs) (TCV-1104 and TCV-1105) and/or supply SW to Emergency Diesel Generators (EDGs) (FCV-1176 and/or FCV-1176A) are inoperable. If both TCV-1104 and

TCV-1105 are inoperable, there is a loss of function of all 5 FCUs. If both FCV-1176 and FCV-1176A are inoperable, there is a loss of function of all 3 EDGs. Note that CTS 3.3.F.2 permits the same Allowable Out of Service Time (AOT) for a loss of redundancy on the essential service water header and a loss of SW function to all EDGs and/or FCUs.

ITS LCO 3.7.9, Required Actions B.1 and C.1, revise CTS 3.3.F.2 to differentiate between a loss of function and a loss of redundancy on the essential service water header when the parallel automatic valves that supply SW to FCU and/or SW to EDG are inoperable. ITS LCO 3.7.9, Required Actions B.1 and C.1, maintain the 12 hour AOT when an inoperable valve causes loss of redundancy in the SW flow path to all FCUs and/or all EDGs but an operable flow path remains. If there is a loss of minimum required essential SW function, ITS LCO 3.7.9, Required Action D.1, requires that the plant is promptly placed in a Mode in which the LCO does not apply. This is a more restrictive change because CTS 3.3.F.2 would allow operation with a loss of minimum required essential and/or nonessential SW function to continue for 12 hours before a plant shutdown is required.

The reasons more restrictive requirements are needed and are acceptable are as follows:

ITS LCO 3.7.9, Condition D and Required Action D.1, are Applicable whenever the essential SW header inoperable for reasons other than Condition B (i.e., redundant SW to FCU valve inoperable) or Condition C (i.e., redundant SW to EDG valve inoperable). Because all other components associated with the Operability of an SWS header are passive components, in almost all cases entry into Condition D will be the result of multiple inoperable pumps on an SWS header or loss of SW to all FCUs or all EDGs. This places the plant outside the design basis; therefore, a prompt plant shutdown is warranted. This more restrictive change does not introduce any operation which is un-analyzed while establishing appropriate requirements when the plant is operating outside of the design basis. Therefore, this change has no adverse impact on safety.

M.3 CTS 3.3 and CTS 4.1 do not require periodic verification that valves capable of being mispositioned are in the correct position. ITS SR 3.7.9.1 establishes a requirement for verification of the correct alignment for manual, power operated, and automatic valves in the SWS System flow paths every 92 days to provide assurance that the proper flow paths will exist for SWS operation. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification of a proper valve lineup at a Frequency consistent with good engineering practice. Therefore, this change has no adverse impact on safety.

M.4 CTS 3.3 and CTS 4.1 do not specifically require periodic verification that SWS valves will actuate to the correct position when required. ITS SR 3.7.9.2 establishes a requirement to verify every 24 months that each SWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification that automatic SWS valves function as required. Operating experience indicates that the 24 month Frequency is sufficient to provide a high degree of assurance that SWS valves will remain capable of actuating throughout the SR interval. Therefore, this change has no adverse impact on safety.

M.5 CTS 3.3 and CTS 4.1 do not specifically require periodic verification each SWS pump will start automatically when required although CTS Table 4.1-3, Item 11 (as modified by TSCR 98-043), requires a manual pump start at least once per quarter (See ITS 3.7.9, DOC LA.2). ITS SR 3.7.9.3 establishes a requirement to verify every 24 months that each SWS pump starts automatically on an actual or simulated actuation signal. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification automatic SWS valves function as required. Operating experience indicates that the 24 month Frequency is sufficient to provide a high degree of assurance that SWS pumps will remain capable of starting throughout the SR interval. Therefore, this change has no adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.3.F.1 requires 3 service water pumps on the SWS header designated as essential because 2 pumps are required in the accident analysis; CTS 3.3.F.1 requires 2 service water pumps on the SWS header designated as nonessential because 1 pump is required in the accident analysis. If one or more required pumps on either or both headers are inoperable, CTS 3.3.F.2 allows 12 hours for restoration. Note that CTS 3.3.F.2 permits the same Allowable Out of Service Times (AOTs) for a loss of function or a loss of redundancy on one or both headers.

Under the same conditions, ITS LCO 3.7.9, Required Action A.1, revises CTS 3.3.F.2 to provide a less restrictive AOT (72 hours versus 12 hours) when an inoperable essential and/or nonessential SW pump results in a loss of redundancy but functional capability is maintained.

This change is needed to provide an allowable out of service time (AOT) commensurate with the level of degradation resulting from the inoperability of one of the three 50% capacity pumps on the essential SWS header and one of the two 100% capacity pumps on the nonessential SWS header. This change is acceptable because of the following: the remaining Operable pumps are capable of removing the post accident heat load; and, the low probability of an event during the AOT for a pump on the essential and/or nonessential header. This change is supported by ITS LCO 3.8.1, Required Actions, which limits the time that a required component may be inoperable if the normal or emergency power supply to the redundant component is inoperable. Therefore, this change has no significant impact on safety.

REMOVED DETAIL

LA.1 CTS 3.3.F.4 specifies that isolation must be maintained between the essential and nonessential headers at all times when above cold shutdown except for a period of eight hours when the headers may be cross connected while another essential header is being placed in service. The allowance permitting the essential and nonessential headers to be cross connected for 8 hours while changing the SWS lineup is maintained in ITS LCO 3.7.9.1, Note 2; however, the statement that the SWS essential and nonessential headers must otherwise be isolated is moved to the Bases as a requirement of SWS Operability. The requirement to separate SWS headers is not changed and is still enforced indirectly by SR 3.7.9.1 and the description of requirements for Operability in the ITS Bases. This is acceptable because this valve lineup information is incorporated into the minimum requirements and ITS specifies the minimum requirements for Operability. Therefore, this design information can be adequately defined and controlled in the ITS 3.7.9 Bases which require change control in accordance with ITS 5.5.12, Bases Control Program.

This change, which allows the detailed description of the requirements for Operability of these systems to be maintained in the ITS Bases, is consistent with the approach used in NUREG-1431 for all Limiting Conditions for Operation (LCOs). This approach is acceptable because the requirements of ITS 5.5.13, Technical Specifications (TS) Bases Control Program, is designed to assure that changes to the ITS Bases do not result in changes to the Technical Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight is maintained for the information being relocated out of the Technical Specifications.

LA.2 CTS Table 4.1-3, Item 11, requires a manual pump start and 15 minutes of pump operation at least once per month (quarterly as modified by TSCR

98-043). ITS SR 3.7.9.3 establishes a new requirement to verify every 24 months that each SWS pump starts automatically on an actual or simulated actuation signal (See ITS 3.7.9, DOC M.4); however, the requirement for a manual pump start and 15 minutes of pump operation at least once per quarter is relocated to the Inservice Testing (IST) Program.

This change is acceptable for the following reasons: the requirement to operate each pump for 15 minutes will be maintained in the IST Program; ITS LCO 3.7.9 maintains the requirement that SWS is Operable; at least 2 of the 6 SWS pumps are running during normal plant operation and the running pumps are rotated; and, operating experience indicates that SWS pumps will remain capable of starting throughout the 24 month SR interval in SR 3.7.9.3.

ITS 5.5.7, Inservice Testing Program (IST), requires establishing and maintaining a program for inservice testing of ASME Code Class 1, 2, and 3 components at frequencies specified in Section XI of the ASME Boiler and Pressure Vessel Code. Additionally, 10 CFR 50.55a(f) already provides the regulatory requirements for this IST Program, and specifies that ASME Code Class 1, 2, and 3 pumps and valves are covered by an IST Program. Therefore, maintaining the requirement that SWS pumps must be Operable in ITS 3. 7.9 and maintaining the requirement for periodic testing of pumps in the IST Program required by ITS 5.5.7 provides a high degree of assurance that the SWS will be tested and maintained to ensure SWS Operability. Additionally, ITS 5.5.7, Inservice Testing Program (IST), requirements and 10 CFR 50.55a(f) ensure adequate change control and regulatory oversight for any changes to the existing requirements. Therefore, requirements to test ECCS pumps can be maintained in the ITS with the Frequency in the IST program with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.9:
"Service Water System (SWS)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.9 - Service Water System (SWS)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change modifies the allowable out of service (AOT) for inoperable service water system (SWS) pumps to differentiate between loss of function and loss of redundancy. This change extends the allowable out of service time for an inoperable SWS pump that does not result in a loss of function from 12 hours to 72 hours. This change will not result in a significant increase in the probability of an accident previously evaluated because the status of SWS pumps has no affect on the initiators of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because the remaining Operable pumps are capable of removing the post accident heat load, the amount of time in this condition is limited, and the low probability of an event. This change is supported by ITS LCO 3.8.1, Required Actions, which limits the time that a required component may be inoperable if the normal or emergency power supply to the redundant component is inoperable.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the remaining Operable pumps are capable of removing the post accident heat load, the amount of time in this condition is limited, and the low probability of an event. This change is supported by ITS LCO 3.8.1, Required Actions, which limits the time that a required component may be inoperable if the normal or emergency power supply to the redundant component is inoperable.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.9:
"Service Water System (SWS)"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.9

This ITS Specification is based on NUREG-1431 Specification No. **3.7.8**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
N/A	N/A	NO GENERIC CHANGES ARE POSTED AGAINST THIS SPECIFICATION.	Not Applicable	Not Applicable	N/A

3.7 PLANT SYSTEMS

<CTS>

3.7.8 9 Service Water System (SWS)

<3.3.F.1.a>

LCO 3.7.8 ~~Two SWS trains shall be OPERABLE.~~ Insert: 3.7-19-01

APPLICABILITY: MODES 1, 2, 3, and 4. Insert: 3.7-19-02

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
<3.3.F.2> <Doc L.1> <Doc M.1> A. ~~One SWS train inoperable.~~ Insert: 3.7-19-03	A.1	~~NOTES~~ ~~1. Enter applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating," for emergency diesel generator made inoperable by SWS.~~ ~~2. Enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," for residual heat removal loops made inoperable by SWS.~~ Restore SWS ~~train~~ pump to OPERABLE status.	72 hours

Insert: 3.7-19-04

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.9 - Service Water System (SWS)

INSERT: 3.7-19-01

<3.3.F.1.a> Three pumps and required flow path for the essential SWS header shall be Operable;

AND,

<3.3.F.1.a> Two pumps and required flow path for the nonessential SWS header shall be Operable.

INSERT: 3.7-19-02

------------------------------------NOTES------------------------------

<Doc A.5> 1. Separate Condition entry is allowed for each SWS header.

<3.3.F.4> <Doc A.7> 2. If LCO 3.7.9 will be met after the essential and non-essential header are swapped, then LCO 3.0.3 is not applicable for 8 hours while swapping the essential SWS header with the nonessential SWS header.

INSERT: 3.7-19-03

<3.3.F.2> <Doc M.1> <Doc L.1>

One required SWS pump on essential header inoperable;

OR

One required SWS pump on nonessential header inoperable.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.9 - Service Water System (SWS)

INSERT: 3.7-19-04

<3.3.F.2> <DOC M.2> <DOC L.1>	B.	One SW to EDG ESFAS valve inoperable.	B.1	Restore both SW to EDG ESFAS valves to OPERABLE status.	12 hours
<3.3.F.2> <DOC M.2> <DOC L.1>	C.	One SW to FCU ESFAS valve inoperable.	C.1	Restore both SW to FCU ESFAS valves to OPERABLE status.	12 hours

ACTIONS (continued)

<3.3.F2>
<DOC A.4>

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~E~~ D. Required Action and associated Completion Time of Condition A, B, or C not met.	~~E~~ D.1 Be in MODE 3. AND ~~E~~ D.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

<DOC A.6>
<DOC M.3>
<DOC M.4>
<DOC M.5>
<T 4.1-3, #11>
<DOC LA.2>

SURVEILLANCE		FREQUENCY
SR 3.7.~~8~~9.1	------------------NOTE------------------ Isolation of SWS flow to individual components does not render the SWS header inoperable. -- Verify each SWS manual, power operated, and automatic valve in the flow path servicing safety related equipment, that is not locked, sealed, or otherwise secured in position, is in the correct position.	31 days 92
SR 3.7.~~8~~9.2	Verify each SWS automatic valve in the flow path that is not locked, sealed, or otherwise secured in position, actuates to the correct position on an actual or simulated actuation signal.	[18] months 24
SR 3.7.~~8~~9.3	Verify each SWS pump starts automatically on an actual or simulated actuation signal.	[18] months 24

B 3.7 PLANT SYSTEMS

B 3.7.~~8~~ 9 Service Water System (SWS)

BASES

BACKGROUND

The SWS provides a heat sink for the removal of process and operating heat from safety related components during a Design Basis Accident (DBA) or transient. During normal operation, and a normal shutdown, the SWS also provides this function for various safety related and nonsafety related components. The safety related function is covered by this LCO.

Insert: B3.7-41-01

~~The SWS consists of two separate, 100% capacity, safety related, cooling water trains. Each train consists of two 100% capacity pumps, one component cooling water (CCW) heat exchanger, piping, valving, instrumentation, and two cyclone separators. The pumps and valves are remote and manually aligned, except in the unlikely event of a loss of coolant accident (LOCA). The pumps aligned to the critical loops are automatically started upon receipt of a safety injection signal, and all essential valves are aligned to their post accident positions. The SWS also provides emergency makeup to the spent fuel pool and CCW System [and is the backup water supply to the Auxiliary Feedwater System].~~

Additional information about the design and operation of the SWS, along with a list of the components served, is presented in the FSAR, Section ~~9.2.1~~ 9.6 (Ref. 1). The principal safety related function of the SWS is the removal of decay heat from the reactor via the CCW System.

APPLICABLE SAFETY ANALYSES

Insert: B3.7-43-02

~~The design basis of the SWS is, for one SWS train, in conjunction with the CCW System and a 100% capacity containment cooling system, to remove core decay heat following a design basis LOCA as discussed in the FSAR Section [6.2] (Ref. 2).~~ This prevents the containment sump fluid from increasing in temperature during the recirculation phase following a LOCA and provides for a gradual reduction in the temperature of this fluid as it is supplied to the Reactor Coolant System by the ECCS pumps. ~~The SWS is designed to perform its function with a single failure of any active component, assuming the loss of offsite power.~~

Insert: B3.7-43-03

~~(continued)~~

Insert: B 3.7-41-01 (page 1 of 2)

The SWS consists of two separate, 100% capacity, safety related, cooling water headers. Each header is supplied by three pumps and includes the piping up to and including the isolation valves on individual components cooled by the SWS. Each of the 6 SWS pumps is equipped with rotary strainers and isolation valves.

SWS heat loads are designated as either essential or nonessential. The essential SWS heat loads are those which must be supplied with cooling water immediately in the event of a LOCA and/or loss of offsite power (LOOP). Examples of essential loads are the emergency diesel generators (EDGs), containment fan cooler units (FCUs) and control room air conditioning system (CRACS). The nonessential SWS heat loads are those which are required only following the switch over to the recirculation phase following a postulated LOCA. Examples of nonessential loads are the component cooling water (CCW) heat exchangers.

The FCUs are connected in parallel to the essential SWS header. Normal SW flow to the FCUs is controlled by TCV-1103. Required ESFAS flow to all five FCUs is initiated when either of the redundant SW to FCU ESFAS valves (TCV-1104 or TCV-1105) opens automatically in response to an ESFAS actuation signal.

The EDGs are connected in parallel to the essential SWS header. Normal Required ESFAS flow to all three EDGs is initiated when either of the redundant SW to EDG ESFAS valves (FCV-1176 or FCV-1176A) opens automatically in response to an ESFAS actuation which starts the EDGs.

The CRACs are connected in parallel to the essential SWS header. Required ESFAS flow to both CRACS is provided continuously because the redundant SW to CRACS valves (TCV-1310/1311 and TCV-1312/1313) have been modified to provide the required flow at all times.

<u>Insert: B 3.7-41-01</u> (page 2 of 2)

Either of the two SWS headers can be aligned to supply the essential heat loads or the nonessential SWS heat loads. Both the essential and nonessential SWS headers are operated to support normal plant operation and the plant response to accidents and transients. The SWS pumps associated with the SWS header designated as the essential header will start automatically. The SWS pumps associated with the SWS header designated as the nonessential header must be manually started when required following a LOCA.

The essential SWS heat loads can be cooled by any two of the three service water pumps on the essential header. The nonessential SWS heat loads can be cooled by any one of the three service water pumps on the nonessential header. To ensure adequate flow to the essential header, the essential and nonessential headers may be cross connected only as necessary while swapping the essential SWS header with the nonessential SWS header.

Service water pump suctions are located below the mean sea level in the Hudson River, the ultimate heat sink. This configuration ensures adequate submergence of the SWS pump suctions.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.9 - Service Water System (SWS)

Insert: B 3.7-41-02

The design basis of the SWS is as follows: post accident essential SWS heat loads can be cooled by any two of the three service water pumps on the designated essential header; and, post accident nonessential SWS heat loads can be cooled by any one of the three service water pumps on the designated nonessential header. With the minimum number of pumps operating, the essential and nonessential headers of the SWS have the required capacity to remove core decay heat following a design basis LOCA as discussed in References 1, 2 and 3.

Insert: B 3.7-41-03

The Service Water System was designed to fulfill required safety functions while sustaining: (a) the single failure of any active component used during the injection phase of a postulated LOCA with or without a LOOP, or (b) the single failure of any active or passive component used during the long-term recirculation phase with or without a LOOP.

The operating modes of the IP3 SWS are as follows: a) normal mode; b) post-LOCA injection mode; and, c) post-LOCA recirculation mode. The postulated failure conditions of the SWS must include consideration of the limiting case for each operating mode of the system which are as follows:

a. Loss of the 10 inch turbine building service water supply header during normal operation and a seismic event;
b. Loss of instrument air, during the post-LOCA injection phase concurrent with single active component failure.
c. Loss of a SWS pump on both the essential and nonessential headers (resulting from an EDG failure) during the post-LOCA recirculation phase.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The SWS, in conjunction with the CCW System, also cools the unit from residual heat removal (RHR) ~~, as discussed in the FSAR, Section [5.4.7], (Ref. 3)~~ entry conditions to MODE 5 during normal and post accident operations. The time required for this evolution is a function of ~~the number of~~ CCW and RHR System ~~trains that are operating~~. ~~One SWS train is sufficient to remove decay heat during subsequent operations~~ ~~in MODES 5 and 6~~. ~~This~~ assumes a maximum SWS temperature of [95]°F occurring simultaneously with maximum heat loads on the system.

flow, SWS flow and UHS temperature

(Ref. 3)

The decay

10 CFR 50.36

The SWS satisfies Criterion 3 of ~~the NRC Policy Statement~~.

LCO

Insert: B3.7-42-01

~~Two SWS trains are required to be OPERABLE to provide the required redundancy to ensure that the system functions to remove post accident heat loads, assuming that the worst case single active failure occurs coincident with the loss of offsite power.~~

header

An SWS ~~train~~ is considered OPERABLE during MODES 1, 2, 3, and 4 when:

Insert: B 3.7-42-02

a. ~~The pump is OPERABLE;~~ ~~and~~

Insert: B3.7-42-03

c ~~b~~. The associated piping, valves, ~~heat exchanger, and~~ instrumentation and controls required to perform the safety related function are OPERABLE.

Insert: B 3.7-42-04

APPLICABILITY

In MODES 1, 2, 3, and 4, the SWS is a normally operating system that is required to support the OPERABILITY of the equipment serviced by the SWS and required to be OPERABLE in these MODES.

In MODES 5 and 6, the OPERABILITY requirements of the SWS are determined by the systems it supports.

ACTIONS

Insert: B 3.7-42-05

A.1

~~If one SWS train is inoperable, action must be taken to restore OPERABLE status within 72 hours. In this Condition~~

Insert: B3.7-42-06

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.9 - Service Water System (SWS)

Insert: B 3.7-42-01

Three of the three SWS pumps associated with the SWS header designated as the essential header; and, two of the three SWS pumps associated with the SWS header designated as the nonessential header must be OPERABLE to provide the required redundancy to ensure that the system functions to remove post accident heat loads, while sustaining: (a) the single failure of any active component used during the injection phase of a postulated LOCA with or without a LOOP, or (b) the single failure of any active or passive component used during the long-term recirculation phase with or without a LOOP.

Insert: B 3.7-42-02

The required number of pumps, consistent with the header's designation as the essential or nonessential header, are OPERABLE;

Insert: B 3.7-42-034

b. The essential and nonessential headers are isolated from each other by at least one closed valve except as specified by NOTE 2 to the ACTIONS;

Insert: B 3.7-42-04

The SW to FCU valves (TCV-1104 or TCV-1105) and SW to EDG valves (FCV-1176 or FCV-1176A) are OPERABLE when they open automatically in response to an ESFAS actuation signal or are blocked open.

Insert: B 3.7-42-05

The ACTIONS are modified by two Notes. Note 1 specifies that separate condition entry is allowed for the SWS header designated as essential and for the SWS header designated as nonessential. This allows completely separate re-entry into any Condition for the essential SWS header and the nonessential SWS header. Separate condition entry includes separate tracking of Completion Times based on this re-entry. This is acceptable because the accident analysis assumptions regarding the available number of SWS pumps on the essential and nonessential SWS headers are independent.

Note 2 specifies that LCO 3.0.3 is not applicable for 8 hours while swapping the essential SWS header with the nonessential SWS header but only if LCO 3.7.9 will be met after the essential and non-essential header are swapped. This means that the essential and nonessential SWS headers may be cross-connected for up to 8 hours during transfer of the designated essential SWS header to the alternate SWS header. This is acceptable because the transfer is performed infrequently (i.e., approximately every 90 days) and the low probability of an event while the headers are cross connected.

Insert: B 3.7-42-06

If one of the three required SWS pumps on the essential SWS header is inoperable, three Operable pumps must be restored to the essential SWS header within 72 hours. Likewise, if one of the two required SWS pumps on nonessential SWS header is inoperable, the header must be restored so that there are two Operable pumps for the nonessential SWS header within 72 hours. With one required SWS pump inoperable on either or both SWS headers,

BASES

ACTIONS

A.1 (continued)

pumps are
an

the remaining OPERABLE SWS train is adequate to perform the heat removal function. However, the overall reliability is reduced because a single failure in the OPERABLE SWS train could result in loss of SWS function. ~~Required Action A.1 is modified by two Notes. The first Note indicates that the applicable Conditions and Required Actions of LCO 3.8.1, "AC Sources—Operating," should be entered if an inoperable SWS train results in an inoperable emergency diesel generator. The second Note indicates that the applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops—MODE 4," should be entered if an inoperable SWS train results in an inoperable decay heat removal train. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components.~~ The 72 hour Completion Time is based on the redundant capabilities afforded by the OPERABLE train, and the low probability of a DBA occurring during this time period.

pump

pump(s) in the same header

Insert: B3.7-43-01

D.1 and D.2

If the SWS train cannot be restored to OPERABLE status within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours.

4

required

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

Insert: B3.7-43-02

SURVEILLANCE REQUIREMENTS

SR 3.7.~~8~~9.1

This SR is modified by a Note indicating that the isolation of the SWS components or systems may render those components inoperable, but does not affect the OPERABILITY of the SWS.

Verifying the correct alignment for manual, power operated, and automatic valves in the SWS flow path provides assurance that the proper flow paths exist for SWS operation. This SR does not apply to valves that are locked, sealed, or

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.9 - Service Water System (SWS)

Insert: B 3.7-43-01

B.1 and C.1

Required ESFAS flow to all three EDGs is initiated when either of the redundant SW to EDG ESFAS valves (FCV-1176 or FCV-1176A) opens automatically in response to an ESFAS actuation which starts the EDGs. Similarly, required ESFAS flow to all five FCUs is initiated when either of the redundant SW to FCU ESFAS valves (TCV-1104 or TCV-1105) opens automatically in response to an ESFAS actuation signal. The SW to FCU ESFAS valves and SW to EDG ESFAS valves are OPERABLE when they open automatically in response to an ESFAS actuation signal or are blocked open.

If one of the redundant SW to EDG ESFAS valves is inoperable, a single failure of the redundant valve could result in the failure of all three EDGs shortly after the initiation of an event. If one of the redundant SW to FCU ESFAS valves is inoperable, a single failure of the redundant valve could result in the failure of all five FCUs. Therefore, a Completion Time of 12 hours is established to restore the required redundancy.

A 12 hour Completion Time is acceptable for the SW to EDG valves because SW to the EDGs is still available and the low probability of an event with a loss of offsite power during this period. A 12 hour Completion Time is acceptable for the SW to FCU valves because SW to the FCUs is still available, the availability of Containment Spray, and the low probability of an event during this period.

If both SW to EDG valves or both SW to FCU valves are inoperable, entry into LCO 3.0.3 is required.

Insert: B 3.7-43-02

If more than one required SWS pump in either the essential or the nonessential header is inoperable; or, the flow path associated with either header is not capable of performing its safety function (e.g., both SW to EDG valves or both SW to FCU valves are inoperable), then the plant in a MODE in which the LCO does not apply. Additionally, if

BASES

SURVEILLANCE REQUIREMENTS

9

SR 3.7.~~8~~.1 (continued)

otherwise secured in position, since they are verified to be in the correct position prior to being locked, sealed, or secured. This SR does not require any testing or valve manipulation; rather, it involves verification that those valves capable of being mispositioned are in the correct position. This SR does not apply to valves that cannot be inadvertently misaligned, such as check valves.

92

The 31 day Frequency is based on engineering judgment, is consistent with the procedural controls governing valve operation, and ensures correct valve positions.

9

SR 3.7.~~8~~.2

This SR verifies proper automatic operation of the SWS valves on an actual or simulated actuation signal. The SWS is a normally operating system that cannot be fully actuated as part of normal testing. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

24

9

SR 3.7.~~8~~.3

This SR verifies proper automatic operation of the SWS pumps on an actual or simulated actuation signal. The SWS is a normally operating system that cannot be fully actuated as part of normal testing during normal operation. The [18] month Frequency is based on the need to perform this Surveillance under the conditions that apply during a unit outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month

24

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.7.~~8~~.3 (9) (continued)

Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.

REFERENCES

1. FSAR, Section ~~[9.2.1]~~. 9.6
2. FSAR, Section [6.~~2~~]. 6.2
3. FSAR, Section [5.4.7].

Insert: B 3.7-45-01

NUREG-1431 Markup Inserts
ITS SECTION 3.7.9 - Service Water System (SWS)

Insert: B 3.7-45-01

3. WCAP-12313, "Safety Evaluation for an Ultimate Heat Sink Temperature Increase to 95°F at Indian Point 3."

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.9:
"Service Water System (SWS)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.9 - Service Water System (SWS)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DB.2 CTS 3.3.F.1.a includes requirements for essential and nonessential SWS headers; CTS 3.7.A includes requirements for emergency diesel generators which requires SWS to satisfy Operability requirements; and, CTS 3.1.A.1.c includes requirements for the RHR decay heat removal capability in Mode 4 which also requires SWS to satisfy Operability requirements. If an inoperable SWS header caused an EDG or RHR header to be inoperable, CTS would require that both SSW and the affected EDG and RHR heat exchanger be declared inoperable. Under the same conditions (inoperability of SSW header causes EDG and/or RHR inoperability), ITS LCO 3.0.6 specifies that only Required Actions for an inoperable SSW header is required. Therefore, ITS 3.7.7, Required Action A.1, is modified by two Notes indicating that the applicable Conditions and Required Actions of LCO 3.8.1, AC Sources - Operating, and/or LCO 3.4.6, RCS Loops – Mode 4, must be entered if an inoperable SWS header results in an inoperable EDG and/or RHR loop. This is an exception to LCO 3.0.6 and ensures the proper actions are taken for these components. This is an administrate change with no impact on safety because both CTS and ITS are designed to ensure that appropriate actions are taken if an inoperable SWS loop causes the EDG and RHR to be inoperable if being relied upon. This is an administrative change with no impact on safety because there is no change to the existing requirements.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.10:
"Ultimate Heat Sink (UHS)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.10 Ultimate Heat Sink (UHS)

LCO 3.7.10 The UHS shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. UHS temperature > 95°F.	A.1 Verify UHS temperature ≤ 95°F.	7 hours
B. Required Action and associated Completion Time of Condition A not met. OR UHS inoperable for reasons other than Condition A.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.10.1	Verify average water temperature of UHS is ≤ 95°F.	24 hours

B 3.7 PLANT SYSTEMS

B 3.7.10 Ultimate Heat Sink (UHS)

BASES

BACKGROUND

The UHS provides a heat sink for processing and operating heat from safety related components during a transient or accident, as well as during normal operation. This is done by utilizing the Service Water System (SWS) and the Component Cooling Water (CCW) System.

The ultimate heat sink for IP3 is the Hudson River. The UHS and supporting structures are capable of providing sufficient cooling for thirty days and are sufficient to:

(a) Support simultaneous safe shutdown and cooldown of both operating nuclear units at the Indian Point site and maintain them in a safe condition, and

(b) In the event of an accident in one unit, support required response to that accident and permit simultaneous safe shutdown and cooldown of the remaining unit and maintain them in a safe shutdown condition.

The ultimate heat sink is capable of withstanding the effects of the most severe natural phenomena associated with the Indian Point site, other site related events and a single failure of man-made structural features.

The two principal functions of the UHS are the dissipation of residual heat after reactor shutdown, and dissipation of residual heat after an accident.

APPLICABLE SAFETY ANALYSES

The UHS is the sink for heat removed from the reactor core following all accidents and anticipated operational occurrences in which the unit is cooled down and placed on residual heat removal (RHR) operation. Because IP3 uses the UHS as the normal heat sink for condenser cooling via the Circulating

BASES

APPLICABLE SAFETY ANALYSES (continued)

Water System, unit operation at full power is its maximum heat load. Its maximum post accident heat load occurs shortly after a design basis loss of coolant accident (LOCA). Near this time, the unit switches from injection to recirculation and the containment cooling systems and containment recirculation system are required to remove the core decay heat.

The operating limits are based on conservative heat transfer analyses for the worst case LOCA. Reference 1 provides the details of the assumptions used in the analysis, which include worst expected meteorological conditions, conservative uncertainties when calculating decay heat, and worst case single active failure (e.g., single failure of a manmade structure). The UHS meets Regulatory Guide 1.27 (Ref.3), which requires a 30 day supply of cooling water in the UHS.

The UHS satisfies Criterion 3 of 10 CFR 50.36.

LCO

The UHS is required to be OPERABLE and is considered OPERABLE if it contains water at or below the maximum temperature that would allow the SWS to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the SWS. To meet this condition, the UHS temperature must not exceed 95°F.

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

BASES

ACTIONS

A.1

If UHS temperature > 95°F, the UHS temperature must be verified to be ≤ 95°F within 7 hours. The 7 hour Completion Time allows for the dissipation of tidal effects that can cause river water temperature transients that may temporarily increase localized UHS temperature.

B.1 and B.2

If UHS temerature does not return to ≤ 95°F within the associated Completion Time, or if the UHS is inoperable for reasons other than Condition A, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.10.1

This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the average water temperature of the UHS is ≤ 95°F.

BASES

REFERENCES

1. FSAR, Section 9.6.
2. WCAP-12313, "Safety Evaluation For An Ultimate Heat Sink Temperature Increase To 95°F At Indian Point Unit 3"
3. Regulatory Guide 1.27.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.10:
"Ultimate Heat Sink (UHS)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.3-10	145	145	No TSCRs	No TSCRs for this Page	N/A
3.3-10a	98	98	No TSCRs	No TSCRs for this Page	N/A
3.3-19	145 IPN 97-175	145 IPN 97-175	IPN 97-175	Changes to Bases Pages	
T 4.1-1(5)	169 TSCR 98-043	169 TSCR 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated
T 4.1-1(6)	181 TSCR 98-043	181 TSCR 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated

SEE ITS 3.7.8

3. If the Component Cooling System is not restored to meet the requirements of 3.3.E.1 within the time periods specified in 3.3.E.2, then:

a. If the reactor is critical, it shall be in the hot shutdown condition within four hours and in the cold shutdown condition within the following 24 hours.

b. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values. If the requirements of 3.3.E.1 are not satisfied within an additional 48 hours, the reactor shall be brought to the cold shutdown condition utilizing normal operating procedures. The shutdown shall start no later than the end of the 48 hour period.

SEE ITS 3.7.9

LCO 3.7.10, Applicability

F. Service Water System/Ultimate Heat Sink

~~The reactor shall not be brought above cold shutdown unless~~: Mode 1, 2, 3 and 4 — A3

SEE ITS 3.7.9

a. Three service water pumps on the designated essential header and a minimum of two service water pumps on the designated non-essential header, together with their associated piping and valves, are operable.

LCO 3.7.10 SR 3.7.10.1

b. Verify every 24 hours that The service water inlet temperature is less than or equal to 95°F. — M.1

SEE ITS 3.7.9

2. When the reactor is above cold shutdown and if the requirements of 3.3.F.1.a cannot be met within twelve hours, the reactor shall be brought to the cold shutdown condition, starting no later than the end of the twelve hour period, utilizing normal operating procedures.

LCO 3.7.10 Cond A, Req. Act B.1, Req. Act B.2

~~3.~~ When the reactor is above cold shutdown and if the requirement of 3.3.F.1.b is exceeded, the reactor shall be placed in at least hot shutdown within seven 6 hours, and in cold shutdown within ~~the~~ ~~following thirty~~ 36 hours unless the service water inlet temperature decreases to within the requirement of 3.3.F.1.b. — A.4

Add Condition A and associated Req. Act — A.5

Amendment No. ~~74~~, ~~98~~, 145

SEE ITS 3.7.9

4. Isolation shall be maintained between the essential and non-essential headers at all times when above cold shutdown conditions except that for a period of eight hours the headers may be connected while another essential header is being placed in service as described in F.2 above.

5. ~~At least two service water inlet temperature monitoring instruments (any combination of installed or portable instruments) shall be operable when the reactor is above 350°F and service water inlet temperature exceeds 90°F.~~

6. ~~If the requirements of 3.3.F.5 cannot be met, the reactor shall be placed in the hot shutdown condition within the next seven hours and subsequently cooled below 350°F using normal operating procedures.~~

7. ~~Service water inlet temperature shall be the average of two or more service water inlet temperature monitoring instrument readings per 3.3.F.5 taken within a five minute interval (instantaneous).~~

8. ~~When the reactor is above 350°F and service water inlet temperature per 3.3.F.7 exceeds 90°F , service water inlet temperature monitoring shall commence at a frequency of once per hour.~~

LA.1

A.1

A total of six service water pumps are installed. Only two of the set of three service water pumps on the header designated the essential header are required immediately following a postulated loss-of-coolant accident.[8] During the recirculation phase of the accident two service water pumps on the non-essential header will be manually started to supply cooling water for one component cooling system heat exchanger, one control room air conditioner, and one diesel generator; the other component cooling system heat exchanger, the other control room air conditioner, the two other diesel generators and remaining safety related equipment are cooled by the essential service water header.[14] During the recirculation phase of the accident, both control room air conditioner units may be cooled by the essential service water header.

The operability requirements on service water temperature monitoring instrumentation and the frequency of service water temperature monitoring insures that appropriate action can be taken to preclude operation beyond established limits. The locations selected for monitoring river water temperature are typically at the circulating or service water inlets, at the circulating water inlet boxes to the condenser hotwells or at the service water supply header to the fan cooler units. Temperature measurements at each of these locations are representative of the river water temperature supplied to cool plant heat loads. Alternate locations may be acceptable on this basis. The limit on the service water maximum inlet temperature insures that the service water and component cooling water systems will be able to dissipate the heat loads generated in the limiting design basis accident[15]. ~~This restriction allows up to seven hours for river water temperature transients which may temporarily increase the service water inlet temperature due to tidal effects to dissipate.~~

The operability of the equipment and systems required for the control of hydrogen gas ensures that this equipment is available to maintain the hydrogen concentration within containment below the flammable limit during post-LOCA conditions. Hydrogen concentration exceeding the flammable limit could potentially result in a containment wide hydrogen burn. This could lead to overpressurization of containment, a breach of CONTAINMENT INTEGRITY, containment leakage, unacceptably high offsite doses, and damage to safety-related equipment located in containment. Two full rated recombiner units are provided in order to control the hydrogen evolved in containment following a loss-of-coolant accident. Each unit is capable of preventing the hydrogen concentration from exceeding the flammable limit. Each recombiner is installed such that independence is maintained and redundancy is assured. Each hydrogen recombiner system consists of a recombiner located inside containment, and a separate power supply, and control panel located outside containment such that they are accessible following a design basis accident.

TSCR 97-175

TABLE 4.1-1 (Sheet 5 of 6)

SEE CTS MASTER MARKUP

Channel Description	Check	Calibrate	Test	Remarks
37. Core Exit Thermocouples	D	24M	N.A.	
38. Overpressure Protection System (OPS)	D	18M (1)	18M	1) Calibration frequency for OPS sensors (RCS pressure and temperature) is 24 months
39. Reactor Trip Breakers	N.A.	N.A.	TM(1)	1) Independent operation of under-voltage and shunt trip attachments
			24M(2)	2) Independent operation of under-voltage and shunt trip from Control Room manual push-button
40. Reactor Trip Bypass Breakers	N.A.	N.A.	(1)	1) Manual shunt trip prior to each use
			24M(2)	2) Independent operation of under-voltage and shunt trip from Control Room manual push-button
			24M(3)	3) Automatic undervoltage trip
41. Reactor Vessel Level Indication System (RVLIS)	D	24M	N.A.	
42. Ambient Temperature Sensors Within the Containment Building	D	24M	N.A.	
~~43. River Water Temperature # (installed)~~	~~S~~	~~18M~~	~~N.A.~~	~~1) Check against installed instrumentation or another portable device~~
~~44. River Water Temperature # (portable)~~	~~S (1)~~	~~Q (2)~~	~~N.A.~~	~~2) Calibrate within 30 days prior to use and quarterly thereafter~~
45. Steam Line Flow	S	24M	Q	Engineered Safety Features circuits only

SR 3.7.10.1

LA.1

ITS 3.7.10

Amendment No. ~~28~~, ~~54~~, ~~65~~, ~~74~~, ~~78~~, ~~93~~, ~~98~~, ~~107~~, ~~125~~, ~~126~~, ~~137~~, ~~140~~, ~~142~~, ~~164~~, ~~169~~, TSCR 98-043

Table Notation

	*	By means of the movable incore detector system
	**	Quarterly when reactor power is below the setpoint and prior to each startup if not done previous month.
SEE CTS MASTER MARKUP		
SR 3.7.10.1	#	These requirements are applicable when specification 3.3.F.5 is in effect only. LA.1
	##	The "each shift" frequency also requires verification that the DNB parameters (Reactor Coolant Temperature, Reactor Coolant Flow, and Pressurizer Pressure) are within the limits of Technical Specification 3.1.H.
SEE CTS MASTER MARKUP	S	- Each Shift
	W	- Weekly
	P	- Prior to each startup if not done previous week
	M	- Monthly
	NA	- Not Applicable
	Q	- Quarterly
	D	- Daily
	18M	- At least once per 18 months
	TM	- At least every two months on a staggered test basis (i.e., one train per month)
	24M	- At least once per 24 months
	6M	- At least once per 6 months

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.10:
"Ultimate Heat Sink (UHS)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.3.F specifies the Applicability for Service Water System/Ultimate Heat Sink as whenever the reactor is above cold shutdown (i.e., Modes 1, 2, 3 and 4). ITS 3.7.9 and ITS LCO 3.7.10 maintain this Applicability by requiring that the Service Water System and Ultimate Heat Sink be Operable in Modes 1, 2, 3 and 4. This is an administrative change with no impact on safety because there is no change to the CTS Applicability.

A.4 CTS 3.3.F.3 requires that the reactor be placed in at least hot shutdown (i.e., Mode 3) within 7 hours, and in cold shutdown (i.e., Mode 5) within the following 30 hours, if the service water inlet temperature exceeds 95°F. Under the same condition, ITS LCO 3.7.10 Required Actions B.1 and B.2 require that the reactor be placed in Mode 3 within 6 hours and in Mode 5 within 36 hours. This change is needed because it makes the plant shutdown Completion Times consistent with other ITS LCOs. This change is acceptable because the ITS Completion Times allow sufficient time to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems. This is an administrative change with no impact on safety because there is no significant change to the existing requirements.

A.5 CTS 3.3.F.1.b requires that UHS (service water inlet) temperature is less than 95°F. The CTS Bases for CTS 3.3.F.1.b clarifies that this restriction is intended to allow up to seven hours for the dissipation of tidal effects that can cause river water temperature transients that may temporarily increase UHS temperature.

ITS LCO 3.7.10, Condition A and Required Action A.1, maintain the requirement that UHS be maintained less than 95°F. Additionally, the Required Action A.1 Completion Time of 7 hours for restoration of UHS temperature before a reactor shutdown must be initiated provides explicit recognition of the allowance for the dissipation of tidal effects that can cause river water temperature transients that may temporarily increase UHS temperature. This is an administrative change with no adverse impact of safety because it is an explicit statement of an existing Completion Time stated in the CTS Bases.

MORE RESTRICTIVE

M.1 CTS 3.3.F.1.b requires that UHS (service water inlet) temperature is less than 95°F: however, there is no requirement for periodic verification that this limit is met except that CTS 3.3.F.8 includes a requirement to monitor UHS temperature every hour when the UHS temperature exceeds 90°F. ITS SR 3.7.10.1 requires verification every 24 that the average temperature of the Ultimate Heat Sink is ≤ 95°F regardless of the UHS temperature; and, requirements for accelerated verification of UHS temperature when UHS temperature is approaching the upper limit are relocated to the Technical Requirements Manual (TRM) (See ITS 3.7.10, DOC LA.1). This more restrictive requirement is acceptable because it verifies that the UHS temperature is consistent with the accident analysis assumptions, and the 24 hour Frequency is acceptable based on operating experience related to trending of the parameter variations during the applicable modes. This change has no adverse impact on safety.

<u>LESS RESTRICTIVE</u>

None

<u>REMOVED DETAIL</u>

LA.1 CTS 3.3.F.5 through CTS 3.3.F.8 require accelerated monitoring (once per hour) using specific instruments whenever the UHS temperature is > 90°F (i.e., approaching the LCO limit of 95°F). CTS Table 4.1-1, Items 43 and 44 require periodic channel checks and calibrations of the instruments used to perform these verifications.

ITS LCO 3.7.10 maintains the requirement that UHS be maintained less than 95°F and ITS SR 3.7.10.1 maintains the requirement for verification every 24 hours that this limit is met; however, requirements for accelerated monitoring of UHS temperature using specific instruments whenever the UHS temperature is approaching the LCO limit of 95°F are relocated to the TRM.

This change is acceptable because ITS LCO 3.7.10 maintains the requirement that the LCO is met whenever the plant is in the Applicable Modes. Maintaining this requirement in Technical Specifications and maintaining requirements for accelerated monitoring of UHS temperature using specific instruments whenever the UHS temperature is approaching the LCO limit provides an adequate level of assurance of prompt identification and initiation of actions if UHS temperature exceeds required limits.

The Quality Assurance Plan will be revised to specify that requirements in the TRM are part of the facility as described in the FSAR and that changes to the TRM can be made only in accordance with the requirements of 10 CFR 50.59. Therefore, this change is acceptable because there is no change to the existing requirements by the relocation of requirements to the TRM and future changes to the TRM will be controlled in accordance with 10 CFR 50.59.

This change is a less restrictive administrative change with no impact on safety because ITS 3.7.10 maintains the requirement that plant operation be curtailed if UHS temperature exceeds the upper limit. Therefore, requirements for accelerated monitoring of UHS temperature and the instruments used to perform this accelerated monitoring can be maintained in the TRM with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.10:
"Ultimate Heat Sink (UHS)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

LESS RESTRICTIVE
<u>("L.1" Labeled Comments/Discussions)</u>

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.10:
"Ultimate Heat Sink (UHS)"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.10

This ITS Specification is based on NUREG-1431 Specification No. **3.7.9**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
N/A	N/A	NO GENERIC CHANGES ARE POSTED AGAINST THIS SPECIFICATION.	Not Applicable	Not Applicable	N/A

<CTS>

3.7 PLANT SYSTEMS

3.7.~~9~~ 10 Ultimate Heat Sink (UHS)

<3.3.F>
<3.3.F.1.b>

LCO 3.7.~~9~~ 10 The UHS shall be OPERABLE.

<3.3.F.1>
<DOC A.3>

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

Insert: 3.7-21-01

Insert: 3.7-21-02

<DOC A.5>

<3.3.F.3>
<DOC A.4>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~One or more cooling towers with one cooling tower fan inoperable.~~	A.1 ~~Restore cooling tower fan(s) to OPERABLE status.~~	~~7 days~~ 7 hours
B. Required Action and associated Completion Time of Condition A not met. OR UHS inoperable [for reasons other than Condition A].	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 36 hours

CLB.1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
~~SR 3.7.9.1~~	~~Verify water level of UHS is ≥ [562] ft [mean sea level].~~	~~[24] hours~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

INSERT: 3.7-21-01

UHS temperature > 95°F.

INSERT: 3.7-21-02

Verify UHS temperature ≤ 95°F.

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
⟨3.3.F.1.b⟩ ⟨DOC M.1⟩ SR 3.7.~~9~~ 10 .2	Verify average water temperature of UHS is ≤ [~~90~~] 95 °F.	24 hours
~~SR 3.7.9.3~~	~~Operate each cooling tower fan for ≥ [15] minutes.~~	~~31 days~~
~~SR 3.7.9.4~~	~~Verify each cooling tower fan starts automatically on an actual or simulated actuation signal.~~	~~[18] months~~

B 3.7 PLANT SYSTEMS

B 3.7.~~9~~ 10 Ultimate Heat Sink (UHS)

BASES

BACKGROUND

The UHS provides a heat sink for processing and operating heat from safety related components during a transient or accident, as well as during normal operation. This is done by utilizing the Service Water System (SWS) and the Component Cooling Water (CCW) System.

Insert: B3.7-46-01

~~The UHS has been defined as that complex of water sources, including necessary retaining structures (e.g., a pond with its dam, or a river with its dam), and the canals or conduits connecting the sources with, but not including, the cooling water system intake structures as discussed in the FSAR, Section [9.2.5] (Ref. 1). If cooling towers or portions thereof are required to accomplish the UHS safety functions, they should meet the same requirements as the sink.~~ The two principal functions of the UHS are the dissipation of residual heat after reactor shutdown, and dissipation of residual heat after an accident.

~~A variety of complexes is used to meet the requirements for a UHS. A lake or an ocean may qualify as a single source. If the complex includes a water source contained by a structure, it is likely that a second source will be required.~~

~~The basic performance requirements are that a 30 day supply of water be available, and that the design basis temperatures of safety related equipment not be exceeded. Basins of cooling towers generally include less than a 30 day supply of water, typically 7 days or less. A 30 day supply would be dependent on other source(s) and makeup system(s) for replenishing the source in the cooling tower basin. For smaller basin sources, which may be as small as a 1 day supply, the systems for replenishing the basin and the backup source(s) become of sufficient importance that the makeup system itself may be required to meet the same design criteria as an Engineered Safety Feature (e.g., single failure considerations), and multiple makeup water sources may be required.~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

INSERT: B 3.7-46-01

The ultimate heat sink for IP3 is the Hudson River. The UHS and supporting structures are capable of providing sufficient cooling for thirty days and are sufficient to:

DB.1

(a) Support simultaneous safe shutdown and cooldown of both operating nuclear units at the Indian Point site and maintain them in a safe condition, and

(b) In the event of an accident in one unit, support required response to that accident and permit simultaneous safe shutdown and cooldown of the remaining unit and maintain them in a safe shutdown condition.

The ultimate heat sink is capable of withstanding the effects of the most severe natural phenomena associated with the Indian Point site, other site related events and a single failure of man-made structural features.

BASES

BACKGROUND (continued)

~~Additional information on the design and operation of the system, along with a list of components served, can be found in Reference 1.~~

APPLICABLE SAFETY ANALYSES

The UHS is the sink for heat removed from the reactor core following all accidents and anticipated operational occurrences in which the unit is cooled down and placed on residual heat removal (RHR) operation. ~~For units that use~~ Because IP3 uses the UHS as the normal heat sink for condenser cooling via the Circulating Water System, unit operation at full power is its maximum heat load. Its maximum post accident heat load occurs ~~20 minutes~~ shortly after a design basis loss of coolant accident (LOCA). Near this time, the unit switches from injection to recirculation and the containment cooling systems and ~~RHR~~ containment recirculation system are required to remove the core decay heat.

The operating limits are based on conservative heat transfer analyses for the worst case LOCA. Reference 1 provides the details of the assumptions used in the analysis, which include worst expected meteorological conditions, conservative uncertainties when calculating decay heat, and worst case single active failure (e.g., single failure of a manmade structure). The UHS ~~is designed in accordance with~~ meets Regulatory Guide 1.27 (Ref. 2), which requires a 30 day supply of cooling water in the UHS. 3

The UHS satisfies Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36

LCO

The UHS is required to be OPERABLE and is considered OPERABLE if it contains ~~a sufficient volume of~~ water at or below the maximum temperature that would allow the SWS to operate for at least 30 days following the design basis LOCA without the loss of net positive suction head (NPSH), and without exceeding the maximum design temperature of the equipment served by the SWS. To meet this condition, the UHS temperature ~~should~~ must not exceed ~~[90°F]~~ 96°F ~~and the level should not fall below [562 ft mean sea level] during normal unit operation.~~

BASES (continued)

APPLICABILITY

In MODES 1, 2, 3, and 4, the UHS is required to support the OPERABILITY of the equipment serviced by the UHS and required to be OPERABLE in these MODES.

In MODE 5 or 6, the OPERABILITY requirements of the UHS are determined by the systems it supports.

ACTIONS

A.1

Insert: B3.7-48-01

~~If one or more cooling towers have one fan inoperable (i.e., up to one fan per cooling tower inoperable), action must be taken to restore the inoperable cooling tower fan(s) to OPERABLE status within 7 days.~~

~~The 7 day Completion Time is reasonable based on the low probability of an accident occurring during the 7 days that one cooling tower fan is inoperable (in one or more cooling towers), the number of available systems, and the time required to reasonably complete the Required Action.~~

B.1 and B.2

Insert: B3.7-48-02

If ~~the cooling tower fan cannot be restored to OPERABLE status~~ within the associated Completion Time, or if the UHS is inoperable for reasons other than Condition A, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours and in MODE 5 within 36 hours.

The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

~~SR 3.7.9.1~~

~~This SR verifies that adequate long term (30 day) cooling can be maintained. The specified level also ensures that sufficient NPSH is available to operate the SWS pumps. The [24] hour Frequency is based on operating experience related to trending of the parameter variations during the~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

INSERT: B 3.7-48-01

If UHS temperature > 95°F, the UHS temperature must be verified to be ≤ 95°F within 7 hours. The 7 hour Completion Time allows for the dissipation of tidal effects that can cause river water temperature transients that may temporarily increase localized UHS temperature.

INSERT: B 3.7-48-02

UHS temperature does not return to ≤ 95°F

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.9.1 (continued)

applicable MODES. This SR verifies that the UHS water level is ≥ [562] ft [mean sea level].

SR 3.7.~~9.2~~ 10.1

This SR verifies that the SWS is available to cool the CCW System to at least its maximum design temperature with the maximum accident or normal design heat loads for 30 days following a Design Basis Accident. The 24 hour Frequency is based on operating experience related to trending of the parameter variations during the applicable MODES. This SR verifies that the average water temperature of the UHS is ≤ ~~[90°F]~~ 95°F.

Insert: B 3.7-49-01

~~SR 3.7.9.3~~

~~Operating each cooling tower fan for ≥ [15] minutes ensures that all fans are OPERABLE and that all associated controls are functioning properly. It also ensures that fan or motor failure, or excessive vibration, can be detected for corrective action. The 31 day Frequency is based on operating experience, the known reliability of the fan units, the redundancy available, and the low probability of significant degradation of the UHS cooling tower fans occurring between surveillances.~~

~~SR 3.7.9.4~~

~~This SR verifies that each cooling tower fan starts and operates on an actual or simulated actuation signal. The [18] month Frequency is consistent with the typical refueling cycle. Operating experience has shown that these components usually pass the Surveillance when performed at the [18] month Frequency. Therefore, the Frequency is acceptable from a reliability standpoint.~~

REFERENCES

1. FSAR, Section ~~9.2.5~~ 9.6.
~~2.~~ 3 Regulatory Guide 1.27.

Insert: B3.7-49-02

Insert: B 3.7-49-03

NUREG-1431 Markup Inserts
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

<u>INSERT: B 3.7-49-01</u>

Requirements for UHS monitoring instrumentation are governed by the Technical Requirements Manual (Ref. 4)

<u>INSERT: B 3.7-49-02</u>

2. WCAP-12313, "Safety Evaluation For An Ultimate Heat Sink Temperature Increase To 95°F At Indian Point Unit 3"

<u>INSERT: B 3.7-49-03</u>

4. IP3 Technical Requirements Manual.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.10:
"Ultimate Heat Sink (UHS)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.7.10, was modified as needed to reflect the IP3 design and current licensing basis. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.10 - Ultimate Heat Sink (UHS)

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.11:
"Control Room Ventilation System (CRVS)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.11 Control Room Ventilation System (CRVS)

LCO 3.7.11 Two CRVS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CRVS train inoperable.	A.1	Restore CRVS train to OPERABLE status.	7 days
B. Two CRVS trains inoperable.	B.1	Restore one CRVS train to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	C.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.11.1	Operate each CRVS train for ≥ 15 minutes.	31 days
SR 3.7.11.2	Perform required CRVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with VFTP
SR 3.7.11.3	Verify each CRVS train actuates on an actual or simulated actuation signal.	24 months
SR 3.7.11.4	Verify one CRVS train can maintain a slight positive pressure relative to the adjacent enclosed area during the 10% incident mode of operation at a makeup flow rate of ≤ 400 cfm.	24 months on a STAGGERED TEST BASIS

B 3.7 PLANT SYSTEMS

B 3.7.11 Control Room Ventilation System (CRVS)

BASES

BACKGROUND

The CRVS provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity, chemicals, or toxic gas.

The Control Room Ventilation System consists of the following equipment: a single filter unit consisting of two roughing filters, two high efficiency particulate air (HEPA) filters; two activated charcoal adsorbers for removal of gaseous activity (principally iodines); two 100% capacity filter booster fans; and, a single duct system including dampers, controls and associated accessories to provide for three different air flow configurations. The air-conditioning units associated with the CRVS are governed by LCO 3.7.12, "Control Room Air Conditioning System (CRACS)."

The CRVS is divided into two trains with each train consisting of a filter booster fan and the associated inlet damper and the following components which are common to both trains: the control room filter unit, damper A (filter unit bypass for outside air makeup to the Control Room), damper B (filter unit inlet for outside air makeup to the Control Room), damper C (filter unit inlet for reticulated air), and the toilet and locker room exhaust fan. The two filter booster fans (F 31 and F 32) are powered from safeguards power trains 5A (EDG 33) and 6A (EDG 32), respectively. Each of the automatic dampers that are common to both trains is positioned in the fail-safe position (open or closed) by either of the redundant actuation channels.

The CRVS is an emergency system, parts of which operate during normal unit operations.

The three different CRVS air flow configurations are as follows:

a) <u>Normal operation</u> consists of approximately 85% (8500 cfm) unfiltered recirculated flow driven by the air-conditioning fans and approximately 15% (1500 cfm) unfiltered outside air makeup;

BASES

BACKGROUND (Continued)

b) Incident mode with outside air makeup (i.e. 10% incident mode) consists of approximately 87% (9250 cfm) unfiltered recirculated flow driven by the two safety related air-conditioning fans, at least 10% (> 1000 cfm) filtered recirculated flow driven by either one of the two filter booster fans and approximately 2.5% to 4.0% (250 to 400 cfm) filtered outside air makeup;

c) Incident mode with no outside air makeup (i.e. 100% incident mode) consists of 85% (9100 cfm) unfiltered reticulated flow driven by the two safety related air-conditioning fans, approximately 15% filtered recirculated flow driven by either one of the two filter booster fans and no outside air makeup.

Note that the required recirculation rates are demonstrated with surveillance tests conducted with the air conditioning system (CRACS) operating. An inoperable CRACS fan will affect the flow balance of tdhe CRVS due to interconnected ductwork. Therefore, if the fan associated with one of the air-conditioning units governed by LCO 3.7.12 is inoperable, Conditions in both LCO 3.7.11, Control Room Ventilation System, and LCO 3.7.12, Control Room Air Conditioning System (CRACS), will apply.

Incident mode with outside air makeup is the preferred method of operation during any radiological event because it provides outside air for pressurization of the Control Room. Calculations indicate that very low volumes of outside air makeup will maintain the Control Room at a slight positive pressure. Nevertheless, due to the difficulty of adjusting and maintaining the flow dampers to provide a low flow, it was determined that the damper should be adjusted to provide a flow of approximately 250 cfm (2.5% outside air makeup). However, a higher volume of outside air makeup to the Control Room increase the thyroid dose to the operators during an accident. Therefore, the Control Room dose assessment assumes a filtered outside air makeup of approximately 400 cfm (4.0% outside air makeup).

On a Safety Injection signal or high radiation in the Control Room (Radiation Monitor R-1), the CRVS will actuate to the incident

BASES

BACKGROUND (Continued)

mode with outside air makeup (i.e. 10% incident mode). This will cause one of the two filters booster fans to start, the locker room exhaust fan to stop, and CRVS dampers to open or close as necessary to filter all incoming outside air and direct approximately 10% of the recirculated air through the filter unit. In the event that the first booster fan fails to start, the second booster fan will start after a predetermined time delay.

If for any reason it is required or desired to operate with 100% recirculated air (e.g., toxic gas condition is identified), the CRVS can be placed in the incident mode with no outside air makeup (i.e. 100% incident mode) by remote manually operated switches. The Firestat detectors will also initiate 100% incident mode in the CRVS.

The control room is continuously monitored by radiation and toxic gas detectors. On a Safety Injection signal or high radiation in the Control Room (Radiation Monitor R-1), will cause actuation of the emergency radiation state of the CRVS (i.e., incident mode with outside air makeup (i.e. 10% incident mode)).

The CRVS does not actuate automatically in response to toxic gases. Separate chlorine, ammonia and oxygen probes are provided to detect the presence of these gases in the outside air intake. Additionally, monitors in the Control Room will detect low oxygen levels and high levels of chlorine and ammonia. The CRVS may be placed in the incident mode with no outside air makeup (i.e. 100% incident mode) to respond to these conditions. Instrumentation for toxic gas monitoring is governed by the IP3 Technical Requirements Manual (TRM) (Ref. 4). Generally, the manually initiated actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.

A single train will create a slight positive pressure in the control room. The CRVS operation in maintaining the control room habitable is discussed in the FSAR, Section 9.9 (Ref. 1).

The CRVS is designed in accordance with Seismic Category I requirements.

BASES

BACKGROUND (Continued)

The CRVS is designed to maintain the control room environment for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a 5 rem whole body dose or 30 rem to the thyroid.

APPLICABLE SAFETY ANALYSES

The CRVS components are arranged in redundant, safety related ventilation trains. The location of components and ducting within the control building envelope ensures an adequate supply of filtered air to all areas requiring access. The CRVS provides airborne radiological protection for the control room operators, as demonstrated by the control room accident dose analyses for the most limiting design basis accident (i.e., DBA LOCA) fission product release presented in the FSAR, Chapter 14 (Ref. 2).

Radiation monitor R-1 is not required for the Operability of the Control Room Ventilation System because control room isolation is initiated by the safety injection signal in MODES 1, 2, 3, 4, and control room isolation is not required for maintaining radiation exposure within General Design Criteria 19 limits following a fuel handling accident or gas-decay-tank rupture.

The worst case active failure of a redundant component of the CRVS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. However, the original CRVS design was not required to meet single failure criteria and, although upgraded from the original design, CRVS does not satisfy all requirements in IEEE-279 for single failure tolerance. Note that the required recirculation rates are demonstrated with surveillance tests conducted with the air conditioning system (CRACS) operating. An inoperable CRACS fan will affect the flow balance of tdhe CRVS due to interconnected ductwork. Therefore, if the fan associated with one of the air-conditioning units governed by LCO 3.7.12 is inoperable, Conditions in both LCO 3.7.11, Control Room Ventilation System,

BASES

APPLICABLE SAFETY ANALYSES (continued)

and LCO 3.7.12, Control Room Air Conditioning System (CRACS), will apply.

The CRVS satisfies Criterion 3 of 10 CFR 50.36.

LCO

Two CRVS trains are required to be OPERABLE to ensure that at least one is available. Total system failure could result in exceeding a dose of 5 rem whole body or 30 rem to the thyroid of the control room operator in the event of a large radioactive release.

The CRVS is considered OPERABLE when the individual components necessary to limit operator exposure are OPERABLE in both trains. A CRVS train is OPERABLE when the associated:

a. A Filter booster fan and an air-conditioning unit fan powered from the same safeguards power train are OPERABLE;

b. HEPA filters and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions; and

c. Ductwork, valves, and dampers are OPERABLE or in the incident mode, and air circulation can be maintained.

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.

Instrumentation for toxic gas monitoring is governed by the IP3 Technical Requirements Manual (TRM) (Ref. 4) and is not included in the LCO. Note that the required recirculation rates are demonstrated with surveillance tests conducted with the air conditioning system (CRACS) operating. An inoperable CRACS fan will affect the flow balance of tdhe CRVS due to interconnected ductwork. Therefore, if the fan associated with one of the air-conditioning units governed by LCO 3.7.12 is inoperable, Conditions in both LCO 3.7.11, Control Room Ventilation System,

BASES

LCO (continued)

and LCO 3.7.12, Control Room Air Conditioning System (CRACS), will apply.

APPLICABILITY

In MODES 1, 2, 3, 4 CRVS must be OPERABLE to limit operator exposure during and following a DBA.

The CRVS is not required in MODE 5 or 6, or during movement of irradiated fuel assemblies and core alterations because analysis indicates that isolation of the control room is not required for maintaining radiation exposure within acceptable limits following a fuel handling accident or gas decay tank rupture.

Administrative controls address the role of the CRVS in maintaining control room habitability following an event at Indian Point Unit 2.

ACTIONS

A.1

When one CRVS train is inoperable, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CRVS train is adequate to perform the control room protection function. However, the overall reliability is reduced because a single failure in the OPERABLE CRVS train could result in loss of CRVS function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

B.1

When neither CRVS train is Operable, action must be taken to restore at least one train to OPERABLE status within 72 hours. The 72 hour Completion Time is acceptable because of the low probability of a DBA occurring during this time period.

BASES

ACTIONS (continued)

C.1 and C.2

If Required Actions A.1 or B.1 are not met within the required Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.11.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe, testing each train once every month provides an adequate check of this system. Note that a CRVS train includes both the filter booster fan and an air-conditioning unit fan powered from the same safeguards power train. The 31 day Frequency is based on the reliability of the equipment and the two train redundancy availability.

SR 3.7.11.2

This SR verifies that the required CRVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The CRVS filter tests are in accordance with the sections of Regulatory Guide 1.52 (Ref. 3) identified in the VFTP. The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.7.11.3

This SR verifies that each CRVS train starts and operates on an actual or simulated actuation signal. The Frequency of 24 months is based on operating experience which has demonstrated this Frequency provides a high degree of assurance that the booster fans will operate and dampers actuate to the correct position when required.

SR 3.7.11.4

This SR verifies the integrity of the control room enclosure, and the assumed inleakage rates of the potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper functioning of the CRVS. During the operation in the incident mode with outside air makeup (i.e. 10% incident mode), the CRVS is designed to maintain the control room at a slight positive pressure with respect to adjacent areas in order to prevent unfiltered inleakage. The CRVS is designed to maintain this positive pressure with very low volumes of outside air makeup. Due to the difficulty of adjusting and maintaining the flow dampers to provide a low flow, it was determined that the damper should be adjusted to provide a flow of approximately 250 cfm (2.5% outside air makeup). Note that the higher the volume of outside air makeup to the Control Room, the higher the thyroid dose to the operators during an accident. The acceptance criteria of 400 cfm (4.0% outside air makeup) is the volume used in the Control Room dose assessment.

The SR Frequency of 24 months on a staggered test basis is acceptable because operating experience has demonstrated that the control room boundary is not normally disturbed. Staggered testing is acceptable because the SR is primarily a verification of Control Room integrity because fan operation is tested elsewhere.

BASES

REFERENCES

1. FSAR, Section 9.9.
2. FSAR, Chapter 14.
3. Regulatory Guide 1.52, Rev. 2.
4. IP3 Technical Requirements Manual.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.11:
"Control Room Ventilation System (CRVS)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.3-11	154	154	No TSCRs	No TSCRs for this Page	N/A
3.3-20	145	145	No TSCRs	No TSCRs for this Page	N/A
4.5-4	131	131	No TSCRs	No TSCRs for this Page	N/A

A.1 A.2

Add Condition A and Req. Act A.1

M.1

SEE ITS 3.3.3

G. Containment Hydrogen Monitoring Systems

1. One hydrogen monitor including a flow path and associated containment fan cooler unit shall be OPERABLE whenever the reactor T_{avg} exceeds 350°F.

   a. The requirements of 3.3.G.1 can be modified to allow both containment hydrogen monitoring systems to be inoperable for a period not to exceed 7 days.

M.1

~~H.~~ Control Room Ventilation System

LCO 3.7.11 Applicability

1. ~~The~~ Two Trains of control room ventilation system shall be operable ~~at all times when containment integrity is required as per specification 3.6.~~ Modes 1, 2, 3 and 4 A.3

~~2. The requirements of 3.3.H.1 may be modified as follows:~~ A.1

Req. Act B.1

~~a.~~ The control room ventilation system may be inoperable for a period not to exceed seventy-two hours. ~~At the end of this period, if the mal-condition in the control room ventilation system has not been corrected, the reactor shall be placed in the hot shutdown condition utilizing normal operating procedures. If after an additional 48 hours the mal-condition still exists, the reactor shall be placed in the cold shutdown condition utilizing normal operating procedures.~~ M.2

Req. Act C.1 & C.2

SEE RELOCATED CTS

3. Two independent toxic gas monitoring systems, with separate channels for detecting chlorine, ammonia, and oxygen shall be operable in accordance with 3.3.H.1 except as specified below. The alarms for ammonia and chlorine shall be adjusted to actuate at ≤35 ppm and ≤3 ppm, respectively.

   a. With any channel for a monitored toxic gas inoperable, restore the inoperable channel to operable status within 7 days.

   b. If 3.a above cannot be satisfied within the specified time, then within the next 8 hours initiate and maintain operation in the control room of alternate monitoring capability for the inoperable channel.

   c. With both channels for a monitored gas inoperable, within 8 hours initiate and maintain operation in the control room of an alternate monitoring system capable of detecting the gas monitored by the inoperable channel.

A.1

~~The containment hydrogen monitoring system consists of two safety related hydrogen concentration measurement cabinets with sample lines which pass through the containment penetrations to each containment fan cooler unit plenum. Two of the five sampling lines (from containment fan cooler units nos. 32 and 35) are routed to a common source line and then to a hydrogen monitor. The other three sample lines (from containment fan cooler units nos. 31, 33 and 34) are likewise headered and routed to the other hydrogen monitor. Each monitor has a separate return line. The design hydrogen concentration for operating the recombiner is established at 3% by volume. Conservative calculations indicate that the hydrogen content within the containment will not reach 3% by volume until 10 days after a loss-of-coolant accident.[10] There is, therefore, no need for immediate operation of the recombiner following an accident.~~

~~Auxiliary Component Cooling Pumps are provided to deliver cooling water for the two Recirculation Pumps located inside the containment. Each recirculation pump is fed by two Auxiliary Component Cooling Pumps. A single Auxiliary Component Cooling Pump is capable of supplying the necessary cooling water required for a recirculation pump during the recirculation phase following a loss-of-coolant accident.~~

~~The control room ventilation is designed to filter the control room atmosphere for intake air and/or for recirculation during control room isolation conditions. The control room system is designed to automatically start upon control room isolation and to maintain the control room pressure to the design positive pressure so that all leakage should be out leakage.~~

~~Radiation monitor R-1 is not part of the Control Room Ventilation System. NRC letter dated January 27, 1982 concluded that, at IP3, "radiation monitors for makeup air are not required." NYPA has also demonstrated (calculation dated May 29, 1992) that Central Control Room (CCR) isolation is not required for maintaining radiation exposure within General Design Criteria 19 limits following a fuel handling accident or gas-decay-tank rupture. For a loss of coolant accident, CCR isolation is initiated by the safety injection signal.~~

~~The control room is equipped with two independent toxic gas monitoring systems. One system in the control room consists of a channel for oxygen (with two oxygen detectors) and a channel each for ammonia and chlorine. The second system in the control room ventilation intake consists of one channel each for oxygen, ammonia and chlorine. Oxygen detectors are used to indirectly monitor changes in carbon dioxide levels.~~

5. Control Room Air Filtration System

SEE ITS 5.5.10

a. Visual inspection of the filter installations shall be performed in accordance with ANSI N 510 (1975) every six months for the first two years and at least once per 24 months thereafter. or at any time fire, chemical releases or work done on the filters could alter their integrity.

SR 3.7.11.1

b. ~~The~~ Each charcoal filtration system shall be operated for a minimum of 15 minutes every month. A.4

SEE ITS 5.5.10

c. At least once per 24 months, the following conditions shall be demonstrated before the system can be considered operable:

(1) The pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at ambient conditions and accident design flow rates.

(2) Using either direct or indirect measurements, the flow rate of the system fans shall be shown to be at least 90% of accident design flow rate.

d. At least once per 24 months or at any time fire, chemical releases or work done on the filters could alter their integrity or after every 720 hours of charcoal adsorber use since the last test, the following conditions shall be demonstrated before the system can be considered operable:

(1) The charcoal shall have a methyl iodine removal efficiency $\geq$ 90% at $\pm$ 20% of the accident design flow rate, 0.05 to 0.15 mg/m^3 inlet methyl iodine concentration, $\geq$ 95% relative humidity and $\geq$ 125°F.

(2) A halogenated hydrocarbon (freon) test on charcoal adsorbers at $\pm$ 20% of the accident design flow rate and ambient conditions shall show $\geq$ 99% halogenated hydrocarbon removal.

(3) A locally generated DOP test of the HEPA filters at $\pm$ 20% of the accident design flow rate and ambient conditions shall show $\geq$ 99% DOP removal.

Add SR 3.7.11.2 A.5

Add SR 3.7.11.3 A.6

Add SR 3.7.11.4 M.3

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.11: "Control Room Ventilation System (CRVS)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.3.H.1 requires that the control room ventilation system be operable at all times when containment integrity is required (i.e., Mode 1, 2, 3 and 4). ITS 3.7.11,"Control Room Ventilation System (CRVS)," is applicable during Modes 1, 2, 3, and 4 (i.e., above cold shutdown). This is an administrative change with no impact on safety because there is no change to the existing requirements.

This Applicability is acceptable based on a determination that isolation of the control room is not required for maintaining radiation exposure within General Design Criteria 19 limits following a fuel handling accident or gas decay tank rupture. Therefore, the control room ventilation system is not required to be operable in Modes 5 and 6, nor during movement of irradiated fuel assemblies and core alterations. (See Amendment No. 137 to Facility Operating License DPR-64 for the Indian Point Nuclear Generating Unit No. 3.)

A.4 CTS 4.5.A.5.b requires that the charcoal filtration system be operated for a minimum of 15 minutes every month. ITS SR 3.7.11.1 requires that each control room ventilation system train be operated for ≥ 15 minutes at a Frequency of 31 days. This is an administrative change with no impact on safety because there is no change to the existing requirements.

A.5 CTS 4.5.A.5.a, 4.5.A.5.c, and 4.5.A.5.d include requirements for the inspection and testing of the control room air filtration system. ITS 5.5.10, Ventilation Filter Testing Program, maintains these requirements as part of a Technical Specification program governing the testing of all ventilation filter systems governed by the ITS. ITS SR 3.7.11.2 is added to establish completion of the VFTP as a requirement for the Operability of the CRVS. This is an administrative change with no impact on safety because there is no change to the existing requirements except as identified and justified for ITS 5.5.10.

A.6 CTS 3.3.H and 4.5.A.5 do not include a specific requirement to verify every 24 months that each CRVS train actuates on an actual or simulated actuation signal; however, the CTS implicitly require this verification when testing the actuation instrumentation which is performed every 24 months. ITS SR 3.7.11.3 is added to require verification that each CRVS train actuates on an actual or simulated actuation signal. This change is needed because ITS separates testing of the ESFAS system from the testing of the actuated devices so that only the LCO Conditions for the actuated device are needed if only an actuated device fails and ESFAS is otherwise Operable. This is an administrative change with no impact on safety because there is no change to the existing requirements.

MORE RESTRICTIVE

M.1 CTS 3.3.H.1 requires that CRVS is operable but does not require redundant CRVS capability. Likewise, CTS 3.3.H.2 establishes requirements when the CRVS is not Operable but does not distinguish between a loss of CRVS redundancy and a loss of CRVS function. Therefore, CTS 3.3.H.2 specifies no Required Actions for a loss of CRVS redundancy and provides an allowable out of service time (AOT) of 72 hours for a loss of CRVS function.

ITS LCO 3.7.11, Condition B and Required Action B.1, maintains the 72 hour AOT for a loss of CRVS function. However, ITS LCO 3.7.11 requires that two CRVS trains are Operable to provide redundant CRVS capability and ITS LCO 3.7.11, Condition A and Required Action A.1, establish a new AOT of 7 days when one of the two redundant CRVS trains is not Operable. This change is needed because it provides greater assurance that the CRVS function will be available despite a failure in a CRVS train and/or an associated support system such as the electrical power source. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring more appropriate AOTs for a loss of CRVS redundancy and a loss of CRVS function. Therefore, this change has no significant adverse impact on safety.

M.2 CTS 3.3.H.2 specifies that if CRVS requirements cannot be met within the specified AOT, then the reactor shall be placed in hot shutdown (i.e., Mode 3) utilizing normal operating procedures. If after an additional 48 hours the mal-condition still exists, the reactor shall be placed in cold shutdown (i.e., Mode 5) utilizing normal operating procedures.

ITS LCO 3.7.11, Required Actions C.1 and C.2, maintains the requirement that the plant be placed in a Mode in which the CRVS LCO does not apply if requirements cannot be met. However, Required Actions C.1 and C.2, specify that the reactor must be in Mode 3 within 6 hours, and in Mode 5 within 36 hours. This change eliminates the allowance permitting the plant to remain in Mode 3 for 48 hours before placing the plant in a Mode in which the CRVS LCO does not apply.

Establishing explicit times to complete the required shutdown and cooldown (i.e., Mode 3 in 6 hours and Mode 5 in 36 hours) is an administrative change with no impact on safety because the allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

Eliminating the allowance permitting the plant to remain in Mode 3 for 48 hours before placing the plant in a Mode in which the CRVS LCO does not apply is needed because it ensures that the plant shutdown and cooldown are completed promptly when requirements for CRVS are not met.

This change is acceptable because it does not introduce any operation which is un-analyzed while requiring more appropriate time limits for completing a plant shutdown following a loss of CRVS redundancy and/or a loss of CRVS function.

M.3 CTS 3.3.H and 4.5.A.5 do not include a specific requirement for periodic verification that control room boundary integrity will permit a single CRVS train to maintain the control room at a slight positive pressure throughout an accident.

ITS SR 3.7.11.4 is added to require verification every 24 months on a staggered test basis that one control room ventilation system train can maintain a slight positive pressure when the CRVS is in the incident mode with outside air with an outside air makeup flow rate of less than 400 cfm. This change is needed because it periodically verifies control room boundary integrity which is required to limit control room operator exposure to airborne radiation following an accident. The acceptance criterion of 400 cfm (4.0% outside air makeup) is the volume used in the Control Room dose assessment. The SR Frequency of 24 months on a staggered test basis is acceptable because operating experience has demonstrated that the control room boundary is not normally disturbed.

Staggered testing is acceptable because the SR is primarily a verification of Control Room integrity because fan operation is tested elsewhere. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification of control room boundary integrity.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.11:
"Control Room Ventilation System (CRVS)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS) Conversion Package

Technical Specification 3.7.11: "Control Room Ventilation System (CRVS)"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.11

This ITS Specification is based on NUREG-1431 Specification No. **3.7.10**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWOG-009		ADD AN ACTION FOR LOSS OF CONTROL ROOM ENCLOSURE INTEGRITY	Rejected by TSTF	Not Incorporated	N/A
BWROG-017	051	REVISE CONTAINMENT REQUIREMENTS DURING HANDLING IRRADIATED FUEL AND CORE ALTERATIONS (REQUIREMENTS LIMITED TO "RECENTLY" IRRADIATED FUEL)	NRC Review	Not Incorporated	N/A
WOG-086 R1		VENTILATION SYSTEM ENVELOPE ALLOWED OUTAGE TIME	TSTF Review	Not Incorporated	N/A

3.7 PLANT SYSTEMS

<CTS>

3.7.~~10~~ 11 Control Room ~~Emergency Filtration~~ Ventilation System (~~CREFS~~) CRVS

<3.3.H.1> LCO 3.7.~~10~~ 11 Two ~~CREFS~~ CRVS trains shall be OPERABLE.

<3.3.H.1>
<DOC A.3>

APPLICABILITY: MODES 1, 2, 3, 4~~, [5, and 6,]~~
~~During movement of irradiated fuel assemblies,~~
~~[During CORE ALTERATIONS]~~. DB.2

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.3.H.2> <DOC H.1> A. One ~~CREFS~~ CRVS train inoperable.	A.1 Restore ~~CREFS~~ CRVS train to OPERABLE status.	7 days
Insert: 3.7-23-01		
<3.3.H.2> <DOC H.2> ~~B~~ C. Required Action and associated Completion Time of Condition A not met ~~in MODE 1, 2, 3, or 4~~. DDB	~~B~~ C.1 Be in MODE 3. AND ~~B~~ C.2 Be in MODE 5.	6 hours 36 hours
~~C. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of irradiated fuel assemblies [, or during CORE ALTERATIONS].~~	~~C.1 -----NOTE----- Place in toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable. ------------------- Place OPERABLE CREFS train in emergency mode.~~ ~~OR~~	~~Immediately~~

DB.2

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

INSERT: 3.7-23-01

<3.3.H.2.a>	B. Two CRVS trains inoperable.	B.1 Restore one CRVS train to OPERABLE status.	72 hours	CLB.1

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1 Suspend CORE ALTERATIONS. AND C.2.[2] Suspend movement of irradiated fuel assemblies.	Immediately Immediately
D. Two CREFS CRVS trains inoperable ~~[in MODE 5 or 6, or]~~ during movement of irradiated fuel assemblies [, or during CORE ALTERATIONS].	D.1 Suspend CORE ALTERATIONS. AND D.[2] Suspend movement of irradiated fuel assemblies.	Immediately Immediately
E. Two CREFS trains inoperable in MODE 1, 2, 3, or 4.	E.1 Enter LCO 3.0.3.	Immediately

DB.2

CLB.1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.~~10~~ 11.1 Operate each CREFS CRVS train for [≥ 10 continuous hours with the heaters operating or (for systems without heaters) ≥ 15 minutes].	31 days

<4.5.b>
<DOC A.4>

DB.1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

		SURVEILLANCE	FREQUENCY	
<4.5.A5> <DOC A.5>	SR 3.7.~~10~~ 11.2	Perform required ~~CREFS~~ CRVS filter testing in accordance with the [Ventilation Filter Testing Program (VFTP)].	In accordance with [VFTP]	
<DOC A.6>	SR 3.7.~~10~~ 11.3	Verify each ~~CREFS~~ CRVS train actuates on an actual or simulated actuation signal.	~~[18]~~ 24 months	
<DOC M.3>	SR 3.7.~~10~~ 11.4	Verify one ~~CREFS~~ CRVS train can maintain a slight positive pressure ~~of ≥ [0.125] inches water gauge,~~ relative to the adjacent ~~[turbine building]~~ enclosed area during the ~~pressurization~~ 10% incident mode of operation at a makeup flow rate of ≤ ~~[3000]~~ 400 cfm.	~~[18]~~ 24 months on a STAGGERED TEST BASIS	CLB.1 DB.1

B 3.7 PLANT SYSTEMS

B 3.7.~~10~~ 11 Control Room Ventilation ~~Emergency Filtration~~ System (~~CREFS~~ CRVS)

BASES

BACKGROUND

The ~~CREFS~~ CRVS provides a protected environment from which operators can control the unit following an uncontrolled release of radioactivity~~, chemicals, or toxic gas~~.

Insert: B3.7-50-01

~~The CREFS consists of two independent, redundant trains that recirculate and filter the control room air. Each train consists of a prefilter or demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system, as well as demisters to remove water droplets from the air stream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case of failure of the main HEPA filter bank.~~

The ~~CREFS~~ CRVS is an emergency system, parts of which ~~may also~~ operate during normal unit operations. ~~in the standby mode of operation. Upon receipt of the actuating signal(s), normal air supply to the control room is isolated, and the stream of ventilation air is recirculated through the system filter trains. The prefilters or demisters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers. Continuous operation of each train for at least 10 hours per month, with the heaters on, reduces moisture buildup on the HEPA filters and adsorbers. Both the demister and heater are important to the effectiveness of the charcoal adsorbers.~~

Insert: B37.50.02

~~Actuation of the CREFS places the system in either of two separate states (emergency radiation state or toxic gas isolation state) of the emergency mode of operation, depending on the initiation signal. Actuation of the system to the emergency radiation state of the emergency mode of operation, closes the unfiltered outside air intake and unfiltered exhaust dampers, and aligns the system for recirculation of the control room air through the redundant trains of HEPA and the charcoal filters. The emergency radiation state also initiates pressurization and filtered ventilation of the air supply to the control room.~~

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

INSERT: B 3.7-50-01

The Control Room Ventilation System consists of the following equipment: a single filter unit consisting of two roughing filters, two high efficiency particulate air (HEPA) filters; two activated charcoal adsorbers for removal of gaseous activity (principally iodines); two 100% capacity filter booster fans; and, a single duct system including dampers, controls and associated accessories to provide for three different air flow configurations. The air-conditioning units associated with the CRVS are governed by LCO 3.7.12, "Control Room Air Conditioning System (CRACS)."

The CRVS is divided into two trains with each train consisting of a filter booster fan and the associated inlet damper and the following components which are common to both trains: the control room filter unit, damper A (filter unit bypass for outside air makeup to the Control Room), damper B (filter unit inlet for outside air makeup to the Control Room), damper C (filter unit inlet for reticulated air), and the toilet and locker room exhaust fan. The two filter booster fans (F 31 and F 32) are powered from safeguards power trains 5A (EDG 33) and 6A (EDG 32), respectively. Each of the automatic dampers that are common to both trains is positioned in the fail-safe position (open or closed) by either of the redundant actuation channels.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

INSERT: B 3.7-50-02

The three different CRVS air flow configurations are as follows:

a) Normal operation consists of approximately 85% (8500 cfm) unfiltered recirculated flow driven by the air-conditioning fans and approximately 15% (1500 cfm) unfiltered outside air makeup;

b) Incident mode with outside air makeup (i.e. 10% incident mode) consists of approximately 87% (9250 cfm) unfiltered recirculated flow driven by the two safety related air-conditioning fans, at least 10% (> 1000 cfm) filtered recirculated flow driven by either one of the two filter booster fans and approximately 2.5% to 4.0% (250 to 400 cfm) filtered outside air makeup;

c) Incident mode with no outside air makeup (i.e. 100% incident mode) consists of 85% (9100 cfm) unfiltered reticulated flow driven by the two safety related air-conditioning fans, approximately 15% filtered recirculated flow driven by either one of the two filter booster fans and no outside air makeup.

Note that the required recirculation rates are demonstrated with surveillance tests conducted with the air conditioning system (CRACS) operating. An inoperable CRACS fan will affect the flow balance of the CRVS due to interconnected ductwork. Therefore, if the fan associated with one of the air-conditioning units governed by LCO 3.7.12 is inoperable, Conditions in both LCO 3.7.11, Control Room Ventilation System, and LCO 3.7.12, Control Room Air Conditioning System (CRACS), will apply.

Incident mode with outside air makeup is the preferred method of operation during any radiological event because it provides outside air for pressurization of the Control Room. Calculations indicate that very low volumes of outside air makeup will maintain the Control Room at a slight positive pressure. Nevertheless, due to the difficulty of adjusting and maintaining the flow dampers to provide a low flow, it was determined that the damper should be adjusted to provide a flow of approximately 250 cfm (2.5% outside air makeup). However, a higher volume of outside air makeup to the Control Room increase the thyroid dose to the operators during an accident. Therefore, the Control Room dose assessment assumes a filtered outside air makeup of approximately 400 cfm (4.0% outside air makeup).

INSERT: B 3.7-50-02 (continued)

On a Safety Injection signal or high radiation in the Control Room (Radiation Monitor R-1), the CRVS will actuate to the incident mode with outside air makeup (i.e. 10% incident mode). This will cause one of the two filters booster fans to start, the locker room exhaust fan to stop, and CRVS dampers to open or close as necessary to filter all incoming outside air and direct approximately 10% of the recirculated air through the filter unit. In the event that the first booster fan fails to start, the second booster fan will start after a predetermined time delay.

If for any reason it is required or desired to operate with 100% recirculated air (e.g., toxic gas condition is identified), the CRVS can be placed in the incident mode with no outside air makeup (i.e. 100% incident mode) by remote manually operated switches. The Firestat detectors will also initiate 100% incident mode in the CRVS.

BACKGROUND (continued)

~~Outside air is filtered, diluted with building air from the electrical equipment and cable spreading rooms, and added to the air being recirculated from the control room.~~

~~Pressurization of the control room prevents infiltration of unfiltered air from the surrounding areas of the building. The actions taken in the toxic gas isolation state are the same, except that the signal switches control room ventilation to an isolation alignment to prevent outside air from entering the control room.~~

Insert: B3.7-51-01

The ~~air entering the~~ control room is continuously monitored by radiation and toxic gas detectors. ~~One detector output above the setpoint~~ Insert: B 3.7-51-02 will cause actuation of the emergency radiation state ~~or toxic gas isolation state, as required~~. H DB.1

Insert: B3.7-51-03

~~The actions of the toxic gas isolation state are more restrictive, and will override the actions of the emergency radiation state.~~

A single train will ~~pressurize the control room to about [0.125] inches water gauge.~~ Insert: B3.7-51-04 The ~~CREFS~~ CRVS operation in maintaining the control room habitable is discussed in the FSAR, Section ~~[6.4]~~ 9.9 (Ref. 1).

~~Redundant supply and recirculation trains provide the required filtration should an excessive pressure drop develop across the other filter train. Normally open isolation dampers are arranged in series pairs so that the failure of one damper to shut will not result in a breach of isolation.~~ The ~~CREFS~~ CRVS is designed in accordance with Seismic Category I requirements.

The ~~CREFS~~ CRVS is designed to maintain the control room environment for 30 days of continuous occupancy after a Design Basis Accident (DBA) without exceeding a 5 rem whole body dose or ~~its equivalent to any part of the body~~ 30 rem to the thyroid.

APPLICABLE SAFETY ANALYSES

The ~~CREFS~~ CRVS components are arranged building in redundant, safety related ventilation trains. The location of components and ducting within the control ~~room~~ envelope ensures an adequate supply of filtered air to all areas requiring access. The ~~CREFS~~ CRVS provides airborne radiological protection for the control room operators, as demonstrated by the control room accident dose analyses for the most limiting design basis

~~(continued)~~

NUREG-1431 Markup Inserts

ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

<u>INSERT: B 3.7-51-01</u>

On a Safety Injection signal or high radiation in the Control Room (Radiation Monitor R-1),

<u>INSERT: B 3.7-51-02</u>

of the CRVS (i.e., <u>incident mode with outside air makeup</u> (i.e. 10% incident mode)).

<u>INSERT: B 3.7-51-03</u>

The CRVS does not actuate automatically in response to toxic gases. Separate chlorine, ammonia and oxygen probes are provided to detect the presence of these gases in the outside air intake. Additionally, monitors in the Control Room will detect low oxygen levels and high levels of chlorine and ammonia. The CRVS may be placed in the <u>incident mode with no outside air makeup</u> (i.e. 100% incident mode) to respond to these conditions. Instrumentation for toxic gas monitoring is governed by the IP3 Technical Requirements Manual (TRM) (Ref. 4). Generally, the manually initiated

<u>INSERT: B 3.7-51-04</u>

create a slight positive pressure in the control room.

BASES

APPLICABLE SAFETY ANALYSES (continued)

Insert: B 3.7-52-01

Insert: B 3.7-52-02

~~loss of coolant accident~~, fission product release presented in the FSAR, Chapter ~~[15]~~ 14 (Ref. 2).

~~The analysis of toxic gas releases demonstrates that the toxicity limits are not exceeded in the control room following a toxic chemical release, as presented in Reference 1.~~ DB.1 DB2

Insert: B 3.7-52-03

The worst case ~~single~~ active failure of a component of the ~~CREFS~~ CRVS assuming a loss of offsite power, does not impair the ability of the system to perform its design function.

The ~~CREFS~~ CRVS satisfies Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

LCO

Two ~~independent and redundant~~ ~~CREFS~~ CRVS trains are required to be OPERABLE to ensure that at least one is available. ~~assuming a single failure disables the other train~~. Total system failure could result in exceeding a dose of ~~5 rem~~ ~~to the control room operator in the event of a large radioactive release.~~

Insert: B3.7-52-04

The ~~CREFS~~ CRVS is considered OPERABLE when the individual components necessary to limit operator exposure are OPERABLE in both trains. A ~~CREFS~~ train is OPERABLE when the associated:

Insert: B 3.7-52-05

a. ~~Fan is~~ OPERABLE;

b. HEPA filters and charcoal adsorbers are not excessively restricting flow, and are capable of performing their filtration functions; and

c. ~~Heater, demister~~, ductwork, valves, and dampers are OPERABLE, and air circulation can be maintained. DB.1

or in the incident mode

In addition, the control room boundary must be maintained, including the integrity of the walls, floors, ceilings, ductwork, and access doors.

Insert: B 3.7-52-06

APPLICABILITY

In MODES 1, 2, 3, 4, ~~[5, and 6,] and during movement of irradiated fuel assemblies [and during CORE ALTERATIONS]~~.

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

INSERT: B 3.7-52-01

accident (i.e., DBA LOCA)

INSERT: B 3.7-52-02

Radiation monitor R-1 is not required for the Operability of the Control Room Ventilation System because control room isolation is initiated by the safety injection signal in MODES 1, 2, 3, and 4 and control room isolation is not required for maintaining radiation exposure within General Design Criteria 19 limits following a fuel handling accident or gas-decay-tank rupture.

INSERT: B 3.7-52-03

However, the original CRVS design was not required to meet single failure criteria and, although upgraded from the original design, CRVS does not satisfy all requirements in IEEE-279 for single failure tolerance. Each of the automatic dampers that are common to both trains is positioned in the fail-safe position (open or closed) by either of the redundant actuation channels.

INSERT: B 3.7-52-04

5 rem whole body or 30 rem to the thyroid of

INSERT: B 3.7-52-05

a filter booster fan and an air-conditioning unit fan powered from the same safeguards power train are

INSERT: B 3.7-52-06

Instrumentation for toxic gas monitoring is governed by the IP3 Technical Requirements Manual (TRM) (Ref. 4) and is not included in the LCO.

BASES

CRVS

APPLICABILITY (continued)

CREFS must be OPERABLE to limit ~~control~~ operator exposure during and following a DBA.

Insert: B3.7-53-01

~~In [MODE 5 or 6], the CREFS is required to cope with the release from the rupture of an outside waste gas tank.~~

~~During movement of irradiated fuel assemblies [and CORE ALTERATIONS], the CREFS must be OPERABLE to cope with the release from a fuel handling accident.~~

ACTIONS

A.1

CRVS

When one CREFS train is inoperable, action must be taken to restore OPERABLE status within 7 days. In this Condition, the remaining OPERABLE CREFS train is adequate to perform the control room protection function. However, the overall reliability is reduced because a ~~single~~ failure in the OPERABLE CREFS train could result in loss of CREFS function. The 7 day Completion Time is based on the low probability of a DBA occurring during this time period, and ability of the remaining train to provide the required capability.

Insert: B3.7-53-02

B.1 and B.2 C

Insert: B3.7-53-03

~~In MODE 1, 2, 3, or 4, if the inoperable CREFS train cannot be restored to OPERABLE status~~ within the required Completion Time, the unit must be placed in a MODE that minimizes accident risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

~~C.1, C.2.1, and C.2.2~~

~~[In MODE 5 or 6, or] during movement of irradiated fuel assemblies [, or during CORE ALTERATIONS], if the inoperable CREFS train cannot be restored to OPERABLE status within the required Completion Time, action must be taken to immediately place the OPERABLE CREFS train in the emergency~~

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

INSERT: B 3.7-53-01

The CRVS is not required in MODE 5 or 6, or during movement of irradiated fuel assemblies and core alterations because analysis indicates that isolation of the control room is not required for maintaining radiation exposure within acceptable limits following a fuel handling accident or gas decay tank rupture.

Administrative controls address the role of the CRVS in maintaining control room habitability following an event at Indian Point Unit 2.

INSERT: B 3.7-53-02

B.1

When neither CRVS train is Operable, action must be taken to restore at least one train to OPERABLE status within 72 hours. The 72 hour Completion Time is acceptable because of the low probability of a DBA occurring during this time period.

INSERT: B 3.7-53-03

If Required Actions A.1 or B.1 are not met

BASES

ACTIONS

~~C.1, C.2.1, and C.2.2 (continued)~~

~~mode. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that any active failure would be readily detected.~~

~~An alternative to Required Action C.1 is to immediately suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk. This does not preclude the movement of fuel to a safe position.~~

~~Required Action C.1 is modified by a Note indicating to place the system in the toxic gas protection mode if automatic transfer to toxic gas protection mode is inoperable.~~

~~D.1 and D.2~~

~~[In MODE 5 or 6, or] during movement of irradiated fuel assemblies [, or during CORE ALTERATIONS], with two CREFS trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might enter the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.~~

~~E.1~~

~~If both CREFS trains are inoperable in MODE 1, 2, 3, or 4, the CREFS may not be capable of performing the intended function and the unit is in a condition outside the accident analyses. Therefore, LCO 3.0.3 must be entered immediately.~~

SURVEILLANCE REQUIREMENTS

SR 3.7.~~10~~11.1

Standby systems should be checked periodically to ensure that they function properly. As the environment and normal operating conditions on this system are not too severe,

~~(continued)~~

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.~~10~~ 11.1 (continued)

testing each train once every month provides an adequate check of this system. ~~Monthly heater operations dry out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized. Systems without heaters need only be operated for ≥ 15 minutes to demonstrate the function of the system.]~~ The 31 day Frequency is based on the reliability of the equipment and the two train redundancy availability.

SR 3.7.~~10~~ 11.2

CRVS

the sections of

identified in the VFTP

This SR verifies that the required CREFS testing is performed in accordance with the [Ventilation Filter Testing Program (VFTP)]. The CREFS filter tests are in accordance with Regulatory Guide 1.52 (Ref. 3). The [VFTP] includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the [VFTP].

SR 3.7.~~10~~ 11.3

CRVS

This SR verifies that each CREFS train starts and operates on an actual or simulated actuation signal. The Frequency of [18] months is ~~specified in Regulatory Guide 1.52 (Ref. 3)~~. 24

Insert B 3.7-55-01

SR 3.7.~~10~~ 11.4

This SR verifies the integrity of the control room enclosure, and the assumed inleakage rates of the potentially contaminated air. The control room positive pressure, with respect to potentially contaminated adjacent areas, is periodically tested to verify proper functioning of the CREFS. During the ~~emergency mode of operation~~, the CREFS is designed to ~~pressurize~~ the control room ≥ [0.125] ~~inches water gauge~~ positive pressure with respect to adjacent areas in order to prevent unfiltered inleakage. The CREFS is designed to maintain this positive pressure

CRVS

maintain

Insert B 3.7-55-02

CRVS

at a slight

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

INSERT: B 3.7-55-01

based on operating experience which has demonstrated this Frequency provides a high degree of assurance that the booster fans will operate and dampers actuate to the correct position when required.

INSERT: B 3.7-55-02

operation in the incident mode with outside air makeup (i.e. 10% incident mode)

BASES

SURVEILLANCE REQUIREMENTS

SR ~~3.7.10.4~~ 3.7.11.4 (continued)

Insert: B 3.7-56-01

~~with one train at a makeup flow rate of [3000] cfm. The Frequency of [18] months on a STAGGERED TEST BASIS is consistent with the guidance provided in NUREG-0800 (Ref. 4).~~

REFERENCES

1. FSAR, Section ~~6.4~~ 9.9.
2. FSAR, Chapter ~~15~~ 14.
3. Regulatory Guide 1.52, Rev. 2.
4. ~~NUREG-0800, Section 6.4, Rev. 2, July 1981.~~

Insert: B 3.7-56-02

NUREG-1431 Markup Inserts
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

INSERT: B 3.7-56-01

with very low volumes of outside air makeup. Due to the difficulty of adjusting and maintaining the flow dampers to provide a low flow, it was determined that the damper should be adjusted to provide a flow of approximately 250 cfm (2.5% outside air makeup). Note that the higher the volume of outside air makeup to the Control Room, the higher the thyroid dose to the operators during an accident. The acceptance criteria of 400 cfm (4.0% outside air makeup) is the volume used in the Control Room dose assessment.

The SR Frequency of 24 months on a staggered test basis is acceptable because operating experience has demonstrated that the control room boundary is not normally disturbed. Staggered testing is acceptable because the SR is primarily a verification of Control Room integrity because fan operation is tested elsewhere.

INSERT: B 3.7-56-02

4. IP3 Technical Requirements Manual

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.11:
"Control Room Ventilation System (CRVS)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.7.11, was modified as needed to reflect the current licensing basis which allows a loss of CRVS function for 72 hours before a plant shutdown is required. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DB.2 Isolation of the control room is not required for maintaining radiation exposure within General Design Criteria 19 limits following a fuel handling accident or gas decay tank rupture, therefore the control room ventilation system is not required to be operable in Modes 5 and 6, and during movement of irradiated fuel assemblies and core alterations. See Amendment No. 137 to Facility Operating License DPR-64 for the Indian Point Nuclear Generating Unit No. 3.

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.11 - Control Room Ventilation System (CRVS)

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.12:
"Control Room Air Conditioning System (CRACS)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.12 Control Room Air Conditioning System (CRACS)

LCO 3.7.12 Two CRACS trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3 and 4.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One CRACS train inoperable.	A.1	Restore CRACS train to OPERABLE status.	30 days
B. Two CRACS trains inoperable.	B.1	Restore one CRACS train to OPERABLE status.	72 hours
C. Required Action and associated Completion Time of Condition A or B not met.	C.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	C.2	Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.12.1	Verify each CRACS train has the capability to remove the assumed heat load.	24 months

B 3.7 PLANT SYSTEMS

B 3.7.12 Control Room Air Conditioning System (CRACS)

BASES

BACKGROUND

The CRACS provides temperature control for the control room following isolation of the control room.

The CRACS consists of two trains that provide cooling of recirculated control room air. Each train consists of, cooling coils, instrumentation, and controls to provide for control room temperature control. The CRACS (CRACS 31 and CRACS 32) are powered from safeguards power trains 5A (EDG 33) and 6A (EDG 32), respectively. The CRACS units are supplied with cooling water from the essential service water header and each unit is capable of performing its design function during an accident with a service water inlet temperature ≤ 95°F.

The CRACS is an emergency system, parts of which may also operate during normal unit operations. Each CRACS unit is sized to provide 60% of the cooling capacity required during normal operation and 100% of the cooling capacity required during an accident. The CRACS operation in maintaining the control room temperature is discussed in the FSAR, Section 9.9 (Ref. 1).

During normal operation, five supplemental air-conditioning units in the Control Room are available to supplement the cooling capacity of the CRACS. These units also provide Control Room heating. These five supplemental air-conditioning units are not assumed to be available during a blackout or design basis accident and, therefore, are not governed by Technical Specifications.

APPLICABLE SAFETY ANALYSES

The design basis of the CRACS is to maintain the control room temperature for 30 days of continuous occupancy.

The CRACS components are arranged in redundant, safety related trains. The CRACS is designed so that the functional capability

BASES

APPLICABLE SAFETY ANALYSES (continued)

of the Control Room is maintained at all times, including a Design Basis Accident. Functional capability of the Control Room means that the ambient temperature for safety equipment located in this room will not exceed 108.2°F. Control Room safety equipment is specified to a temperature of 120°F and the 108.2°F limit for Control room temperature is sufficient to account for the temperature rise in the enclosed cabinets. Functional capability of the Control Room can be maintained by one train of CRACS being cooled by the essential service water system assuming the ultimate heat sink temperature is ≤ 95°F. Analysis indicates that under worst case conditions, the Control Room temperature could rise to approximately 106°F following the loss of one CRACS train assuming all lights, except emergency lights, are turned off (Ref.1). Detectors and controls are provided for control room temperature control. The CRACS is designed in accordance with Seismic Category I requirements. The CRACS is capable of removing sensible and latent heat loads from the control room, which include consideration of equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY.

A failure of a component of the CRACS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. However, the original CRACS design was not required to meet single failure criteria and, although upgraded from the original design, CRACS does not satisfy all requirements in IEEE-279 for single failure tolerance.

The CRACS satisfies Criterion 3 of 10 CFR 50.36.

LCO

Two trains of the CRACS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disabling the other train. Total system failure could result in the equipment operating temperature exceeding limits in the event of an accident.

The CRACS is considered to be OPERABLE when the individual components necessary to maintain the control room temperature are OPERABLE in both trains. These components include the cooling

BASES

LCO (continued)

coils and common temperature control instrumentation. In addition, the CRACS must be operable to the extent that air circulation can be maintained.

Note that the required recirculation rates are demonstrated with surveillance tests conducted with the air conditioning system (CRACS) operating. An inoperable CRACS fan will affect the flow balance of the CRVS due to interconnected ductwork. Therefore, if the fan associated with one of the air-conditioning units governed by LCO 3.7.12 is inoperable, Conditions in both LCO 3.7.11, Control Room Ventilation System, and LCO 3.7.12, Control Room Air conditioning System (CRACS), will apply.

APPLICABILITY

In MODES 1, 2, 3 and 4, the CRACS must be OPERABLE to ensure that the control room temperature will not exceed equipment operational requirements following isolation of the control room.

The CRACS is not required in MODE 5 or 6, or during movement of irradiated fuel assemblies and core alterations because analysis indicates that isolation of the control room is not required for maintaining radiation exposure within acceptable limits following a fuel handling accident or gas decay tank rupture.

ACTIONS

A.1

With one CRACS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE CRACS train is adequate to maintain the control room temperature within limits. However, the overall reliability is reduced because a single failure in the OPERABLE CRACS train could result in loss of CRACS function. The 30 day Completion Time is based on the low probability of an event requiring control room isolation, the consideration that the remaining train can provide the required protection, and that alternate nonsafety related cooling means are typically available.

BASES

ACTIONS (continued)

B.1

When neither CRACS train is Operable, action must be taken to restore at least one train to OPERABLE status within 72 hours. The 72 hour Completion Time is acceptable because of the low probability of a DBA occurring during this time period and because alternate nonsafety cooling means are typically available.

C.1 and C.2

If Required Actions A.1 or B.1 are not met within the required Completion Time, the unit must be placed in a MODE that minimizes the risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.12.1

This SR verifies that the heat removal capability of the system is sufficient to remove the heat load assumed in the control room. This SR consists of a combination of testing and calculations. The 24 month Frequency is appropriate since significant degradation of the CRACS is slow and is not expected over this time period.

REFERENCES

1. FSAR, Section 9.9.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.12:
"Control Room Air Conditioning System (CRACS)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
None	N/A	N/A	No TSCRs	No TSCRs for this Page	N/A

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.12:
"Control Room Air Conditioning System (CRACS)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

ADMINISTRATIVE

None

MORE RESTRICTIVE

M.1 CTS do not include any requirements for the Operability of the Control Room air-conditioning System (CRACS). ITS LCO 3.7.12 and associated Conditions and Required Actions are added to require that two 100% capacity control room air-conditioning systems are operable in Modes 1, 2, 3, and 4. In conjunction with this change, Conditions A, B and C are added to establish allowable out of service times for a loss of CRACS redundancy and a loss of CRACS function. Specifically, Required Action A.1, establishes a 30 day AOT for loss of CRACS redundancy and Required Action B.1, establishes a 72 hour AOT for loss of CRACS function. Required Actions C.1 and C.2 require that the plant be promptly placed outside the applicable Mode if the Required Actions or Completion Times of Condition A or B are not met.

This change is needed because at least one train of CRACS may be required to maintain control room temperature to maintain the Operability of control room instrumentation required by Regulatory Guide 1.97. This change is acceptable because one train of CRACS is capable of maintaining the Control Room temperature within limits required to support Control Room instrument Operability if the ultimate heat sink temperature is ≤ 95°F and control room lighting, except for emergency lighting, is extinguished. Two air-conditioning units are required to be operable to ensure that at least one is available, assuming a failure of the other air conditioning unit.

The AOT of Required Action A.1 for loss of CRACS redundancy is acceptable because the 30 day completion time is based on the low probability of an event requiring control room isolation and cooling, the consideration that the remaining train can provide the required control room cooling, and that alternate cooling capability is typically available and will function if offsite power is available.

The AOT of Required Action B.1 for loss of CRACS function is acceptable because the 72 hour completion time is based on the low probability of an event requiring control room isolation and cooling and that alternate cooling capability is typically available and will function if offsite power is available. The new requirement for the Operability of redundant CRACS capability and the associated AOTs for loss of CRACS redundancy and/or CRACS function are acceptable because they do not introduce any operation which is un-analyzed. Therefore, this change has no adverse impact on safety.

M.2 CTS do not include any requirements for the testing of the Control Room air-conditioning System (CRACS). ITS SR 3.7.12.1 is added to require verification every 24 months that each control room air-conditioning system has the capability to remove the heat load assumed in the safety analysis. This more restrictive requirement is acceptable because it verifies the Operability of the control room air-conditioning system. The 24 month Frequency is appropriate since significant degradation of the control room air conditioning system is slow and not expected over this time period. This change has no adverse impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.12:
"Control Room Air Conditioning System (CRACS)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.12:
"Control Room Air Conditioning System (CRACS)"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.12

This ITS Specification is based on NUREG-1431 Specification No. **3.7.11**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-017	051	REVISE CONTAINMENT REQUIREMENTS DURING HANDLING IRRADIATED FUEL AND CORE ALTERATIONS (REQUIREMENTS LIMITED TO "RECENTLY" IRRADIATED FUEL)	NRC Review	Not Incorporated	N/A

CRACS
~~CREATCS~~ Typical
3.7.~~11~~ 12

3.7 PLANT SYSTEMS

3.7.~~11~~ 12 Control Room Air Conditioning ~~Emergency Air Temperature Control~~ System CRACS ~~(CREATCS)~~

⟨DOC M.1⟩ LCO 3.7.~~11~~ 12 Two CRACS ~~CREATCS~~ trains shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4~~, [5, and 6,]~~
~~During movement of irradiated fuel assemblies,~~
~~[During CORE ALTERATIONS].~~

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME
⟨DOC M1⟩	A. One CRACS ~~CREATCS~~ train inoperable.	A.1	Restore CRACS ~~CREATCS~~ train to OPERABLE status.	30 days
Insert: 3.7-26-01				
⟨DOC M.1⟩	~~B.~~ C. Required Action and associated Completion Time of Condition A not met ~~in MODE 1, 2, 3, or 4~~ or B.	~~B.~~C.1	Be in MODE 3.	6 hours
		AND		
		~~B.~~C.2	Be in MODE 5.	36 hours
	~~C. Required Action and associated Completion Time of Condition A not met [in MODE 5 or 6, or] during movement of irradiated fuel assemblies [, or during CORE ALTERATIONS].~~	~~C.1~~	~~Place OPERABLE CREATCS train in operation.~~	~~Immediately~~
		~~OR~~		
		~~C.2.1~~	~~Suspend CORE ALTERATIONS.~~	~~Immediately~~
		~~AND~~		
		~~C.2.[2]~~	~~Suspend movement of irradiated fuel assemblies.~~	~~Immediately~~

DB2

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

INSERT: 3.7-26-01

B. <DOC M.1>	Two CRACS trains inoperable.	B.1 Restore one CRACS train to OPERABLE status.	72 hours

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
D. ~~Two CREATCS trains inoperable [in MODE 5 or 6, or] during movement of irradiated fuel assemblies [, or during CORE ALTERATIONS].~~	D.1	~~Suspend CORE ALTERATIONS.~~	~~Immediately~~
	AND		
	D.[2]	~~Suspend movement of irradiated fuel assemblies.~~	~~Immediately~~
E. ~~Two CREATCS trains inoperable in MODE 1, 2, 3, or 4.~~	E.1	~~Enter LCO 3.0.3.~~	~~Immediately~~

DB.2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<DOC M.2> SR 3.7.~~11~~.1 12	Verify each ~~CREATCS~~ CRACS train has the capability to remove the assumed heat load.	~~[18]~~ 24 months

B 3.7 PLANT SYSTEMS

B 3.7.~~11~~ 12 Control Room ~~Emergency Air Temperature Control~~ Air Conditioning System ~~(CREATCS)~~ (CRACS)

BASES

BACKGROUND

The ~~CREATCS~~ CRACS provides temperature control for the control room following isolation of the control room.

The ~~CREATCS~~ CRACS consists of two ~~independent and redundant~~ trains that provide cooling ~~and heating~~ of recirculated control room air. Each train consists of ~~heating coils,~~ cooling coils, instrumentation, and controls to provide for control room temperature control. ~~The CREATCS is a subsystem providing air temperature control for the control room.~~

Insert: B3.7-57-01

The ~~CREATCS~~ CRACS is an emergency system, parts of which may also operate during normal unit operations. ~~A single train will provide the required temperature control to maintain the control room between [70]°F and [85]°F.~~ The ~~CREATCS~~ CRACS operation in maintaining the control room temperature is discussed in the FSAR, Section ~~[6.4]~~ 9.9 (Ref. 1).

Insert B3.7-57-02

Insert: B3.7-57-03

APPLICABLE SAFETY ANALYSES

The design basis of the ~~CREATCS~~ CRACS is to maintain the control room temperature for 30 days of continuous occupancy.

The ~~CREATCS~~ CRACS components are arranged in redundant, safety related trains. ~~During emergency operation, the CREATCS maintains the temperature between [70]°F and [85]°F. A single active failure of a component of the CREATCS, with a loss of offsite power, does not impair the ability of the system to perform its design function. Redundant~~ detectors and controls are provided for control room temperature control. The ~~CREATCS~~ CRACS is designed in accordance with Seismic Category I requirements. The ~~CREATCS~~ CRACS is capable of removing sensible and latent heat loads from the control room, which include consideration of equipment heat loads and personnel occupancy requirements, to ensure equipment OPERABILITY.

Insert: B3.7-57-04

The ~~CREATCS~~ CRACS satisfies Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

Insert B3.7-57-05

~~(continued)~~

INSERT: B 3.7-57-01

The CRACS (CRACS 31 and CRACS 32) are powered from safeguards power trains 5A (EDG 33) and 6A (EDG 32), respectively. The CRACS units are supplied with cooling water from the essential service water header and each unit is capable of performing its design function during an accident with a service water inlet temperature ≤ 95°F.

INSERT: B 3.7-57-02

Each CRACS unit is sized to provide 60% of the cooling capacity required during normal operation and 100% of the cooling capacity required during an accident.

INSERT: B 3.7-57-03

During normal operation, five supplemental air-conditioning units in the Control Room are available to supplement the cooling capacity of the CRACS. These units also provide Control Room heating. These five supplemental air-conditioning units are not assumed to be available during a blackout or design basis accident and, therefore, are not governed by Technical Specifications.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

INSERT: B 3.7-57-04

The CRACS is designed so that the functional capability of the Control Room is maintained at all times, including a Design Basis Accident. Functional capability of the Control Room means that the ambient temperature for safety equipment located in this room will not exceed 108.2°F. Control Room safety equipment is specified to a temperature of 120°F and the 108.2°F limit for Control room temperature is sufficient to account for the temperature rise in the enclosed cabinets. Functional capability of the Control Room can be maintained by one train of CRACS being cooled by the essential service water system assuming the ultimate heat sink temperature is ≤ 95°F. Analysis indicates that under worst case conditions, the Control Room temperature could rise to approximately 106°F following the loss of one CRACS train assuming all lights, except emergency lights, are turned off (Ref.1).

INSERT: B 3.7-57-05

A failure of a component of the CRACS, assuming a loss of offsite power, does not impair the ability of the system to perform its design function. However, the original CRACS design was not required to meet single failure criteria and, although upgraded from the original design, CRVS does not satisfy all requirements in IEEE-279 for single failure tolerance.

BASES (continued)

LCO

CRACS

Two ~~independent and redundant~~ trains of the CREATCS are required to be OPERABLE to ensure that at least one is available, assuming a single failure disabling the other train. Total system failure could result in the equipment operating temperature exceeding limits in the event of an accident.

CRACS

The CREATCS is considered to be OPERABLE when the individual components necessary to maintain the control room temperature are OPERABLE in both trains. These components include the ~~heating and~~ cooling coils and ~~associated~~ temperature control instrumentation. In addition, the CREATCS must be operable to the extent that air circulation can be maintained.

Common

Insert: B3.7-58-01

CRACS

and

APPLICABILITY

In MODES 1, 2, 3, ~~4,~~ ~~[5, and 6,]~~ ~~and during movement of irradiated fuel assemblies [and during CORE ALTERATIONS],~~ the CREATCS must be OPERABLE to ensure that the control room temperature will not exceed equipment operational requirements following isolation of the control room.

CRACS

~~[In MODE 5 or 6,] CREATCS may not be required for those facilities that do not require automatic control room isolation.~~

Insert: B3.7-58-02

ACTIONS

A.1

CRACS

With one CREATCS train inoperable, action must be taken to restore OPERABLE status within 30 days. In this Condition, the remaining OPERABLE CREATCS train is adequate to maintain the control room temperature within limits. However, the overall reliability is reduced because a single failure in the OPERABLE CREATCS train could result in loss of CREATCS function. The 30 day Completion Time is based on the low probability of an event requiring control room isolation, the consideration that the remaining train can provide the required protection, and that alternate ~~safety or~~ nonsafety related cooling means are available.

CRACS

typically

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

INSERT: B 3.7-58-01

Note that the required recirculation rates are demonstrated with surveillance tests conducted with the air conditioning system (CRACS) operating. An inoperable CRACS fan will affect the flow balance of the CRVS due to interconnected ductwork. Therefore, if the fan associated with one of the air-conditioning units governed by LCO 3.7.12 is inoperable, Conditions in both LCO 3.7.11, Control Room Ventilation System, and LCO 3.7.12, Control Room Air Conditioning System (CRACS), will apply.

INSERT: B 3.7-58-02

The CRACS is not required in MODE 5 or 6, or during movement of irradiated fuel assemblies and core alterations because analysis indicates that isolation of the control room is not required for maintaining radiation exposure within acceptable limits following a fuel handling accident or gas decay tank rupture.

Insert: B 3.7-59-01

BASES

ACTIONS (continued)

B.1 and B.2 C

Insert: B 3.7-59-02

~~In MODE 1, 2, 3, or 4, if the inoperable CREATCS train cannot be restored to OPERABLE status~~ within the required Completion Time, the unit must be placed in a MODE that minimizes the risk. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

~~C.1, C.2.1, and C.2.2~~

~~[In MODE 5 or 6, or] during movement of irradiated fuel [, or during CORE ALTERATIONS], if the inoperable CREATCS train cannot be restored to OPERABLE status within the required Completion Time, the OPERABLE CREATCS train must be placed in operation immediately. This action ensures that the remaining train is OPERABLE, that no failures preventing automatic actuation will occur, and that active failures will be readily detected.~~

~~An alternative to Required Action C.1 is to immediately suspend activities that present a potential for releasing radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes accident risk. This does not preclude the movement of fuel to a safe position.~~

~~D.1 and D.2~~

~~[In MODE 5 or 6, or] during movement of irradiated fuel assemblies [, or during CORE ALTERATIONS], with two CREATCS trains inoperable, action must be taken immediately to suspend activities that could result in a release of radioactivity that might require isolation of the control room. This places the unit in a condition that minimizes risk. This does not preclude the movement of fuel to a safe position.~~

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

INSERT: B 3.7-59-01

B.1

When neither CRACS train is Operable, action must be taken to restore at least one train to OPERABLE status within 72 hours. The 72 hour Completion Time is acceptable because of the low probability of a DBA occurring during this time period and because alternate nonsafety cooling means are typically available.

INSERT: B 3.7-59-02

If Required Actions A.1 or B.1 are not met

BASES

ACTIONS (continued)

E.1

If both CREATCS trains are inoperable in MODE 1, 2, 3, or 4, the control room CREATCS may not be capable of performing its intended function. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

12

SR 3.7.~~11~~.1

This SR verifies that the heat removal capability of the system is sufficient to remove the heat load assumed in the ~~[safety analyses] in the~~ control room. This SR consists of a combination of testing and calculations. The 18 month Frequency is appropriate since significant degradation of the CREATCS is slow and is not expected over this time period. 24 CRACS

REFERENCES

1. FSAR, Section 6.4. 9.9

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.12:
"Control Room Air Conditioning System (CRACS)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

<u>RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)</u>

None

<u>PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT</u>

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

<u>PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS</u>

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DB.2 The CRACS is not required in MODE 5 or 6, or during movement of irradiated fuel assemblies and core alterations because analysis indicates that isolation of the control room is not required for maintaining radiation exposure within acceptable limits following a fuel handling accident or gas decay tank rupture.

<u>DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431</u>

None

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.12 - Control Room Air Conditioning System (CRACS)

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.13:

"Fuel Storage Building Emergency Ventilation System (FSBEVS)"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.13 Fuel Storage Building Emergency Ventilation System (FSBEVS)

LCO 3.7.13 FSBEVS shall be OPERABLE.

APPLICABILITY: During movement of irradiated fuel assemblies in the fuel storage building.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. FSBEVS inoperable.	A.1	Suspend movement of irradiated fuel assemblies in the fuel storage building.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.13.1	Verify FSBEVS charcoal filter bypass dampers are installed.	92 days
SR 3.7.13.2	Operate FSBEVS for ≥ 15 minutes.	31 days
SR 3.7.13.3	Perform required FSBEVS filter testing in accordance with the Ventilation Filter Testing Program (VFTP).	In accordance with the VFTP
SR 3.7.13.4	Verify FSBEVS actuates on an actual or simulated actuation signal.	92 days
SR 3.7.13.5	Verify FSBEVS can maintain a pressure ≤ -0.125 inches water gauge with respect to atmospheric pressure during the post accident mode of operation at a flow rate ≤ 20,000 cfm.	24 months

B 3.7 PLANT SYSTEMS

B 3.7.13 Fuel Storage Building Emergency Ventilation System (FSBEVS)

BASES

BACKGROUND

The FSBEVS filters airborne radioactive particulates from the area of the fuel pool following a fuel handling accident. The FSBEVS, in conjunction with other normally operating systems, also provides environmental control of temperature and humidity in the fuel storage building.

The Fuel Storage Building (FSB) ventilation system maintains environmental conditions in the building enclosing the spent fuel pit and consists of the following:

Two FSB air tempering units with associated ventilation supply fans and ventilation supply isolation dampers;

One FSB exhaust fan and associated outlet damper;

One FSB exhaust filtration unit consisting of roughing, HEPA, and charcoal filters which includes the pneumatically operated inlet and outlet dampers for the carbon filter and manually operated dampers that allow the carbon filter to be bypassed;

Inflatable seals on man doors and truck door,

Area Radiation Monitor (R-5) consisting of an extended range area monitor used to measure the area radiation fields of the Fuel Storage Building; and,

Ductwork, dampers, and instrumentation needed to support system operation.

During normal operation, the FSB air tempering units and associated ventilation supply fans and the FSB exhaust fan operate, as necessary, to ventilate and, if necessary, heat the FSB. One or both FSB air tempering units are used to supply outside air to the south end of the FSB and the FSB exhaust fan is used to exhaust air from the north end of the FSB through the roughing filters and HEPA filters and is released to the

BASES

BACKGROUND (Continued)

environment via the plant vent. FSB air flow is directed from radiologically clean to less clean areas to prevent the spread of contamination. Additionally, the FSBEVS is designed so that the exhaust fan capacity is greater than the supply fan(s) capacity so that the FSB is normally maintained at a slight negative pressure. This ensures that ventilation air leaving the FSB passes through the filters and HEPA in the exhaust filtration unit and is released to the environment via the plant vent. When not handing irradiated fuel in the FSB, the carbon filter in the exhaust filtration unit is normally bypassed to extend the life of the charcoal. In this configuration, the manually operated charcoal filter bypass dampers are left open and the automatically operated charcoal filter face dampers (inlet and outlet dampers) are closed.

<u>During irradiated fuel handling activities in the FSB,</u> the FSBEVS is operated as described above except that the manually operated charcoal filter bypass dampers are closed and the charcoal filter face dampers (inlet and outlet dampers) are opened. In this configuration, the FSB is still maintained at a slight negative pressure but all FSB ventilation exhaust is directed through the roughing filters, HEPA filters, and charcoal filters and is released to the environment via the plant vent.

<u>Following an Area Radiation Monitor (R-5) signal or manual actuation to the emergency mode of operation</u>, the ventilation supply fans stop automatically and the associated ventilation supply dampers close automatically. The charcoal filter face dampers (inlet and outlet dampers) open automatically, if not already open. Additionally, the rolling truck door closes, if open, and the inflatable seals on the man doors and truck door are actuated. The FSB exhaust fan continues to operate. With the FSB ventilation supply stopped and the FSB boundary secured, the FSB exhaust fan is capable of maintaining the FSB at a pressure ≤ -0.5 inches water gauge with respect to atmospheric pressure with the exhaust flow rate ≤ 20,000 cfm.. Ventilation dampers required to establish the boundary or flow path (e.g., air tempering unit ventilation supply inlet dampers) will fail-safe into the required emergency mode position. Note that the

BASES

BACKGROUND (Continued)

inflatable seals on man doors and truck door are not required for maintaining the FSB at these required post accident conditions.

A push button switch adjacent to the 95' elevation door leading to the Fan House allows the Fuel Storage Building Exhaust Fan to be momentarily shut down and air removed from the man door seal to allow the door to be opened for FSB ingress or egress when in the emergency mode of operation. The fan will automatically restart and the door is resealed after a preset time has elapsed (approximately 30 seconds).

The FSBEVS is discussed in the FSAR, Sections 9.5, and 14.2 (Refs. 1 and 2, respectively).

APPLICABLE SAFETY ANALYSES

The FSBEVCS design basis is established by the consequences of the limiting Design Basis Accident (DBA), which is a fuel handling accident. The analysis for a fuel handling accident assumes that the FSB exhaust fan can maintain the FSB at a slight negative pressure (i.e., ≤ -0.125 inches water gauge) with respect to atmospheric pressure with the exhaust flow rate ≤ 20,000 cfm. Under these conditions, all FSB ventilation exhaust is assumed to be directed through the roughing filters, HEPA filters, and charcoal filters and is released to the environment via the plant vent. This ensures that offsite post accident dose rates are within required limits. Although this LCO requires the OPERABILITY of the FSBEVS whenever irradiated fuel assemblies are being moved within the FSB, analysis indicates that offsite post accident dose rates will be within required limits without the operation of the FSBEVS if the irradiated fuel has had a continuous 45 day decay period. This analysis is described in Reference 2.

The FSBEVS satisfies Criterion 3 of 10 CFR 50.36.

BASES

LCO

This LCO requires that the Fuel Storage Building Emergency Ventilation System is OPERABLE and the FSB boundary is intact. This ensures that the required negative pressure is maintained in the FSB and FSB ventilation exhaust is directed through the roughing filters, HEPA filters, and charcoal filters and is released to the environment via the plant vent. Failure of the FSBEVS or the FSB boundary could result in the atmospheric release from the fuel storage building exceeding the 10 CFR 100 (Ref. 3) limits in the event of a fuel handling accident.

The FSBEVS is considered OPERABLE when the individual components necessary to control exposure in the fuel storage building are OPERABLE. FSBEVS is considered OPERABLE when its associated:

a. Exhaust fan is OPERABLE;

b. Roughing filter, HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function;

c. Ductwork and dampers are OPERABLE as needed to ensure air circulation can be maintained through the filter; and

d. Ventilation supply fan trip function and ventilation supply isolation dampers closure function are OPERABLE or secured in incident position; and

e. FSBEVS charcoal filter bypass dampers are closed and leak tested.

The inflatable seals on man doors and truck door are not required for maintaining the FSB at these required post accident conditions. Additionally, the FSBEVS is not rendered inoperable when the FSBEVS exhaust fan is momentarily shut down and air removed from the door seal to allow the door to be opened for FSB ingress or egress when in the emergency mode of operation.

Requirements for the OPERABILITY of the Area Radiation Monitor (R-5) and associated instrumentation that initiates the FSBEVS are addressed in LCO 3.3.8, "Fuel Storage Building Emergency Ventilation System Actuation Instrumentation."

BASES

LCO (continued)

Requirements for leak testing the FSBEVS charcoal filter bypass dampers following closure are governed by the IP3 FSAR.

APPLICABILITY

During movement of irradiated fuel in the fuel storage building, the FSBEVS is required to be OPERABLE to mitigate the consequences of a fuel handling accident.

ACTIONS

A.1

When the FSBEVS is inoperable during movement of irradiated fuel assemblies in the fuel storage building, action must be taken to place the unit in a condition in which the LCO does not apply. Action must be taken immediately to suspend movement of irradiated fuel assemblies in the fuel storage building. This does not preclude the movement of fuel to a safe position.

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1

This SR requires periodic verification that the FSBEVS charcoal filter bypass dampers are installed and leak tested. This SR is performed by a visual verification that the bypass dampers are installed and an administrative verification that required leak testing was performed following the last installation of the dampers. Requirements for leak testing the FSBEVS charcoal filter bypass dampers following closure are governed by the IP3 FSAR.

This SR is performed prior to movement of irradiated fuel assemblies in the fuel storage building, and once per 92 days thereafter. The 92 day Frequency is appropriate because the bypass dampers are operated under administrative controls which provides a high degree of assurance that the dampers will remain

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.13.1 (continued)

in the required position. This Frequency has been shown to be acceptable through operating experience.

SR 3.7.13.2

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing the FSBEVS once every 31 days provides an adequate check on this system. Systems are operated for ≥ 15 minutes to demonstrate the function of the system. The 31 day Frequency is based on the known reliability of the equipment.

SR 3.7.13.3

This SR verifies that the required FSBEVS testing is performed in accordance with the Ventilation Filter Testing Program (VFTP). The FSBEVS filter tests are in accordance with the applicable portions of Regulatory Guide 1.52 (Ref. 4) as specified in the VFTP. The VFTP includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the VFTP.

SR 3.7.13.4

This SR verifies that the FSBEVS starts and operates on an actual or simulated actuation signal. The 92 day Frequency ensures that the SR is performed within a short time prior to a potential need for the FSBEVS and allows the SR to be performed only once prior to or during a refueling outage. This SR Frequency is based on the demonstrated reliability of the system.

SR 3.7.13.5

This SR verifies the integrity of the fuel storage building enclosure. The ability of the fuel building to maintain negative

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.13.5 (continued)

pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the FSBEVS. During the normal mode of operation, the FSBEVS is designed to maintain a slight negative pressure in the fuel storage building, to prevent unfiltered LEAKAGE. This test verifies that the FSB exhaust fan can maintain the FSB at a slight negative pressure (i.e., ≤ -0.125 inches water gauge) with respect to atmospheric pressure with the exhaust flow rate ≤ 20,000 cfm during a fuel handling accident. The Frequency of 24 months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. 5).

REFERENCES

1. FSAR, Section 9.5.
2. FSAR, Section 14.2.
3. 10 CFR 100.
4. Regulatory Guide 1.52 (Rev. 2).
5. NUREG-0800, Section 6.5.1, Rev. 2, July 1981.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.13:
"Fuel Storage Building Emergency Ventilation System (FSBEVS)"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.8-1	86	86	No TSCRs	No TSCRs for this Page	N/A
3.8-2	175	175	No TSCRs	No TSCRs for this Page	N/A
3.8-3	114	114	No TSCRs	No TSCRs for this Page	N/A
3.8-4	173	173	No TSCRs	No TSCRs for this Page	N/A
3.8-6	175	175	No TSCRs	No TSCRs for this Page	N/A
T 4.1-1(2)	169	169	No TSCRs	No TSCRs for this Page	N/A
4.5-5	125	125	No TSCRs	No TSCRs for this Page	N/A

3.8 Refueling, Fuel Handling and Storage

A.2

~~Applicability~~

~~Applies to operating limitations during refueling, fuel handling, storage operations, and when heavy loads are moved over the reactor when the head is removed.~~

~~Objective~~

~~To ensure that no incident could occur during refueling, fuel handling, and storage operations that would adversely affect public health and safety.~~

Specification

LCO 3.7.13

Applicability A. During handling operations, A.3 reactor vessel head removal or installation, or movement of heavy loads over the reactor vessel with the head removed, the following conditions shall be met:

SEE CTS RELOC

SEE ITS 3.9.3

1. The equipment door and at least one door in each personnel air lock shall be properly closed. When the closure plate with a personnel door that prevents direct air flow from the containment is used, it shall be properly closed.

2. At least one isolation valve shall be operable, locked closed or blind flanged in each line penetrating the containment and which provides a direct path from containment atmosphere to the outside.

SEE CTS RELOCATED

3. Radiation levels in the containment and spent fuel storage areas shall be monitored continously.

SEE ITS 3.9.2

4. The core subcritical neutron flux shall be continuously monitored by the two source range neutron monitors, each with continuous visual indication in the control room and one with audible indication in the containment available whenever core geometry is being changed. When core geometry is not being changed, at least one source range neutron flux monitor shall be in service.

SEE ITS 3.9.4, 3.9.5

5. At least one residual heat removal pump and heat exchanger shall be operating except during those core alternations in which the residual heat removal flow interferes with component positioning.

SEE ITS 1.0

6. During reactor vessel head removal and while loading and unloading fuel in the reactor, T_{avg} shall be < 140°F.

SEE RELOCATED CTS

7. Direct communication between the control room and the refueling cavity manipulator crane shall be available whenever changes in core geometry are taking place.

SEE ITS 3.9.3	8.	The containment vent and purge system, including the radiation monitors which initiate isolation, shall be tested and verified to be operable within 100 hours prior to refueling operations.
SEE RELOCATED	9.	No movement of irradiated fuel in the reactor shall be made until the reactor has been subcritical for at least 145 hours. In
SEE ITS 3.9.3		addition, movement of fuel in the reactor before the reactor has been subcritical for equal to or greater than 421* hours will necessitate operation of the Containment Building Vent and Purge System through the HEPA filters and charcoal absorbers. For this case operability of the Containment Building Vent and Purge System shall be established in accordance with Section 4.13 of the Technical Specifications.
SEE RELOCATED		In the event that more than 76 assemblies are to be discharged from the reactor, those assemblies in excess of 76 shall not be discharged earlier than 267 hours after shutdown.
SEE ITS 3.9.6	10.	Whenever movement of irradiated fuel is being made, the minimum water level in the area of movement shall be maintained 23 feet over the top of the reactor pressure vessel flange.
SEE CTS RELOCATED	11.	Hoists or cranes utilized in handling irradiated fuel shall be dead- load tested before movement begins. The load assumed by the hoists or cranes for this test must be equal to or greater than the maximum load to be assumed by the hoists or cranes during the refueling operation. A thorough visual inspection of the hoists or cranes shall be made after the deadload test and prior to fuel handling. A test of interlocks and overload cutoff devices on the manipulator shall also be performed.
LCO 3.7.13 Applicability Req Act. A.1	12.	The fuel storage building emergency ventilation system shall be operable whenever irradiated fuel is being handled within the fuel storage building. The emergency ventilation system may be inoperable when irradiated fuel is in the fuel storage building, provided irradiated fuel is not being handled (A.3)
SEE CTS RELOCATED		and neither the spent fuel cask nor the cask crane are moved over the spent fuel pit during the period of inoperability.
SEE ITS 3.9.4, 3.9.5	13.	To ensure redundant decay heat removal capability, at least two of the following requirements shall be met:

SEE ITS 3.9.3	*	Movement of irradiated VANTAGE + fuel assemblies before the reactor has been subcritical for ≥550 hours requires operation of the Containment Building Vent and Purge System through the HEPA filters and charcoal adsorbers.

SEE ITS 3.9.4 and ITS 3.9.5

a. No. 31 residual heat removal pump and heat exchanger, together with their associated piping and valves are operable.

b. No. 32 residual heat removal pump and heat exchanger, together with their associated piping and valves are operable.

c. The water level in the refueling cavity above the top of the reactor vessel flange is equal to or greater than 23 feet.

SEE ITS SECTION 3.9

B. If any of the specified limiting conditions for refueling are not met, refueling shall cease until the specified limits are met, and no operations which may increase the reactivity of the core shall be made.

LCO 3.7.13 Applicability

C. During fuel handling and storage operations, the following conditions shall be met: A.3

SEE RELOCATED CTS

1. Radiation levels in the spent fuel storage area shall be monitored continuously whenever there is irradiated fuel stored therein. If the monitor is inoperable, a portable monitor may be used.

2. The spent fuel cask shall not be moved over any region of the spent fuel pit which contains irradiated fuel. Additionally, if the spent fuel pit contains irradiated fuel, no loads in excess of 2,000 pounds shall be moved over any region of the spent fuel pit.

3. During periods of spent fuel cask or fuel storage building cask crane movement over the spent fuel pit, ~~or~~ during periods of spent fuel movement in the spent fuel pit when the pit contains irradiated fuel, the pit shall be filled with borated water at a concentration of >1000 ppm.

SEE ITS 3.7.14 and ITS 3.7.15

4. Whenever movement of irradiated fuel in the spent fuel pit is being made, the minimum water level in the area of movement shall be maintained 23 feet over the top of irradiated fuel assemblies seated in the storage rack.

SEE RELOCATED CTS

5. Hoists or cranes utilized in handling irradiated fuel shall be deadload tested before fuel movement begins. The load assumed by the hoists or cranes for this test must be equal to or greater than the maximum load to be assumed by the hoists or cranes during the fuel handling operation. A thorough visual inspection of the hoists or cranes shall be made after the deadload test prior to fuel handling.

LCO 3.7.13 Applicability Req. Act A.1

6. The fuel storage building emergency ventilation system shall be operable whenever irradiated fuel is being handled within the fuel storage building. The emergency ventilation system may be inoperable when irradiated fuel is in the fuel storage building, provided irradiated fuel is not being handled and neither the spent fuel cask nor the cask crane are moved over the spent fuel pit during the periods of inoperability. A.3

SEE RELOCATED CTS

SEE ITS 3.7.16

7. The spent fuel storage racks consist of two regions, as shown on Figure 3.8-3: Region 1 (Columns SS-ZZ, Rows 35-64) and Region 2 (Columns A-RR, Rows 1-34). Fuel storage is restricted in each region as follows:

   a. As specified in Figure 3.8-2, fuel assemblies to be stored in Region 2 shall have a minimum burnup exposure as a function of initial enrichment.

   b. As specified in Figure 3.8-1, fuel assemblies to be stored in Region 1 consist of 3 types (Type A, B, C), depending on their initial enrichment and current burnup. Restrictions on location of fuel in Region 1 are as follows:

      1. Type A assemblies may be stored anywhere in Region 1.

      2. A Type B assembly may be stored anywhere in Region 1, provided it is not face-adjacent to a Type C assembly.

      3. Type C assemblies may not be stored in Row 64 or Column ZZ of Region 1. A Type C assembly may be stored in any other Region 1 location provided that all surrounding (face-adjacent) locations are occupied by Type A assemblies, non-fuel components or empty.

SEE ITS 3.9.1

D. When any fuel assemblies are in the reactor vessel and the reactor vessel head bolts are less than fully tensioned, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met; either:

A.1

The waiting time of 267 hours required following plant shutdown before unloading more than 76 assemblies from the reactor assures that the maximum pool water temperature will be within design objectives as stated in the FSAR. The calculations confirming this are based on an inlet river temperature of 95°F, consistent with the FSAR assumptions[2].

The requirement for the fuel storage building emergency ventilation system to be operable is established in accordance with standard testing requirements to assure that the system will function to reduce the offsite dose to within acceptable limits in the event of a fuel-handling accident. The fuel storage building emergency ventilation system must be operable whenever irradiated fuel is being moved. However, if the irradiated fuel has had a continuous 45 day decay period, the fuel storage building emergency ventilation system is not technically necessary, even though the system is required to be operable during all fuel handling operations. Fuel Storage Building isolation is actuated upon receipt of a signal from the area high activity alarm or by manual operation. The emergency ventilation bypass assembly is manually isolated, using manual isolation devices, prior to movement of any irradiated fuel. This ensures that all air flow is directed through the emergency ventilation HEPA filters and charcoal adsorbers. The ventilation system is tested prior to all fuel handling activities to ensure the proper operation of the filtration system.

When fuel in the reactor is moved before the reactor has been subcritical for at least 421 hours (See footnote on page 3.8-2), the limitations on the containment vent and purge system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorbers prior to discharge to the atmosphere.

The limit to have at least two means of decay heat removal operable ensures that a single failure of the operating RHR System will not result in a total loss of decay heat removal capability. With the reactor head removed and 23 feet of water above the vessel flange, a large heat sink is available for core cooling. Thus, in the event of a single component failure, adequate time is provided to initiate diverse methods to cool the core.

The minimum spent fuel pit boron concentration and the restriction of the movement of the spent fuel cask over irradiated fuel were specified in order to minimize the consequences of an unlikely sideways cask drop.

TABLE 4.1-1 (Sheet 2 of 6)

Channel Description	Check	Calibrate	Test	Remarks
8. 6.9 KV Voltage	N.A.	18M	Q	Reactor protection circuits only
6.9 KV Frequency	N.A.	24M	Q	Reactor protection circuits only
9. Analog Rod Position	S	24M	M	
10. Steam Generator Level	S	24M	Q	
11. Residual Heat Removal Pump Flow	N.A.	24M	N.A.	
12. Boric Acid Tank Level	S	24M	N.A.	Bubbler tube rodded during calibration
13. Refueling Water Storage Tank Level				
a. Transmitter	W	18M	N.A.	Low level alarm
b. Indicating Switch	W	6M	N.A.	Low level alarm
14a. Containment Pressure - narrow range	S	24M	Q	High and High-High
14b. Containment Pressure - wide range	M	18M	N.A.	
15. Process and Area Radiation Monitoring:				SEE ITS 3.3.8
a. Fuel Storage Building Area Radiation Monitor (R-5)	D	24M	Q	
b. Vapor Containment Process Radiation Monitors (R-11 and R-12)	D	24M	Q	
c. Vapor Containment High Radiation Monitors (R-25 and R-26)	D	24M	Q	
d. Wide Range Plant Vent Gas Process Radiation Monitor (R-27)	D	24M	Q	

SR 3.7.13.4

Amendment No. 8, 38, 65, 68, 74, 93, 107, 125, 137, 140, 144, 148, 150, 154, 169

A.1

ITS 3.7.13

SEE RELOCATED CTS

e. Each toxic gas monitoring system shall be demonstrated operable by performance of a channel check at least once per day, a channel test at least once per 31 days and a channel calibration at least once per 18 months.

CTS 4.5.A.6.

Fuel Storage Building Emergency Ventilation System

SR 3.7.13.2

~~a.~~ The fuel storage building emergency ventilation system fan shall be operated for a minimum of 15 minutes every month ~~when there is irradiated fuel in the spent fuel pit.~~ L.1

SEE ITS 5.5.10

b. Prior to handling of irradiated fuel, the following conditions shall be demonstrated before the system can be considered operable:

(1) The pressure drop across the combined HEPA filters and charcoal adsorber banks is less than 6 inches of water at ambient conditions and accident design flow rates.

(2) Using either direct or indirect measurements, the flow rate of the system fans shall be shown to be at least 90% of the accident design flow rate.

A.4

SR 3.7.13.1

(3) The filtration system bypass assembly shall be isolated ~~and leak tested to assure that it is properly sealed.~~ LA.1

verify every 92 days M.2

SEE ITS 5.5.10

c. Prior to handling of irradiated fuel, or at any time fire, chemical releases or work done on the filters could alter their integrity or after every 720 hours of charcoal adsorber use since the last test, the following conditions shall be demonstrated before the system can be considered operable:

(1) Charcoal shall have a methyl iodine removal efficiency $\geq$ 90% at $\pm$ 20% of the accident design flow rate, 0.05 to 0.15 mg/m^3 inlet methyl iodine concentration, $\geq$ 95% relative humidity and $\geq$ 125°F.

(2) A halogenated hydrocarbon (freon) test on charcoal adsorbers at $\pm$ 20% of the accident design flow rate and ambient conditions shall show $\geq$ 99% halogenated hydrocarbon removal.

A.4

Add SR 3.7.13.3 A.4

Add SR 3.7.13.5 M.1

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.13:
"Fuel Storage Building Emergency Ventilation System (FSBEVS)"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.8.A, CTS 3.8.A.12, CTS 3.8.C, and CTS 3.8.C.6 specify that the fuel storage building emergency ventilation system must be Operable during fuel handling and more specifically whenever irradiated fuel is being handled within the fuel storage building. ITS LCO 3.7.13 maintains this Applicability. This is an administrative change with no impact on safety because there is no change to the existing requirements.

A.4 CTS 4.5.A.6.b and 4.5.A.6.c establish requirements for the inspection and testing of the fuel storage building emergency ventilation system. ITS 5.5.10, Ventilation Filter Testing Program, maintains these requirements as part of a Technical Specification program governing the testing of all ventilation filter systems governed by the ITS. ITS SR 3.7.13.3 is added to establish completion of the VFTP as a requirement for the Operability of the FSBEVS. This is an administrative change with no impact on safety because there is no change to the existing requirements except as identified and justified for ITS 5.5.10.

<u>MORE RESTRICTIVE</u>

M.1 CTS 3.8.A.12 and CTS 3.8.C.6 require the Operability of the FSBEVS; however, there is no CTS requirement for the periodic verification that the Fuel Service Building boundary and the FSBEVS meet the requirements specified in the FSAR. ITS SR 3.7.13.5 is added to require verification every 24 months FSB will have a maximum in-leakage to the building (caused by the operation of the exhaust fan) ≤ 20,000 cfm with the FSBEVS maintaining the FSB at a slight negative pressure (i.e., ≤ -0.125 inches water gauge). This change is needed because it requires periodic verification that the FSB boundary and FSBEVS meet the requirements specified in the FSAR. This change is acceptable because it does not introduce any operation that is un-analyzed while requiring periodic verification that analysis assumptions regarding the Operability of the FSBEVS and FSB boundary are satisfied. Therefore, this change has no significant adverse impact on safety.

M.2 CTS 4.5.A.6.b(3) requires that the filtration bypass assembly must be isolated and leak tested to assure that it is properly sealed prior to handling of irradiated fuel; however, there is no explicit requirement for initial verification and periodic re-verification that these requirements are met.

ITS SR 3.7.13.1 maintains the requirement to verify that the FSBEVS charcoal filter bypass dampers are installed (See ITS 3.7.13, DOC LA.1); however, ITS SR 3.7.13.1 includes a requirement for verification at a Frequency of 92 days. Therefore, verification that the FSBEVS charcoal filter bypass dampers are installed is performed prior to movement of irradiated fuel assemblies in the fuel storage building, and once per 92 days thereafter. The 92 day Frequency is appropriate because the bypass dampers are installed (i.e., bolted into the correct position) under administrative controls which provide a high degree of assurance that the dampers will remain in the required position. This Frequency has been shown to be acceptable through operating experience.

This change is needed because it establishes a formal requirement for periodic verification that a requirement for FSBEVS Operability is met. This change is acceptable because it does not introduce any operation that is un-analyzed while requiring periodic verification that analysis assumptions regarding the Operability of the FSBEVS are satisfied. Therefore, this change has no significant adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 4.5.6.a requires that the fuel storage building emergency ventilation system fan must be operated for a minimum of 15 minutes every month when there is irradiated fuel in the spent fuel pit. CTS 4.5.6.a, therefore, requires testing of the FSBEVS even when the FSBEVS is not required to be Operable (i.e., even if irradiated fuel is not being handled within the fuel storage building).

ITS SR 3.7.13.2 maintains the requirement to operate the FSBEVS fan for a minimum of 15 minutes every 31 days when ITS LCO 3.7.13 is Applicable (i.e., whenever irradiated fuel is being handled within the fuel storage building); however, the requirement to perform this test every 31 days whenever there is irradiated fuel in the spent fuel pit is deleted. This change is acceptable because operating the fans is not needed to maintain equipment condition or improve reliability and ITS SR 3.7.13.2 is still required to be performed and met whenever the FSBEVS is required to be Operable (i.e., prior to the movement of irradiated fuel). Therefore, deletion of this requirement has no significant adverse impact on safety.

REMOVED DETAIL

LA.1 CTS 4.5.A.6.b (3) requires that the filtration bypass assembly must be isolated and leak tested to assure that it is properly sealed prior to handling of irradiated fuel; however, there is no explicit requirement for initial verification and periodic re-verification that these requirements are met .

ITS SR 3.7.13.1 maintains the requirement that the FSBEVS charcoal filter bypass dampers are installed (See ITS 3.7.13, DOC M.2); however, ITS SR 3.7.13.1 relocates the requirements for leak testing the dampers to the IP3 FSAR. Specifically, the LCO section of the Bases will specify that requirements for leak testing the FSBEVS charcoal filter bypass dampers following closure are governed by the IP3 final Safety Analysis Report (FSAR). Additionally, the ITS SR 3.7.13.1 Bases will specify that the SR 3.7.13.1 is met by verification that the FSBEVS charcoal filter bypass dampers are closed and leak tested. This SR is performed by a visual verification that the bypass dampers are installed and an administrative verification that required leak testing was performed following the last installation of the dampers.

Changes to the FSAR can be made only in accordance with the requirements of 10 CFR 50.59. Therefore, this change is acceptable because there is no change to the existing requirements by the relocation of requirements to the FSAR and future changes to the FSAR will be controlled in accordance with 10 CFR 50.59.

This change is a less restrictive administrative change with no impact on safety because ITS SR 3.7.13.1 maintains the requirement that the dampers are closed as a condition of Operability of the FSBEVS and the

DISCUSSION OF CHANGES
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

ITS Bases clarify that closed includes a verification of leak tightness. Additionally, the FSAR will establish requirements for leak testing. Therefore, requirements to leak test the FSBEVS dampers can be maintained in the FSAR with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.13:

"Fuel Storage Building Emergency Ventilation System (FSBEVS)"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   CTS 4.5.6.a requires that the fuel storage building emergency ventilation system fan must be operated for a minimum of 15 minutes every month when there is irradiated fuel in the spent fuel pit. CTS 4.5.6.a, therefore, requires testing of the FSBEVS even when the FSBEVS is not required to be Operable (i.e., even if irradiated fuel is not being handled within the fuel storage building). ITS SR 3.7.13.2 maintains the requirement to operate the FSBEVS fan for a minimum of 15 minutes every 31 days when ITS LCO 3.7.13 is Applicable (i.e., whenever irradiated fuel is being handled within the fuel storage building); however, the requirement to perform this test every 31 days whenever there is irradiated fuel in the spent fuel pit is deleted.

   This change will not result in a significant increase in the probability of an accident previously evaluated because the not testing the FSBEVS exhaust fans does not affect the initiators of any analyzed event. This change will not result in a significant increase in the consequences of an accident previously evaluated because operating the fans is not needed to maintain equipment condition or improve reliability and ITS SR 3.7.13.2 is still required to be performed and met whenever the FSBEVS is required to be Operable (i.e., prior to the movement of irradiated fuel).

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because operating the fans is not needed to maintain equipment condition or improve reliability and ITS SR 3.7.13.2 is still required to be performed and met whenever the FSBEVS is required to be Operable (i.e., prior to the movement of irradiated fuel).

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.13:
"Fuel Storage Building Emergency Ventilation System (FSBEVS)"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.13

This ITS Specification is based on NUREG-1431 Specification No. 3.7.13
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-008 R3	036 R3	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	NRC Rejects: TSTF to Revise	Not Incorporated	N/A
BWROG-017	051	REVISE CONTAINMENT REQUIREMENTS DURING HANDLING IRRADIATED FUEL AND CORE ALTERATIONS (REQUIREMENTS LIMITED TO "RECENTLY" IRRADIATED FUEL)	NRC Review	Not Incorporated	N/A
WOG-086 R1		VENTILATION SYSTEM ENVELOPE ALLOWED OUTAGE TIME	TSTF Review	Not Incorporated	N/A

<CTS>

3.7 PLANT SYSTEMS

3.7.13 Fuel Storage Building ~~Air Cleanup~~ Emergency Ventilation System (~~FBACS~~ FSBEVS)

<3.8.A.12>
<3.8.C.6>

LCO 3.7.13 Two ~~FBACS trains~~ FSBEVS shall be OPERABLE. DB.1

<3.8.A>
<3.8.A.12>
<3.8.C>
<3.8.C.6>
<DOC A.3>

APPLICABILITY: ~~[MODES 1, 2, 3, and 4,]~~
During movement of irradiated fuel assemblies in the fuel storage building.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A. One FBACS train inoperable.~~	~~A.1 Restore FBACS train to OPERABLE status.~~	~~7 days~~
~~[B. Required Action and associated Completion Time of Condition A not met in MODE 1, 2, 3, or 4.~~ ~~OR~~ ~~Two FBACS trains inoperable in MODE 1, 2, 3, or 4.]~~	~~B.1 Be in MODE 3.~~ ~~AND~~ ~~B.2 Be in MODE 5.~~	~~6 hours~~ ~~36 hours~~
~~C. Required Action and associated Completion Time [of Condition A] not met during movement of irradiated fuel assemblies in the fuel building.~~	~~C.1 Place OPERABLE FBACS train in operation.~~ ~~OR~~ ~~C.2 Suspend movement of irradiated fuel assemblies in the fuel building.~~	~~Immediately~~ ~~Immediately~~

DB.1

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME
⟨3.8.A.12⟩ ⟨3.8.B⟩ ⟨3.8.C.6⟩	A. ~~B~~. ~~Two FBACS trains~~ FS BEVS inoperable ~~during movement of irradiated fuel assemblies in the fuel building~~.	A. ~~B~~.1 Suspend movement of irradiated fuel assemblies in the fuel storage building.	Immediately

SURVEILLANCE REQUIREMENTS

Insert: 3.7-31-01

	SURVEILLANCE		FREQUENCY
⟨4.5.A.6.a⟩ ⟨DOC L.1⟩	SR 3.7.13.~~1~~ 2	Operate ~~each FBACS train~~ FSBEVS for ~~[≥ 10 continuous hours with the heaters operating or (for systems without heaters)~~ ≥ 15 minutes~~]~~.	31 days
⟨DOC A.4⟩ ⟨4.5.A.6.b⟩ ⟨4.5.A.6.c⟩	SR 3.7.13.~~2~~ 3	Perform required ~~FBACS~~ FSBEVS filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~.	In accordance with the ~~[~~VFTP~~]~~
⟨Table 4.1-1, Item 15.a⟩	~~[~~SR 3.7.13.~~3~~ 4	Verify ~~each FBACS train~~ FS BEVS actuates on an actual or simulated actuation signal.	~~[18 months~~ 92 days~~]~~
⟨DOC M.1⟩	SR 3.7.13.~~4~~ 5	Verify ~~one FBACS train~~ FBEVS can maintain a pressure ≤ ~~[-0.125]~~ -0.125 inches water gauge with respect to atmospheric pressure during the ~~[~~post accident~~]~~ mode of operation at a flow rate ≤ ~~[~~20,000~~]~~ cfm.	~~[18]~~ 24 months ~~on a STAGGERED TEST BASIS~~

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION		COMPLETION TIME
<3.8.A.12> <3.8.B> <3.8.C.6>	A. ~~B~~. FS BEVS ~~Two FBACS trains~~ inoperable ~~during movement of irradiated fuel assemblies in the fuel building~~.	A. ~~B~~.1	Suspend movement of irradiated fuel assemblies in the storage fuel building.	Immediately

SURVEILLANCE REQUIREMENTS

Insert: 3.7-31-01

	SURVEILLANCE		FREQUENCY
<4.5.A.6.a> <DOC L.1>	SR 3.7.13.~~1~~ 2	Operate ~~each FBACS train~~ FSBEVS fan for ~~[≥ 10 continuous hours with the heaters operating or (for systems without heaters)~~ ≥ 15 minutes~~]~~.	31 days
<DOC A.4> <4.5.A.6.b> <4.5.A.6.c>	SR 3.7.13.~~2~~ 3	Perform required ~~FBACS~~ FSBEVS filter testing in accordance with the ~~[~~Ventilation Filter Testing Program (VFTP)~~]~~.	In accordance with the ~~[~~VFTP~~]~~
<Table 4.1-1, Item 15.a>	~~[~~SR 3.7.13.~~3~~ 4	Verify ~~each FBACS train~~ FSBEVS actuates on an actual or simulated actuation signal.	~~[18] months~~ 92 days~~]~~
<DOC M.1>	SR 3.7.13.~~4~~ 5	Verify ~~one FBACS train~~ FBEVS can maintain a pressure ≤ ~~[-0.125]~~ -0.125 inches water gauge with respect to atmospheric pressure during the ~~[~~post accident~~]~~ mode of operation at a flow rate ≤ ~~[~~20,000~~]~~ cfm.	24 ~~[18]~~ months ~~on a STAGGERED TEST BASIS~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

INSERT: 3.7-31-01

SR 3.7.13.1	Verify FSBEVS charcoal filter bypass dampers are installed.	92 days

<4.5.A.6.b.3>
<DOC LA.1>
<DOC M.2>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
~~SR 3.7.13.5~~	~~Verify each FBACS filter bypass damper can be closed.~~	~~[18] months~~

B 3.7 PLANT SYSTEMS

B 3.7.13 Fuel Storage Building Emergency Ventilation ~~Air Cleanup~~ System (~~FBACS~~ FSBEVS)

BASES

BACKGROUND

The ~~FBACS~~ FSBEVS filters airborne radioactive particulates from the area of the fuel pool following a fuel handling accident ~~or loss of coolant accident (LOCA)~~. The ~~FBACS~~, in conjunction with other normally operating systems, also provides environmental control of temperature and humidity in the fuel ~~pool area~~ storage building.

Insert: B37-66-01

~~The FBACS consists of two independent and redundant trains. Each train consists of a heater, a prefilter or demister, a high efficiency particulate air (HEPA) filter, an activated charcoal adsorber section for removal of gaseous activity (principally iodines), and a fan. Ductwork, valves or dampers, and instrumentation also form part of the system, as well as demisters, functioning to reduce the relative humidity of the airstream. A second bank of HEPA filters follows the adsorber section to collect carbon fines and provide backup in case the main HEPA filter bank fails. The downstream HEPA filter is not credited in the analysis, but serves to collect charcoal fines, and to back up the upstream HEPA filter should it develop a leak. The system initiates filtered ventilation of the fuel handling building following receipt of a high radiation signal.~~

~~The FBACS is a standby system, parts of which may also be operated during normal plant operations. Upon receipt of the actuating signal, normal air discharges from the building, the fuel handling building is isolated, and the stream of ventilation air discharges through the system filter trains. The prefilters or demisters remove any large particles in the air, and any entrained water droplets present, to prevent excessive loading of the HEPA filters and charcoal adsorbers.~~

The ~~FBACS~~ is discussed in the FSAR, Sections ~~6.5.1~~ 14.2, ~~9.4.5~~ 2, and ~~15.7.4~~ 9.5 (Refs. 1, ~~2~~ and ~~3~~, respectively) ~~because it may be used for normal, as well as post accident, atmospheric cleanup functions.~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

<u>INSERT: B 3.7-66-01</u>

The Fuel Storage Building (FSB) ventilation system maintains environmental conditions in the building enclosing the spent fuel pit and consists of the following:

Two FSB air tempering units with associated ventilation supply fans and ventilation supply isolation dampers;

One FSB exhaust fan and associated outlet damper;

One FSB exhaust filtration unit consisting of roughing, HEPA, and charcoal filters which includes the pneumatically operated inlet and outlet dampers for the carbon filter and manually operated dampers that allow the carbon filter to be bypassed;

Inflatable seals on man doors and truck door,

Area Radiation Monitor (R-5) consisting of an extended range area monitor used to measure the area radiation fields of the Fuel Storage Building; and,

Ductwork, dampers, and instrumentation needed to support system operation.

NUREG-1431 Markup Inserts
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

INSERT: B 3.7-66-01 (continued, page 2)

During normal operation, the FSB air tempering units and associated ventilation supply fans and the FSB exhaust fan operate, as necessary, to ventilate and, if necessary, heat the FSB. One or both FSB air tempering units are used to supply outside air to the south end of the FSB and the FSB exhaust fan is used to exhaust air from the north end of the FSB through the roughing filters and HEPA filters and is released to the environment via the plant vent. FSB air flow is directed from radiologically clean to less clean areas to prevent the spread of contamination. Additionally, the FSBEVS is designed so that the exhaust fan capacity is greater than the supply fan(s) capacity so that the FSB is normally maintained at a slight negative pressure. This ensures that ventilation air leaving the FSB passes through the roughing filters and HEPA in the exhaust filtration unit and is released to the environment via the plant vent. When not handing irradiated fuel in the FSB, the carbon filter in the exhaust filtration unit is normally bypassed to extend the life of the charcoal. In this configuration, the manually operated charcoal filter bypass dampers are left open and the automatically operated charcoal filter face dampers (inlet and outlet dampers) are closed.

During irradiated fuel handling activities in the FSB, the FSBEVS is operated as described above except that the manually operated charcoal filter bypass dampers are closed and the charcoal filter face dampers (inlet and outlet dampers) are opened. In this configuration, the FSB is still maintained at a slight negative pressure but all FSB ventilation exhaust is directed through the roughing filters, HEPA filters, and charcoal filters and is released to the environment via the plant vent.

<u>INSERT: B 3.7-66-01</u> (continued, page 3)

<u>Following an Area Radiation Monitor (R-5) signal or manual actuation to the emergency mode of operation</u>, the ventilation supply fans stop automatically and the associated ventilation supply dampers close automatically. The charcoal filter face dampers (inlet and outlet dampers) open automatically, if not already open. Additionally, the rolling door closes, if open, and the inflatable seals on the man doors and truck door are actuated. The FSB exhaust fan continues to operate. With the FSB ventilation supply stopped and the FSB boundary secured, the FSB exhaust fan can maintain the FSB at a pressure ≤ -0.5 inches water gauge with respect to atmospheric pressure with the exhaust flow rate ≤ 20,000 cfm. Ventilation dampers required to establish the boundary or flow path (e.g., air tempering unit ventilation supply inlet dampers) will fail-safe into the required emergency mode position. Note that the inflatable seals on man doors and truck door are not required for maintaining the FSB at these required post accident conditions.

A push button switch adjacent to the 95' elevation door leading to the Fan House allows the Fuel Storage Building Exhaust Fan to be momentarily shut down and air removed from the man door seal to allow the door to be opened for FSB ingress or egress when in the emergency mode of operation. The fan will automatically restart and the door is resealed after a preset time has elapsed (approximately 30 seconds).

BASES (continued)

FSBEVS

APPLICABLE SAFETY ANALYSES

The FBACS design basis is established by the consequences of the limiting Design Basis Accident (DBA), which is a fuel handling accident. ~~The analysis of the fuel handling accident, given in Reference 3, assumes that all fuel rods in an assembly are damaged. The analysis of the LOCA assumes that radioactive materials leaked from the Emergency Core Cooling System (ECCS) are filtered and adsorbed by the FBACS. The DBA analysis of the fuel handling accident assumes that only one train of the FBACS is functional due to a single failure that disables the other train. The accident analysis accounts for the reduction in airborne radioactive material provided by the one remaining train of this filtration system. The amount of fission products available for release from the fuel handling building is determined for a fuel handling accident and for a LOCA. These assumptions and the analysis follow the guidance provided in Regulatory Guide 1.25 (Ref. 4).~~

Insert: B 3.7-67-01

FSBEVS

10 CFR 50.36

The FBACS satisfies Criterion 3 of ~~the NRC Policy Statement~~.

LCO

~~Two independent and redundant trains of the FBACS are required to be OPERABLE to ensure that at least one train is available, assuming a single failure that disables the other train, coincident with a loss of offsite power. Total system failure~~ could result in the atmospheric release from the fuel ~~handling~~ building exceeding the 10 CFR 100 (Ref. ~~5~~) 3 limits in the event of a fuel handling accident.

Insert: B 3.7-67-02

FSBEVS

The FBACS is considered OPERABLE when the individual components necessary to control exposure in the fuel ~~handling~~ storage building are OPERABLE ~~in both trains~~. ~~An~~ FBACS ~~train~~ is considered OPERABLE when its associated:

a. Exhaust Fan is OPERABLE;

b. Roughing filter, HEPA filter and charcoal adsorber are not excessively restricting flow, and are capable of performing their filtration function; ~~and~~

c. ~~Heater, demister,~~ ductwork, ~~valves~~ and dampers are OPERABLE, ~~and~~ as needed to ensure air circulation can be maintained through the filter; and

Insert: B 3.7-67-03

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

INSERT: B 3.7-67-01

The analysis for a fuel handling accident assumes that the FSB exhaust fan can maintain the FSB at a slight negative pressure (i.e., ≤ -0.125 inches water gauge) with respect to atmospheric pressure with the exhaust flow rate ≤ 20,000 cfm. Under these conditions, all FSB ventilation exhaust is assumed to be directed through the roughing filters, HEPA filters, and charcoal filters and is released to the environment via the plant vent. This ensures that offsite post accident dose rates are within required limits. Although this LCO requires the OPERABILITY of the FSBEVS whenever irradiated fuel assemblies are being moved within the FSB, analysis indicates that offsite post accident dose rates will be within required limits without the operation of the FSBEVS if the irradiated fuel has had a continuous 45 day decay period. This analysis is described in Reference 2.

INSERT: B 3.7-67-02

This LCO requires that the Fuel Storage Building Emergency Ventilation System is OPERABLE and the FSB boundary is intact. This ensures that the required negative pressure is maintained in the FSB and FSB ventilation exhaust is directed through the roughing filters, HEPA filters, and charcoal filters and is released to the environment via the plant vent. Failure of the FSBEVS or the FSB boundary

INSERT: B 3.7-67-03

d. Ventilation supply fan trip function and ventilation supply isolation dampers closure function are OPERABLE or secured in the incident position; and

e. FSBEVS charcoal filter bypass dampers are closed and leak tested.

INSERT: B 3.7-67-03 (continued)

The inflatable seals on man doors and truck door are not required for maintaining the FSB at these required post accident conditions. Additionally, the FSBEVS is not rendered inoperable when the FSBEVS exhaust fan is momentarily shut down and air removed from the door seal to allow the door to be opened for FSB ingress or egress when in the emergency mode of operation.

Requirements for the OPERABILITY of the Area Radiation Monitor (R-5) and associated instrumentation that initiates the FSBEVS are addressed in LCO 3.3.8, "Fuel Storage Building Emergency Ventilation System Actuation Instrumentation."

Requirements for leak testing the FSBEVS charcoal filter bypass dampers following closure are governed by the IP3 FSAR.

BASES (continued)

APPLICABILITY

~~In MODE 1, 2, 3, or 4, the FBACS is required to be OPERABLE to provide fission product removal associated with ECCS leaks due to a LOCA and leakage from containment and annulus.~~

~~In MODE 5 or 6, the FBACS is not required to be OPERABLE since the ECCS is not required to be OPERABLE.~~

FSBEVS

storage building

During movement of irradiated fuel in the fuel ~~handling~~ area, the FBACS is required to be OPERABLE to alleviate the consequences of a fuel handling accident.

mitigate

ACTIONS

~~A.1~~

~~With one FBACS train inoperable, action must be taken to restore OPERABLE status within 7 days. During this period, the remaining OPERABLE train is adequate to perform the FBACS function. The 7 day Completion Time is based on the risk from an event occurring requiring the inoperable FBACS train, and the remaining FBACS train providing the required protection.~~

~~B.1 and B.2~~

~~In MODE 1, 2, 3, or 4, when Required Action A.1 cannot be completed within the associated Completion Time, or when both FBACS trains are inoperable, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in MODE 3 within 6 hours, and in MODE 5 within 36 hours. The Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.~~

~~C.1 and C.2~~

~~When Required Action A.1 cannot be completed within the required Completion Time, during movement of irradiated fuel assemblies in the fuel building, the OPERABLE FBACS train must be started immediately or fuel movement suspended. This action ensures that the remaining train is OPERABLE,~~

~~(continued)~~

BASES

ACTIONS

~~C.1 and C.2 (continued)~~

~~that no undetected failures preventing system operation will occur, and that any active failure will be readily detected.~~

~~If the system is not placed in operation, this action requires suspension of fuel movement, which precludes a fuel handling accident. This does not preclude the movement of fuel assemblies to a safe position.~~

A. ~~E~~.1 the FSBEVS is

storage

When ~~two trains of the FBACS are~~ inoperable during movement of irradiated fuel assemblies in the fuel building, action must be taken to place the unit in a condition in which the LCO does not apply. Action must be taken immediately to suspend movement of irradiated fuel assemblies in the fuel building. This does not preclude the movement of fuel to a safe position.

Insert: B 3.7-69-01

SURVEILLANCE REQUIREMENTS

SR 3.7.13.~~1~~ 2

Standby systems should be checked periodically to ensure that they function properly. As the environmental and normal operating conditions on this system are not severe, testing ~~each train~~ the FSBEVS once every ~~month~~ 31 days provides an adequate check on this system.

mo H

~~Monthly heater operation dries out any moisture accumulated in the charcoal from humidity in the ambient air. [Systems with heaters must be operated for ≥ 10 continuous hours with the heaters energized.~~ Systems ~~without heaters need only be~~ are operated for ≥ 15 minutes to demonstrate the function of the system.* The 31 day Frequency is based on the known reliability of the equipment ~~and the two train redundancy available~~.

SR 3.7.13.~~3~~ 3

This SR verifies that the required ~~FBACS~~ FSBEVS testing is performed in accordance with the [Ventilation Filter Testing

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

INSERT: B 3.7-69-01

SR 3.7.13.1

This SR requires periodic verification that the FSBEVS charcoal filter bypass dampers are installed and leak tested. This SR is performed by a visual verification that the bypass dampers are installed and an administrative verification that required leak testing was performed following the last installation of the dampers. Requirements for leak testing the FSBEVS charcoal filter bypass dampers following closure are governed by the IP3 FSAR.

This SR is performed prior to movement of irradiated fuel assemblies in the fuel storage building, and once per 92 days thereafter. The 92 day Frequency is appropriate because the bypass dampers are operated under administrative controls which provides a high degree of assurance that the dampers will remain in the required position. This Frequency has been shown to be acceptable through operating experience.

as specified in the VFTP.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.13.~~2~~ 3 (continued)

FSBEVS

Program (VFTP)]. The ~~FBACS~~ filter tests are in accordance with Regulatory Guide 1.52 (Ref. 6). The [VFTP] includes testing HEPA filter performance, charcoal adsorber efficiency, minimum system flow rate, and the physical properties of the activated charcoal (general use and following specific operations). Specific test frequencies and additional information are discussed in detail in the [VFTP].

the applicable portions of

4

SR 3.7.13.~~3~~ 4

the FSBEVS

This SR verifies that ~~each FBACS train~~ starts and operates on an actual or simulated actuation signal. The [18] ~~month~~ Frequency ~~is consistent with Reference 6~~.

92 day

Insert: B 3.7-70-01

SR 3.7.13.~~4~~ 5

storage

This SR verifies the integrity of the fuel building enclosure. The ability of the fuel building to maintain negative pressure with respect to potentially uncontaminated adjacent areas is periodically tested to verify proper function of the FBACS. During the ~~post accident~~ mode of operation, the FBACS is designed to maintain a slight negative pressure in the fuel building, to prevent unfiltered LEAKAGE. ~~The FBACS is designed to maintain a ≤ [-0.125] inches water gauge with respect to atmospheric pressure at a flow rate of [20,000] cfm to the fuel building.~~ The Frequency of [18] months is consistent with the guidance provided in NUREG-0800, Section 6.5.1 (Ref. ~~7~~).

normal

B 3.7-70-02

24

5

~~An [18] month Frequency (on a STAGGERED TEST BASIS) is consistent with Reference 6.~~

~~SR 3.7.13.5~~

~~Operating the FBACS filter bypass damper is necessary to ensure that the system functions properly. The OPERABILITY of the FBACS filter bypass damper is verified if it can be closed. An [18] month Frequency is consistent with Reference 6.~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.13 - Fuel Storage Building
Emergency Ventilation System (FSBEVS)

INSERT: B 3.7-70-01

ensures that the SR is performed within a short time prior to a potential need for the FSBEVS and allows the SR to be performed only once prior to or during a refueling outage. This SR Frequency is based on the demonstrated reliability of the system.

INSERT: B 3.7-70-02

This test verifies that the FSB exhaust fan can maintain the FSB at a slight negative pressure (i.e., ≤ -0.125 inches water gauge) with respect to atmospheric pressure with the exhaust flow rate ≤ 20,000 cfm during a fuel handling accident.

BASES (continued)

REFERENCES

1. FSAR, Section ~~[6.5.1]~~. 9.5
2. FSAR, Section ~~[9.4.5]~~. 14.2
3. ~~FSAR, Section [15.7.4].~~
4. ~~Regulatory Guide 1.25.~~

3 ~~5~~. 10 CFR 100.

4 ~~6~~. Regulatory Guide 1.52 (Rev. 2).

5 ~~7~~. NUREG-0800, Section 6.5.1, Rev. 2, July 1981.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.13:
"Fuel Storage Building Emergency Ventilation System (FSBEVS)"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.13 - Fuel Storage Building Emergency Ventilation System (FSBEVS)

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.14:
"Spent Fuel Pit Water Level"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.14 Spent Fuel Pit Water Level

LCO 3.7.14 The spent fuel pit water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

APPLICABILITY: During movement of irradiated fuel assemblies in the spent fuel pit.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent fuel pit water level not within limit.	A.1 ---------NOTE--------- LCO 3.0.3 is not applicable. ---------------------- Suspend movement of irradiated fuel assemblies in the spent fuel pit.	 Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.14.1	Verify the spent fuel pit water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	7 days

B 3.7 PLANT SYSTEMS

B 3.7.14 Spent Fuel Pit Water Level

BASES

BACKGROUND

The minimum water level in the spent fuel pit meets the assumptions of iodine decontamination factors following a fuel handling accident. The specified water level shields and minimizes the general area dose when the storage racks are filled to their maximum capacity. The water also provides shielding during the movement of spent fuel.

A general description of the spent fuel pit design and the Spent Fuel Cooling and Cleanup System is given in the FSAR, Section 9.5 (Ref. 1). The assumptions of the fuel handling accident are given in the FSAR, Section 14.2 (Ref. 2).

APPLICABLE SAFETY ANALYSES

The minimum water level in the spent fuel pit meets the assumptions of the fuel handling accident described in FSAR, Section 14.2 (Ref. 2). The resultant 2 hour thyroid dose per person at the exclusion area boundary is a small fraction of the 10 CFR 100 (Ref. 3) limits.

According to Reference 2, there is 23 ft of water between the top of the damaged fuel bundle and the fuel pool surface during a fuel handling accident. With 23 ft of water, the assumptions of Reference 2 can be used directly. In practice, this LCO preserves this assumption for the bulk of the fuel in the storage racks.

The Spent Fuel Pit water level satisfies Criteria 2 and 3 of 10 CFR 50.36.

LCO

The spent fuel pit water level is required to be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks. The specified water level preserves the assumptions of the fuel

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BASES

LCO (continued)

handling accident analysis (Ref. 2). As such, it is the minimum required for fuel storage and movement within the spent fuel pit.

APPLICABILITY

This LCO applies during movement of irradiated fuel assemblies in the spent fuel pit, since the potential for a release of fission products exists.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the initial conditions for prevention of an accident cannot be met, steps should be taken to preclude the accident from occurring. When the spent fuel pit water level is lower than the required level, the movement of irradiated fuel assemblies in the spent fuel pit is immediately suspended to a safe position. This action effectively precludes the occurrence of a fuel handling accident. This does not preclude movement of a fuel assembly to a safe position.

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODES 1, 2, 3, and 4, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.14.1

This SR verifies sufficient spent fuel pit water is available in the event of a fuel handling accident. The water level in the

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.14.1 (continued)

spent fuel pit must be checked periodically. The 7 day Frequency is appropriate because the volume in the spent fuel pit is normally stable. Water level changes are controlled by plant procedures and are acceptable based on operating experience.

During refueling operations, the level in the spent fuel pit is normally in equilibrium with the refueling canal and reactor cavity, and the level in the refueling reactor cavity is checked daily in accordance with SR 3.9.6.1.

REFERENCES

1. FSAR, Section 9.5.
2. FSAR, Section 14.2.
3. 10 CFR 100.11.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.14:
"Spent Fuel Pit Water Level"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.8-3	114	114	No TSCRs	No TSCRs for this Page	N/A
3.8-5	173	173	No TSCRs	No TSCRs for this Page	N/A

SEE ITS Section 3.9

a. No. 31 residual heat removal pump and heat exchanger, together with their associated piping and valves are operable.

b. No. 32 residual heat removal pump and heat exchanger, together with their associated piping and valves are operable.

c. The water level in the refueling cavity above the top of the reactor vessel flange is equal to or greater than 23 feet.

B. If any of the specified limiting conditions for refueling are not met, refueling shall cease until the specified limits are met, and no operations which may increase the reactivity of the core shall be made.

CTS 3.8.C. During fuel handling and storage operations, the following conditions shall be met:

SEE RELOCATED CTS

1. Radiation levels in the spent fuel storage area shall be monitored continuously whenever there is irradiated fuel stored therein. If the monitor is inoperable, a portable monitor may be used.

2. The spent fuel cask shall not be moved over any region of the spent fuel pit which contains irradiated fuel. Additionally, if the spent fuel pit contains irradiated fuel, no loads in excess of 2,000 pounds shall be moved over any region of the spent fuel pit.

3. During periods of spent fuel cask or fuel storage building cask crane movement over the spent fuel pit, ~~or~~ during periods of spent fuel movement in the spent fuel pit when the pit contains irradiated fuel, the pit shall be filled with borated water at a concentration of >1000 ppm.

SEE ITS 3.7.15

LCO 3.7.14 Applicability ~~4.~~ Whenever movement of irradiated fuel in the spent fuel pit is being made, the minimum water level ~~in the area of movement~~ shall be maintained 23 feet over the top of irradiated fuel assemblies seated in the storage rack. A.4

Add Condition A and associated Req. Action A.3

Add SR 3.7.14.1 M.1

Amendment No. ~~13~~, ~~34~~, ~~89~~, ~~88~~, ~~99~~, 114

SEE ITS 3.9.1

a. A shutdown margin greater than or equal to 5% ΔK/K

or

b. A boron concentration of greater than or equal to 1900 ppm.

The required boron concentration will be verified by chemical analysis daily. With the requirements of the above specification not satisfied, immediately suspend all operations involving core alterations or positive reactivity changes and initiate boration to return to the more restrictive of the limits above.

Basis

The equipment and general procedures to be utilized during refueling, fuel handling, and storage are discussed in the FSAR. Detailed instructions, the above specified precautions, and the design of the fuel handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling, fuel handling, reactor maintenance or storage operations that would result in a hazard to public health and safety.[1] Whenever changes are not being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The residual heat removal pump is used to maintain a uniform boron concentration.

The shutdown margin indicated will keep the core subcritical. During refueling the reactor refueling cavity is filled with approximately 342,000 gallons of water from the refueling water storage tank with a boron concentration of 2400-2600 ppm. Periodic checks of refueling water boron concentration and residual heat removal pump operation insure the proper shutdown margin. The requirement for direct communications allows the control room operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement. A

The minimum boron concentration of this water is the more restrictive of either 1900 ppm or else sufficient to maintain the reactor subcritical by at least 5% ΔK/K in the cold shutdown condition with all rods inserted. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analyses.

In addition to the above safeguards, interlocks are utilized during refueling to ensure safe handling. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

The 145-hour decay time following the subcritical condition and the 23 feet of water above the top of the reactor pressure vessel flange bounds the assumptions used in the dose calculation for the fuel-handling accident. The 145-hour decay time is based on limiting calculated worst-case spent fuel pool temperature rise to 150°F with up to 76 assemblies discharged from the reactor.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.14:
"Spent Fuel Pit Water Level"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.14 - SPENT FUEL PIT WATER LEVEL

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.8.C.4 specifies that the water level in the fuel storage pit must be maintained ≥ 23 feet over the top of irradiated fuel assemblies seated in the storage rack whenever irradiated fuel in the spent fuel pit is being moved; however, there is no explicit statement of the actions required if level is not maintained during movement of irradiated fuel.

ITS 3.7.14, Required Action A.1, is added to require that the movement of irradiated fuel assemblies in the fuel storage pool be immediately suspended when the fuel storage pool water level is lower than the required level, and allows movement of a fuel assembly to a safe position. This is an administrative change with no impact on safety because ITS 3.7.14, Required Action A.1, is consistent with a reasonable interpretation of the existing requirements.

ITS 3.7.14, Required Action A.1 is modified by a note indicating that LCO 3.0.3 does not apply. LCO 3.0.3 would allow a reactor shutdown in lieu of ITS 3.7.14, Required Action A.1. LCO 3.0.3 is not applicable to ITS 3.7.14, Required Action A.1, because LCO 3.0.3 would not specify any action if moving irradiated fuel assemblies while in Mode 5 or 6. Additionally, fuel movement activities are independent of reactor operation if moving irradiated fuel assemblies while in Modes 1, 2, 3, and 4. This is an administrative change with no impact on safety because the note to ITS 3.7.14, Required Action A.1, is consistent with a reasonable interpretation of the existing requirements.

A.4 CTS 3.8.C.4 specifies that the minimum water level in the fuel storage pit "in the area of movement" must be maintained ≥ 23 feet over the top of irradiated fuel assemblies seated in the storage rack whenever irradiated fuel in the spent fuel pit is being moved. ITS LCO 3.7.14 requires that the water level in the fuel storage pit must be maintained ≥ 23 feet over the top of irradiated fuel assemblies seated in the storage rack whenever irradiated fuel in the spent fuel pit is being moved. Deletion of the statement "in the area of movement" is an administrative change with no adverse impact of safety because it is an explicit statement of a reasonable interpretation of the existing requirement

MORE RESTRICTIVE

M.1 CTS 3.8.C.4 specifies that the minimum water level in the fuel storage pit must be maintained ≥ 23 feet over the top of irradiated fuel assemblies seated in the storage rack whenever irradiated fuel in the spent fuel pit is being moved; however, there is no explicit requirement for periodic verification that this requirement is met.

ITS SR 3.7.14.1 is added to require verification every 7 days that the fuel storage pool water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks whenever irradiated fuel in the spent fuel pit is being moved. This change is needed because it requires periodic verification that LCO 3.7.14 requirements are met. The addition of this SR is acceptable because this requirement assures that sufficient water is available in the event of a fuel handling accident. This change has no adverse impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.14: "Spent Fuel Pit Water Level"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.14 - SPENT FUEL PIT WATER LEVEL

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.14:
"Spent Fuel Pit Water Level"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.14

This ITS Specification is based on NUREG-1431 Specification No. **3.7.15**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
CEOG-051 R1	**139 R1**	INCORRECT CRITERIA DEFINED IN B 3.7.16	Approved by NRC	Incorporated	**T.1**

Spent Fuel Pit

3.7 PLANT SYSTEMS

3.7.~~15~~ 14 ~~Fuel Storage Pool~~ Water Level

<3.8.C.4>
<DOC A.4>

LCO 3.7.~~15~~ 14 The ~~fuel storage pool~~ water level shall be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks.

<3.8.C.4>

APPLICABILITY: During movement of irradiated fuel assemblies in the ~~fuel storage pool~~.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC A.3> A. ~~Fuel storage pool~~ water level not within limit.	A.1 --------NOTE--------- LCO 3.0.3 is not applicable. --------------------- Suspend movement of irradiated fuel assemblies in the ~~fuel storage pool~~.	Immediately

spent fuel pit

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<DOC M.1> SR 3.7.~~15~~.1 14	Verify the ~~fuel storage pool~~ water level is ≥ 23 ft above the top of the irradiated fuel assemblies seated in the storage racks.	7 days

B 3.7 PLANT SYSTEMS

B 3.7.~~15~~ 14 ~~Fuel Storage Pool~~ Spent Fuel Pit Water Level

BASES

BACKGROUND

The minimum water level in the ~~fuel storage pool~~ spent fuel pit meets the assumptions of iodine decontamination factors following a fuel handling accident. The specified water level shields and minimizes the general area dose when the storage racks are filled to their maximum capacity. The water also provides shielding during the movement of spent fuel.

A general description of the ~~fuel storage pool~~ spent fuel pit design ~~is given in the FSAR, Section [9.1.2] (Ref. 1). A description of~~ and the Spent Fuel ~~Pool~~ Pit Cooling and Cleanup System is given in the FSAR, Section ~~[9.1.3]~~ 9.5 (Ref. ~~2~~ 1). The assumptions of the fuel handling accident are given in the FSAR, Section ~~[15.7.4]~~ 14.2 (Ref. ~~3~~ 2).

APPLICABLE SAFETY ANALYSES

The minimum water level in the ~~fuel storage pool~~ spent fuel pit meets the assumptions of the fuel handling accident described in ~~Regulatory Guide 1.25~~ FSAR, Section 14.2 (Ref. ~~4~~ 2). The resultant 2 hour thyroid dose per person at the exclusion area boundary is a small fraction of the 10 CFR 100 (Ref. ~~5~~ 3) limits.

According to Reference ~~4~~ 2, there is 23 ft of water between the top of the damaged fuel bundle and the fuel pool surface during a fuel handling accident. With 23 ft of water, the assumptions of Reference ~~4~~ 2 can be used directly. In practice, this LCO preserves this assumption for the bulk of the fuel in the storage racks. ~~In the case of a single bundle dropped and lying horizontally on top of the spent fuel racks, however, there may be < 23 ft of water above the top of the fuel bundle and the surface, indicated by the width of the bundle. To offset this small nonconservatism, the analysis assumes that all fuel rods fail, although analysis shows that only the first few rows fail from a hypothetical maximum drop.~~

The ~~fuel storage pool~~ Spent Fuel Pit water level satisfies ~~Criterion~~ Criteria 2 and 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36. T.1

~~(continued)~~

BASES (continued)

LCO

spent fuel pit

The ~~fuel storage pool~~ water level is required to be ≥ 23 ft over the top of irradiated fuel assemblies seated in the storage racks. The specified water level preserves the assumptions of the fuel handling accident analysis (Ref. ~~5~~ 2). As such, it is the minimum required for fuel storage and movement within the ~~fuel storage pool~~.

APPLICABILITY

spent fuel pit

This LCO applies during movement of irradiated fuel assemblies in the ~~fuel storage pool~~, since the potential for a release of fission products exists.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

spent fuel pit

When the initial conditions for prevention of an accident cannot be met, steps should be taken to preclude the accident from occurring. When the ~~fuel storage pool~~ water level is lower than the required level, the movement of irradiated fuel assemblies in the ~~fuel storage pool~~ is immediately suspended to a safe position. This action effectively precludes the occurrence of a fuel handling accident. This does not preclude movement of a fuel assembly to a safe position.

If moving irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not specify any action. If moving irradiated fuel assemblies while in MODES 1, 2, 3, and 4, the fuel movement is independent of reactor operations. Therefore, inability to suspend movement of irradiated fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~15~~14.1

Spent Fuel Pit

This SR verifies sufficient ~~fuel storage pool~~ water is available in the event of a fuel handling accident. The water level in the ~~fuel storage pool~~ must be checked periodically. The 7 day Frequency is appropriate because

~~(continued)~~

BASES

SURVEILLANCE REQUIREMENTS	SR 3.7.~~15~~14.1 (continued)
	the volume in the ~~pool~~ spent fuel pit is normally stable. Water level changes are controlled by plant procedures and are acceptable based on operating experience.
	During refueling operations, the level in the ~~fuel storage pool~~ spent fuel pit is normally in equilibrium with the refueling canal, and the level in the refueling ~~canal~~ reactor cavity is checked daily in and reactor cavity accordance with SR 3.9.6.1.
REFERENCES	1. FSAR, Section ~~[9.1.2]~~ 9.5.
	~~2. FSAR, Section [9.1.3].~~
	2 ~~3~~. FSAR, Section ~~[15.7.4]~~ 14.2.
	~~4. Regulatory Guide 1.25, [Rev. 0].~~
	3 ~~5~~. 10 CFR 100.11.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.14:
"Spent Fuel Pit Water Level"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.14 - SPENT FUEL PIT WATER LEVEL

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-139 (CEOG-51). Fuel storage water level is a process variable which satisfies both Criterion 2 and Criterion 3 of 10 CFR 50.36(c)(2)(ii). It is an initial condition assumed in the fuel handling accident and mitigates the release of radionuclides.

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.15:
"Spent Fuel Pit Boron Concentration"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.15 Spent Fuel Pit Boron Concentration

LCO 3.7.15 The Spent Fuel Pit boron concentration shall be ≥ 1000 ppm.

APPLICABILITY: When fuel assemblies are stored in the spent fuel pit and a spent fuel pit verification has not been performed since the last movement of fuel assemblies in the spent fuel pit.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Spent fuel pit boron concentration not within limit.	------------NOTE------------ LCO 3.0.3 is not applicable. ----------------------------	
	A.1 Suspend movement of fuel assemblies in the spent fuel pit.	Immediately
	<u>AND</u>	
	A.2.1 Initiate action to restore spent fuel pit boron concentration to within limit.	Immediately
	<u>OR</u>	
	A.2.2 Initiate action to perform a spent fuel pit verification.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.15.1	Verify the spent fuel pit boron concentration is within limit.	7 days

B 3.7 PLANT SYSTEMS

B 3.7.15 Spent Fuel Pit Boron Concentration

BASES

BACKGROUND

In the Maximum Density Rack (MDR) design, the spent fuel storage pool is divided into two separate and distinct regions. The layout of the IP3 MDR is shown in Figure B 3.7.16-1. As shown in Figure B 3.7.16-1, Region 1 (Columns SS-ZZ, Rows 35-64) includes 240 storage positions and Region 2 (Columns A-RR, Rows 1-34) includes 1105 storage positions. Region 1 is analyzed for storage of high-enrichment and low-burnup fuel. Region 2 is analyzed for storage of fuel with either higher burnup or lower enrichment. Each region has been separately analyzed for close packed storage when all cells in that region contain fuel of the highest reactivity stored in accordance with LCO 3.7.16, Spent Fuel Assembly Storage. This analysis is the basis for the restrictions on fuel storage locations established by LCO 3.7.16.

Limits, based on a combination of initial enrichment and burnup, are used to determine if a fuel assembly must be stored in region 1 or if the fuel assembly may be stored in either region 1 or region 2. Fuel with the highest initial enrichments are subject to additional restrictions even when stored in region 1. Fuel assemblies with an initial enrichment > 5.0 wt% U-235 cannot be stored in the spent fuel pit in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.

The water in the spent fuel pit normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of both regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded when fuel storage locations, enrichment and burnup are in conformance with analysis assumptions as specified in LCO 3.7.16. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. 1) allows credit for soluble boron under other abnormal or accident conditions, because only a single accident

BASES

BACKGROUND (Continued)

need be considered at one time. For example, the accident scenarios include movement of fuel from Region 1 to Region 2, or accidental misloading of a fuel assembly in Region 1. This event could increase the potential for criticality of the spent fuel pit. To mitigate these postulated criticality related accidents, boron concentration is verified by SR 3.7.15.1 to be within the limits specified in this LCO prior to movement of fuel assemblies in the spent fuel pit. Safe operation of the MDR with no movement of assemblies is achieved by controlling the location of each assembly in accordance with LCO 3.7.16, "Spent Fuel Assembly Storage." Prior to movement of an assembly, it is necessary to perform SR 3.7.15.1.

APPLICABLE SAFETY ANALYSES

Most accident conditions do not result in an increase in the reactivity of either of the two regions. Examples of these accident conditions are the loss of cooling (reactivity increase with decreasing water density) and the dropping of a fuel assembly on the top of the rack. However, accidents can be postulated that could increase the reactivity. This increase in reactivity is unacceptable with unborated water in the storage pool. Thus, for these accident occurrences, the presence of soluble boron in the storage pool prevents criticality in both regions. The postulated accidents are basically of two types. A fuel assembly could be incorrectly transferred from Region 1 to Region 2 (e.g., an unirradiated fuel assembly or an insufficiently depleted fuel assembly). The second type of postulated accidents is associated with a fuel assembly which is dropped adjacent to the fully loaded storage rack. This could have a small positive reactivity effect on the Region. However, the negative reactivity effect of the soluble boron compensates for the increased reactivity caused by either one of the two postulated accident scenarios. The accident analyses is described in References 2 and 3.

The concentration of dissolved boron in the spent fuel pit satisfies Criterion 2 of 10 CFR 50.36.

BASES

LCO

The spent fuel pit boron concentration is required to be ≥ 1000 ppm. The specified concentration of dissolved boron in the spent fuel pit preserves the assumptions used in the analyses of the potential critical accident scenarios as described in Reference 3. This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the spent fuel pit until a spent fuel pit verification confirms that there are no mis-loaded fuel assemblies. With no mis-loaded fuel assemblies and unborated water, the spent fuel pit design is sufficient to maintain the core at $k_{eff} \leq 0.95$.

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the spent fuel pit, until a complete spent fuel pit verification has been performed on all fuel that was moved since the last verification following the last movement of fuel assemblies in the spent fuel pit. This LCO does not apply following the verification, since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly.

ACTIONS

A.1, A.2.1 and A.2.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply.

When the concentration of boron in the spent fuel pit is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. Alternatively, beginning a verification of the Spent Fuel Pit fuel locations, to ensure proper locations of the fuel, can be performed. However, prior to resuming movement of fuel assemblies, the concentration of

BASES

ACTIONS

A.1, A.2.1 and A.2.2 (continued)

boron must be restored. This does not preclude movement of a fuel assembly to a safe position.

If the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.15.1

This SR verifies that the concentration of boron in the spent fuel pit is within the required limit. As long as this SR is met, the analyzed accidents are fully addressed. The 7 day Frequency is appropriate because no major replenishment of spent fuel pit water is expected to take place over such a short period of time. This SR is not required to be met or performed if a spent fuel pit verification for conformance with LCO 3.7.16, Figures 3.7.16-1 and 3.7.16-2, has been performed on all fuel assemblies moved since the last verification.

REFERENCES

1. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

2. SER related to Amendment 173 to Facility Operating License No. DPR-64, Indian Point Nuclear Generating Unit No. 3, April 15, 1997.

BASES

REFERENCES (continued)

3. Criticality Analysis of the Indian Point 3 Fresh and Spent Fuel Racks, Westinghouse Commercial Nuclear Fuel Division, October, 1996.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.15:
"Spent Fuel Pit Boron Concentration"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.8-3	114	114	No TSCRs	No TSCRs for this Page	N/A
3.8-5	173	173	No TSCRs	No TSCRs for this Page	N/A
3.8-6	175	175	No TSCRs	No TSCRs for this Page	N/A
3.8-7	173	173	No TSCRs	No TSCRs for this Page	N/A
T 4.1-2(1)	139	139	No TSCRs	No TSCRs for this Page	N/A
5.4-1	173	173	No TSCRs	No TSCRs for this Page	N/A

5.4 FUEL STORAGE

A.2

~~Applicability~~

~~Applies to the capacity and storage arrays of new and spent fuel.~~

~~Objective~~

~~To define those aspects of fuel storage relating to prevention of criticality in fuel storage areas.~~

Specification

SEE ITS SECTION 4.0

1. The spent fuel pit structure is designed to withstand the anticipated earthquake loadings as a Class I structure. The spent fuel pit has a stainless steel liner to insure against loss of water.

2. The spent fuel storage racks are designed to assure $K_{eff} \leq 0.95$ if the assemblies are inserted in accordance with Technical Specification 3.8. The capacity of the spent fuel pit is 1345 assemblies with the maximum density storage racks installed. The new fuel storage racks are designed to assure $K_{eff} \leq 0.95$ under all possible moderation conditions. The capacity of the new fuel racks is 72 assemblies containing fuel pellets enriched to a maximum 5.0 weight percent of U-235 and a maximum K_{eff} (in infinite array) of each fuel assembly of 0.95. Credit may be taken for burnable integral neutron absorbers.

LCO 3.7.15 Applicability

3. ~~Whenever there is fuel in the pit (except in the initial core loading)~~, the spent fuel storage is filled and borated to the concentration ~~to match that used in the reactor cavity and refueling canal during refueling operations~~.

SEE ITS SECTION 4.0

4. Fuel assemblies that contain pellets enriched to greater than 5.0 weight percent of U-235 shall not be stored in the spent fuel pit or new fuel racks.

Add LCO 3.7.15 Applicability L.1

A.3

1000 ppm A.4

Add Condition A and associated Req. Act — (A.5)

SEE ITS 3.9.4 3.9.5

a. No. 31 residual heat removal pump and heat exchanger, together with their associated piping and valves are operable.

b. No. 32 residual heat removal pump and heat exchanger, together with their associated piping and valves are operable.

c. The water level in the refueling cavity above the top of the reactor vessel flange is equal to or greater than 23 feet.

SEE ITS SECTION 3.9

B. If any of the specified limiting conditions for refueling are not met, refueling shall cease until the specified limits are met, and no operations which may increase the reactivity of the core shall be made.

LCO 3.7.15 Applicability

C. During fuel handling and storage operations, the following conditions shall be met:

SEE RELOCATED CTS

1. Radiation levels in the spent fuel storage area shall be monitored continuously whenever there is irradiated fuel stored therein. If the monitor is inoperable, a portable monitor may be used.

2. The spent fuel cask shall not be moved over any region of the spent fuel pit which contains irradiated fuel. Additionally, if the spent fuel pit contains irradiated fuel, no loads in excess of 2,000 pounds shall be moved over any region of the spent fuel pit.

LCO 3.7.15 and Applicability

3. During periods of spent fuel cask or fuel storage building cask crane movement over the spent fuel pit, or during periods of spent fuel movement in the spent fuel pit when the pit contains irradiated fuel, the pit shall be filled with borated water at a concentration of >1000 ppm. (A.3)

SEE ITS 3.7.14

4. Whenever movement of irradiated fuel in the spent fuel pit is being made, the minimum water level in the area of movement shall be maintained 23 feet over the top of irradiated fuel assemblies seated in the storage rack.

CTS 3.8.D

SEE ITS 3.9.1

a. A shutdown margin greater than or equal to 5% ΔK/K

or

b. A boron concentration of greater than or equal to 1900 ppm.

The required boron concentration will be verified by chemical analysis daily. With the requirements of the above specification not satisfied, immediately suspend all operations involving core alterations or positive reactivity changes and initiate boration to return to the more restrictive of the limits above.

Basis

The equipment and general procedures to be utilized during refueling, fuel handling, and storage are discussed in the FSAR. Detailed instructions, the above specified precautions, and the design of the fuel handling equipment incorporating built-in interlocks and safety features, provide assurance that no incident could occur during the refueling, fuel handling, reactor maintenance or storage operations that would result in a hazard to public health and safety.[1] Whenever changes are not being made in core geometry, one flux monitor is sufficient. This permits maintenance of the instrumentation. Continuous monitoring of radiation levels and neutron flux provides immediate indication of an unsafe condition. The residual heat removal pump is used to maintain a uniform boron concentration.

The shutdown margin indicated will keep the core subcritical. During refueling the reactor refueling cavity is filled with approximately 342,000 gallons of water from the refueling water storage tank with a boron concentration of 2400-2600 ppm. Periodic checks of refueling water boron concentration and residual heat removal pump operation insure the proper shutdown margin. The requirement for direct communications allows the control room operator to inform the manipulator operator of any impending unsafe condition detected from the main control board indicators during fuel movement.

A

The minimum boron concentration of this water is the more restrictive of either 1900 ppm or else sufficient to maintain the reactor subcritical by at least 5% ΔK/K in the cold shutdown condition with all rods inserted. These limitations are consistent with the initial conditions assumed for the boron dilution incident in the safety analyses.

In addition to the above safeguards, interlocks are utilized during refueling to ensure safe handling. An excess weight interlock is provided on the lifting hoist to prevent movement of more than one fuel assembly at a time. The spent fuel transfer mechanism can accommodate only one fuel assembly at a time.

The 145-hour decay time following the subcritical condition and the 23 feet of water above the top of the reactor pressure vessel flange bounds the assumptions used in the dose calculation for the fuel-handling accident. The 145-hour decay time is based on limiting calculated worst-case spent fuel pool temperature rise to 150°F with up to 76 assemblies discharged from the reactor.

A.1

~~The waiting time of 267 hours required following plant shutdown before unloading more than 76 assemblies from the reactor assures that the maximum pool water temperature will be within design objectives as stated in the FSAR. The calculations confirming this are based on an inlet river temperature of 95°F, consistent with the FSAR assumptions(2).~~

~~The requirement for the fuel storage building emergency ventilation system to be operable is established in accordance with standard testing requirements to assure that the system will function to reduce the offsite dose to within acceptable limits in the event of a fuel-handling accident. The fuel storage building emergency ventilation system must be operable whenever irradiated fuel is being moved. However, if the irradiated fuel has had a continuous 45 day decay period, the fuel storage building emergency ventilation system is not technically necessary, even though the system is required to be operable during all fuel handling operations. Fuel Storage Building isolation is actuated upon receipt of a signal from the area high activity alarm or by manual operation. The emergency ventilation bypass assembly is manually isolated, using manual isolation devices, prior to movement of any irradiated fuel. This ensures that all air flow is directed through the emergency ventilation HEPA filters and charcoal adsorbers. The ventilation system is tested prior to all fuel handling activities to ensure the proper operation of the filtration system.~~

~~When fuel in the reactor is moved before the reactor has been subcritical for at least 421 hours (See footnote on page 3.8-2), the limitations on the containment vent and purge system ensure that all radioactive material released from an irradiated fuel assembly will be filtered through the HEPA filters and charcoal adsorbers prior to discharge to the atmosphere.~~

~~The limit to have at least two means of decay heat removal operable ensures that a single failure of the operating RHR System will not result in a total loss of decay heat removal capability. With the reactor head removed and 23 feet of water above the vessel flange, a large heat sink is available for core cooling. Thus, in the event of a single component failure, adequate time is provided to initiate diverse methods to cool the core.~~

~~The minimum spent fuel pit boron concentration and the restriction of the movement of the spent fuel cask over irradiated fuel were specified in order to minimize the consequences of an unlikely sideways cask drop.~~

A.1

As shown in Figure 3.8-3, the maximum density spent fuel storage racks consist of two regions: Region 1 (Columns SS-ZZ, Rows 35-64) and Region 2 (Columns A-RR, Rows 1-34). Each region has been separately analyzed for close packed storage, where all cells in that region contain fuel of the highest allowable reactivity.

The Region 1 area has also been analyzed for storage of high-enrichment and low-burnup fuel. Figure 3.8-1 categorizes Region 1 fuel assemblies as a function of their initial enrichment and current burnup into Types A, B, and C. Each type has different restrictions as to how it may be stored in Region 1. The least reactive assemblies, which are Type A assemblies, may be stored anywhere in Region 1. The most reactive assemblies, which are Type C assemblies, are stored only in Region 1 with the restrictions of Technical Specification 3.8.C.7.b.3, due to their high reactivity. Type C assemblies cannot be stored face-adjacent to anything more reactive than Type A fuel assemblies. There are no additional restrictions defining storage requirements for diagonally-adjacent fuel assemblies in Region 1. In addition, to prevent a criticality interaction with Region 2 fuel assemblies, Type C assemblies cannot be stored in Column ZZ or Row 64.

The following criteria should be used to categorize Region 1 fuel assemblies. Unburned fuel assemblies at or below 4.2 w/o enrichment are Type A. Unburned fuel assemblies at or below 4.6 w/o enrichment (but greater than 4.2 w/o enrichment) are Type B. Fuel assemblies whose burnup puts them on or above the diagonal line below the Type A zone are defined as Type A.

Fuel assemblies to be stored in Region 2 of the spent fuel racks must have a minimum burnup exposure as a function of initial enrichment as specified in Figure 3.8-2. Administrative controls will provide verification that each fuel assembly to be placed in Region 2 satisfies the burnup criterion.

Mechanical stops incorporated on the bridge rails of the fuel storage building crane make it impossible for the bridge of the crane to travel further north than a point directly over the spot in the spent fuel pit that is reserved for the spent fuel cask. Therefore, it will be impossible to carry any object over the spent fuel storage areas north of the spot in the pit that is reserved for the cask with either the 40 or 5-ton hook of the fuel storage building crane. It is possible to use the fuel storage building crane to carry objects over the spent fuel storage areas that are directly east of the spot in the pit that is reserved for the cask. However, the technical specifications and plant procedures prevent any object weighing more than 2,000 pounds from being moved over any region of the spent fuel pit. Therefore, the storage areas directly east of the spot in the pit that is reserved for the cask are protected from heavy load handling by administrative controls.

Dead load tests and visual inspection of the hoists and cranes before handling irradiated fuel provide assurance that the hoists or cranes are capable of proper operation.

<u>References</u>

(1) FSAR - Section 9.5.2
(2) FSAR - Section 9.3

SEE CTS MASTER MARKUP

TABLE 4.1-2 (Sheet 1 of 2)

FREQUENCIES FOR SAMPLING TESTS

Sample	Analysis	Frequency	Maximum Time Between Analysis
1. Reactor Coolant	Gross Activity(1)	5 days/week(1)(4)	3 days(4)
	Tritium Activity	Weekly(1)	10 days
	Boron concentration	2 days/week	5 days
	Radiochemical (gamma)(2) Spectral Check	Monthly	45 days
	Oxygen and Chlorides Concentration	3 times per 7 days	3 days
	Fluorides Concentration	Weekly	10 days
	$\bar{E}$ Determination (3)	Semi-Annually	30 weeks
	Isotopic Analysis for I-131, I-133, I-135	Once per 14 days(5)	20 days
2. Boric Acid Tank	Boron Concentration, Chlorides	Weekly	10 days
3. Spray Additive Tank	NaOH Concentration	Monthly	45 days
4. Accumulators	Boron Concentration	Monthly	45 days
5. Refueling Water Storage Tank	Boron Concentration pH, Chlorides	Monthly	45 days
	Gross Activity	Quarterly	16 weeks
6. Secondary Coolant	I-131 Equivalent (Isotopic Analysis)	Monthly	45 days
	Gross Activity	3 times per 7 days	3 days
7. Component Cooling Water	Gross Activity, Corrosion Inhibitor and pH	Monthly	45 days
SR 3.7.15.1 — 8. Spent Fuel Pool (when fuel stored)	Gross Activity Boron Concentration, Chlorides	Monthly	45 days

SEE RELOCATED CTS

7 days unless pool verification completed

L.1

A.3

Amendment No. 139

ITS 3.7.15

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.15:
"Spent Fuel Pit Boron Concentration"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.15 - SPENT FUEL PIT BORON CONCENTRATION

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.8.C.3 specifies that requirements for spent fuel pit boron concentration apply "during periods of spent fuel movement in the spent fuel pit" only. However, CTS 5.4.3 and CTS 4.1-2, Item 8, specify that requirements for spent fuel pit boron concentration apply whenever fuel is stored in the spent fuel pit. Therefore, the more restrictive CTS requirement that spent fuel pit boron concentration limits apply whenever there is fuel in the pit are applied at IP3. The discrepancy in the Applicability for spent fuel pit boron concentration limits has no impact on safety and is corrected in ITS 3.7.15. Note that ITS LCO 3.7.15 adopts the less restrictive applicability used in CTS 3.8.C.3 (See ITS 3.7.15, DOC L.1).

A.4 CTS 3.8.C.3 requires that spent fuel pit minimum boron concentration during periods of spent fuel movement must be > 1000 ppm. However, CTS 5.4.3 specifies that spent fuel pit minimum boron concentration must match that used in the reactor cavity and refueling canal during refueling operations (i.e., the more restrictive of either a shutdown margin greater ≥ to 5% ΔK/K or a boron concentration ≥ 1900 ppm as specified in CTS 3.8.D). The SER related to Amendment 173 to Facility Operating License No. DPR-64, Indian Point Nuclear Generating Unit No. 3, April 15, 1997, interprets CTS 3.8.C.3 and CTS 5.4.3 as requiring a boron concentration > 1000 ppm when fuel is stored in the pit. This interpretation is supported by Criticality Analysis of the Indian Point 3 Fresh and Spent Fuel Racks, Westinghouse Commercial Nuclear Fuel Division, October, 1996.

ITS LCO 3.7.15 specifies that spent fuel pit minimum boron concentration shall be maintained ≥1000 ppm. This is an administrative change with no adverse impact of safety because it conforms to the interpretation of CTS 3.8.C.3 and CTS 5.4.3 as clarified in the SER related to Amendment 173 and the Criticality Analysis of the Indian Point 3 Fresh and Spent Fuel Racks.

A.5 CTS 3.8.C.3 and CTS 5.4.3 specify requirements for the spent fuel pit minimum boron concentration; however, no explicit actions are specified if these limits are not met. ITS LCO 3.7.15, Required Actions A.1, A.2.1, and A.2.2, are added to require the following actions if spent fuel pit minimum boron concentration is not met: immediately suspend movement of fuel assemblies; and, immediately initiate action to restore the Spent Fuel Pit boron concentration to within the limit or perform a storage pit verification. This is an administrative change with no impact on safety because these actions are a reasonable interpretation of the existing requirements consistent with the change in the ITS LCO 3.7.15 Applicability described in ITS 3.7.15, DOC L.1.

MORE RESTRICTIVE

M.1 CTS Table 4.1-2, Item 8, requires a monthly verification of spent fuel pit boron concentration whenever fuel is stored in the spent fuel pit. ITS SR 3.7.15 requires verification of spent fuel pit boron concentration every 7 days (unless a fuel location verification is completed (See ITS 3.7.15, DOC L.1). This change is needed because a 7 day Frequency provides a high degree of assurance that LCO limits will e met considering no major replenishment of pit water is expected to take place over such a short period of time. This change has no significant adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.8.C.3 specifies the Applicability of requirements for spent fuel pit boron concentration as during periods of spent fuel movement in the spent fuel pit. CTS 5.4.3 specifies the Applicability of requirements for spent fuel pit boron concentration as whenever there is fuel in the pit (See ITS 3.7.15, DOC A.3). CTS 4.1-2, Item 8, requires monthly verification of boron concentration "when fuel stored" in the spent fuel pit. Therefore, IP3 requirements for spent fuel pit boron concentration apply whenever there is fuel in the spent fuel pit.

ITS 3.7.15 specifies that spent fuel pit boron concentration limits must be met "When fuel assemblies are stored in the fuel storage pit and a spent fuel pit verification has not been performed since the last movement of fuel assemblies in the fuel storage pit." This change is acceptable because, as stated in the SER Related to IP3 CTS Amendment 173, April 15, 1997, the spent fuel pit design is sufficient to maintain the core at $k_{eff} \leq 0.95$ with unborated water if there are no misloaded fuel assemblies (i.e., fuel storage locations meet the requirements of ITS LCO 3.7.16). The requirement in ITS SR 3.7.16.1 to verify proper storage location of each fuel assembly prior to landing the assembly in the spent fuel pit and the requirement to perform a complete spent fuel pit verification on any bundle moved since the last verification prior to relaxing boron concentration requirements provides a high degree of assurance that boron concentration will be maintained at all times there is a potential for a mis-positioned fuel assembly. Finally, even if requirements for boron concentration are eliminated, spent fuel pit boron concentration is not reduced after the completion of fuel movement and is usually maintained > 1900 ppm. As a result, the practical consequence of this change is to eliminate the formal requirement in CTS Table 4.1-2, Item 8, for monthly verification of spent fuel pit boron concentration after a storage location verification is completed. Therefore, eliminating the requirements for a minimum boron concentration in the spent fuel pit if no fuel movement is in progress and a storage verification was performed after the last movement of fuel assemblies will not significantly increase the potential for criticality in the spent fuel pit. This change has no significant adverse impact on safety.

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.15:
"Spent Fuel Pit Boron Concentration"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.15 - Spent Fuel Pit BORON CONCENTRATION

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change eliminates the requirement for maintaining a minimum boron concentration in the spent fuel pit if no fuel movement is in progress and a storage verification was performed after the last movement of fuel assemblies. This change will not result in a significant increase in the probability or consequences of an accident previously evaluated because , as stated in the SER Related to IP3 CTS Amendment 173, April 15, 1997, the spent fuel pit design is sufficient to maintain the core at $k_{eff} \leq 0.95$ with unborated water if there are no misloaded fuel assemblies (i.e., fuel storage locations meet the requirements of ITS LCO 3.7.16). The requirement in ITS SR 3.7.16.1 to verify proper storage location of each fuel assembly prior to landing the assembly in the spent fuel pit and the requirement to perform a complete spent fuel pit verification on each bundle moved sing the last verification prior to relaxing boron concentration requirements provides a high degree of assurance that boron concentration will be maintained at all times there is a potential for a mis-positioned fuel assembly. Finally, even if requirements for boron concentration are eliminated, spent fuel pit boron concentration is not reduced after the completion of fuel movement and is usually maintained > 1900 ppm. As a result, the practical consequence of this change is to eliminate the formal requirement in CTS Table 4.1-2, Item 8, for monthly verification of spent fuel pit boron concentration after a storage location verification is completed. Therefore, eliminating the requirements for a minimum boron concentration in the spent fuel pit if no fuel movement is in progress and a storage verification was performed after the last movement of fuel assemblies will not significantly increase the potential for criticality in the spent fuel pit.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

This change does not involve a significant reduction in a margin of safety because, as stated in the SER Related to IP3 CTS Amendment 173, April 15, 1997, the spent fuel pit design is sufficient to maintain the core at $k_{eff} \leq 0.95$ with unborated water if there are no misloaded fuel assemblies (i.e., fuel storage locations meet the requirements of ITS LCO 3.7.16). The requirement in ITS SR 3.7.16.1 to verify proper storage location of each fuel assembly prior to landing the assembly in the spent fuel pit and the requirement to perform a complete spent fuel pit verification on each bundle moves since the last verification prior to relaxing boron concentration requirements provides a high degree of assurance that boron concentration will be maintained at all times there is a potential for a mis-positioned fuel assembly. Finally, even if requirements for boron concentration are eliminated, spent fuel pit boron concentration is not reduced after the completion of fuel movement and is usually maintained at 1900 ppm. As a result, the practical consequence of this change is to eliminate the formal requirement in CTS Table 4.1-2, Item 8, for monthly verification of spent fuel pit boron concentration after a storage location verification is completed. Therefore, eliminating the requirements for a minimum boron concentration in the spent fuel pit if no fuel movement is in progress and a storage verification was performed after the last movement of fuel assemblies will not significantly increase the potential for criticality in the spent fuel pit.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.15:
"Spent Fuel Pit Boron Concentration"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.15

This ITS Specification is based on NUREG-1431 Specification No. **3.7.16**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
CEOG-023 R1	**070 R1**	FUEL STORAGE POOL VERIFICATION	Approved by NRC	Incorporated	**T.1**
CEOG-051 R1	**139 R1**	INCORRECT CRITERIA DEFINED IN B 3.7.16	Approved by NRC	Incorporated	**T.2**

3.7 PLANT SYSTEMS

Spent Fuel Pit

3.7.~~16~~ 15 ~~Fuel Storage Pool~~ Boron Concentration

<5.4.3>
<DOC A.5>
<3.8.C.3>
<DOC A.4>

LCO 3.7.~~16~~ 15 The ~~fuel storage pool~~ boron concentration shall be ≥ ~~2300~~ ppm.

1000

<5.4.3>
<DOC L.1>
<DOC A.3>

APPLICABILITY: When fuel assemblies are stored in the ~~fuel storage pool~~ and a ~~fuel storage pool~~ verification has not been performed since the last movement of fuel assemblies in the ~~fuel storage pool~~.

spent fuel pit

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ~~Fuel storage pool~~ boron concentration not within limit. Spent fuel pit <DOC A.5>	------------NOTE------------ LCO 3.0.3 is not applicable. ---------------------------	
	A.1 Suspend movement of fuel assemblies in the ~~fuel storage pool~~. spent fuel pit	Immediately
	AND	
	A.2.1 Initiate action to restore ~~fuel storage pool~~ boron concentration to within limit.	Immediately
	OR	
Insert: 3.7-36-01 <DOC L.1>	A.2.2 ~~Verify by administrative means [Region 2] fuel storage pool verification has been performed since the last movement of fuel assemblies in the fuel storage pool.~~	Immediately

T.1

NUREG-1431 Markup Inserts
ITS SECTION 3.7.15 - SPENT FUEL PIT BORON CONCENTRATION

INSERT: 3.7-36-01

Initiate action to perform a spent fuel pit verification.

⟨Table 4.1-2, #8⟩
⟨DOC M.1⟩
⟨DOC L.1⟩

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.~~16~~15.1	Verify the ~~fuel storage pool~~ spent fuel pit boron concentration is within limit.	7 days

Typical

Spent Fuel Pit

B 3.7 PLANT SYSTEMS

B 3.7.~~16~~ 15 ~~Fuel Storage Pool~~ Boron Concentration

BASES

BACKGROUND

In the Maximum Density Rack (MDR) ~~[(Refs. 1 and 2)]~~ design, the spent fuel storage pool is divided into two separate and distinct regions. ~~which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure [3.7.17-1], in the accompanying LCO. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored~~ in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.

Insert: B3.7-81-01

The water in the spent fuel storage pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of both regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. ~~2~~ 1) allows credit for soluble boron under other abnormal or accident conditions, ~~since~~ because only a single accident need be considered at one time. For example, the ~~most severe~~ accident scenario~~s~~ ~~is associated with the~~ include movement of fuel from [Region 1 to Region 2], ~~and~~ or accidental misloading of a fuel assembly in [Region 2]. ~~This could potentially increase the~~ criticality of ~~[Region 2]~~. To mitigate these postulated criticality related accidents, boron ~~is dissolved in the pool water~~. Safe operation of the MDR with no movement of assemblies ~~may therefore be~~ is achieved by controlling the location of each assembly in accordance with LCO 3.7.~~17~~ 16, "Spent Fuel Assembly Storage." Prior to movement of an assembly, it is necessary to perform SR 3.7.~~16~~ 15.1.

Insert: B3.7-81-02

Insert: B3.7-81-03

Insert: B3.7-81-04

The spent fuel pit

~~(continued)~~

NUREG-1431 Markup Inserts
ITS SECTION 3.7.15 - SPENT FUEL PIT BORON CONCENTRATION

INSERT: B 3.7-81-01

The layout of the IP3 MDR is shown in Figure B 3.7.16-1. As shown in Figure B 3.7.16-1, Region 1 (Columns SS-ZZ, Rows 35-64) includes 240 storage positions and Region 2 (Columns A-RR, Rows 1-34) includes 1105 storage positions. Region 1 is analyzed for storage of high-enrichment and low-burnup fuel. Region 2 is analyzed for storage of fuel with either higher burnup or lower enrichment. Each region has been separately analyzed for close packed storage when all cells in that region contain fuel of the highest reactivity stored in accordance with LCO 3.7.16, Spent Fuel Assembly Storage. This analysis is the basis for the restrictions on fuel storage locations established by LCO 3.7.16.

Limits, based on a combination of initial enrichment and burnup, are used to determine if a fuel assembly must be stored in region 1 or if the fuel assembly may be stored in either region 1 or region 2. Fuel with the highest initial enrichments are subject to additional restrictions even when stored in region 1. Fuel assemblies with an initial enrichment > 5.0 wt% U-235 cannot be stored in the spent fuel pit

INSERT: B 3.7-81-02

when fuel storage locations, enrichment and burnup are in conformance with analysis assumptions as specified in LCO 3.7.16.

INSERT: B 3.7-81-03

This event could increase the potential for

INSERT: B 3.7-81-04

concentration is verified by SR 3.7.15.1 to be within the limits specified in this LCO prior to movement of fuel assemblies in the spent fuel pit.

BASES (continued)

APPLICABLE SAFETY ANALYSES

Most accident conditions do not result in an increase in the ~~activity~~ reactivity of either of the two regions. Examples of these accident conditions are the loss of cooling (reactivity increase with decreasing water density) and the dropping of a fuel assembly on the top of the rack. However, accidents can be postulated that could increase the reactivity. This increase in reactivity is unacceptable with unborated water in the storage pool. Thus, for these accident occurrences, the presence of soluble boron in the storage pool prevents criticality in both regions. The postulated accidents are basically of two types. A fuel assembly could be incorrectly transferred from [Region 1 to Region 2] (e.g., an unirradiated fuel assembly or an insufficiently depleted fuel assembly). The second type of postulated accidents is associated with a fuel assembly which is dropped adjacent to the fully loaded ~~[Region 2]~~ storage rack. This could have a small positive reactivity effect ~~on [Region 2]~~ in the Region. However, the negative reactivity effect of the soluble boron compensates for the increased reactivity caused by either one of the two postulated accident scenarios. The accident analyses is ~~provided in the FSAR, Section [15.7.4] (Ref. 4)~~ described in References 2 and 3.

The concentration of dissolved boron in the spent fuel ~~storage pool~~ pit satisfies Criterion 2 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

LCO

The spent fuel ~~storage pool~~ pit boron concentration is required to be ≥ ~~[2300]~~ 1000 ppm. The specified concentration of dissolved boron in the ~~fuel storage pool~~ spent fuel storage pit preserves the assumptions used in the analyses of the potential critical accident scenarios as described in Reference ~~4~~ 3. This concentration of dissolved boron is the minimum required concentration for fuel assembly storage and movement within the ~~fuel storage pool~~.

Insert: B 3.7-82-01

APPLICABILITY

This LCO applies whenever fuel assemblies are stored in the spent fuel storage ~~pool~~ pit, until a complete spent fuel storage pool verification has been performed following the last movement of fuel assemblies in the spent fuel storage ~~pool~~ pit. This LCO does not apply following the verification, since the verification would confirm that there are no misloaded fuel assemblies. With no further fuel assembly movements in

(continued)

INSERT: B 3.7-82-01

until a spent fuel pit verification confirms that there are no mis-loaded fuel assemblies. With no mis-loaded fuel assemblies and unborated water, the spent fuel pit design is sufficient to maintain $k_{eff} \leq 0.95$.

BASES

APPLICABILITY (continued)

progress, there is no potential for a misloaded fuel assembly or a dropped fuel assembly.

ACTIONS

A.1, A.2.1, and A.2.2

The Required Actions are modified by a Note indicating that LCO 3.0.3 does not apply.

When the concentration of boron in the fuel storage pool is less than required, immediate action must be taken to preclude the occurrence of an accident or to mitigate the consequences of an accident in progress. This is most efficiently achieved by immediately suspending the movement of fuel assemblies. The concentration of boron is restored simultaneously with suspending movement of fuel assemblies. ~~An acceptable alternative is to verify by administrative means that the fuel storage pool verification has been performed since the last movement of fuel assemblies in the fuel storage pool.~~ However, prior to resuming movement of fuel assemblies, the concentration of boron must be restored. This does not preclude movement of a fuel assembly to a safe position.

Insert: B 3.7-83-01

T.1

If the LCO is not met while moving irradiated fuel assemblies in MODE 5 or 6, LCO 3.0.3 would not be applicable. If moving irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the fuel movement is independent of reactor operation. Therefore, inability to suspend movement of fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~16~~ 15 .1

This SR verifies that the concentration of boron in the fuel storage pool is within the required limit. As long as this SR is met, the analyzed accidents are fully addressed. The 7 day Frequency is appropriate because no major replenishment of pool water is expected to take place over such a short period of time.

Insert: B 3.7-83-01

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.15 - SPENT FUEL PIT BORON CONCENTRATION

INSERT: B 3.7-83-01

Alternatively, beginning a verification of the Spent Fuel Pit fuel locations, to ensure proper locations of the fuel, can be performed.

INSERT: B 3.7-83-02

This SR is not required to be met or performed if a spent fuel pit verification for conformance with LCO 3.7.16, Figures 3.7.16-1 and 3.7.16-2, has been performed on all fuel assemblies moved since the last verification following the last movement of fuel assemblies in the spent fuel pit.

BASES (continued)

REFERENCES

~~1. Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."~~

~~2. Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station).~~

1 ~~3~~. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

~~4. FSAR, Section [15.7.4].~~

Insert:
B 3.7-84-01

NUREG-1431 Markup Inserts
ITS SECTION 3.7.15 - SPENT FUEL PIT BORON CONCENTRATION

INSERT: B 3.7-84-01

2. SER related to Amendment 173 to Facility Operating License No. DPR-64, Indian Point Nuclear Generating Unit No. 3, April 15, 1997.

3. Criticality Analysis of the Indian Point 3 Fresh and Spent Fuel Racks, Westinghouse Commercial Nuclear Fuel Division, October, 1996.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.15: "Spent Fuel Pit Boron Concentration"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.15 - SPENT FUEL PIT BORON CONCENTRATION

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described below, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1: therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-70, Rev. 1 (CEOG-23) which revises Required Action A.1 and the associated Bases to require verification of Spent Fuel Pit locations. If a Spent Fuel Pit verification had been performed since the last fuel movement as verified by Required Action A.2.2, the plant would not be in the conditions specified by the Applicability. Therefore, a change to the Required Action is required.

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.15 - SPENT FUEL PIT BORON CONCENTRATION

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.16:
"Spent Fuel Assembly Storage"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.16 Spent Fuel Assembly Storage

LCO 3.7.16

Fuel assemblies stored in the spent fuel pit shall be classified in accordance with Figure 3.7.16-1 based on initial enrichment and burnup; and,

Fuel assembly storage location within the spent fuel pit shall be restricted based on the Figure 3.7.16-1 classification as follows:

a. Fuel assemblies classified as Type 2 may be stored in any location in either Region 1 or Region 2;

b. Fuel assemblies classified as Type 1A, 1B or 1C shall be stored in Region 1;

c. Fuel assembly storage location within Region 1 shall be restricted as follows:

1. Type 1A assemblies may be stored anywhere in Region 1;

2. Type 1B assemblies may be stored anywhere in Region 1, except a Type 1B assembly shall not be stored face-adjacent to a Type 1C assembly;

3. Type 1C assemblies shall not be stored in Row 64 or in Column ZZ; and

4. Type 1C assemblies shall be stored in Region 1 locations where all face-adjacent locations are as follows:

   a) occupied by Type 2 or Type 1A assemblies, or

   b) occupied by non-fuel components, or

   c) empty.

APPLICABILITY: Whenever any fuel assembly is stored in the spent fuel pit.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 ---------NOTE---------- LCO 3.0.3 is not applicable. ---------------------- Initiate action to move fuel to restore compliance with LCO 3.7.16.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.7.16.1	Verify by administrative means the initial enrichment and burnup of each fuel assembly and that the storage location meets LCO 3.7.16 requirements.	Prior to storing the fuel assembly in the spent fuel pit

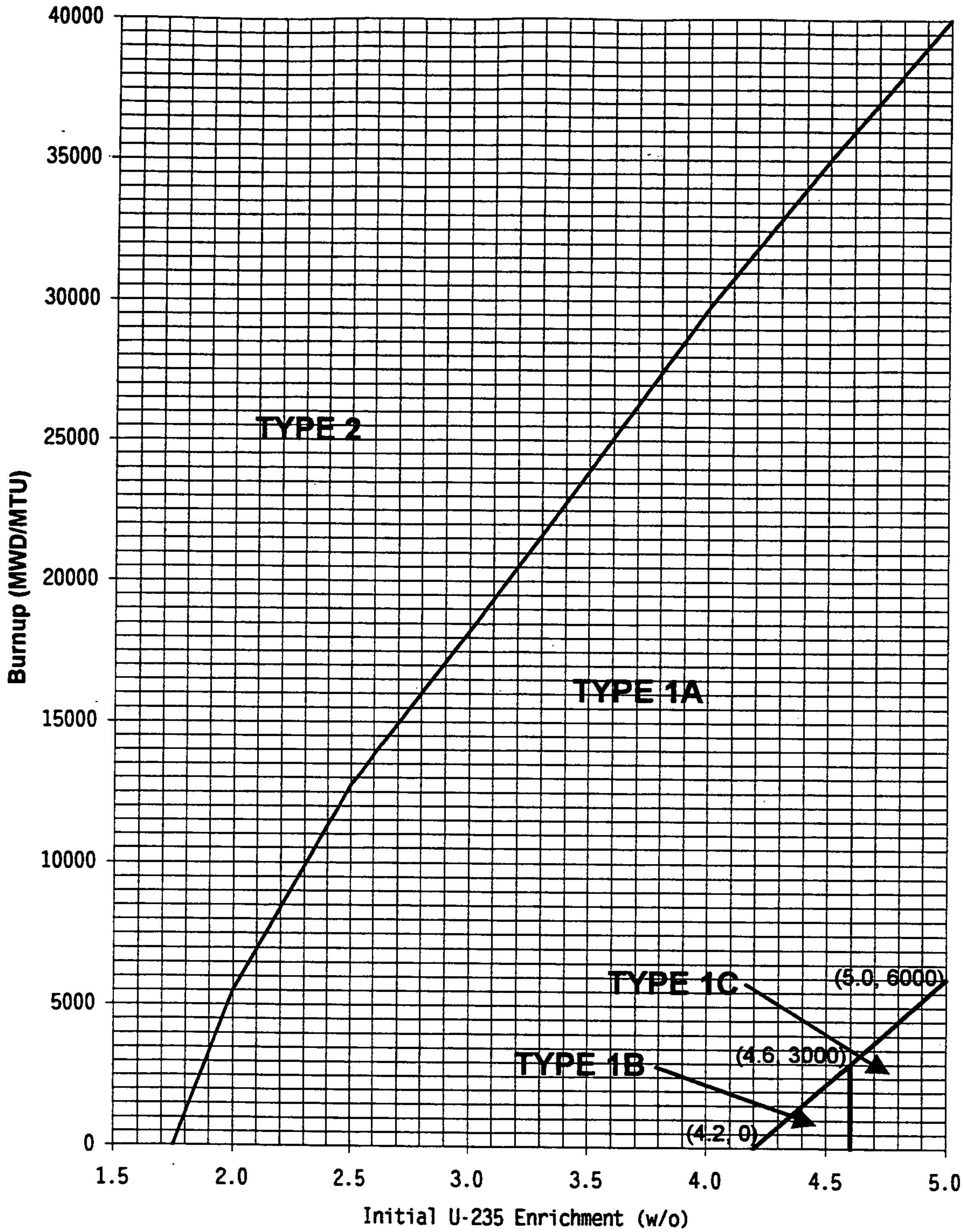


Figure 3.7.16-1 (Page 1 of 1)
Fuel Assembly Classification
for Storage in the Spent Fuel Pit

B 3.7 PLANT SYSTEMS

B 3.7.16 Spent Fuel Assembly Storage

BASES

BACKGROUND

In the Maximum Density Rack (MDR) design, the spent fuel pit (SFP) is divided into two separate and distinct regions. The layout of the IP3 MDR is shown in Figure B 3.7.16-1, IP3 Maximum Density Spent Fuel Pit Racks, Regions and Indexing. As shown in Figure B 3.7.16-1, Region 1 (i.e., Columns SS-ZZ, Rows 35-64) includes 240 storage positions and Region 2 (i.e., Columns A-RR, Rows 1-34) includes 1105 storage positions. Region 1 is analyzed for storage of high-enrichment and low-burnup fuel. Region 2 is analyzed for storage of fuel with either higher burnup or lower enrichment. Each region has been separately analyzed for close packed storage when all cells in that region contain fuel of the highest reactivity that is allowed by this LCO. This analysis is the basis for the restrictions on fuel storage locations established by this LCO.

Prior to storage in the spent fuel pit, fuel assemblies are classified as to the level of reactivity based on the initial enrichment and burnup. This classification is made using Figure 3.7.16-1, "Fuel Assembly Classification for Storage in the Spent Fuel Pit". This classification is used to determine in which region a particular fuel assembly may be stored and if additional restrictions must be applied to the assemblies in adjacent locations. Figure 3.7.16-1, "Fuel Assembly Classification for Storage in the Spent Fuel Pit", is used to classify each assembly into one of the following categories based on initial U-235 enrichment and burnup:

Type 2 assemblies are the least reactive assemblies and include any assembly for which the combination of initial enrichment and burnup places the assembly in the domain labeled Type 2 in Figure 3.7.16-1. Type 2 assemblies may be stored in any location in Region 1 or Region 2 of Figure B 3.7.16-1.

Type 1A assemblies are more reactive than Type 2 assemblies and include any assembly for which the combination of initial enrichment and burnup places the assembly in the domain labeled Type 1A in Figure 3.7.16-1. Type 1A assemblies must be stored in

BASES

BACKGROUND (Continued)

Region 1 of Figure B 3.7.16-1 but may be stored in any location in Region 1.

Type 1B assemblies are more reactive than Type 1A assemblies and include any assembly with an initial enrichment > 4.2 but ≤ 4.6 wt% U-235 with a burnup that places the assembly in the domain labeled Type 1B in Figure 3.7.16-1. Type 1B assemblies must be stored in Region 1 of Figure B 3.7.16-1 but may be stored in any location in Region 1 except in locations that are face-adjacent to a Type 1C assembly.

Type 1C assemblies are the most reactive bundles permitted in accordance with Specification 4.3, Fuel Storage. Type 1C assemblies include any assembly with an initial enrichment > 4.6 but ≤ 5.0 wt% U-235 with a burnup that places the assembly in the domain labeled Type 1C on Figure 3.7.16-1. Type 1C assemblies must be stored in Region 1 of Figure B 3.7.16-1. Type 1C assemblies cannot be stored in Row 64 or in Column ZZ. Additionally, Type 1C assemblies must be stored in a location where all face-adjacent locations are as follows: a) occupied by Type 2 or Type 1A assemblies; b) occupied non-fuel components; or, c) empty.

Fuel assemblies with an initial enrichment > 5.0 wt% U-235 are not shown on Figure 3.7.16-1 and cannot be stored in the spent fuel pit in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.

The water in the spent fuel pit normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of both regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded and fuel storage locations, enrichment and burnup are in conformance with analysis assumptions and this LCO. The double contingency principle

BASES

BACKGROUND (Continued)

discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. 1) allows credit for soluble boron under other abnormal or accident conditions because only a single accident need be considered at one time. For example, the accident scenarios include movement of a type 1C fuel assembly from Region 1 to Region 2, or accidental misloading of a fuel assembly in Region 1. These events could increase the potential for criticality in the Spent Fuel Pit. To mitigate these postulated criticality related accidents, boron concentration is verified to be within the limits specified in LCO 3.7.15, Spent Fuel Pit Boron Concentration, prior to movement of any fuel assembly. Safe operation of the SFP with no movement of assemblies is achieved by controlling the location of each assembly in accordance with the accompanying LCO. However, prior to movement of an assembly, it is necessary to perform SR 3.7.15.1 (i.e., verification that the spent fuel pit boron concentration is within limit).

APPLICABLE SAFETY ANALYSES

The restrictions on the placement of fuel assemblies within the spent fuel pit are based on initial enrichment and burnup which is indicative of fuel assembly reactivity. Storage locations are then restricted to ensure the k_{eff} of the spent fuel pit will always remain < 0.95, assuming the pool to be flooded with unborated water. Fuel assemblies not meeting the criteria of Figure 3.7.16-1 may not be stored in accordance with Specification 4.3.1.1 in Section 4.3.

The hypothetical accidents can only take place during or as a result of the movement of an assembly (References 2 and 3). For these accident occurrences, the presence of soluble boron in the spent fuel storage pit (controlled by LCO 3.7.15, "Spent Fuel Pit Boron Concentration") prevents criticality in both regions. By closely controlling the movement of each assembly and by checking the location of each assembly after movement, the time period for potential accidents may be limited to a small fraction of the total operating time. During the remaining time period

BASES

APPLICABLE SAFETY ANALYSES (continued)

with no potential for accidents, the operation may be under the auspices of the accompanying LCO.

The configuration of fuel assemblies in the fuel storage pit satisfies Criterion 2 of 10 CFR 50.36.

LCO

Fuel assemblies stored in the spent fuel pit are classified in accordance with Figure 3.7.16-1 based on initial enrichment and burnup which is indicative of fuel assembly reactivity. Based on this classification, fuel assembly storage location within the spent fuel pit and storage location relative to other assemblies is restricted in accordance with the rules established by this LCO.

Fuel assemblies with an initial enrichment > 5.0 wt% U-235 are not shown on Figure 3.7.16-1 because fuel assemblies with this enrichment cannot be stored in the spent fuel pit in accordance with limits established in Technical Specification Section 4.3.

APPLICABILITY

This LCO applies whenever any fuel assembly is stored in the spent fuel pit.

ACTIONS

A.1

Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.

When the configuration of fuel assemblies stored in the spent fuel pit is not in accordance with this LCO, the immediate action is to initiate action to make the necessary fuel assembly movement(s) to bring the configuration into compliance with this LCO.

If unable to move irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not be applicable. If unable to move irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the

BASES

ACTIONS

A.1 (continued)

action is independent of reactor operation. Therefore, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.16.1

This SR verifies by administrative means that the initial enrichment and burnup of the fuel assembly in each location is in accordance with the accompanying LCO.

REFERENCES

1. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

2. SER related to Amendment 173 to Facility Operating License No. DPR-64, Indian Point Nuclear Generating Unit No. 3, April 15, 1997.

3. Criticality Analysis of the Indian Point 3 Fresh and Spent Fuel Racks, Westinghouse Commercial Nuclear Fuel Division, October, 1996.

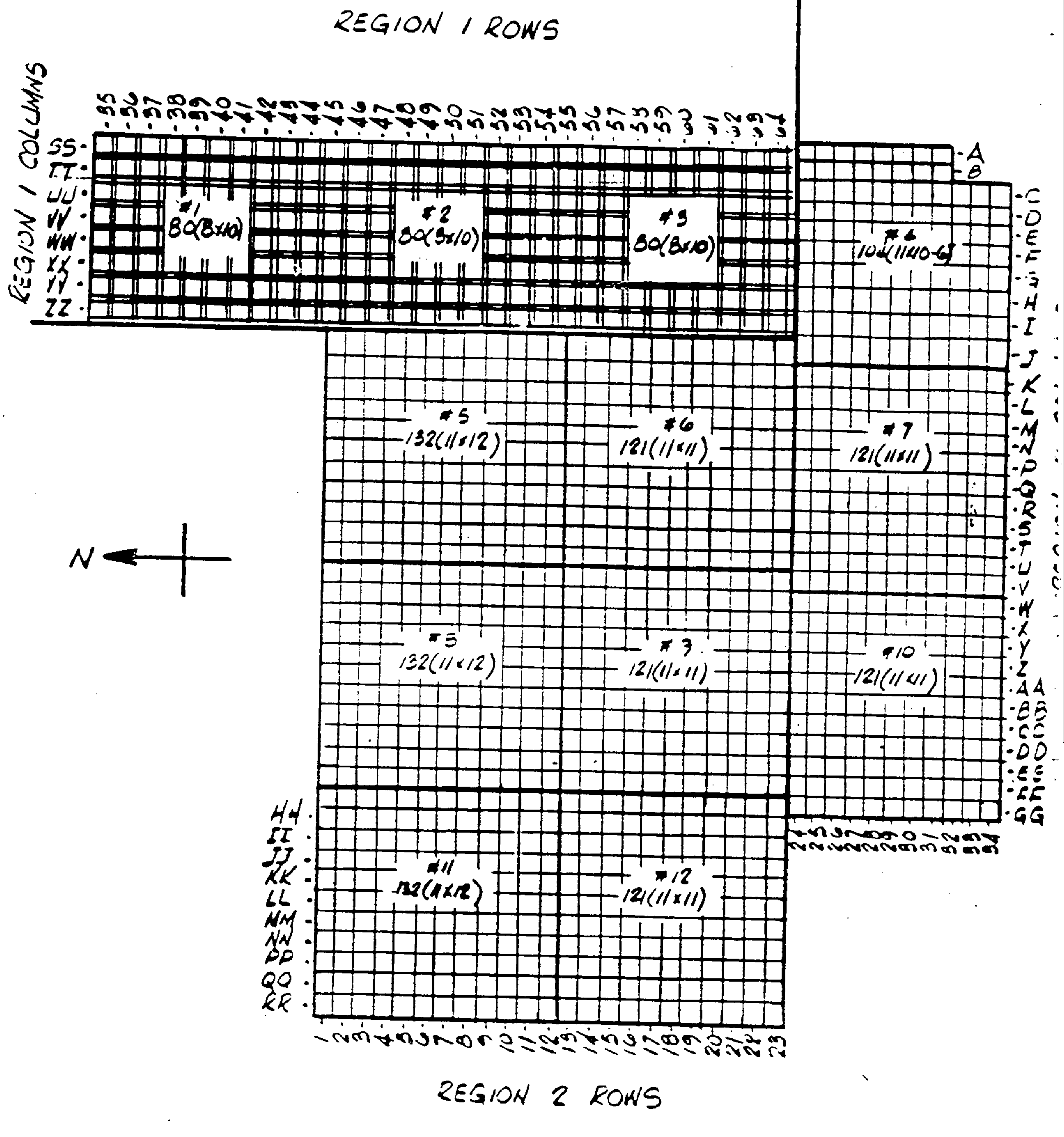


Figure B 3.7.16-1 (Page 1 of 1)
Maximum Density Spent Fuel Pit (SFP)
Racks, Regions and Indexing

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.16:
"Spent Fuel Assembly Storage"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.8-4	173	173	No TSCRs	No TSCRs for this Page	N/A
3.8-7	173	173	No TSCRs	No TSCRs for this Page	N/A
F 3.8-1	173	173	No TSCRs	No TSCRs for this Page	N/A
F 3.8-2	173	173	No TSCRs	No TSCRs for this Page	N/A
F 3.8-3	90	90	No TSCRs	No TSCRs for this Page	N/A

Add Condition A and Req Act A.1 — A.5

Add SR 3.7.16.1 — A.4

ITS 3.7.16
A.1 A.2

SEE RELOCATED CTS

5. Hoists or cranes utilized in handling irradiated fuel shall be deadload tested before fuel movement begins. The load assumed by the hoists or cranes for this test must be equal to or greater than the maximum load to be assumed by the hoists or cranes during the fuel handling operation. A thorough visual inspection of the hoists or cranes shall be made after the deadload test prior to fuel handling.

SEE ITS 3.7.13

6. The fuel storage building emergency ventilation system shall be operable whenever irradiated fuel is being handled within the fuel storage building. The emergency ventilation system may be inoperable when irradiated fuel is in the fuel storage building, provided irradiated fuel is not being handled and neither the spent fuel cask nor the cask crane are moved over the spent fuel pit during the periods of inoperability.

CTS 3.8.C.7

LCO 3.7.16

7. ~~The spent fuel storage racks consist of two regions, as shown on Figure 3.8-3: Region 1 (Columns SS-ZZ, Rows 35-64) and Region 2 (Columns A-RR, Rows 1-34).~~ — LA.1 Fuel storage is restricted in each region as follows:

3.7.16.a a. As specified in Figure ~~3.8-2~~ 3.7.16-1 Only Type 2 fuel assemblies to be stored in Region 2 ~~shall have a minimum burnup exposure as a function of initial enrichment~~. — A.3

3.7.16.b b. As specified in Figure 3.8-1, Type 1 A and Type 2 fuel assemblies to be stored in Region 1 consist of 3 types (Type A, B, C), depending on their initial enrichment and current burnup. Restrictions on location of fuel in Region 1 are as follows: — A.3

3.7.16.c.1 1. Type ~~A~~ 1A assemblies may be stored anywhere in Region 1.

3.7.16.c.2 2. A Type ~~B~~ 1B assembly may be stored anywhere in Region 1, provided it is not face-adjacent to a Type ~~C~~ 1C assembly.

3.7.16.c.3 3. Type ~~C~~ 1C assemblies may not be stored in Row 64 or Column ZZ of Region 1. A Type 1C assembly may be stored in any other Region 1 location provided that

3.7.16.c.4 all surrounding (face-adjacent) locations are occupied by Type 1A assemblies, or Type 2, non-fuel components or empty. — A.3

SEE ITS 3.9.1

D. When any fuel assemblies are in the reactor vessel and the reactor vessel head bolts are less than fully tensioned, the boron concentration of all filled portions of the Reactor Coolant System and the refueling canal shall be maintained uniform and sufficient to ensure that the more restrictive of the following reactivity conditions is met; either:

A.1

As shown in Figure 3.8-3, the maximum density spent fuel storage racks consist of two regions: Region 1 (Columns SS-ZZ, Rows 35-64) and Region 2 (Columns A-RR, Rows 1-34). Each region has been separately analyzed for close packed storage, where all cells in that region contain fuel of the highest allowable reactivity.

The Region 1 area has also been analyzed for storage of high-enrichment and low-burnup fuel. Figure 3.8-1 categorizes Region 1 fuel assemblies as a function of their initial enrichment and current burnup into Types A, B, and C. Each type has different restrictions as to how it may be stored in Region 1. The least reactive assemblies, which are Type A assemblies, may be stored anywhere in Region 1. The most reactive assemblies, which are Type C assemblies, are stored only in Region 1 with the restrictions of Technical Specification 3.8.C.7.b.3, due to their high reactivity. Type C assemblies cannot be stored face-adjacent to anything more reactive than Type A fuel assemblies. There are no additional restrictions defining storage requirements for diagonally-adjacent fuel assemblies in Region 1. In addition, to prevent a criticality interaction with Region 2 fuel assemblies, Type C assemblies cannot be stored in Column ZZ or Row 64.

The following criteria should be used to categorize Region 1 fuel assemblies. Unburned fuel assemblies at or below 4.2 w/o enrichment are Type A. Unburned fuel assemblies at or below 4.6 w/o enrichment (but greater than 4.2 w/o enrichment) are Type B. Fuel assemblies whose burnup puts them on or above the diagonal line below the Type A zone are defined as Type A.

Fuel assemblies to be stored in Region 2 of the spent fuel racks must have a minimum burnup exposure as a function of initial enrichment as specified in Figure 3.8-2. Administrative controls will provide verification that each fuel assembly to be placed in Region 2 satisfies the burnup criterion.

Mechanical stops incorporated on the bridge rails of the fuel storage building crane make it impossible for the bridge of the crane to travel further north than a point directly over the spot in the spent fuel pit that is reserved for the spent fuel cask. Therefore, it will be impossible to carry any object over the spent fuel storage areas north of the spot in the pit that is reserved for the cask with either the 40 or 5-ton hook of the fuel storage building crane. It is possible to use the fuel storage building crane to carry objects over the spent fuel storage areas that are directly east of the spot in the pit that is reserved for the cask. However, the technical specifications and plant procedures prevent any object weighing more than 2,000 pounds from being moved over any region of the spent fuel pit. Therefore, the storage areas directly east of the spot in the pit that is reserved for the cask are protected from heavy load handling by administrative controls.

Dead load tests and visual inspection of the hoists and cranes before handling irradiated fuel provide assurance that the hoists or cranes are capable of proper operation.

<u>References</u>

(1) FSAR - Section 9.5.2
(2) FSAR - Section 9.3

Amendment No. 69, 70, 72, 86, 90, 114, ~~Letter dated Oct 2, 1992~~, 173

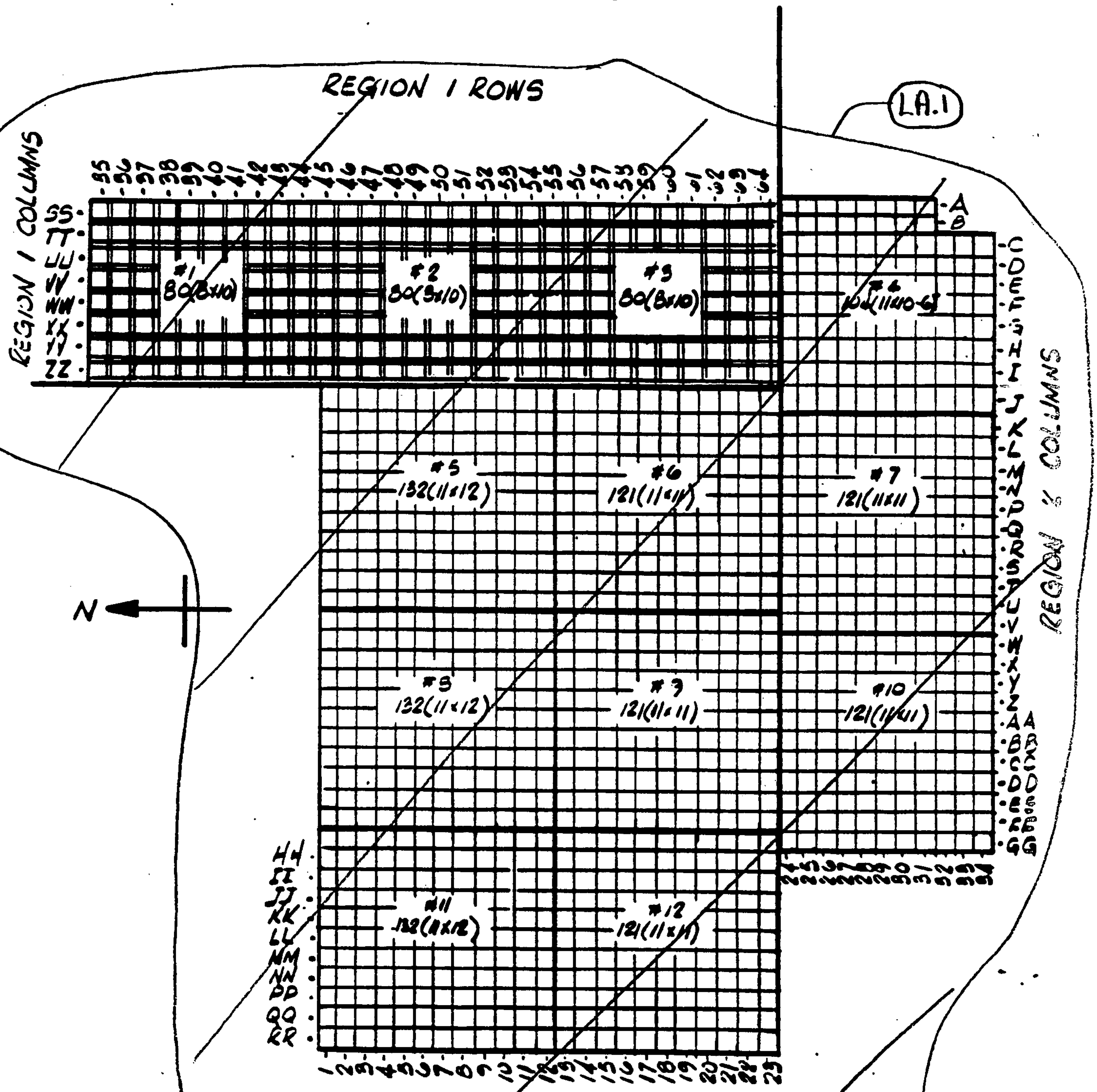
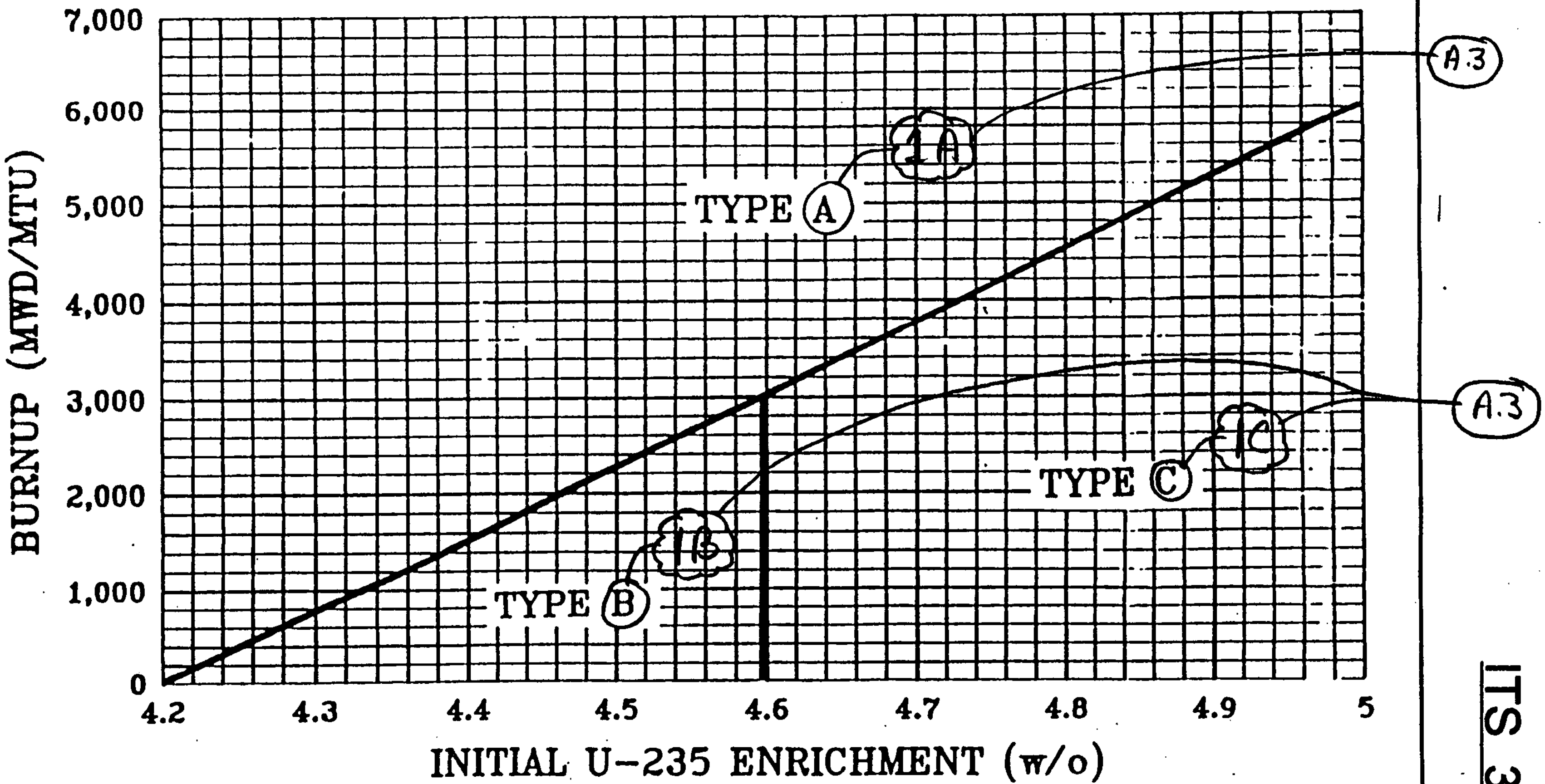


FIGURE 3.8-3
MAXIMUM DENSITY SPENT FUEL PIT (SFP) RACKS
REGIONS AND INDEXING

Fuel Classification for Storage in Spent Fuel Pit A.3

Figure 3.8-1

~~Spent Fuel Pit Region 1 Type Definition~~



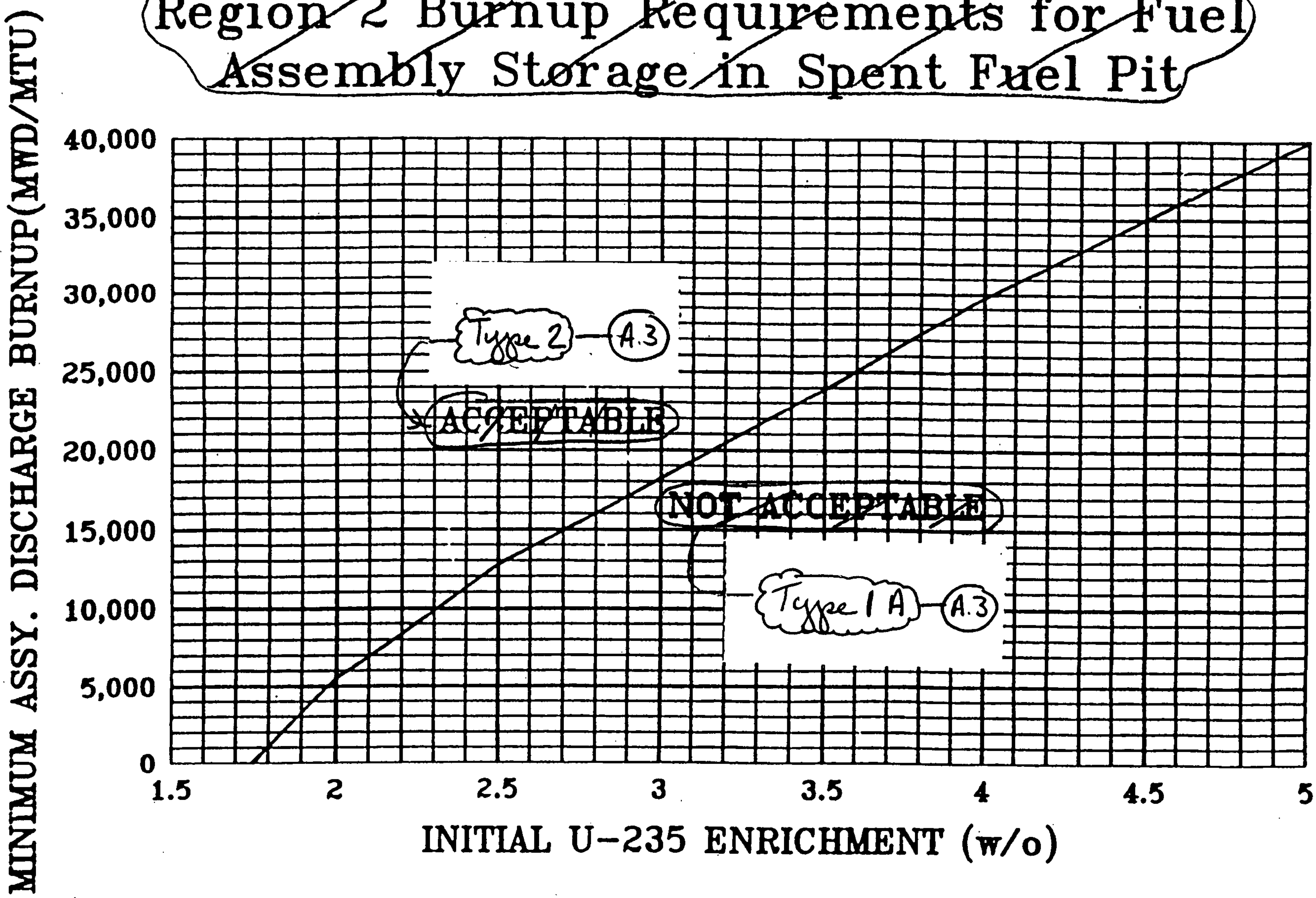
Note: Fresh (unburned) fuel is defined as fuel with a burnup of 0 MWD/MTU.

Figure ~~3.8-2~~ 3.7.16-1

~~Region 2 Burnup Requirements for Fuel Assembly Storage in Spent Fuel Pit~~

Fuel Classification for Storage in Spent Fuel Pit

A.3



ITS 3.7.16

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.16:
"Spent Fuel Assembly Storage"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.8.C.7 specifies restrictions on the storage locations for fuel in the spent fuel pit based on the fuel classification of each fuel assembly based on the initial enrichment and burnup in accordance with CTS Figures 3.8-1 and 3.8-2. ITS LCO 3.7.16 maintains the identical restrictions on the storage locations for fuel in the spent fuel pit; however, nomenclature was revised to improve clarity as follows:

a. CTS Figures 3.8-1 and 3.8-2 were combined into a single Figure, ITS Figure 3.7.16-1, Fuel Assembly Classification for Storage in the Spent Fuel Pit. Note that CTS Figure 3.8-1 represents a small section of CTS Figure 3.8-2.

b. The domain in CTS Figure 3.8-2 labeled "Acceptable" (i.e., acceptable for storage in Region 2 or Region 1) was re-labeled as "Type 2." The domain in CTS Figure 3.8-2 labeled "Not Acceptable" (i.e., not acceptable for storage in Region 2 but acceptable for Region 1) was re-labeled as "Type 1A." The domains in CTS Figure 3.8-1 labeled A, B and C were renamed 1A, 1B and 1C, respectively.

ITS LCO 3.7.16 restrictions for fuel storage were revised to reflect the nomenclature changes described above with no changes in the technical requirements. This is an administrative change with no adverse impact on safety because there is no change to the existing requirement.

A.4 CTS 3.8.C.7 specifies requirements for fuel assembly storage locations in the spent fuel pit based on a combination of initial enrichment and burnup; however, no explicit requirements are specified for verification that these requirements for fuel assembly storage locations. ITS SR 3.7.16.1 is added to require verification by administrative means that the initial enrichment and burnup of each fuel assembly and the storage location meets LCO 3.7.16 requirements. This SR must be performed prior to storing the fuel assembly in the spent fuel pit and requires that fuel assemblies are placed in the appropriate position as part of each fuel movement. This is an administrative change with no impact on safety because the proposed action is a reasonable interpretation of the existing requirement.

A.5 CTS 3.8.C.7 specifies requirements for fuel assembly storage locations in the spent fuel pit based on a combination of initial enrichment and burnup; however, no explicit requirements are specified if the requirements for fuel assembly storage locations are not met. ITS LCO 3.7.16 maintains the requirements for fuel assembly storage locations. Additionally, ITS LCO 3.7.16, Required Action A.1, is added to require action to be initiated immediately to move a noncomplying fuel assembly from the improper location if the requirements of the LCO are not met. This is an administrative change with no impact on safety because the proposed action is a reasonable interpretation of the existing requirement.

ITS LCO 3.7.16, Required Action A.1, is modified by a note which states that LCO 3.0.3 does not apply. This statement is needed because LCO 3.0.3 would require a reactor shutdown if ITS LCO 3.7.16, Required Action A.1, is not performed. In this condition, a reactor shutdown is not a satisfactory response because it does not eliminate the potential for criticality in the fuel storage pit. This is an administrative change with no impact on safety because the proposed action is a reasonable interpretation of the existing requirement.

MORE RESTRICTIVE

None

LESS RESTRICTIVE

None

REMOVED DETAIL

LA.1 CTS 3.8.C.7 and CTS Figure 3.8-3 describe the layout of the spent fuel storage racks. This information is not included in ITS 3.7.16 and is relocated to the Bases for ITS 3.7.16. This is acceptable because the requirements and restrictions for fuel assembly storage in the spent fuel pit are retained in ITS 3.7.16. The ITS 5.5.13, Technical Specifications (TS) Bases Control Program, is designed to assure that changes to the ITS Bases do not result in changes to the Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight is maintained for the information being relocated out of the Technical Specifications.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.16:
"Spent Fuel Assembly Storage"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.16:
"Spent Fuel Assembly Storage"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.16

This ITS Specification is based on NUREG-1431 Specification No. **3.7.17**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
N/A	N/A	NO GENERIC CHANGES ARE POSTED AGAINST THIS SPECIFICATION.	Not Applicable	Not Applicable	N/A

<CTS>

3.7 PLANT SYSTEMS

3.7.~~17~~ 16 Spent Fuel Assembly Storage

Insert: 3.7-38-01

<3.8.C.7> <DOC A3> <DOC LA.1>

LCO 3.7.~~17~~ 16 ~~The combination of initial enrichment and burnup of each spent fuel assembly stored in [Region 2] shall be within the Acceptable [Burnup Domain] of Figure 3.7.17-1 or in accordance with Specification 4.3.1.1.~~ DB.1

APPLICABILITY: Whenever any fuel assembly is stored in ~~[Region 2] of~~ the spent fuel ~~storage pool~~ pit.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC A.5> A. Requirements of the LCO not met.	A.1 ---------NOTE--------- LCO 3.0.3 is not applicable. --------------------- Initiate action to move ~~the noncomplying fuel assembly from [Region 2]~~. Insert: 3.7-38-02	Immediately

DB.1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
<DOC A.4> SR 3.7.~~17~~ 16.1	Verify by administrative means the initial enrichment and burnup of ~~the~~ each fuel assembly ~~is in accordance with Figure 3.7.17-1 or Specification 4.3.1.1.~~ Insert: 3.7-38-03	Prior to storing the fuel assembly in ~~[Region 2]~~ the spent fuel pit

DB.1

Typical

NUREG-1431 Markup Inserts
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

<u>INSERT: 3.7-38-01</u>

<3.8.c.7>
<DOC A.3>
Fuel assemblies stored in the spent fuel pit shall be classified in accordance with Figure 3.7.16-1 based on initial enrichment and burnup; and,

Fuel assembly storage location within the spent fuel pit shall be restricted based on the Figure 3.7.16-1 classification as follows:

<DOC A.3> a. Fuel assemblies classified as Type 2 may be stored in any location in either Region 1 or Region 2;

<3.8.c.7.b> b. Fuel assemblies classified as Type 1A, 1B or 1C shall be stored in Region 1;

<3.8.c.7.b> c. Fuel assembly storage location within Region 1 shall be restricted as follows:

<3.8.c.7.b.1> 1. Type 1A assemblies may be stored anywhere in Region 1;

<3.8.c.7.b.2> 2. Type 1B assemblies may be stored anywhere in Region 1, except a Type 1B assembly shall not be stored face-adjacent to a Type 1C assembly;

<3.8.c.7.b.3> 3. Type 1C assemblies shall not be stored in Row 64 or in Column ZZ; and

<3.8.c.7.b.3> 4. Type 1C assemblies shall be stored in Region 1 locations where all face-adjacent locations are as follows:
   - a) occupied by Type 2 or Type 1A assemblies, or
   - b) occupied by non-fuel components, or
   - c) empty.

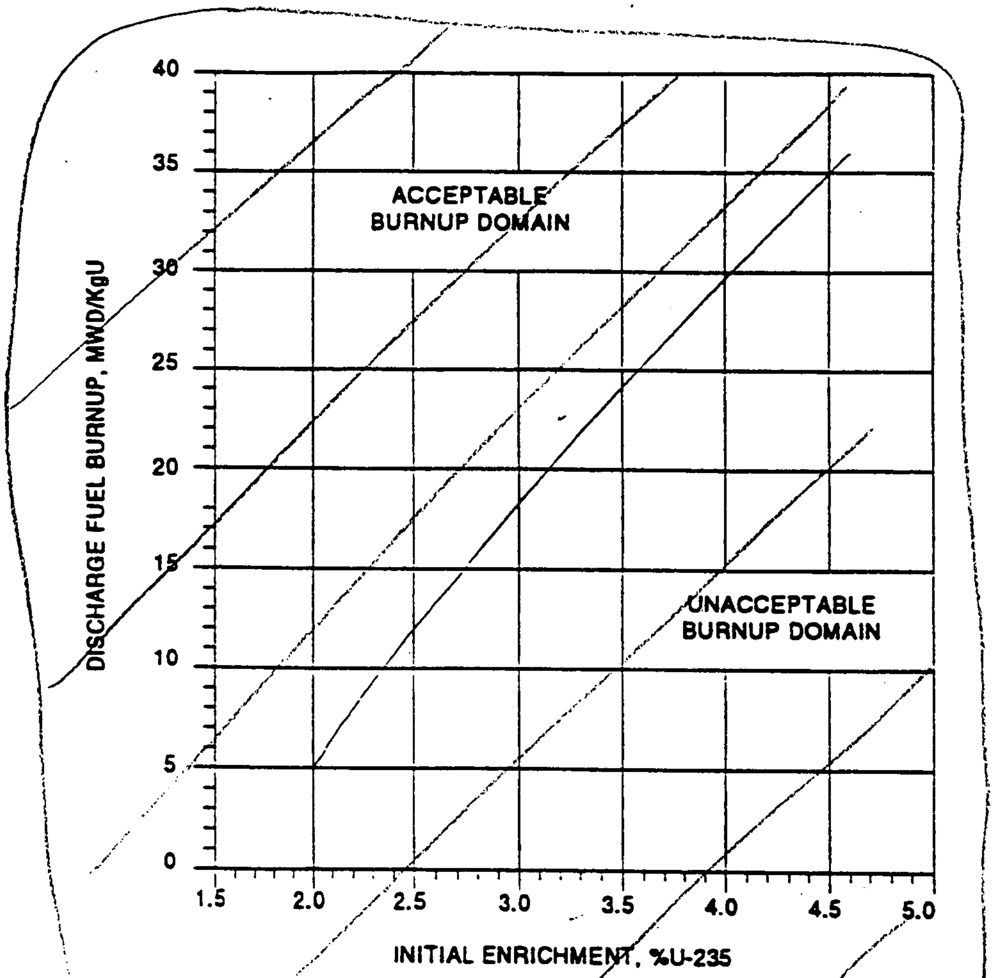
NUREG-1431 Markup Inserts
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

<u>INSERT: 3.7-38-02</u>

fuel to restore compliance with LCO 3.7.16.

<u>INSERT: 3.7-38-03</u>

and that the storage location meets LCO 3.7.16 requirements.



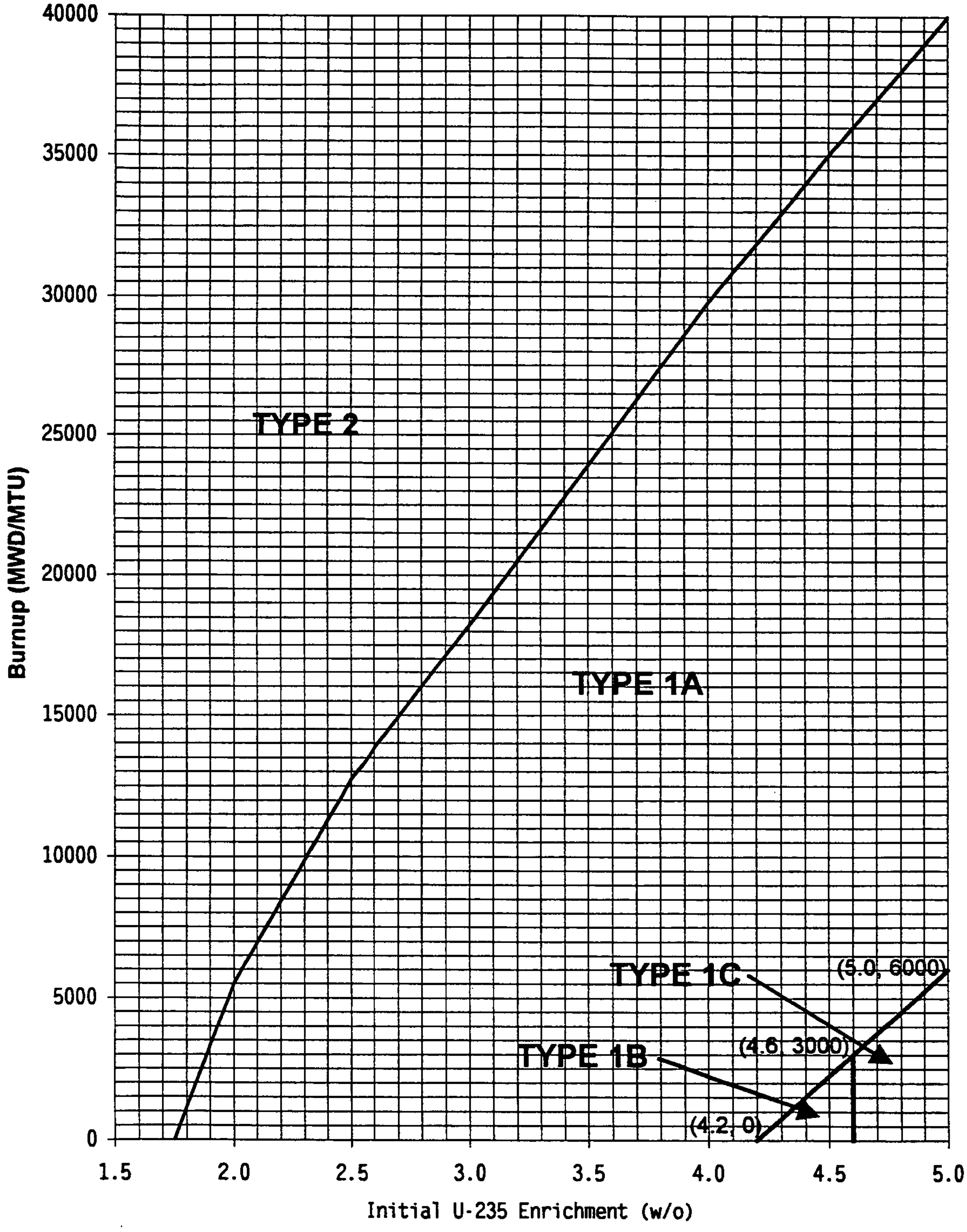
Not to be used for Operation.
For illustration purposes only.

Figure 3.7.17-1 (page 1 of 1)
Fuel Assembly Burnup Limits in Region 2

Insert:
3.7-39-01

Insert.
3.7-39-02

Insert. 3.7-39-01



INSERT: 3.7-39-02

Figure 3.7.16-1 (Page 1 of 1)
Fuel Assembly Classification
for Storage in the Spent Fuel Pit

B 3.7 PLANT SYSTEMS

B 3.7.~~17~~ 16 Spent Fuel Assembly Storage

PA.1

BASES

pit (SFP)

BACKGROUND

In the Maximum Density Rack (MDR) ~~(Refs. 1 and 2)~~ design, the spent fuel ~~storage~~ pool is divided into two separate and distinct regions. ~~which, for the purpose of criticality considerations, are considered as separate pools. [Region 1], with [336] storage positions, is designed to accommodate new fuel with a maximum enrichment of [4.65] wt% U-235, or spent fuel regardless of the discharge fuel burnup. [Region 2], with [2670] storage positions, is designed to accommodate fuel of various initial enrichments which have accumulated minimum burnups within the acceptable domain according to Figure 3.7.17-1, in the accompanying LCO. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored~~ in accordance with paragraph 4.3.1.1 in Section 4.3, Fuel Storage.

Insert: B3.7-85-01

pit

The water in the spent fuel storage pool normally contains soluble boron, which results in large subcriticality margins under actual operating conditions. However, the NRC guidelines, based upon the accident condition in which all soluble poison is assumed to have been lost, specify that the limiting k_{eff} of 0.95 be evaluated in the absence of soluble boron. Hence, the design of both regions is based on the use of unborated water, which maintains each region in a subcritical condition during normal operation with the regions fully loaded. The double contingency principle discussed in ANSI N-16.1-1975 and the April 1978 NRC letter (Ref. ~~3~~ 1) allows credit for soluble boron under other abnormal or accident conditions, ~~since~~ because only a single accident need be considered at one time. For example, the ~~most severe~~ accident scenario ~~is associated with the~~ include movement of ~~fuel~~ a type IC fuel assembly from ~~[Region 1 to Region 2]~~, ~~and~~ or accidental misloading of a fuel assembly in ~~[Region 2]~~. ~~This~~ These events could ~~potentially~~ increase the potential for criticality of ~~[Region 2]~~. To mitigate these postulated criticality related accidents, boron ~~is dissolved in the pool water~~ is in the Spent Fuel Pit. Safe operation of the ~~MDR~~ SFP with no movement of assemblies ~~may therefore be~~ is achieved by controlling the location of each assembly in accordance with the accompanying LCO. However, Prior to movement of an assembly, it is necessary to perform SR 3.7.~~16~~ 15.1.

Insert: B3.7.85-02

Insert: B3.7-85-03

Insert: B3.7.85-04

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

DB.1

INSERT: B 3.7-85-01

The layout of the IP3 MDR is shown in Figure B 3.7.16-1, IP3 Maximum Density Spent Fuel Pit Racks, Regions and Indexing. As shown in Figure B 3.7.16-1, Region 1 (i.e., Columns SS-ZZ, Rows 35-64) includes 240 storage positions and Region 2 (i.e., Columns A-RR, Rows 1-34) includes 1105 storage positions. Region 1 is analyzed for storage of high-enrichment and low-burnup fuel. Region 2 is analyzed for storage of fuel with either higher burnup or lower enrichment. Each region has been separately analyzed for close packed storage when all cells in that region contain fuel of the highest reactivity that is allowed by this LCO. This analysis is the basis for the restrictions on fuel storage locations established by this LCO.

Prior to storage in the spent fuel pit, fuel assemblies are classified as to the level of reactivity based on the initial enrichment and burnup. This classification is made using Figure 3.7.16-1, Fuel Assembly Classification for Storage in the Spent Fuel Pit. This classification is used to determine in which region a particular fuel assembly may be stored and if additional restrictions must be applied to the assemblies in adjacent locations.

<u>INSERT: B 3.7-85-01</u> (continued)

Figure 3.7.16-1, Fuel Assembly Classification for Storage in the Spent Fuel Pit, is used to classify each assembly into one of the following categories based on initial U-235 enrichment and burnup:

Type 2 assemblies are the least reactive assemblies and include any assembly for which the combination of initial enrichment and burnup places the assembly in the domain labeled Type 2 in Figure 3.7.16-1. Type 2 assemblies may be stored in any location in Region 1 or Region 2 of Figure B 3.7.16-1.

<u>Type 1A</u> assemblies are more reactive than Type 2 assemblies and include any assembly for which the combination of initial enrichment and burnup places the assembly in the domain labeled Type 1A in Figure 3.7.16-1. Type 1A assemblies must be stored in Region 1 of Figure B 3.7.16-1 but may be stored in any location in Region 1.

<u>Type 1B</u> assemblies are more reactive than Type 1A assemblies and include any assembly with an initial enrichment > 4.2 but ≤ 4.6 wt% U-235 with a burnup that places the assembly in the domain labeled Type 1B in Figure 3.7.16-1. Type 1B assemblies must be stored in Region 1 of Figure B 3.7.16-1 but may be stored in any location in Region 1 except in locations that are face-adjacent to a Type 1C assembly.

<u>Type 1C</u> assemblies are the most reactive bundles permitted in accordance with Specification 4.3, Fuel Storage. Type 1C assemblies include any assembly with an initial enrichment > 4.6 but ≤ 5.0 wt% U-235 with a burnup that places the assembly in the domain labeled Type 1C on Figure 3.7.16-1. Type 1C assemblies must be stored in Region 1 of Figure B 3.7.16-1. Type 1C assemblies cannot be stored in Row 64 or in Column ZZ. Additionally, Type 1C assemblies must be stored in a location where all face-adjacent locations are as follows: a) occupied by Type 2 or Type 1A assemblies; b) occupied non-fuel components; or, c) empty.

Fuel assemblies with an initial enrichment > 5.0 wt% U-235 are not shown on Figure 3.7.16-1 and cannot be stored in the spent fuel pit

NUREG-1431 Markup Inserts
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

INSERT: B 3.7-85-02

and fuel storage locations, enrichment and burnup are in conformance with analysis assumptions and this LCO.

INSERT: B 3.7-85-03

concentration is verified to be within the limits specified in LCO 3.7.15, Spent Fuel Pit Boron Concentration, prior to movement of fuel assemblies in the spent fuel pit.

INSERT: B 3.7-85-04

(i.e., verification that the spent fuel pit boron concentration is within limit).

BASES (continued)

APPLICABLE SAFETY ANALYSES	The hypothetical accidents can only take place during or as a result of the movement of an assembly (~~Ref. 4~~). For these accident occurrences, the presence of soluble boron in the spent fuel storage pool (controlled by LCO 3.7.~~16~~, "Fuel Storage Pool Boron Concentration") prevents criticality in both regions. By closely controlling the movement of each assembly and by checking the location of each assembly after movement, the time period for potential accidents may be limited to a small fraction of the total operating time. During the remaining time period with no potential for accidents, the operation may be under the auspices of the accompanying LCO.
	The configuration of fuel assemblies in the fuel storage pool satisfies Criterion 2 of ~~the NRC Policy Statement~~.
LCO	The restrictions on the placement of fuel assemblies within the spent fuel pool ~~in accordance with Figure 3.7.17-1~~, in ~~the accompanying LCO~~, ensures the k_{eff} of the spent fuel ~~storage~~ pool will always remain < 0.95, assuming the pool to be flooded with unborated water. Fuel assemblies not meeting the criteria of Figure [3.7.17-1] shall be stored in accordance with Specification 4.3.1.1 in Section 4.3.
APPLICABILITY	This LCO applies whenever any fuel assembly is stored in ~~[Region 2] of~~ the ~~fuel storage pool~~.
ACTIONS	A.1
	Required Action A.1 is modified by a Note indicating that LCO 3.0.3 does not apply.
	When the configuration of fuel assemblies stored in ~~[Region 2]~~ the spent fuel ~~storage pool~~ is not in accordance with ~~Figure 3.7.17-1, or paragraph 4.3.1.1~~, the immediate action is to initiate action to make the necessary fuel assembly movement(s) to bring the configuration into compliance with ~~Figure 3.7.17-1 or Specification 4.3.1.1~~.

pit

References 2 and 3

15

pit

10 CFR 50.36

PA.1

Insert: B 3.7-86-02

pit

16

may not

Insert: B 3.7-86-01

spent fuel pit

pit

this LCO

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

INSERT: B 3.7-86-01

Fuel assemblies stored in the spent fuel pit are classified in accordance with Figure 3.7.16-1 based on initial enrichment and burnup which is indicative of fuel assembly reactivity. Based on this classification, fuel assembly storage location within the spent fuel pit and storage location relative to other assemblies is restricted in accordance with the rules established by this LCO.

Fuel assemblies with an initial enrichment > 5.0 wt% U-235 are not shown on Figure 3.7.16-1 because fuel assemblies with this enrichment cannot be stored in the spent fuel pit in accordance with limits established in Technical Specification Section 4.3.

INSERT: B 3.7-86-02

are based on initial enrichment and burnup which is indicative of fuel assembly reactivity. Storage locations are then restricted to

BASES

ACTIONS

A.1 (continued)

If unable to move irradiated fuel assemblies while in MODE 5 or 6, LCO 3.0.3 would not be applicable. If unable to move irradiated fuel assemblies while in MODE 1, 2, 3, or 4, the action is independent of reactor operation. Therefore, inability to move fuel assemblies is not sufficient reason to require a reactor shutdown.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~17~~.1 16

This SR verifies by administrative means in each location that the initial enrichment and burnup of the fuel assembly is in accordance with ~~Figure [3.7.17-1] in~~ the accompanying LCO. ~~For fuel assemblies in the unacceptable range of Figure 3.7.17-1, performance of this SR will ensure compliance with Specification 4.3.1.1.~~

REFERENCES

1. ~~Callaway FSAR, Appendix 9.1A, "The Maximum Density Rack (MDR) Design Concept."~~

2. ~~Description and Evaluation for Proposed Changes to Facility Operating Licenses DPR-39 and DPR-48 (Zion Power Station).~~

1 ~~3~~. Double contingency principle of ANSI N16.1-1975, as specified in the April 14, 1978 NRC letter (Section 1.2) and implied in the proposed revision to Regulatory Guide 1.13 (Section 1.4, Appendix A).

~~4. FSAR, Section [15.7.4].~~

Insert:
B 3.7-87-01

Insert:
B 3.7-87-02

INSERT: B 3.7-87-01

2. SER related to Amendment 173 to Facility Operating License No. DPR-64, Indian Point Nuclear Generating Unit No. 3, April 15, 1997.

3. Criticality Analysis of the Indian Point 3 Fresh and Spent Fuel Racks, Westinghouse Commercial Nuclear Fuel Division, October, 1996.

INSERT: B 3.7-87-02

[Insert is CTS Figure 3.8-3, MDR Spent Fuel Pit Layout]

Figure B 3.7.16-1 (Page 1 of 1)
Maximum Density Spent Fuel Pit (SFP)
Racks, Regions and Indexing

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.16:
"Spent Fuel Assembly Storage"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.16 - SPENT FUEL ASSEMBLY STORAGE

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCES FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.17:
"Secondary Specific Activity"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.7 PLANT SYSTEMS

3.7.17 Secondary Specific Activity

LCO 3.7.17 The specific activity of the secondary coolant shall be ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3. AND A.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.7.17.1 Verify the specific activity of the secondary coolant is ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131.	31 days

B 3.7 PLANT SYSTEMS

B 3.7.17 Secondary Specific Activity

BASES

BACKGROUND

Activity in the secondary coolant results from steam generator tube outleakage from the Reactor Coolant System (RCS). Under steady state conditions, the activity is primarily iodines with relatively short half lives and, thus, indicates current conditions. During transients, I-131 spikes have been observed as well as increased releases of some noble gases. Other fission product isotopes, as well as activated corrosion products in lesser amounts, may also be found in the secondary coolant.

A limit on secondary coolant specific activity during power operation minimizes releases to the environment because of normal operation, anticipated operational occurrences, and accidents.

This limit is lower than the activity value that might be expected from a 1 gpm tube leak (LCO 3.4.13, "RCS Operational LEAKAGE") of primary coolant at the limit of 1.0 μCi/gm (LCO 3.4.16, "RCS Specific Activity"). The steam line failure is assumed to result in the release of the noble gas and iodine activity contained in the steam generator inventory, the feedwater, and the reactor coolant LEAKAGE. Most of the iodine isotopes have short half lives, (i.e., < 20 hours).

Operating a unit at the allowable limits could result in a 2 hour exclusion area boundary (EAB) or site boundary exposure of a small fraction (i.e., 10%) of the 10 CFR 100 (Ref. 1) limits (i.e., 25 rem whole body and 300 rem thyroid), or the limits established as the NRC staff approved licensing basis.

APPLICABLE SAFETY ANALYSES

The accident analysis of the main steam line break (MSLB), as discussed in the FSAR, Chapter 14.2 (Ref. 2) assumes the initial secondary coolant specific activity to have a radioactive isotope concentration of 0.10 μCi/gm DOSE EQUIVALENT I-131. This assumption is used in the analysis for determining the

BASES

APPLICABLE SAFETY ANALYSES (continued)

radiological consequences of the postulated accident. The accident analysis, based on this and other assumptions, shows that the radiological consequences of an MSLB do not exceed a small fraction of the EAB (i.e., site boundary) limits (Ref. 1) for whole body and thyroid dose rates.

With the loss of offsite power, the remaining steam generators are available for core decay heat dissipation by venting steam to the atmosphere through the MSSVs and steam generator atmospheric dump valves (ADVs). The Auxiliary Feedwater System supplies the necessary makeup to the steam generators. Venting continues until the reactor coolant temperature and pressure have decreased sufficiently for the Residual Heat Removal System to complete the cooldown.

In the evaluation of the radiological consequences of this accident, the activity released from the steam generator connected to the failed steam line is assumed to be released directly to the environment. The unaffected steam generator is assumed to discharge steam and any entrained activity through the MSSVs and ADVs during the event. Credit is taken in the analysis for activity plateout or retention; however, the resultant radiological consequences represent a conservative estimate of the potential integrated dose due to the postulated steam line failure.

Secondary specific activity limits satisfy Criterion 2 of 10 CFR 50.36.

LCO

As indicated in the Applicable Safety Analyses, the specific activity of the secondary coolant is required to be ≤ 0.10 μCi/gm DOSE EQUIVALENT I-131 to limit the radiological consequences of a Design Basis Accident (DBA) to a small fraction of the required limit (Ref. 1).

Monitoring the specific activity of the secondary coolant ensures that when secondary specific activity limits are exceeded, appropriate actions are taken in a timely manner to place the

BASES

LCO (continued)

unit in an operational MODE that would minimize the radiological consequences of a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, the limits on secondary specific activity apply due to the potential for secondary steam releases to the atmosphere.

In MODES 5 and 6, the steam generators are not normally used for heat removal. Both the RCS and steam generators are depressurized, and primary to secondary LEAKAGE is minimal. Therefore, monitoring of secondary specific activity is not required.

ACTIONS

A.1 and A.2

DOSE EQUIVALENT I-131 exceeding the allowable value in the secondary coolant, is an indication of a problem in the RCS and contributes to increased post accident doses. If the secondary specific activity cannot be restored to within limits within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1

This SR verifies that the secondary specific activity is within the limits of the accident analysis. A gamma isotopic analysis of the secondary coolant, which determines DOSE EQUIVALENT I-131,

BASES

SURVEILLANCE REQUIREMENTS

SR 3.7.17.1 (continued)

confirms the validity of the safety analysis assumptions as to the source terms in post accident releases. It also serves to identify and trend any unusual isotopic concentrations that might indicate changes in reactor coolant activity or LEAKAGE. The 31 day Frequency is based on the detection of increasing trends of the level of DOSE EQUIVALENT I-131, and allows for appropriate action to be taken to maintain levels below the LCO limit.

REFERENCES

1. 10 CFR 100.11.
2. FSAR, Chapter 14.2.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.17:
"Secondary Specific Activity"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.1-35	121	121	No TSCRs	No TSCRs for this Page	N/A
T 4.1-2(1)	139	139	No TSCRs	No TSCRs for this Page	N/A

CTS 3.1.G. **Secondary Coolant Activity**

Mode 1, 2, 3 and 4 M.1

Specification

LCO 3.7.17 Applicability 1. ~~Whenever the average reactor coolant temperature is ≥ 350°F,~~ the specific activity of the secondary coolant system shall be ≤ 0.10 μCi/gram of Dose Equivalent I-131.

2. If the specific activity of the secondary coolant system exceeds 0.10 μCi/gram of Dose Equivalent I-131, the reactor shall be immediately brought to the ~~hot shutdown condition with T_{avg} <350°F utilizing normal operating procedures.~~ Mode 3 in 6 hrs, Mode 5 in 36 hrs M.1

Basis

~~The limitations on secondary system specific activity ensure that the resultant off-site radiation dose will be limited to a small fraction of 10CFR Part 100 limits in the event of a steam line rupture. The restriction of 0.1 μCi/gram Dose Equivalent I-131 in the secondary system limits the two-hour thyroid exposure dose to 1.5 rem at the site boundary under these accident conditions. This accident analysis also includes the effects of a coincident 500 gallons per day primary to secondary tube leak in the steam generator of the affected steam line and considers the effect of a coincident iodine spike. Accident meteorological conditions are assumed (5% X/Q) and a decontamination factor of 10 is applied between the water and steam phases.~~ A.1

Amendment No. 121

TABLE 4.1-2 (Sheet 1 of 2)

FREQUENCIES FOR SAMPLING TESTS			
Sample	**Analysis**	**Frequency**	**Maximum Time Between Analysis**
1. Reactor Coolant	Gross Activity(1)	5 days/week(1)(4)	3 days(4)
	Tritium Activity	Weekly(1)	10 days
	Boron concentration	2 days/week	5 days
	Radiochemical (gamma)(2) Spectral Check	Monthly	45 days
	Oxygen and Chlorides Concentration	3 times per 7 days	3 days
	Fluorides Concentration	Weekly	10 days
	$\bar{E}$ Determination (3)	Semi-Annually	30 weeks
	Isotopic Analysis for I-131, I-133, I-135	Once per 14 days(5)	20 days
2. Boric Acid Tank	Boron Concentration, Chlorides	Weekly	10 days
3. Spray Additive Tank	NaOH Concentration	Monthly	45 days
4. Accumulators	Boron Concentration	Monthly	45 days
5. Refueling Water Storage Tank	Boron Concentration pH, Chlorides	Monthly	45 days
	Gross Activity	Quarterly	16 weeks
SR 3.7.17.1 6. Secondary Coolant	I-131 Equivalent (Isotopic Analysis)	Monthly 31 days	45 days SR 3.0.2 M.2
	Gross Activity	3 times per 7 days	3 days
7. Component Cooling Water	Gross Activity, Corrosion Inhibitor and pH	Monthly	45 days
8. Spent Fuel Pool (when fuel stored)	Gross Activity Boron Concentration, Chlorides	Monthly	45 days

Amendment No. 139

ITS 3.7.17

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.17:
"Secondary Specific Activity"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.7.17 - SECONDARY SPECIFIC ACTIVITY

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the Improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

MORE RESTRICTIVE

M.1 CTS 3.1.G.1 requires that secondary system specific activity must be within the required limit whenever the average reactor coolant temperature is $\geq 350^{\circ}F$ (i.e., Modes 1, 2 and 3). ITS 3.7.17 requires that secondary system specific activity must be within the required limit in Modes 1, 2, 3 and 4. In conjunction with the change in applicability, ITS 3.7.17, Required Action A.1 and A.2 require that the unit be placed in and Mode 5 (i.e., outside the expanded Applicability) if the specific activity is not within the limit.

This change, adding Mode 4 to the Applicability for secondary system specific activity, is needed because SG venting to the atmosphere may be needed to remove decay heat in Mode 4. This change is acceptable because it does not introduce any operation which is un-analyzed while requiring that the LCO for secondary system specific activity is applicable whenever there is a potential that SG venting to the atmosphere may be needed to remove decay heat. Therefore, this change has no adverse impact on safety.

M.2 CTS Table 4.1-2, Item 6, requires verification that secondary system specific activity (i.e., Dose Equivalent I-131) is within specified limits every month with a maximum time between secondary coolant specific activity analyses of 45 days. ITS 3.7.17 maintains the requirement to verify secondary system specific activity every 31 days but limits the maximum time between analyses based on ITS SR 3.0.2 which allows a 25% grace period for a maximum interval of approximately 7.5 days. This change is not needed to satisfy technical requirements but is being adopted for consistency with the NUREG-1431 and to simplify application of ITS SR 3.0.2. This change has no impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.17:
"Secondary Specific Activity"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.7.17 - SECONDARY SPECIFIC ACTIVITY

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.17:
"Secondary Specific Activity"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.7.17

This ITS Specification is based on NUREG-1431 Specification No. **3.7.18**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
CEOG-078	**173**	DELETE INCORRECT BASES STATEMENT REGARDING I-131 EQUILIBRIUM	Approved by NRC	Incorporated	**T.1**
WOG-001.2	**003 R1**	RELOCATE REFERENCES TO THYROID DOSE CONVERSION FACTORS TO THE BASES.	Rejected by NRC	Not Incorporated.	**N/A**

<CTS>

3.7 PLANT SYSTEMS

3.7.~~18~~ 17 Secondary Specific Activity

<3.1.G>

LCO 3.7.~~18~~ 17 The specific activity of the secondary coolant shall be ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131.

<3.1.G>
<DOC M.1>

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

<3.1.G>
DOC M.1

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Specific activity not within limit.	A.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	A.2 Be in MODE 5.	36 hours

SURVEILLANCE REQUIREMENTS

<Table 4.1-2, Item 6>
<DOC M.2>

SURVEILLANCE	FREQUENCY
SR 3.7.~~18~~ 17.1 Verify the specific activity of the secondary coolant is ≤ ~~[~~0.10~~]~~ μCi/gm DOSE EQUIVALENT I-131.	31 days

Typical

B 3.7 PLANT SYSTEMS

B 3.7.~~16~~ 17 Secondary Specific Activity

BASES

BACKGROUND

Activity in the secondary coolant results from steam generator tube outleakage from the Reactor Coolant System (RCS). Under steady state conditions, the activity is primarily iodines with relatively short half lives and, thus, indicates current conditions. During transients, I-131 spikes have been observed as well as increased releases of some noble gases. Other fission product isotopes, as well as activated corrosion products in lesser amounts, may also be found in the secondary coolant.

A limit on secondary coolant specific activity during power operation minimizes releases to the environment because of normal operation, anticipated operational occurrences, and accidents.

This limit is lower than the activity value that might be expected from a 1 gpm tube leak (LCO 3.4.13, "RCS Operational LEAKAGE") of primary coolant at the limit of [1.0] μCi/gm (LCO 3.4.16, "RCS Specific Activity"). The steam line failure is assumed to result in the release of the noble gas and iodine activity contained in the steam generator inventory, the feedwater, and the reactor coolant LEAKAGE. Most of the iodine isotopes have short half lives, (i.e., < 20 hours). ~~I-131, with a half life of 8.04 days concentrates faster than it decays, but does not reach equilibrium because of blowdown and other losses.~~ T.1

~~With the specified activity limit, the resultant 2 hour thyroid dose to a person at the exclusion area boundary (EAB) would be about 0.58 rem if the main steam safety valves (MSSVs) open for 2 hours following a trip from full power.~~

exclusion area boundary (EAB) or site boundary

Operating a unit at the allowable limits could result in a 2 hour EAB exposure of a small fraction (i.e., 10%) of the 10 CFR 100 (Ref. 1) limits, or the limits established as the NRC staff approved licensing basis. (i.e., 25 rem whole body and 300 rem thyroid)

(continued)

BASES (continued)

APPLICABLE SAFETY ANALYSES

The accident analysis of the main steam line break (MSLB), as discussed in the FSAR, Chapter ~~[15]~~ 14.2 (Ref. 2) assumes the initial secondary coolant specific activity to have a radioactive isotope concentration of [0.10] μCi/gm DOSE EQUIVALENT I-131. This assumption is used in the analysis for determining the radiological consequences of the postulated accident. The accident analysis, based on this and other assumptions, shows that the radiological consequences of an MSLB do not exceed a small fraction of the ~~unit~~ EAB (i.e. site boundary) limits (Ref. 1) for whole body and thyroid dose rates.

With the loss of offsite power, the remaining steam generators are available for core decay heat dissipation by venting steam to the atmosphere through the MSSVs and steam generator atmospheric dump valves (ADVs). The Auxiliary Feedwater System supplies the necessary makeup to the steam generators. Venting continues until the reactor coolant temperature and pressure have decreased sufficiently for the Residual Heat Removal System to complete the cooldown.

In the evaluation of the radiological consequences of this accident, the activity released from the steam generator connected to the failed steam line is assumed to be released directly to the environment. The unaffected steam generator is assumed to discharge steam and any entrained activity through the MSSVs and ADVs during the event. ~~Since no~~ ~~C~~credit is taken in the analysis for activity plateout or retention, however, the resultant radiological consequences represent a conservative estimate of the potential integrated dose due to the postulated steam line failure.

Secondary specific activity limits satisfy Criterion 2 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

LCO

As indicated in the Applicable Safety Analyses, the specific activity of the secondary coolant is required to be ≤ [0.10] μCi/gm DOSE EQUIVALENT I-131 to limit the radiological consequences of a Design Basis Accident (DBA) to a small fraction of the required limit (Ref. 1).

Monitoring the specific activity of the secondary coolant ensures that when secondary specific activity limits are exceeded, appropriate actions are taken in a timely manner

(continued)

BASES

LCO (continued)

to place the unit in an operational MODE that would minimize the radiological consequences of a DBA.

APPLICABILITY

In MODES 1, 2, 3, and 4, the limits on secondary specific activity apply due to the potential for secondary steam releases to the atmosphere.

In MODES 5 and 6, the steam generators are not normally ~~being~~ used for heat removal. Both the RCS and steam generators are depressurized, and primary to secondary LEAKAGE is minimal. Therefore, monitoring ~~of~~ secondary specific activity is not required.

ACTIONS

A.1 and A.2

DOSE EQUIVALENT I-131 exceeding the allowable value in the secondary coolant, is an indication of a problem in the RCS and contributes to increased post accident doses. If the secondary specific activity cannot be restored to within limits within the associated Completion Time, the unit must be placed in a MODE in which the LCO does not apply. To achieve this status, the unit must be placed in at least MODE 3 within 6 hours, and in MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging unit systems.

SURVEILLANCE REQUIREMENTS

SR 3.7.~~18~~17.1

This SR verifies that the secondary specific activity is within the limits of the accident analysis. A gamma isotopic analysis of the secondary coolant, which determines DOSE EQUIVALENT I-131, confirms the validity of the safety analysis assumptions as to the source terms in post accident releases. It also serves to identify and trend any unusual isotopic concentrations that might indicate changes in reactor coolant activity or LEAKAGE. The 31 day Frequency is based on the detection of increasing trends of the level

(continued)

BASES

SURVEILLANCE REQUIREMENTS	SR 3.7.~~18~~17.1 (continued) of DOSE EQUIVALENT I-131, and allows for appropriate action to be taken to maintain levels below the LCO limit.
REFERENCES	1. 10 CFR 100.11. 2. FSAR, Chapter ~~15~~. 14.2

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.7.17: "Secondary Specific Activity"

PART 6:

Justification of Differences between NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.7.17 - SECONDARY SPECIFIC ACTIVITY

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

None

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-173, Rev.0 (CEOG-78) which deletes an incorrect statement in the Bases regarding I-131 equilibrium.

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point
3

Improved

Technical Specifications

Conversion Submittal

Volume 13

New York Power
Authority

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.1:
"AC Sources - Operating"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources – Operating

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite Electrical Power Distribution System; and

b. Three diesel generators (DGs) (31, 32 and 33) capable of supplying the onsite power distribution subsystem(s)

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for OPERABLE offsite circuit. AND	1 hour AND Once per 8 hours thereafter (continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)		---------NOTE----------- Only required if 13.8 kV offsite circuit is supplying 6.9 kV bus 5 or 6 and the Unit Auxiliary Transformer is supplying 6.9 kV bus 2 or 3. -----------------------	
	A.2	Verify automatic transfer of 6.9 kV buses 1, 2, 3, and 4 to 6.9 kV bus 5 and 6 is disabled.	1 hour AND Once per 8 hours thereafter
	AND		
	A.3	Declare inoperable required feature(s) with no offsite power available when its redundant required feature(s) is inoperable.	24 hours from discovery of no available offsite power to one train concurrent with inoperability of redundant required feature(s)
	AND		
	A.4	Restore offsite circuit to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. One DG inoperable.	B.1	Perform SR 3.8.1.1 for the offsite circuits.	1 hour AND Once per 8 hours thereafter
	AND		
	B.2	Declare inoperable the required features supported by the inoperable DG when its required redundant feature is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature
	AND		
	B.3.1	Determine OPERABLE DG(s) are not inoperable due to common cause failure.	24 hours
		OR	
	B.3.2	Perform SR 3.8.1.2 for OPERABLE DGs.	24 hours
	AND		
	B.4	Restore DG to OPERABLE status.	72 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. Two offsite circuits inoperable.	C.1 Declare required features inoperable when its redundant required feature is inoperable.	12 hours from discovery of Condition C concurrent with inoperability of redundant required feature
	AND	
	C.2 Restore one offsite circuit to OPERABLE status.	24 hours
D. One offsite circuit inoperable. AND One DG inoperable.	-----------NOTE---------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems – Operating," when Condition D is entered with no offsite or DG AC power source to any train. ------------------------	
	D.1 Restore offsite circuit to OPERABLE status.	12 hours
	OR	
	D.2 Restore DG to OPERABLE status.	12 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. Two or more DGs inoperable.	E.1 Restore at least two DGs to OPERABLE status.	2 hours
F. Required Action and associated Completion Time of Condition A, B, C, D, or E not met.	F.1 Be in MODE 3.	6 hours
	<u>AND</u>	
	F.2 Be in MODE 5.	36 hours
G. One or more offsite circuits and two DGs inoperable.	G.1 Enter LCO 3.0.3.	Immediately
H. Two offsite circuits and one or more DGs inoperable.	H.1 Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each offsite circuit.	7 days
SR 3.8.1.2	-------------------NOTE------------------- All DG starts may be preceded by an engine prelube period. -- Verify each DG starts from standby conditions and achieves in ≤ 10 seconds, voltage ≥ 422 V and ≤ 500 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	31 days
SR 3.8.1.3	-------------------NOTES------------------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This SR shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2. -- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ 1575 kW and ≤ 1750 kW.	31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.4	Verify each day tank contains ≥ 115 gal of fuel oil.	31 days
SR 3.8.1.5	Check for and remove accumulated water from each day tank.	31 days
SR 3.8.1.6	Verify the fuel oil transfer system operates to automatically transfer fuel oil from DG storage tank to the day tank.	31 days
SR 3.8.1.7	Verify manual transfer of AC power sources from the normal offsite circuit to the alternate offsite circuit.	24 months
SR 3.8.1.8	-------------------NOTES-------------------- 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Only required to be met if 138 kV offsite circuit is supplying 6.9 kV bus 5 and 6 and the Unit Auxiliary Transformer is supplying 6.9 kV bus 2 or 3. --- Verify automatic transfer of AC power for 6.9 kV buses 2 and 3 from the unit auxiliary transformer to 6.9 kV buses 5 and 6.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	Verify each DG's automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal except: a. Engine overspeed; b. Low lube oil pressure; and c. Overcrank relay.	24 months
SR 3.8.1.10	-------------------NOTE-------------------- Momentary transients outside the load and power factor ranges do not invalidate this test. --- Verify each DG operating at a power factor ≤ 0.9 operates for ≥ 8 hours: a. For ≥ 105 minutes loaded ≥ 1837 kW and ≤ 1925 kW; and b. For the remaining hours of the test loaded ≥ 1575 kW and ≤ 1750 kW.	24 months
SR 3.8.1.11	-----------------NOTE---------------------- Load timers associated with equipment that has automatic initiation capability disabled are not required to be operable. --- Verify each time delay relay functions within the required design interval.	18 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	-------------------NOTES------------------- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. 3. This SR may be performed on one safeguards power train or on two or three safeguards power trains simultaneously. ---	
	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; and c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ 10 seconds, 2. energizes auto-connected emergency loads through individual load timers, 3. achieves steady state voltage ≥ 422 V and ≤ 500 V, 4. achieves steady state frequency ≥ 58.8 Hz and ≤ 61.2 Hz, and 5. supplies permanently connected and auto-connected emergency loads for ≥ 5 minutes.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.13	-------------------NOTE------------------- 1. All DG starts may be preceded by an engine prelube period. 2. Performance of SR 3.8.1.12 may be used to satisfy the requirements of this SR if all three diesel generators are started simultaneously. -- Verify when started simultaneously from standby condition, each DG achieves, in ≤ 10 seconds, voltage ≥ 422 V and ≤ 500 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz.	10 years

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources – Operating

BASES

BACKGROUND

The unit Electrical Power Distribution System AC sources consist of the following: two offsite circuits (the normal or 138 kV circuit and the alternate or 13.8 kV circuit), each of which has a preferred and backup feeder; and, the onsite standby power circuit consisting of three diesel generators. As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems.

The onsite plant distribution system is configured around 6.9 kV buses Nos. 1, 2, 3, 4, 5, and 6. All offsite power to safeguards buses enter the plant via 6.9 kV buses Nos.5 and 6 which are connected to the 138 kV (normal) offsite circuit and have the ability to be connected to the 13.8 kV (alternate) offsite circuit. 6.9 kV buses 1, 2, 3, and 4, which supply power to the 4 reactor coolant pumps (RCPs), typically receive power from the main generator via the unit auxiliary transformer (UAT) when the plant is at power. However, when the main generator or UAT is not capable of supporting this arrangement, 6.9 kV buses 1 and 2 receive offsite power via 6.9 kV bus 5 and 6.9 kV buses 3 and 4 receive offsite power via 6.9 kV bus 6. Following a unit trip, 6.9 kV buses 1, 2, 3, and 4 will auto transfer (fast transfer) to 6.9 kV buses 5 and 6 in order to receive offsite power. The 6.9 kV buses supply power to the 480 V buses using 6.9 kV/480 V station service transformers (SSTs) as follows: 6.9 kV bus 5 supplies 480 V bus 5A via SST 5; 6.9 kV bus 6 supplies 480 V bus 6A via SST 6; 6.9 kV bus 2 supplies 480 V bus 2A via SST 2; and, 6.9 kV bus 3 supplies 480 V bus 3A via SST 3.

The onsite AC Power Distribution System begins with 480 V buses 5A, 6A, 2A and 3A and is divided into 3 safeguards power trains (trains) consisting of the 480 volt safeguards bus(es) and associated AC electrical power distribution subsystems, 125 volt DC bus subsystems, and 120 volt vital AC instrument bus subsystems. The three trains are designed such that any two trains are capable of meeting minimum requirements for accident

BASES

BACKGROUND (Continued)

mitigation and/or safe shutdown. The three safeguards power trains are train 5A (480 volt bus 5A and associated DG 33), train 6A (480 volt bus 6A and associated DG 32), and train 2A/3A (480 volt buses 2A and 3A and associated DG 31).

Offsite power is supplied to the plant from the transmission network by two electrically and physically separated circuits, the 138 kV or normal circuit and the 13.8 kV or alternate circuit. Each of the offsite circuits from the Buchanan substation into the plant is required to be supported by a physically independent circuit from the offsite network into the Buchanan substation. All offsite power enters the plant via 6.9 kV buses Nos.5 and 6 which are connected to the 138 kV (normal) offsite circuit and have the ability to be connected to the 13.8 kV (alternate) offsite circuit. This arrangement satisfies the requirement that at least one of the two required circuits can within a few seconds, provide power to safety-related equipment following a loss-of-coolant accident. Operator action is required to supply offsite power to the plant using the 13.8 kV (alternate) offsite source.

The 138 kV circuit and the 13.8 kV circuit each have a preferred and a backup feeder that connects the circuit to the Buchanan substation. For both the 138 kV and 13.8 kV circuits, the preferred IP3 feeder is the backup IP2 feeder and the backup IP3 feeder is the preferred IP2 feeder.

For the 138 kV (i.e., normal) offsite circuit, IP2 and IP3 each have a dedicated Station Auxiliary Transformer (SAT) that can be supplied by either a preferred or backup feeder. The normal or 138 kV offsite circuit, including the SAT used exclusively for IP3, is designed to supply all IP3 loads, including 4 operating RCPs and ESF loads, when using either the preferred (95331) or backup (95332) feeder. There are no special restrictions when IP2 and IP3 are both using the same 138 kV feeder concurrently.

For the 13.8 kV (i.e., alternate) offsite circuit, there is a 13.8 kV/6.9 kV auto-transformer associated with feeder 13W92 and a 13.8 kV/6.9 kV auto-transformer associated with feeder 13W93. Feeder 13W93 and its associated auto-transformer is the preferred

BASES

BACKGROUND (Continued)

feeder for the IP3 alternate (13.8 kV) circuit and the backup feeder for the IP2 alternate (13.8 kV) circuit. Feeder 13W92 and its associated auto-transformer is the backup feeder for the IP3 alternate (13.8 kV) circuit and the preferred feeder for the IP2 alternate (13.8 kV) circuit.

An offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network to the onsite 480 V ESF bus(es).

The onsite standby power source consists of 3 480 V diesel generators (DGs) with a separate DG dedicated to each of the safeguards power trains. Safeguards power train 5A (480 V bus 5A) is supported by DG 33; safeguards power train 6A (480 V bus 6A) is supported by DG 32; and, safeguards power train 2A/3A (480 V buses 2A and 3A) is supported by DG 31. A DG starts automatically on a safety injection (SI) signal or on an ESF bus undervoltage signal (refer to LCO 3.3.5, "Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation"). After the DG has started, it will automatically tie to its respective bus after offsite power is tripped as a consequence of ESF bus undervoltage, independent of or coincident with an SI signal. The DGs will also start and operate in the standby mode without tying to the ESF bus on an SI signal alone. Following the trip of offsite power, an undervoltage signal strips nonpermanent loads from the ESF bus. When the DG is tied to the ESF bus, loads are then sequentially connected to its respective ESF bus by individual load timers. The sequencing logic controls the permissive and starting signals to motor breakers to prevent overloading the DG by automatic load application.

In the event of a loss of 138 kV or normal offsite source, the ESF electrical loads are automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident (DBA) such as a loss of coolant accident (LOCA).

Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the DG in

BASES

BACKGROUND (Continued)

the process. Within 1 minute after the initiating signal is received, all loads needed to recover the unit or maintain it in a safe condition are returned to service.

Ratings for DGs 31, 32 and 33 are consistent with the requirements of Regulatory Guide 1.9 (Ref. 3). The 3 DGs each consist of an Alco model 16-251-E engine coupled to a Westinghouse 2188 kVA, 0.8 power factor, 900 rpm, 3 phase, 60 cycle, 480 volt generator. Each DG has a 2 hr rating of 1950 kW and a continuous rating of 1750 kW. The ESF loads that are powered from the 480 V ESF buses are listed in Reference 2.

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient analyses in the FSAR, Chapter 6 (Ref. 4) and Chapter 14 (Ref. 5), assume ESF systems are OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System (RCS), and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the Accident analyses and is based upon meeting the design basis of the unit. This results in maintaining at least 2 of the 3 safeguards power trains energized from either onsite or offsite AC sources during Accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC power; and

b. A worst case single failure.

The AC sources satisfy Criterion 3 of 10 CFR 50.36.

BASES

LCO

Two qualified circuits between the offsite transmission network and the onsite Electrical Power System and separate and independent DGs for each train ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA.

There are two qualified circuits (normal and alternate) from the transmission network at the Buchanan Station to the onsite electric distribution system. Each of these circuits must be supported by a circuit from the offsite network into the Buchanan substation that is physically independent from the other circuit to the extent practical. The circuits into the Buchanan substation that satisfy these requirements are 96951, 96952 and 95891.

The 138 kV (i.e., normal) offsite circuit consists of one of the following: 138 kV feeder 95331 (preferred); or, 138 kV feeder 95332 (backup). Additionally, the 138 kV/6.9 kV station auxiliary transformer, circuit breakers ST5 and ST6 which supply 6.9 kV buses 5 and 6, and the following components which are common to the normal and alternate offsite circuits:

a. The 480 V bus 5A supply consisting of 6.9 kV bus 5, station service transformer 5, and circuit breakers SS5 and 52/5A;

b. The 480 V bus 2A supply consisting of 6.9 kV bus 5, circuit breaker UT2-ST5 (including autotransfer function), 6.9 kV bus 2, station service transformer 2, and circuit breakers SS2 and 52/2A;

c. The 480 V bus 6A supply consisting of 6.9 kV bus 6, station service transformer 6, and circuit breakers SS6 and 52/6A; and,

d. The 480 V bus 3A supply consisting of 6.9 kV bus 6, circuit breaker UT3-ST6 (including autotransfer function), 6.9 kV bus 3, station service transformer 3, and circuit breakers SS3 and 52/3A.

The 13.8 kV (i.e., alternate) offsite circuit consists of one of the following: 13.8 kV feeder 13W93 and its associated

BASES

LCO (continued)

13.8/6.9 kV autotransformer (preferred); or, 13.8 kV feeder 13W92 and its associated 13.8/6.9 kV autotransformer (backup). Circuit breakers GT35 and GT36, which supply 6.9 kV buses 5 and 6, and the following components are common to the normal and alternate offsite circuits:

a. The 480 V bus 5A supply consisting of 6.9 kV bus 5, station service transformer 5, and circuit breakers SS5 and 52/5A;

b. The 480 V bus 2A supply consisting of 6.9 kV bus 5, circuit breaker UT2-ST5 (not including autotransfer function), 6.9 kV bus 2, station service transformer 2, and circuit breakers SS2 and 52/2A;

c. The 480 V bus 6A supply consisting of 6.9 kV bus 6, station service transformer 6, and circuit breakers SS6 and 52/6A; and,

d. The 480 V bus 3A supply consisting of 6.9 kV bus 6, circuit breaker UT3-ST6 (not including autotransfer function), 6.9 kV bus 3, station service transformer 3, and circuit breakers SS3 and 52/3A.

If the alternate (13.8 kV) offsite circuit is being used to supply power to the plant and the Unit Auxiliary Transformer is supplying 6.9 kV bus 1, 2, 3 or 4, the size of the 13.8 kV/6.9 kV auto-transformers requires that the automatic transfer of 6.9 kV buses 1, 2, 3, and 4 to 6.9 kV buses 5 and 6 (i.e., the offsite circuit) be disabled because neither 13.8 kV/6.9 kV auto-transformer is capable of supplying 4 operating RCPs. This requirement is not intended to preclude supplying 6.9 kV buses 1, 2, 3, and 4 using the alternate offsite circuit via the 13.8 kV/6.9 kV auto-transformers once sufficient loads have been stripped from 6.9 kV buses 1, 2, 3, and 4 to assure that the 13.8 kV/6.9 kV auto-transformer will not be overloaded by these manual actions.

If IP3 and IP2 are both using a single 13.8 kV feeder (13W92 or 13W93), administrative controls are used to ensure that the

BASES

LCO (continued)

13.8 kV/6.9 kV auto-transformer load restrictions will not be exceeded.

Each offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ESF buses.

Three DGs must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This will be accomplished within 10 seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ESF buses.

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

The AC sources in each safeguards power train must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete.

For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus, and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE automatic or manual transfer capability to the ESF buses to support OPERABILITY of that circuit.

APPLICABILITY

The AC sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

BASES

APPLICABILITY (continued)

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources – Shutdown."

ACTIONS

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition C, for two offsite circuits inoperable, is entered.

A.2

Required Action A.2, which applies only if the 13.8 kV offsite power circuit is being used to feed 6.9 kV buses 5 and 6 and the UAT is supplying 6.9 kV bus 1, 2, 3 or 4, prevents the automatic transfer of 6.9 kV buses 1, 2, 3, and 4 from the UAT to offsite power after a unit trip. Transfer of buses 1, 2, 3, and 4 from the UAT to offsite power could result in overloading the 13.8 kV/6.9 kV autotransformer. Having the auto-transfer disabled when the 13.8 kV offsite power circuit is supplying power to 6.9 kV buses 5 and 6 does not, by itself, cause either the 138 kV or 13.8 kV offsite power circuit to be inoperable. This requirement is not intended to preclude supplying 6.9 kV buses 1, 2, 3, and 4 using the alternate offsite circuit via the 13.8 kV/6.9 kV auto-transformers once sufficient loads have been stripped from 6.9 kV buses 1, 2, 3, and 4 to assure that the 13.8 kV/6.9 kV auto-transformer will not be overloaded by these manual actions. Automatic transfer of buses 1, 2, 3, and 4 can be disabled by placing 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 in the "pull-out" position.

BASES

ACTIONS

A.2 (continued)

Although the auto-transfer feature is normally disabled prior to placing the 13.8 kV offsite power circuit in service, a Completion Time of 1 hour ensures that the 13.8 kV circuit meets requirements for Operability promptly when the alternate offsite circuit is configured to support the response of ESF functions.

A.3

Required Action A.3, which only applies if the train will not be powered automatically from an offsite source when the main turbine generator trips, is intended to provide assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of redundant required features. Required safety features are designed with a redundant safety feature that is powered from a different safeguards power train. Therefore, if a required safety feature is supported by an inoperable offsite circuit, then the failure of the DG associated with that required safety feature will not result in the loss of a safety function because the safety function will be accomplished by the redundant safety feature that is powered from a different safeguards power train. However, if a required safety feature is supported by an inoperable offsite circuit and the redundant safety feature that is powered from a different safeguards power train is also inoperable, then the failure of the DG associated with that required safety feature will result in the loss of a safety function. Required Action A.3 ensures that appropriate compensatory measures are taken for a Condition where the loss of a DG could result in the loss of a safety function when an offsite circuit is not OPERABLE.

The turbine driven auxiliary feedwater pump is not required to be considered a redundant required feature, and, therefore, not required to be determined OPERABLE by this Required Action, because the design is such that the remaining OPERABLE motor driven auxiliary feedwater pump(s) is capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.

BASES

ACTIONS

A.3 (continued)

The Completion Time for Required Action A.3 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. The train will not have offsite power automatically supplying its loads following a trip of the main turbine generator; and

b. A required feature powered from another safaeguards power train is inoperable.

If at any time during the existence of Condition A (one offsite circuit inoperable) a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

Discovering that offsite power is not automatically available to one train of the onsite Electrical Power Distribution System coincident with one or more inoperable required support or supported features, or both, that are associated with the other train that has offsite power, results in starting the Completion Times for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the two remaining safeguards power trains of the onsite Distribution System. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

BASES

ACTIONS (continued)

A.4

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite Distribution System.

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.1

To ensure a highly reliable power source remains with an inoperable DG, it is necessary to verify the availability of the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of redundant required features. Required safety features are designed with a redundant safety feature that is powered from a different safeguards power train. Therefore, if a required safety feature is supported by an inoperable DG, then the failure of the offsite circuit will not result in the loss of a safety function because the safety function will be accomplished by the redundant safety feature that is powered from a different safeguards power train (and DG).

BASES

ACTIONS

B.2 (continued)

However, if a required safety feature is supported by an inoperable DG and the redundant safety feature that is powered from a different safeguards power train is also inoperable, then a loss of offsite power will result in the loss of a safety function. Required Action B.2 ensures that appropriate compensatory measures are taken for a Condition where the loss of offsite power could result in the loss of a safety function when a DG is not OPERABLE.

The turbine driven auxiliary feedwater pump is not required to be considered a redundant required feature, and, therefore, not required to be determined OPERABLE by this Required Action, because the design is such that the remaining OPERABLE motor driven auxiliary feedwater pumps is capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

a. An inoperable DG exists; and

b. A required feature powered from another safeguards power train is inoperable.

If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked.

Discovering one required DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with either OPERABLE DG, results in starting the Completion Time for the Required Action. A COMPLETION TIME of four hours from the discovery of these events existing

BASES

ACTIONS

B.2 (continued)

concurrently is Acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

In this Condition, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite

Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.3.1 and B.3.2

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DGs, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG(s), the other DG(s) would be declared inoperable upon discovery and Condition E of LCO 3.8.1 would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG(s), performance of SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the plant corrective action program will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

BASES

ACTIONS

B.3.1 and B.3.2 (continued)

According to Generic Letter 84-15 (Ref. 7), 24 hours is reasonable to confirm that the OPERABLE DGs are not affected by the same problem as the inoperable DG.

B.4

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.

In Condition B, the remaining OPERABLE DGs and offsite circuits are adequate to supply electrical power to the onsite Distribution System. The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

C.1 and C.2

Required Action C.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.3). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that three complete safeguards power trains are OPERABLE. When a redundant required feature is not OPERABLE, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are included as discussed in the Bases for Required Action A.3.

The Completion Time for Required Action C.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an

BASES

ACTIONS

C.1 and C.2 (continued)

exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

a. All required offsite circuits are inoperable; and

b. A required feature is inoperable.

If at any time during the existence of Condition C (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst

BASES

ACTIONS

C.1 and C.2 (continued)

case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A.

D.1 and D.2

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. When the UAT is being used to supply 6.9 kV buses 1, 2, 3 Or 4 and the 13.8 kV offsite circuit is being used to supply 6.9 kV buses 5 and 6, the autotransfer function is disabled. Therefore, 480 V safeguards buses 2A and 3A (safeguards train 2A/3A) will not be automatically re-energized with offsite power following a plant trip until connected to the offsite circuit by operator action. Therefore, the Required Actions of Condition D are modified by a Note to indicate that when Condition D is entered with no offsite or DG AC source to any train, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems – Operating," must be immediately entered. This allows Condition D to provide requirements for the loss of one offsite circuit and one DG, without regard to whether a train would be de-energized during an event. LCO 3.8.9 provides the appropriate restrictions for a train that would be de-energized.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition D for a period that should not exceed 12 hours.

BASES

ACTIONS

D.1 and D.2 (continued)

In Condition D, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition C (loss of both required offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

E.1

With two or more DGs inoperable, the remaining standby AC sources are not adequate to satisfy analysis assumptions. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

According to Reference 6, with two or more DGs inoperable, operation may continue for a period that should not exceed 2 hours.

F.1 and F.2

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To

BASES

ACTIONS

F.1 and F.2 (continued)

achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1 and H.1

Conditions G and H correspond to a level of degradation in which all redundancy in the AC electrical power supplies has been lost or a loss of safety function has already occurred. Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. 1). Periodic component tests are supplemented by extensive functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3),and Regulatory Guide 1.137 (Ref. 8).

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of 422 V is the value determined to be acceptable in the analysis of the degraded grid condition. This value allows for voltage drop to the terminals of 480 V motors. It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 500 V is equal to the maximum operating voltage specified for 480 V circuit breakers. The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are

BASES

SURVEILLANCE REQUIREMENTS (continued)

equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3).

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. Portions of this SR are satisfied by telephone communication with Consolidated Edison personnel capable of confirming the status of the offsite circuits. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because 6.9 kV bus status and 13.8 kV circuit status are displayed in the control room.

SR 3.8.1.2

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period.

For the purposes of SR 3.8.1.2, the DGs are started from standby conditions. Standby conditions for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

SR 3.8.1.2 requires that, at a 31 day Frequency, the DG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 (continued)

supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter 14 (Ref. 5).

The normal 31 day Frequency for SR 3.8.1.2 is consistent with Regulatory Guide 1.9 (Ref. 3). This Frequency provides adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing. DGs have redundant air start motors and both air start motors are actuated by both channels of the start logic. The DG is OPERABLE when either air start motor is OPERABLE; however, this SR will not demonstrate that both of the air start motors are independently capable of starting the DG. If an air start motor is not capable of performing its intended function, a DG is inoperable until a timed start is conducted using the remaining air start motor. Alternately, this SR may be performed using one air start motor (i.e., redundant air start motor isolated) on a staggered basis to ensure that the DG will start with either air start motor.

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads approximating the maximum expected accident loads. A minimum run time of 60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between 0.8 lagging and 1.0. The 0.8 value is the design rating of the machine, while the 1.0 is an operational limitation to ensure circulating currents are minimized. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 31 day Frequency for this Surveillance is consistent with Regulatory Guide 1.9 (Ref. 3).

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing bus loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and is selected to ensure adequate fuel oil for approximately 1 hour of DG operation at full load.

The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are provided and facility operators would be aware of any large uses of fuel oil during this period.

SR 3.8.1.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel oil day tanks once every 31 days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.5 (continued)

condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are consistent with Regulatory Guide 1.137 (Ref. 8). This SR is for preventative maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its associated day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

The design of fuel transfer systems is such that pumps operate automatically or must be started manually in order to maintain an adequate volume of fuel oil in the day tanks during or following DG testing. Therefore, a 31 day Frequency is appropriate. Since proper operation of fuel transfer systems is an inherent part of DG OPERABILITY, the Frequency of this SR is consistent with the 31 day Frequency for verification of DG operability.

SR 3.8.1.7

Transfer of the offsite power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. The 24 month Frequency of the Surveillance is based on engineering judgment, taking into consideration the unit conditions required to perform the

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.7 (continued)

Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.1.8

Verification that 6.9 kV buses 2 and 3 will auto transfer (fast transfer) from the Unit Auxiliary transformer to 6.9 kV buses 5 and 6 (i.e. station auxiliary transformer) following a loss of voltage on 6.9 kV buses 2 and 3 is needed to confirm the Operability of a function assumed to operate to provide offsite power to safeguards power train 2A/3A following a trip of the main generator.

An actual demonstration of this feature requires the tripping of the main generator while the reactor is at power with the main generator supplying 6.9 kV buses 2 and 3. This will cause perturbations to the electrical distribution systems that could challenge unit safety systems during a plant shutdown. Therefore, in lieu of actually initiating a circuit transfer, testing that adequately shows the capability of the transfer is acceptable. This transfer testing may include any sequence of sequential, overlapping, or total steps so that the entire transfer sequence is verified. The 24 month Frequency is based on engineering judgement taking into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle length.

This SR is modified by two Notes. The reason for Note 1 is that, during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge unit safety systems. Credit may be taken for unplanned events that satisfy this SR. As stated in Note 2, this SR is only required to be met when the 138 kV offsite circuit is supplying 6.9 kV buses 5 and 6 because, if the

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.8 (continued)

13.8 kV circuit is supplying 6.9 kV buses 5 and 6, then the feature tested by this SR is required to be disabled.

SR 3.8.1.9

This Surveillance demonstrates that DG noncritical protective functions are bypassed on a loss of voltage signal concurrent with an ESF actuation test signal, and critical protective functions (engine overspeed, low lube oil pressure, and engine overcrank) trip the DG to avert substantial damage to the DG unit. The noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

The 24 month Frequency is based on engineering judgment, taking into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.8.1.10

IEEE-387-1995 (Ref. 9) requires demonstration once per 24 months that the DGs can start and run continuously at full load capability for an interval of not less than 8 hours, ≥ 105 minutes of which is at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.10 (continued)

In order to ensure that the DG is tested under load conditions that are as close to design conditions as possible, testing must be performed using a power factor of ≤ 0.9. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 24 month Frequency is consistent with the recommendations of Ref. 9, and takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by a note that states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test.

SR 3.8.1.11

Under accident conditions with concurrent loss of offsite power, loads are sequentially connected to the bus by individual load timers to prevent overloading of the DGs due to high motor starting currents. The design load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ESF buses.

The Frequency of 18 months is based on engineering judgment, taking into consideration operating experience that has shown that these components usually pass the SR. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

This SR is modified by a Note that specifies that load timers associated with equipment that has automatic initiation capability disabled are not required to be OPERABLE. This note is needed because these time delay relays affect the OPERABILITY of both the AC sources (offsite power and DG) and the specific load that the relay starts. If a timer fails to start a required load or starts the load later than assumed in the analysis, then the required load is not OPERABLE. If a timer starts the load outside the design interval (early or late), then the DG and offsite source are not OPERABLE because overlap of equipment starts may cause an offsite source to exceed limits for voltage or current or a DG to exceed limits for voltage, current or frequency. Therefore, when an individual load sequence timer is not OPERABLE, it is conservative to disable the automatic initiation capability of that component rather than declare the associated DG inoperable because of the following: the potential for adverse impact on the DG by simultaneous start of ESF equipment is eliminated; all other loads powered from the safeguards power train are available to respond to the event; and, the load with the inoperable timer remains available for a manual start after the one minute completion of the normal starting sequence.

SR 3.8.1.12

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the DG operation during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal. This SR verifies all actions encountered from an ESF signal concurrent with the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

The DG autostart time of 10 seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved.

The requirement to verify the connection and power supply of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation.

In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of 24 months takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of 24 months.

This SR is modified by three Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil and temperature maintained and lube oil continuously circulated consistent with manufacturer recommendations for DGs.

The reason for Note 2 is that the performance of the Surveillance would remove required offsite circuits from service, perturb the electrical distribution system, and challenge safety systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

The reason for Note 3 is to allow the SR to be conducted with only one safeguards train at a time or with two or three safeguards trains concurrently. Allowing the LOOP/LOCA test to be conducted using one safeguards power train and one DG at a time is acceptable because the safeguards power trains are designed to respond to this event independently. Therefore, an individual test for each safeguards power train will provide an adequate verification of plant response to this event.

Allowing the LOOP/LOCA test to be conducted with more than one safeguards trains concurrently is acceptable for the following reasons: plant status is established to minimize impact on core cooling and in accordance with LCO 3.8.2 just as if no DGs are OPERABLE during the performance of this test; and, extensive experience with this test indicates that loss of all AC due to common failure modes and/or undetected interdependence among DGs is not likely.

SR 3.8.1.13

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3).

This SR is modified by two Notes. The reason for Note 1 is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is to allow SR 3.8.1.12 to satisfy the requirements of this SR if SR 3.8.1.12 is performed with more than one safeguards power train concurrently.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.1:
"AC Sources - Operating"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-1	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-2	132 TSCR 98-044	132 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
3.7-2a	54	54	No TSCRs	No TSCRs for this Page	N/A
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A
3.7-3a	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-4	161 TSCR 98-044	161 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
3.7-5	153 IPN 97-175	153 IPN 97-175	IPN 97-175	Changes to Bases Pages	
3.7-6	153 TSCR 98-044	153 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
T 4.1-3(1)	178 TSCR 97-156, 98-043	178 TSCR 97-156, 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated
T 4.1-3(1)	178 TSCR 97-156, 98-043	178 TSCR 97-156, 98-043	IPN 97-156	SR Freq for Main Turbine Stop and Control Valves	Incorporated

Indian Point 3
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Technical Specification 3.8.1:
"AC Sources - Operating"

4.5-1	142	142	No TSCRs	No TSCRs for this Page	N/A
4.6-1	142	142	No TSCRs	No TSCRs for this Page	N/A
4.6-2	155	155	No TSCRs	No TSCRs for this Page	N/A
4.6-3	155	155	No TSCRs	No TSCRs for this Page	N/A

A.1

3.7 AUXILIARY ELECTRICAL SYSTEMS

A.2

~~**Applicability**~~

~~Applies to the availability of electrical power for the operation of plant auxiliaries.~~

~~**Objective**~~

~~To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation, and (2) to provide for the continuing availability of engineered safety features.~~

LCO 3.8.1 **Specification**

Mode 1, 2, 3, 4 A.1

Applicability A. ~~The reactor shall not be brought above the cold shutdown condition unless the following requirements are met:~~

LCO 3.8.1.a ~~1.~~ Two ~~physically independent transmission~~ circuits to ~~Buchanan Substation~~ capable of supplying engineered safeguards loads. LA.1

~~2. 6.9 KV buses 5 and 6 energized from either 138 KV feeder 95331 or 95332.~~

~~3. Either 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 KV power.~~

SEE ITS 3.8.9 4. The four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A, and between buses 3A and 6A, opened. M.2

LCO 3.8.1.b 5. Three diesel generators operable with a minimum onsite supply of 6671 gallons of fuel in each of the three individual underground storage tanks. In addition to the underground storage tanks, 30,026 gallons of fuel compatible for operation with the diesels shall be available onsite or at the Buchanan substation. This 30,026 gallon reserve is for Indian Point Unit No. 3 usage only

SEE ITS 3.8.3

Add note to Req. Actions D.1, D.2 M.2

SEE ITS 3.8.3 and is in addition to the fuel requirements for other nuclear units on the site.

SEE ITS 3.8.4 6. Three batteries plus three chargers and the D.C. distribution systems operable.

SEE ITS 3.8.7 7. No more than one 120 volt A.C. Instrument Bus on the backup power supply.

3.8.1, Actions ~~B.~~ The requirements of 3.7.A may be modified to allow ~~any one~~ of the following power supplies to be inoperable ~~at any one time~~. L.1

Req. Act B.4 ~~1.~~ ~~One diesel of any diesel fuel oil system or a diesel and its~~ SEE ITS 3.8.3 ~~associated fuel oil system~~ may be inoperable for up to 72 hours provided the 138 KV and the 13.8 KV sources of offsite power are available, and the engineered safety features associated with the remaining diesel generator buses are operable. L.2

Req. Act B.2 If the inoperable diesel generator became inoperable due to any cause other than preplanned maintenance or testing, then within 24 hours, either:

Req. Act B.3.1 a. Determine by evaluation, that the remaining operable diesel generators are not inoperable due to common-cause failure. L.3 SEE TSCR 98-044

OR

Req. Act B.3.2 b. Verify by testing, that the remaining diesel generators are operable.

Req. Act A.4 ~~2.~~ The 138 KV or the 13.8 KV sources of power may be inoperable for 48 72 hours provided the three diesel generators are operable. ~~This operation may be extended beyond 48 hours provided the failure is reported to the NRC within the 48 hour period with an outline of the plans for restoration of offsite power and NRC approval is granted.~~ L.4

Add SR 3.8.1.1 and Req. Act A.1 and B.1 M.1

TSCR 98-044

Amendment No. ~~34~~, ~~54~~, ~~132~~

A.1

and UAT is supplying 6.9 kV bus 1, 2, 3 or 4 L.9

3.8.1, Req Act A.2

3. If the 138 KV power source is lost and the 13.8KV power source is being used to feed Buses 5 and 6, ~~in addition to satisfying the requirements of specification 3.7.B.2 above, the 6.9 KV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 in the CCR shall be placed in the "pull-out" position to~~ prevent an automatic transfer of the 6.9 KV buses 1, 2, 3 and 4. within 1 hr and 8 hours thereafter LA.2 A.3

SEE ITS 3.8.4

4. One battery may be inoperable for 2 hours provided the other batteries and the three battery chargers remain operable with one battery charger carrying the D.C. load of the failed battery supply system.

Add Req. Actions C.2 D.1, D.2 E.1 — L.5

Add Req. Actions G.1, H.1 — M.10

Conditions ~~C.~~ C, D, E, G, H If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

Req Act F.1 & F.2 ~~1.~~ ~~If~~ the reactor ~~is critical, it~~ shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours. M.10

2. ~~If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.~~

D. ~~The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:~~

~~Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.~~ LA.3

SEE RELOCATED E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

F. As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:

SEE ITS 3.8.2

1. One transmission circuit to Buchanan Substation, except for testing.

2. Either:

a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,

or

b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

SEE ITS 3.8.10 3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

SEE ITS 3.8.3

4. Two operable diesel generators together with total underground storage containing a minimum of 6671 gallons of fuel.

3.8.1, Req. Acts. A.3 B.2 C.1

~~6~~. When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered operable for the purpose of satisfying the requirements of its applicable specification provided: (1) its corresponding normal or emergency power source is operable; and (2) all of its redundant system(s), subsystem(s), train(s), components(s) and device(s) are operable or likewise satisfy the requirements of the specification.

L.2

Basis

The electrical system equipment is arranged so that no single contingency can inactivate enough safeguards equipment to jeopardize the plant safety. The 480-volt equipment is arranged on 4 buses. The 6900-volt equipment is supplied from 6 buses.

The Buchanan Substation has both 345 KV and 138 KV transmission circuits which are capable of supplying startup, normal operation, shutdown and/or engineered safeguards loads.

The 138 KV supplies or the gas turbines are capable of providing sufficient power for plant startup. Power via the station auxiliary transformer can supply all the required plant auxiliaries during normal operation, if required.

In addition to the unit transformer, four separate sources supply station service power to the plant.[1]

The plant auxiliary equipment is arranged electrically so that multiple items receive their power from different buses. Redundant valves are individually supplied from separate motor control centers.

A.1

The bus arrangements specified for operation ensure that power is available to an adequate number of safeguards auxiliaries. With additional switching, more equipment could be out of service without infringing on safety.

Two diesel generators have sufficient capacity to start and run within design load the minimum required engineered safeguards equipment.[1] The minimum onsite underground stored diesel fuel oil inventory is maintained at all times to assure the operation of two diesels carrying the minimum required engineered safeguards equipment load for at least 48 hours.[2] The minimum required storage tank volume (when above cold shutdown) of 6671 gallons is the minimum volume required when sounding the tanks to obtain level information. This volume includes allowances for fuel not usable due to the oil transfer pump cutoff switch (760 gallons) and a safety margin (20 gallons). If the installed level indicators are used to measure tank volume, 6721 gallons of oil (6671 gallons plus the 50 gallon uncertainty assoicated with the level indicators) must be in each storage tank.

When in cold shutdown, two diesel generators must be operable with a total underground storage of 6671 gallons of fuel oil. The same methodology used to measure fuel volume above cold shutdown should be used. Additional fuel oil suitable for use in the diesel generators will be stored either on site or at the Buchanan Substation. The minimum storage of 30,026 gallons of additional fuel oil will assure continuous operation of two diesels at the minimum engineered safeguards load for a total of 7 days. A truck with hosing connections compatible with the underground diesel fuel oil storage tanks is available for transferal of diesel oil from storage areas either on site or at the Buchanan Substation. Commercial oil supplies and trucking facilities are also available.

Specification 3.7.B.1.a provides an allowance to avoid unnecessary testing of operable emergency diesel generators (EDG) upon discovery of an inoperable EDG (Reference 3). If it can be determined by evaluation that the cause of the inoperable EDG does not exist on the operable EDGs, the operability test for those EDGs does not have to be performed. If the cause of inoperability does exist on one or both of the other EDGs, the affected EDG(s) would be declared inoperable upon discovery and Specification 3.7.C would be entered. If the cause of the initial inoperable EDG cannot be confirmed not to exist on the remaining EDGs, performance of the surveillance test that starts the affected EDG(s) suffices to provide assurance of continued operability of those EDGs. If a diesel generator is out of service due to preplanned preventive maintenance or testing, special surveillance testing of the remaining diesel generators is not required because the required periodic surveillance testing suffices to provide assurance of their operability. The fact that preplanned corrective maintenance is sometimes performed in conjunction with preplanned maintenance or testing does not necessitate that the remaining diesels be tested, because this corrective maintenance is on defects or potential defects that never called diesel operability into question. If a diesel generator defect or operability concern is discovered while performing this preplanned preventive maintenance or testing, the concern or defect is evaluated to determine if the same concern or defect could render the remaining diesel generators inoperable.

A.1

One battery charger shall be in service on each battery so that the batteries will always be at full charge in anticipation of a loss-of-AC power incident. This insures that adequate D.C. power will be available for starting the emergency generators and other emergency uses.

The plant can be safely shutdown without the use of offsite power since all vital loads (safety systems, instruments, etc.) can be supplied from the emergency diesel generators.

Any two of three diesel generators, the station auxiliary transformer or the separate 13.8 to 6.9 KV transformer are each capable of supplying the minimum safeguards loads, and therefore provide separate sources of power immediately available for operation of these loads. Thus the power supply system meets the single failure criteria required of safety systems. To provide maximum assurance that the redundant or alternate power supplies will operate if required to do so, the redundant or alternate power supplies are verified operable prior to initiating repair of the inoperable power supply. Continued plant operation is governed by the specified allowable time period for the power source, not the specified allowable time period for those items determined to be inoperable solely because of the inoperability of its normal or emergency power source provided the conditions defined in specification 3.7.G are satisfied. These conditions assure that the minimum required safeguards will be operable. If it develops that (a) the inoperable power supply is not repaired within the specified allowable time period, or (b) a second power supply in the same or related category is found to be inoperable, the reactor, if critical, will initially be brought to the hot shutdown condition utilizing normal operating procedures to provide for reduction of the decay heat from the fuel, and consequent reduction of cooling requirements after a postulated loss-of-coolant accident. If the reactor was already subcritical, the reactor coolant system temperature and pressure will be maintained within the stated values in order to limit the amount of stored energy in the Reactor Coolant System. The stated tolerances provide a band for operator control. After a limited time in hot shutdown, if the malfunction(s) are not corrected, the reactor will be brought to the cold shutdown condition, utilizing normal shutdown and cool-down procedures. In the cold shutdown condition there is no possibility of an accident that would damage the fuel elements or result in a release in excess of 10 CFR 100 and 10 CFR 50 dose limits.

Conditions of a system-wide blackout could result in a unit trip. Since normal off-site power supplies as required in Specification 3.7.A.1 are not available for startup, it is necessary to be able to black start the unit with gas turbines providing the incoming power supplies as a first step in restoring the system to an operable status and restoring power to customers for essential services. Specification 3.7.C provides for startup using 37 MW's of gas turbine power (nameplate rating at 80°F) which is sufficient to carry out a normal plant startup. A system-wide blackout is deemed to exist when the majority of Con Edison electric generating facilities are shutdown due to an electrical disturbance and the remainder are incapable of supplying the system therefore necessitating major load shedding.

TSCR 97-175

Since the backup lighting supply is stripped on safety injection, the requirement that not more than one 120 volt A.C. instrument bus be energized from the backup lighting supply is to assure minimum operable containment spray actuation channels.

As a result of an investigation of the effect components that might become submerged following a LOCA may have on ECCS, containment isolation and other safety-related functions, a fuse and a locked open circuit breaker were provided on the electrical feeder to emergency lighting panel 318 inside containment. With the circuit breaker in the open position, containment electrical penetration H-70 is de-energized during the accident condition. Personnel access to containment may be required during power operation. Since it is highly improbable that a LOCA would occur during this short period of time, the circuit breaker may be closed during that time to provide emergency lighting inside containment for personnel safety.

When the 138 KV source of offsite power is out of service and the 13.8KV power source is being used to feed Buses 5 and 6, the automatic transfer of 6.9 KV Buses 1, 2, 3 and 4 to offsite power after a unit trip could result in overloading of the 20 MVA 13.8 KV/6.9 KV auto-transformer. Accordingly, the intent of specification 3.7.B.3 is to prevent the automatic transfer when only the 13.8 KV source of offsite power is available. However, this specification is not intended to preclude subsequent manual operations or bus transfers once sufficient loads have been stripped to assure that the 20 MVA auto-transformer will not be overloaded by these manual actions.

References

1) FSAR - Section 8.2.1
2) NYPA Calculation, IP3-CALC-EG-00217, Revision 3, dated May 25, 1994.
3) NRC Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," dated July 2, 1984.

A.1

TSCR 98-044

TABLE 4.1-3 (Sheet 1 of 2)

FREQUENCIES FOR EQUIPMENT TESTS

	Check	Frequency
1. Control Rods	Rod drop times of all control rods	24M
2. Control Rods	Movement of at least 10 steps in any one direction of all control rods	Every 31 days during reactor critical operations
3. Pressurizer Safety Valves	Set Point	24M*
4. Main Steam Safety Valves	Set Point	24M
5. Containment Isolation System	Automatic actuation	24M
6. Refueling System Interlocks	Functioning	Each refueling, prior to movement of core components
7. Primary System Leakage	Evaluate	5 days/week
8. Diesel Generators Nos. 31, 32 & 33 Fuel Supply	Fuel Inventory in day tank ≥ 115 gal	Weekly 31 days
9. Turbine Steam Stop And Control Valves	Closure	Not to exceed 6 months**
10. L.P. Steam Dump System (6 lines)	Closure	Monthly
11. Service Water System	Each pump starts and operates for 15 minu.. : (unless already operating)	Monthly
12. City Water Connections to Charging Pumps and Boric Acid Piping	Temporary connections available and valves operable	24M

SEE MASTER MARKUP

SR 3.8.1.4 (SEE ALSO ITS 3.8.3)

A.5

L.8

SEE MASTER MARKUP

* ~~Pressurizer Safety Valve setpoint test due no later than May 1996 may be deferred until the next refueling outage but no later than May 31, 1997~~ TSCR 98-043

** The turbine steam stop and control valves shall be tested at a frequency determined by the methodology presented in WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency," as updated by Westinghouse Report, WOG-TVTF-93-17, "Update of BB-95/96 Turbine Valve Failure Rates and Effect on Destructive Overspeed Probabilities." The maximum test interval for these valves shall not exceed six months. Surveillance interval extension as per Technical Specification 1.12 is not applicable to the maximum test interval.

4.5 TESTS FOR ENGINEERED SAFETY FEATURES AND AIR FILTRATION SYSTEMS

A.2

~~Applicability~~

~~Applies to testing of the Safety Injection System, the Containment Spray System, the Hydrogen Recombiner System, and the Air Filtration Systems.~~

~~Objective~~

~~To verify that the subject systems will respond promptly and perform their design functions, if required.~~

Specification

A. SYSTEM TESTS

SEE ITS 3.5.2

1. Safety Injection System

a. System tests shall be performed at least once per 24 months*. With the Reactor Coolant System pressure less than or equal to 350 psig and temperature less than or equal to 350°F, a test safety injection signal will be applied to initiate operation of the system. The safety injection and residual heat removal pumps are made inoperable for this test.

b. The test will be considered satisfactory if control board indication and visual observations indicate that all components have received the safety injection signal in the proper sequence and timing, that is, the appropriate pump breakers shall have opened and closed, and the appropriate valves shall have completed their travel.

c. Conduct a flow test of the high head safety injection system after any modification is made to either its piping and/or valve arrangement.

d. Verify that the mechanical stops on Valves 856 A, C, D, E, F, H, J and K are set at the position measured and recorded during the most recent ECCS operational flow test or flow tests performed in accordance with (c) above. This surveillance procedure shall be performed following any maintenance on these valves or their associated motor operators and at a convenient outage if the position of the mechanical stops have not been verified in the preceding three months.

SR 3.8.1.11 * The time delay relays will be tested at intervals no greater than 22.5 months (18 months + 25%). L.6

Add note to SR 3.8.1.11

4.6 EMERGENCY POWER SYSTEM PERIODIC TESTS

A.2

~~Applicability~~

~~Applies to periodic testing and surveillance requirements of the emergency power system.~~

~~Objective~~

~~To verify that the emergency power system will respond promptly and properly when required.~~

~~Specification~~

Add 4 notes to SR 3.8.1.3 — A.6

~~The following tests and surveillance shall be performed as stated:~~ — A.1

A. Diesel Generators

Add note to SR 3.8.1.2 — A.7

Add SR 3.8.1.2 Acceptance criteria — M.3

SR 3.8.1.2 SR 3.8.1.3 ~~1.~~ Each month each diesel generator shall be manually started and synchronized to its bus or buses and shall ~~be allowed to assume the normal bus load and run for a period of time sufficient to reach stable operating temperatures.~~ Add SR 3.8.1.3 Acceptance Criteria — M.3

SR 3.8.1.10 ~~2.~~ At least once per 24 months each diesel generator shall be manually started, synchronized and loaded up to its ~~2 hour rating and run for a period of at least 105 minutes.~~ — M.8

SR 3.8.1.13 — L.7

SR 3.8.1.12 ~~3.~~ At least once per 24 months*, simulate a loss of all normal AC station service power supplies in conjuction with a actual or simulated Safety Injection signal, and verify: — A.4

SR 3.8.1.12.a, b a. the required bus load shedding;

SR 3.8.1.12.c b. the automatic start of each diesel generator; and

c. the restoration to operation of particular vital equipment, via the diesel generator ~~assuming the required load within 60 seconds after the initial start signal.~~ — A.8

SR 3.8.1.11 — Add SR 3.8.1.12 acceptance criteria — M.9

SR 3.8.1.11 * The time delay relays will be tested at intervals no greater than 22.5 months (18 months + 25%). — L.6

Add note to SR 3.8.1.11

Amendment No. ~~125~~, ~~138~~, 142

Add SR 3.8.1.5 — M.4

Add SR 3.8.1.7 and 3.8.1.8 — M.6

Add SR 3.8.1.6 — M.5

Add SR 3.8.1.9 — M.7

A.1

4. ~~Each diesel generator shall be inspected and maintained following the manufacturer's recommendations for this class of stand-by service.~~ LA.4

~~The above tests will be considered satisfactory if the required minimum safeguards equipment operates as designed.~~ A.1

B. Station Batteries

SEE ITS 3.8.4 & ITS 3.8.6

1. Every month the voltage of each cell, the specific gravity and temperature of a pilot cell in each battery and each battery voltage shall be measured and recorded.

2. Every 3 months each battery shall be subjected to a 24 hour equalizing charge, and the specific gravity of each cell, the temperature reading of every fifth cell, the height of electrolyte, and the amount of water added shall be measured and recorded.

3. At least once per 24 months, during shutdown, each battery shall be subjected to a service test and a visual inspection of the plates.[1]

4. At least once per 60 months, during shutdown, each battery shall be subjected to a performance discharge (or modified performance discharge) test.[1,2] This test shall verify that the battery capacity is at least 80% of the manufacturer's rating.

5. Any battery which is demonstrated to have less than 90% of the manufacturer's rating or, whose capacity drops more than 10% of rated capacity from its previous performance discharge (or modified performance discharge) test, shall be subjected to a performance discharge (or modified performance discharge) test annually, during shutdown, until the battery is replaced.

~~Basis~~

~~The tests specified are designed to demonstrate that the diesel generators will provide power for operation of equipment. They also assure that the emergency generator system controls and the control systems for the safeguards equipment will function automatically in the event of a loss of all normal 480v AC station service power. During the simulated loss of power/safety injection system test of specification 4.6.A.3, certain safeguards valves will be closed and made inoperable, to prevent Safety Injection flow to the core.~~ A.1

1. A modified performance discharge test may be performed in lieu of the battery service test every other 24 month operating cycle.

2. The first time a performance discharge (or modified performance discharge test) will be performed will be in refueling outage 10/11.

A.1

The testing frequency specified will be often enough to identify and correct any mechanical or electrical deficiency before it can result in a system failure. The fuel supply is continuously monitored. An abnormal condition in these systems would be signaled without having to place the diesel generators themselves on test.

Each diesel generator has a continuous rating of 1750 kw and a 2 hour rating of 1950 kw. Two diesels can power the minimum safeguards loads. To ensure that each diesel can operate at its 2 hour rating (as required by specification 4.6.A.2.), each diesel will be loaded to 1900-1950 kw and run for at least 105 minutes.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide an indication of a cell becoming unserviceable long before it fails. The periodic equalizing charge will ensure that the ampere-hour capability of the batteries is maintained.

The service and performance discharge test of each battery, together with the visual inspection of the plates, will assure the continued integrity of the batteries. The batteries are of the type that can be visually inspected, and this method of assuring the continued integrity of the battery is proven standard power plant practice.

The battery service test demonstrates the capability of the battery to meet the system design requirements. The Indian Point Unit 3 design duty cycle loads are determined by a LOCA concurrent with a loss of AC power.

The performance discharge test is a test of the constant current capacity of a battery, normally done in the as found condition after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

The modified battery performance discharge test is a composite test which addresses both the service test and performance discharge test requirements. It shall consist of a one minute peak load equivalent to that of the service test and a constant discharge current for the remainder of the test which envelopes the next highest load value of the service test. The purpose of the modified performance discharge test is to compare the capacity of the battery against the manufacturer's specified capacity and thereby determine when the battery is approaching the end of its life, as well as to demonstrate capability to meet system design requirements. Every other 24 month operating cycle, the modified performance discharge test may be performed in lieu of the battery service test required by Technical Specification 4.6.B.3.

The station batteries are required for plant operation, and performing the station battery service and performance discharge (or modified performance discharge) test require the reactor to be shutdown.

Reference

FSAR, Section 8.2

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.1:
"AC Sources - Operating"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.1 - AC Sources - Operating

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases that are designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.7.B.3 requires that the 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 are in the "pull-out" position when the 13.8 kV offsite source (alternate source) is being used to feed 6.9 kV buses 5 and 6. This requirement is needed because 6.9 kV buses 1, 2, 3, and 4, which supply power to the 4 reactor coolant pumps (RCPs), are powered directly from the IP3 main generator via the unit auxiliary transformer when the plant is at power; however, if the main generator trips, 6.9 kV buses 1, 2, 3, and 4 auto transfer to 6.9 kV buses 5 and 6 (fed from either the 138 kV or 13.8 kV offsite source). Although both the 138 kV offsite (normal) source and the 13.8 kV offsite (alternate) source are sufficient to supply engineered safety feature (ESF) loads, only the 138 kV offsite source is capable of supporting both the ESF loads and 4 operating RCPs. Therefore, if the 13.8 kV offsite (alternate) source is being used to feed 6.9 kV buses 5 and 6, then CTS 3.7.B.3 requires that 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 are in the "pull-out" position. This restriction prevents overloading the 13.8 kV/6.9 kV auto-transformer with the RCPs if the main generator trips.

ITS LCO 3.8.1, Required Action A.2 and associated note, maintain the requirement to disable automatic transfer of 6.9 kV buses 1, 2, 3, and 4 to the offsite source if the 13.8 kV offsite source is supplying 6.9 kV bus 5 or 6 except that ITS LCO 3.8.1, Required Action A.2, allows 1 hour to complete this requirement whereas the CTS does not specify a completion time (see ITS 3.8.1, DOC LA.2). Although disabling the automatic transfer is typically performed prior to switching to the 13.8 kV offsite source, establishment of a 1 hour Completion Time for this activity establishes an appropriate control to ensure the activity is completed in a timely manner. ITS LCO 3.8.1, Required Action A.2 includes a specific requirement for periodic verification every 8 hours that the required compensatory action is being maintained. This is an administrative change with no impact on safety because a one hour completion time is a reasonable interpretation of a CTS requirement for which no completion time is specified.

A.4 CTS 4.6.A.3 requires that the loss of offsite power/ESF actuation test is initiated by simulating a loss of all normal AC station service power supplies. ITS SR 3.8.1.12 allows the use of either an actual or simulated signal to initiate the test. This change is acceptable because use of an actual instead of a simulated or "test" signal will not affect the performance of the test because the equipment being tested cannot discriminate between an actual or simulated signal. This is an administrative change with no impact on safety because the use of an actual or simulated signal does not change the validity of the test as a verification of plant response to the event.

A.5 CTS Table 4.1-3, Item 8, requires weekly verification of the fuel inventory for DGs 31, 32, and 33. DG fuel inventory includes the DG day tanks, the onsite underground fuel oil storage tanks, and the offsite fuel oil reserve. ITS requirements for the periodic verification of DG fuel oil inventory in the onsite storage tanks and the offsite fuel oil reserve are addressed in ITS LCO 3.8.3, Diesel Fuel Oil and Starting Air. ITS requirements for the periodic verification of DG fuel oil inventory in the DG day tanks is addressed in ITS SR 3.8.1.4.

ITS SR 3.8.1.4 maintains the requirement for periodic verification of DG fuel inventory in the day tanks except that ITS SR 3.8.1.4 includes the acceptance criteria that each day tank contains ≥ 115 gallons of fuel oil. This acceptance criteria is acceptable because 115 gallons of fuel oil is sufficient for approximately one hour of DG operation at the continuous rating. Additionally, automatic makeup to the day tank is initiated at approximately 115 gallons; therefore, this acceptance criteria provides an indirect confirmation that the automatic fuel transfer capability required by ITS SR 3.8.1.6 is functional. The addition of acceptance criteria is an administrative change with no impact on safety because the acceptance criteria is identical to requirements in FSAR Section 8.2 and consistent with current practice.

A.6 CTS 4.6.A.1 requires that each DG to be manually started each month, synchronized to its bus or buses, allowed to assume the normal bus load, and run for a time sufficient to reach stable operating temperatures. ITS SR 3.8.1.3 maintains this requirement (see ITS 3.8.1, DOC M.3) but includes 4 new notes that clarify requirements for performing this test. These notes and the justification for their inclusion are as follows:

ITS SR 3.8.1.3, Note 1, specifies that DG loadings may include gradual loading as recommended by the manufacturer. This note is consistent with and a clarification to the CTS requirement that DGs be manually started.

ITS SR 3.8.1.3, Note 2, specifies that momentary transients outside the load range do not invalidate this test. This note is consistent with the CTS requirement to operate at normal bus load and is needed only because ITS SR 3.8.1.3 establishes specific loading requirements for the test (see ITS 3.8.1, DOC M.3).

ITS SR 3.8.1.3, Note 3, specifies that the SR shall be conducted on only one DG at a time. This note is consistent with CTS requirements to keep the specified number of DGs Operable in accordance with requirements of CTS 3.7.A.5 and CTS 3.7.F.4.

ITS SR 3.8.1.3, Note 4, specifies that the SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 (DG fast start test). This note is needed only because ITS SR 3.8.1.2 establishes specific acceptance criteria for DG starting during the monthly test (see ITS 3.8.1, DOC M.3).

The addition of these notes to ITS SR 3.8.1.3 is an administrative change with no impact on safety because they are either clarifications of existing requirements or allowances or needed to support other changes justified elsewhere (see ITS 3.8.1, DOC M.3).

A.7 CTS 4.6.A.1 requires that each DG to be manually started each month, synchronized to its bus or buses, allowed to assume the normal bus load, and run for a time sufficient to reach stable operating temperatures. ITS SR 3.8.1.2 and ITS SR 3.8.1.12 maintain this requirement (see ITS 3.8.1, DOC M.3, L.7 and M.9) but include a note allowing the DG starts to be preceded by a prelube period. This allowance is intended to minimize the stress and wear on moving parts that do not get lubricated when the engine is not running. This note is consistent with the recommendations in Generic Letter 84-15 and current industry practice.

This is an administrative change with no significant adverse impact on safety because the CTS requirement for a manual start does not preclude a prelube period and the note is needed to clarify requirements associated with new fast start acceptance criteria justified elsewhere (see ITS 3.8.1, DOC M.3).

A.8 CTS 4.5.A.1.a (footnote *) and CTS 4.6.A.3 (footnote *) establish requirements intended to ensure that auto-connected emergency loads are re-connected to the emergency bus within the time interval assumed in the safety analysis and require testing of the individual time delay relays used to sequence the starting of ESF components. CTS 4.6.A.3.c includes a redundant requirement to verify that the DGs assume their required loads within 60 seconds after the initial start signal.

ITS SR 3.8.1.11 maintains this requirement to verify that auto-connected emergency loads are re-connected to the emergency bus within the time interval assumed in the safety analysis and ITS SR 3.8.1.12.c.2 maintains the requirement to verify that DGs assume the required load; however, ITS SR 3.8.1.12.c.2 does not include a specific requirement to verify that re-connection of loads is complete within 1 minute.

This change is acceptable because ITS SR 3.8.1.11 will ensure that the loads re-connect within required limits specified in the FSAR and these limits are currently less than one minute. This is an administrative change with no adverse impact on safety.

MORE RESTRICTIVE

M.1 CTS 3.7 and CTS 4.6 do not establish any requirements for the periodic verification of correct breaker alignment and indicated power availability for offsite circuits. ITS SR 3.8.1.1 is added to require verification every 7 days that each breaker in the offsite circuit is in its correct position. This change is needed to ensure that distribution buses and loads are connected to their normal power source and that appropriate independence of offsite circuits is maintained.

The 7 day Frequency for SR 3.8.1.1 is adequate since breaker position is not likely to change without the operator being aware and because breaker status is displayed in the control room. However, when an offsite circuit or DG is inoperable, it is very important that breaker alignment is consistent with analysis assumptions. Therefore, when in this condition, ITS LCO 3.8.1, Required Actions A.1 and B.1, are added to accelerate the required Frequency of SR 3.8.1.1 to within one hour of discovering the inoperable offsite source or DG and once every 8 hours thereafter.

This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification that analysis assumptions regarding the availability and independence of offsite sources are satisfied. Therefore, this change has no significant adverse impact on safety.

M.2 CTS 3.7.A.4 requires that the four 480 V safeguards buses 2A, 3A, 5A and 6A are energized when above cold shutdown. This requirement is maintained in ITS 3.8.9, Distribution Systems - Operating. However, ITS LCO 3.0.6 specifies that it is not necessary to take Required Actions for a system made inoperable by an inoperable support system (e.g., Actions for an inoperable 480 V safeguards bus would not be required because a DG and/or offsite source is inoperable). Therefore, it is possible that a 480 V safeguards bus could be de-energized because of the inoperability of the DG and offsite source that supply that 480 volt safeguards bus; but, because of ITS LCO 3.0.6, ITS 3.8.9 Actions would not be entered even though appropriate. Therefore, NUREG-1431, LCO 3.8.1, Required Actions D.1 and D.2, are modified by a note to indicate that when Condition D is entered with no AC power source to any train, the Conditions and Required Actions for LCO 3.8.9,"Distribution Systems - Operating," must be immediately entered. This allows Condition D to provide requirements for the loss of one offsite circuit and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train.

The note to ITS LCO 3.8.1, Required Actions D.1 and D.2, differs from NUREG-1431 by requiring that when Condition D is entered with no "offsite or DG" AC power source to any train, the Conditions and Required Actions for LCO 3.8.9,"Distribution Systems - Operating," must be immediately entered. This change is needed because 480 V safeguards buses 2A and 3A (safguards power train 2A/3A) are normally supplied by the main generator via the unit auxiliary transformer. Additionally, the configuration of the IP3 electrical distribution system is such that 480 V safeguards buses 2A and 3A (safguards power train 2A/3A) will not be automatically connected to an offsite source if the 13.8 kV offsite source (alternate source) is being used to supply 6.9 kV buses 5 and 6 (see ITS 3.8.1, DOC A.3). As a result, if DG 31 (supporting safguards power train 2A/3A) is not Operable when the 13.8 kV offsite source (alternate source) is being used to supply 6.9 kV buses 5 and 6, then 480 V safeguards buses 2A and 3A (safguards power train 2A/3A) will not be energized following a plant trip until connected to the offsite source by operator action. Therefore, when 6.9 kV buses 5 and 6 are powered from the 13.8 kV offsite source and DG 31 is not Operable, the Conditions and Required Actions for LCO 3.8.9 are appropriate even though safeguards buses 2A and 3A (safguards power train 2A/3A) are energized by the unit auxiliary transformer.

This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification that analysis assumptions regarding the availability and independence of offsite sources are satisfied. Therefore, this change has no significant adverse impact on safety.

M.3 CTS 4.6.A.1 requires that each month each DG must be manually started and synchronized to its bus or buses and allowed to assume the normal bus load and run for a period of time sufficient to reach stable operating temperatures. ITS SR 3.8.1.2 and ITS SR 3.8.1.3 maintain this requirement: however, ITS SR 3.8.1.2 establishes more restrictive acceptance criteria for DG starting and ITS SR 3.8.1.3 establishes more restrictive acceptance criteria for DG loading and the length of the test.

Specifically, ITS SR 3.8.1.2 requires that each DG starts from standby conditions (See ITS 3.8.1, DOC A.7) and achieves, in ≤ 10 seconds, voltage ≥ 422 V and ≤ 500 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. This acceptance criteria ensures that monthly DG start tests verify that the DG achieves the voltage and frequency determined to be suitable for accepting ESF loads within the time assumed in the accident analysis.

Additionally, ITS SR 3.8.1.3 requires that the DG start test is immediately followed by one hour of operation at 90% to 100% of the continuous rating of the DG versus the CTS requirement to assume the normal bus load. The ITS acceptance criteria provides assurance that the DG is capable of functioning within design limits.

These changes are acceptable because they do not introduce any operation which is un-analyzed while requiring periodic verification of DG starting times and ability to accept rated load using acceptance criteria consistent with the IP3 analysis assumptions. Therefore, this change has no significant adverse impact on safety.

M.4 CTS 4.6 does not include any requirement for periodically checking for and removing accumulated water from each day tank. ITS SR 3.8.1.5 adds a new requirement to check for and remove accumulated water from each day tank once every 31 days. This change is needed to reduce the potential for fuel oil degradation due to microbiological fouling and to eliminate the potential for water entrainment in the fuel oil during DG operation. This change is acceptable because it is consistent with the recommendations of Regulatory Guide 1.137 and does not create any condition that could interfere with DG Operability or operation. Therefore, this change has no significant adverse impact on safety.

M.5 CTS 4.6 does not include any requirement for verification of the proper operation of the automatic makeup of fuel oil from the storage tank to the DG day tank. ITS SR 3.8.1.6 adds a new requirement to verify that the fuel oil transfer system operates to automatically transfer fuel oil from the storage tank to each DG day tank. This change is needed to demonstrate that the transfer system will support continuous operation of the DG by ensuring each of the following: the fuel oil transfer pump is operable; the fuel oil piping system is intact; the fuel delivery piping is not obstructed; and, the controls for automatic fuel transfer are operable. This change is acceptable because it does not create any condition that could interfere with DG Operability or operation. Therefore, this change has no significant adverse impact on safety.

M.6 CTS 4.6 does not include any requirements to verify the ability to transfer between the 138 kV offsite (normal) source and the 13.8 kV offsite (alternate) source to demonstrate the Operability of the 13.8 kV offsite (alternate) and/or the ability of this source to power the shutdown loads. CTS 4.6 does not include any requirements to verify that 6.9 kV buses 1, 2, 3, and 4, which are powered directly from the main generator via the unit auxiliary transformer when the plant is at power, will auto transfer back to 6.9 kV buses 5 and 6 (i.e., the offsite source) if the main generator trips.

ITS SR 3.8.1.7 adds a new requirement to verify every 24 months that offsite power can be manually transferred from the 138 kV offsite (normal) source to the 13.8 kV offsite (alternate) source to demonstrate the Operability of the 13.8 kV offsite source to power the shutdown loads as is assumed in the FSAR.

ITS SR 3.8.1.8 adds a new requirement to verify every 24 months that 6.9 kV buses 1, 2, 3, and 4 will auto transfer to 6.9 kV buses 5 and 6 following a loss of voltage on 6.9 kV buses 1, 2, 3, and 4. This SR is needed to confirm the Operability of a function assumed to operate on a loss of offsite power. This SR is modified by a note stipulating that this SR is only required to be met when the 138 kV offsite source is supplying 6.9 kV buses 5 and 6. This note is needed and is acceptable because the feature tested by this SR is required to be disabled whenever the 13.8 kV source is supplying 6.9 kV buses 5 and 6 (See ITS 3.8.1, DOCs A.3 and LA.2). This SR may be performed during any normal plant shutdown or credit may be taken for unplanned events that satisfy this SR.

This change is acceptable because it does not create any condition that could interfere with Operability or operation of the offsite sources. Therefore, this change has no significant adverse impact on safety.

M.7 CTS 4.6 does not include any requirements to verify a DG's automatic trips are bypassed during an emergency DG start. ITS SR 3.8.1.9 is added to verify that a loss of voltage signal on the emergency bus concurrent with an ESF actuation signal causes each DG's automatic trips to be bypassed except for those trips identified in the FSAR as not being bypassed. The trips not bypassed are engine overspeed, low lube oil pressure, and the start failure relay. This test is needed to verify that non-critical trips will not prevent the DG from responding as required. This SR is acceptable because it does not create any condition that could interfere with DG Operability or operation. Therefore, this change has no significant adverse impact on safety.

M.8 CTS 4.6.A.2 requires that at least once every 24 months each diesel generator shall be manually started, synchronized, loaded up to its 2 hour rating (1950 kW), and run for a period of at least 105 minutes. ITS SR 3.8.1.10 maintains this requirement: however, ITS SR 3.8.1.10 extends the length of the DG endurance test from 105 minutes to 8 hours. Additionally, ITS SR 3.8.1.10 specifies that this endurance is conducted with the DG loaded ≥ 1837 kW and ≤ 1925 kW for ≥ 105 minutes and loaded ≥ 1575 kW and ≤ 1750 kW for the remaining hours of the test.

This change is needed to conform to the recommendations of IEEE 387-1995 for the endurance testing of DGs and to provide greater assurance that DG endurance is consistent with the assumptions of the accident analysis. The length of the endurance run is sufficient to demonstrate proper and adequate long term operation of the DG lube oil, fuel oil, ventilation and cooling water systems. This change is acceptable because the DG is still demonstrated to be capable of maintaining a load greater than the maximum DG load assumed in FSAR 8.2 and the length of the test does not result in significant stress or wear on the DG. Therefore, this change has no significant adverse impact on safety. Note that the high load portion of the endurance run will remain at 105 minutes consistent with current licensing basis versus 2 hours in IEEE 387-1995. This is necessary because the DG rating limits operation to less than two hours in any 24 hour period when operating in the range required for the high load portion of the endurance run.

M.9 CTS 4.6.A.3 requires verification every 24 months of the ability of the plant to respond to a DBA with concurrent loss of offsite power. This test requires verification of required bus load shedding, automatic start of each DG, restoration to operation of particular vital equipment via the DG, and verification that the DG powers the required loads within 60 seconds after the initial start signal.

ITS 3.8.1.12 maintains this requirement (see ITS 3.8.1, DOC L.7 and A.8) however, ITS SR 3.8.1.12 establishes more restrictive acceptance criteria for DG starting, loading, and the length of the test. Specifically, ITS SR 3.8.1.12 requires that each DG starts from standby conditions (See ITS 3.8.1, DOC A.7) and achieves, in ≤ 10 seconds, voltage ≥ 422 V and ≤ 500 V, and frequency ≥ 58.8 Hz and ≤ 61.2 Hz. This acceptance criteria ensures that the test verifies that the DG achieves the voltage and frequency determined to be suitable for accepting ESF loads within the time assumed in the accident analysis. Additionally, ITS SR 3.8.1.12 requires that the DG operate at the assumed load for a minimum of 5 minutes. This change is needed because the ITS SR 3.8.1.12 acceptance criteria provides assurance that the DG is capable of functioning within design limits.

This change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification of DG starting times and ability to accept rated load using acceptance criteria consistent with the IP3 analysis assumptions. Therefore, this change has no significant adverse impact on safety.

M.10 CTS 3.7.C establishes the Actions required if the electrical distribution system is not restored to meet CTS requirements within specified completion times when above cold shutdown (Mode 5). CTS 3.7.C.1 specifies that, if the reactor is critical when requirements are not met, then the reactor shall be in hot shutdown (Mode 3) within 6 hours and cold shutdown (Mode 5) within the following 30 hours. However, if the reactor is subcritical when requirements are not met, CTS 3.7.C.2 requires only that reactor coolant system temperature and pressure not be increased more than 25°F and 100 psi, respectively, over existing values with no requirement to proceed to cold shutdown (Mode 5).

Under the same conditions, ITS 3.8.1, Required Actions F.1 and F.2, G.1 and H.1, require that the reactor is in Mode 3 in 6 hours and Mode 5 in 36 hours regardless of the status of the unit when the Condition is identified. The allowance provided in CTS 3.7.C.2 is deleted. This change is needed to eliminate the ambiguity created by CTS 3.7.C.2 when performing a reactor shutdown and cooldown required by CTS 3.7.C.1 and to ensure that the plant is placed outside the LCO Applicability whenever LCO requirements are not met. This change is acceptable because placing the plant outside the LCO Applicability when LCO requirements are not met is conservative and there is no change in the CTS 3.7.C.1 requirement. This change has no significant adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.7.B limits the number of concurrent inoperable electrical power sources by limiting the Actions for inoperable DGs, offsite sources, and batteries to "allow any one" of these power supplies to be inoperable at any one time. Therefore, in conjunction with specific directions provided in CTS 3.7.B.1 and CTS 3.7.B.2, CTS 3.7.B does not permit a battery to be inoperable when either a diesel generator or an offsite source is inoperable. ITS 3.8.1 and ITS 3.8.4 appear to be less restrictive because there are no direct restrictions on DC electrical power subsystems (batteries and battery chargers) based on the operability of DGs or offsite sources nor are there restrictions on DGs or offsite sources based on the operability of DC electrical power subsystems.

Elimination of the "allow any one" restriction in CTS 3.7.B is acceptable because, even without this restriction, both CTS and ITS 3.8.4 limit inoperability of one battery and/or charger to a maximum of two hours. Additionally, CTS and ITS 3.8.4 both require immediate initiation of a shutdown if two batteries and/or chargers are inoperable. Therefore, the maximum impact of the elimination of the restriction in CTS 3.7.B is the potential that ITS 3.8.1 and/or ITS 3.8.4 would allow initiation of a reactor shutdown to be delayed by 2 hours from what would be required by CTS 3.7.B (i.e., CTS would require Mode 3 in 6 hours and Mode 5 in 36 hours and ITS would require Mode 3 in 8 hours and Mode 5 in 38 hours). Additionally, ITS would allow more time to initiate a reactor shutdown only in very infrequent combinations of inoperabilities (e.g. two diesel generators and the battery associated with the third diesel generator become inoperable at the same time). Therefore, elimination of the restriction in CTS 3.7.B has no significant consequence and is deleted.

L.2 CTS 3.7.G requires that a component with an inoperable offsite power source or an inoperable DG power source be declared inoperable immediately if its redundant component is inoperable for any reason other than an inoperable power source. CTS 3.7.B.1 includes a redundant requirement by stipulating that if a DG is inoperable then the engineered safety features associated with the remaining DG buses must be Operable. CTS 3.7.G is needed to provide assurance that the failure of the one remaining Operable power source to a component does not result in the loss of a safety function because the redundant component is inoperable for reasons other than an inoperable power supply.

ITS 3.8.1, Required Actions A.3 (one offsite circuit inoperable), B.2 (DG inoperable), and C.1 (two offsite circuits inoperable) maintain the same requirement to declare required feature(s) supported by the inoperable AC source inoperable when its required redundant feature is inoperable. However, ITS 3.8.1 allows implementation of this requirement to be delayed for 24 hours when one offsite circuit is inoperable (Required Action A.3), 4 hours when one DG is inoperable (Required Action B.2), and 12 hours when both offsite circuits are inoperable (Required Action C.1). This new allowance provides time to allow the operator to evaluate and repair any discovered inoperabilities before subjecting the plant to transients associated with shutdown.

The additional time allowed to implement ITS 3.8.1, Required Actions A.3, B.2 and C.1, versus the requirement to implement CTS 3.7.G immediately is acceptable for the following reason: the conditions under which ITS 3.8.1, Required Actions A.3, B.2 and C.1, and CTS 3.7.G are implemented is the loss of the ability to tolerate a single failure (of the remaining Operable power supply) and not the loss of a function. The less restrictive Completion Times for ITS 3.8.1, Required Actions A.3, B.2 and C.1, take into account the operability of the redundant counterpart to the inoperable required feature and the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA during this period. Therefore, this change does not have a significant adverse impact on safety.

L.3 (Superceded by TSCR 98-044) CTS 3.7.B.1 requires that the Operable DGs must be tested within 24 hours whenever a DG is declared inoperable for any reason other than preplanned maintenance or testing (based on the presumption there is no need to suspect common mode DG failure when the DG is inoperable for these reasons). ITS 3.8.1, Required Actions B.3.1 and B.3.2, maintain the same requirement; however, ITS 3.8.1, Required Actions B.3.1 and B.3.2, allows omitting testing of the Operable DGs even if the DG is inoperable for reasons other than preplanned maintenance or testing if it can be determined that the cause of the DG's inoperability does not exist on the Operable DGs.

This change is needed because it eliminates unnecessary testing consistent with the recommendations of Generic Letter 84-15. This change is acceptable because the purpose of the CTS 3.7.B.1 requirement is to ensure the potential for an unidentified common mode failure is promptly identified; however, ITS 3.8.1, Required Actions B.3.1 and B.3.2, recognize that, in many instances, it is not possible to confirm that the Operable DGs are not affected by the same problem as the inoperable DG without performing DG start testing. Therefore, this change has no significant adverse impact on safety.

L.4 CTS 3.7.B.2 allows either the 138 kV or the 13.8 kV offsite source to be inoperable for 48 hours provided the three diesel generators are operable. CTS 3.7.B.2 also specifies that this allowable out of service time (AOT) may be extended beyond 48 hours if NRC approval is granted. Under the same conditions, ITS 3.8.1, Required Action A.4, establishes an AOT of 72 hours for one inoperable offsite source and eliminates the statement that the AOT may be extended with NRC approval.

This change is acceptable because if one offsite source is inoperable then the remaining operable offsite circuit and DGs are adequate to supply electrical power for required safety functions during any event that includes the failure of the remaining offsite source and/or one DG. Therefore, an AOT consistent with the recommendations of Regulatory Guide 1.93, Availability of Electric Power Sources, Revision 0, is appropriate. This AOT takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. Therefore, this change has no significant adverse impact on safety.

In conjunction with this change, the CTS 3.7.B.2 allowance that the 48 hour AOT may be extended beyond 48 hours if NRC approval is granted is deleted because the process for obtaining an exemption for a Technical Specification AOT from the NRC is the same regardless of the CTS statement that permission for such an extension is possible. This change has no impact on safety.

L.5 CTS 3.7.B.1 and CTS 3.7.B.2 specify Required Actions and Completion Times for one inoperable DG or one inoperable offsite source and includes the restriction that the listed required actions "allow any one" of these power supplies to be inoperable at any one time. Therefore, if more than one DG or more than one offsite source is inoperable or if a DG and offsite source are inoperable concurrently, then CTS 3.0 requires that a reactor shutdown is initiated immediately.

Under the same conditions, ITS 3.8.1, Required Action C.2, allows 24 hours to restore at least one offsite source if both are inoperable; ITS 3.8.1, Required Actions D.1 and D.2, allow 12 hours to restore an offsite source or a DG if one offsite source and one DG are inoperable; and, ITS 3.8.1, Required Action E.1, allows 2 hours to restore at least 2 DGs to Operable if 2 or more DGs are inoperable.

Extending the AOTs for multiple inoperable AC sources is needed because the extended AOTs provide time to allow the operator to evaluate and repair any discovered inoperabilities before subjecting the plant to transients associated with shutdown. These changes are acceptable because if any two AC sources are inoperable then the remaining operable offsite circuits and/or DGs are adequate to supply electrical power for required safety functions during any event that includes the failure of an additional offsite source and/or DG. Therefore, AOTs consistent with the recommendations of Regulatory Guide 1.93, Availability of Electric Power Sources, Revision 0, are appropriate. These AOTs take into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. Therefore, these changes have no significant adverse impact on safety.

L.6 CTS 4.5.A.1.a (footnote *) and CTS 4.6.A.3 (footnote *) require periodic testing of the individual time delay relays used to sequence the starting of ESF components on the four 480 V safeguards buses. ITS SR 3.8.1.11 maintains this requirement; however, ITS 3.8.1.11 includes a note that load timers associated are not required to be Operable if the associated equipment has automatic initiation capability disabled.

The note to SR 3.8.1.11 is needed because these time delay relays affect the Operability of both the AC sources (offsite power and DG) and the specific load that the relay starts. If a timer fails to start a required load or starts the load later than assumed in the analysis, then the required load is not Operable. If a timer starts the load outside the design interval (early or late), then the DG and offsite source are not Operable because overlap of equipment starts may cause an offsite source to exceed limits for voltage or current or a DG to exceed limits for voltage, current or frequency. Therefore, when an individual load sequence timer is not Operable, it is conservative to disable the automatic initiation capability of that component rather than declare the associated DG inoperable because of the following: the potential for adverse impact on the DG by simultaneous start of ESF equipment is eliminated; all other loads powered from the safeguards power train are available to respond to the event; and, the load with the inoperable timer remains available for a manual start after the one minute completion of the normal starting sequence.

Therefore, the note to SR 3.8.1.11 is acceptable because the potential for adverse impact on the DG by simultaneous start of ESF equipment is eliminated with automatic initiation capability disabled (and the associated equipment declared inoperable). Additionally, Required Actions and Completion Times for the individual loads with automatic initiation capability disabled ensure that the functions affected by the inoperable timers are restored to service within the Technical Specification allowable out of service time for that component. Therefore, this change has no significant adverse impact on safety.

L.7 CTS 4.6.A.3 requires verification every 24 months of the ability of the plant to respond to a DBA with concurrent loss of offsite power (LOOP/LOCA test). As specified in CTS 4.6.A.3, this test is conducted by simulating a loss of "all normal AC station service power supplies" in conjunction with a simulated Safety Injection signal (i.e., all three DGs and safeguards power trains are tested concurrently).

ITS SR 3.8.1.12 maintains this requirement (see ITS 3.8.1, DOC M.9); however, ITS SR 3.8.1.12, Note 3, allows the SR to be conducted with only one safguards power train at a time or with two or three safguards power trains concurrently. ITS SR 3.8.1.12, Note 2, requires that this test is not conducted in Modes 1, 2, 3 or 4. Additionally, ITS SR 3.8.1.13 will require a simultaneous start of all three DGs at least once every 10 years if ITS SR 3.8.1.12 is conducted with only one DG at a time during the 10 year interval,

Allowing the LOOP/LOCA test to be conducted using one or two safguards power train is acceptable because the safguards power trains and DGs are designed to respond to this event independently. Therefore, an individual test for each safguards power train will provide an adequate verification of plant response to this event.

Allowing the LOOP/LOCA test to be conducted with all 3 safeguards power trains concurrently is the current requirement and practice. This is acceptable for the following reasons: plant status will be established in accordance with ITS LCO 3.8.2 as if no DGs are Operable during the performance of this test; and extensive experience with this test indicates that loss of all AC due to common failure modes and/or undetected interdependence among DGs is not likely.

Allowing the option of performing the LOOP/LOCA test with one safguards power train at a time or with two or three safguards power trains concurrently is acceptable because both options provide an adequate test of plant response to this event and neither option presents a significant risk of an extended plant blackout.

L.8 CTS Table 4.1-3, Item 8, requires weekly verification of the fuel inventory for DGs 31, 32, and 33. In accordance with the FSAR, DG fuel inventory includes the DG day tanks, the onsite underground fuel oil storage tanks, and the offsite fuel oil reserve. ITS requirements for the periodic verification of DG fuel oil inventory in the onsite storage tanks and the offsite fuel oil reserve are addressed in ITS 3.8.3, Diesel Fuel Oil, Lube Oil, and Starting Air. ITS requirements for the periodic verification of DG fuel oil inventory in the DG day tanks are addressed in ITS SR 3.8.1.4.

ITS SR 3.8.1.4 maintains the requirement for periodic verification of DG fuel inventory in the day tanks except that the required Frequency is extended from weekly to once per 31 days. A 31 day frequency is acceptable for this SR because the day tank is equipped with low level alarms; the day tank level is maintained by automatic transfer from the underground storage tank and the transfer is initiated automatically to maintain day tank levels within limits, and Operability of the automatic transfer function is verified monthly in ITS SR 3.8.1.6 (see ITS 3.8.1, DOC M.5). Therefore, this change has no significant adverse impact on safety.

L.9 CTS 3.7.B.3 requires that the 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 are in the "pull-out" position when the 13.8 kV offsite source (alternate source) is being used to feed 6.9 kV buses 5 and 6.

ITS 3.8.1, Required Action A.2 and associated Note, maintain the requirement to disable automatic transfer of 6.9 kV buses 1, 2, 3, and 4 to the offsite source if the 13.8 kV offsite source is supplying 6.9 kV bus 5 or 6 except that ITS 3.8.1, Required Action A.2 Note, requires this restriction only if "the Unit Auxiliary Transformer is supplying 6.9 kV bus 1, 2, 3 or 4." (See ITS 3.8.1, DOC A.3 for a discussion of the purpose of the restrictions imposed by CTS 3.7.B.3 and ITS 3.8.1, Required Action A.2 and associated Note.)

This change is needed because it will allow operating one or two reactor coolant pumps supplied by the 13.8 kV offsite source when in Modes 3 or 4 consistent with the administrative controls governing loading of the 13.8 kV offsite source. This change is acceptable because operation in Mode 1 or 2 requires 4 operating RCPs which requires use of either the unit auxiliary transformer or the 138 kV offsite source. Therefore, this change will not permit the plant to be placed in a configuration where a trip of the main generator could overload the 13.8 kV offsite source. With one or two RCPs supplied by the 13.8 kV offsite source, the 13.8 kV source retains sufficient capacity to support ESF loads required in Modes 3 and 4. Therefore, this change has no significant adverse impact on safety.

REMOVED DETAIL

LA.1 CTS 3.7.A.1 requires two physically independent transmission circuits to Buchanan substation capable of supplying engineered safeguards loads; CTS 3.7.A.2 requires that the 6.9 kV buses 5 and 6 energized from either 138 kV feeder 95331 or 95332; and, CTS 3.7.A.3 requires that either 13.8 kV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer be available to supply 6.9 kV power. ITS 3.8.1.a maintains the same requirement by requiring the Operability of two qualified circuits between the offsite transmission network and the onsite AC electrical power distribution system: however, the description of the design of these circuits and a detailed description of the requirements for Operability of these circuits are relocated to the IP3 FSAR and the ITS 3.8.1 Bases, respectively. The Bases description of the requirements for Operability include the requirement that there must be one offsite circuit into the Buchanan substation for each Operable offsite circuit and that these circuits into Buchanan must be physically independent. This change is acceptable because ITS 3.8.1 maintains the existing requirement for the Operability of two qualified offsite circuits; therefore, there is no change to the existing requirements and no change to the level of safety of facility operation.

This change, which allows the description of the design of the qualified circuits to be maintained in the FSAR and the detailed description of the requirements for Operability of these circuits to be maintained in the ITS Bases, is consistent with the approach used in NUREG-1431 for all Limiting Conditions for Operation (LCOs). This approach is acceptable because the requirements of 10 CFR 50.59, Changes, Tests and Experiments, and ITS 5.5.13, Technical Specifications (TS) Bases Control Program, are designed to assure that changes to the FSAR and ITS Bases do not result in changes to the Technical Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement FSAR changes in accordance with 10 CFR 50.59 and ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of FSAR and Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight are maintained for the information being relocated out of the Technical Specifications.

LA.2 CTS 3.7.B.3 requires that the 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 are in the "pull-out" position when the 13.8 kV offsite source (alternate source) is being used to feed 6.9 kV buses 5 and 6. This requirement is needed because the 13.8 kV/6.9 kV auto-transformer is the alternate offsite source intended to supply ESF loads and/or support plant shutdown and is not designed to supply 4 operating reactor coolant pumps. Therefore, an automatic transfer (fast transfer) of 6.9 kV buses 1, 2, 3, and 4 to the 13.8 kV source following a loss of offsite power could violate procedural restrictions that limit the load on the 13.8 kV source and overload the 13.8 kV/6.9 kV auto-transformer.

ITS 3.8.1, Required Action A.2 and associated note, maintain the requirement to disable automatic transfer of 6.9 kV buses 1, 2, 3, and 4 to 6.9 kV bus 5 and 6 if the 13.8 kV offsite source is supplying 6.9 kV bus 5 or 6; however, ITS 3.8.1, Required Action A.2, does not include the details about how automatic transfer is disabled. This information will be maintained in the ITS 3.8.1 Bases. Note that eliminating the requirement to have the tie breakers in the "pull-out" position eliminates an unintended restriction against using the 13.8 kV offsite source to supply 6.9 kV buses 1, 2, 3, and 4, consistent with procedural restrictions limiting the load, when the reactor is shutdown.

This change is acceptable because ITS 3.8.1, Required Action A.2, maintains the requirement to disable automatic transfer when required to prevent overloading the 13.8 kV offsite source. The details about how automatic transfer is disabled are not essential elements of the requirement and can be relocated to the ITS Bases. Furthermore, the ITS 5.5.13, Technical Specifications (TS) Bases Control Program, is designed to assure that changes to the ITS Bases do not result in changes to the Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight are maintained for the information being relocated out of the Technical Specifications.

LA.3 CTS 3.7.D states that the requirements of CTS 3.7.A.1 for two offsite circuits when above cold shutdown may be modified during an emergency system-wide blackout condition. CTS 3.7.D stipulates that, under emergency conditions, requirements for offsite power sources may be satisfied with the following: two of the three 13.8 kV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 kV buses operable with at least 37 mW power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan substation and onsite available for exclusive use on Indian Point Unit No. 3.

This relaxation of requirements for offsite sources during an emergency system-wide blackout condition is not retained in the ITS. The FSAR will be amended to discuss the currently approved requirements for performing a plant startup during an emergency system-wide blackout condition. If relief from Technical Specification requirements are needed during an emergency system-wide blackout to protect the public health and safety, the FSAR discussion and previous approval may be used as justification when obtaining NRC concurrence.

LA.4 CTS 4.6.A.4 requires that each diesel generator be inspected and maintained following the manufacturer's recommendations for this class of standby service. ITS LCO 3.8.1 does not include this requirement; however, this requirement will be maintained in the Final Safety Analysis Report (FSAR) and implemented by plant procedures. This change is acceptable because performance the SRs required by ITS 3.8.1 are sufficient to demonstrate the Operability of the DGs. Inspecting and maintaining the DGs in accordance with the manufacturer's recommendations is routine preventative maintenance and is not a direct demonstration that a DG is capable of performing its intended safety function. Changes to the FSAR can be made only in accordance with the requirements of 10 CFR 50.59. Therefore, this change is acceptable because there is no change to the existing requirements by the relocation of requirements to the FSAR and future changes to the FSAR will be controlled in accordance with 10 CFR 50.59.

This change is a less restrictive administrative change with no impact on safety because ITS 3.8.1 maintains the requirements to have DGs Operable and maintains the requirements to perform periodic testing that demonstrates DG Operability. Therefore, requirements to inspect and maintain the DGs in accordance with the manufacturer's recommendations can be maintained in the TRM with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.1: "AC Sources - Operating"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.1 - AC Sources - Operating

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change eliminates the restriction in CTS 3.7.B that does not permit a battery to be inoperable when either a diesel generator or an offsite source is inoperable. ITS 3.8.1 and ITS 3.8.4 are less restrictive because there are no direct restrictions on DC electrical power subsystems (batteries and battery chargers) based on the operability of DGs or offsite sources nor are there restrictions on DGs or offsite sources based on the operability of DC electrical power subsystems. However, the maximum impact of the elimination of the restriction in CTS 3.7.B is the potential that ITS 3.8.1 and/or ITS 3.8.4 would allow initiation of a reactor shutdown to be delayed by 2 hours from what would be required by CTS 3.7.B (i.e., CTS would require Mode 3 in 6 hours and Mode 5 in 36 hours and ITS would require Mode 3 in 8 hours and Mode 5 in 38 hours). Additionally, ITS would allow more time to initiate a reactor shutdown only in very infrequent combinations of inoperabilities (e.g. two diesel generators and the battery associated with the third diesel generator become inoperable at the same time). This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because of the following: allowing an additional 2 hours to initiate a reactor shutdown when a single battery is inoperable concurrent with an inoperable DG or offsite source is not significant; the additional time may be used to restore one of the inoperable electrical sources to Operable thus avoiding a plant transient; the infrequent occurrence of this combination of inoperabilities; and, the low probability of an event during this period.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because of the following: allowing an additional 2 hours to initiate a reactor shutdown when a single battery is inoperable concurrent with an inoperable DG or offsite source is not significant; the additional time may be used to restore one of the inoperable electrical sources to Operable thus avoiding a plant transient; the infrequent occurrence of this combination of inoperabilities; and, the low probability of an event during this period.

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   CTS 3.7.G requires that a component with an inoperable offsite power source or an inoperable DG power source be declared inoperable immediately if its redundant component is inoperable for any reason other than an inoperable power source. ITS 3.8.1, Required Actions A.3

(one offsite circuit inoperable), B.2 (DG inoperable), and C.1 (two offsite circuits inoperable) allow implementation of this requirement to be delayed for 24 hours when one offsite circuit inoperable (Required Action A.3), 4 hours when one DG is inoperable (Required Action B.2), and 12 hours when both offsite circuits are inoperable (Required Action C.1). This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because new allowance provides time to allow the operator to evaluate and repair any discovered inoperabilities before subjecting the plant to transients associated with shutdown. Additionally, the additional time allowed to implement ITS 3.8.1, Required Actions A.3, B.2 and C.1, versus the requirement to implement CTS 3.7.G immediately is acceptable for the following reason: the conditions under which ITS 3.8.1, Required Actions A.3, B.2 and C.1, and CTS 3.7.G are implemented is the loss of the ability to tolerate a single failure (of the remaining Operable power supply) and not the loss of a function. Finally, the less restrictive Completion Times for ITS 3.8.1, Required Actions A.3, B.2 and C.1, take into account the operability of the redundant counterpart to the inoperable required feature and the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the additional time allowed to implement ITS 3.8.1, Required Actions A.3, B.2 and C.1, versus the requirement to implement CTS 3.7.G immediately is acceptable for the following reason: the conditions under which ITS 3.8.1, Required Actions A.3, B.2 and C.1, and CTS 3.7.G are implemented is the loss of the ability to tolerate a single failure (of the remaining Operable power supply) and not the loss of a function. Finally, the less restrictive Completion Times for ITS 3.8.1, Required Actions A.3, B.2 and C.1, take into account the operability of the redundant counterpart to the inoperable required feature and the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

LESS RESTRICTIVE
("L.3" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change extends the allowance in CTS 3.7.B.1 to forego testing of Operable DGs when the inoperable DG is inoperable because of preplanned maintenance or testing and allows omitting testing of the Operable DGs even if the DG is inoperable for reasons other than preplanned maintenance or testing if it can be determined that the cause of the DG's inoperability does not exist on the Operable DGs. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because the purpose of the CTS 3.7.B.1 requirement is to ensure the potential for an unidentified common mode failure is promptly identified; however, ITS 3.8.1, Required Actions B.3.1 and B.3.2, recognize that, in many instances, it is possible to confirm that the Operable DGs are not affected by the same problem as the inoperable DG without performing DG start testing. Additionally, this change eliminates unnecessary testing consistent with the recommendations of Generic Letter 84-15.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the purpose of the CTS 3.7.B.1 requirement is to ensure the potential for an unidentified common mode failure is promptly identified; however, ITS 3.8.1, Required Actions B.3.1 and B.3.2, recognize that, in many instances, is possible to confirm that the Operable DGs are not affected by the same problem as the inoperable DG without performing DG start testing.

LESS RESTRICTIVE
("L.4" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change extends the allowable out of service time for either the 138 kV or the 13.8 kV offsite source from 48 hours to 72 hours. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because if one offsite source is inoperable then the remaining operable offsite circuit and DGs are adequate to supply electrical power for required safety functions during any event that includes the failure of the remaining offsite source and/or one DG. Therefore, an AOT consistent with the recommendations of Regulatory Guide 1.93, Availability of Electric Power Sources, Revision 0, is appropriate. This AOT takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because if one offsite source is inoperable then the remaining operable offsite circuit and DGs are adequate to supply electrical power for required safety functions during any event that includes the failure of the remaining offsite source and/or one DG. Therefore, an AOT consistent with the recommendations of Regulatory Guide 1.93, Availability of Electric Power Sources, Revision 0, is appropriate. This AOT takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

LESS RESTRICTIVE
("L.5" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change eliminates CTS 3.7.B.1 and CTS 3.7.B.2 requirements that if more than one DG or more than one offsite source is inoperable or if a DG and offsite source are inoperable concurrently, then a reactor shutdown must be initiated immediately in accordance with CTS 3.0. Under the same conditions, ITS 3.8.1, Required Action C.2, allows 24 hours to restore at least one offsite source if both are inoperable; ITS 3.8.1, Required Actions D.1 and D.2, allow 12 hours to restore an offsite source or a DG if one offsite source and one DG are inoperable; and, ITS 3.8.1, Required Actions E.1, allows 2 hours to restore at least 2 DGs to Operable if 2 or more DGs are inoperable.

   This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because if any two AC sources are inoperable then the remaining operable offsite circuits and/or DGs are adequate to supply electrical power for required safety functions during any event that includes the failure of an additional offsite source and/or DG. Therefore, AOTs consistent with the recommendations of Regulatory Guide 1.93, Availability of Electric Power Sources, Revision 0, are appropriate. These AOTs take into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. Additionally, the extended AOTs provide time to allow the operator to evaluate and repair any discovered inoperabilities before subjecting the plant to transients associated with shutdown.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

 This change does not involve a significant reduction in a margin of safety because if any two AC sources are inoperable then the remaining operable offsite circuits and/or DGs are adequate to supply electrical power for required safety functions during any event that includes the failure of an additional offsite source and/or DG. Therefore, AOTs consistent with the recommendations of Regulatory Guide 1.93, Availability of Electric Power Sources, Revision 0, are appropriate. These AOTs take into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period. Additionally, the extended AOTs provide time to allow the operator to evaluate and repair any discovered inoperabilities before subjecting the plant to transients associated with shutdown.

LESS RESTRICTIVE
("L.6" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

 This change adds a specific allowance that ESF component individual load timers associated with equipment that has automatic initiation capability disabled are not required to be Operable. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because when an individual load sequence timer is not Operable, it is conservative to disable the automatic initiation capability of that component rather than declare the associated DG inoperable because of the following: the potential for adverse impact on the DG by simultaneous start of ESF equipment is eliminated; all other loads powered from the DG are available to respond to the event; and, the load with the inoperable timer remains available for a manual start within the one minute completion of the normal starting sequence. Additionally, the Required Actions and Completion Times for the individual loads with automatic initiation capability disabled ensure that the functions affected by the inoperable timers are restored to service within the Technical Specification allowable out of service time for that component.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because when an individual load sequence timer is not Operable, it is conservative to disable the automatic initiation capability of that component rather than declare the associated DG inoperable because of the following: the potential for adverse impact on the DG by simultaneous start of ESF equipment is eliminated; all other loads powered from the DG are available to respond to the event; and, the load with the inoperable timer remains available for a manual start within the one minute completion of the normal starting sequence. Additionally, the Required Actions and Completion Times for the individual loads with automatic initiation capability disabled ensure that the functions affected by the inoperable timers are restored to service within the Technical Specification allowable out of service time for that component.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.1 - AC Sources - Operating

LESS RESTRICTIVE
("L.7" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

    This change eliminates the requirement in CTS 4.6.A.3 that the test of plant response to a DBA with concurrent loss of offsite power (LOOP/LOCA test) is conducted such that all three DGs and safeguards trains are tested concurrently. This change provides the option permitting the SR to be conducted with only one safeguards train at a time or with all 3 safeguards trains concurrently, as is the current requirement and practice. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because of the following:

    Allowing the LOOP/LOCA test to be conducted using one safeguards train and one DG at a time is acceptable because the safeguards power trains and DGs are designed to respond to this event with no interaction between safeguards power trains. Therefore, an individual test for each safeguards train will provide an adequate verification of plant response to this event. Additionally, ITS SR 3.8.1.13 will require a simultaneous start of all three DGs at least once every 10 years if ITS SR 3.8.1.12 is conducted with only one DG at a time during the 10 year interval,

    Allowing the LOOP/LOCA test to be conducted with all 3 safeguards trains concurrently, as is the current requirement and practice, remains acceptable for the following reasons: ITS SR 3.8.1.12, Note 2, requires that this test is not conducted in Modes 1, 2, 3 or 4; plant status will be established in accordance with ITS SR 3.8.2 such that no DGs are required to be Operable during the performance of this test; and, extensive experience with this test indicates that loss of all AC due to common failure modes and/or undetected interdependence among DGs is not likely.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This following the option of performing the LOOP/LOCA test with one safeguards train at a time or with all 3 safeguards trains concurrently does not involve a significant reduction in a margin of safety because both options provide an adequate test of plant response to this event and neither option presents a significant risk of an extended plant blackout.

LESS RESTRICTIVE
("L.8" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change extends the Frequency for the required verification of DG day tank level from weekly to every 31 days. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because of the following: the day tank is equipped with low level alarms; the day tank level is maintained by automatic transfer from the underground storage tank and the transfer is initiated automatically to maintain day tank level within limits; and, Operability of the automatic transfer function is verified monthly in ITS SR 3.8.1.6.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because of the following: the day tank is equipped with low level alarms; the day tank level is maintained by automatic transfer from the underground storage tank and the transfer is initiated automatically to maintain day tank level within limits; and, Operability of the automatic transfer function is verified monthly in ITS SR 3.8.1.6.

LESS RESTRICTIVE
<u>("L.9" Labeled Comments/Discussions)</u>

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.1 - AC Sources - Operating

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change relaxes the requirement in CTS 3.7.B.3 that the 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 are in the "pull-out" position when the 13.8 kV offsite source (alternate source) is being used to feed 6.9 kV buses 5 and 6. ITS 3.8.1, Required Action A.2 Note, requires this restriction only if "the Unit Auxiliary Transformer is supplying 6.9 kV bus 1, 2, 3 or 4." (See ITS 3.8.1, DOC A.3 for a discussion of the purpose of the restrictions imposed by CTS 3.7.B.3 and ITS 3.8.1, Required Action A.2 and associated Note.)

   This change is needed because it will allow operating one or two reactor coolant pumps supplied by the 13.8 kV offsite source when in Modes 3 or 4 consistent with the administrative controls governing loading of the 13.8 kV offsite source. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because operation in Mode 1 or 2 requires 4 operating RCPs which requires use of either the unit auxiliary transformer or the 138 kV offsite source. Therefore, this change will not permit the plant to be placed in a configuration where a trip of the main generator could overload the 13.8 kV offsite source. With one or two RCPs supplied by the 13.8 kV offsite source, the 13.8 kV source retains sufficient capacity to support ESF loads required in Modes 3 and 4.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because operation in Mode 1 or 2 requires 4 operating RCPs which requires use of either the unit auxiliary transformer or the 138 kV offsite source. Therefore, this change will not permit the plant to be placed in a configuration where a trip of the main generator could overload the 13.8 kV offsite source. With one or two RCPs supplied by the 13.8 kV offsite source, the 13.8 kV source retains sufficient capacity to support ESF loads required in Modes 3 and 4.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.1:
"AC Sources - Operating"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.1

This ITS Specification is based on NUREG-1431 Specification No. **3.8.1**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-009	**037 R0**	GENERIC LETTER 94-01 IMPLEMENTATION, REMOVE ACCELERATED TESTING AND SPECIAL REPORTING FOR DGS	See Next Rev.	See R1	**N/A**
BWROG-009 R1	**037 R1**	GENERIC LETTER 94-01 IMPLEMENTATION, REMOVE ACCELERATED TESTING AND SPECIAL REPORTING FOR DGS	NRC Rejects: TSTF to Revise	DG Failure Report not in ITS based on CLB.	**N/A**
BWROG-018 R1		ELIMINATE UPPER VOLTAGE AND FREQUENCY LIMITS ON UNLOADED DG SURVEILLANCES	Rejected by TSTF	Not Incorporated	**N/A**
WOG-003.3 R1	**008 R1**	REVISE THE SR 3.0.1 BASES TO ALLOW CREDIT FOR UNPLANNED EVENTS TO MEET ANY SURVEILLANCE	See Next Rev.	See Next Rev.	**N/A**

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.1:
"AC Sources - Operating"

WOG-003.3 R2	**008 R2**	REVISE THE SR 3.0.1 BASES TO ALLOW CREDIT FOR UNPLANNED EVENTS TO MEET ANY SURVEILLANCE	Approved by NRC	Incorporated	**T.1**
WOG-069	**163 R2**	MINIMUM VS. STEADY STATE VOLTAGE AND FREQUENCY	NRC Review	Not Incorporated	**N/A**
WOG-070 R2		PROVIDE OPTIONAL PRESENTATION FOR MODIFIED START PROCEDURES	Rejected by TSTF	Not Incorporated	**N/A**
WOG-071 R1		ELIMINATE REQUIREMENT FOR DG START FROM "STANDBY CONDITIONS"	Rejected by TSTF	Not Incorporated	**N/A**
WOG-089		ELIMINATE SECTION 3.8 MODE RESTRICTION NOTES	TSTF Review	Not Incorporated	**N/A**

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.1 AC Sources—Operating

<3.7.A.1 3.7.A.2 3.7.A.3>
<3.7.A.5>

LCO 3.8.1 The following AC electrical sources shall be OPERABLE:

a. Two qualified circuits between the offsite transmission network and the onsite ~~Class 1E~~ AC Electrical Power Distribution System; ~~[and]~~

b. Three Two diesel generators (DGs) (31, 32 and 33) capable of supplying the onsite ~~Class 1E~~ power distribution subsystem(s) ~~[; and~~

~~c. Automatic load sequencers for Train A and Train B]~~

CLB.1

<3.7.A> APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.7.B.2> <DOC M.1> A. One ~~[required]~~ offsite circuit inoperable.	A.1 Perform SR 3.8.1.1 for ~~[required]~~ OPERABLE offsite circuit.	1 hour **AND** Once per 8 hours thereafter
Insert: 3.8-1-01	**AND**	
<3.7.G> <DOC L.2>	A.~~2~~ 3 Declare required feature(s) with no offsite power available automatically inoperable when its redundant required feature(s) is inoperable.	24 hours from discovery of no automatically available offsite power to one train concurrent with inoperability of redundant required feature(s)
	AND	
		(continued)

INSERT 3.8-1-01:

CLB.1

<CTS>
<3.7.B.3>
<Doc A.3>
<Doc A.9>
<Doc L.9>
<Doc LA.2>

	AND		
		----------NOTE--------- Only required if 138 kV offsite circuit is supplying 6.9 kV bus 5 and 6 and the Unit Auxiliary Transformer is supplying 6.9 kV bus 2 or 3. ---------------------	
	A.2	Verify automatic transfer of 6.9 kV buses 1, 2, 3, and 4 to 6.9 kV bus 5 and 6 is disabled.	1 hour AND Once per 8 hours thereafter

<CTS>

ACTIONS

	CONDITION		REQUIRED ACTION	COMPLETION TIME	
<3.7.B.1.> <DOC L.4>	A. (continued)	A.~~3~~ 4	Restore ~~[required]~~ offsite circuit to OPERABLE status.	72 hours ~~AND~~ ~~6 days from discovery of failure to meet LCO~~	CLB.1
<3.7.B.1> <DOC M.1>	B. One ~~[required]~~ DG inoperable.	B.1	Perform SR 3.8.1.1 for the ~~[required]~~ offsite circuit~~(s)~~.	1 hour AND Once per 8 hours thereafter	
		AND			
<3.7.B.1> <DOC L.2> <3.7.G.>		B.2	Declare required feature~~(s)~~ supported by the inoperable DG inoperable when its required redundant feature~~(s)~~ is inoperable.	4 hours from discovery of Condition B concurrent with inoperability of redundant required feature~~(s)~~	
		AND			
<3.7.B.1> <DOC L.3>		B.3.1	Determine are OPERABLE DG~~(s)~~ ~~is~~ not inoperable due to common cause failure.	~~[~~24~~]~~ hours	DB.1
		OR			
<3.7.B.1>		B.3.2	Perform SR 3.8.1.2 for OPERABLE DG~~(s)~~.	~~[~~24~~]~~ hours	
		AND			
				(continued)	

ACTIONS

	CONDITION	REQUIRED ACTION		COMPLETION TIME	
⟨3.7.B.2⟩	B. (continued)	B.4	Restore ~~[required]~~ DG to OPERABLE status.	72 hours ~~AND~~ ~~6 days from discovery of failure to meet LCO~~	CLB.1
⟨3.7.G⟩ ⟨DOC L.2⟩	C. Two ~~[required]~~ offsite circuits inoperable.	C.1	Declare required feature~~(s)~~ inoperable when its redundant required feature~~(s)~~ is inoperable.	12 hours from discovery of Condition C concurrent with inoperability of redundant required feature~~s~~	
		AND			
⟨3.7.C.1⟩ ⟨DOC L.5⟩		C.2	Restore one ~~[required]~~ offsite circuit to OPERABLE status.	24 hours	

(continued)

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
<3.7.c> <DOC M.2>	D. One ~~[required]~~ offsite circuit inoperable. **AND** One ~~[required]~~ DG inoperable.	------------NOTE------------ Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating," when Condition D is entered with no offsite or DG AC power source to any train. ----------------------------		CLB.1
<DOC L.5>		D.1 Restore ~~[required]~~ offsite circuit to OPERABLE status.	12 hours	
		OR		
		D.2 Restore ~~[required]~~ DG to OPERABLE status.	12 hours	
<3.7.c> <DOC L.5>	E. Two or more ~~[required]~~ DGs inoperable.	E.1 Restore ~~one~~ at least two ~~[required]~~ DG(s) to OPERABLE status.	2 hours	DB.1

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
~~F. ----REVIEWER'S NOTE--- This Condition may be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads following a loss of offsite power independent of, or coincident with, a Design Basis Event. ---------------------- One [required] [automatic load sequencer] inoperable.~~	~~F.1~~	~~Restore [required] [automatic load sequencer] to OPERABLE status.~~	~~[12] hours~~
~~G~~ F. Required Action and associated Completion Time of Condition A, B, C, D, ~~[or]~~ E~~[, or F]~~ not met.	~~G~~ F.1	Be in MODE 3.	6 hours
	AND		
	~~G~~ F.2	Be in MODE 5.	36 hours
~~H. Three or more [required] AC sources inoperable.~~	~~H.1~~	~~Enter LCO 3.0.3.~~	~~Immediately~~

<3.7.C.1>
<DOC M.10>

<3.7.C>
<DOC M.10>

Insert: 3.8-5-01

INSERT 3.8.5-01:

DB.1
CLB.1

<3.7.C> <DOC M.10> G.	One or more offsite sources and two DGs inoperable.	G.1	Enter LCO 3.0.3.	Immediately
<3.7.C> <DOC M.10> H.	Two offsite sources and one or more DGs inoperable.	H.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.1.1	Verify correct breaker alignment and indicated power availability for each ~~[required]~~ offsite circuit.	7 days
SR 3.8.1.2	-------------------NOTES------------------- 1. ~~Performance of SR 3.8.1.7 satisfies this SR.~~ 2. All DG starts may be preceded by an engine prelube period ~~and followed by a warmup period prior to loading~~. 3. ~~A modified DG start involving idling and gradual acceleration to synchronous speed may be used for this SR as recommended by the manufacturer. When modified start procedures are not used, the time, voltage, and frequency tolerances of SR 3.8.1.7 must be met.~~ --- Verify each DG starts from standby conditions and achieves ~~steady state~~ in ≤ 10 seconds, voltage ≥ ~~[3740]~~ 422 V and ≤ ~~[4580]~~ 500 V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	~~As specified in Table 3.8.1-1~~ 31 days

<DOC M.1>

<DOC A.7>

<4.6.A.1>
<DOC M.3>

DB.1

DB.1

DB.1

CLB.1

PA.1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

<CTS>

	SURVEILLANCE	FREQUENCY
<DOC A.6> <4.6.A.1> <DOC M.3>	SR 3.8.1.3 -------------------NOTES------------------- 1. DG loadings may include gradual loading as recommended by the manufacturer. 2. Momentary transients outside the load range do not invalidate this test. 3. This ~~Surveillance~~ SR shall be conducted on only one DG at a time. 4. This SR shall be preceded by and immediately follow without shutdown a successful performance of SR 3.8.1.2 ~~or SR 3.8.1.7.~~ -- Verify each DG is synchronized and loaded and operates for ≥ 60 minutes at a load ≥ ~~[4500]~~ 1575 kW and ≤ ~~[5000]~~ 1750 kW.	~~As specified in Table 3.8.1-1~~ 31 days CLB.1
<T 4.1-3 (1) Item 8> <DOC L.8, A.5>	SR 3.8.1.4 Verify each day tank ~~[and engine mounted tank]~~ contains ≥ ~~[220]~~ 115 gal of fuel oil.	31 days
<DOC M.4>	SR 3.8.1.5 Check for and remove accumulated water from each day tank ~~[and engine mounted tank]~~.	31 days
<DOC M.5>	SR 3.8.1.6 Verify the fuel oil transfer system operates to automatically transfer fuel ~~oil from~~ storage tank[s] to the day tank ~~[and engine mounted tank]~~. the DG	~~[92]~~ 31 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
~~SR 3.8.1.7~~	~~-----NOTE----- All DG starts may be preceded by an engine prelube period.~~ ~~Verify each DG starts from standby condition and achieves in ≤ [10] seconds, voltage ≥ [3740] V and ≤ [4580] V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.~~	~~184 days~~
SR 3.8.1.~~8~~ 7	~~-----NOTE----- This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.~~ Verify ~~[automatic [and]~~ manual] transfer of AC power sources from the normal offsite circuit to ~~each~~ the alternate ~~[required]~~ offsite circuit.	[~~18~~ 24 months]

<Doc M.6>

T.1

(continued)

<Doc M.6> Insert: 3.8-8-01

INSERT 3.8-8-01:

SR 3.8.1.8 <Doc M.6>	------------------NOTES------------------- 1. This Surveillance shall not be performed in MODE 1 or 2. 2. Only required to be met if 13.8 kV offsite circuit is supplying 6.9 kV bus 5 or 6 and the Unit Auxiliary Transformer is supplying 6.9 kV bus 2 or 3. -- Verify automatic transfer of AC power for 6.9 kV buses 2 or 3 from the unit auxiliary transformer to 6.9 kV buses 5 and 6.	24 months

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.9	------------------NOTES------------------ 1. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. 2. If performed with the DG synchronized with offsite power, it shall be performed at a power factor ≤ [0.9]. --- Verify each DG rejects a load greater than or equal to its associated single largest post-accident load, and: a. Following load rejection, the frequency is ≤ [63] Hz; b. Within [3] seconds following load rejection, the voltage is ≥ [3740] V and ≤ [4580] V; and c. Within [3] seconds following load rejection, the frequency is ≥ [58.8] Hz and ≤ [61.2] Hz.	[18 months]
SR 3.8.1.10	------------------NOTE------------------ This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. --- Verify each DG operating at a power factor ≤ [0.9] does not trip and voltage is maintained ≤ [5000] V during and following a load rejection of ≥ [4500] kW and ≤ [5000] kW.	[18 months]

CLB.1

CLB.1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.11	------------------NOTES------------------ 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. -- Verify on an actual or simulated loss of offsite power signal: a. De-energization of emergency buses; b. Load shedding from emergency buses; c. DG auto-starts from standby condition and: 1. energizes permanently connected loads in ≤ [10] seconds, 2. energizes auto-connected shutdown loads through [automatic load sequencer], 3. maintains steady state voltage ≥ [3740] V and ≤ [4580] V, 4. maintains steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and 5. supplies permanently connected [and auto-connected] shutdown loads for ≥ 5 minutes.	[18 months]

CLB.1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.12	-------------------NOTES------------------- 1. All DG starts may be preceded by prelube period. 2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR. --- Verify on an actual or simulated Engineered Safety Feature (ESF) actuation signal each DG auto-starts from standby condition and: a. In ≤ [10] seconds after auto-start and during tests, achieves voltage ≥ [3740] V and ≤ [4580] V; b. In ≤ [10] seconds after auto-start and during tests, achieves frequency ≥ [58.8] Hz and ≤ [61.2] Hz; c. Operates for ≥ 5 minutes; d. Permanently connected loads remain energized from the offsite power system; and e. Emergency loads are energized [or auto-connected through the automatic load sequencer] from the offsite power system.	[18 months]

CLB.1

(continued)

<CTS>

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.~~13~~ 9	~~NOTE: This Surveillance shall not be performed in MODE 1 or 2. [However, credit may be taken for unplanned events that satisfy this SR.]~~ Verify each DG's automatic trips are bypassed on [actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal] except: a. Engine overspeed; ~~[and]~~ ~~b. Generator differential current;~~ b ~~c~~. [Low lube oil pressure;] ~~d. [High crankcase pressure;]~~ and c ~~e~~. ~~[Start failure relay]~~ Overcrank relay.	[~~18~~ months] 24

CL B.1

T.1

<DOC M.7>

DB.1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

<CTS>

SURVEILLANCE		FREQUENCY
SR 3.8.1.~~14~~ 10	-------------------NOTE~~S~~------------------- ~~1.~~ Momentary transients outside the load and power factor ranges do not invalidate this test. <DOC M.8> ~~2. This Surveillance shall not be performed in MODE 1 or 2. However, credit may be taken for unplanned events that satisfy this SR.~~ T.1 --- Verify each DG operating at a power factor ≤ ~~[0.9]~~ 0.9 operates for ≥ ~~24~~ 8 hours: <4.6.A.2> a. For ≥ ~~[2] hours~~ 105 minutes loaded ≥ ~~[5250]~~ 1837 kW and ≤ ~~[5500]~~ 1925 kW; and <DOC M.8> CLB.1 b. For the remaining hours of the test loaded ≥ ~~[4500]~~ 1575 kW and ≤ ~~[5000]~~ 1750 kW.		~~[18~~ 24 months~~]~~ DB.1 CLB.1
~~SR 3.8.1.15~~	~~-------------------NOTES------------------- 1. This Surveillance shall be performed within 5 minutes of shutting down the DG after the DG has operated ≥ [2] hours loaded ≥ [4500] kW and ≤ [5000] kW. Momentary transients outside of load range do not invalidate this test. 2. All DG starts may be preceded by an engine prelube period. --- Verify each DG starts and achieves, in ≤ [10] seconds, voltage ≥ [3740] V, and ≤ [4580] V and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.~~		~~[18 months]~~ CLB.1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.1.16	-------------------NOTE------------------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. -- Verify each DG: a. Synchronizes with offsite power source while loaded with emergency loads upon a simulated restoration of offsite power; b. Transfers loads to offsite power source; and c. Returns to ready-to-load operation.	[18 months]
SR 3.8.1.17	-------------------NOTE------------------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR. -- Verify, with a DG operating in test mode and connected to its bus, an actual or simulated ESF actuation signal overrides the test mode by: a. Returning DG to ready-to-load operation [; and b. Automatically energizing the emergency load from offsite power].	[18 months]

CLB.1

CLB.1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

<CTS>

SURVEILLANCE		FREQUENCY
<4.5.A.1.a> <4.6.A.3> <DOC L.6> SR 3.8.1.~~18~~ 11	Insert: 3.8-15-01 ---NOTE--- ~~This Surveillance shall not be performed in MODE 1, 2, 3, or 4. However, credit may be taken for unplanned events that satisfy this SR.~~ Verify ~~interval between each sequenced load block is~~ within ~~± [10% of design interval] for each emergency [and shutdown] load sequencer.~~ Insert: 3.8-15-02	time delay relay functions ~~[~~18 months~~]~~ T.1
<4.6.A.3> <DOC A.7> SR 3.8.1.~~19~~ 12	---NOTES--- 1. All DG starts may be preceded by an engine prelube period. 2. This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ~~However, credit may be taken for unplanned events that satisfy this SR.~~ <DOC L.7> Insert: 3.8-15-03	T.1
<4.6.A.3> <DOC A.4>	Verify on an actual or simulated loss of offsite power signal in conjunction with an actual or simulated ESF actuation signal:	~~[18~~ 24 months~~]~~
<4.6.A.3.a>	a. De-energization of emergency buses; b. Load shedding from emergency buses; and	
<4.6.A.3.b>	c. DG auto-starts from standby condition and:	
<DOC M.9>	1. energizes permanently connected loads in ≤ ~~[~~10~~]~~ seconds,	
		(continued)

INSERT 3.8-15-01:

(Doc L.6) Load timers associated with equipment that has automatic initiation capability disabled are not required to be operable.

INSERT 3.8-15-02:

the required design interval.

INSERT 3.8-15-03:

(Doc A.4)
(Doc L.7)
3. This SR may be performed on one safeguards power train or on two or three safeguards power trains simultaneously.

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.1.~~13~~ .12 (continued) 2. energizes auto-connected emergency loads through ~~load sequencer~~, Individual load timers 3. achieves steady state voltage ≥ ~~[3740]~~ 422 V and ≤ ~~[4580]~~ 500 V, 4. achieves steady state frequency ≥ [58.8] Hz and ≤ [61.2] Hz, and 5. supplies permanently connected [and auto-connected] emergency loads for ≥ 5 minutes.	
SR 3.8.1.~~23~~ 13 -------------------NOTE------------------- 1. All DG starts may be preceded by an engine prelube period. Insert: 3.8-16-01 -- Verify when started simultaneously from standby condition, each DG achieves, in ≤ [10] seconds, voltage ≥ ~~[3744]~~ 422 V and ≤ ~~[4576]~~ 500 V, and frequency ≥ [58.8] Hz and ≤ [61.2] Hz.	10 years

<DOC M.9>

<4.6.A.3>
<DOC L.7>

NUREG-1431 Markup Inserts
ITS SECTION 3.8.1 - AC Sources - Operating

INSERT 3.8-16-01: CL8.1

<DOC A.4>

2. Performance of SR 3.8.1.12 may be used to satisfy the requirements of this SR if all three diesel generators are started simultaneously.

CLB.1

Table 3.8.1-1 (page 1 of 1)
Diesel Generator Test Schedule

NUMBER OF FAILURES IN LAST 25 VALID TESTS[a]	FREQUENCY
≤ 3	31 days
≥ 4	7 days[b] (but no less than 24 hours)

(a) Criteria for determining number of failures and valid tests shall be in accordance with Regulatory Position C.2.1 of Regulatory Guide 1.9, Revision 3, where the number of tests and failures is determined on a per DG basis.

(b) This test frequency shall be maintained until seven consecutive failure free starts from standby conditions and load and run tests have been performed. This is consistent with Regulatory Position [ ], of Regulatory Guide 1.9, Revision 3. If, subsequent to the 7 failure free tests, 1 or more additional failures occur, such that there are again 4 or more failures in the last 25 tests, the testing interval shall again be reduced as noted above and maintained until 7 consecutive failure free tests have been performed.

Note: If Revision 3 of Regulatory Guide 1.9 is not approved, the above table will be modified to be consistent with the existing version of Regulatory Guide 1.108, GL 84-15, or other approved version.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.1 AC Sources—Operating

BASES

BACKGROUND

The unit ~~Class 1E AC~~ Electrical Power Distribution System AC sources consist of the offsite power sources (preferred power sources, normal and alternate(s)), and the onsite standby power sources (Train A and Train B diesel generators (DGs)). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the design of the AC electrical power system provides independence and redundancy to ensure an available source of power to the Engineered Safety Feature (ESF) systems.

Insert: B 3.8-1-01

The onsite Class 1E AC Distribution System is divided into redundant load groups (trains) so that the loss of any one group does not prevent the minimum safety functions from being performed. Each train has connections to two preferred offsite power sources and a single DG.

Insert B 3.8-1-02

Offsite power is supplied to the unit switchyard(s) from the transmission network by [two] transmission lines. From the switchyard(s), two electrically and physically separated circuits provide AC power, through [step down station auxiliary transformers], to the 4.16 kV ESF buses. A detailed description of the offsite power network and the circuits to the ~~Class 1E~~ ESF buses is found in the FSAR, Chapter [8] (Ref. 2).

Insert: B 3.8-1-03

An offsite circuit consists of all breakers, transformers, switches, interrupting devices, cabling, and controls required to transmit power from the offsite transmission network to the onsite ~~Class 1E~~ ESF bus(es).

480V

Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the transformer supplying offsite power to the onsite ~~Class 1E~~ Distribution System. Within [1] minute after the initiating signal is received, all automatic and permanently connected loads needed to recover the unit or maintain it in a safe condition are returned to service via the load sequencer.

The onsite standby power source for each 4.16 kV ESF bus is a dedicated DG. DGs [11] and [12] are dedicated to ESF buses [11] and [12], respectively. A DG starts

Insert: B 3.8-1-04

(continued)

Typical

INSERT B 3.8-1-01:

the following: two offsite circuits (the normal or 138 kV circuit and the alternate or 13.8 kV circuit), each of which has a preferred and backup feeder; and, the onsite standby power circuit consisting of three diesel generators.

INSERT B 3.8-1-02:

The onsite plant distribution system is configured around 6.9 kV buses Nos. 1, 2, 3, 4, 5, and 6. All offsite power to the safeguards buses enter the plant via 6.9 kV buses Nos.5 and 6 which are connected to the 138 kV (normal) offsite circuit and have the ability to be connected to the 13.8 kV (alternate) offsite circuit. 6.9 kV buses 1, 2, 3, and 4, which supply power to the 4 reactor coolant pumps (RCPs), typically receive power from the main generator via the unit auxiliary transformer (UAT) when the plant is at power. However, when the main generator or UAT is not capable of supporting this arrangement, 6.9 kV buses 1 and 2 receive offsite power via 6.9 kV bus 5 and 6.9 kV buses 3 and 4 receive offsite power via 6.9 kV bus 6. Following a unit trip, 6.9 kV buses 1, 2, 3, and 4 will auto transfer (fast transfer) to 6.9 kV buses 5 and 6 in order to receive offsite power. The 6.9 kV buses supply power to the 480 V buses using 6.9 kV/480 V station service transformers (SSTs) as follows: 6.9 kV bus 5 supplies 480 V bus 5A via SST 5; 6.9 kV bus 6 supplies 480 V bus 6A via SST 6; 6.9 kV bus 2 supplies 480 V bus 2A via SST 2; and, 6.9 kV bus 3 supplies 480 V bus 3A via SST 3.

The onsite AC Power Distribution System begins with 480 V buses 5A, 6A, 2A and 3A and is divided into 3 safeguards power trains (trains) consisting of the 480 volt safeguards bus(es) and associated AC electrical power distribution subsystems, 125 volt DC bus subsystems, and 120 volt vital AC instrument subsystems. The three trains are designed such that any two trains are capable of meeting minimum requirements for accident mitigation and/or safe shutdown. The three safeguards power trains are train 5A (480 volt bus 5A and associated DG 33), train 6A (480 volt bus 6A and associated DG 32), and train 2A/3A (480 volt buses 2A and 3A and associated DG 31).

INSERT B 3.8-1-03:

Offsite power is supplied to the plant from the transmission network by two electrically and physically separated circuits, the 138 kV or normal circuit and the 13.8 kV or alternate circuit. Each of the offsite circuits from the Buchanan substation into the plant is required to be supported by a physically independent circuit from the offsite network into the Buchanan substation. All offsite power enters the plant via 6.9 kV buses Nos.5 and 6 which are connected to the 138 kV (normal) offsite circuit and have the ability to be connected to the 13.8 kV (alternate) offsite circuit. This arrangement satisfies the requirement that at least one of the two required circuits can, within a few seconds, provide power to safety-related equipment following a loss-of-coolant accident. Operator action is required to supply offsite power to the plant using the 13.8 kV (alternate) offsite source.

The 138 kV circuit and the 13.8 kV circuit each have a preferred and a backup feeder that connects the circuit to the Buchanan substation. For both the 138 kV and 13.8 kV circuits, the preferred IP3 feeder is the backup IP2 feeder and the backup IP3 feeder is the preferred IP2 feeder.

For the 138 kV (i.e., normal) offsite circuit, IP2 and IP3 each have a dedicated Station Auxiliary Transformer (SAT) that can be supplied by either a preferred or backup feeder. The normal or 138 kV offsite circuit, including the SAT used exclusively for IP3, is designed to supply all IP3 loads, including 4 operating RCPs and ESF loads, when using either the preferred (95331) or backup (95332) feeder. There are no special restrictions when IP2 and IP3 are both using the same 138 kV feeder concurrently.

For the 13.8 kV (i.e., alternate) offsite circuit, there is a 13.8 kV/6.9 kV auto-transformer associated with feeder 13W92 and a 13.8 kV/6.9 kV auto-transformer associated with feeder 13W93. Feeder 13W93 and its associated auto-transformer is the preferred feeder for the IP3 alternate (13.8 kV) circuit and the backup feeder for the IP2 alternate (13.8 kV) circuit. Feeder 13W92 and its associated auto-transformer is the backup feeder for the IP3 alternate (13.8 kV) circuit and the preferred feeder for the IP2 alternate (13.8 kV) circuit.

INSERT B 3.8-1-04:

consists of 3 480 V diesel generators (DGs) with a separate DG dedicated to each of the safeguards power trains. Safeguards power train 5A (480 V bus 5A) is supported by DG 33; safeguards power train 6A (480 V bus 6A) is supported by DG 32; and, safeguards power train 2A/3A (480 V buses 2A and 3A) is supported by DG 31.

BASES

BACKGROUND (continued)

automatically on a safety injection (SI) signal ~~(i.e. low pressurizer pressure or high containment pressure signals)~~ or on an [ESF bus ~~degraded voltage or~~ undervoltage signal] (refer to LCO 3.3.5, "Loss of Power (LOP) Diesel Generator (DG) Start Instrumentation"). After the DG has started, it will automatically tie to its respective bus after offsite power is tripped as a consequence of ESF bus undervoltage ~~or degraded voltage~~, independent of or coincident with an SI signal. The DGs will also start and operate in the standby mode without tying to the ESF bus on an SI signal alone. Following the trip of offsite power, ~~[a sequencer/]~~an undervoltage signal] strips nonpermanent loads from the ESF bus. When the DG is tied to the ESF bus, loads are then sequentially connected to its respective ESF bus by ~~the automatic load sequencer~~. The sequencing logic controls the ~~permissive and~~ starting signals to motor breakers to prevent overloading the DG by automatic load application.

individual load timers

In the event of a loss of ~~preferred power~~, the ESF electrical loads are automatically connected to the DGs in sufficient time to provide for safe reactor shutdown and to mitigate the consequences of a Design Basis Accident (DBA) such as a loss of coolant accident (LOCA).

138 kV or normal offsite source

Certain required unit loads are returned to service in a predetermined sequence in order to prevent overloading the DG in the process. Within [1] minute after the initiating signal is received, all loads needed to recover the unit or maintain it in a safe condition are returned to service.

DGs 31, 32 and 33 are consistent with

Ratings for ~~Train A and Train B DGs satisfy~~ the requirements of Regulatory Guide 1.9 (Ref. 3). ~~The continuous service rating of each DG is [7000] kW with [10]% overload permissible for up to 2 hours in any 24 hour period.~~ The ESF loads that are powered from the ~~4.16~~ 480 kV ESF buses are listed in Reference 2.

Insert: 3.8-2-01

APPLICABLE SAFETY ANALYSES

The initial conditions of DBA and transient 14 analyses in the FSAR, Chapter [6] (Ref. 4) and Chapter ~~[15]~~ (Ref. 5), assume ESF systems are OPERABLE. The AC electrical power sources are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System (RCS), and containment design limits are not

(continued)

INSERT B 3.8-2-01:

The 3 DGs each consist of an Alco model 16-251-E engine coupled to a Westinghouse 2188 kVA, 0.8 power factor, 900 rpm, 3 phase, 60 cycle, 480 volt generator. Each DG has a 2 hr rating of 1950 kW and a continuous rating of 1750 kW.

BASES

APPLICABLE SAFETY ANALYSES (continued)

exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the AC electrical power sources is consistent with the initial assumptions of the Accident analyses and is based upon meeting the design basis of the unit. This results in maintaining at least ~~one train of the~~ onsite or offsite AC sources ~~OPERABLE~~ during Accident conditions in the event of:

Insert: B3.8-3-01

a. An assumed loss of all offsite power or all onsite AC power; and

b. A worst case single failure.

The AC sources satisfy Criterion 3 of ~~NRC Policy Statement~~ 10 CFR 50.36.

LCO

Two qualified circuits between the offsite transmission network and the onsite ~~Class 1E~~ Electrical Power System and separate and independent DGs for each train ensure availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Insert: 3.8-3-02

~~Qualified offsite circuits are those that are described in the FSAR and are part of the licensing basis for the unit.~~

~~In addition, one required automatic load sequencer per train must be OPERABLE.~~

Each offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the ESF buses.

~~Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. Offsite circuit #2 consists of the Startup Transformer, which is normally fed from the Switchyard~~

(continued)

INSERT B 3.8-3-01:

2 of the 3 safeguards power trains energized from either

INSERT B 3.8-3-02:

There are two qualified circuits (normal and alternate) from the transmission network at the Buchanan Station to the onsite electric distribution system. Each of these circuits must be supported by a circuit from the offsite network into the Buchanan substation that is physically independent from the other circuit to the extent practical. The circuits into the Buchanan substation that satisfy these requirements are 96951, 96952 and 95891.

The 138 kV (i.e., normal) offsite circuit consists of one of the following: 138 kV feeder 95331 (preferred); or, 138 kV feeder 95332 (backup). Additionally, the 138 kV/6.9 kV station auxiliary transformer, circuit breakers ST5 and ST6 which supply 6.9 kV buses 5 and 6, and the following components which are common to the normal and alternate offsite circuits:

a. The 480 V bus 5A supply consisting of 6.9 kV bus 5, station service transformer 5, and circuit breakers SS5 and 52/5A;

b. The 480 V bus 2A supply consisting of 6.9 kV bus 5, circuit breaker UT2-ST5 (including autotransfer function), 6.9 kV bus 2, station service transformer 2, and circuit breakers SS2 and 52/2A;

c. The 480 V bus 6A supply consisting of 6.9 kV bus 6, station service transformer 6, and circuit breakers SS6 and 52/6A; and,

d. The 480 V bus 3A supply consisting of 6.9 kV bus 6, circuit breaker UT3-ST6 (including autotransfer function), 6.9 kV bus 3, station service transformer 3, and circuit breakers SS3 and 52/3A.

INSERT B 3.8-3-02: (continued)

The 13.8 kV (i.e., alternate) offsite circuit consists of one of the following: 13.8 kV feeder 13W93 and its associated 13.8/6.9 kV autotransformer (preferred); or, 13.8 kV feeder 13W92 and its associated 13.8/6.9 kV autotransformer (backup). Circuit breakers GT35 and GT36, which supply 6.9 kV buses 5 and 6, and the following components are common to the normal and alternate offsite circuits:

a. The 480 V bus 5A supply consisting of 6.9 kV bus 5, station service transformer 5, and circuit breakers SS5 and 52/5A;

b. The 480 V bus 2A supply consisting of 6.9 kV bus 5, circuit breaker UT2-ST5 (not including autotransfer function), 6.9 kV bus 2, station service transformer 2, and circuit breakers SS2 and 52/2A;

c. The 480 V bus 6A supply consisting of 6.9 kV bus 6, station service transformer 6, and circuit breakers SS6 and 52/6A; and,

d. The 480 V bus 3A supply consisting of 6.9 kV bus 6, circuit breaker UT3-ST6 (not including autotransfer function), 6.9 kV bus 3, station service transformer 3, and circuit breakers SS3 and 52/3A.

If the alternate (13.8 kV) offsite circuit is being used to supply power to the plant and the Unit Auxiliary Transformer is supplying 6.9 kV bus 1, 2, 3 or 4, the size of the 13.8 kV/6.9 kV auto-transformers requires that the automatic transfer of 6.9 kV buses 1, 2, 3, and 4 to 6.9 kV buses 5 and 6 (i.e., the offsite circuit) be disabled because neither 13.8 kV/6.9 kV auto-transformer is capable of supplying 4 operating RCPs. This requirement is not intended to preclude supplying 6.9 kV buses 1, 2, 3, and 4 using the alternate offsite circuit via the 13.8 kV/6.9 kV auto-transformers once sufficient loads have been stripped from 6.9 kV buses 1, 2, 3, and 4 to assure that the 13.8 kV/6.9 kV auto-transformer will not be overloaded by these manual actions.

If IP3 and IP2 are both using a single 13.8 kV feeder (13W92 or 13W93), administrative controls are used to ensure that the 13.8 kV/6.9 kV auto-transformer load restrictions will not be exceeded.

BASES

LCO (continued)

~~Bus A, and is fed through breaker PA 0201, powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.~~

Three DGs

~~Each DG~~ must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This will be accomplished within [10] seconds. Each DG must also be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ESF buses. ~~These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby with the engine at ambient conditions. Additional DG capabilities must be demonstrated to meet required Surveillance, e.g., capability of the DG to revert to standby status on an ECCS signal while operating in parallel test mode.~~

Proper sequencing of loads, [including tripping of nonessential loads,] is a required function for DG OPERABILITY.

each safeguards power train

The AC sources in ~~one train~~ must be separate and independent (to the extent possible) of the AC sources in the other train. For the DGs, separation and independence are complete.

automatic or manual transfer capability to the ESF buses

For the offsite AC sources, separation and independence are to the extent practical. A circuit may be connected to more than one ESF bus ~~with fast transfer capability to the other circuit OPERABLE,~~ and not violate separation criteria. A circuit that is not connected to an ESF bus is required to have OPERABLE ~~fast transfer interlock mechanisms to at least two ESF buses~~ to support OPERABILITY of that circuit.

APPLICABILITY

The AC sources ~~[and sequencers]~~ are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

(continued)

BASES

APPLICABILITY (continued)

b. Adequate core cooling is provided and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

The AC power requirements for MODES 5 and 6 are covered in LCO 3.8.2, "AC Sources—Shutdown."

ACTIONS

A.1

To ensure a highly reliable power source remains with one offsite circuit inoperable, it is necessary to verify the OPERABILITY of the remaining required offsite circuit on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action not met. However, if a second required circuit fails SR 3.8.1.1, the second offsite circuit is inoperable, and Condition C, for two offsite circuits inoperable, is entered.

[~~Reviewer's Note:~~ The turbine driven auxiliary feedwater pump is ~~only~~ not required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, ~~if~~ because the design is such that the remaining OPERABLE motor ~~or turbine~~ driven auxiliary feedwater pump(s) is ~~not by itself~~ capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.]

Insert: B 3.8-5-01

A.~~2~~ 3

Required Action A.~~2~~ 3, which only applies if the train cannot be powered from an offsite source, is intended to provide assurance that an event coincident with a single failure of the associated DG will not result in a complete loss of ~~safety function of critical redundant required features. These features are powered from the redundant AC electrical power train. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, may not be included.~~

Insert: B3.8-5-02

(continued)

INSERT: B 3.8-5-01

A.2

Required Action A.2, which applies only if the 13.8 kV offsite power circuit is being used to feed 6.9 kV buses 5 and 6 and the UAT is supplying 6.9 kV bus 1, 2, 3 or 4, prevents the automatic transfer of 6.9 kV buses 1, 2, 3, and 4 from the UAT to offsite power after a unit trip. Transfer of buses 1, 2, 3, and 4 from the UAT to offsite power could result in overloading the 13.8 kV/6.9 kV autotransformer. Having the auto-transfer disabled when the 13.8 kV offsite power circuit is supplying power to 6.9 kV buses 5 and 6 does not, by itself, cause either the 138 kV or 13.8 kV offsite power circuit to be inoperable. This requirement is not intended to preclude supplying 6.9 kV buses 1, 2, 3, and 4 using the alternate offsite circuit via the 13.8 kV/6.9 kV auto-transformers once sufficient loads have been stripped from 6.9 kV buses 1, 2, 3, and 4 to assure that the 13.8 kV/6.9 kV auto-transformer will not be overloaded by these manual actions. Automatic transfer of buses 1, 2, 3, and 4 can be disabled by placing 6.9 kV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 in the "pull-out" position.

Although the auto-transfer feature is normally disabled prior to placing the 13.8 kV offsite power circuit in service, a Completion Time of 1 hour ensures that the 13.8 kV circuit meets requirements for Operability promptly when the alternate offsite circuit is configured to support the response of ESF functions.

INSERT: B 3.8-5-02

redundant required features. Required safety features are designed with a redundant safety feature that is powered from a different safeguards power train. Therefore, if a required safety feature is supported by an inoperable offsite circuit, then the failure of the DG associated with that required safety feature will not result in the loss of a safety function because the safety function will be accomplished by the redundant safety feature that is powered from a different safeguards power train. However, if a required safety feature is supported by an inoperable offsite circuit and the redundant safety feature that is powered from a different safeguards power train is also inoperable, then the failure of the DG associated with that required safety feature will result in the loss of a safety function. Required Action A.3 ensures that appropriate compensatory measures are taken for a Condition where the loss of a DG could result in the loss of a safety function when an offsite circuit is not Operable.

following a trip of the main turbine generator

BASES

ACTIONS

③

A.~~2~~ (continued)

③

The Completion Time for Required Action A.~~2~~ is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

will not have

automatically ⑤

a. The train ~~has no~~ offsite power supplying its loads; and

powered from another safeguards power

b. A required feature ~~on the other~~ train is inoperable.

If at any time during the existence of Condition A (one offsite circuit inoperable) a redundant required feature subsequently becomes inoperable, this Completion Time begins to be tracked.

is not automically available

that

Discovering ~~no~~ offsite power to one train of the onsite ~~Class 1E~~ Electrical Power Distribution System coincident with one or more inoperable required support or supported features, or both, that are associated with the other train that has offsite power, results in starting the Completion Times for the Required Action. Twenty-four hours is acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

The two remaining safeguards power trains.

The remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to ~~Train A and Train B~~ of the onsite ~~Class 1E~~ Distribution System. The 24 hour Completion Time takes into account the component OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 24 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

A.~~3~~ ④

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition A for a period that should not exceed 72 hours. With one offsite circuit inoperable, the reliability of the offsite system is degraded, and the

(continued)

BASES

ACTIONS

A.3 (continued)

potential for a loss of offsite power is increased, with attendant potential for a challenge to the unit safety systems. In this Condition, however, the remaining OPERABLE offsite circuit and DGs are adequate to supply electrical power to the onsite ~~Class 1E~~ Distribution System.

The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

~~The second Completion Time for Required Action A.3 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DG is inoperable and that DG is subsequently returned OPERABLE, the LCO may already have been not met for up to 72 hours. This could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the offsite circuit. At this time, a DG could again become inoperable, the circuit restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 day Completion Time provides a limit on the time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A and B are entered concurrently. The "AND" connector between the 72 hour and 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

~~As in Required Action A.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition A was entered.~~

B.1

To ensure a highly reliable power source remains with an inoperable DG, it is necessary to verify the availability of

(continued)

BASES

ACTIONS

B.1 (continued)

the offsite circuits on a more frequent basis. Since the Required Action only specifies "perform," a failure of SR 3.8.1.1 acceptance criteria does not result in a Required Action being not met. However, if a circuit fails to pass SR 3.8.1.1, it is inoperable. Upon offsite circuit inoperability, additional Conditions and Required Actions must then be entered.

not

because

[~~Reviewer's Note~~: The turbine driven auxiliary feedwater pump is ~~only~~ required to be considered a redundant required feature, and, therefore, required to be determined OPERABLE by this Required Action, if the design is such that the remaining OPERABLE motor ~~or turbine~~ driven auxiliary feedwater pump~~(s)~~ is ~~not by itself~~ capable (without any reliance on the motor driven auxiliary feedwater pump powered by the emergency bus associated with the inoperable diesel generator) of providing 100% of the auxiliary feedwater flow assumed in the safety analysis.]

B.2

Required Action B.2 is intended to provide assurance that a loss of offsite power, during the period that a DG is inoperable, does not result in a complete loss of ~~safety function of critical systems. These features are designed with redundant safety related trains. This includes motor driven auxiliary feedwater pumps. Single train systems, such as turbine driven auxiliary feedwater pumps, are not included. Redundant required feature failures consist of inoperable features associated with a train, redundant to the train that has an inoperable DG.~~

Insert: B3.8-8-01

The Completion Time for Required Action B.2 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action, the Completion Time only begins on discovery that both:

(continued)

INSERT: B 3.8-8-01

redundant required features. Required safety features are designed with a redundant safety feature that is powered from a different safeguards power train. Therefore, if a required safety feature is supported by an inoperable DG, then the failure of the offsite circuit will not result in the loss of a safety function because the safety function will be accomplished by the redundant safety feature that is powered from a different safeguards power train (and DG). However, if a required safety feature is supported by an inoperable DG and the redundant safety feature that is powered from a different safeguards power train is also inoperable, then a loss of offsite power will result in the loss of a safety function. Required Action B.2 ensures that appropriate compensatory measures are taken for a Condition where the loss of offsite power could result in the loss of a safety function when a DG is not Operable.

BASES

ACTIONS

B.2 (continued)

a. An inoperable DG exists; and

powered from another safeguards power

b. A required feature on the other train (Train A or Train B) is inoperable.

If at any time during the existence of this Condition (one DG inoperable) a required feature subsequently becomes inoperable, this Completion Time would begin to be tracked.

either

A COMPETION TIME of

Discovering one required DG inoperable coincident with one or more inoperable required support or supported features, or both, that are associated with the OPERABLE DG, results in starting the Completion Time for the Required Action. Four hours from the discovery of these events existing concurrently is Acceptable because it minimizes risk while allowing time for restoration before subjecting the unit to transients associated with shutdown.

(s)

In this Condition, the remaining OPERABLE DG and offsite circuits are adequate to supply electrical power to the onsite ~~Class 1E~~ Distribution System. Thus, on a component basis, single failure protection for the required feature's function may have been lost; however, function has not been lost. The 4 hour Completion Time takes into account the OPERABILITY of the redundant counterpart to the inoperable required feature. Additionally, the 4 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

B.3.1 and B.3.2

(s)

Required Action B.3.1 provides an allowance to avoid unnecessary testing of OPERABLE DG(s). If it can be determined that the cause of the inoperable DG does not exist on the OPERABLE DG, SR 3.8.1.2 does not have to be performed. If the cause of inoperability exists on other DG(s), the other DG(s) would be declared inoperable upon discovery and Condition E of LCO 3.8.1 would be entered. Once the failure is repaired, the common cause failure no longer exists, and Required Action B.3.1 is satisfied. If the cause of the initial inoperable DG cannot be confirmed not to exist on the remaining DG(s), performance of

(continued)

BASES

ACTIONS

B.3.1 and B.3.2 (continued)

SR 3.8.1.2 suffices to provide assurance of continued OPERABILITY of that DG.

In the event the inoperable DG is restored to OPERABLE status prior to completing either B.3.1 or B.3.2, the [plant corrective action program] will continue to evaluate the common cause possibility. This continued evaluation, however, is no longer under the 24 hour constraint imposed while in Condition B.

According to Generic Letter 84-15 (Ref. 7), [24] hours is reasonable to confirm that the OPERABLE DG[s] ~~is~~ are not affected by the same problem as the inoperable DG.

B.4

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition B for a period that should not exceed 72 hours.

In Condition B, the remaining OPERABLE DG(s) and offsite circuits are adequate to supply electrical power to the onsite ~~Class 1E~~ Distribution System. The 72 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

~~The second Completion Time for Required Action B.4 establishes a limit on the maximum time allowed for any combination of required AC power sources to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an offsite circuit is inoperable and that circuit is subsequently restored OPERABLE, the LCO may already have been not met for up to 72 hours. This could lead to a total of 144 hours, since initial failure to meet the LCO, to restore the DG. At this time, an offsite circuit could again become inoperable, the DG restored OPERABLE, and an additional 72 hours (for a total of 9 days) allowed prior to complete restoration of the LCO. The 6 day Completion Time provides a limit on time allowed in a specified condition after discovery of failure to meet the LCO. This limit is considered reasonable for situations in which Conditions A~~

(continued)

BASES

ACTIONS

~~B.4 (continued)~~

~~and B are entered concurrently. The "AND" connector between the 72 hour and 6 day Completion Times means that both Completion Times apply simultaneously, and the more restrictive Completion Time must be met.~~

~~As in Required Action B.2, the Completion Time allows for an exception to the normal "time zero" for beginning the allowed time "clock." This will result in establishing the "time zero" at the time that the LCO was initially not met, instead of at the time Condition B was entered.~~

C.1 and C.2

Required Action C.1, which applies when two offsite circuits are inoperable, is intended to provide assurance that an event with a coincident single failure will not result in a complete loss of redundant required safety functions. The Completion Time for this failure of redundant required features is reduced to 12 hours from that allowed for one train without offsite power (Required Action A.2). The rationale for the reduction to 12 hours is that Regulatory Guide 1.93 (Ref. 6) allows a Completion Time of 24 hours for two required offsite circuits inoperable, based upon the assumption that two complete safety trains are OPERABLE. When a ~~concurrent~~ redundant required feature failure exists, this assumption is not the case, and a shorter Completion Time of 12 hours is appropriate. These features are powered from redundant AC safety trains. This includes motor driven auxiliary feedwater pumps. Single train features, such as turbine driven auxiliary pumps, are ~~not~~ included ~~in the list~~.

3

safeguards power

three

is not OPERABLE

as discussed in the Bases for Required Action A.3

The Completion Time for Required Action C.1 is intended to allow the operator time to evaluate and repair any discovered inoperabilities. This Completion Time also allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." In this Required Action the Completion Time only begins on discovery that both:

a. All required offsite circuits are inoperable; and

b. A required feature is inoperable.

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

If at any time during the existence of Condition C (two offsite circuits inoperable) a required feature becomes inoperable, this Completion Time begins to be tracked.

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition C for a period that should not exceed 24 hours. This level of degradation means that the offsite electrical power system does not have the capability to effect a safe shutdown and to mitigate the effects of an accident; however, the onsite AC sources have not been degraded. This level of degradation generally corresponds to a total loss of the immediately accessible offsite power sources.

Because of the normally high availability of the offsite sources, this level of degradation may appear to be more severe than other combinations of two AC sources inoperable that involve one or more DGs inoperable. However, two factors tend to decrease the severity of this level of degradation:

a. The configuration of the redundant AC electrical power system that remains available is not susceptible to a single bus or switching failure; and

b. The time required to detect and restore an unavailable offsite power source is generally much less than that required to detect and restore an unavailable onsite AC source.

With both of the required offsite circuits inoperable, sufficient onsite AC sources are available to maintain the unit in a safe shutdown condition in the event of a DBA or transient. In fact, a simultaneous loss of offsite AC sources, a LOCA, and a worst case single failure were postulated as a part of the design basis in the safety analysis. Thus, the 24 hour Completion Time provides a period of time to effect restoration of one of the offsite circuits commensurate with the importance of maintaining an AC electrical power system capable of meeting its design criteria.

According to Reference 6, with the available offsite AC sources, two less than required by the LCO, operation may

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

continue for 24 hours. If two offsite sources are restored within 24 hours, unrestricted operation may continue. If only one offsite source is restored within 24 hours, power operation continues in accordance with Condition A.

D.1 and D.2

Insert: B3.8-13-01

Pursuant to LCO 3.0.6, the Distribution System ACTIONS would not be entered even if all AC sources to it were inoperable, resulting in de-energization. Therefore, the Required Actions of Condition D are modified by a Note to indicate that when Condition D is entered with no AC source to any train, the Conditions and Required Actions for LCO 3.8.9, "Distribution Systems—Operating," must be immediately entered. This allows Condition D to provide requirements for the loss of one offsite circuit and one DG, without regard to whether a train is de-energized. LCO 3.8.9 provides the appropriate restrictions for ~~a~~ de-energized ~~train~~.

offsite or DG

would be

during an event

train that would be

According to Regulatory Guide 1.93 (Ref. 6), operation may continue in Condition D for a period that should not exceed 12 hours.

In Condition D, individual redundancy is lost in both the offsite electrical power system and the onsite AC electrical power system. Since power system redundancy is provided by two diverse sources of power, however, the reliability of the power systems in this Condition may appear higher than that in Condition C (loss of both required offsite circuits). This difference in reliability is offset by the susceptibility of this power system configuration to a single bus or switching failure. The 12 hour Completion Time takes into account the capacity and capability of the remaining AC sources, a reasonable time for repairs, and the low probability of a DBA occurring during this period.

E.1

two or more

With Train A and Train B DGs inoperable, ~~there are no~~ the remaining standby AC sources. Thus, with an assumed loss of offsite electrical power, insufficient standby AC sources

are not adequate to satisfy analysis assumptions

(continued)

INSERT: B 3.8-13-01

When the UAT is being used to supply 6.9 kV buses 1, 2, 3 0r 4 and the 13.8 kV offsite circuit is being used to supply 6.9 kV buses 5 and 6, the autotransfer function is disabled. Therefore, 480 V safeguards buses 2A and 3A (safeguards train 2A/3A) will not be automatically re-energized with offsite power following a plant trip until connected to the offsite circuit by operator action.

BASES

ACTIONS

E.1 (continued)

are available to power the minimum required ESF functions. Since the offsite electrical power system is the only source of AC power for this level of degradation, the risk associated with continued operation for a very short time could be less than that associated with an immediate controlled shutdown (the immediate shutdown could cause grid instability, which could result in a total loss of AC power). Since any inadvertent generator trip could also result in a total loss of offsite AC power, however, the time allowed for continued operation is severely restricted. The intent here is to avoid the risk associated with an immediate controlled shutdown and to minimize the risk associated with this level of degradation.

two or more

According to Reference 6, with both DGs inoperable, operation may continue for a period that should not exceed 2 hours.

~~F.1~~

~~The sequencer(s) is an essential support system to [both the offsite circuit and the DG associated with a given ESF bus]. [Furthermore, the sequencer is on the primary success path for most major AC electrically powered safety systems powered from the associated ESF bus.] Therefore, loss of an [ESF bus sequencer] affects every major ESF system in the [division]. The [12] hour Completion Time provides a period of time to correct the problem commensurate with the importance of maintaining sequencer OPERABILITY. This time period also ensures that the probability of an accident (requiring sequencer OPERABILITY) occurring during periods when the sequencer is inoperable is minimal.~~

~~This Condition is preceded by a Note that allows the Condition to be deleted if the unit design is such that any sequencer failure mode will only affect the ability of the associated DG to power its respective safety loads under any conditions. Implicit in this Note is the concept that the Condition must be retained if any sequencer failure mode results in the inability to start all or part of the safety loads when required, regardless of power availability, or results in overloading the offsite power circuit to a safety bus during an event and thereby causes its failure. Also~~

(continued)

BASES

ACTIONS

~~E.1 (continued)~~

~~implicit in the Note, is that the Condition is not applicable to any train that does not have a sequencer.~~

F

~~G~~.1 and ~~G~~.2 F.1 and F.2

If the inoperable AC electric power sources cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

G.1 and H.1

Conditions G and H

Condition H correspond~~s~~ to a level of degradation in which all redundancy in the AC electrical power supplies has been lost ~~.~~ or a loss of safety function has already occurred ~~At this severely degraded level, any further losses in the AC electrical power system will cause a loss of function.~~ Therefore, no additional time is justified for continued operation. The unit is required by LCO 3.0.3 to commence a controlled shutdown.

SURVEILLANCE REQUIREMENTS

The AC sources are designed to permit inspection and testing of all important areas and features, especially those that have a standby function, in accordance with 10 CFR 50, Appendix A, GDC 18 (Ref. ~~8~~ 7). Periodic component tests are supplemented by ~~extensive~~ functional tests during refueling outages (under simulated accident conditions). The SRs for demonstrating the OPERABILITY of the DGs are ~~in accordance~~ consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3), ~~Regulatory Guide 1.108 (Ref. 9),~~ and Regulatory Guide 1.137 (Ref. ~~10~~ 8)~~, as addressed in the FSAR~~.

Where the SRs discussed herein specify voltage and frequency tolerances, the following is applicable. The minimum steady state output voltage of ~~3740~~ 422 V is ~~90% of the nominal 4160 V output voltage~~ Insert: B3.8-15-01. This value~~, which is specified in~~

(continued)

INSERT: B 3.8-15-01

the value determined to be acceptable in the analysis of the degraded grid condition.

BASES

SURVEILLANCE REQUIREMENTS (continued)

~~ANSI C84.1 (Ref. 11),~~ allows for voltage drop to the terminals of 4000 V motors ~~whose minimum operating voltage is specified as 90% or 3600 V.~~ It also allows for voltage drops to motors and other equipment down through the 120 V level where minimum operating voltage is also usually specified as 90% of name plate rating. The specified maximum steady state output voltage of 4756 V is equal to the maximum operating voltage specified ~~for 4000 V motors.~~ ~~It ensures that for a lightly loaded distribution system, the voltage at the terminals of 4000 V motors is no more than the maximum rated operating voltages.~~ The specified minimum and maximum frequencies of the DG are 58.8 Hz and 61.2 Hz, respectively. These values are equal to ± 2% of the 60 Hz nominal frequency and are derived from the recommendations given in Regulatory Guide 1.9 (Ref. 3).

480

500

480 V Circuit breakers

SR 3.8.1.1

This SR ensures proper circuit continuity for the offsite AC electrical power supply to the onsite distribution network and availability of offsite AC electrical power. The breaker alignment verifies that each breaker is in its correct position to ensure that distribution buses and loads are connected to their preferred power source, and that appropriate independence of offsite circuits is maintained. The 7 day Frequency is adequate since breaker position is not likely to change without the operator being aware of it and because ~~its status is~~ displayed in the control room.

Insert: B 3.8-16-01

6.9 kV bus status and 13.8 kV circuit status are

SR 3.8.1.2 ~~and SR 3.8.1.7~~

These SRs help to ensure the availability of the standby electrical power supply to mitigate DBAs and transients and to maintain the unit in a safe shutdown condition.

To minimize the wear on moving parts that do not get lubricated when the engine is not running, these SRs are modified by a Note ~~(Note 2 for SR 3.8.1.2)~~ to indicate that all DG starts for these Surveillances may be preceded by an engine prelube period. ~~and followed by a warmup period prior to loading~~.

For the purposes of SR 3.8.1.2 ~~and SR 3.8.1.7 testing~~, the DGs are started from standby conditions. Standby conditions

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.1 - AC Sources - Operating

INSERT: B 3.8-16-01

Portions of this SR are satisfied by telephone communication with Consolidated Edison personnel capable of confirming the status of the offsite circuits.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.2 ~~and SR 3.8.1.7~~ (continued)

for a DG mean that the diesel engine coolant and oil are being continuously circulated and temperature is being maintained consistent with manufacturer recommendations.

~~In order to reduce stress and wear on diesel engines, some manufacturers recommend a modified start in which the starting speed of DGs is limited, warmup is limited to this lower speed, and the DGs are gradually accelerated to synchronous speed prior to loading. These start procedures are the intent of Note 3, which is only applicable when such modified start procedures are recommended by the manufacturer.~~

SR 3.8.1.~~7~~ 2 requires that, at a ~~184~~ 31 day Frequency, the DG starts from standby conditions and achieves required voltage and frequency within 10 seconds. The 10 second start requirement supports the assumptions of the design basis LOCA analysis in the FSAR, Chapter ~~15~~ 14 (Ref. 5).

~~The 10 second start requirement is not applicable to SR 3.8.1.2 (see Note 3) when a modified start procedure as described above is used. If a modified start is not used, the 10 second start requirement of SR 3.8.1.7 applies.~~

~~Since SR 3.8.1.7 requires a 10 second start, it is more restrictive than SR 3.8.1.2, and it may be performed in lieu of SR 3.8.1.2. This is the intent of Note 1 of SR 3.8.1.2.~~

The normal 31 day Frequency for SR 3.8.1.2 ~~(see Table 3.8.1-1, "Diesel Generator Test Schedule," in the accompanying LCO)~~ is consistent with Regulatory Guide 1.9 (Ref. 3). ~~The 184 day Frequency for SR 3.8.1.7 is a reduction in cold testing consistent with Generic Letter 84-15 (Ref. 7).~~ A ~~These Frequencies~~ This Frequency provide adequate assurance of DG OPERABILITY, while minimizing degradation resulting from testing.

Insert: 3.8-17-01

SR 3.8.1.3

This Surveillance verifies that the DGs are capable of synchronizing with the offsite electrical system and accepting loads ~~greater than or equal to the equivalent of~~ approximating the maximum expected accident loads. A minimum run time of

(continued)

INSERT: B 3.8-17-01

DGs have redundant air start motors and both air start motors are actuated by both channels of the start logic. The DG is OPERABLE when either air start motor is OPERABLE; however, this SR will not demonstrate that both of the air start motors are independently capable of starting the DG. If an air start motor is not capable of performing its intended function, a DG is inoperable until a timed start is conducted using the remaining air start motor. Alternately, this SR may be performed using one air start motor (i.e., redundant air start motor isolated) on a staggered basis to ensure that the DG will start with either air start motor.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.3 (continued)

60 minutes is required to stabilize engine temperatures, while minimizing the time that the DG is connected to the offsite source.

Although no power factor requirements are established by this SR, the DG is normally operated at a power factor between [0.8 lagging] and [1.0]. The [0.8] value is the design rating of the machine, while the [1.0] is an operational limitation [to ensure circulating currents are minimized]. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 31 day Frequency for this Surveillance ~~(Table 3.8.1-1)~~ is consistent with Regulatory Guide 1.9 (Ref. 3).

This SR is modified by four Notes. Note 1 indicates that diesel engine runs for this Surveillance may include gradual loading, as recommended by the manufacturer, so that mechanical stress and wear on the diesel engine are minimized. Note 2 states that momentary transients, because of changing bus loads, do not invalidate this test. Similarly, momentary power factor transients above the limit do not invalidate the test. Note 3 indicates that this Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations. Note 4 stipulates a prerequisite requirement for performance of this SR. A successful DG start must precede this test to credit satisfactory performance.

SR 3.8.1.4

This SR provides verification that the level of fuel oil in the day tank ~~[and engine mounted tank]~~ is at or above the level at which fuel oil is automatically added. The level is expressed as an equivalent volume in gallons, and ~~is~~ selected to ensure adequate fuel oil for a ~~minimum of~~ approximately 1 hour of DG operation at full load ~~plus 10%~~.

The 31 day Frequency is adequate to assure that a sufficient supply of fuel oil is available, since low level alarms are

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.4 (continued)

provided and facility operators would be aware of any large uses of fuel oil during this period.

SR 3.8.1.5

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel oil day ~~[and engine mounted]~~ tanks once every [31] days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, contaminated fuel oil, and breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system.

Consistent with

The Surveillance Frequencies are ~~established by~~ Regulatory Guide 1.137 (Ref. 10). This SR is for preventative maintenance. The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during the performance of this Surveillance.

8

SR 3.8.1.6

This Surveillance demonstrates that each required fuel oil transfer pump operates and transfers fuel oil from its associated storage tank to its associated day tank. This is required to support continuous operation of standby power sources. This Surveillance provides assurance that the fuel oil transfer pump is OPERABLE, the fuel oil piping system is intact, the fuel delivery piping is not obstructed, and the controls and control systems for automatic fuel transfer systems are OPERABLE.

~~The Frequency for this SR is variable, depending on individual system design, with up to a [92] day interval. The [92] day Frequency corresponds to the testing requirements for pumps as contained in the ASME Code.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.6 (continued)

~~Section XI (Ref. 11); however~~, the design of fuel transfer systems is such that pumps operate automatically or must be started manually in order to maintain an adequate volume of fuel oil in the day ~~[and engine mounted]~~ tanks during or following DG testing. Therefore, ~~In such a case,~~ a 31 day Frequency is appropriate. Since proper operation of fuel transfer systems is an inherent part of DG OPERABILITY, the Frequency of this SR ~~should be modified to reflect individual designs~~ is consistent with the 31 day Frequency for verification of DG operability.

~~SR 3.8.1.7~~

~~See SR 3.8.1.2.~~

SR 3.8.1.8 7

Transfer of each offsite ~~4.16 kV ESF bus~~ power supply from the normal offsite circuit to the alternate offsite circuit demonstrates the OPERABILITY of the alternate circuit distribution network to power the shutdown loads. The [18 month] 24 Frequency of the Surveillance is based on engineering judgment, taking into consideration the unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed ~~at the [18 month] Frequency~~. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

~~This SR is modified by a Note. The reason for the Note is that, during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. Credit may be taken for unplanned events that satisfy this SR.~~

T.1

Insert: B 3.8-20-01

~~SR 3.8.1.9~~

~~Each DG is provided with an engine overspeed trip to prevent damage to the engine. Recovery from the transient caused by the loss of a large load could cause diesel engine~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.1 - AC Sources - Operating

INSERT: B 3.8-20-01

SR 3.8.1.8

Verification that 6.9 kV buses 2 and 3 will auto transfer (fast transfer) from the Unit Auxiliary transformer to 6.9 kV buses 5 and 6 (i.e. station auxiliary transformer) following a loss of voltage on 6.9 kV buses 2 and 3 is needed to confirm the Operability of a function assumed to operate to provide offsite power to safeguards power train 2A/3A following a trip of the main generator.

An actual demonstration of this feature requires the tripping the main generator while the reactor is at power with the main generator supplying 6.9 kV buses 2 and 3. This will cause perturbations to the electrical distribution systems that could challenge unit safety systems during a plant shutdown. Therefore, in lieu of actually initiating a circuit transfer, testing that adequately shows the capability of the transfer is acceptable. This transfer testing may include any sequence of sequential, overlapping, or total steps so that the entire transfer sequence is verified. The 24 month Frequency is based on engineering judgement taking into consideration the plant conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle length.

This SR is modified by two Notes. The reason for Note 1 is that, during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge unit safety systems. Credit may be taken for unplanned events that satisfy this SR. As stated in Note 2, this SR is only required to be met when the 138 kV offsite circuit is supplying 6.9 kV buses 5 and 6 because, if the 13.8 kV circuit is supplying 6.9 kV buses 5 and 6, then the feature tested by this SR is required to be disabled.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

overspeed, which, if excessive, might result in a trip of the engine. This Surveillance demonstrates the DG load response characteristics and capability to reject the largest single load without exceeding predetermined voltage and frequency and while maintaining a specified margin to the overspeed trip. [For this unit, the single load for each DG and its horsepower rating is as follows:] This Surveillance may be accomplished by:

a. Tripping the DG output breaker with the DG carrying greater than or equal to its associated single largest post-accident load while paralleled to offsite power, or while solely supplying the bus; or

b. Tripping its associated single largest post-accident load with the DG solely supplying the bus.

As required by IEEE-308 (Ref. 12), the load rejection test is acceptable if the increase in diesel speed does not exceed 75% of the difference between synchronous speed and the overspeed trip setpoint, or 15% above synchronous speed, whichever is lower.

The time, voltage, and frequency tolerances specified in this SR are derived from Regulatory Guide 1.9 (Ref. 3) recommendations for response during load sequence intervals. The 3 seconds specified is equal to 60% of a typical 5 second load sequence interval associated with sequencing of the largest load. The voltage and frequency specified are consistent with the design range of the equipment powered by the DG. SR 3.8.1.9.a corresponds to the maximum frequency excursion, while SR 3.8.1.9.b and SR 3.8.1.9.c are steady state voltage and frequency values to which the system must recover following load rejection. The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9).

This SR is modified by two Notes. The reason for Note 1 is that during operation with the reactor critical, performance of this SR could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~ In order to ensure that the DG is tested under load

T.1

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.9 (continued)

conditions that are as close to design basis conditions as possible, Note 2 requires that, if synchronized to offsite power, testing must be performed using a power factor ≤ [0.9]. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience.

[Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable.

a. Performance of the SR will not render any safety system or component inoperable;

b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and

c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.]

SR 3.8.1.10

This Surveillance demonstrates the DG capability to reject a full load without overspeed tripping or exceeding the predetermined voltage limits. The DG full load rejection may occur because of a system fault or inadvertent breaker tripping. This Surveillance ensures proper engine generator load response under the simulated test conditions. This test simulates the loss of the total connected load that the DG experiences following a full load rejection and verifies that the DG does not trip upon loss of the load. These acceptance criteria provide for DG damage protection. While the DG is not expected to experience this transient during an event and continues to be available, this response ensures that the DG is not degraded for future application, including reconnection to the bus if the trip initiator can be corrected or isolated.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.10 (continued)

In order to ensure that the DG is tested under load conditions that are as close to design basis conditions as possible, testing must be performed using a power factor ≤ [0.9]. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience.

The [18 month] Frequency is consistent with the recommendation of Regulatory Guide 1.108 (Ref. 9) and is intended to be consistent with expected fuel cycle lengths.

This SR has been modified by a Note. The reason for the Note is that during operation with the reactor critical, performance of this SR could cause perturbation to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~ T.1

[Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:

a. Performance of the SR will not render any safety system or component inoperable;

b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and

c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.]

SR 3.8.1.11

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), this Surveillance demonstrates the as designed operation of the standby power sources during loss of the offsite source. This test verifies all actions

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

encountered from the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

The DG autostart time of [10] seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved.

The requirement to verify the connection and power supply of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG systems to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(1), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.11 (continued)

consistent with manufacturer recommendations. The reason for Note 2 is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~

T.1

SR 3.8.1.12

This Surveillance demonstrates that the DG automatically starts and achieves the required voltage and frequency within the specified time ([10] seconds) from the design basis actuation signal (LOCA signal) and operates for ≥ 5 minutes. The 5 minute period provides sufficient time to demonstrate stability. SR 3.8.1.12.d and SR 3.8.1.12.e ensure that permanently connected loads and emergency loads are energized from the offsite electrical power system on an ESF signal without loss of offsite power.

The requirement to verify the connection of permanent and autoconnected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, ECCS injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or RHR systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with the expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the [18 month] Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.12 (continued)

This SR is modified by two Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations. The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~

T.1

9

SR 3.8.1.13

This Surveillance demonstrates that DG noncritical protective functions ~~(e.g., high jacket water temperature)~~ are bypassed on a loss of voltage signal concurrent with an ESF actuation test signal, and critical protective functions (engine overspeed, ~~generator differential current~~, [low lube oil pressure, ~~high crankcase pressure~~, and start failure relay]) trip the DG to avert substantial damage to the DG unit. The noncritical trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

(engine overcrank)

24

The 18 month] Frequency is based on engineering judgment, taking into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR ~~when performed at the [18 month] Frequency~~. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

The SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required DG from service. ~~Credit may be taken for unplanned events that satisfy this SR.~~

T.1

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.13 (continued)

~~Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable;~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

10

SR 3.8.1.~~14~~

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~~Regulatory Guide 1.108~~ (Ref. 9) ~~paragraph 2.a.(3)~~, requires demonstration once per ~~18~~ months that the DGs can start and run continuously at full load capability for an interval of not less than ~~24~~ hours, ≥ ~~[2] hours~~ of which is at a load equivalent to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

8

105 minutes

In order to ensure that the DG is tested under load conditions that are as close to design conditions as possible, testing must be performed using a power factor of ≤ [0.9]. This power factor is chosen to be representative of the actual design basis inductive loading that the DG would experience. The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

0.9

(continued)

BASES

SURVEILLANCE REQUIREMENTS

(10)

SR 3.8.1.14 (continued)

(24)

The 18 month Frequency is consistent with the recommendations of ~~Regulatory Guide 1.108~~ (Ref. 9), and ~~paragraph 2.a.(3))~~ takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by ~~two Notes~~ a ~~Note 1~~ that states that momentary transients due to changing bus loads do not invalidate this test. Similarly, momentary power factor transients above the power factor limit will not invalidate the test. ~~The reason for Note 2 is that during operation with the reactor critical, performance of this Surveillance could cause perturbations to the electrical distribution systems that could challenge continued steady state operation and, as a result, unit safety systems. Credit may be taken for unplanned events that satisfy this SR.~~ (T.1)

~~SR 3.8.1.15~~

~~This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within [10] seconds. The [10] second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(5).~~

~~This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least [2] hours at full load conditions prior to performance of this Surveillance is based on manufacturer recommendations for achieving hot conditions. Momentary transients due to changing bus loads do not invalidate this test. Note 2 allows all DG starts to be preceded by an engine prelube period to minimize wear and tear on the diesel during testing.~~

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.1.16

As required by Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), this Surveillance ensures that the manual synchronization and automatic load transfer from the DG to the offsite source can be made and the DG can be returned to ready to load status when offsite power is restored. It also ensures that the autostart logic is reset to allow the DG to reload if a subsequent loss of offsite power occurs. The DG is considered to be in ready to load status when the DG is at rated speed and voltage, the output breaker is open and can receive an autoclose signal on bus undervoltage, and the load sequence timers are reset.

The Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(6), and takes into consideration unit conditions required to perform the Surveillance.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~

SR 3.8.1.17

Demonstration of the test mode override ensures that the DG availability under accident conditions will not be compromised as the result of testing and the DG will automatically reset to ready to load operation if a LOCA actuation signal is received during operation in the test mode. Ready to load operation is defined as the DG running at rated speed and voltage with the DG output breaker open. These provisions for automatic switchover are required by IEEE-308 (Ref. 13), paragraph 6.2.6(2).

The requirement to automatically energize the emergency loads with offsite power is essentially identical to that of SR 3.8.1.12. The intent in the requirement associated with SR 3.8.1.17.b is to show that the emergency loading was not affected by the DG operation in test mode. In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the emergency loads to perform these functions is acceptable.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.1.17 (continued)

This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified.

The [18 month] Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(8), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~ T.1

11

SR 3.8.1.18

with concurrent

Under accident ~~[and~~ loss of offsite power~~] conditions~~ loads are sequentially connected to the bus by ~~the [automatic load sequencer]. The sequencing logic controls the permissive and starting signals to motor breakers~~ to prevent overloading of the DGs due to high motor starting currents. The ~~[10]%~~ load sequence time interval tolerance ensures that sufficient time exists for the DG to restore frequency and voltage prior to applying the next load and that safety analysis assumptions regarding ESF equipment time delays are not violated. Reference 2 provides a summary of the automatic loading of ESF buses.

individual load timers

design

The Frequency of [18 months] ~~is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9), paragraph 2.a.(2), takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths~~.

Insert: B 3.8-30-01

This SR is modified by a Note. ~~The reason for the Note is that performing the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. Credit may be taken for unplanned events that satisfy this SR.~~ T.1

Insert: B 3.8-30-02

(continued)

INSERT: B 3.8-30-01

is based on engineering judgment, taking into consideration operating experience that has shown that these components usually pass the SR. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

INSERT: B 3.8-30-02

that specifies that load timers associated with equipment that has automatic initiation capability disabled are not required to be Operable. This note is needed because these time delay relays affect the Operability of both the AC sources (offsite power and DG) and the specific load that the relay starts. If a timer fails to start a required load or starts the load later than assumed in the analysis, then the required load is not Operable. If a timer starts the load outside the design interval (early or late), then the DG and offsite source are not Operable because overlap of equipment starts may cause an offsite source to exceed limits for voltage or current or a DG to exceed limits for voltage, current or frequency. Therefore, when an individual load sequence timer is not Operable, it is conservative to disable the automatic initiation capability of that component rather than declare the associated DG inoperable because of the following: the potential for adverse impact on the DG by simultaneous start of ESF equipment is eliminated; all other loads powered from the safeguards power train are available to respond to the event; and, the load with the inoperable timer remains available for a manual start after the one minute completion of the normal starting sequence.

BASES

SURVEILLANCE REQUIREMENTS

(11) SR 3.8.1.18 (continued)

~~Reviewer's Note: The above MODE restrictions may be deleted if it can be demonstrated to the staff, on a plant specific basis, that performing the SR with the reactor in any of the restricted MODES can satisfy the following criteria, as applicable:~~

~~a. Performance of the SR will not render any safety system or component inoperable;~~

~~b. Performance of the SR will not cause perturbations to any of the electrical distribution systems that could result in a challenge to steady state operation or to plant safety systems; and~~

~~c. Performance of the SR, or failure of the SR, will not cause, or result in, an AOO with attendant challenge to plant safety systems.~~

(12) SR 3.8.1.19

In the event of a DBA coincident with a loss of offsite power, the DGs are required to supply the necessary power to ESF systems so that the fuel, RCS, and containment design limits are not exceeded.

This Surveillance demonstrates the DG operation, ~~as discussed in the Bases for SR 3.8.1.11,~~ during a loss of offsite power actuation test signal in conjunction with an ESF actuation signal. Insert: B3.8-31-01 In lieu of actual demonstration of connection and loading of loads, testing that adequately shows the capability of the DG system to perform these functions is acceptable. This testing may include any series of sequential, overlapping, or total steps so that the entire connection and loading sequence is verified. H

(24) The Frequency of [18 months] takes into consideration unit conditions required to perform the Surveillance and is intended to be consistent with an expected fuel cycle length of [18 months].

This SR is modified by ~~two~~ three Notes. The reason for Note 1 is to minimize wear and tear on the DGs during testing. For

(continued)

INSERT: B 3.8-31-01

This SR verifies all actions encountered from an ESF signal concurrent with the loss of offsite power, including shedding of the nonessential loads and energization of the emergency buses and respective loads from the DG. It further demonstrates the capability of the DG to automatically achieve the required voltage and frequency within the specified time.

The DG autostart time of 10 seconds is derived from requirements of the accident analysis to respond to a design basis large break LOCA. The Surveillance should be continued for a minimum of 5 minutes in order to demonstrate that all starting transients have decayed and stability is achieved.

The requirement to verify the connection and power supply of permanent and auto-connected loads is intended to satisfactorily show the relationship of these loads to the DG loading logic. In certain circumstances, many of these loads cannot actually be connected or loaded without undue hardship or potential for undesired operation. For instance, Emergency Core Cooling Systems (ECCS) injection valves are not desired to be stroked open, or high pressure injection systems are not capable of being operated at full flow, or residual heat removal (RHR) systems performing a decay heat removal function are not desired to be realigned to the ECCS mode of operation.

BASES

SURVEILLANCE REQUIREMENTS

(12) SR 3.8.1.19 (continued)

and lube oil continuously circulated

(H)

the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil ~~continuously circulated and~~ temperature maintained consistent with manufacturer recommendations for DGs. The reason for Note 2 is that the performance of the Surveillance would remove a required offsite circuit from service, perturb the electrical distribution system, and challenge safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~

(A) (T.1)

Insert: B 3.8-32-01

(13) SR 3.8.1.20

This Surveillance demonstrates that the DG starting independence has not been compromised. Also, this Surveillance demonstrates that each engine can achieve proper speed within the specified time when the DGs are started simultaneously.

The 10 year Frequency is consistent with the recommendations of Regulatory Guide 1.108 (Ref. 9). (1.9) (3)

This SR is modified by a Note. The reason for ~~the~~ Note is to minimize wear on the DG during testing. For the purpose of this testing, the DGs must be started from standby conditions, that is, with the engine coolant and oil continuously circulated and temperature maintained consistent with manufacturer recommendations.

(two) (5) (1)

Insert: B 3.8-32-02

~~Diesel Generator Test Schedule~~

~~The DG test schedule (Table 3.8.1-1) implements the recommendations of Revision 3 to Regulatory Guide 1.9 (Ref. 3). The purpose of this test schedule is to provide timely test data to establish a confidence level associated with the goal to maintain DG reliability > 0.95 per demand.~~

~~According to Regulatory Guide 1.9, Revision 3 (Ref. 3), each DG should be tested at least once every 31 days. Whenever a DG has experienced 4 or more valid failures in the last 25 valid tests, the maximum time between tests is reduced to 7 days. Four failures in 25 valid tests is a failure rate of 0.16, or the threshold of acceptable DG performance, and~~

(continued)

INSERT: B 3.8-32-01

The reason for Note 3 is to allow the SR to be conducted with only one safeguards train at a time or with two or three safeguards trains concurrently. Allowing the LOOP/LOCA test to be conducted using one safeguards train and one DG at a time is acceptable because the safeguards trains are designed to respond to this event independently. Therefore, an individual test for each safeguards train will provide an adequate verification of plant response to this event.

Allowing the LOOP/LOCA test to be conducted with more than one safeguards trains concurrently is acceptable for the following reasons: plant status is established to minimize plant cooling requirements and in accordance with LCO 3.8.2 just as if no DGs are OPERABLE during the performance of this test; and, extensive experience with this test indicates that loss of all AC due to common failure modes and/or undetected interdependence among DGs is not likely.

INSERT: B 3.8-32-02

The reason for Note 2 is that is to allow SR 3.8.1.12 to satisfy the requirements of this SR if SR 3.8.1.12 is performed with more than one safeguards power train concurrently.

BASES

SURVEILLANCE REQUIREMENTS

Diesel Generator Test Schedule (continued)

hence may be an early indication of the degradation of DG reliability. When considered in the light of a long history of tests, however, 4 failures in the last 25 valid tests may only be a statistically probable distribution of random events. Increasing the test Frequency will allow for a more timely accumulation of additional test data upon which to base judgment of the reliability of the DG. The increased test Frequency must be maintained until seven consecutive, failure free tests have been performed.

The Frequency for accelerated testing is 7 days, but no less than 24 hours. Tests conducted at intervals of less than 24 hours may be credited for compliance with Required Actions. However, for the purpose of re-establishing the normal 31-day Frequency, a successful test at an interval of less than 24 hours should be considered an invalid test and not count towards the 7 consecutive failure free starts, and the consecutive test count is not reset.

A test interval in excess of 7 days (or 31 days, as appropriate) constitutes a failure to meet the SRs, and results in the associated DG being declared inoperable. It does not, however, constitute a valid test or failure of the DG, and any consecutive test count is not reset.

REFERENCES

1. 10 CFR 50, Appendix A~~, GDC 17~~.

2. FSAR, Chapter [8].

3. Regulatory Guide 1.9, Rev. 3, ~~[date]~~. July 1993

4. FSAR, Chapter [6].

5. FSAR, Chapter ~~[15]~~. 14

6. Regulatory Guide 1.93, Rev. 0, December 1974.

~~7. Generic Letter 84-15, "Proposed Staff Actions to Improve and Maintain Diesel Generator Reliability," July 2, 1984.~~

7 ~~8.~~ 10 CFR 50, Appendix A, GDC 18.

(continued)

BASES

REFERENCES (continued)

~~9. Regulatory Guide 1.108, Rev. 1, August 1977.~~

8 ~~10~~. Regulatory Guide 1.137, Rev. [ ], [date].

~~11. ASME, Boiler and Pressure Vessel Code, Section XI.~~

~~12. IEEE Standard 308-1978~~

Insert:
B 3.8-34-01

9. IEEE Standard 387-1995, IEEE Standard Criteria for Diesel-Generator Units Applied as Standby Power Supplies for Nuclear Power Generating Stations.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.1:
"AC Sources - Operating"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.1 - AC Sources – Operating

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.8.1, was modified as needed to reflect the IP3 design and current licensing basis. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-008, Rev.2 (WOG-03.3) which revises SR 3.0.1 to allow credit for unplanned events to meet any SR requirement. This generic change to NUREG 1431, Rev. 1, has been approved by the NRC.

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.2:
"AC Sources - Shutdown"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources – Shutdown

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One qualified circuit between the offsite transmission network and the onsite AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems – Shutdown"; and

b. Two diesel generators (DGs) capable of supplying two safeguards power trains of the onsite AC electrical power distribution subsystem(s) required by LCO 3.8.10.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required offsite circuit inoperable.	------------NOTE------------ Enter applicable Conditions and Required Actions of LCO 3.8.10, with any required bus de-energized as a result of Condition A. ------------------------------	
	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	<u>OR</u>	

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (Continued)	A.2.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	A.2.2	Suspend movement of irradiated fuel assemblies.	Immediately
	AND		
	A.2.3	Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND		
	A.2.4	Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately
B. One or more required DGs inoperable.	B.1	Declare affected required feature(s) with no DG available inoperable.	Immediately
	OR		
	B.2.1	Suspend CORE ALTERATIONS.	Immediately
	AND		

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. (continued)	B.2.2	Suspend movement of irradiated fuel assemblies.	Immediately
	AND		
	B.2.3	Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND		
	B.2.4	Initiate action to restore required DG(s) to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.2.1	-------------------NOTE------------------- The following SRs are required to be met but are not required to be performed: SR 3.8.1.3, SR 3.8.1.8, SR 3.8.1.9, SR 3.8.1.10, SR 3.8.1.11, SR 3.8.1.12; and SR 3.8.1.13. --	
	For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources – Operating," are applicable.	In accordance with applicable SRs

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources – Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources – Operating."

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 and during movement of irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6. Worst case bounding events are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

BASES

APPLICABLE SAFETY ANALYSES (continued)

During MODES 1, 2, 3, and 4, various deviations from the analysis assumptions and design requirements are allowed within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are generally planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown modes based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both.

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite diesel generator (DG) power.

The AC sources satisfy Criterion 3 of 10 CFR 50.36.

LCO

One offsite circuit capable of supplying the onsite power distribution subsystem(s) of LCO 3.8.10, "Distribution Systems – Shutdown," ensures that all required loads are powered

BASES

LCO (continued)

from offsite power. Two OPERABLE DGs, associated with the distribution system train required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DGs ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

The qualified offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the Engineered Safety Feature (ESF) bus(es). Qualified offsite circuits are those that are described in the Bases of LCO 3.8.1, AC Sources - Operating, except that safeguards power trains may be cross connected when in MODES 5 and 6.

The DGs must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This sequence must be accomplished within 10 seconds. The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ESF buses.

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

It is acceptable for safeguards power trains to be cross tied during shutdown conditions, allowing a single offsite power circuit to supply all required trains.

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies provide assurance that:

BASES

APPLICABILITY (continued)

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

A.1

An offsite circuit would be considered inoperable if it were not available to one required safeguards power train. Although two safeguards power trains may be required by LCO 3.8.10, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By the allowance of the option to declare required features inoperable, with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

A.2.1, A.2.2, A.2.3 and A.2.4

With the offsite circuit not available to all required trains, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. It is, therefore, required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions. The Required Action to suspend positive reactivity additions does not

BASES

ACTIONS

A.2.1, A.2.2, A.2.3 and A.2.4 (continued)

preclude actions to maintain or increase reactor vessel inventory provided the required SDM is maintained.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System's ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A are modified by a Note to indicate that when Condition A is entered with no AC power to any required ESF bus, the ACTIONS for LCO 3.8.10 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit, whether or not a train is de-energized. LCO 3.8.10 would provide the appropriate restrictions for the situation involving a de-energized bus.

B.1

A DG would be considered inoperable if it could not support its associated safeguards power train. Although two DGs are required, one OPERABLE DG and its associated safeguards power train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By the allowance of the option to declare required features inoperable, with no DG available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

BASES

ACTIONS (continued)

B.2.1, B.2.2, B.2.3 and B.2.4

With one required DG inoperable, the option would still exist to declare inoperable all required features supported by the inoperable DG. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. Therefore, with one required DG inoperable, the option exists to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions.

With two required DGs inoperable, the minimum required diversity of AC power sources is not available to any required features. Although the option would still exist to declare all required features inoperable, the requirements imposed by the affected required features LCO's ACTIONS would be equivalent to the option provided by Required Actions B.2.1, B.2.2 and B.2.3. Therefore, with two required DGs inoperable, it is required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions.

With one or more required DGs inoperable, the Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the required SDM is maintained. Additionally, Required Actions B.2.1, B.2.2 and B.2.3 do not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events.

Furthermore, Required Actions B.2.1, B.2.2 and B.2.3 are implemented, it is required to immediately initiate action to restore the required DG(s) and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time

BASES

ACTIONS

B.2.1, B.2.2, B.2.3 and B.2.4 (continued)

during which the unit safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, 3, and 4. Surveillance tests that include features not required or not capable of functioning in the existing plant MODE or plant condition are satisfactory if all features required in the existing plant MODE or plant condition are tested and verified to be OPERABLE.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 480 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit is required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

REFERENCES

None.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.2:
"AC Sources - Shutdown"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A
3.7-3a	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-4	161 TSCR 98-044	161 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
3.7-5	153 IPN 97-175	153 IPN 97-175	IPN 97-175	Changes to Bases Pages	
4.6-1	142	142	No TSCRs	No TSCRs for this Page	N/A

SEE ITS 3.8.1

C. If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

1. If the reactor is critical, it shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours.

2. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

3.8.2 Applicability

~~F. As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:~~ Mode 5 and 6 and movement of irradiated fuel — L.1 — A.3

LCO 3.8.2.a

~~1.~~ One transmission circuit ~~to~~ from Buchanan Substation, ~~except for testing~~ — M.3

2. ~~Either:~~

~~a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,~~
~~or~~
~~b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,~~ — LA.1

SEE ITS 3.8.10

3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

LCO 3.8.2.b ~~4.~~ Two operable diesel generators ~~together with total underground storage containing a minimum of 6671 gallons of fuel.~~

SEE ITS 3.8.3

SEE ITS 3.8.1

G. When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered operable for the purpose of satisfying the requirements of its applicable specification provided: (1) its corresponding normal or emergency power source is operable; and (2) all of its redundant system(s), subsystem(s), train(s), components(s) and device(s) are operable or likewise satisfy the requirements of the specification.

~~**Basis**~~

~~The electrical system equipment is arranged so that no single contingency can inactivate enough safeguards equipment to jeopardize the plant safety. The 480-volt equipment is arranged on 4 buses. The 6900-volt equipment is supplied from 6 buses.~~

~~The Buchanan Substation has both 345 KV and 138 KV transmission circuits which are capable of supplying startup, normal operation, shutdown and/or engineered safeguards loads.~~

~~The 138 KV supplies or the gas turbines are capable of providing sufficient power for plant startup. Power via the station auxiliary transformer can supply all the required plant auxiliaries during normal operation, if required.~~

~~In addition to the unit transformer, four separate sources supply station service power to the plant.(1)~~

~~The plant auxiliary equipment is arranged electrically so that multiple items receive their power from different buses. Redundant valves are individually supplied from separate motor control centers.~~

A.1

Add Condition A and associated Required Actions
Add Condition B and associated Required Actions

M.1

Amendment No. ~~34~~, ~~58~~, ~~133~~, 161

The bus arrangements specified for operation ensure that power is available to an adequate number of safeguards auxiliaries. With additional switching, more equipment could be out of service without infringing on safety.

Two diesel generators have sufficient capacity to start and run within design load the minimum required engineered safeguards equipment.[1] The minimum onsite underground stored diesel fuel oil inventory is maintained at all times to assure the operation of two diesels carrying the minimum required engineered safeguards equipment load for at least 48 hours.[2] The minimum required storage tank volume (when above cold shutdown) of 6671 gallons is the minimum volume required when sounding the tanks to obtain level information. This volume includes allowances for fuel not usable due to the oil transfer pump cutoff switch (760 gallons) and a safety margin (20 gallons). If the installed level indicators are used to measure tank volume, 6721 gallons of oil (6671 gallons plus the 50 gallon uncertainty assoicated with the level indicators) must be in each storage tank.

When in cold shutdown, two diesel generators must be operable with a total underground storage of 6671 gallons of fuel oil. The same methodology used to measure fuel volume above cold shutdown should be used. Additional fuel oil suitable for use in the diesel generators will be stored either on site or at the Buchanan Substation. The minimum storage of 30,026 gallons of additional fuel oil will assure continuous operation of two diesels at the minimum engineered safeguards load for a total of 7 days. A truck with hosing connections compatible with the underground diesel fuel oil storage tanks is available for transferal of diesel oil from storage areas either on site or at the Buchanan Substation. Commercial oil supplies and trucking facilities are also available.

Specification 3.7.B.1.a provides an allowance to avoid unnecessary testing of operable emergency diesel generators (EDG) upon discovery of an inoperable EDG (Reference 3). If it can be determined by evaluation that the cause of the inoperable EDG does not exist on the operable EDGs, the operability test for those EDGs does not have to be performed. If the cause of inoperability does exist on one or both of the other EDGs, the affected EDG(s) would be declared inoperable upon discovery and Specification 3.7.C would be entered. If the cause of the initial inoperable EDG cannot be confirmed not to exist on the remaining EDGs, performance of the surveillance test that starts the affected EDG(s) suffices to provide assurance of continued operability of those EDGs. If a diesel generator is out of service due to preplanned preventive maintenance or testing, special surveillance testing of the remaining diesel generators is not required because the required periodic surveillance testing suffices to provide assurance of their operability. The fact that preplanned corrective maintenance is sometimes performed in conjunction with preplanned maintenance or testing does not necessitate that the remaining diesels be tested, because this corrective maintenance is on defects or potential defects that never called diesel operability into question. If a diesel generator defect or operability concern is discovered while performing this preplanned preventive maintenance or testing, the concern or defect is evaluated to determine if the same concern or defect could render the remaining diesel generators inoperable.

One battery charger shall be in service on each battery so that the batteries will always be at full charge in anticipation of a loss-of-AC power incident. This insures that adequate D.C. power will be available for starting the emergency generators and other emergency uses.

The plant can be safely shutdown without the use of offsite power since all vital loads (safety systems, instruments, etc.) can be supplied from the emergency diesel generators.

Any two of three diesel generators, the station auxiliary transformer or the separate 13.8 to 6.9 KV transformer are each capable of supplying the minimum safeguards loads, and therefore provide separate sources of power immediately available for operation of these loads. Thus the power supply system meets the single failure criteria required of safety systems. To provide maximum assurance that the redundant or alternate power supplies will operate if required to do so, the redundant or alternate power supplies are verified operable prior to initiating repair of the inoperable power supply. Continued plant operation is governed by the specified allowable time period for the power source, not the specified allowable time period for those items determined to be inoperable solely because of the inoperability of its normal or emergency power source provided the conditions defined in specification 3.7.G are satisfied. These conditions assure that the minimum required safeguards will be operable. If it develops that (a) the inoperable power supply is not repaired within the specified allowable time period, or (b) a second power supply in the same or related category is found to be inoperable, the reactor, if critical, will initially be brought to the hot shutdown condition utilizing normal operating procedures to provide for reduction of the decay heat from the fuel, and consequent reduction of cooling requirements after a postulated loss-of-coolant accident. If the reactor was already subcritical, the reactor coolant system temperature and pressure will be maintained within the stated values in order to limit the amount of stored energy in the Reactor Coolant System. The stated tolerances provide a band for operator control. After a limited time in hot shutdown, if the malfunction(s) are not corrected, the reactor will be brought to the cold shutdown condition, utilizing normal shutdown and cool-down procedures. In the cold shutdown condition there is no possibility of an accident that would damage the fuel elements or result in a release in excess of 10 CFR 100 and 10 CFR 50 dose limits.

Conditions of a system-wide blackout could result in a unit trip. Since normal off-site power supplies as required in Specification 3.7.A.1 are not available for startup, it is necessary to be able to black start the unit with gas turbines providing the incoming power supplies as a first step in restoring the system to an operable status and restoring power to customers for essential services. Specification 3.7.C provides for startup using 37 MW's of gas turbine power (nameplate rating at 80°F) which is sufficient to carry out a normal plant startup. A system-wide blackout is deemed to exist when the majority of Con Edison electric generating facilities are shutdown due to an electrical disturbance and the remainder are incapable of supplying the system therefore necessitating major load shedding.

TSCR 97-175

4.6 EMERGENCY POWER SYSTEM PERIODIC TESTS

ITS 3.8.2

A.2

~~Applicability~~

~~Applies to periodic testing and surveillance requirements of the emergency power system.~~

~~Objective~~

~~To verify that the emergency power system will respond promptly and properly when required.~~

Specification

The following tests and surveillance shall be performed as stated:

~~A.~~ Diesel Generators

SR 3.8.2.1

SEE ITS 3.8.1

1. Each month each diesel generator shall be manually started and synchronized to its bus or buses and shall be allowed to assume the normal bus load and run for a period of time sufficient to reach stable operating temperatures.

2. At least once per 24 months each diesel generator shall be manually started, synchronized and loaded up to its 2 hour rating and run for a period of at least 105 minutes.

3. At least once per 24 months*, simulate a loss of all normal AC station service power supplies in conjuction with a simulated Safety Injection signal, and verify:

   a. the required bus load shedding;

   b. the automatic start of each diesel generator; and

   c. the restoration to operation of particular vital equipment, via the diesel generator assuming the required load within 60 seconds after the initial start signal.

* The time delay relays will be tested at intervals no greater than 22.5 months (18 months + 25%).

L.2

M.2

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.2:
"AC Sources - Shutdown"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.2 - AC Sources - Shutdown

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.7.F.1 specifies requirements for offsite power in Mode 5 and 6 as one transmission circuit "to" Buchanan Substation. ITS LCO 3.8.2 specifies requirements for offsite power in Mode 5 and 6 as one transmission circuit between the offsite transmission network and the onsite AC electrical power distribution subsystems. This is an administrative change with no adverse impact of safety because it is an explicit statement of a reasonable interpretation of the existing requirement (See ITS 3.8.1, DOC LA.1).

DISCUSSION OF CHANGES
ITS SECTION 3.8.2 - AC Sources - Shutdown

MORE RESTRICTIVE

M.1 CTS 3.7.F specifies requirements for minimum AC sources when shutdown (one offsite source and two DGs); however, CTS 3.7.F does not specify any Actions if requirements are not met. ITS LCO 3.8.2 maintains the requirements for minimum AC sources when shutdown. However, ITS 3.8.2, Required Actions, specify that if requirements for minimum AC sources when shutdown then either: declare inoperable any required feature(s) with fewer than the required number of AC sources; or, suspend core alterations, suspend movement of irradiated fuel assemblies, initiate action to suspend operations involving positive reactivity additions; and, initiate action to restore required AC sources to operable status. This change is needed to establish specific and conservative Actions when the requirements of ITS LCO 3.8.2 are not met. This change is acceptable because of the following:

a. Declaring inoperable any required features that are not supported by an Operable offsite source and an Operable DG ensures that appropriate restrictions will be implemented in accordance with the affected required features LCO's Required Actions. This ensures that all required features will be able to tolerate the single failure of a DG or the loss of offsite power but not both.

b. Suspending core alterations, suspending movement of irradiated fuel assemblies, initiating action to suspend operations involving positive reactivity additions ensures that conditions are established that minimize the potential for the occurrence of events postulated for this plant condition.

c. Allowances are made so that requirements for suspension of the prohibited activities do not preclude completion of actions to establish a safe conservative condition or increase reactor vessel inventory provided the required SDM is maintained.

d. Finally, if the option for suspension of the prohibited activities is selected, then it is required to initiate action to restore the required AC sources immediately and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

This change is acceptable because it does not introduce any operation that is un-analyzed while establishing specific and conservative Actions when the requirements of ITS LCO 3.8.2 are not met. Therefore, this change has no significant adverse impact on safety.

M.2 CTS 4.6.A includes requirements for periodic testing and surveillance of the AC sources, specifically the diesel generators, and these requirements are applicable in all Modes. ITS SR 3.8.2.1 maintains the same requirement by requiring that all applicable ITS 3.8.1 SRs must be met when ITS 3.8.2 is applicable. However, ITS 3.8.1 SRs include requirements not included in CTS 4.6.A including: requirements for testing and/or verification of the status of offsite circuits; and, new and/or more restrictive acceptance criteria for existing SRs. All changes to surveillance and testing requirements are described and justified with ITS 3.8.1 (See ITS 3.8.1, DOCs).

M.3 CTS 3.7.F.1 specifies that requirements for AC sources when shutdown include one transmission circuit to Buchanan Substation, "except for testing." ITS LCO 3.8.2 provides no relaxation of requirements for AC Sources when shutdown to accommodate testing. However, ITS LCO 3.8.2, Actions, does specify that if minimum requirements for AC sources are not met when shutdown, the plant is required to either (see ITS 3.8.2, DOC M.1): declare inoperable the affected required feature(s) with no DG available; or, suspend core alterations, suspend movement of irradiated fuel assemblies, and initiate action to suspend operations involving positive reactivity additions. Additionally, ITS LCO 3.0.2 allows intentionally taking Actions in lieu of meeting an LCO, as needed, for performance of SRs, preventive maintenance, corrective maintenance, or investigation of operational problems. Therefore, the combination of the Required Actions for LCO 3.8.2 and the allowance provided by ITS LCO 3.0.2 provide an allowance equivalent to CTS 3.7.F.1 in order to accommodate required testing; however, ITS 3.8.2 requires that specific plant requirements (LCO 3.8.2 Required Actions) that must be satisfied before taking this allowance for testing. This is a more restrictive change with no significant adverse impact on safety because this change requires taking conservative compensatory actions before an existing allowance for testing can be exercised.

LESS RESTRICTIVE

L.1 CTS 3.7.F specifies that AC electrical power sources and distribution must be operable under all conditions including cold shutdown. ITS LCO 3.8.2 specifies that the AC electrical power sources and distribution must be operable in Modes 5 and 6 and during movement of irradiated fuel assemblies. The ITS definition of Mode applies only when fuel is in the reactor vessel; therefore, ITS 3.8.2 eliminates Technical Specification requirements for when there is no fuel in the reactor vessel unless irradiated fuel assemblies are being moved. This change is acceptable because the ITS LCO 3.8.2 Applicability ensures that: the unit can be maintained in the shutdown or refueling condition for extended periods; sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and, adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident. In general, when the plant is shut down, ITS LCO 3.8.2 requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. Therefore, this change has no significant adverse impact on safety.

L.2 CTS 4.6.A includes requirements for periodic testing and surveillance of the AC power sources, specifically the diesel generators, and these requirements are applicable in all Modes. ITS SR 3.8.2.1 maintains the same requirement by requiring that all ITS 3.8.1 SRs must be met when ITS 3.8.2 is applicable. However, ITS SR 3.8.2.1 includes the allowance that, although all of the ITS 3.8.1 SRs must be met. ITS SR 3.8.2.1 does not require performance of the following SRs: SR 3.8.1.3; SR 3.8.1.8; SR 3.8.1.9; SR 3.8.1.10; SR 3.8.1.11; SR 3.8.1.12; and SR 3.8.1.13. This change is needed because it eliminates performing an SR that would require an Operable DG(s) being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and eliminates de-energizing a required 480 V ESF bus or disconnecting a required offsite circuit during performance of SRs. This change is acceptable because of the following: the demonstrated high reliability of equipment as indicated by the very high rate at which these SRs demonstrate that equipment is Operable; the requirement that equipment must be maintained in a condition where the SRs are still capable of being met; and, elimination of the potential that a single event could compromise both the required circuit and the DG during performance of these SRs.

DISCUSSION OF CHANGES
ITS SECTION 3.8.2 - AC Sources - Shutdown

REMOVED DETAIL

LA.1 CTS 3.7.F.1 requires that as a minimum, under all conditions including cold shutdown, one transmission circuit to Buchanan Substation be operable, and either 6.9 KV buses 5 or 6 be energized from 138 KV feeder 95331 or 95332, or 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer be available to supply 6.9 KV power.

ITS LCO 3.8.2.a maintains the same requirement by requiring the Operability of one qualified circuit between the offsite transmission network and the onsite AC electrical power distribution subsystem(s) required by ITS LCO 3.8.10, Distribution Systems - Shutdown, be Operable: however, the description of the design of these circuits and a detailed description of the requirements for Operability of these circuits are relocated to the IP3 FSAR and the ITS 3.8.1 Bases, respectively.

This change is acceptable because ITS 3.8.1 maintains the existing requirement for the Operability of one qualified offsite circuit; therefore, there is no change to the existing requirements and no change to the level of safety of facility operation.

This change, which allows the description of the design of the qualified circuits to be maintained in the FSAR and the detailed description of the requirements for Operability of these circuits to be maintained in the ITS Bases, is consistent with the approach used in NUREG-1431 for all Limiting Conditions for Operation (LCOs). This approach is acceptable because the requirements of 10 CFR 50.59, Changes, Tests and Experiments, and ITS 5.5.13, Technical Specifications (TS) Bases Control Program, are designed to assure that changes to the FSAR and ITS Bases do not result in changes to the Technical Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement FSAR changes in accordance with 10 CFR 50.59 and ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of FSAR and Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight are maintained for the information being relocated out of the Technical Specifications.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.2:
"AC Sources - Shutdown"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.2 - AC Sources – Shutdown

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change modifies the applicability of Technical Specification requirements for AC sources (offsite circuits and diesel generators) when shutdown from under all conditions to Modes 5 and 6 and during movement of irradiated fuel assemblies. The ITS definition of Mode applies only when fuel is in the reactor vessel; therefore, ITS 3.8.2 eliminates Technical Specification requirements for when there is no fuel in the reactor vessel unless irradiated fuel assemblies are being moved. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because the ITS LCO 3.8.2 Applicability ensures that: the unit can be maintained in the shutdown or refueling condition for extended periods; sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and, adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident. In general, when the plant is shut down, ITS LCO 3.8.2 requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the ITS LCO 3.8.2 Applicability ensures that: the unit can be maintained in the shutdown or refueling condition for extended periods; sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and, adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident. In general, when the plant is shut down, ITS LCO 3.8.2 requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents.

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change provides an allowance that if the plant is in cold shutdown then surveillance requirements for AC power sources (offsite circuits and diesel generators) required when the plant is above cold shutdown must be met but do not have to be performed to demonstrate Operability. This change is needed because it eliminates performing an SR that would require an Operable DG(s) being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and eliminates de-energizing a required 480 V ESF bus or disconnecting a required offsite circuit during performance of SRs.

   This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because of the following: the demonstrated high reliability of equipment as indicated by the very high rate at which these SRs demonstrate that equipment is Operable; the requirement that equipment must be maintained in a condition where the SRs are still capable of being met; and, elimination of the potential that a single event could compromise both the required circuit and the DG during performance of these SRs.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because of the following: the demonstrated high reliability of equipment as indicated by the very high rate at which these SRs demonstrate that equipment is Operable; the requirement that equipment must be maintained in a condition where the SRs are still capable of being met; and, elimination of the potential that a single event could compromise both the required circuit and the DG during performance of these SRs.

Indian Point 3
Improved Technical Specifications (ITS)
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Technical Specification 3.8.2:
"AC Sources - Shutdown"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.2

This ITS Specification is based on NUREG-1431 Specification No. **3.8.2**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-008 R1	**036 R1**	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	Rejected by TSTF	See Rev 2	**N/A**
BWROG-008 R3	**036 R3**	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	NRC Rejects: TSTF to Revise	Not Incorporated	**N/A**
BWROG-017	**051**	REVISE CONTAINMENT REQUIREMENTS DURING HANDLING IRRADIATED FUEL AND CORE ALTERATIONS (REQUIREMENTS LIMITED TO "RECENTLY" IRRADIATED FUEL)	NRC Review	Not Incorporated	**N/A**

3.8 ELECTRICAL POWER SYSTEMS

3.8.2 AC Sources—Shutdown

<3.7.F>
<DOC A3>
<DOC M.3>

LCO 3.8.2 The following AC electrical power sources shall be OPERABLE:

a. One qualified circuit between the offsite transmission network and the onsite ~~Class 1E~~ AC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems—Shutdown"; and DB.1

b. Two ~~One~~ diesel generator(s) (DG) capable of supplying two safeguards power ~~one~~ train(s) of the onsite ~~Class 1E~~ AC electrical power distribution subsystem(s) required by LCO 3.8.10.

<3.7.F>
<DOC L.1>

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC M.1> A. One required offsite circuit inoperable.	------------NOTE------------ Enter applicable Conditions and Required Actions of LCO 3.8.10, with any ~~one~~ required bus ~~train~~ de-energized as a result of Condition A. -----------------------------	DB.1
	A.1 Declare affected required feature(s) with no offsite power available inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.2.2	Suspend movement of irradiated fuel assemblies.	Immediately
	AND		
	A.2.3	Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND		
	A.2.4	Initiate action to restore required offsite power circuit to OPERABLE status.	Immediately
~~B. One required DG inoperable.~~	~~B.1~~	~~Suspend CORE ALTERATIONS.~~	~~Immediately~~
	~~**AND**~~		
	~~B.2~~	~~Suspend movement of irradiated fuel assemblies.~~	~~Immediately~~
	~~**AND**~~		
	~~B.3~~	~~Initiate action to suspend operations involving positive reactivity additions.~~	~~Immediately~~
	~~**AND**~~		
	~~B.4~~	~~Initiate action to restore required DG to OPERABLE status.~~	~~Immediately~~

Insert: 3.8-19-01

DB.1

CLB.1

NUREG-1431 Markup Inserts
ITS SECTION 3.8.2 - AC Sources - Shutdown

INSERT 3.8-19-01:

DB.1
CLB.1

B. One or more required DGs inoperable.	B.1 Declare affected required feature(s) with no DG available inoperable.	Immediately
<DOC M.1>	OR	
	B.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	B.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	B.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
	B.2.4 Initiate action to restore required DG(s) to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
<DOC L.2> SR 3.8.2.1	-----NOTE----- The following SRs ~~are not required to be performed: SR 3.8.1.3, SR 3.8.1.9 through SR 3.8.1.11, SR 3.8.1.13 through SR 3.8.1.16, [SR 3.8.1.18,] and SR 3.8.1.19.~~ Insert: 3.8-20-01	
<DOC M.2>	For AC sources required to be OPERABLE, the SRs of Specification 3.8.1, "AC Sources—Operating," ~~except SR 3.8.1.8, SR 3.8.1.17, and SR 3.8.1.20,~~ are applicable.	In accordance with applicable SRs

PA.1
DB.1

NUREG-1431 Markup Inserts
ITS SECTION 3.8.2 - AC Sources - Shutdown

INSERT 3.8-20-01:

<Doc L.2>

are required to be met but are not required to be performed:

SR 3.8.1.3;	SR 3.8.1.11;
SR 3.8.1.8;	SR 3.8.1.12;
SR 3.8.1.9;	and
SR 3.8.1.10;	SR 3.8.1.13.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.2 AC Sources—Shutdown

BASES

BACKGROUND

A description of the AC sources is provided in the Bases for LCO 3.8.1, "AC Sources—Operating."

APPLICABLE SAFETY ANALYSES

The OPERABILITY of the minimum AC sources during MODES 5 and 6 and during movement of irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

In general, when the unit is shut down, the Technical Specifications requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. However, assuming a single failure and concurrent loss of all offsite or all onsite power is not required. The rationale for this is based on the fact that many Design Basis Accidents (DBAs) that are analyzed in MODES 1, 2, 3, and 4 have no specific analyses in MODES 5 and 6. Worst case bounding events are deemed not credible in MODES 5 and 6 because the energy contained within the reactor pressure boundary, reactor coolant temperature and pressure, and the corresponding stresses result in the probabilities of occurrence being significantly reduced or eliminated, and in minimal consequences. These deviations from DBA analysis assumptions and design requirements during shutdown conditions are allowed by the LCO for required systems.

During MODES 1, 2, 3, and 4, various deviations from the analysis assumptions and design requirements are allowed

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

within the Required Actions. This allowance is in recognition that certain testing and maintenance activities must be conducted provided an acceptable level of risk is not exceeded. During MODES 5 and 6, performance of a significant number of required testing and maintenance activities is also required. In MODES 5 and 6, the activities are generally planned and administratively controlled. Relaxations from MODE 1, 2, 3, and 4 LCO requirements are acceptable during shutdown modes based on:

a. The fact that time in an outage is limited. This is a risk prudent goal as well as a utility economic consideration.

b. Requiring appropriate compensatory measures for certain conditions. These may include administrative controls, reliance on systems that do not necessarily meet typical design requirements applied to systems credited in operating MODE analyses, or both.

c. Prudent utility consideration of the risk associated with multiple activities that could affect multiple systems.

d. Maintaining, to the extent practical, the ability to perform required functions (even if not meeting MODE 1, 2, 3, and 4 OPERABILITY requirements) with systems assumed to function during an event.

In the event of an accident during shutdown, this LCO ensures the capability to support systems necessary to avoid immediate difficulty, assuming either a loss of all offsite power or a loss of all onsite diesel generator (DG) power.

The AC sources satisfy Criterion 3 of the NRC Policy Statement. 10 CFR 50.36

LCO

One offsite circuit capable of supplying the onsite ~~Class 1E~~ power distribution subsystem(s) of LCO 3.8.10, "Distribution Systems—Shutdown," ensures that all required loads are powered from offsite power. Two An OPERABLE DG(s), associated with the distribution system train required to be OPERABLE by LCO 3.8.10, ensures a diverse power source is available to

(continued)

BASES

S

LCO (continued)

provide electrical power support, assuming a loss of the offsite circuit. Together, OPERABILITY of the required offsite circuit and DG ensures the availability of sufficient AC sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

The qualified offsite circuit must be capable of maintaining rated frequency and voltage, and accepting required loads during an accident, while connected to the Engineered Safety Feature (ESF) bus(es). Qualified offsite circuits are those that are described ~~in the FSAR and are part of the licensing basis for the unit.~~

Insert: B3.8-37-01

~~Offsite circuit #1 consists of Safeguards Transformer B, which is supplied from Switchyard Bus B, and is fed through breaker 52-3 powering the ESF transformer XNB01, which, in turn, powers the #1 ESF bus through its normal feeder breaker. The second offsite circuit consists of the Startup Transformer, which is normally fed from the Switchyard Bus A, and is fed through breaker PA 0201 powering the ESF transformer, which, in turn, powers the #2 ESF bus through its normal feeder breaker.~~

A

The DG must be capable of starting, accelerating to rated speed and voltage, and connecting to its respective ESF bus on detection of bus undervoltage. This sequence must be accomplished within ~~[~~10~~]~~ seconds. The DG must be capable of accepting required loads within the assumed loading sequence intervals, and continue to operate until offsite power can be restored to the ESF buses. ~~These capabilities are required to be met from a variety of initial conditions such as DG in standby with the engine hot and DG in standby at ambient conditions.~~

Proper sequencing of loads, including tripping of nonessential loads, is a required function for DG OPERABILITY.

~~In addition, proper sequencer operation is an integral part of offsite circuit OPERABILITY since its inoperability impacts on the ability to start and maintain energized loads required OPERABLE by LCO 3.8.10.~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.2 - AC Sources - Shutdown

<u>INSERT B 3.8-36-01</u>:

~~Described~~ in the Bases of LCO 3.8.1, AC Sources - Operating, except that safeguards power trains may be cross connected when in MODES 5 and 6.

safeguards power

BASES

LCO (continued)

It is acceptable for trains to be cross tied during shutdown conditions, allowing a single offsite power circuit to supply all required trains.

APPLICABILITY

The AC sources required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The AC power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.1.

ACTIONS

<u>A.1</u>

safeguards power

An offsite circuit would be considered inoperable if it were not available to one required ESF train. Although two trains are required by LCO 3.8.10, the one train with offsite power available may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By the allowance of the option to declare required features inoperable, with no offsite power available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS.

may be

(continued)

BASES

ACTIONS (continued)

and

A.2.1, A.2.2, A.2.3, A.2.4, ~~B.1, B.2, B.3, and B.4~~

With the offsite circuit not available to all required trains, the option would still exist to declare all required features inoperable. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. ~~With the required DG inoperable, the minimum required diversity of AC power sources is not available.~~ It is, therefore, required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions. The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the required SDM is maintained.

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC sources and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

Pursuant to LCO 3.0.6, the Distribution System's ACTIONS would not be entered even if all AC sources to it are inoperable, resulting in de-energization. Therefore, the Required Actions of Condition A are modified by a Note to indicate that when Condition A is entered with no AC power to any required ESF bus, the ACTIONS for LCO 3.8.10 must be immediately entered. This Note allows Condition A to provide requirements for the loss of the offsite circuit, whether or not a train is de-energized. LCO 3.8.10 would provide the appropriate restrictions for the situation involving a de-energized ~~train~~.

bus

Insert: B 3.8-39-01

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.2 - AC Sources - Shutdown

INSERT B 3.8-39-01:

B.1

A DG would be considered inoperable if it could not support its associated safeguards power train. Although two DGs are required, one Operable DG and its associated safeguards power train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By the allowance of the option to declare required features inoperable, with no DG available, appropriate restrictions will be implemented in accordance with the affected required features LCO's ACTIONS. <A1>

B.2.1, B.2.2, B.2.3 and B.2.4

With one required DG inoperable, the option would still exist to declare inoperable all required features supported by the inoperable DG. Since this option may involve undesired administrative efforts, the allowance for sufficiently conservative actions is made. Therefore, with one required DG inoperable, the option exists to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions.

With two required DGs inoperable, the minimum required diversity of AC power sources is not available to any required features. Although the option would still exist to declare all required features inoperable, the requirements imposed by the affected required features LCO's ACTIONS would be equivalent to the option provided by Required Actions B.2.1, B.2.2 and B.2.3. Therefore, with two required DGs inoperable, it is required to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions.

With one or more required DGs inoperable, the Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory provided the required SDM is maintained. Additionally, Required Actions B.2.1, B.2.2 and B.2.3 do not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability or the occurrence of postulated events.

Furthermore, Required Actions B.2.1, B.2.2 and B.2.3 are implemented, it is required to immediately initiate action to restore the required DG(s) and to continue this action until restoration is accomplished in order to provide the necessary AC power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required AC electrical power sources should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.2.1

SR 3.8.2.1 requires the SRs from LCO 3.8.1 that are necessary for ensuring the OPERABILITY of the AC sources in other than MODES 1, 2, 3, and 4. ~~SR 3.8.1.8 is not required to be met since only one offsite circuit is required to be OPERABLE. SR 3.8.1.17 is not required to be met because the required OPERABLE DG(s) is not required to undergo periods of being synchronized to the offsite circuit. SR 3.8.1.20 is excepted because starting independence is not required with the DG(s) that is not required to be operable.~~

Insert B3.8-40-01

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DG(s) from being paralleled with the offsite power network or otherwise rendered inoperable during performance of SRs, and to preclude deenergizing a required 4160 V ESF bus or disconnecting a required offsite circuit during performance of SRs. With limited AC sources available, a single event could compromise both the required circuit and the DG. It is the intent that these SRs must still be capable of being met, but actual performance is not required during periods when the DG and offsite circuit is required to be OPERABLE. Refer to the corresponding Bases for LCO 3.8.1 for a discussion of each SR.

480

REFERENCES

None.

INSERT B 3.8-40-01:

Surveillance tests that include features not required or not capable of functioning in the existing plant MODE or plant condition are satisfactory if all features required in the existing plant MODE or plant condition are tested and verified to be OPERABLE.

(continued)

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.2:
"AC Sources - Shutdown"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.2 - AC Sources – Shutdown

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.8.1, was modified as needed to reflect the IP3 design and current licensing basis. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.3:
"Diesel Fuel Oil and Starting Air"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil and Starting Air

LCO 3.8.3 The stored diesel fuel oil and starting air subsystem shall be within limits for each required diesel generator (DG).

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

-------------------------------------NOTE-------------------------------------
Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. ----------NOTE---------- Only applicable in MODES 1, 2, 3 and 4. ---------------------- One or more DGs with usable fuel oil in associated DG fuel oil storage tank < 5891 gal.	A.1 Declare associated DG inoperable.	Immediately
B. ----------NOTE---------- Only applicable in MODES 5 and 6 and during movement of irradiated fuel. ---------------------- Total usable fuel oil in all DG fuel oil storage tanks < 5891 gal.	B.1 Declare all DGs inoperable.	Immediately

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. ---------NOTE---------- Only applicable in MODES 1, 2, 3 and 4. ---------------------- Total useable fuel oil in reserve storage tank(s) < 30,026 gal.	C.1 Declare all DGs inoperable.	Immediately
D. One or more DG fuel oil storage tanks with fuel oil total particulates not within limits.	D.1 Restore stored fuel oil total particulates within limits of SR 3.8.3.3.	7 days
E. One or more DG fuel oil storage tanks with new fuel oil properties not within limits.	E.1 Restore stored fuel oil properties to within limits of SR 3.8.3.3.	30 days
F. Fuel oil in reserve storage tank(s) with properties not within limits of SR 3.8.3.4.	F.1 Restore fuel oil in reserve storage tank(s) to within limits of SR 3.8.3.4.	30 days
G. One or more DGs with starting air receiver pressure < 250 psig and ≥ 90 psig.	G.1 Restore starting air receiver pressure to ≥ 250 psig.	48 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
H. Required Action and associated Completion Time not met. <u>OR</u> One or more DGs diesel fuel oil or starting air subsystem not within limits for reasons other than Condition A, B, C, D, E, F or G.	H.1 Declare associated DG inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.3.1	-------------------NOTE------------------- Only required in MODES 1, 2, 3 and 4. -- Verify reserve storage tank(s) contain ≥ 30,026 gal of fuel oil reserved for IP3 usage only.	24 hours
SR 3.8.3.2	Verify DG fuel oil storage tanks contain: a. Usable fuel oil volume ≥ 5891 gal in each storage tank when in MODES 1, 2, 3 and 4; and b. Total usable fuel oil volume ≥ 5891 gal in storage tank(s) when in MODES 5 and 6 and during movement of irradiated fuel assemblies.	31 days
SR 3.8.3.3	Verify that fuel oil properties of new and stored fuel oil in the DG fuel oil storage tanks are tested and maintained in accordance with the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.3.4	-------------------NOTE------------------- Only required in MODES 1, 2, 3 and 4. -- Verify that fuel oil properties in the reserve storage tank(s) are within limits specified in the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program
SR 3.8.3.5	Verify each DG air start receiver pressure is ≥ 250 psig.	31 days
SR 3.8.3.6	Check for and remove accumulated water from each DG fuel oil storage tank.	92 days

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.3 Diesel Fuel Oil and Starting Air

BASES

BACKGROUND

Fuel oil for the safeguards DGs is stored in three 7,700 gallon DG fuel oil storage tanks located on the south side of the Diesel Generator Building. The offsite DG fuel oil reserve is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation which is located in close proximity to the IP3 site. The IP3 offsite fuel oil reserve is maintained by the operators of IP2, Consolidated Edison Company, in accordance with formal agreements with NYPA. The IP3 offsite DG fuel oil reserve is normally stored in the same tanks used to store the IP2 offsite DG fuel oil reserve.

Sufficient fuel for at least 48 hours of minimum safeguards equipment operation is available when any two of the DG fuel oil storage tanks are available and contain 6671 gallons (5,891 usable gallons) of fuel oil. The maximum DG loadings for design basis transients that actuate safety injection are summarized in FSAR 8.2 (Ref. 1). These transients include large and small break loss of coolant accidents (LOCA), main steamline break and steam generator tube rupture (SGTR).

The three DG fuel oil storage tanks are filled through a common fill line that is equipped with a truck hose connection and a shutoff valve at each tank. The overflow from any DG fuel oil storage tank will cascade into an adjacent tank. Each DG fuel oil storage tank is equipped with a single vertical fuel oil transfer pump that discharges to either the normal or emergency header. Either header can be used to fill the day tank at each diesel. Each DG fuel oil storage tank has an alarm that sounds in the control room when the level in the tank drops to approximately 6,717 gallons. Each tank is also equipped with a sounding connection and a level indicator.

Each emergency diesel is equipped with a 175-gallon day tank with an operating level that provides sufficient fuel for approximately one hour of DG operation. A decrease in day tank level to approximately 115 gallons (65% full) will cause the

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BASES

BACKGROUND (Continued)

normal and emergency fill valves on that day tank to open and the transfer pump in the corresponding DG fuel oil storage tank to start. Once started, the pump will continue to run until that day tank is filled. However, any operating transfer pump will fill any day tank with a normal or emergency fill valve that is open. When a day tank is at approximately 158 gallons (90% full), a switch initiates closing of the day tank normal and emergency fill valves.

Technical Specifications require sufficient fuel oil to operate 2 of the 3 required DGs at minimum safeguards load for 7 days. The Technical Specification required volume of fuel oil includes the 30,026 gallons of usable fuel oil in the reserve tanks, 11,782 usable gallons in two DG fuel oil storage tanks (assuming a failure makes the oil in the third DG fuel oil storage tank unavailable), and 230 gallons in two day tanks (assuming a failure makes the oil in the day tank associated with the third DG unavailable).

If the DGs require fuel oil from the fuel oil reserve tank(s), the fuel oil will be transported by truck to the DG fuel oil storage tanks. A truck with appropriate hose connections and capable of transporting oil is available either on site or at the Buchanan Substation. Commercial oil supplies and trucking facilities are also available in the vicinity of the plant.

For proper operation of the standby DGs, it is necessary to ensure the proper quality of the fuel oil. Requirements for DG fuel oil testing methodology, frequency, and acceptance criteria are maintained in the program required by Specification 5.5.12, Diesel Fuel Oil Testing Program.

Each DG has an air start system with adequate capacity for four successive start attempts on the DG without recharging the air start receiver(s). The air starting system is designed to shutdown and lock out any engine which does not start during the initial start attempt so that only enough air for one automatic start is used. This conserves air for subsequent DG start attempts.

BASES

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 3), assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of 10 CFR 50.36.

LCO

Stored diesel fuel oil is required to have sufficient supply for 7 days of operation for 2 of 3 DGs at minimum safeguards load. Fuel oil is also required to meet specific standards for quality. This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources - Operating," and LCO 3.8.2, "AC Sources - Shutdown."

The starting air system is required to have a minimum capacity for four successive DG start attempts without recharging the air start receivers.

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel

BASES

APPLICABILITY (continued)

oil and starting air are required to be within limits when the associated DG is required to be OPERABLE.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

A.1

In this Condition, the requirements of SR 3.8.3.2.a are not met. Therefore, a DG will not be able to support 48 hours of continuous operation at minimum safeguards load and replenishment of the DG fuel oil storage tanks will be required in less than 48 hours following an accident. The DG associated with the DG fuel oil storage tank not within limits must be declared inoperable immediately because replenishment of the DG fuel oil storage tank requires that fuel be transported from the offsite DG fuel oil reserve by truck and the volume of fuel oil remaining in the DG fuel oil storage tank may not be sufficient to allow continuous DG operation while the fuel transfer is planned and conducted under accident conditions.

This Condition is preceded by a Note stating that Condition A is applicable only in MODES 1, 2, 3 and 4. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required in the DG fuel oil storage tanks when in these MODES.

B.1

In this Condition, the requirements of SR 3.8.3.2.b are not met. With less than the total required minimum fuel oil in one or more DG fuel oil storage tanks, the two DGs required to be operable in

BASES

ACTIONS

B.1 (continued)

MODES 5 and 6 and during movement of irradiated fuel may not have sufficient fuel oil to support continuous operation while a fuel transfer from the offsite DG fuel oil reserve or from another offsite source is planned and conducted under accident conditions.

This condition requires that all DGs be declared inoperable immediately because minimum fuel oil level requirements in SR 3.8.3.2.b is a condition of Operability of all DGs when in the specified MODES.

This Condition is preceded by a Note stating that Condition B is applicable only in MODES 5 and 6 and during the movement of irradiated fuel. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required in the DG fuel oil storage tanks when in these MODES.

C.1

In this Condition, the fuel oil remaining in the offsite DG fuel oil reserve is not sufficient to operate 2 of the 3 DGs at minimum safeguards load for 7 days. Therefore, all 3 DGs are declared inoperable immediately.

This Condition is preceded by a Note stating that Condition D is applicable only in MODES 1, 2, 3 and 4 because the offsite DG fuel oil reserve is required to be available only in these MODES. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required when in these MODES.

D.1

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.3 when the DG fuel oil storage tanks are verified to have particulate within the allowable value in Specification 5.5.12, Diesel Fuel Oil Testing Program. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of

BASES

ACTIONS

D.1 (continued)

acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

E.1

If the properties of new fuel oil are determined not to be within the requirements established by Specification 5.5.12, Diesel Fuel Oil Testing Program, after the fuel oil has been added to the DG fuel oil storage tanks, then a period of 30 days is allowed to restore the properties of the fuel oil in the DG fuel oil storage tank to within the limits established by Specification 5.5.12. This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

F.1

Fuel oil from the offsite DG fuel oil reserve will be added to the DG fuel oil fuel oil storage tanks within the first 48 hours following an event in conjunction with a sustained loss of offsite power. Therefore, the properties of the fuel oil in the offsite reserve must be maintained within the limits established by Specification 5.5.12, Diesel Fuel Oil Testing Program. Failure to maintain the offsite DG fuel oil reserve within these limits may adversely impact DG operation of all three DGs at some

BASES

ACTIONS

F.1 (continued)

point following addition of the reserves to the DG fuel oil storage tanks. Therefore, if the offsite DG fuel oil reserve is not restored to within these limits within the specified Completion Time, then all three DGs must be declared inoperable.

Restoration of properties to within required limits may be performed by using the fuel in the gas turbine peaking units and replacing it with fuel within required limits or by the methods described in the Bases for Condition E.

The Completion Time of 30 days for the restoration of fuel oil properties to within limits is acceptable because the DG fuel oil storage tanks contain sufficient fuel for a minimum of 48 hours DG operation at minimum safeguards load. The Completion Time is acceptable because there is a high likelihood that the DG would still be capable of meeting requirements for starting and endurance even if fuel oil from the offsite DG fuel oil reserve must be added to the DG fuel oil tanks during the time interval the fuel oil properties are outside specified limits. Additionally, IP3 is located in an area where compatible fuel oil is expected to be readily available.

G.1

With starting air receiver pressure < 250 psig, sufficient capacity for four successive DG start attempts does not exist. However, as long as the receiver pressure is ≥ 90 psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period. Entry into Condition G is not required when air receiver pressure is less than required limits while the DG is operating following a successful start.

BASES

ACTIONS (continued)

H.1

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil or starting air subsystem not within limits for reasons other than addressed by Conditions A through G, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the offsite DG fuel oil reserve to support 2 DGs at minimum safeguards load for 7 days assuming requirements for the DG fuel oil storage tanks and day tanks are met. The 7 day duration with 2 of the 3 DGs at minimum safeguards load is sufficient to place the unit in a safe shutdown condition and to bring in replenishment fuel from a commercial source.

The 24 hour Frequency is needed because the DG fuel oil reserve is stored in fuel oil tanks that support the operation of gas turbine peaking units that are not under IP3 control. Specifically, the 30,026 gallons needed to support 7 days of DG operation is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation. Although the volume of fuel oil required to support IP3 DG operability is designated as for the exclusive use of IP3, the fact that the oil in the storage tanks is used for purposes other than IP3 DGs and oil consumption is not under the direct control of IP3 operators warrants frequent verification that required offsite DG fuel oil reserve volume is being maintained.

SR 3.8.3.2

SR 3.8.3.2.a provides verification when in MODES 1, 2, 3, and 4, that there is an adequate inventory of fuel oil in the storage

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.2 (continued)

DG fuel oil tanks to support each DG's operation for at least 48 hours of operation of minimum safeguards equipment when any two of the DG fuel oil storage tanks are available and 5,891 gallons of usable fuel oil is contained in each tank.

SR 3.8.3.2.b provides verification when in MODES 5 and 6 and during movement of irradiated fuel that the minimum required fuel oil for operation in these MODES is available in one or more DG fuel oil storage tanks. The minimum required volume of fuel oil takes into account the reduced DG loading required to respond to events in MODES 5 and 6 is sufficient to support the two DGs required to be operable in MODES 5 and 6 and during movement of irradiated fuel while a fuel transfer from the offsite DG fuel oil reserve or from another offsite source is planned and conducted under accident conditions.

This minimum volume required by SR 3.8.3.2.a and SR 3.8.3.2.b is the usable volume and does not include allowances for fuel not usable due to the fuel oil transfer pump cutoff switch (760 gallons) and the required safety margin (20 gallons per tank). If the installed level indicators are used to measure tank volume, an additional allowance of 50 gallons for instrument uncertainty associated with the level indicators must be included. Appropriate adjustments are required for SR 3.8.3.2.b if the required volume is found in more than one DG fuel oil storage tank.

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

SR 3.8.3.3

This surveillance verifies that the properties of new and stored fuel oil meet the acceptance criteria established by Specification 5.5.12, "Diesel Fuel Oil Testing Program." Specific sampling and testing requirements for diesel fuel oil

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.3 (continued)

in accordance with applicable ASTM Standards are specified in the administrative program developed to ensure Specification.

New fuel oil is sampled prior to addition to the DG fuel oil storage tanks and stored fuel oil is periodically sampled from the DG fuel oil storage tanks. Requirements and acceptance criteria for fuel oil are divided into 3 parts as follows: a) tests of the sample of new fuel sample and acceptance criteria that must be met prior to adding the new fuel to the DG fuel oil storage tanks; b) tests of the sample of new fuel that may be completed after the fuel is added to the DG fuel oil storage tanks; and, c) tests of the fuel oil stored in the DG fuel oil storage tanks. The basis for each of these tests is described below.

The tests of the sample of new fuel and acceptance criteria that must be met prior to adding the new fuel to the DG fuel oil storage tanks are a means of determining that the new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. The tests, limits, and applicable ASTM Standards needed to satisfy Specification 5.5.12 are listed in the administrative program developed to implement Specification 5.5.12.

Failure to meet any of the specified limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO because the fuel oil is not added to the storage tanks.

The tests of the sample of new fuel that may be completed after the fuel is added to the DG fuel oil storage tanks must be completed Within 31 days. The fuel oil is analyzed to establish that the other properties of the fuel oil meet the acceptance

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.3 (continued)

criteria of Specification 5.5.12. The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. Failure to meet the specified acceptance criteria requires entry into Condition E and restoration of the quality of the fuel oil in the DG fuel oil storage tank within the associated Completion Time and explained in the Bases for Condition E. This Surveillance ensures the availability of high quality fuel oil for the DGs.

The periodic tests of the fuel oil stored in the DG fuel oil storage tanks verify that the length of time or conditions of storage has not degraded the fuel in a manner that could impact DG OPERABILITY. Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure. Particulate concentrations must meet the acceptance criteria of Specification 5.5.12. It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. Each DG fuel oil storage tank must be considered and tested separately.

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

SR 3.8.3.4

The IP3 offsite fuel oil reserve is maintained by the operators of IP2, Consolidated Edison Company, in accordance with formal agreements with NYPA. The IP3 offsite DG fuel oil reserve is normally stored in the same tanks used to store the IP2 offsite DG fuel oil reserve. Fuel oil properties of new and stored fuel are controlled in accordance with IP2 Technical Specifications and FSAR in order to meet requirements for the Operability of IP2 and IP3 DGs.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.4 (continued)

Required testing of the properties of new and stored fuel in the offsite DG fuel oil reserve is performed by IP2 in accordance with programs established by Consolidated Edison Company. NYPA performs periodic verification that fuel oil stored in the offsite DG fuel oil reserve meet the requirements of Specification 5.5.12.

Failure to meet the specified acceptance criteria, whether identified by IP2 or IP3, requires entry into Condition F and restoration of the quality of the fuel oil in the offsite DG fuel oil reserve within the associated Completion Time and explained in the Bases for Condition F.

SR 3.8.3.5

This Surveillance ensures that, without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of four engine starts without recharging. Failure of the engine to start within approximately 15 seconds indicates a malfunction at which point the overcrank relays terminate the start cycle. In this condition, sufficient starting air will still be available so that the DG can be manually started. The pressure specified in this SR is intended to reflect the lowest value at which the four starts can be accomplished.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

SR 3.8.3.6

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every 92 days eliminates the necessary environment for bacterial

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.6 (continued)

survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are consistent with Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. Unless the volume of water is sufficient that it could impact DG OPERABILITY, presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed within 30 days of performance of the Surveillance.

REFERENCES

1. FSAR, Section 8.2.
2. Regulatory Guide 1.137.
3. FSAR, Chapter 14.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.3:
"Diesel Fuel Oil and Starting Air"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-1	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-2	132 TSCR 98-044	132 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A
3.7-3a	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-4	161 TSCR 98-044	161 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
T 4.1-3(1)	182 TSCR 98-043	178 TSCR 97-156, 98-043	IPN 98-043	Instrument Channel Surveillance Intervals Extended to 24 Months	Incorporated
T 4.1-3(1)	182 TSCR 98-043	178 TSCR 97-156, 98-043	IPN 97-156	Amendment 182	Incorporated

3.7 AUXILIARY ELECTRICAL SYSTEMS

A.2

~~Applicability~~

~~Applies to the availability of electrical power for the operation of plant auxiliaries.~~

~~Objective~~

~~To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation, and (2) to provide for the continuing availability of engineered safety features.~~

Specification

LCO 3.8.3 Applicability A. ~~The reactor shall not be brought above the cold shutdown condition unless the following requirements are met:~~ A.5

SEE ITS 3.8.1

1. Two physically independent transmission circuits to Buchanan Substation capable of supplying engineered safeguards loads.

2. 6.9 KV buses 5 and 6 energized from either 138 KV feeder 95331 or 95332.

3. Either 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 KV power.

4. The four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A, and between buses 3A and 6A, opened.

A.6

5891

SR 3.8.3.2

SR 3.8.3.1

5. Three diesel generators operable with a minimum onsite supply of 6671 gallons of fuel in each of the three individual underground storage tanks. In addition to the underground storage tanks, 30,026 gallons of fuel ~~compatible for operation with the diesels~~ shall be available ~~onsite or at the Buchanan substation~~. This 30,026 gallon reserve is for Indian Point Unit No. 3 usage only

A.7

LA.1

Add Condition A and associated Req Act — A.8

Add Condition C and associated Req Act — A.1

Add Conditions D, E and F and associated Req Act — L.2

Add SR 3.8.3.5 and Condition G and Associated Req Act — M.3, L.3

LA.1

~~and is in addition to the fuel requirements for other nuclear units on the site.~~

SEE ITS 3.8.4 6.	Three batteries plus three chargers and the D.C. distribution systems operable.
SEE ITS 3.8.7 7.	No more than one 120 volt A.C. Instrument Bus on the backup power supply.

SEE ITS 3.8.1

B. The requirements of 3.7.A may be modified to allow any one of the following power supplies to be inoperable at any one time.

1. One diesel ~~or any diesel fuel oil system~~ or a diesel and its associated fuel oil system may be inoperable for up to 72 hours provided the 138 KV and the 13.8 KV sources of offsite power are available, and the engineered safety features associated with the remaining diesel generator buses are operable. If the inoperable diesel generator became inoperable due to any cause other than preplanned maintenance or testing, then within 24 hours, either: A.3 A8

   a. Determine by evaluation, that the remaining operable diesel generators are not inoperable due to common-cause failure.

   OR

   b. Verify by testing, that the remaining diesel generators are operable.

2. The 138 KV or the 13.8 KV sources of power may be inoperable for 48 hours provided the three diesel generators are operable. This operation may be extended beyond 48 hours provided the failure is reported to the NRC within the 48 hour period with an outline of the plans for restoration of offsite power and NRC approval is granted.

Add LCO 3.8.3, Separate Condition Entry — A.4

Add SR 3.8.3.3 and SR 3.8.3.4 — M.2

Add Condition H and associated Req Act — A.3

Add SR 3.8.3.6 — M.4

TSCR 98-044

SEE ITS 3.8.1 ITS 3.8.4 ITS 3.8.7 ITS 3.8.9

C. If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

1. If the reactor is critical, it shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours.

2. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.

SEE ITS 3.8.1

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

LCO 3.8.3 APPLICABILITY

F. ~~As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:~~ A.5

SEE ITS 3.8.2

1. One transmission circuit to Buchanan Substation, except for testing.

2. Either:

a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,

or

b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

SEE ITS 3.8.10

3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

{Condition B and associated Required Actions} A.8

SEE ITS 3.8.2 SR 3.8.3.2.b

4. Two operable diesel generators together with total underground storage containing a minimum of 6671 gallons of fuel. 5891 A.6

SEE ITS 3.8.1

G. When a system, subsystem, train, component or device is determined to be inoperable solely because its emergency power source is inoperable, or solely because its normal power source is inoperable, it may be considered operable for the purpose of satisfying the requirements of its applicable specification provided: (1) its corresponding normal or emergency power source is operable; and (2) all of its redundant system(s), subsystem(s), train(s), components(s) and device(s) are operable or likewise satisfy the requirements of the specification.

A.1

~~Basis~~

~~The electrical system equipment is arranged so that no single contingency can inactivate enough safeguards equipment to jeopardize the plant safety. The 480-volt equipment is arranged on 4 buses. The 6900-volt equipment is supplied from 6 buses.~~

~~The Buchanan Substation has both 345 KV and 138 KV transmission circuits which are capable of supplying startup, normal operation, shutdown and/or engineered safeguards loads.~~

~~The 138 KV supplies or the gas turbines are capable of providing sufficient power for plant startup. Power via the station auxiliary transformer can supply all the required plant auxiliaries during normal operation, if required.~~

~~In addition to the unit transformer, four separate sources supply station service power to the plant.[1]~~

~~The plant auxiliary equipment is arranged electrically so that multiple items receive their power from different buses. Redundant valves are individually supplied from separate motor control centers.~~

The bus arrangements specified for operation ensure that power is available to an adequate number of safeguards auxiliaries. With additional switching, more equipment could be out of service without infringing on safety.

Two diesel generators have sufficient capacity to start and run within design load the minimum required engineered safeguards equipment.(1) The minimum onsite underground stored diesel fuel oil inventory is maintained at all times to assure the operation of two diesels carrying the minimum required engineered safeguards equipment load for at least 48 hours.(2) The minimum required storage tank volume (when above cold shutdown) of 6671 gallons is the minimum volume required when sounding the tanks to obtain level information. This volume includes allowances for fuel not usable due to the oil transfer pump cutoff switch (760 gallons) and a safety margin (20 gallons). If the installed level indicators are used to measure tank volume, 6721 gallons of oil (6671 gallons plus the 50 gallon uncertainty assoicated with the level indicators) must be in each storage tank.

When in cold shutdown, two diesel generators must be operable with a total underground storage of 6671 gallons of fuel oil. The same methodology used to measure fuel volume above cold shutdown should be used. Additional fuel oil suitable for use in the diesel generators will be stored either on site or at the Buchanan Substation. The minimum storage of 30,026 gallons of additional fuel oil will assure continuous operation of two diesels at the minimum engineered safeguards load for a total of 7 days. A truck with hosing connections compatible with the underground diesel fuel oil storage tanks is available for transferal of diesel oil from storage areas either on site or at the Buchanan Substation. Commercial oil supplies and trucking facilities are also available.

Specification 3.7.B.1.a provides an allowance to avoid unnecessary testing of operable emergency diesel generators (EDG) upon discovery of an inoperable EDG (Reference 3). If it can be determined by evaluation that the cause of the inoperable EDG does not exist on the operable EDGs, the operability test for those EDGs does not have to be performed. If the cause of inoperability does exist on one or both of the other EDGs, the affected EDG(s) would be declared inoperable upon discovery and Specification 3.7.C would be entered. If the cause of the initial inoperable EDG cannot be confirmed not to exist on the remaining EDGs, performance of the surveillance test that starts the affected EDG(s) suffices to provide assurance of continued operability of those EDGs. If a diesel generator is out of service due to preplanned preventive maintenance or testing, special surveillance testing of the remaining diesel generators is not required because the required periodic surveillance testing suffices to provide assurance of their operability. The fact that preplanned corrective maintenance is sometimes performed in conjunction with preplanned maintenance or testing does not necessitate that the remaining diesels be tested, because this corrective maintenance is on defects or potential defects that never called diesel operability into question. If a diesel generator defect or operability concern is discovered while performing this preplanned preventive maintenance or testing, the concern or defect is evaluated to determine if the same concern or defect could render the remaining diesel generators inoperable.

TABLE 4.1-3 (Sheet 1 of 2)

FREQUENCIES FOR EQUIPMENT TESTS

SEE CTS MASTER MARKUP

	Check	Frequency
1. Control Rods	Rod drop times of all control rods	24M
2. Control Rods	Movement of at least 10 steps in any one direction of all control rods	Every 31 days during reactor critical operations
3. Pressurizer Safety Valves	Set Point	24M*
4. Main Steam Safety Valves	Set Point	24M
5. Containment Isolation System	Automatic actuation	24M
6. Refueling System Interlocks	Functioning	Each refueling, prior to movement of core components
7. Primary System Leakage	Evaluate	5 days/week
8. Diesel Generators Nos. 31, 32 & 33 Fuel Supply	Fuel Inventory	Weekly SR 3.8.3.1 24 hr M.1 SR 3.8.3.2 31 day L.1
9. Turbine Steam Stop And Control Valves	Closure	Not to exceed 6 months**
10. L.P. Steam Dump System (6 lines)	Closure	Monthly
11. Service Water System	Each pump starts and operates for 15 minutes (unless already operating)	Monthly
12. City Water Connections to Charging Pumps and Boric Acid Piping	Temporary connections available and valves operable	24M

SR 3.8.3.1
SR 3.8.3.2

SEE CTS MASTER MARKUP

* ~~Pressurizer Safety Valve setpoint test due no later than May 1996 may be deferred until the next refueling outage but no later than May 31, 1997~~ TSCR 98-043

** The turbine steam stop and control valves shall be tested at a frequency determined by the methodology presented in WCAP-11525, "Probabilistic Evaluation of Reduction in Turbine Valve Test Frequency," as updated by Westinghouse Report, WOG-TVTF-93-17, "Update of BB-95/96 Turbine Valve Failure Rates and Effect on Destructive Overspeed Probabilities." The maximum test interval for these valves shall not exceed six months. Surveillance interval extension as per Technical Specification 1.12 is not applicable to the maximum test interval.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.3:
"Diesel Fuel Oil and Starting Air"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases that are designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 3.7 and CTS Table 4.1-3, Item 8, include requirements for diesel generator (DG) fuel oil inventory as an integral part of requirements for DG operability. ITS 3.8.3, Diesel Fuel Oil and Starting Air, is added to separate requirements for DG Operability (ITS LCO 3.8.1 and ITS LCO 3.8.2) from requirements for Operability of DG support systems. This change is needed to recognize that these parameters, while supporting DG Operability, contains substantial margin before reaching a condition that would prevent the DG from performing its safety function.

Therefore, the limited levels of degradation permitted by these new conditions justify some allowance for restoration. During the newly allowed restoration periods for these parameters, the DG is still capable of performing its intended function. This reorganization of Technical Specification requirements is an administrative change with no impact on safety because any differences between the existing requirements and ITS 3.8.3 are described and justified elsewhere in this discussion of changes.

A.4 ITS 3.8.3 Conditions and Required Actions are preceded by the Note "Separate Condition entry is allowed for each DG." In conjunction with the ITS Specification 1.3, "Completion Times," this Note provides direction consistent with the intent of the CTS for an inoperable DG. Specifically, this note allows separate entry into an LCO 3.8.3 Condition for each DG and separate tracking of Completion Times based on a particular DG's time of entry into the Condition. However, the ITS design is unique in that fuel oil reserve inventory requirements are not associated with a specific DG and separate condition entry is not appropriate when this Condition affects more than one DG; therefore, Required Actions for ITS 3.8.3, Conditions B and C, were designed to ensure that all affected DGs are declared inoperable if the Condition is entered and/or the Completion Time exceeded. This approach eliminates the need to take exception to the Note allowing separate condition entry for Conditions B and C. The addition of the separate Condition Note and design of Conditions B and C are administrative changes with no impact on safety because any technical changes to CTS requirements are discussed elsewhere in this discussion of changes.

A.5 CTS 3.7.A specifies that DG fuel oil requirements for three DGs are applicable when above cold shutdown and CTS 3.7.F specifies that DG fuel oil requirements for to DGs are applicable under all conditions. ITS 3.8.3, Diesel Fuel Oil and Starting Air, specifies an Applicability of "when associated DG is required to be OPERABLE." Therefore, changes to the Applicability for CTS 3.7.A are described and justified as part of ITS LCO 3.8.1 and changes to the Applicability for CTS 3.7.F are described and justified as part of ITS LCO 3.8.2. This is an administrative change with no impact on safety because the applicability of ITS LCO 3.8.3 is just a more specific statement of the existing requirement and any differences between the ITS and CTS requirements are described and justified as part of ITS LCO 3.8.1 and ITS LCO 3.8.2.

A.6 CTS 3.7.A.5 requires that each DG fuel oil storage tank contain 6671 gallons of fuel oil when above cold shutdown and CTS 3.7.F.4 requires a total of 6671 gallons of fuel oil must be maintained in the DG fuel oil storage tanks under all conditions including cold shutdown. ITS LCO 3.8.3 maintains the same requirements; however, ITS LCO 3.8.3 establishes requirements in terms of useable fuel and not total tank volume. Therefore, ITS LCO 3.8.3, SR 3.8.3.2 and associated Conditions A and B, specify 5891 gallons of usable fuel as the minimum acceptance criteria for DG fuel oil storage tank volume. This is an administrative change because both CTS and ITS require a minimum usable inventory of 5891 gallons. As explained in both the CTS and ITS Bases, the ITS acceptance criteria of 5891 gallons is the usable volume in the tank and does not include allowances for fuel not usable due to the oil transfer pump cutoff switch (760 gallons), a required safety margin (20 gallons per tank) and allowances for instrument uncertainty. Therefore, if the installed level indicators are used to measure tank volume, 6721 gallons of oil (6671 gallons plus the 50 gallon uncertainty associated with the level indicators) must be in each storage tank.

This change is needed to ensure that the volume of usable fuel (including the required safety margin of 20 gallons per tank) is correctly determined during shutdown conditions if the minimum inventory is stored in more than one tank. Additionally, this change also increases flexibility if volume is obtained by sounding rather than the use of installed instrumentation. This is an administrative change with no impact on safety because the acceptance criteria for the required minimum volume of fuel oil available to each DG is not changed.

A.7 CTS 3.7.A.5 establishes requirements for properties of DG fuel oil in the DG fuel oil reserve. Specifically, DG fuel oil in the fuel oil reserve must be "compatible for operation with the diesels." This requirement is maintained in ITS 5.5.12, Diesel Fuel Oil Testing Program.

A.8 CTS 3.7.A.5 requires that each DG fuel oil storage tank contain 6671 gallons of fuel oil when above cold shutdown; otherwise, CTS 3.7.B.1 requires that the associated DG is inoperable immediately. CTS 3.7.F.4 requires a total of 6671 gallons of fuel oil in must be maintained in the DG fuel oil storage tanks under all conditions including cold shutdown; otherwise, there is an unstated requirement that both required DGs are declared inoperable immediately. ITS LCO 3.8.3 maintains the same requirements; however, ITS LCO 3.8.3 establishes these requirements by a specific statement of the Conditions (A and B, respectively) and the associated Required Actions. This is an administrative change with no significant adverse impact on safety.

MORE RESTRICTIVE

M.1 CTS Table 4.1-3, Item 8, requires weekly verification of the fuel inventory for DGs 31, 32, and 33. DG fuel inventory includes the DG day tanks (See ITS 3.8.1), the DG fuel oil storage tanks (See ITS 3.8.3, DOC L.1), and the offsite fuel oil reserve.

ITS SR 3.8.3.1 maintains the requirement to verify the DG fuel oil inventory in the offsite fuel oil reserve; however, ITS SR 3.8.3.1 increases the Frequency from weekly to every 24 hours. This change is needed to satisfy requirements in FSAR 8.2.3 for daily monitoring of offsite DG fuel oil reserves. FSAR 8.2.3 specifies daily monitoring of the offsite fuel oil reserve because the DG fuel oil reserve is stored in fuel oil tanks that support the operation of gas turbine units that are not under IP3 control (See ITS 3.8.3, DOC LA.1). Specifically, the diesel fuel oil needed to support 7 days of operation of IP3 DGs is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation. Although the 30,026 gallons of fuel oil required to support IP3 DG operability is designated for the exclusive use of IP3, the fact that the oil in the storage tanks is used for purposes other than IP3 DGs and oil consumption is not under the direct control of IP3 operators warrants frequent verification that required fuel oil reserve volumes are being maintained.

This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring a more conservative verification of DG reserve fuel oil inventory than is currently required by Technical Specifications. Additionally, this change is consistent with the IP3 FSAR 8.2.3 requirement for daily monitoring. Therefore, this change has no significant adverse impact on safety.

M.2 CTS 3.7 and CTS 4.6 do not establish any requirements for the properties of diesel fuel oil in either the DG fuel oil storage tanks or the offsite DG fuel oil reserve except that the oil in the offsite DG fuel oil reserve must be "compatible for operation with the diesels" (See ITS 3.8.3, DOC A.7). ITS SR 3.8.3 3 and 3.8.3.4 require that important properties of fuel oil in both the DG fuel oil storage tanks and the DG fuel oil reserve are verified at the frequency and to the acceptance criteria specified in ITS 5.5.12, "Diesel Fuel Oil Testing Program" when tested using the methodology specified in the administrative program developed to ensure ITS 5.5.12 is met. (See DOC L.2 for Conditions and Required Actions when fuel oil properties are not verified or determined not within limits). The acceptance criteria and sampling frequency are addressed in discussion of changes for ITS Specification 5.5.12, "Diesel Fuel Oil Testing Program."

The IP3 offsite fuel oil reserve is maintained by the operators of IP2, Consolidated Edison Company, in accordance with formal agreements with NYPA. The IP3 offsite DG fuel oil reserve is normally stored in the same tanks used to store the IP2 offsite DG fuel oil reserve. Fuel oil properties of new and stored fuel are controlled in accordance with IP2 Technical Specifications and FSAR in order to meet requirements for the Operability of IP2 and IP3 DGs.

Required testing of the properties of new and stored fuel in the offsite DG fuel oil reserve will be performed by IP2 in accordance with programs established by Consolidated Edison Company. NYPA will perform periodic verification that fuel oil stored in the offsite DG fuel oil reserve meet the requirements of Specification 5.5.12 when tested in accordance with the Diesel Fuel Oil Testing Program required by ITS 5.5.12.

These more restrictive changes are acceptable because they do not introduce any operation which is un-analyzed while establishing specific requirements for diesel fuel oil acceptance criteria and periodic verification that acceptance criteria are met. Therefore, this change has no significant adverse impact on safety.

M.3 CTS 3.7 and CTS 4.6 do not establish any requirements for a minimum DG air start receiver pressure. ITS SR 3.8.3.5 adds a new requirement to verify every 31 days that each DG air receiver is at the minimum pressure required to support at least four start attempts consistent with the requirements in the FSAR Section 8.2 (See ITS 3.8.3, DOC L.3 for associated Condition and Required Action). This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while establishing more conservative requirements for verification of air start receiver pressure than is currently required. Therefore, this change has no negative impact on safety.

M.4 CTS 3.7 and CTS 4.6 do not establish any requirements for checking for and removing accumulated water from each DG fuel oil storage tank. ITS SR 3.8.3.6 is added to requires checking for and removing accumulated water from each DG fuel oil storage tank every 92 days. This SR is needed because water in a storage tank is a condition that promotes microbiological fouling which is a major cause of fuel oil degradation. In addition, periodic removal of water from DG fuel oil storage tanks eliminates the potential for water entrainment in the fuel oil during extended DG operation. The SR Frequency of 92 days is consistent with recommendations in Regulatory Guide 1.137 for DG fuel oil storage tanks where the tank bottom is above the water table. This SR is for preventive maintenance; therefore, the presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed during performance of the SR.

This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring a more conservative maintenance requirements which help maintain fuel oil properties within limits. Therefore, this change has no significant adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS Table 4.1-3, Item 8, requires weekly verification of the fuel inventory for DGs 31, 32, and 33. DG fuel inventory includes the DG day tanks (See ITS 3.8.1), the offsite fuel oil reserve (See ITS 3.8.3, DOC M.1), and the DG fuel oil storage tanks.

ITS SR 3.8.3.2 maintains the requirement to verify the DG fuel oil inventory in the DG fuel oil storage tanks; however, ITS SR 3.8.3.2 decreases the Frequency from weekly to every 31 days. This change is needed because a weekly Frequency creates an administrative burden with no commensurate benefit of more prompt discovery of an unanticipated low volume in the storage tanks.

This 31 day Frequency is acceptable because unit operators are cognizant of any large uses of DG fuel oil which may require a special verification of the fuel oil inventory and administrative controls associated with the operation of the DGs are capable of ensuring minimum inventories are maintained. Additionally, the DG fuel oil DG fuel oil storage tanks are equipped with low level alarms at the Technical Specification minimum level. Although there is no Technical Specification requirement for a level alarm on the storage tanks, the existence of the alarms, which are described in the FSAR, is an appropriate consideration in the establishment of the SR Frequency. This change has no significant adverse impact on safety because a 31 day SR Frequency is adequate to ensure the effectiveness of the administrative controls that maintain the tank volume within required limits.

L.2 CTS 3.7 and CTS 4.6 do not establish any requirements for the properties of diesel fuel oil except that the offsite DG fuel oil reserve must be "compatible for operation with the diesels; therefore, DGs must be declared inoperable immediately if fuel oil properties are suspected to affect DG starting capability or endurance. ITS SR 3.8.3 3 and 3.8.3.4 require that fuel oil in both the DG fuel oil storage tanks and the offsite DG fuel oil reserve must meet acceptance criteria specified in Specification 5.5.12, "Diesel Fuel Oil Testing Program" and verified to meet this acceptance criteria at the frequency specified in Specification 5.5.12 (See ITS 3.8.3, DOC M.2).

receiver pressure is not sufficient for four successive DG start attempts but sufficient for one start attempt. This allowance is less restrictive because it provides additional time to restore from a condition that under the CTS would result in the DG being inoperable immediately.

This change is acceptable because air receiver pressure sufficient to support four start attempts contains substantial margin before reaching a condition that would prevent the DG from performing its safety function. Therefore, if sufficient starting air for at least one start attempt is maintained during the new restoration period then the DG is still capable of performing its safety function. This change has no significant impact on safety because of the limited level of degradation permitted by this new condition and the limited time this condition is allowed to persist.

REMOVED DETAIL

LA.1 CTS 3.7.A.5 specifies that the 30,026 gallons required to be in the offsite fuel oil reserve must be designated for Indian Point Unit No. 3 usage only and must be in addition to the fuel requirements for other nuclear units on the site. ITS LCO 3.8.3 maintains the requirement to maintain greater than a specified minimum volume of fuel oil in the DG fuel reserve. However, the clarification that fuel oil reserve minimum may include only that oil designated for the exclusive use of IP3 is maintained in the Bases for ITS LCO 3.8.3 and/or IP3 FSAR Section 8.2.

This change is acceptable because ITS LCO 3.8.3 maintains the requirement to maintain greater than a specified minimum volume of fuel oil in the DG fuel reserve; therefore, there is no change to the existing requirements and no change to the level of safety of facility operation.

This change, which maintains the clarification that fuel oil reserve minimum may include only that oil designated for the exclusive use of IP3 in ITS LCO 3.8.3 and/or IP3 FSAR Section 8.2, is consistent with the approach used in NUREG-1431 for all Limiting Conditions for Operation (LCOs). This approach is acceptable because the requirements of 10 CFR 50.59, Changes, Tests and Experiments, and ITS 5.5.13, Technical

Specifications (TS) Bases Control Program, are designed to assure that changes to the FSAR and ITS Bases do not result in changes the to the Technical Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement FSAR changes in accordance with 10 CFR 50.59 and ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of FSAR and Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight are maintained for the information being relocated out of the Technical Specifications.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.3:
"Diesel Fuel Oil and Starting Air"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed changes do not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change extends the interval between required verifications of fuel oil inventory in the DG fuel oil storage tanks from weekly to every 31 days. This change will not result in a significant increase in the probability of an accident previously evaluated because the volume of diesel fuel available in the DG fuel oil storage tanks has no impact on the occurrence of any accident previously evaluated. This change will not result in a significant increase in the consequences of an accident previously evaluated because this change does not increase the probability that required minimum fuel oil inventories will not be available at the start of any event. Required fuel oil inventories will be adequately maintained at this SR Frequency because unit operators are cognizant of any large uses of DG fuel oil which may require a special verification of the fuel oil inventory and administrative controls associated with the operation of the DGs are capable of ensuring minimum inventories are maintained. Additionally, the DG fuel oil DG fuel oil storage tanks are equipped with low level alarms at the Technical Specification minimum level. Although there is no Technical Specification requirement for a level alarm on the storage tanks, the existence of the alarms, which are described in the FSAR, is an appropriate consideration in the establishment of the SR Frequency. This change has no adverse impact on safety because a 31 day SR Frequency is adequate to ensure the effectiveness of the administrative controls that maintain the tank volume within required limits.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal plant operation are consistent with the current safety analysis assumptions because there is no change in the method that will be used to verify diesel fuel oil inventory. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because required fuel oil inventories will be adequately maintained at this SR Frequency. Unit operators are cognizant of any large uses of DG fuel oil which may require a special verification of the fuel oil inventory and administrative controls associated with the operation of the DGs are capable of ensuring minimum inventories are maintained. Additionally, the DG fuel oil DG fuel oil storage tanks are equipped with low level alarms at the Technical Specification minimum level. Although there is no Technical Specification requirement for a level alarm on the storage tanks, the existence of the alarms, which are described in the FSAR, is an appropriate consideration in the establishment of the SR Frequency. This change has no adverse impact on safety because a 31 day SR Frequency is adequate to ensure the effectiveness of the administrative controls that maintain the tank volume within required limits.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed changes do not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change, added in conjunction with new requirements for DG fuel oil properties, allows time to restore fuel oil properties to within required limits before the associated DG must be declared inoperable. This change will not result in a significant increase in the probability of an accident previously evaluated because fuel oil properties are not associated with the initiators of any analyzed event. This change will not result in a significant increase in the consequences of an accident previously evaluated because each of the fuel oil parameters, while supporting DG Operability, contains substantial margin before reaching a condition that would affect DG starting capability or endurance. Generally, fuel oil properties are intended to measure long term oil stability and are not indicative of conditions that would prevent DG operation in the short run. Therefore, during the allowed restoration period for these parameters, the DG is capable of performing its safety function. Therefore, the limited levels of degradation justify the limited amount of time for restoration permitted by ITS. Finally, DG Operability is demonstrated every 31 days and changes in fuel oil properties are not expected to be significant enough to affect Operability during this period.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed changes will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal Plant evaluated because DG air start receiver pressure is not the initiator of any analyzed event. This change will not result in a significant increase in the consequences of an accident previously evaluated because air receiver pressure sufficient to support four start attempts contains substantial margin before reaching a condition that would prevent the DG from performing its safety function. Therefore, if sufficient starting air for at least one start attempt is maintained during the new restoration period then the DG is still capable of performing its safety function. This change has no significant impact on safety because of the limited level of degradation permitted by this new condition and the limited time this condition is allowed to persist.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed changes will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal Plant operation are consistent with the current safety analysis assumptions because there is no change to the method used to start the DG. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because air receiver pressure sufficient to support four start attempts contains substantial margin before reaching a condition that would prevent the DG from performing its safety function.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.3:
"Diesel Fuel Oil and Starting Air"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.3

This ITS Specification is based on NUREG-1431 Specification No. **3.8.3**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-010	002 R1	RELOCATE THE 10 YEAR SEDIMENT CLEANING OF THE FUEL OIL STORAGE TANK TO LICENSEE CONTROL	NRC Review. NRC will approve on plant specific basis.	Incorporated	T.1

3.8 ELECTRICAL POWER SYSTEMS

3.8.3 Diesel Fuel Oil, ~~Lube Oil~~, and Starting Air

⟨3.7.A.5⟩ ⟨DOC A.3⟩

LCO 3.8.3 The stored diesel fuel oil, ~~lube oil~~, and starting air subsystem shall be within limits for each required diesel generator (DG).

⟨3.7.A⟩ ⟨DOC A.5⟩

APPLICABILITY: When associated DG is required to be OPERABLE.

ACTIONS

---NOTE---

⟨DOC A.4⟩ Separate Condition entry is allowed for each DG.

CONDITION	REQUIRED ACTION	COMPLETION TIME	
Insert: B 3.8-21-01 ~~A. One or more DGs with fuel level < [33,000] gal and > [28,285] gal in storage tank.~~	~~A.1 Restore fuel oil level to within limits.~~	~~48 hours~~	CLB.1
~~B. One or more DGs with lube oil inventory < [500] gal and > [425] gal.~~	~~B.1 Restore lube oil inventory to within limits.~~	~~48 hours~~	CLB.2
⟨DOC L.2⟩ D ~~C~~. One or more DGs with ~~stored~~ underground storage tank fuel oil total particulates not within limit.	D ~~C~~.1 Restore fuel oil total particulates within limit of SR 3.8.3.3	7 days	PA.1 DB.1

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: 3.8-21-01

<3.7.A> <3.7.A5> <Doc A6> <Doc A8>	A.	--------NOTE-------- Only applicable in MODES 1, 2, 3 and 4. ------------------- One or more DGs with usable fuel oil in associated DG fuel oil storage tank < 5891 gal.	A.1	Declare associated DG inoperable.	Immediately
<3.7.F> <3.7.F4> <Doc A6> <Doc A8>	B.	--------NOTE-------- Only applicable in MODES 5 and 6 and during movement of irradiated fuel. ------------------- Total usable fuel oil in all DG fuel oil storage tanks < 5891 gal.	B.1	Declare all DGs inoperable.	Immediately
<3.7.A> <3.7A5> <Doc A.1>	C.	--------NOTE-------- Only applicable in MODES 1, 2, 3 and 4. ------------------- Total useable fuel oil in reserve storage tank(s) < 30,026 gal.	C.1	Declare all DGs inoperable.	Immediately

ACTIONS (continued)

	CONDITION	REQUIRED ACTION	COMPLETION TIME	
<DOC L.2>	E ~~D~~. One or more DGs with new fuel oil properties not within limits. Insert: 3.8-22-01	E ~~D~~.1 Restore stored fuel oil properties to within limits ~~.~~ of SR 3.8.3.3	30 days	PA.1
Insert: 3.8-22-02				
<DOC L.3>	G ~~E~~. One or more DGs with starting air receiver pressure < ~~[225]~~ 250 psig and ≥ ~~[125]~~ 90 psig.	G ~~E~~.1 Restore starting air receiver pressure to ≥ ~~[225]~~ 250 psig.	48 hours	
<DOC A.3>	H ~~F~~. Required Action and associated Completion Time not met. OR One or more DGs diesel fuel oil ~~, lube oil,~~ or starting air subsystem not within limits for reasons other than Condition A, B, C, D, ~~or E~~ E, F, or G	H ~~F~~.1 Declare associated DG inoperable.	Immediately	

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
~~SR 3.8.3.1 Verify each fuel oil storage tank contains ≥ [33,000] gal of fuel.~~	~~31 days~~

Insert: 3.8-22-03

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: 3.8-22-01

with DG fuel oil storage tanks with

INSERT: 3.8-22-02

DB.1

<Doc L.2>

F. Fuel oil in reserve storage tank(s) with properties not within limits of SR 3.8.3.4.	F.1 Restore fuel oil in reserve storage tank(s) to within limits of SR 3.8.3.4.	30 days

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

<u>INSERT: 3.8-22-03</u>

CLB.1
DB.1

<3.7.A> Table <4.1-3, #8> <Doc M.1>	SR 3.8.3.1	---------------NOTE--------------- Only required in MODES 1, 2, 3 and 4. ---------------------------------- Verify reserve storage tank(s) contain ≥ 30,026 gal of fuel oil reserved for IP3 usage only.	24 hours
<Table 4.1-3, #8> <Doc L.1> <3.7.A> <Doc A.6> <3.7.A.5> <3.7.F> <3.7.F.4>	SR 3.8.3.2	Verify DG fuel oil storage tanks contain: a. Usable fuel oil volume ≥ 5891 gal in each storage tank when in MODES 1, 2, 3 and 4; and b. Total usable fuel oil volume ≥ 5891 gal in storage tank(s) when in MODES 5 and 6 and during movement of irradiated fuel assemblies.	31 days

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY	
~~SR 3.8.3.2~~	~~Verify lubricating oil inventory is ≥ [500] gal.~~	~~31 days~~	CLB 2
<DOC M.2> SR 3.8.3.3	Verify that fuel oil properties of new and ~~stored fuel oil~~ are tested in accordance with, and maintained within the limits of, the Diesel Fuel Oil Testing Program. Insert: 3.8-23-01	In accordance with the Diesel Fuel Oil Testing Program	
Insert: 3.8-23-02			
<DOC M.3> SR 3.8.3.~~4~~ 5	Verify each DG air start receiver pressure is ≥ ~~[225]~~ 250 psig.	31 days	
<DOC M.4> SR 3.8.3.~~5~~ 6	Check for and remove accumulated water from each underground fuel oil storage tank.	~~[31]~~ 92 days	PA.1
~~SR 3.8.3.6~~	~~For each fuel oil storage tank: a. Drain the fuel oil; b. Remove the sediment; and c. Clean the tank.~~	~~10 years~~	T.1

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: 3.8-23-01

for the DG fuel oil storage tanks that

INSERT: 3.8-23-02

<3.7.F>

<DOC M2>

SR 3.8.3.4	----------------NOTE---------------- Only required in MODES 1, 2, 3 and 4. ------------------------------------ Verify that fuel oil properties in the reserve storage tank(s) are within limits specified in the Diesel Fuel Oil Testing Program.	In accordance with the Diesel Fuel Oil Testing Program

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-41-01 (page 1)

Fuel oil for the safeguards DGs is stored in three 7,700 gallon DG fuel oil storage tanks located on the south side of the Diesel Generator Building. The offsite DG fuel oil reserve is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation which is located in close proximity to the IP3 site. The IP3 offsite fuel oil reserve is maintained by the operators of IP2, Consolidated Edison Company, in accordance with formal agreements with NYPA. The IP3 offsite DG fuel oil reserve is normally stored in the same tanks used to store the IP2 offsite DG fuel oil reserve.

Sufficient fuel for at least 48 hours of minimum safeguards equipment operation is available when any two of the DG fuel oil storage tanks are available and contain 6671 gallons (5,891 usable gallons) of fuel oil. The maximum DG loadings for design basis transients that actuate safety injection are summarized in FSAR 8.2 (Ref. 1). These transients include large and small break loss of coolant accidents (LOCA), main steamline break and steam generator tube rupture (SGTR).

The three DG fuel oil storage tanks are filled through a common fill line that is equipped with a truck hose connection and a shutoff valve at each tank. The overflow from any DG fuel oil storage tank will cascade into an adjacent tank. Each DG fuel oil storage tank is equipped with a single vertical fuel oil transfer pump that discharges to either the normal or emergency header. Either header can be used to fill the day tank at each diesel. Each DG fuel oil storage tank has an alarm that sounds in the control room when the level in the tank drops to approximately 6,717 gallons. Each tank is also equipped with a sounding connection and a level indicator.

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-41-01 (page 2)

Each emergency diesel is equipped with a 175-gallon day tank with an operating level that provides sufficient fuel for approximately one hour of DG operation. A decrease in day tank level to approximately 115 gallons (65% full) will cause the normal and emergency fill valves on that day tank to open and the transfer pump in the corresponding DG fuel oil storage tank to start. Once started, the pump will continue to run until that day tank is filled. However, any operating transfer pump will fill any day tank with a normal or emergency fill valve that is open. When a day tank is at approximately 158 gallons (90% full), a switch initiates closing of the day tank normal and emergency fill valves.

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

<u>INSERT: B 3.8-41-01</u> (page 3)

Technical Specifications require sufficient fuel oil to operate 2 of the 3 required DGs at minimum safeguards load for 7 days. The Technical Specification required volume of fuel oil includes the 30,026 gallons of usable fuel oil in the reserve tanks, 11,782 usable gallons in two DG fuel oil storage tanks (assuming a failure makes the oil in the third DG fuel oil storage tank unavailable), and 230 gallons in two day tanks (assuming a failure makes the oil in the day tank associated with the third DG unavailable).

If the DGs require fuel oil from the fuel oil reserve tank(s), the fuel oil will be transported by truck to the DG fuel oil storage tanks. A truck with appropriate hose connections and capable of transporting oil is available either on site or at the Buchanan Substation. Commercial oil supplies and trucking facilities are also available in the vicinity of the plant.

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-41-02

Requirements for DG fuel oil testing methodology, frequency, and acceptance criteria are maintained in the program required by Specification 5.5.12, Diesel Fuel Oil Testing Program.

INSERT: B 3.8-41-03

The air starting system is designed to shutdown and lock out any engine which does not start during the initial start attempt so that only enough air for one automatic start is used. This conserves air for subsequent DG start attempts.

BASES (continued)

14 3

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 4), ~~and in the FSAR, Chapter [15] (Ref. 5)~~, assume Engineered Safety Feature (ESF) systems are OPERABLE. The DGs are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that fuel, Reactor Coolant System and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

Since diesel fuel oil, ~~lube oil~~ and the air start subsystem support the operation of the standby AC power sources, they satisfy Criterion 3 of ~~the NRC Policy Statement~~.

10 CFR 50.36

LCO

Insert: B3.8-42-01

Stored diesel fuel oil is required to have sufficient supply for 7 days ~~of full load operation. It~~ is also required to meet specific standards for quality. ~~Additionally, sufficient lubricating oil supply must be available to ensure the capability to operate at full load for 7 days.~~ This requirement, in conjunction with an ability to obtain replacement supplies within 7 days, supports the availability of DGs required to shut down the reactor and to maintain it in a safe condition for an anticipated operational occurrence (AOO) or a postulated DBA with loss of offsite power. DG day tank fuel requirements, as well as transfer capability from the storage tank to the day tank, are addressed in LCO 3.8.1, "AC Sources—Operating," and LCO 3.8.2, "AC Sources—Shutdown."

four

The starting air system is required to have a minimum capacity for five successive DG start attempts without recharging the air start receivers.

APPLICABILITY

The AC sources (LCO 3.8.1 and LCO 3.8.2) are required to ensure the availability of the required power to shut down the reactor and maintain it in a safe shutdown condition after an AOO or a postulated DBA. Since stored diesel fuel oil, ~~lube oil~~, and the starting air subsystem support LCO 3.8.1 and LCO 3.8.2, stored diesel fuel oil, ~~lube oil~~,

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-42-01

of operation for 2 of 3 DGs at minimum safeguards load.
Fuel oil

BASES

APPLICABILITY (continued)

and starting air are required to be within limits when the associated DG is required to be OPERABLE.

ACTIONS

The ACTIONS Table is modified by a Note indicating that separate Condition entry is allowed for each DG. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DG subsystem. Complying with the Required Actions for one inoperable DG subsystem may allow for continued operation, and subsequent inoperable DG subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

~~A.1~~

~~In this Condition, the 7 day fuel oil supply for a DG is not available. However, the Condition is restricted to fuel oil level reductions that maintain at least a 6 day supply. These circumstances may be caused by events, such as full load operation required after an inadvertent start while at minimum required level, or feed and bleed operations, which may be necessitated by increasing particulate levels or any number of other oil quality degradations. This restriction allows sufficient time for obtaining the requisite replacement volume and performing the analyses required prior to addition of fuel oil to the tank. A period of 48 hours is considered sufficient to complete restoration of the required level prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~

Insert: B3.8-43-01

~~B.1~~

~~With lube oil inventory < 500 gal, sufficient lubricating oil to support 7 days of continuous DG operation at full load conditions may not be available. However, the Condition is restricted to lube oil volume reductions that maintain at least a 6 day supply. This restriction allows sufficient time to obtain the requisite replacement volume. A period of 48 hours is considered sufficient to complete~~

(continued)

INSERT: B 3.8-43-01 (page 1)

A.1

In this Condition, the requirements of SR 3.8.3.2.a are not met. Therefore, a DG will not be able to support 48 hours of continuous operation at minimum safeguards load and replenishment of the DG fuel oil storage tanks will be required in less than 48 hours following an accident. The DG associated with the DG fuel oil storage tank not within limits must be declared inoperable immediately because replenishment of the DG fuel oil storage tank requires that fuel be transported from the offsite DG fuel oil reserve by truck and the volume of fuel oil remaining in the DG fuel oil storage tank may not be sufficient to allow continuous DG operation while the fuel transfer is planned and conducted under accident conditions.

This Condition is preceded by a Note stating that Condition A is applicable only in MODES 1, 2, 3 and 4. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required in the DG fuel oil storage tanks when in these MODES.

INSERT: B 3.8-43-01 (page 2)

B.1

In this Condition, the requirements of SR 3.8.3.2.b are not met. With less than the total required minimum fuel oil in one or more DG fuel oil storage tanks, the two DGs required to be operable in MODES 5 and 6 and during movement of irradiated fuel may not have sufficient fuel oil to support continuous operation while a fuel transfer from the offsite DG fuel oil reserve or from another offsite source is planned and conducted under accident conditions.

This condition requires that all DGs be declared inoperable immediately because minimum fuel oil level requirements in SR 3.8.3.2.b is a condition of Operability of all DGs when in the specified MODES.

This Condition is preceded by a Note stating that Condition B is applicable only in MODES 5 and 6 and during the movement of irradiated fuel. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required in the DG fuel oil storage tanks when in these MODES.

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-43-01 (page 3)

C.1

In this Condition, the fuel oil remaining in the offsite DG fuel oil reserve is not sufficient to operate 2 of the 3 DGs at minimum safeguards load for 7 days. Therefore, all 3 DGs are declared inoperable immediately.

This Condition is preceded by a Note stating that Condition D is applicable only in MODES 1, 2, 3 and 4 because the offsite DG fuel oil reserve is required to be available only in these MODES. This Note provides recognition that reduced DG loading required to respond to events in MODES 5 and 6 significantly reduces the amount of fuel oil required when in these MODES.

BASES

ACTIONS

~~C.1 (continued)~~

~~restoration of the required volume prior to declaring the DG inoperable. This period is acceptable based on the remaining capacity (> 6 days), the low rate of usage, the fact that procedures will be initiated to obtain replenishment, and the low probability of an event during this brief period.~~

D ~~E~~.1

Insert: B3.8-44-01

This Condition is entered as a result of a failure to meet the acceptance criterion of SR 3.8.3.5. Normally, trending of particulate levels allows sufficient time to correct high particulate levels prior to reaching the limit of acceptability. Poor sample procedures (bottom sampling), contaminated sampling equipment, and errors in laboratory analysis can produce failures that do not follow a trend. Since the presence of particulates does not mean failure of the fuel oil to burn properly in the diesel engine, and particulate concentration is unlikely to change significantly between Surveillance Frequency intervals, and proper engine performance has been recently demonstrated (within 31 days), it is prudent to allow a brief period prior to declaring the associated DG inoperable. The 7 day Completion Time allows for further evaluation, resampling and re-analysis of the DG fuel oil.

E ~~F~~.1

Insert: B3.8-44-02

~~With the new fuel oil properties defined in the Bases for SR 3.8.3.4 not within the required limits, a period of 30 days is allowed for restoring the stored fuel oil properties.~~ This period provides sufficient time to test the stored fuel oil to determine that the new fuel oil, when mixed with previously stored fuel oil, remains acceptable, or to restore the stored fuel oil properties. This restoration may involve feed and bleed procedures, filtering, or combinations of these procedures. Even if a DG start and load was required during this time interval and the fuel oil properties were outside limits, there is a high likelihood that the DG would still be capable of performing its intended function.

Insert: B3.8-44-03

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-44-01

SR 3.8.3.3 when the DG fuel oil storage tanks are verified to have particulate within the allowable value in Specification 5.5.12, Diesel Fuel Oil Testing Program.

INSERT: B 3.8-44-02

If the properties of new fuel oil are determined not to be within the requirements established by Specification 5.5.12, Diesel Fuel Oil Testing Program, after the fuel oil has been added to the DG fuel oil storage tanks, then a period of 30 days is allowed to restore the properties of the fuel oil in the DG fuel oil storage tank to within the limits established by Specification 5.5.12.

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-44-03

F.1

Fuel oil from the offsite DG fuel oil reserve will be added to the DG fuel oil fuel oil storage tanks within the first 48 hours following an event in conjunction with a sustained loss of offsite power. Therefore, the properties of the fuel oil in the offsite reserve must be maintained within the limits established by Specification 5.5.12, Diesel Fuel Oil Testing Program. Failure to maintain the offsite DG fuel oil reserve within these limits may adversely impact DG operation of all three DGs at some point following addition of the reserves to the DG fuel oil storage tanks. Therefore, if the offsite DG fuel oil reserve is not restored to within these limits within the specified Completion Time, then all three DGs must be declared inoperable.

Restoration of properties to within required limits may be performed by using the fuel in the gas turbine peaking units and replacing it with fuel within required limits or by the methods described in the Bases for Condition E.

The Completion Time of 30 days for the restoration of fuel oil properties to within limits is acceptable because the DG fuel oil storage tanks contain sufficient fuel for a minimum of 48 hours DG operation at minimum safeguards load. The Completion Time is acceptable because there is a high likelihood that the DG would still be capable of meeting requirements for starting and endurance even if fuel oil from the offsite DG fuel oil reserve must be added to the DG fuel oil tanks during the time interval the fuel oil properties are outside specified limits. Additionally, IP3 is located in an area where compatible fuel oil is expected to be readily available.

BASES

ACTIONS (continued)

G ~~F~~.1

four 250

With starting air receiver pressure < ~~[225]~~ psig, sufficient capacity for ~~five~~ successive DG start attempts does not exist. However, as long as the receiver pressure is ≥ 90 ~~≥ [125]~~ psig, there is adequate capacity for at least one start attempt, and the DG can be considered OPERABLE while the air receiver pressure is restored to the required limit. A period of 48 hours is considered sufficient to complete restoration to the required pressure prior to declaring the DG inoperable. This period is acceptable based on the remaining air start capacity, the fact that most DG starts are accomplished on the first attempt, and the low probability of an event during this brief period.

Insert: B3.8-45-01

H ~~F~~.1

With a Required Action and associated Completion Time not met, or one or more DG's fuel oil, ~~lube oil~~, or starting air subsystem not within limits for reasons other than addressed by Conditions A through ~~D~~ G, the associated DG may be incapable of performing its intended function and must be immediately declared inoperable.

SURVEILLANCE REQUIREMENTS

SR 3.8.3.~~1~~ 2

Insert: B3.8-45-02

~~This SR~~ SR 3.8.3.2.a provides verification when in MODES 1, 2 3 and 4 that there is an adequate inventory of fuel oil in the storage tanks to support each DG's operation for ~~7 days at full load~~. ~~The 7 day period is sufficient time to place the unit in a safe shutdown condition and to bring in replenishment fuel from an offsite location.~~

Insert: B3.8-45-03

Insert: B3.8-45-04

The 31 day Frequency is adequate to ensure that a sufficient supply of fuel oil is available, since low level alarms are provided and unit operators would be aware of any large uses of fuel oil during this period.

~~SR 3.8.3.2~~

~~This Surveillance ensures that sufficient lube oil inventory is available to support at least 7 days of full load~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-45-01:

Entry into Condition G is not required when air receiver pressure is less than required limits while the DG is operating following a successful start.

INSERT: B 3.8-45-02:

SR 3.8.3.1

This SR provides verification that there is an adequate inventory of fuel oil in the offsite DG fuel oil reserve to support 2 DGs at minimum safeguards load for 7 days assuming requirements for the DG fuel oil storage tanks and day tanks are met. The 7 day duration with 2 of the 3 DGs at minimum safeguards load is sufficient to place the unit in a safe shutdown condition and to bring in replenishment fuel from a commercial source.

The 24 hour Frequency is needed because the DG fuel oil reserve is stored in fuel oil tanks that support the operation of gas turbine peaking units that are not under IP3 control. Specifically, the 30,026 gallons needed to support 7 days of DG operation is maintained in two 30,000 gallon tanks located in the Indian Point 1 Superheater Building and/or a 200,000 gallon tank in the Buchanan Substation. Although the volume of fuel oil required to support IP3 DG operability is designated as for the exclusive use of IP3, the fact that the oil in the storage tanks is used for purposes other than IP3 DGs and oil consumption is not under the direct control of IP3 operators warrants frequent verification that required offsite DG fuel oil reserve volume is being maintained.

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-45-03:

at least 48 hours of operation of minimum safeguards equipment when any two of the DG fuel oil storage tanks are available and 5,891 gallons of usable fuel oil is contained in each tank.

INSERT: B 3.8-45-04:

SR 3.8.3.2.b provides verification when in MODES 5 and 6 and during movement of irradiated fuel that the minimum required fuel oil for operation in these MODES is available in one or more DG fuel oil storage tanks. The minimum required volume of fuel oil takes into account the reduced DG loading required to respond to events in MODES 5 and 6 is sufficient to support the two DGs required to be operable in MODES 5 and 6 and during movement of irradiated fuel while a fuel transfer from the offsite DG fuel oil reserve or from another offsite source is planned and conducted under accident conditions.

This minimum volume required by SR 3.8.3.2.a and SR 3.8.3.2.b is the usable volume and does not include allowances for fuel not usable due to the fuel oil transfer pump cutoff switch (760 gallons) and the required safety margin (20 gallons per tank). If the installed level indicators are used to measure tank volume, an additional allowance of 50 gallons for instrument uncertainty associated with the level indicators must be included. Appropriate adjustments are required for SR 3.8.3.2.b if the required volume is found in more than one DG fuel oil storage tank.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.2 (continued)

operation for each DG. The [500] gal requirement is based on the DG manufacturer consumption values for the run time of the DG. Implicit in this SR is the requirement to verify the capability to transfer the lube oil from its storage location to the DG, when the DG lube oil sump does not hold adequate inventory for 7 days of full load operation without the level reaching the manufacturer recommended minimum level.

CLB

A 31 day Frequency is adequate to ensure that a sufficient lube oil supply is onsite, since DG starts and run time are closely monitored by the unit staff.

SR 3.8.3.3 3

Insert: 3.8-46-01

The tests listed below are a means of determining whether new fuel oil is of the appropriate grade and has not been contaminated with substances that would have an immediate, detrimental impact on diesel engine combustion. If results from these tests are within acceptable limits, the fuel oil may be added to the storage tanks without concern for contaminating the entire volume of fuel oil in the storage tanks. These tests are to be conducted prior to adding the new fuel to the storage tank(s), but in no case is the time between receipt of new fuel and conducting the tests to exceed 31 days. The tests, limits, and applicable ASTM Standards are as follows:

Insert: 3.8-46-02

Insert: 3.8.46-03

a. Sample the new fuel oil in accordance with ASTM D4057-[ ] (Ref. 6);

b. Verify in accordance with the tests specified in ASTM D975-[ ] (Ref. 6) that the sample has an absolute specific gravity at 60/60°F of ≥ 0.83 and ≤ 0.89 or an API gravity at 60°F of ≥ 27° and ≤ 39°, a kinematic viscosity at 40°C of ≥ 1.9 centistokes and ≤ 4.1 centistokes, and a flash point of ≥ 125°F; and

c. Verify that the new fuel oil has a clear and bright appearance with proper color when tested in accordance with ASTM D4176-[ ] (Ref. 6).

(continued)

INSERT: B 3.8-46-01:

This surveillance verifies that the properties of new and stored fuel oil meet the acceptance criteria established by Specification 5.5.12, "Diesel Fuel Oil Testing Program." Sampling and testing requirements for the performance of diesel fuel oil testing in accordance with applicable ASTM Standards are specified in the administrative program developed to ensure that Specification 5.5.12 is met.

New fuel oil is sampled prior to addition to the DG fuel oil storage tanks and stored fuel oil is periodically sampled from the DG fuel oil storage tanks. Requirements and acceptance criteria for fuel oil are divided into 3 parts as follows: a) tests of the sample of new fuel sample and acceptance criteria that must be met prior to adding the new fuel to the DG fuel oil storage tanks; b) tests of the sample of new fuel that may be completed after the fuel is added to the DG fuel oil storage tanks; and, c) tests of the fuel oil stored in the DG fuel oil storage tanks. The basis for each of these tests is described below.

INSERT: B 3.8-46-02:

of the sample of new fuel and acceptance criteria that must be met prior to adding the new fuel to the DG fuel oil storage tanks

INSERT: B 3.8-46-03:

performed in accordance the administrative program developed to ensure that Specification 5.5.12 is met.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.3.~~9~~ 3 (continued)

Failure to meet any of the ~~above~~ specified limits is cause for rejecting the new fuel oil, but does not represent a failure to meet the LCO ~~concern/since~~ because the fuel oil is not added to the storage tanks.

Insert: B 3.8-47-01

~~Within 31 days following the initial new fuel oil sample~~, ~~the~~ fuel oil is analyzed to establish that the other properties ~~specified in Table 1 of ASTM D975-[ ] (Ref. 7) are met for new fuel oil when tested in accordance with ASTM D975-[ ] (Ref. 6), except that the analysis for sulfur may be performed in accordance with ASTM D1552-[ ] (Ref. 6) or ASTM D2622-[ ] (Ref. 6).~~ The 31 day period is acceptable because the fuel oil properties of interest, even if they were not within stated limits, would not have an immediate effect on DG operation. This Surveillance ensures the availability of high quality fuel oil for the DGs.

Insert: B 3.8-47-02

Insert: B 3.8-47-03

Insert: B 3.8-47-04

Fuel oil degradation during long term storage shows up as an increase in particulate, due mostly to oxidation. The presence of particulate does not mean the fuel oil will not burn properly in a diesel engine. The particulate can cause fouling of filters and fuel oil injection equipment, however, which can cause engine failure.

Particulate concentrations ~~should be determined in accordance with ASTM D2276-[ ], Method A (Ref. 6). This method involves a gravimetric determination of total particulate concentration in the fuel oil and has a limit of 10 mg/l.~~ It is acceptable to obtain a field sample for subsequent laboratory testing in lieu of field testing. ~~[For those designs in which the total stored fuel oil volume is contained in two or more interconnected tanks,~~ ~~each~~ Each tank must be considered and tested separately.~~]~~

Insert: B 3.8-47-05

underground storage

The Frequency of this test takes into consideration fuel oil degradation trends that indicate that particulate concentration is unlikely to change significantly between Frequency intervals.

Insert: B 3.8-47-06

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-47-01:

The tests of the sample of new fuel that may be completed after the fuel is added to the DG fuel oil storage tanks must be completed

INSERT: B 3.8-47-02:

of the fuel oil meet the acceptance criteria of Specification 5.5.12.

INSERT: B 3.8-47-03:

Failure to meet the specified acceptance criteria requires entry into Condition E and restoration of the quality of the fuel oil in the DG fuel oil storage tank within the associated Completion Time and explained in the Bases for Condition E.

INSERT: B 3.8-47-04:

The periodic tests of the fuel oil stored in the DG fuel oil storage tanks verify that the length of time or conditions of storage has not degraded the fuel in a manner that could impact DG OPERABILITY.

INSERT: B 3.8-47-05:

must meet the acceptance criteria of Specification 5.5.12.

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-47-06:

SR 3.8.3.4

The IP3 offsite fuel oil reserve is maintained by the operators of IP2, Consolidated Edison Company, in accordance with formal agreements with NYPA. The IP3 offsite DG fuel oil reserve is normally stored in the same tanks used to store the IP2 offsite DG fuel oil reserve. Fuel oil properties of new and stored fuel are controlled in accordance with IP2 Technical Specifications and FSAR in order to meet requirements for the Operability of IP2 and IP3 DGs.

Required testing of the properties of new and stored fuel in the offsite DG fuel oil reserve is performed by IP2 in accordance with programs established by Consolidated Edison Company. NYPA performs periodic verification that fuel oil stored in the offsite DG fuel oil reserve meet the requirements of Specification 5.5.12.

Failure to meet the specified acceptance criteria, whether identified by IP2 or IP3, requires entry into Condition F and restoration of the quality of the fuel oil in the offsite DG fuel oil reserve within the associated Completion Time and explained in the Bases for Condition F.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.3.~~4~~ 5

This Surveillance ensures that, A without the aid of the refill compressor, sufficient air start capacity for each DG is available. The system design requirements provide for a minimum of [five] four engine start ~~cycles~~ without recharging. ~~[A start cycle is defined by the DG vendor, but usually is measured in terms of time (seconds of cranking) or engine cranking speed.]~~ Insert: B3.8-48-01 The pressure specified in this SR is intended to reflect the lowest value at which the [five] four starts can be accomplished.

The 31 day Frequency takes into account the capacity, capability, redundancy, and diversity of the AC sources and other indications available in the control room, including alarms, to alert the operator to below normal air start pressure.

SR 3.8.3.~~5~~ 7

Microbiological fouling is a major cause of fuel oil degradation. There are numerous bacteria that can grow in fuel oil and cause fouling, but all must have a water environment in order to survive. Removal of water from the fuel storage tanks once every [31] 92 days eliminates the necessary environment for bacterial survival. This is the most effective means of controlling microbiological fouling. In addition, it eliminates the potential for water entrainment in the fuel oil during DG operation. Water may come from any of several sources, including condensation, ground water, rain water, and contaminated fuel oil, and from breakdown of the fuel oil by bacteria. Frequent checking for and removal of accumulated water minimizes fouling and provides data regarding the watertight integrity of the fuel oil system. The Surveillance Frequencies are ~~established by~~ Consistent with Regulatory Guide 1.137 (Ref. 2). This SR is for preventive maintenance. Insert: B3.8-48-02 The presence of water does not necessarily represent failure of this SR, provided the accumulated water is removed ~~during~~ within 30 days of performance of the Surveillance.

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.3 Diesel Fuel Oil and Starting Air

INSERT: B 3.8-48-01

Failure of the engine to start within approximately 15 seconds indicates a malfunction at which point the overcrank relays terminate the start cycle. In this condition, sufficient starting air will still be available so that the DG can be manually started.

INSERT: B 3.8-48-02

Unless the volume of water is sufficient that it could impact DG OPERABILITY.

BASES

~~SURVEILLANCE REQUIREMENTS (continued)~~

~~SR 3.8.3.6~~

~~Draining of the fuel oil stored in the supply tanks, removal of accumulated sediment, and tank cleaning are required at 10 year intervals by Regulatory Guide 1.137 (Ref. 2), paragraph 2.f. This SR also requires the performance of the ASME Code, Section XI (Ref. 8), examinations of the tanks. To preclude the introduction of surfactants in the fuel oil system, the cleaning should be accomplished using sodium hypochlorite solutions, or their equivalent, rather than soap or detergents. This SR is for preventive maintenance. The presence of sediment does not necessarily represent a failure of this SR, provided that accumulated sediment is removed during performance of the Surveillance.~~

REFERENCES

1. FSAR, Section [9.5.4.2]. 8.2
2. Regulatory Guide 1.137.
3. ~~ANSI N195-1976, Appendix B.~~
3 ~~4~~. FSAR, Chapter [6]. 14
5. ~~FSAR, Chapter [15].~~
6. ~~ASTM Standards: D4057-[ ]; D975-[ ]; D4176-[ ]; D1552-[ ]; D2622-[ ]; D2276, Method A.~~
7. ~~ASTM Standards, D975, Table 1.~~
8. ~~ASME, Boiler and Presser Vessel Code, Section XI.~~

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.3:
"Diesel Fuel Oil and Starting Air"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.8.3, was modified as needed to reflect the IP3 design and current licensing basis. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

CLB.2 IP3 ITS differs from NUREG-1431 by not incorporating requirements for a minimum inventory and periodic monitoring of DG lube oil. CTS 3.7 and CTS 4.6 do not establish any requirements for a minimum DG lube oil inventory or periodic verification. IP3 administrative controls ensure that the minimum inventory and periodic monitoring of DG lube oil are adequate to ensure DG operability. This change maintains the current licensing basis.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.3 Diesel Fuel Oil, Lube Oil, and Starting Air

There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-002, Rev.1 (BWROG-010) which relocates the 10 year sediment cleaning of the fuel oil sediment tank to licensee control. This generic change to NUREG 1431, Rev. 1, is consistent with IP3 current licensing basis.

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.4:
"DC Sources - Operating"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources – Operating

LCO 3.8.4 The following four DC electrical power subsystems shall be OPERABLE:

Battery 31 and associated Battery Charger;
Battery 32 and associated Battery Charger;
Battery 33 and associated Battery Charger; and
Battery 34.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. DC electrical power subsystem 34 inoperable.	A.1 Declare Inverter 34 inoperable and take Required Actions specified in LCO 3.8.7, Inverters-Operating.	2 hours
B. One DC electrical power subsystem (31 or 32 or 33) inoperable.	B.1 Restore DC electrical power subsystem to OPERABLE status.	2 hours
C. Required Action and Associated Completion Time not met.	C.1 Be in MODE 3. <u>AND</u> C.2 Be in MODE 5.	6 hours 36 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.4.1	Verify battery terminal voltage on float charge is within the following limits: a. ≥ 120.06 V for batteries 31 and 32; and b. ≥ 124.20 V for batteries 33 and 34.	31 days
SR 3.8.4.2	-------------------NOTE------------------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. -- Verify each battery charger supplies its associated battery at the voltage and current adequate to demonstrate battery charger capability requirements are met.	24 months
SR 3.8.4.3	-------------------NOTES------------------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. -- Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test or a modified performance discharge test.	24 months

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.4	---NOTE--- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. --- Verify battery capacity is ≥ 80% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months <u>AND</u> 12 months when battery shows degradation or has reached 85% of expected life with capacity < 100% of manufacturer's rating <u>AND</u> 24 months when battery has reached 85% of the expected life with capacity ≥ 100% of manufacturer's rating

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources – Operating

BASES

BACKGROUND

The station DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred 120 V AC vital instrument bus power (via inverters). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system also is consistent with the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3).

The 125 VDC electrical power system consists of four independent safety related DC electrical power subsystems (31, 32, 33 and 34). Each subsystem consists of one 125 VDC battery, the associated battery charger for each battery (except that battery charger 34 is not covered by this LCO), and all the associated control equipment and interconnecting cabling.

The four DC electrical power subsystems (batteries and associated chargers) 31, 32, 33, and 34 feed four main distribution power panels. DC electrical power subsystems 31, 32, and 33 supply DC control power to 480 volt buses Nos. 5A, 6A, and 2A/3A, respectively. The 480 volt switchgear bus sections that supply power to the safeguards equipment also receive DC control power from its associated DC electrical power subsystem. DC electrical power subsystem 34 does not provide DC control power to any equipment assumed to function to mitigate an accident.

The DC electrical power subsystems 31, 32, 33 and 34 also provide DC electrical power to the inverters, which in turn power the AC vital instrument buses. As a result, each of the four DC electrical power subsystems supports one of the four Reactor Protection System (RPS) Instrumentation channels and one of the four Engineered Safety Features Actuation (ESFAS) Instrumentation channels. DC electrical power subsystems 31 and 32 each support one of the two trains of RPS Instrumentation actuation logic and one of the two trains of ESFAS Instrumentation actuation logic.

BASES

BACKGROUND (Continued)

Electrical distribution, including DC Sources, is described in the FSAR (Ref. 4).

During normal operation, the 125 VDC load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries.

Each of the four station batteries is sized to carry its expected shutdown loads for a period of 2 hours without battery terminal voltage falling below 105 volts following a plant trip that includes a loss of all AC power. Major loads with their approximate operating times on each battery are listed in Reference 4. The four battery chargers have been sized to recharge discharged batteries within 15 hours while carrying the normal DC subsystem load.

Battery 34 and charger 34 were installed in 1979 (along with inverter 34) to ensure a continuous power supply to 120 V AC vital instrument bus (VIB) 34 which supports RPS and ESFAS channel III. Prior to this modification, VIB 34 was powered solely by two 480 V/120 V constant voltage transformers (CVTs) supplied by separate safeguard power trains. Although these two CVTs provide redundant safety related power supplies for VIB 34, these power sources are unavailable following a loss of offsite power until the emergency diesel generators re-power one or both of the associated safeguards power trains. Additionally, battery 34 (via the associated inverter) provides a continuous power supply for VIB 34 which decreases the potential for an inadvertent reactor trip or ESFAS actuation, especially when an instrument channel associated with a different VIB is inoperable and in trip. Note that battery charger 34 is not required by LCO 3.8.4. This is acceptable because VIB 34 can be powered by either of the two CVTs supplied by separate safeguard power trains if battery charger 34 is not available following an event.

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution Systems - Operating," and LCO 3.8.10, "Distribution Systems - Shutdown."

BASES

BACKGROUND (Continued)

Each 125 VDC battery is separately housed in a ventilated room apart from its charger and power panels. Each subsystem is separated electrically from the other subsystems to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant subsystems, such as batteries, battery chargers, or power panels.

The batteries are sized to produce required capacity at 80% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. The voltage limit is 2.07 V per cell, which corresponds to a total minimum voltage output of $\geq$ 120.06 V for batteries 31 and 32 and $\geq$ 124.2 V for batteries 33 and 34.

Each DC electrical power subsystem has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient capacity to restore the battery from the design minimum charge to the required charged state within 15 hours while supplying normal steady state loads discussed in the FSAR, Chapter 8 (Ref. 4).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 6), assume that Engineered Safety Feature (ESF) systems are OPERABLE. The DC electrical power subsystems 31, 32 and 33 provide normal and emergency DC electrical power for the DGs, and control and switching during all MODES of operation. Each of the four DC electrical power subsystems supports one of the four 120 V AC vital instrument buses via an inverter.

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources OPERABLE during accident conditions in the event of:

BASES

APPLICABLE SAFETY ANALYSES (continued)

a. An assumed loss of all offsite AC power or all onsite AC power (i.e., emergency diesel generators); and

b. A worst case single failure.

The DC sources satisfy Criterion 3 of 10 CFR 50.36.

LCO

This LCO requires the OPERABILITY of the following four DC electrical power subsystems:

Battery 31 and associated Battery Charger;
Battery 32 and associated Battery Charger;
Battery 33 and associated Battery Charger; and
Battery 34.

In addition, the corresponding control equipment and interconnecting cabling supplying power to the associated bus within the train are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any train DC electrical power subsystem does not prevent the minimum safety function from being performed (Ref. 4).

An OPERABLE DC electrical power subsystem requires the battery and respective charger to be operating and connected to the associated DC bus.

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

---

BASES

APPLICABILITY (continued)

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources – Shutdown."

ACTIONS

A.1

Condition A is entered when battery No. 34 is not OPERABLE. The only safety related load supported by DC subsystem 34 is 120 V AC vital instrument bus 34 which is supplied via inverter 34. Therefore, the Required Actions for inverter 34 not OPERABLE specified in LCO 3.8.7, Inverters-Operating, are appropriate when battery No. 34 is not OPERABLE. Additionally, ITS 3.8.9 (and ITS Section 3.3) ensure that 120 V AC vital instrument bus 34 is energized when required. The 2 hour Completion Time is consistent with the completion time for an inoperable battery and/or charger in any of the other three DC electrical power subsystems.

B.1

Condition B is entered when DC subsystem 31, 32 or 33 (battery and/or associated charger) is not Operable. Loss of DC subsystem 34 (Condition A) differs from the loss of DC subsystem 31, 32 or 33 (Condition B) because Condition B could result in the loss of DC control power to 480 volt bus No. 5A, 6A, or 2A/3A, respectively, and the associated emergency diesel generator. Therefore, this Condition represents a significant degradation of the ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential loss of additional DC subsystems.

If one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery, inoperable battery charger,

BASES

ACTIONS

B.1 (continued)

or inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure would, however, result in the loss of another 125 VDC electrical power subsystems with attendant loss of ESF functions, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

C.1 and C.2

If the inoperable DC electrical power subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery (or battery cell) and maintain the battery (or a battery cell) in a fully charged state. The voltage

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1 (continued)

requirements are based on the nominal design voltage (i.e., 2.07 volts per cell) of the battery and are consistent with the initial voltages assumed in the battery sizing calculations. The 31 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref.8).

SR 3.8.4.2

This SR requires that each battery charger be capable of supplying the voltage and current necessary to recharge partially discharged batteries (two hour discharge at a rate that does not cause battery terminal voltage to fall below 105 volts). These requirements are consistent with the output rating of the chargers (Ref. 4). Therefore, this SR can be satisfied by operating each charger at the design voltage and current for a minimum of 2 hours. According to Regulatory Guide 1.32 (Ref. 9), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these 24 month intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

This Surveillance is required to be performed during MODES 5 and 6 since it would require the DC electrical power subsystem to be inoperable during performance of the test.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.3

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

The Surveillance Frequency of 24 months is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 9) and Regulatory Guide 1.129 (Ref. 10), which state that the battery service test should be performed during refueling operations or at some other outage.

A modified performance discharge test may be performed in lieu of a service test.

The modified performance discharge test is a simulated duty cycle consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

A modified performance discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.3 (continued)

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

SR 3.8.4.4

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

A battery modified performance discharge test is described in the Bases for SR 3.8.4.3. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.4; however, only the modified performance discharge test may be used to satisfy SR 3.8.4.4 while satisfying the requirements of SR 3.8.4.3 at the same time.

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 8) and IEEE-485 (Ref. 5). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery deterioration is increasing, even if there is ample capacity to meet the load requirements.

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 8), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is ≥ 10% below the manufacturer's

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.4 (continued)

rating. These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 8).

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems.

REFERENCES

1. 10 CFR 50, Appendix A.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-1978.
4. FSAR, Chapter 8.
5. IEEE-485-1983, June 1983.
6. FSAR, Chapter 14.
7. Regulatory Guide 1.93, December 1974.
8. IEEE-450-1995.
9. Regulatory Guide 1.32, February 1977.
10. Regulatory Guide 1.129, December 1974.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.4:
"DC Sources - Operating"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-1	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-2	132 TSCR 98-044	132 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
3.7-2a	54	54	No TSCRs	No TSCRs for this Page	N/A
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A
3.7-5	153 IPN 97-175	153 IPN 97-175	IPN 97-175	Changes to Bases Pages	
4.6-2	155	155	No TSCRs	No TSCRs for this Page	N/A
4.6-3	155	155	No TSCRs	No TSCRs for this Page	N/A

3.7 AUXILIARY ELECTRICAL SYSTEMS

A.2

~~**Applicability**~~

~~Applies to the availability of electrical power for the operation of plant auxiliaries.~~

~~**Objective**~~

~~To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation, and (2) to provide for the continuing availability of engineered safety features.~~

Specification

Mode 1, 2, 3 and 4 — A.1

LCO 3.8.4 Applicability

A. ~~The reactor shall not be brought above the cold shutdown condition unless the following requirements are met:~~

SEE ITS 3.8.1

1. Two physically independent transmission circuits to Buchanan Substation capable of supplying engineered safeguards loads.

2. 6.9 KV buses 5 and 6 energized from either 138 KV feeder 95331 or 95332.

3. Either 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 KV power.

SEE ITS 3.8.9

4. The four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A, and between buses 3A and 6A, opened.

SEE ITS 3.8.1 and ITS 3.8.3

5. Three diesel generators operable with a minimum onsite supply of 6671 gallons of fuel in each of the three individual underground storage tanks. In addition to the underground storage tanks, 30,026 gallons of fuel compatible for operation with the diesels shall be available onsite or at the Buchanan substation. This 30,026 gallon reserve is for Indian Point Unit No. 3 usage only

Add Condition A and Req. Act. A.1 M.1

SEE ITS 3.8.1 — and is in addition to the fuel requirements for other nuclear units on the site.

LCO 3.8.4 — 6. ~~Three~~ 31, 32, 33 and 34 batteries plus ~~three~~ 31, 32 and 33 chargers and the D.C. distribution systems operable. M.1

SEE ITS 3.8.9

SEE ITS 3.8.7 — 7. No more than one 120 volt A.C. Instrument Bus on the backup power supply.

LCO 3.8.4 Actions — ~~B.~~ The requirements of 3.7.A may be modified to allow any one of the following power supplies to be inoperable at any one time. L.2

SEE ITS 3.8.1

1. One diesel or any diesel fuel oil system or a diesel and its associated fuel oil system may be inoperable for up to 72 hours provided the 138 KV and the 13.8 KV sources of offsite power are available, and the engineered safety features associated with the remaining diesel generator buses are operable. If the inoperable diesel generator became inoperable due to any cause other than preplanned maintenance or testing, then within 24 hours, either:

   a. Determine by evaluation, that the remaining operable diesel generators are not inoperable due to common-cause failure.

   OR

   b. Verify by testing, that the remaining diesel generators are operable.

2. The 138 KV or the 13.8 KV sources of power may be inoperable for 48 hours provided the three diesel generators are operable. This operation may be extended beyond 48 hours provided the failure is reported to the NRC within the 48 hour period with an outline of the plans for restoration of offsite power and NRC approval is granted.

TSCR 98-044

SEE ITS 3.8.1

3. If the 138 KV power source is lost and the 13.8KV power source is being used to feed Buses 5 and 6, in addition to satisfying the requirements of specification 3.7.B.2 above, the 6.9 KV bus tie breaker control switches 1-5, 2-5, 3-6, and 4-6 in the CCR shall be placed in the "pull-out" position to prevent an automatic transfer of the 6.9 KV buses 1, 2, 3 and 4.

LCO 3.8.4 Condition B

~~4.~~ One battery and/or associated charger may be inoperable for 2 hours ~~provided the other batteries and the three battery chargers remain operable with one battery charger carrying the D.C. load of the failed battery supply system.~~ L.1

LCO 3.8.4 Actions

~~G.~~ If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

3.8.4 Req. Act C.1, C.2

1. ~~If~~ the ~~reactor is critical, it~~ shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours. M.3

2. ~~If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.~~

SEE ITS 3.8.1

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

SEE ITS 3.8.2, 3.8.5 and 3.8.8

F. As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:

1. One transmission circuit to Buchanan Substation, except for testing.

SEE ITS 3.8.2

2. Either:

a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,
or
b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

SEE ITS 3.8.10

3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

One battery charger shall be in service on each battery so that the batteries will always be at full charge in anticipation of a loss-of-AC power incident. This insures that adequate D.C. power will be available for starting the emergency generators and other emergency uses.

The plant can be safely shutdown without the use of offsite power since all vital loads (safety systems, instruments, etc.) can be supplied from the emergency diesel generators.

Any two of three diesel generators, the station auxiliary transformer or the separate 13.8 to 6.9 KV transformer are each capable of supplying the minimum safeguards loads and therefore provide separate sources of power immediately available for operation of these loads. Thus the power supply system meets the single failure criteria required of safety systems. To provide maximum assurance that the redundant or alternate power supplies will operate if required to do so, the redundant or alternate power supplies are verified operable prior to initiating repair of the inoperable power supply. Continued plant operation is governed by the specified allowable time period for the power source, not the specified allowable time period for those items determined to be inoperable solely because of the inoperability of its normal or emergency power source provided the conditions defined in specification 3.7.G are satisfied. These conditions assure that the minimum required safeguards will be operable. If it develops that (a) the inoperable power supply is not repaired within the specified allowable time period, or (b) a second power supply in the same or related category is found to be inoperable, the reactor, if critical, will initially be brought to the hot shutdown condition utilizing normal operating procedures to provide for reduction of the decay heat from the fuel, and consequent reduction of cooling requirements after a postulated loss-of-coolant accident. If the reactor was already subcritical, the reactor coolant system temperature and pressure will be maintained within the stated values in order to limit the amount of stored energy in the Reactor Coolant System. The stated tolerances provide a band for operator control. After a limited time in hot shutdown, if the malfunction(s) are not corrected, the reactor will be brought to the cold shutdown condition, utilizing normal shutdown and cool-down procedures. In the cold shutdown condition there is no possibility of an accident that would damage the fuel elements or result in a release in excess of 10 CFR 100 and 10 CFR 50 dose limits.

Conditions of a system-wide blackout could result in a unit trip. Since normal off-site power supplies as required in Specification 3.7.A.1 are not available for startup, it is necessary to be able to black start the unit with gas turbines providing the incoming power supplies as a first step in restoring the system to an operable status and restoring power to customers for essential services. Specification 3.7.C provides for startup using 37 MW's of gas turbine power (nameplate rating at 80°F) which is sufficient to carry out a normal plant startup. A system-wide blackout is deemed to exist when the majority of Con Edison electric generating facilities are shutdown due to an electrical disturbance and the remainder are incapable of supplying the system therefore necessitating major load shedding.

Add SR 3.8.4.2 M.2

SEE ITS 3.8.1

4. Each diesel generator shall be inspected and maintained following the manufacturer's recommendations for this class of stand-by service.

The above tests will be considered satisfactory if the required minimum safeguards equipment operates as designed.

SEE ITS 3.8.1

~~B.~~ Station Batteries

SEE ITS 3.8.4 ~~1~~.

SR 3.8.4.1 Every month the voltage of each cell, the specific gravity and temperature of a pilot cell in each battery and each battery voltage shall be measured ~~and recorded~~. A.4 M.4

SEE ITS 3.8.6

2. Every 3 months each battery shall be subjected to a 24 hour equalizing charge, and the specific gravity of each cell, the temperature reading of every fifth cell, the height of electrolyte, and the amount of water added shall be measured and recorded.

SR 3.8.4.3 ~~3~~. At least once per 24 months, during shutdown, each battery shall be subjected to a service test ~~and a visual inspection of the plates~~.[1] LA.1

SR 3.8.4.4 Note to SR ~~4~~. At least once per 60 months, during shutdown, each battery shall be subjected to a performance discharge (or modified performance discharge) test.[1,2] This test shall verify that the battery capacity is at least 80% of the manufacturer's rating.

SR 3.8.4.4 Frequency ~~5~~. ~~Any battery which is demonstrated to have less than 90% of the manufacturer's rating or, whose capacity drops more than 10% of rated capacity from its previous performance discharge (or modified performance discharge) test, shall be subjected to a performance discharge (or modified performance discharge) test annually, during shutdown, until the battery is replaced.~~ M.5

~~**Basis**~~

~~The tests specified are designed to demonstrate that the diesel generators will provide power for operation of equipment. They also assure that the emergency generator system controls and the control systems for the safeguards equipment will function automatically in the event of a loss of all normal 480v AC station service power. During the simulated loss of power/safety injection system test of specification 4.6.A.3, certain safeguards valves will be closed and made inoperable, to prevent Safety Injection flow to the core.~~ A.1

1. A modified performance discharge test may be performed in lieu of the battery service test ~~every other 24 month operating cycle~~. A.5

2. ~~The first time a performance discharge (or modified performance discharge test) will be performed will be in refueling outage 10/11.~~ A.3

A.1

The testing frequency specified will be often enough to identify and correct any mechanical or electrical deficiency before it can result in a system failure. The fuel supply is continuously monitored. An abnormal condition in these systems would be signaled without having to place the diesel generators themselves on test.

Each diesel generator has a continuous rating of 1750 kw and a 2 hour rating of 1950 kw. Two diesels can power the minimum safeguards loads. To ensure that each diesel can operate at its 2 hour rating (as required by specification 4.6.A.2.), each diesel will be loaded to 1900-1950 kw and run for at least 105 minutes.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide an indication of a cell becoming unserviceable long before it fails. The periodic equalizing charge will ensure that the ampere-hour capability of the batteries is maintained.

The service and performance discharge test of each battery, together with the visual inspection of the plates, will assure the continued integrity of the batteries. The batteries are of the type that can be visually inspected, and this method of assuring the continued integrity of the battery is proven standard power plant practice.

The battery service test demonstrates the capability of the battery to meet the system design requirements. The Indian Point Unit 3 design duty cycle loads are determined by a LOCA concurrent with a loss of AC power.

The performance discharge test is a test of the constant current capacity of a battery, normally done in the as found condition after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

The modified battery performance discharge test is a composite test which addresses both the service test and performance discharge test requirements. It shall consist of a one minute peak load equivalent to that of the service test and a constant discharge current for the remainder of the test which envelopes the next highest load value of the service test. The purpose of the modified performance discharge test is to compare the capacity of the battery against the manufacturer's specified capacity and thereby determine when the battery is approaching the end of its life, as well as to demonstrate capability to meet system design requirements. Every other 24 month operating cycle, the modified performance discharge test may be performed in lieu of the battery service test required by Technical Specification 4.6.B.3.

The station batteries are required for plant operation, and performing the station battery service and performance discharge (or modified performance discharge) test require the reactor to be shutdown.

<u>Reference</u>
FSAR, Section 8.2

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.4:
"DC Sources - Operating"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.4 DC Sources - Operating

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases that are designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 CTS 4.6.B.4 establishes requirements for the performance of a performance or modified performance discharge test every 60 months. This requirement is modified by a footnote stating that the first time a performance discharge (or modified performance discharge test) will be performed will be in refueling outage 10/11. This note is not retained in ITS because ITS will not be implemented until after refueling outage 10/11. This is an administrative change with no impact on safety.

A.4 CTS 4.6.B.1 requires that the voltage of each battery voltage must be measured and recorded every month. ITS SR 3.8.4.1 (As modified by TSTF-202) maintains this requirement; however, the explicit requirement that data must be recorded is deleted. This is an administrative change with no impact on safety.

A.5 CTS 4.6.B.4, Note 1, allows a battery modified performance discharge test to be performed in lieu of the battery service test every other 24 month cycle (i.e., every 48 months). ITS SR 3.8.4.3 (as modified by TSTF-200) allows a battery modified performance discharge test to be performed in lieu of the battery service test at any time.

This change is acceptable because a modified performance discharge test is required to envelope the duty cycle of the service test and, therefore, provides a better indication of battery condition than the service test. IEEE 450-1995, Section 5.4, the latest guidance for maintenance and testing of lead-acid batteries for the optimization of life and performance of the batteries in use for emergency applications at nuclear power plants, states "A modified performance discharge test can be used in lieu of a service test at any time." This is an administrative change with no impact on safety because a modified performance discharge test is more conservative that a service test and the substitution has no significant adverse impact on battery life or performance.

MORE RESTRICTIVE

M.1 CTS 3.7.A.6 specifies that three batteries plus three chargers must be operable when above the cold shutdown condition. Under the same conditions (i.e., Mode 1, 2, 3 and 4), ITS LCO 3.8.4 requires Operability of the following DC electrical power subsystems:

Battery 31 and associated Battery Charger;
Battery 32 and associated Battery Charger;
Battery 33 and associated Battery Charger; and
Battery 34.

This change adds Technical Specification requirements for battery 34 but not charger 34 (See ITS 3.8.7, DOC M.1). Battery 34 and charger 34 were installed in 1979 (along with inverter 34) to provide a more stable power supply to 120 V AC vital instrument bus 34 which supports RPS and ESFAS channel III. Prior to this modification, 120 V AC vital instrument bus 34 was supported solely by two 480 V/120 V constant voltage transformers supplied by separate safeguard power trains. Although these two 480 V/120 V constant voltage transformers provide redundant safety related power supplies for 120 V AC vital instrument bus 34, these power sources are unavailable following a loss of offsite power until the emergency diesel generators re-power one or both of the associated safeguards power trains. Additionally, battery 34 (via the associated inverter) provides a stable power supply for 120 V AC vital instrument bus 34 which decrease the potential for an inadvertent reactor trip or ESFAS actuation especially when an instrument channel associated with a different 120 V AC vital instrument bus is inoperable and in trip. Note that battery charger 34 is not required by LCO 3.8.4 because the two 480 V/120 V constant voltage transformers supplied by separate safeguard power trains ensure that power will be available to 120 V AC vital instrument bus 34 even if the non-safety related battery charger 34 is not available.

This change is needed to ensure Technical Specifications are consistent with FSAR requirements, to ensure a stable and reliable power supply for RPS and ESFAS channel III, and to incorporate commitments made in response to GL 91-011, "Resolution of Generic Issues 48, "LCOs for Class 1E Vital Instrument Buses," AND 49, "Interlocks and LCOs for Class 1E Tie Breakers."

In conjunction with the addition of operability and surveillance requirements for battery 34, ITS 3.8.4, Condition A, is added to provide Required Actions and Completion Times, when battery 34 is not operable. Required Action A.1, declare inverter 34 inoperable within 2 hours (and take actions for the inoperable inverter), is acceptable because inverter 34 is the only safety related load supplied by battery 34. The Completion Time is consistent with the completion time for an inoperable battery and/or charger in any of the other three DC electrical power subsystems. Therefore, this change has no significant adverse impact on safety.

M.2 CTS 3.7 and CTS 4.6 do not establish any requirements for the periodic verification of battery charger capacity even though the FSAR 8.2 requires that battery chargers be capable of maintaining the voltage and current necessary to recharge partially discharged batteries (two hour discharge at a rate that does not cause battery terminal voltage to fall below 105 volts) within 15 hours while carrying the charger's normal load.

ITS SR 3.8.4.2 requires verification every 24 months that each battery charger is capable of supplying its associated battery at the voltage and current adequate to demonstrate battery charger capability requirements are met.

This change is needed because the batteries will be depleted relatively early during an accident (a period of time greater than 2 hours) and the battery chargers must be available to recharge the batteries while feeding the anticipated post accident DC loads. Specific acceptance criteria for each battery charger is identified in the FSAR. This Surveillance is required to be performed during Mode 5 or 6 because it requires the DC electrical power subsystem to be inoperable during performance of the test.

This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic verification that battery chargers are capable of performing in accordance with design requirements. Therefore, this change has no significant adverse impact on safety.

M.3 CTS 3.7.C establishes the Actions required if the electrical distribution system is not restored to meet CTS requirements within specified completion times when above cold shutdown (Mode 5). CTS 3.7.C.1 specifies that, if the reactor is critical when requirements are not met, then the reactor shall be in hot shutdown (Mode 3) within 6 hours and cold shutdown (Mode 5) within the following 30 hours. However, if the reactor is subcritical when requirements are not met, CTS 3.7.C.2 requires only that reactor coolant system temperature and pressure not be increased more than 25°F and 100 psi, respectively, over existing values with no requirement to go to cold shutdown (Mode 5).

Under the same conditions, ITS 3.8.4, Required Actions C.1 and C.2, require that the reactor is in Mode 3 in 6 hours and Mode 5 in 36 hours regardless of the status of the unit when the Condition is identified. The allowance provided in CTS 3.7.C.2 is deleted. This change is needed to eliminate the ambiguity created by CTS 3.7.C.2 when performing a reactor shutdown and cooldown required by CTS 3.7.C.1 and to ensure that the plant is placed outside the LCO Applicability when the LCO requirements are not met. This change is acceptable because placing the plant outside the LCO Applicability when LCO requirements are not met is conservative and there is no change in the CTS 3.7.C.1 requirement. This change has no significant adverse impact on safety.

M.4 CTS 4.6.B.1 requires that the voltage of each battery must be measured every month; however, acceptance criteria is not included in the Technical Specifications. ITS SR 3.8.4.1 (as modified by TSTF-202) maintains this requirement; however, the explicit acceptance criteria for each battery is included in the Technical Specifications. This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring periodic battery voltage acceptance criteria consistent with design requirements. Therefore, this change has no significant adverse impact on safety.

M.5 CTS 4.6.B.4 requires a battery performance discharge (or modified performance discharge) test at least once per 60 months. CTS 4.6.B.5 requires an accelerated Frequency of 12 months for the performance of this test if any of the following conditions are met: a battery has < 90% of the manufacturer's rating; or, battery capacity drops more than 10% of rated capacity from its previous performance discharge (or modified performance discharge) test.

ITS SR 3.8.4.4 maintains the requirement for a battery performance discharge (or modified performance discharge) test at least once per 60 months; however, ITS SR 3.8.4.4 requires an accelerated Frequency of 12 months for the performance of this test if any of the following conditions are met: the battery shows degradation; or the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. Additionally, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450-1995, when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is ≥ 10% below the manufacturer's rating.

This change is acceptable because these Frequencies are more restrictive than the existing requirements and are consistent with the recommendations in IEEE-450-1995. Therefore, this change has no significant adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.7.A.6 requires batteries (31, 32 and 33) and chargers (31, 32 and 33) to be operable. CTS 3.7.B.4 specifies required actions for an inoperable battery (initiate shutdown within 2 hours) with a stipulation that the associated battery charger must be operable during the two hour allowable out of service time for a battery. No action is specified for an inoperable battery charger; therefore, CTS requires that the plant be shutdown immediately if a battery charger becomes inoperable.

Under the same conditions, ITS LCO 3.8.4, Condition B, allows 2 hours to restore an inoperable battery and/or charger (except battery and charger 34 which are governed by Condition A). Therefore, this change extends the allowable out of service time for a battery charger to 2 hours. This change is acceptable because the immediate affect of an inoperable battery charger is less significant than the inoperability of a battery (i.e., loss of battery prevents starting of associated DG following a loss of offsite power (LOOP) whereas loss of battery charger would not prevent DG start following a LOOP during the 2 hour allowable out of service time). The 2 hour AOT for a battery charger is based on Regulatory Guide 1.93 and reflects a reasonable time to assess unit status as a function of the inoperable battery and/or charger and provides a reasonable time initiate an orderly and safe unit shutdown if DC electrical power subsystem is not restored. Therefore, this change does not have a significant adverse impact on safety.

L.2 CTS 3.7.B limits the number of concurrent inoperable electrical power sources by limiting the Actions for inoperable DGs, offsite sources, and batteries to "allow any one" of these power supplies to be inoperable at any one time. Therefore, in conjunction with specific directions provided in CTS 3.7.B.1 and CTS 3.7.B.2, CTS 3.7.B.3 does not permit a battery to be inoperable when either a diesel generator or an offsite source is inoperable. ITS 3.8.1 and ITS 3.8.4 appear to be less restrictive because there are no direct restrictions on DC electrical power subsystems (batteries and battery chargers) based on the operability of DGs or offsite sources nor are there restrictions on DGs or offsite sources based on the operability of DC electrical power subsystems.

Elimination of the "allow any one" restriction in CTS 3.7.B is acceptable because, even without this restriction, both CTS and ITS 3.8.4 limit inoperability of one battery and/or charger to a maximum of two hours (See ITS 3.8.4, DOC M.1 for exception). Additionally, both CTS and ITS 3.8.4 both require immediate initiation of a shutdown if two batteries and/or chargers are inoperable. Therefore, the maximum impact of the elimination of the restriction in CTS 3.7.B is the potential that ITS 3.8.1 and/or ITS 3.8.4 would allow initiation of a reactor shutdown to be delayed by 2 hours from what would be required by CTS 3.7.B (i.e., CTS would require Mode 3 in 6 hours and Mode 5 in 36 hours and ITS would require Mode 3 in 8 hours and Mode 5 in 38 hours). Additionally, ITS would allow more time to initiate a reactor shutdown only in very infrequent combinations of inoperabilities (e.g. two diesel generators and the battery associated with the third diesel generator become inoperable at the same time). Therefore, elimination of the restriction in CTS 3.7.B has no significant consequence and is deleted.

REMOVED DETAIL

LA.1 CTS 4.6.B.3 includes a requirement for a visual inspection of the battery plates every 24 months. ITS 3.8.4 (As modified by TSTF-199) does not include this requirement because a visual inspection at a 24 month interval is routine preventative maintenance and is not intended a as periodic verification of battery Operability. Therefore, this requirement is relocated to the FSAR and will be implemented by plant procedures.

This change is acceptable because performance the SRs required by ITS 3.8.4 and ITS 3.8.6 are sufficient to demonstrate the Operability of each battery. Inspecting and maintaining batteries in accordance with the manufacturer's recommendations is routine preventative maintenance and is not a direct demonstration that a battery is capable of performing its intended safety function. Additionally, changes to the FSAR can be made only in accordance with the requirements of 10 CFR 50.59. Therefore, this change is acceptable because there is no change to the existing requirements by the relocation of requirements to the FSAR and future changes to the FSAR will be controlled in accordance with 10 CFR 50.59.

This change is a less restrictive administrative change with no impact on safety because ITS 3.8.4 maintains the requirements to have batteries Operable and maintains the requirements to perform periodic testing that demonstrates battery Operability. Therefore, requirements to inspect and maintain the batteries in accordance with the manufacturer's recommendations can be maintained in the FSAR with no significant adverse impact on safety.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.4:
"DC Sources - Operating"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.4 DC Sources - Operating

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed changes do not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change establishes that the same Required Actions and Completion Times for an inoperable battery are applicable when the battery and/or charger are inoperable. This change will not result in a significant increase in the probability of an accident previously evaluated because the status of a battery charger has no affect on the initiators of any analyzed events. This change will not result in a significant increase in the consequences of an accident previously evaluated because if only one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery, inoperable battery charger(s), or inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown and to mitigate an accident condition. The 2 hour Completion Time is based on Regulatory Guide 1.93 and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to operable status, to prepare to effect an orderly and safe unit shutdown. Additionally, a consequence of an inoperable battery (associated DG will not start) is that the battery charger will not be available following an event. Therefore, allowing the same 2 hour allowable out of service time for a battery and/or battery charger will not have a significant affect on the mitigation of an event that occurs during that period of time.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

The proposed changes will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal Plant operation are consistent with the current safety analysis assumptions because there is no change in the way the batteries and/or associated chargers are operated. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because if only one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery, inoperable battery charger(s), or inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystems have the capacity to support a safe shutdown and to mitigate an accident condition. The 2 hour Completion Time is based on Regulatory Guide 1.93 and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to operable status, to prepare to effect an orderly and safe unit shutdown. Additionally, a consequence of an inoperable battery (associated DG will not start) is that the battery charger will not be available following an event. Therefore, allowing the same 2 hour allowable out of service time for a battery and/or battery charger will not have a significant affect on the mitigation of an event that occurs during that period of time.

LESS RESTRICTIVE
<u>("L.2" Labeled Comments/Discussions)</u>

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change eliminates the restriction in CTS 3.7.B that does not permit a battery to be inoperable when either a diesel generator or an offsite source is inoperable. ITS 3.8.1 and ITS 3.8.4 are less restrictive because there are no direct restrictions on DC electrical power subsystems (batteries and battery chargers) based on the operability of DGs or offsite sources nor are there restrictions on DGs or offsite sources based on the operability of DC electrical power subsystems. However, the maximum impact of the elimination of the restriction in CTS 3.7.B is the potential that ITS 3.8.1 and/or ITS 3.8.4 would allow initiation of a reactor shutdown to be delayed by 2 hours from what would be required by CTS 3.7.B (i.e., CTS would require Mode 3 in 6 hours and Mode 5 in 36 hours and ITS would require Mode 3 in 8 hours and Mode 5 in 38 hours). Additionally, ITS would allow more time to initiate a reactor shutdown only in very infrequent combinations of inoperabilities (e.g. two diesel generators and the battery associated with the third diesel generator become inoperable at the same time). This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because of the following: allowing an additional 2 hours to initiate a reactor shutdown when a single battery is inoperable concurrent with an inoperable DG or offsite source is not significant; the additional time may be used to restore one of the inoperable electrical sources to Operable thus avoiding a plant transient; the infrequent occurrence of this combination of inoperabilities; and, the low probability of an event during this period.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

This change does not involve a significant reduction in a margin of safety because of the following: allowing an additional 2 hours to initiate a reactor shutdown when a single battery is inoperable concurrent with an inoperable DG or offsite source is not significant; the additional time may be used to restore one of the inoperable electrical sources to Operable thus avoiding a plant transient; the infrequent occurrence of this combination of inoperabilities; and, the low probability of an event during this period.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.4:
"DC Sources - Operating"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.4

This ITS Specification is based on NUREG-1431 Specification No. **3.8.4**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWOG-023	**115 R0**	BATTERY FLOAT CURRENT AND BATTERY INSPECTION PROGRAM	Rejected by TSTF	Not Incorporated	**N/A**
BWOG-034	**199 R0**	3.8.4 - DELETE MAINTENANCE SURVEILLANCES	NRC Review	Incorporated. TSTF is CLB.	**T.2**
BWOG-035	**200 R0**	UNLIMITED USE OF BATTERY MODIFIED PERFORMANCE DISCHARGE TEST	NRC Review	Incorporated	**T.3**
BWOG-037	**202 R0**	REVISE BATTERY SURVEILLANCE WEEKLY FREQUENCY	NRC Review	Incorporated. TSTF is CLB.	**T.4**
BWROG-011	**038 R0**	REVISE VISUAL SURVEILLANCE OF BATTERIES TO SPECIFY INSPECTION IS FOR PERFORMANCE DEGRADATION	Approved by NRC	Superceded by TSTF-199	**N/A**

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.4:
"DC Sources - Operating"

WOG-003.3 R2	**008 R2**	REVISE THE SR 3.0.1 BASES TO ALLOW CREDIT FOR UNPLANNED EVENTS TO MEET ANY SURVEILLANCE	Approved by NRC	Incorporated	**T.1**

3.8 ELECTRICAL POWER SYSTEMS

3.8.4 DC Sources—Operating

<3.7.A.6>
<DOC M.1>

LCO 3.8.4 The ~~Train~~ A ~~and Train~~ B ~~DC~~ ~~electrical~~ power ~~subsystems~~ shall be ~~OPERABLE~~.

Insert: 3.8-24-01

<3.7.A>
<DOC A.1>

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

Insert: 3.8-24-02

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A~~. B One DC electrical power subsystem inoperable. Insert: 3.8-24-03	~~A~~.1 B Restore DC electrical power subsystem to OPERABLE status.	2 hours
~~B~~. C Required Action and Associated Completion Time not met.	C ~~B~~.1 Be in MODE 3. AND ~~B~~.2 C Be in MODE 5.	6 hours 36 hours

<3.7.B.4>
<DOC L.1>

<3.7.C>
<3.7.C.1>
<DOC M.3>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.4.1 Verify battery terminal voltage ~~is~~ ~~≥ [129] V~~ on float charge.	~~7~~ days 31

<4.6.B.1>
<DOC A.4>
<DOC M.4>

T.4
CLB

Insert: 3.8-24-04

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

INSERT: 3.8-24-01:

<37.A.6>
<DOC M.1>

The following four DC electrical power subsystems shall be OPERABLE:

Battery 31 and associated Battery Charger;
Battery 32 and associated Battery Charger;
Battery 33 and associated Battery Charger; and
Battery 34.

INSERT: 3.8-24-02:

<DOC M.1>

A.	DC electrical power subsystem 34 inoperable.	A.1	Declare Inverter 34 inoperable and take Required Actions specified in LCO 3.8.7, Inverters-Operating.	2 hours

INSERT: 3.8-24-03:

(31 or 32 or 33)

INSERT: 3.8-24-04:

<4.6.B.1>
<DOC M.4>

is within the following limits:

a. ≥ 120.06 V for batteries 31 and 32; and

b. ≥ 124.20 V for batteries 33 and 34.

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.8.4.2	Verify no visible corrosion at battery terminals and connectors. OR Verify battery connection resistance [is ≤ [1E-5 ohm] for inter-cell connections, ≤ [1E-5 ohm] for inter-rack connections, ≤ [1E-5 ohm] for inter-tier connections, and ≤ [1E-5 ohm] for terminal connections].	92 days
SR 3.8.4.3	Verify battery cells, cell plates, and racks show no visual indication of physical damage or abnormal deterioration.	[12] months
SR 3.8.4.4	Remove visible terminal corrosion, verify battery cell to cell and terminal connections are clean and tight, and are coated with anti-corrosion material.	[12] months
SR 3.8.4.5	Verify battery connection resistance [is ≤ [1E-5 ohm] for inter-cell connections, ≤ [1E-5 ohm] for inter-rack connections, ≤ [1E-5 ohm] for inter-tier connections, and ≤ [1E-5 ohm] for terminal connections].	[12] months

(continued)

T.2
CLB

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY	
<DOC M.2>	SR 3.8.4.~~6~~ 2	-------------------NOTE------------------- This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ~~However, credit may be taken for unplanned events that satisfy this SR.~~ --		T.1
Insert: 3.8-26-01		Verify each battery charger supplies ~~≥ [400] amps at ≥ [125] V for ≥ [8] hours.~~	24 ~~[18~~ months~~]~~	
	SR 3.8.4.~~7~~ 3	-------------------NOTES------------------- ~~1. The modified performance discharge test in SR 3.8.4.8 may be performed in lieu of the service test in SR 3.8.4.7 once per 60 months.~~ 4 3		T.3
<4.6.B.3>		~~2.~~ This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ~~However, credit may be taken for unplanned events that satisfy this SR.~~ --		T.1
<4.6.B.3>		Verify battery capacity is adequate to supply, and maintain in OPERABLE status, the required emergency loads for the design duty cycle when subjected to a battery service test or a modified performance discharge test.	~~[18~~ months~~]~~ 24	

(continued)

<4.6.B.3, Note 1>
<Doc A.5>

T.3

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

INSERT: 3.8-26-01:

its associated battery at the voltage and current adequate to demonstrate battery charger capability requirements are met.

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
<4.6.B.4>	SR 3.8.4.~~8~~4 ------------------NOTE------------------ This Surveillance shall not be performed in MODE 1, 2, 3, or 4. ~~However, credit may be taken for unplanned events that satisfy this SR~~. --	
<4.6.B.4> <4.6.B.5> <DOC M.5>	Verify battery capacity is ≥ ~~[~~80~~]~~% of the manufacturer's rating when subjected to a performance discharge test or a modified performance discharge test.	60 months AND 12 months when battery shows degradation or has reached ~~[~~85~~]~~% of expected life with capacity < 100% of manufacturer's rating AND 24 months when battery has reached ~~[~~85~~]~~% of the expected life with capacity ≥ 100% of manufacturer's rating

T.1

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.4 DC Sources—Operating

BASES

instrument

BACKGROUND

The station DC electrical power system provides the AC emergency power system with control power. It also provides both motive and control power to selected safety related equipment and preferred AC vital bus power (via inverters). As required by 10 CFR 50, Appendix A, GDC 17 (Ref. 1), the DC electrical power system is designed to have sufficient independence, redundancy, and testability to perform its safety functions, assuming a single failure. The DC electrical power system ~~also conforms to~~ the recommendations of Regulatory Guide 1.6 (Ref. 2) and IEEE-308 (Ref. 3).

120 V

is consistent with

~~The [125/250] VDC electrical power system consists of two independent and redundant safety related Class 1E DC electrical power subsystems ([Train A and Train B]). Each subsystem consists of [two] 125 VDC batteries [(each battery [50]% capacity)], the associated battery charger(s) for each battery, and all the associated control equipment and interconnecting cabling.~~

~~The 250 VDC source is obtained by use of the two 125 VDC batteries connected in series. Additionally there is [one] spare battery charger per subsystem, which provides backup service in the event that the preferred battery charger is out of service. If the spare battery charger is substituted for one of the preferred battery chargers, then the requirements of independence and redundancy between subsystems are maintained.~~

Insert: B3.8-50-01

During normal operation, the [125/250] VDC load is powered from the battery chargers with the batteries floating on the system. In case of loss of normal power to the battery charger, the DC load is automatically powered from the station batteries.

125

Insert: B3.8-50-02

~~The [Train A and Train B] DC electrical power subsystems provide the control power for its associated Class 1E AC power load group, [4.16] kV switchgear, and [480] V load centers. The DC electrical power subsystems also provide DC electrical power to the inverters, which in turn power the AC vital buses.~~

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

INSERT: B 3.8-50-01:

The 125 VDC electrical power system consists of four independent safety related DC electrical power subsystems (31, 32, 33 and 34). Each subsystem consists of one 125 VDC battery, the associated battery charger for each battery (except that battery charger 34 is not covered by this LCO), and all the associated control equipment and interconnecting cabling.

The four DC electrical power subsystems (batteries and associated chargers) 31, 32, 33, and 34 feed four main distribution power panels. DC electrical power subsystems 31, 32, and 33 supply DC control power to 480 volt buses Nos. 5A, 6A, and 2A/3A, respectively. The 480 volt switchgear bus sections that supply power to the safeguards equipment also receive DC control power from its associated DC electrical power subsystem. DC electrical power subsystem 34 does not provide DC control power to any equipment assumed to function to mitigate an accident.

The DC electrical power subsystems 31, 32, 33 and 34 also provide DC electrical power to the inverters, which in turn power the AC vital instrument buses. As a result, each of the four DC electrical power subsystems supports one of the four Reactor Protection System (RPS) Instrumentation channels and one of the four Engineered Safety Features Actuation (ESFAS) Instrumentation channels. DC electrical power subsystems 31 and 32 each support one of the two trains of RPS Instrumentation actuation logic and one of the two trains of ESFAS Instrumentation actuation logic. Electrical distribution, including DC Sources, is described in the FSAR (Ref. 4).

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

<u>INSERT: B 3.8-50-02</u>:

Each of the four station batteries is sized to carry its expected shutdown loads for a period of 2 hours without battery terminal voltage falling below 105 volts following a plant trip that includes a loss of all AC power. Major loads with their approximate operating times on each battery are listed in Reference 4. The four battery chargers have been sized to recharge discharged batteries within 15 hours while carrying the normal DC subsystem load.

Battery 34 and charger 34 were installed in 1979 (along with inverter 34) to ensure a continuous power supply to 120 V AC vital instrument bus (VIB) 34 which supports RPS and ESFAS channel III. Prior to this modification, VIB 34 was powered solely by two 480 V/120 V constant voltage transformers (CVTs) supplied by separate safeguard power trains. Although these two CVTs provide redundant safety related power supplies for VIB 34, these power sources are unavailable following a loss of offsite power until the emergency diesel generators re-power one or both of the associated safeguards power trains. Additionally, battery 34 (via the associated inverter) provides a continuous power supply for VIB 34 which decreases the potential for an inadvertent reactor trip or ESFAS actuation, especially when an instrument channel associated with a different VIB is inoperable and in trip. Note that battery charger 34 is not required by LCO 3.8.4. This is acceptable because VIB 34 can be powered by either of the two CVTs supplied by separate safeguard power trains if battery charger 34 is not available following an event.

BASES

BACKGROUND (continued)

The DC power distribution system is described in more detail in Bases for LCO 3.8.9, "Distribution System—Operating," and LCO 3.8.10, "Distribution Systems—Shutdown."

~~Each battery has adequate storage capacity to carry the required load continuously for at least 2 hours and to perform three complete cycles of intermittent loads discussed in the FSAR, Chapter [8] (Ref. 4).~~

power panels

Each 125 VDC battery is separately housed in a ventilated room apart from its charger and distribution centers. Each subsystem is ~~located in an area~~ separated ~~physically and~~ electrically from the other subsystem to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem. There is no sharing between redundant ~~Class 1E~~ subsystems, such as batteries, battery chargers, or distribution panels. 2

power

The batteries ~~for Train A and Train B DC electrical power subsystems~~ are sized to produce required capacity at 80% of nameplate rating, corresponding to warranted capacity at end of life cycles and the 100% design demand. ~~Battery size is based on 125% of required capacity and, after selection of an available commercial battery, results in a battery capacity in excess of 150% of required capacity.~~ The voltage limit is 2.13 V per cell, which corresponds to a total minimum voltage output of ~~128 V per battery discussed in the FSAR, Chapter [8] (Ref. 4). The criteria for sizing large lead storage batteries are defined in IEEE-485 (Ref. 5).~~

Insert: B38-51-01

The required

Each ~~Train A and Train B~~ DC electrical power subsystem has ample power output capacity for the steady state operation of connected loads required during normal operation, while at the same time maintaining its battery bank fully charged. Each battery charger also has sufficient capacity to restore the battery from the design minimum charge to ~~its fully~~ charged state within 24 hours while supplying normal steady state loads discussed in the FSAR, Chapter [8] (Ref. 4).

15

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in ~~the FSAR, Chapter [6] (Ref. 6), and in~~ the FSAR, Chapter ~~[15]~~ (Ref. 7), assume that Engineered Safety Feature (ESF) systems are OPERABLE. ~~The~~ DC

14 6

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

<u>INSERT: B 3.8-51-01</u>:

≥ 123.5 V for batteries 31 and 32 and ≥ 127.8 V for batteries 33 and 34.

BASES

subsystems 31, 32 and 33

APPLICABLE SAFETY ANALYSES (continued)

electrical power system provides normal and emergency DC electrical power for the DGs, ~~emergency auxiliaries,~~ and control and switching during all MODES of operation.

Insert: B 3.8-52-01

The OPERABILITY of the DC sources is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining the DC sources OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power (i.e., emergency diesel generators); and

b. A worst case single failure.

10 CFR 50.36

The DC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~.

LCO

Insert: B 3.8-52-02

~~The DC electrical power subsystems, each subsystem consisting of [two] batteries, battery charger [for each battery] and~~ the corresponding control equipment and interconnecting cabling supplying power to the associated bus within the train are required to be OPERABLE to ensure the availability of the required power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. Loss of any train DC electrical power subsystem does not prevent the minimum safety function from being performed (Ref. 4).

An OPERABLE DC electrical power subsystem requires ~~all required batteries~~ the battery and respective charger~~s~~ to be operating and connected to the associated DC bus~~(es)~~.

APPLICABILITY

The DC electrical power sources are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure safe unit operation and to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

INSERT: B 3.8-52-01:

Each of the four DC electrical power subsystems supports one of the four 120 V AC vital instrument buses via an inverter.

INSERT: B 3.8-52-02:

This LCO requires the OPERABILITY of the following four DC electrical power subsystems:

Battery 31 and associated Battery Charger;
Battery 32 and associated Battery Charger;
Battery 33 and associated Battery Charger; and
Battery 34.

In addition,

BASES

APPLICABILITY (continued)

b. Adequate core cooling is provided, and containment integrity and other vital functions are maintained in the event of a postulated DBA.

The DC electrical power requirements for MODES 5 and 6 are addressed in the Bases for LCO 3.8.5, "DC Sources—Shutdown."

ACTIONS

Insert: B3.8-53-01

B ~~A~~.1

Condition B ~~A~~ ~~represents one train with a loss of~~ ability to completely respond to an event, and a potential loss of ability to remain energized during normal operation. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential ~~for complete loss of DC power to the affected train. The 2 hour limit is consistent with the allowed time for an inoperable DC distribution system train~~.

Insert B3.8-53-02

Insert B3.8-53-03

If one of the required DC electrical power subsystems is inoperable (e.g., inoperable battery, inoperable battery charger(~~s~~), or inoperable battery charger and associated inoperable battery), the remaining DC electrical power subsystem ~~has~~ have the capacity to support a safe shutdown and to mitigate an accident condition. Since a subsequent worst case single failure would, however, result in the ~~complete~~ loss of ~~the remaining~~ another 125 VDC electrical power subsystems with attendant loss of ESF functions, continued power operation should not exceed 2 hours. The 2 hour Completion Time is based on Regulatory Guide 1.93 (Ref. ~~8~~ 7) and reflects a reasonable time to assess unit status as a function of the inoperable DC electrical power subsystem and, if the DC electrical power subsystem is not restored to OPERABLE status, to prepare to effect an orderly and safe unit shutdown.

C ~~B~~.1 and C ~~B~~.2

If the inoperable DC electrical power subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

INSERT: B 3.8-53-01:

A.1

Condition A is entered when battery No. 34 is not OPERABLE. The only safety related load supported by DC subsystem 34 is 120 V AC vital instrument bus 34 which is supplied via inverter 34. Therefore, the Required Actions for inverter 34 not OPERABLE specified in LCO 3.8.7, Inverters-Operating, are appropriate when battery No. 34 is not OPERABLE. Additionally, ITS 3.8.9 (and ITS Section 3.3) ensure that 120 V AC vital instrument bus 34 is energized when required. The 2 hour Completion Time is consistent with the completion time for an inoperable battery and/or charger in any of the other three DC electrical power subsystems.

INSERT: B 3.8-53-02:

is entered when DC subsystem 31, 32 or 33 (battery and/or associated charger) is not Operable. Loss of DC subsystem 34 (Condition A) differs from the loss of DC subsystem 31, 32 or 33 (Condition B) because Condition B could result in the loss of DC control power to 480 volt bus No. 5A, 6A, or 2A/3A, respectively, and the associated emergency diesel generator. Therefore, this Condition represents a significant degradation of the

INSERT: B 3.8-53-03:

loss of additional DC subsystems.

BASES

ACTIONS

C.1 and C.2 (continued)

within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems. The Completion Time to bring the unit to MODE 5 is consistent with the time required in Regulatory Guide 1.93 (Ref. 7).

SURVEILLANCE REQUIREMENTS

SR 3.8.4.1

Verifying battery terminal voltage while on float charge for the batteries helps to ensure the effectiveness of the charging system and the ability of the batteries to perform their intended function. Float charge is the condition in which the charger is supplying the continuous charge required to overcome the internal losses of a battery (or battery cell) and maintain the battery (or a battery cell) in a fully charged state. The voltage requirements are based on the nominal design voltage (i.e. 2.07 volts per cell) of the battery and are consistent with the initial voltages assumed in the battery sizing calculations. The 31 day Frequency is consistent with manufacturer recommendations and IEEE-450 (Ref. 8).

SR 3.8.4.2

~~Visual inspection to detect corrosion of the battery cells and connections, or measurement of the resistance of each intercell, interrack, intertier, and terminal connection, provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.~~

~~The limits established for this SR must be no more than 20% above the resistance as measured during installation or not above the ceiling value established by the manufacturer.~~ T.2

~~The Surveillance Frequency for these inspections, which can detect conditions that can cause power losses due to resistance heating, is 92 days. This Frequency is considered acceptable based on operating experience related to detecting corrosion trends.~~ CLB.1

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.3

Visual inspection of the battery cells, cell plates, and battery racks provides an indication of physical damage or abnormal deterioration that could potentially degrade battery performance.

[The 12 month Frequency for this SR is consistent with IEEE-450 (Ref. 9), which recommends detailed visual inspection of cell condition and rack integrity on a yearly basis.]

SR 3.8.4.4 and SR 3.8.4.5

Visual inspection and resistance measurements of intercell, interrack, intertier, and terminal connections provide an indication of physical damage or abnormal deterioration that could indicate degraded battery condition. The anticorrosion material is used to help ensure good electrical connections and to reduce terminal deterioration. The visual inspection for corrosion is not intended to require removal of and inspection under each terminal connection. The removal of visible corrosion is a preventive maintenance SR. The presence of visible corrosion does not necessarily represent a failure of this SR provided visible corrosion is removed during performance of SR 3.8.4.4.

Reviewer's Note: The requirement to verify that terminal connections are clean and tight applies only to nickel cadmium batteries as per IEEE Standard P1106, "IEEE Recommended Practice for Installation, Maintenance, Testing and Replacement of Vented Nickel - Cadmium Batteries for Stationary Applications." This requirement may be removed for lead acid batteries.

The connection resistance limits for SR 3.8.4.5 shall be no more than 20% above the resistance as measured during installation, or not above the ceiling value established by the manufacturer.

[The Surveillance Frequencies of 12 months is consistent with IEEE-450 (Ref. 9), which recommends cell to cell and terminal connection resistance measurement on a yearly basis.]

(continued)

Insert: B 3.8-56-02

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.8.4.~~6~~ 2

output rating

This SR requires that each battery charger be capable of supplying [400] amps and [125] V for ≥ [8] hours. These requirements are based on the design capacity of the chargers (Ref. 4). According to Regulatory Guide 1.32 (Ref. 10), the battery charger supply is required to be based on the largest combined demands of the various steady state loads and the charging capacity to restore the battery from the design minimum charge state to the fully charged state, irrespective of the status of the unit during these demand occurrences. The minimum required amperes and duration ensures that these requirements can be satisfied.

Insert: B 3.8-56-01

9

4

consistent with

The Surveillance Frequency is acceptable, given the unit conditions required to perform the test and the other administrative controls existing to ensure adequate charger performance during these [18 month] intervals. In addition, this Frequency is intended to be consistent with expected fuel cycle lengths.

24

This Surveillance is required to be performed during MODES 5 and 6 since it would require the DC electrical power subsystem to be inoperable during performance of the test.

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~ T.1

SR 3.8.4.~~7~~ 3

A battery service test is a special test of battery capability, as found, to satisfy the design requirements (battery duty cycle) of the DC electrical power system. The discharge rate and test length should correspond to the design duty cycle requirements as specified in Reference 4.

24 9

The Surveillance Frequency of [18 months] is consistent with the recommendations of Regulatory Guide 1.32 (Ref. 10) and Regulatory Guide 1.129 (Ref. 11), which state that the battery service test should be performed during refueling operations or at some other outage~~, with intervals between tests, not to exceed [18 months]~~.

10

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.4 DC Sources - Operating

INSERT: B 3.8-56-01

the voltage and current necessary to recharge partially discharged batteries (two hour discharge at a rate that does not cause battery terminal voltage to fall below 105 volts).

INSERT: B 3.8-56-02

Therefore, this SR can be satisfied by operating each charger at the design voltage and current for a minimum of 2 hours.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.~~7~~ 3 (continued)

A ~~This SR is modified by two Notes. Note 1 allows the performance of a~~ modified performance discharge test may be performed in lieu of a service test ~~once per 60 months~~. T.3

The modified performance discharge test is a simulated duty cycle consisting of just two rates; the one minute rate published for the battery or the largest current load of the duty cycle, followed by the test rate employed for the performance test, both of which envelope the duty cycle of the service test. Since the ampere-hours removed by a rated one minute discharge represents a very small portion of the battery capacity, the test rate can be changed to that for the performance test without compromising the results of the performance discharge test. The battery terminal voltage for the modified performance discharge test should remain above the minimum battery terminal voltage specified in the battery service test for the duration of time equal to that of the service test.

A modified performance discharge test is a test of the battery capacity and its ability to provide a high rate, short duration load (usually the highest rate of the duty cycle). This will often confirm the battery's ability to meet the critical period of the load duty cycle, in addition to determining its percentage of rated capacity. Initial conditions for the modified performance discharge test should be identical to those specified for a service test.

This SR is modified by a Note. The reason for the Note ~~2~~ is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~ T.3 T.1

SR 3.8.4.~~8~~ 4

A battery performance discharge test is a test of constant current capacity of a battery, normally done in the as found condition, after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.4.~~8~~ 4 (continued)

A battery modified performance discharge test is described in the Bases for SR 3.8.4.~~7~~. Either the battery performance discharge test or the modified performance discharge test is acceptable for satisfying SR 3.8.4.~~8~~; however, only the modified performance discharge test may be used to satisfy SR 3.8.4.8 while satisfying the requirements of SR 3.8.4.7 at the same time. 4 3

The acceptance criteria for this Surveillance are consistent with IEEE-450 (Ref. 9) and IEEE-485 (Ref. 5). These references recommend that the battery be replaced if its capacity is below 80% of the manufacturer's rating. A capacity of 80% shows that the battery ~~rate of~~ deterioration is increasing, even if there is ample capacity to meet the load requirements. 8

The Surveillance Frequency for this test is normally 60 months. If the battery shows degradation, or if the battery has reached 85% of its expected life and capacity is < 100% of the manufacturer's rating, the Surveillance Frequency is reduced to 12 months. However, if the battery shows no degradation but has reached 85% of its expected life, the Surveillance Frequency is only reduced to 24 months for batteries that retain capacity ≥ 100% of the manufacturer's rating. Degradation is indicated, according to IEEE-450 (Ref. 9), when the battery capacity drops by more than 10% relative to its capacity on the previous performance test or when it is ≥ [10%] below the manufacturer's rating. These Frequencies are consistent with the recommendations in IEEE-450 (Ref. 9). 8 8

This SR is modified by a Note. The reason for the Note is that performing the Surveillance would perturb the electrical distribution system and challenge safety systems. ~~Credit may be taken for unplanned events that satisfy this SR.~~ T.1

REFERENCES

1. 10 CFR 50, Appendix A~~, GDC 17~~.
2. Regulatory Guide 1.6, March 10, 1971.
3. IEEE-308-[1978].

(continued)

BASES

REFERENCES (continued)	4.	FSAR, Chapter [8].
	5.	IEEE-485-[1983], June 1983.
	~~6.~~	~~FSAR, Chapter [6].~~
	6 ~~7.~~	FSAR, Chapter $\boxed{15}$. 14
	7 ~~8.~~	Regulatory Guide 1.93, December 1974.
	8 ~~9.~~	IEEE-450-$\boxed{1987}$. 1995
	9 ~~10.~~	Regulatory Guide 1.32, February 1977.
	10 ~~11.~~	Regulatory Guide 1.129, December 1974.

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Conversion Package

Technical Specification 3.8.4:
"DC Sources - Operating"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.4 DC Sources - Operating

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.8.4, was modified as needed to reflect the IP3 design and current licensing basis. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-008, Rev.2 (WOG-03.3) which revises SR 3.0.1 to allow credit for unplanned events to meet any SR requirement. This generic change to NUREG 1431, Rev. 1, has been approved by the NRC.

T.2 This change incorporates Generic Change TSTF-199, Rev.0 (BWOG-034) which deletes battery surveillances that are routine maintenance items and not explicit verifications of battery Operability. Although this generic change to NUREG 1431, Rev. 1, has not been approved by the NRC, it was incorporated because it is consistent with the current licensing basis.

T.3 This change incorporates Generic Change TSTF-200, Rev.0 (BWOG-035) which allows use of battery modified performance discharge test in lieu of service test as permitted by IEEE-450. Although this generic change to NUREG 1431, Rev. 1, has not been approved by the NRC, it was incorporated because it is consistent with the current licensing basis.

T.4 This change incorporates Generic Change TSTF-202, Rev.0 (BWOG-037) which extends battery surveillance intervals for routine battery status verifications. Although this generic change to NUREG 1431, Rev. 1, has not been approved by the NRC, it was incorporated because it is consistent with the current licensing basis.

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.5:
"DC Sources - Shutdown"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources – Shutdown

LCO 3.8.5 DC electrical power subsystems shall be OPERABLE to support the DC electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems – Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable.	A.1 Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	-------------------NOTE------------------ The following SRs are not required to be performed: SR 3.8.4.2, SR 3.8.4.3, and SR 3.8.4.4. --- For DC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.3 SR 3.8.4.2 SR 3.8.4.4.	In accordance with applicable SRs

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources – Shutdown

BASES

BACKGROUND

A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter 14 (Ref. 1), assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum DC electrical power sources during MODES 5 and 6 and during movement of irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

The DC sources satisfy Criterion 3 of 10 CFR 50.36.

BASES

LCO

The four DC electrical power subsystems, each subsystem consisting of one battery, one battery charger (except for battery charger 34 which is not covered by this LCO), and the corresponding control equipment and interconnecting cabling within the safeguards power train, are required to be OPERABLE to support required safeguards power trains of the distribution systems required OPERABLE by LCO 3.8.10, "Distribution Systems – Shutdown." This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

DC subsystems may be cross connected in Modes 5 and 6 and during movement of irradiated fuel because there is no requirement to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem.

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 5 and 6, and during movement of irradiated fuel assemblies, provide assurance that:

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

b. Required features needed to mitigate a fuel handling accident are available;

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.4.

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3 and A.2.4

If any DC electrical subsystems are required by LCO 3.8.10 and one becomes inoperable, the remaining DC power available may be capable of supporting sufficient systems to allow continuation of CORE ALTERATIONS and fuel movement. By allowing the option to declare required features inoperable with the associated DC power source(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO ACTIONS. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power subsystems and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power subsystems should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

SR 3.8.5.1 requires performance of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.4. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

REFERENCES

1. FSAR, Chapter 14.

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Conversion Package

Technical Specification 3.8.5:
"DC Sources - Shutdown"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A

SEE ITS 3.8.1 3.8.4 3.8.7 3.8.9

C. If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

1. If the reactor is critical, it shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours.

2. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.

SEE ITS 3.8.1

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

F. As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:

SEE ITS 3.8.2

1. One transmission circuit to Buchanan Substation, except for testing.

2. Either:

a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,

or

b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

SEE ITS 3.8.9

3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

Amendment No. 34

Add LCO 3.8.5
Add LCO 3.8.5, Condition A
Add SR 3.8.5.1

M.1

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.5:
"DC Sources - Shutdown"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

ADMINISTRATIVE

None

MORE RESTRICTIVE

M.1 CTS 3.7.F and CTS 4.6 do not establish any direct requirements for the operability or surveillance testing of batteries and/or battery chargers when in cold shutdown, refueling operations, or when moving irradiated fuel assemblies except that batteries and/or battery chargers are required to function as necessary to support the operability of features that are required to be operable (e.g., diesel generators). ITS LCO 3.8.5 establishes requirements for the operability and surveillance testing of any DC electrical power subsystem needed to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems - Shutdown." The adoption of ITS LCO 3.8.5 is a more restrictive change because it requires that batteries and/or battery chargers must be operable, which includes meeting required SRs, if the battery is needed to support the operability of any other features required to be Operable. However, ITS SR 3.8.5.1 does not require the performance of any battery and/or battery charger SRs if the performance would render the battery and/or charger inoperable. This allowance applies only if the SRs that are not required to be performed are still met.

The adoption of ITS LCO 3.8.5 also provides an additional option if a battery and/or battery charger is not capable of supporting the operability of required features. Whereas the CTS would require that all required features supported by the inoperable battery be declared inoperable, ITS LCO 3.8.5 allows an additional option of suspending core alterations, suspending movement of irradiated fuel assemblies, and suspending operations involving positive reactivity additions. These actions are sufficiently conservative so that is acceptable to avoid the administrative burden of declaring each of the supported features inoperable and taking the Required Actions for each of these features.

Finally, the adoption of ITS LCO 3.8.5 establishes requirements for the operability of features required to mitigate the consequences of a fuel handling accident whenever irradiated fuel is being moved even if these features would not otherwise be required (i.e., fuel is removed from the reactor vessel).

These more restrictive changes are acceptable because they do not introduce any operation which is un-analyzed while requiring more conservative requirements for ensuring that batteries and battery chargers are operable whenever needed to support features required to prevent or mitigate an accident. This change has no negative impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.5:
"DC Sources - Shutdown"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.5 DC Sources - Shutdown

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.5:
"DC Sources - Shutdown"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.5

This ITS Specification is based on NUREG-1431 Specification No. **3.8.5**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWOG-023	**115 R0**	BATTERY FLOAT CURRENT AND BATTERY INSPECTION PROGRAM	Rejected by TSTF	Not Incorporated	**N/A**
BWOG-033	**198 R0**	SPECIFICATION 3.8.6-UNLIMITED USE OF BATTERY CHARGING CURRENT IN LIEU OF SPECIFIC GRAVITY	NRC Review	Not Incorporated	**N/A**
BWROG-008 R3	**036 R3**	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	NRC Rejects: TSTF to Revise	Not Incorporated	**N/A**
BWROG-017	**051**	REVISE CONTAINMENT REQUIREMENTS DURING HANDLING IRRADIATED FUEL AND CORE ALTERATIONS (REQUIREMENTS LIMITED TO "RECENTLY" IRRADIATED FUEL)	NRC Review	Not Incorporated	**N/A**

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Technical Specification 3.8.5:
"DC Sources - Shutdown"

WOG-062	**204**	REVISE DC SOURCES - SHUTDOWN AND INVERTERS - SHUTDOWN TO ADDRESS SPECIFIC SUBSYSTEM REQUIREMENTS	NRC Review	Not Incorporated	**N/A**

3.8 ELECTRICAL POWER SYSTEMS

3.8.5 DC Sources—Shutdown

A

⟨DOC M.1⟩

LCO 3.8.5 DC electrical power subsystem shall be OPERABLE to support the DC electrical power distribution subsystem~~(s)~~ required by LCO 3.8.10, "Distribution Systems—Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

⟨DOC M.1⟩

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required DC electrical power subsystems inoperable.	A.1 Y Declare affected required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate action to restore required DC electrical power subsystems to OPERABLE status.	Immediately

<DOC M.1>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.5.1	------------------NOTE------------------ The following SRs are not required to be performed: SR 3.8.4.~~6~~ 2, SR 3.8.4.~~7~~ 3, and SR 3.8.4.~~8~~ 4. -- For DC sources required to be OPERABLE, the following SRs are applicable: SR 3.8.4.1 SR 3.8.4.4 ~~SR 3.8.4.7~~ SR 3.8.4.2 ~~SR 3.8.4.5~~ ~~SR 3.8.4.8~~ SR 3.8.4.3 ~~SR 3.8.4.6~~	In accordance with applicable SRs

<DOC M.1>

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.5 DC Sources—Shutdown

BASES

BACKGROUND

A description of the DC sources is provided in the Bases for LCO 3.8.4, "DC Sources—Operating."

APPLICABLE SAFETY ANALYSES

14

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter ~~[6]~~ (Ref. 1) ~~and Chapter [15] (Ref. 2)~~, assume that Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators~~, emergency auxiliaries,~~ and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum DC electrical power sources during MODES 5 and 6 and during movement of irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate DC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

The DC sources satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10CFR 50.36.

LCO

four

The DC electrical power subsystems, each subsystem consisting of ~~two~~ one batteri~~es~~, one battery charger ~~per battery~~ (except for battery charger 34 which is not covered by this LCO), and ~~the corresponding~~ y control equipment and

(continued)

X.

BASES

LCO (continued)

safeguards power

interconnecting cabling within the train, are required to be OPERABLE to support required trains of the distribution systems required OPERABLE by LCO 3.8.10, "Distribution Systems—Shutdown." This ensures the availability of sufficient DC electrical power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

Insert: B3.8-61-01

APPLICABILITY

The DC electrical power sources required to be OPERABLE in MODES 5 and 6, and during movement of irradiated fuel assemblies, provide assurance that:

a. Required features to provide adequate coolant inventory makeup are available for the irradiated fuel assemblies in the core;

b. Required features needed to mitigate a fuel handling accident are available;

c. Required features necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

The DC electrical power requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.4.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

and one becomes inoperable

any DC electrical subsystems

If ~~two trains~~ are required by LCO 3.8.10, the remaining ~~train with~~ DC power available may be capable of supporting sufficient systems to allow continuation of CORE ALTERATIONS and fuel movement. By allowing the option to declare required features inoperable with the associated DC power source(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCO ACTIONS. In many instances, this option may involve undesired administrative efforts. Therefore, the

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.5 DC Sources - Shutdown

INSERT B 3.8-61-01:

DC subsystems may be cross connected in Modes 5 and 6 and during movement of irradiated fuel because there is no requirement to ensure that a single failure in one subsystem does not cause a failure in a redundant subsystem.

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required DC electrical power subsystems and to continue this action until restoration is accomplished in order to provide the necessary DC electrical power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required DC electrical power subsystems should be completed as quickly as possible in order to minimize the time during which the unit safety systems may be without sufficient power.

SURVEILLANCE REQUIREMENTS

SR 3.8.5.1

4

SR 3.8.5.1 requires performance of all Surveillances required by SR 3.8.4.1 through SR 3.8.4.8. Therefore, see the corresponding Bases for LCO 3.8.4 for a discussion of each SR.

This SR is modified by a Note. The reason for the Note is to preclude requiring the OPERABLE DC sources from being discharged below their capability to provide the required power supply or otherwise rendered inoperable during the performance of SRs. It is the intent that these SRs must still be capable of being met, but actual performance is not required.

(continued)

BASES (continued)

REFERENCES

1. FSAR, Chapter [6]. 14

~~2. FSAR, Chapter [15].~~

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.5:
"DC Sources - Shutdown"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.5 DC Sources - Shutdown

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

LCO 3.8.6 Battery cell parameters for batteries 31, 32, 33 and 34 shall be within the limits of Table 3.8.6-1.

APPLICABILITY: When associated DC electrical power subsystems are required to be OPERABLE.

ACTIONS

-----------------------------------NOTE-----------------------------------

Separate Condition entry is allowed for each battery.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more batteries with one or more battery cell parameters not within Category A or B limits.	A.1 Verify pilot cells electrolyte level and float voltage meet Table 3.8.6-1 Category C limits.	1 hour
	<u>AND</u>	
	A.2 Verify battery cell parameters meet Table 3.8.6-1 Category C limits.	24 hours <u>AND</u> Once per 7 days thereafter
	<u>AND</u>	
	A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1.	31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> One or more batteries with average electrolyte temperature of the representative cells not within limits of SR 3.8.6.3. <u>OR</u> One or more batteries with one or more battery cell parameters not within Category C values.	B.1	Declare associated battery inoperable.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.8.6.1	Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	31 days
SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	92 days
SR 3.8.6.3	Verify average electrolyte temperature of representative cells is within the following limits: a. ≥ 60°F for batteries 31, 32 and 34; and b. ≥ 35°F for battery 33.	92 days

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameters Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[(a)]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[(a)]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity[(b)]	≥ 1.205	≥ 1.195 AND Average of all connected cells > 1.205	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ 1.195

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.

(b) Corrected for electrolyte temperature.

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Cell Parameters

BASES

BACKGROUND

This LCO delineates the limits on electrolyte temperature, level, float voltage, and specific gravity for the DC power source batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources – Operating," and LCO 3.8.5, "DC Sources – Shutdown."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 1), assume Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining at least one train of DC sources OPERABLE during accident conditions, in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power; and

b. A worst case single failure.

Battery cell parameters satisfy the Criterion 3 of 10 CFR 50.36.

LCO

Battery cell parameters must remain within acceptable limits to ensure availability of the required DC power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. Electrolyte limits

BASES

LCO (continued)

are conservatively established, allowing continued DC electrical system function even with Category A and B limits not met.

APPLICABILITY

The battery cell parameters are required solely for the support of the associated DC electrical power subsystems. Therefore, battery electrolyte is only required when the DC power source is required to be OPERABLE. Refer to the Applicability discussion in Bases for LCO 3.8.4 and LCO 3.8.5.

ACTIONS

The ACTIONS Table is modified by a Note which indicates that separate Condition entry is allowed for each battery. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DC subsystem. Complying with the Required Actions for one inoperable DC subsystem may allow for continued operation, and subsequent inoperable DC subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

A.1, A.2 and A.3

With one or more cells in one or more batteries not within limits (i.e., Category A limits not met, Category B limits not met, or Category A and B limits not met) but within the Category C limits specified in Table 3.8.6-1 in the accompanying LCO, the battery is degraded but there is still sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of Category A or B limits not met and operation is permitted for a limited period.

The pilot cell electrolyte level and float voltage are required to be verified to meet the Category C limits within 1 hour (Required Action A.1). This check will provide a quick indication of the status of the remainder of the battery cells. One hour provides time to inspect the electrolyte level and to confirm the float voltage of the pilot cells. One hour is

BASES

ACTIONS

A.1, A.2 and A.3 (continued)

considered a reasonable amount of time to perform the required verification.

Verification that the Category C limits are met (Required Action A.2) provides assurance that during the time needed to restore the parameters to the Category A and B limits, the battery is still capable of performing its intended function. A period of 24 hours is allowed to complete the initial verification because specific gravity measurements must be obtained for each connected cell. Taking into consideration both the time required to perform the required verification and the assurance that the battery cell parameters are not severely degraded, this time is considered reasonable. The verification is repeated at 7 day intervals until the parameters are restored to Category A or B limits. This periodic verification is more frequent than the normal Frequency of pilot cell Surveillances because of the degraded condition of the battery.

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. With the consideration that, while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable prior to declaring the battery inoperable.

B.1

With one or more batteries with one or more battery cell parameters outside the Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, other potentially extreme conditions, such as not completing the Required Actions of Condition A within the required Completion Time or average electrolyte temperature of representative cells outside the limits of SR 3.8.6.3 are also cause for immediately declaring the associated DC electrical power subsystem inoperable.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

This SR verifies that Category A battery cell parameters are consistent with IEEE-450 (Ref. 2), which recommends regular battery inspections (at least one per month) including voltage, specific gravity, and electrolyte temperature of pilot cells.

SR 3.8.6.2

The quarterly inspection of specific gravity and voltage is consistent with IEEE-450 (Ref. 2) which recommends augmentation of the battery inspections conducted in SR 3.8.6.1 at least once per quarter by checking the level, voltage and specific gravity of each cell, and the temperature of pilot cells.

SR 3.8.6.3

This Surveillance verification that the average temperature of representative cells (i.e., every fifth cell) is within specified limits, is consistent with a recommendation of IEEE-450 (Ref. 2), that states that the temperature of electrolytes in representative cells should be determined on a quarterly basis.

Lower than normal temperatures act to inhibit or reduce battery capacity. This SR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on manufacturer recommendations.

Table 3.8.6-1

This table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designated pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and electrolyte specific gravity approximate the state of charge of the entire battery.

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

The Category A limits specified for electrolyte level are based on manufacturer recommendations and are consistent with the guidance in IEEE-450 (Ref. 2), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperatures and charge effects. In addition to this allowance, footnote a to Table 3.8.6-1 permits the electrolyte level to be above the specified maximum level during equalizing charge, provided it is not overflowing. These limits ensure that the plates suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 2) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours.

The Category A limit specified for float voltage is ≥ 2.13 V per cell. This value is based on the recommendations of IEEE-450 (Ref. 2), which states that prolonged operation of cells < 2.13 V can reduce the life expectancy of cells.

The Category A limit specified for specific gravity for each pilot cell is ≥ 1.205 (0.010 below the manufacturer fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 2), the specific gravity readings are based on a temperature of 77°F (25°C).

The specific gravity readings are corrected for actual electrolyte temperature as long as level is maintained within the required range. For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F. The specific gravity of the electrolyte in a cell increases with a loss of water due to electrolysis or evaporation.

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is ≥ 1.195 (0.020 below the manufacturer fully charged, nominal specific gravity) with the average of all connected cells > 1.205 (0.010 below the manufacturer fully charged, nominal specific gravity). These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that the effects of a highly charged or newly installed cell will not mask overall degradation of the battery.

Category C defines the limits for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limits specified for electrolyte level (above the top of the plates and not overflowing) ensure that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limits for float voltage is based on IEEE-450 (Ref. 2), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement.

The Category C limit of average specific gravity ≥ 1.195 is based on manufacturer recommendations (0.020 below the manufacturer recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

for each connected cell must be no less than 0.020 below the average of all connected cells. This limit ensures that the effect of a highly charged or new cell does not mask overall degradation of the battery.

REFERENCES

1. FSAR, Chapter 14.

2. IEEE-450-1995.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.6:
"Battery Cell Parameters"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
4.6-2	155	155	No TSCRs	No TSCRs for this Page	N/A
4.6-3	155	155	No TSCRs	No TSCRs for this Page	N/A

Add LCO 3.8.6 — M.1
Add LCO 3.8.6, Action Note — A.3
Add LCO 3.8.6, Applicability — A.2

Add Condition A and associated Req. Actions — M.1

SEE ITS 3.8.1

4. Each diesel generator shall be inspected and maintained following the manufacturer's recommendations for this class of stand-by service.

The above tests will be considered satisfactory if the required minimum safeguards equipment operates as designed.

SEE ITS 3.8.4

B. Station Batteries — L.2

SR 3.8.6.1 T 3.8.6-1, Cat A SR 3.8.6.2

1. Every month the voltage of each cell, the specific gravity and temperature of a pilot cell in each battery and each battery voltage shall be measured ~~and recorded~~. — L.1 — A.4 — LA.2

SR 3.8.6.2 T 3.8.6-1, Cat B

2. Every 3 months ~~each battery shall be subjected to a 24 hour equalizing charge~~ and the specific gravity ~~of each cell~~, the temperature reading of every fifth cell, the height of electrolyte, ~~and the amount of water added shall be measured and recorded~~. — LA.1 — L.2 — LA.2

SEE ITS 3.8.4

3. At least once per 24 months, during shutdown, each battery shall be subjected to a service test and a visual inspection of the plates.[1]

4. At least once per 60 months, during shutdown, each battery shall be subjected to a performance discharge (or modified performance discharge) test.[1,2] This test shall verify that the battery capacity is at least 80% of the manufacturer's rating.

5. Any battery which is demonstrated to have less than 90% of the manufacturer's rating or, whose capacity drops more than 10% of rated capacity from its previous performance discharge (or modified performance discharge) test, shall be subjected to a performance discharge (or modified performance discharge) test annually, during shutdown, until the battery is replaced.

Basis — A.1

~~The tests specified are designed to demonstrate that the diesel generators will provide power for operation of equipment. They also assure that the emergency generator system controls and the control systems for the safeguards equipment will function automatically in the event of a loss of all normal 480v AC station service power. During the simulated loss of power/safety injection system test of specification 4.6.A.3, certain safeguards valves will be closed and made inoperable, to prevent Safety Injection flow to the core.~~

SEE ITS 3.8.4

1. A modified performance discharge test may be performed in lieu of the battery service test every other 24 month operating cycle.

2. The first time a performance discharge (or modified performance discharge test) will be performed will be in refueling outage 10/11.

Add Acceptance Criteria, Table 3.8.6-1 — M.1 — A.4

Add T 3.8.6-1, Note (b) — L.2

Add Table 3.8.6-1, Note (a) — A.4

A.1

The testing frequency specified will be often enough to identify and correct any mechanical or electrical deficiency before it can result in a system failure. The fuel supply is continuously monitored. An abnormal condition in these systems would be signaled without having to place the diesel generators themselves on test.

Each diesel generator has a continuous rating of 1750 kw and a 2 hour rating of 1950 kw. Two diesels can power the minimum safeguards loads. To ensure that each diesel can operate at its 2 hour rating (as required by specification 4.6.A.2.), each diesel will be loaded to 1900-1950 kw and run for at least 105 minutes.

Station batteries will deteriorate with time, but precipitous failure is extremely unlikely. The surveillance specified is that which has been demonstrated over the years to provide an indication of a cell becoming unserviceable long before it fails. The periodic equalizing charge will ensure that the ampere-hour capability of the batteries is maintained.

The service and performance discharge test of each battery, together with the visual inspection of the plates, will assure the continued integrity of the batteries. The batteries are of the type that can be visually inspected, and this method of assuring the continued integrity of the battery is proven standard power plant practice.

The battery service test demonstrates the capability of the battery to meet the system design requirements. The Indian Point Unit 3 design duty cycle loads are determined by a LOCA concurrent with a loss of AC power.

The performance discharge test is a test of the constant current capacity of a battery, normally done in the as found condition after having been in service, to detect any change in the capacity determined by the acceptance test. The test is intended to determine overall battery degradation due to age and usage.

The modified battery performance discharge test is a composite test which addresses both the service test and performance discharge test requirements. It shall consist of a one minute peak load equivalent to that of the service test and a constant discharge current for the remainder of the test which envelopes the next highest load value of the service test. The purpose of the modified performance discharge test is to compare the capacity of the battery against the manufacturer's specified capacity and thereby determine when the battery is approaching the end of its life, as well as to demonstrate capability to meet system design requirements. Every other 24 month operating cycle, the modified performance discharge test may be performed in lieu of the battery service test required by Technical Specification 4.6.B.3.

The station batteries are required for plant operation, and performing the station battery service and performance discharge (or modified performance discharge) test require the reactor to be shutdown.

<u>Reference</u>
FSAR, Section 8.2

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.6:
"Battery Cell Parameters"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.6 - Battery Parameters

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases that are designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS 4.6.B requires verification that battery cell parameters are within acceptable limits for battery Operability; however, no acceptance criteria is established. Therefore, IP3 procedures that implement CTS 4.6.B include acceptance criteria based on IEEE-450 and manufacturer's recommendations.

ITS 3.8.6, Table 3.8.6-1, includes acceptance criteria for battery cell parameters needed for battery Operability which are identified as Category C Allowable Limits. Additionally, ITS SR 3.8.6.3 adds the acceptance criteria for battery cell temperature. This is an administrative change with no impact on safety because the acceptance criteria identified as ITS Table 3.8.6-1, Category C Allowable Limits, and ITS SR 3.8.6.3 are consistent with the acceptance criteria in IP3 procedures. The addition of new Category A and B limits in ITS Table 3.8.6-1 is a more restrictive change (See ITS 3.8.6, DOC M.1).

A.3 ITS 3.8.6 Conditions and Required Actions are preceded by the Note "Separate Condition entry is allowed for each battery." In conjunction with the ITS Specification 1.3, "Completion Times," this Note provides direction consistent with the intent of the CTS for a degraded or inoperable battery. Specifically, this note allows separate entry into an LCO 3.8.6 Condition for each battery and separate tracking of Completion Times based on a particular battery's time of entry into the Condition. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each degraded or inoperable battery. Complying with the Required Actions for one degraded or inoperable battery may allow continued operation, and subsequent degraded or inoperable batteries are governed by separate Condition entry and application of associated Required Actions. This is an administrative change with no impact on safety because any differences between the existing requirements and ITS 3.8.6 are described and justified elsewhere in this discussion of changes.

A.4 CTS 4.6.B.1 requires that battery voltage must be measured and recorded every month. ITS SR 3.8.4.1 (as modified by TSTF-202) maintains the requirement to verify battery voltage every month (See ITS 3.8.6, DOC L.1); however, the explicit requirement that data must be recorded is deleted. This is an administrative change with no impact on safety.

MORE RESTRICTIVE

M.1 CTS 4.6.B requires verification that battery cell parameters are within acceptable limits for battery Operability; however, no acceptance criteria is established. Therefore, IP3 procedures that implement CTS 4.6.B include acceptance criteria based on IEEE-450 and manufacturer's recommendations. If this acceptance criteria is not met, then batteries are inoperable.

ITS 3.8.6, Table 3.8.6-1, maintains the CTS acceptance criteria for battery Operability which are identified as Category C Allowable Limits. However, ITS 3.8.6, Table 3.8.6-1, also establishes new acceptance criteria identified as Category A Limits (for each designated pilot cell) and Category B Limits (for every connected cell). Category A and

B limits are more restrictive than Category C limits; however, failure to meet Category A and/or B limits does not require an immediate declaration that a battery is not Operable. The Category A and B limits are the acceptance criteria for ITS SR 3.8.6.1 and ITS SR 3.8.6.2, respectively.

This change is needed because the failure to meet Category A (SR 3.8.6.1) and/or Category B (SR 3.8.6.1) limits is indicative of battery degradation that may require action even if the battery cell parameters are such that the battery could still perform its safety function. Therefore, if Category A and/or B limits are not met, then ITS 3.8.6 Required Action A.1 requires verification within 1 hour that Category C limits are met for pilot cells(i.e., battery is Operable). Additionally, Required Action A.2 requires accelerated periodic verification of battery cell parameters, and Required Action A.3 requires restoration to within Category A and B limits within 31 days.

This change is acceptable because the CTS acceptance criteria (established in procedures) used to establish battery Operability are maintained in ITS as Table 3.8.6-1 Category C Allowable Limits. Therefore, this change has no significant adverse impact on safety while requiring a more aggressive response to preliminary indications of battery deterioration.

LESS RESTRICTIVE

L.1 CTS 4.6.B.1 requires verification each month that the voltage of each battery cell is within acceptable limits. ITS SR 3.8.6.1 and ITS SR 3.8.6.2 maintain this requirement; however, the Frequency of this verification is maintained at every 31 days only for designated pilot cells and extended to every 92 days for all other cells. This change is acceptable because monthly verification of the voltage of each pilot cell (ITS SR 3.8.6.1) along with monthly verification of battery terminal voltage while on float (ITS SR 3.8.4.1) adequately demonstrates that the battery is capable of performing its safety function. Additionally, experience has shown that verification every 92 days of the voltage of all cells (ITS SR 3.8.6.1) is sufficient for timely identification of the deterioration of an individual cell. The

Frequency for SR 3.8.6.1 and SR 3.8.6.2 is consistent with the recommendations of IEEE-450-1995. Therefore, this change has no significant adverse impact on safety.

L.2 CTS 4.6.B.1 and CTS 4.6.B.2 require verification of the temperature of pilot cells monthly and of every fifth cell every 3 months, respectively. ITS SR 3.8.6.3 maintains the requirement to verify battery temperature of representative cells every 92 days (See ITS 3.8.6, DOC LA.2); however, the requirement to check the temperature of pilot cells every 31 days is deleted.

The purpose of ITS SR 3.8.6.3 is to prevent operating the battery at low temperatures that would inhibit or reduce battery capacity. The only reason for a low battery temperature is environmental conditions because battery faults (i.e., shorts) typically result in individual cells with higher temperatures. As described in IEEE-450-1995, high temperature cells and battery faults are identified by cell voltage differences. Therefore, eliminating the requirement to verify pilot cell temperatures every 31 days extends the Frequency from monthly to every 92 days for verification that battery cell temperature is above the specified minimum.

This change is acceptable because of the following: ITS SR 3.8.6.3 maintains the requirement to verify every 92 days that the temperature of representative cells is above the specified minimum; and, environmental conditions below the specified minimum operating level of the battery will be apparent during other battery SRs which are performed at the battery location. Therefore, this change has no significant impact on safety.

REMOVED DETAIL

LA.1 CTS 4.6.B.2 requires that each battery shall be subjected to a 24 hour equalizing charge every 3 months. ITS 3.8.6 does not include this requirement because an equalizing charge is routine maintenance. Therefore, this requirement is relocated to the Final Safety Analysis Report (FSAR) and implemented via plant procedures.

This change is acceptable because performance of the SRs required by ITS 3.8.4 and ITS 3.8.6 are sufficient to demonstrate the Operability of each battery. Performing an equalizing charge in accordance with the manufacturer's recommendations is routine maintenance that must be performed to satisfy the SRs required by ITS 3.8.4 and ITS 3.8.6 and is not a direct demonstration that a battery is capable of performing its intended safety function.

Changes to the FSAR can be made only in accordance with the requirements of 10 CFR 50.59. Therefore, this change is acceptable because there is no change to the existing requirements by the relocation of requirements to the FSAR and future changes to the FSAR will be controlled in accordance with 10 CFR 50.59.

This change is a less restrictive administrative change with no impact on safety because ITS 3.8.4 maintains the requirements to have batteries Operable and ITS 3.8.4 SRs and ITS 3.8.6 SRs maintain the requirements to perform periodic testing that demonstrates battery Operability. Therefore, requirements to perform equalizing charges on the batteries in accordance with the manufacturer's recommendations can be maintained in the FSAR with no significant adverse impact on safety.

LA.2 CTS 4.6.B.1 and CTS 4.6.B.2 require verification of battery cell temperature of pilot cells monthly and of every fifth cell every 3 months, respectively. ITS SR 3.8.6.3 maintains the same requirement (See ITS 3.8.6, DOC L.4) except that ITS SR 3.8.6.3 requires that temperature measurements are taken on representative cells. The requirements about what constitutes a representative cell (i.e., every fifth cell) is relocated to the Bases for ITS SR 3.8.6.3.

This change is acceptable because ITS SR 3.8.6.3 maintains the requirement to verify every 92 days that the temperature of representative cells is above the specified minimum. The purpose of ITS SR 3.8.6.3 is to prevent operating the battery at low temperatures that would inhibit or reduce battery capacity. The only reason for a low battery temperature is environmental conditions because battery faults (i.e., shorts) typically result in individual cells with higher temperatures. Since environmental temperatures are likely to affect all cells, the number and selection of representative cells is not a critical parameter for ensuring SR 3.8.6.3 is met. Therefore, relocating to the ITS Bases the CTS requirement that temperature verification must be performed on every fifth cell has no significant adverse impact on safety.

Maintaining this information in the Bases is acceptable because the requirements of 10 CFR 50.59, Changes, Tests and Experiments, and ITS 5.5.13, Technical Specifications (TS) Bases Control Program, are designed to assure that changes to the ITS Bases do not result in changes to the Technical Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight are maintained for the information being relocated out of the Technical Specifications.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.6:
"Battery Cell Parameters"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.6 - Battery Parameters

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed changes do not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   CTS 4.6.B.1 requires verification each month that the voltage of each battery cell is within acceptable limits. ITS SR 3.8.6.1 and ITS SR 3.8.6.2 maintain this requirement; however, the Frequency of this verification is extended to once per 92 days for all cells except designated pilot cells for which the Frequency is maintained at once per 31 days.

   This change will not result in a significant increase in the probability of an accident previously evaluated because the frequency of verification of station battery cell voltage has no affect on the initiators of any analyzed events. This change will not result in a significant increase in the consequences of an accident previously evaluated because monthly verification of the voltage of each pilot cell (ITS SR 3.8.6.1) along with monthly verification of battery terminal voltage while on float (ITS SR 3.8.4.1) adequately demonstrates that the battery is capable of performing its safety function. Additionally, industry experience has shown that verification every 92 days of the voltage of all cells (ITS SR 3.8.6.1) is sufficient for timely identification of the deterioration of an individual cell. The Frequency for SR 3.8.6.1 and SR 3.8.6.2 is consistent with the recommendations of IEEE-450-1995.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed changes will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal Plant operation are consistent with the current safety analysis assumptions because there is no change in the way battery terminal voltage is verified. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because monthly verification of the voltage of each pilot cell (ITS SR 3.8.6.1) along with monthly verification of battery terminal voltage while on float (ITS SR 3.8.4.1) adequately demonstrates that the battery is capable of performing its safety function. Additionally, experience has shown that verification every 92 days of the voltage of all cells (ITS SR 3.8.6.1) is sufficient for timely identification of the deterioration of an individual cell. The Frequency for SR 3.8.6.1 and SR 3.8.6.2 is consistent with the recommendations of IEEE-450-1995.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.6 - Battery Parameters

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed changes do not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   CTS requires verification of the temperature of pilot cells monthly and of every fifth cell every 3 months. ITS SR 3.8.6.3 maintains the requirement to verify battery temperature of representative cells every 92 days; however, the requirement to check the temperature of pilot cells every 31 days is deleted.

   This change will not result in a significant increase in the probability of an accident previously evaluated because the frequency for verification of the temperature of pilot cells has no affect on the initiators of any analyzed events. This change will not result in a significant increase in the consequences of an accident previously evaluated because this change does not increase the likelihood that batteries will be operated below the minimum temperature needed to assure battery capacity. The purpose of ITS SR 3.8.6.3 is to prevent operating the battery at low temperatures that would inhibit or reduce battery capacity. The only reason for a low battery temperature is environmental conditions because battery faults (i.e., shorts) typically result in individual cells with higher temperatures. As described in IEEE-450-1995, high temperature cells and battery faults are identified by cell voltage differences. Therefore, eliminating the requirement to verify pilot cell temperatures every 31 days extends the Frequency from monthly to every 92 days for verification that battery cell temperature is above the specified minimum. Additionally, ITS SR 3.8.6.3 maintains the requirement to verify every 92 days that the temperature of representative cells is above the specified minimum; and, environmental conditions below the specified minimum operating level of the battery will be apparent during other battery SRs which are performed at the battery location.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed changes will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal Plant operation are consistent with the current safety analysis assumptions because there is no change in the way battery cell temperature is verified in not changed. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because this change does not increase the likelihood that batteries will be operated below the minimum temperature needed to assure battery capacity. The purpose of ITS SR 3.8.6.3 is to prevent operating the battery at low temperatures that would inhibit or reduce battery capacity. The only reason for a low battery temperature is environmental conditions because battery faults (i.e., shorts) typically result in individual cells with higher temperatures. As described in IEEE 450-1995, high temperature cells and battery faults are identified by cell voltage differences. Therefore, eliminating the requirement to verify pilot cell temperatures every 31 days extends the Frequency from monthly to every 92 days for verification that battery cell temperature is above the specified minimum. Additionally, ITS SR 3.8.6.3 maintains the requirement to verify every 92 days that the temperature of representative cells is above the specified minimum; and, environmental conditions below the specified minimum operating level of the battery will be apparent during other battery SRs which are performed at the battery location.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.6:
"Battery Cell Parameters"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.6

This ITS Specification is based on NUREG-1431 Specification No. **3.8.6**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWOG-023	**115 R0**	BATTERY FLOAT CURRENT AND BATTERY INSPECTION PROGRAM	Rejected by TSTF	Not Incorporated	**N/A**
BWOG-033	**198 R0**	SPECIFICATION 3.8.6-UNLIMITED USE OF BATTERY CHARGING CURRENT IN LIEU OF SPECIFIC GRAVITY	NRC Review	Not Incorporated	**N/A**
BWOG-036	**201 R0**	OMIT BATTERY "CONDITIONAL EVALUATIONS" FROM SR 3.8.6.2	NRC Review	Incorporated. TSTF is CLB.	**T.3**
BWOG-037	**202 R0**	REVISE BATTERY SURVEILLANCE WEEKLY FREQUENCY	NRC Review	Incorporated. TSTF is CLB.	**T.1**
BWOG-038	**203 R0**	ADD BASES FOR 3.8.6 ACTIONS NOTE	NRC Review	Incorporated	**T.2**

3.8 ELECTRICAL POWER SYSTEMS

3.8.6 Battery Cell Parameters

31, 32, 33 and 34

<DOC M.1> LCO 3.8.6 Battery cell parameters for ~~Train A and Train B~~ batteries shall be within the limits of Table 3.8.6-1.

<DOC A.1> <DOC A.2> APPLICABILITY: When associated DC electrical power subsystems are required to be OPERABLE.

ACTIONS

<DOC A.3>

---NOTE---
Separate Condition entry is allowed for each battery.

CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC M.1> A. One or more batteries with one or more battery cell parameters not within Category A or B limits.	A.1 Verify pilot cell~~[s]~~ electrolyte level and float voltage meet Table 3.8.6-1 Category C limits.	1 hour
	AND	
	A.2 Verify battery cell parameters meet Table 3.8.6-1 Category C limits.	24 hours AND Once per 7 days thereafter
	AND	
	A.3 Restore battery cell parameters to Category A and B limits of Table 3.8.6-1.	31 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Required Action and associated Completion Time of Condition A not met. __OR__ One or more batteries with average electrolyte temperature of the representative cells < [60]°F. __OR__ One or more batteries with one or more battery cell parameters not within Category C values.	B.1 Declare associated battery inoperable.	Immediately

<Doc M.1>

not within limits of SR 3.8.6.3

<4.6.B.1>
<4.6.B.2>

DB.1

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
SR 3.8.6.1 Verify battery cell parameters meet Table 3.8.6-1 Category A limits.	7 days 31

<4.6.B.1>
<DOC L.1>
<Doc A.4>

T.1
CLB-1

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE		FREQUENCY
<4.6.B.2> <LA.1> <DOC L.1>	SR 3.8.6.2	Verify battery cell parameters meet Table 3.8.6-1 Category B limits.	92 days ~~AND~~ ~~Once within 24 hours after a battery discharge < [110] V~~ ~~AND~~ ~~Once within 24 hours after a battery overcharge > [150] V~~ T.3 CLB-1
<4.6.B.2> <LA.2> <DOC L.2>	SR 3.8.6.3	Verify average electrolyte temperature of representative cells is ≥ [60]°F. Insert: 3.8-32-01	92 days

DB.1

NUREG-1431 Markup Inserts
ITS SECTION 3.8.6 - Battery Parameters

INSERT 3.8-32-01:

within the following limits:

a. ≥ 60°F for batteries 31, 32 and 34; and

b. ≥ 35°F for battery 33.

<DOC A.4>
<DOC M.1>

Table 3.8.6-1 (page 1 of 1)
Battery Cell Parameters Requirements

PARAMETER	CATEGORY A: LIMITS FOR EACH DESIGNATED PILOT CELL	CATEGORY B: LIMITS FOR EACH CONNECTED CELL	CATEGORY C: ALLOWABLE LIMITS FOR EACH CONNECTED CELL
Electrolyte Level	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	> Minimum level indication mark, and ≤ ¼ inch above maximum level indication mark[a]	Above top of plates, and not overflowing
Float Voltage	≥ 2.13 V	≥ 2.13 V	> 2.07 V
Specific Gravity[b][c]	≥ ~~[1.200]~~ 1.205	≥ [1.195] AND Average of all connected cells > [1.205]	Not more than 0.020 below average of all connected cells AND Average of all connected cells ≥ [1.195]

<DOC A.4>
<DOC M.1>

(a) It is acceptable for the electrolyte level to temporarily increase above the specified maximum during equalizing charges provided it is not overflowing.

<DOC A.4>
<DOC L.2>

(b) Corrected for electrolyte temperature ~~and level. Level correction is not required, however, when battery charging is < [2] amps when on float charge.~~ X.1

~~(c) A battery charging current of < [2] amps when on float charge is acceptable for meeting specific gravity limits following a battery recharge, for a maximum of [7] days. When charging current is used to satisfy specific gravity requirements, specific gravity of each connected cell shall be measured prior to expiration of the [7] day allowance.~~ DB.2

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.6 Battery Cell Parameters

BASES

BACKGROUND

This LCO delineates the limits on electrolyte temperature, level, float voltage, and specific gravity for the DC power source batteries. A discussion of these batteries and their OPERABILITY requirements is provided in the Bases for LCO 3.8.4, "DC Sources—Operating," and LCO 3.8.5, "DC Sources—Shutdown."

14

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 1) ~~and Chapter [15] (Ref. 2)~~, assume Engineered Safety Feature systems are OPERABLE. The DC electrical power system provides normal and emergency DC electrical power for the diesel generators, ~~emergency auxiliaries,~~ and control and switching during all MODES of operation.

The OPERABILITY of the DC subsystems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining at least one train of DC sources OPERABLE during accident conditions, in the event of:

a. An assumed loss of all offsite AC power or all onsite AC power; and

b. A worst case single failure.

Battery cell parameters satisfy the Criterion 3 of ~~the NRC Policy Statement~~. 10 CFR 50.36

LCO

Battery cell parameters must remain within acceptable limits to ensure availability of the required DC power to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. Electrolyte limits are conservatively established, allowing continued DC electrical system function even with Category A and B limits not met.

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.6 - Battery Parameters

INSERT B 3.8-65-01:

The ACTIONS Table is modified by a Note which indicates that separate Condition entry is allowed for each battery. This is acceptable because the Required Actions for each Condition provide appropriate compensatory actions for each inoperable DC subsystem. Complying with the Required Actions for one inoperable DC subsystem may allow for continued operation, and subsequent inoperable DC subsystem(s) are governed by separate Condition entry and application of associated Required Actions.

BASES (continued)

APPLICABILITY

The battery cell parameters are required solely for the support of the associated DC electrical power subsystems. Therefore, battery electrolyte is only required when the DC power source is required to be OPERABLE. Refer to the Applicability discussion in Bases for LCO 3.8.4 and LCO 3.8.5.

Insert: B 3.8-65-01

T.2

ACTIONS

A.1, A.2, and A.3

With one or more cells in one or more batteries not within limits (i.e., Category A limits not met, Category B limits not met, or Category A and B limits not met) but within the Category C limits specified in Table 3.8.6-1 in the accompanying LCO, the battery is degraded but there is still sufficient capacity to perform the intended function. Therefore, the affected battery is not required to be considered inoperable solely as a result of Category A or B limits not met and operation is permitted for a limited period.

The pilot cell electrolyte level and float voltage are required to be verified to meet the Category C limits within 1 hour (Required Action A.1). This check will provide a quick indication of the status of the remainder of the battery cells. One hour provides time to inspect the electrolyte level and to confirm the float voltage of the pilot cells. One hour is considered a reasonable amount of time to perform the required verification.

Verification that the Category C limits are met (Required Action A.2) provides assurance that during the time needed to restore the parameters to the Category A and B limits, the battery is still capable of performing its intended function. A period of 24 hours is allowed to complete the initial verification because specific gravity measurements must be obtained for each connected cell. Taking into consideration both the time required to perform the required verification and the assurance that the battery cell parameters are not severely degraded, this time is considered reasonable. The verification is repeated at 7 day intervals until the parameters are restored to Category A or B limits. This periodic verification is ~~consistent with~~ more frequent than the normal Frequency of pilot cell Surveillances because of the degraded condition of the battery.

(continued)

BASES

ACTIONS

A.1, A.2, and A.3 (continued)

Continued operation is only permitted for 31 days before battery cell parameters must be restored to within Category A and B limits. With the consideration that, while battery capacity is degraded, sufficient capacity exists to perform the intended function and to allow time to fully restore the battery cell parameters to normal limits, this time is acceptable prior to declaring the battery inoperable.

B.1

With one or more batteries with one or more battery cell parameters outside the Category C limit for any connected cell, sufficient capacity to supply the maximum expected load requirement is not assured and the corresponding DC electrical power subsystem must be declared inoperable. Additionally, other potentially extreme conditions, such as not completing the Required Actions of Condition A within the required Completion Time or average electrolyte temperature of representative cells falling below 60°F are also cause for immediately declaring the associated DC electrical power subsystem inoperable.

outside the limits of SR 3.8.6.3

SURVEILLANCE REQUIREMENTS

SR 3.8.6.1

This SR verifies that Category A battery cell parameters are consistent with IEEE-450 (Ref. 3), which recommends regular battery inspections (at least one per month) including voltage, specific gravity, and electrolyte temperature of pilot cells.

2

SR 3.8.6.2

2

The quarterly inspection of specific gravity and voltage is consistent with IEEE-450 (Ref. 3). ~~In addition, within 24 hours of a battery discharge < [110] V or a battery overcharge > [150] V, the battery must be demonstrated to meet Category B limits. Transients, such as motor starting transients, which may momentarily cause battery voltage to drop to ≤ [110] V, do not constitute a battery discharge~~

Insert: B 3.8-66-01

(continued)

INSERT B 3.8-66-01:

which recommends augmentation of the battery inspections conducted in SR 3.8.6.1 at least once per quarter by checking the level, voltage and specific gravity of each cell, and the temperature of pilot cells.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.6.2 (continued)

~~provided the battery terminal voltage and float current return to pre-transient values. This inspection is also consistent with IEEE-450 (Ref. 3), which recommends special inspections following a severe discharge or overcharge, to ensure that no significant degradation of the battery occurs as a consequence of such discharge or overcharge.~~ T.3

SR 3.8.6.3

within specified limits

(i.e, every fifth cell)

This Surveillance verification that the average temperature of representative cells is ~~≥ 60°F~~, is consistent with a recommendation of IEEE-450 (Ref. 3), ~~that states that the~~ temperature of electrolytes in representative cells should be determined on a quarterly basis. 2

Lower than normal temperatures act to inhibit or reduce battery capacity. This SR ensures that the operating temperatures remain within an acceptable operating range. This limit is based on manufacturer recommendations.

Table 3.8.6-1

This table delineates the limits on electrolyte level, float voltage, and specific gravity for three different categories. The meaning of each category is discussed below.

Category A defines the normal parameter limit for each designated pilot cell in each battery. The cells selected as pilot cells are those whose temperature, voltage, and electrolyte specific gravity approximate the state of charge of the entire battery.

The Category A limits specified for electrolyte level are based on manufacturer recommendations and are consistent with the guidance in IEEE-450 (Ref. 3), with the extra ¼ inch allowance above the high water level indication for operating margin to account for temperatures and charge effects. In addition to this allowance, footnote a to Table 3.8.6-1 permits the electrolyte level to be above the specified maximum level during equalizing charge, provided it is not overflowing. These limits ensure that the plates 2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

suffer no physical damage, and that adequate electron transfer capability is maintained in the event of transient conditions. IEEE-450 (Ref. 3) recommends that electrolyte level readings should be made only after the battery has been at float charge for at least 72 hours. 2

2

The Category A limit specified for float voltage is ≥ 2.13 V per cell. This value is based on the recommendations of IEEE-450 (Ref. 3), which states that prolonged operation of cells < 2.13 V can reduce the life expectancy of cells.

1.205

The Category A limit specified for specific gravity for each pilot cell is ≥ [1.200] (0.015 below the manufacturer fully charged nominal specific gravity or a battery charging current that had stabilized at a low value). This value is characteristic of a charged cell with adequate capacity. According to IEEE-450 (Ref. 3), the specific gravity readings are based on a temperature of 77°F (25°C). 2

The specific gravity readings are corrected for actual electrolyte temperature and level. For each 3°F (1.67°C) above 77°F (25°C), 1 point (0.001) is added to the reading; 1 point is subtracted for each 3°F below 77°F. The specific gravity of the electrolyte in a cell increases with a loss of water due to electrolysis or evaporation.

as long as level is maintained within the required range

Category B defines the normal parameter limits for each connected cell. The term "connected cell" excludes any battery cell that may be jumpered out.

The Category B limits specified for electrolyte level and float voltage are the same as those specified for Category A and have been discussed above. The Category B limit specified for specific gravity for each connected cell is ≥ [1.195] (0.020 below the manufacturer fully charged, nominal specific gravity) with the average of all connected cells > [1.205] (0.010 below the manufacturer fully charged, nominal specific gravity). These values are based on manufacturer's recommendations. The minimum specific gravity value required for each cell ensures that the effects of a highly charged or newly installed cell will not mask overall degradation of the battery.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

Category C defines the limits for each connected cell. These values, although reduced, provide assurance that sufficient capacity exists to perform the intended function and maintain a margin of safety. When any battery parameter is outside the Category C limits, the assurance of sufficient capacity described above no longer exists, and the battery must be declared inoperable.

The Category C limits specified for electrolyte level (above the top of the plates and not overflowing) ensure that the plates suffer no physical damage and maintain adequate electron transfer capability. The Category C limits for float voltage is based on IEEE-450 (Ref. 3), which states that a cell voltage of 2.07 V or below, under float conditions and not caused by elevated temperature of the cell, indicates internal cell problems and may require cell replacement. 2

The Category C limit of average specific gravity ≥ 1.195 is based on manufacturer recommendations (0.020 below the manufacturer recommended fully charged, nominal specific gravity). In addition to that limit, it is required that the specific gravity for each connected cell must be no less than 0.020 below the average of all connected cells. This limit ensures that the effect of a highly charged or new cell does not mask overall degradation of the battery.

~~The footnotes to Table 3.8.6-1 are applicable to Category A, B, and C specific gravity. Footnote (b) to Table 3.8.6-1 requires the above mentioned correction for electrolyte level and temperature, with the exception that level correction is not required when battery charging current is ≤ [2] amps on float charge. This current provides, in general, an indication of overall battery condition.~~

~~Because of specific gravity gradients that are produced during the recharging process, delays of several days may occur while waiting for the specific gravity to stabilize. A stabilized charger current is an acceptable alternative to specific gravity measurement for determining the state of charge. This phenomenon is discussed in IEEE-450 (Ref. 3). Footnote (c) to Table 3.8.6-1 allows the float charge current to be used as an alternate to specific gravity for~~ DB.2

(continued)

BASES

SURVEILLANCE REQUIREMENTS

Table 3.8.6-1 (continued)

up to [7] days following a battery recharge. Within [7] days, each connected cell's specific gravity must be measured to confirm the state of charge. Following a minor battery recharge (such as equalizing charge that does not follow a deep discharge) specific gravity gradients are not significant, and confirming measurements may be made in less than [7] days.

DB.2

[~~Reviewer's Note:~~ The value of [2] amps used in footnote ~~(b) and~~ (c) is the nominal value for float current established by the battery vendor as representing a fully charged battery with an allowance for overall battery condition.]

REFERENCES

1. FSAR, Chapter ~~[6]~~. 14

~~2. FSAR, Chapter [15].~~

2 ~~3~~. IEEE-450-~~[1980]~~. 1995

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.6: "Battery Cell Parameters"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.6 - Battery Cell Parameters

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.8.6, was modified as needed to reflect the IP3 design and current licensing basis. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DB.2 NUREG-1431, Revision 1, LCO 3.8.6, Table 3.8.6-1, footnote (c), allows a stabilized charger current to be used as alternative to specific gravity measurement for determining the state of charge for up to 7 days following a battery recharge. This option is not included in the IP3 ITS because IP3 does not have the capability for monitoring charger current.

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.6 - Battery Cell Parameters

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

T.1 This change incorporates Generic Change TSTF-202, Rev.0 (BWOG-037) which extends battery surveillance intervals for routine battery status verifications. Although this generic change to NUREG 1431, Rev. 1, has not been approved by the NRC, it was incorporated because it is consistent with the current licensing basis.

T.2 This change incorporates Generic Change TSTF-203, Rev.0 (BWOG-038) which adds Bases to describe the existing Note to the Actions allowing separate condition entry for each battery. Although this generic change to NUREG 1431, Rev. 1, has not been approved by the NRC, it is an administrative change to the Bases that explains an existing LCO Note.

T.3 This change incorporates Generic Change TSTF-201, Rev.0 (BWOG-036) which omits "conditional evaluations" from SR 3.8.6.2. Although this generic change to NUREG 1431, Rev. 1, has not been approved by the NRC, it was incorporated because it is consistent with the current licensing basis.

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

X.1 NUREG-1431, Revision 1, LCO 3.8.6, Table 3.8.6-1, footnote (b), requires that specific gravity measurements be corrected for level and temperature except when the battery is on float charge. IP3 ITS LCO 3.8.6, Table 3.8.6-1, footnote (b), does not require level correction for specific gravity regardless of the status of the float charge. This change is needed and acceptable based on the recommendations of the battery manufacturer and is specifically permitted by IEEE-450, 1995, Annex A.3. IEEE-450, 1995, Annex A.3, states that "if the electrolyte level is between the high and low level marks and the temperature corrected specific gravity of the electrolyte is within the manufacturer's specific gravity range, it is not necessary to correct the specific gravity of the battery for electrolyte level. This change has no impact on safety because, as determined by the manufacturer with the concurrence of IEEE 450, battery specific gravities that are not corrected for level provide an adequate indication of the state of charge of the battery.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.7:
"Inverters - Operating"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

ACTIONS (continued)

3.8 ELECTRICAL POWER SYSTEMS

3.8.7 Inverters – Operating

LCO 3.8.7 Inverters 31, 32, 33 and 34 shall be OPERABLE; and
Two constant voltage transformers (CVTs) capable of supplying 120 V AC vital instrument bus (VIB) 34 shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

-- NOTE --
Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any required bus de-energized.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One required CVT inoperable.	A.1 Restore CVT to OPERABLE status.	30 days
B. Two required CVTs inoperable.	B.1 Restore one CVT to OPERABLE status.	7 days

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One inverter inoperable.	C.1	---------NOTE--------- Only applicable to feature(s) that require power to perform the required safety function. --------------------- Declare required feature(s) supported by associated inverter inoperable when the required redundant feature(s) is inoperable.	2 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)
	<u>AND</u>		
	C.2	Restore inverter to OPERABLE status.	7 days
D. Required Action and associated Completion Time not met.	D.1	Be in MODE 3.	6 hours
	<u>AND</u>		
	D.2	Be in MODE 5.	36 hours

ACTIONS (continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage and alignment to required 120V AC vital buses.	7 days
SR 3.8.7.2	Verify manual transfer of the AC power source for VIB 34 from inverter 34 to each required CVT.	24 months

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Inverters – Operating

BASES

BACKGROUND

The inverters are the preferred source of power for the 120 V AC vital instrument buses because of the stability and reliability they achieve. The function of the inverter is to provide AC electrical power to the vital instrument buses.

There are four 120 volt AC vital instrument buses (VIBs), Nos. 31, 32, 33 and 34. The preferred power supplies to these buses are static inverters, Nos. 31, 32, 33 and 34, which are in turn supplied from separate 125 volt DC buses, Nos. 31, 32, 33 and 34. Each of the four 125 volt DC buses is powered by a battery and associated battery charger.

Inverters 31, 32, and 33 each have an associated backup 480 V/120 V constant voltage transformer (CVT). Each of these inverters has a manual bypass switch that causes the associated VIB to receive AC power from plant AC sources via the backup CVT instead of the DC powered inverter. Inverters 31, 32, and 33 will transfer to the backup power supply (i.e., the associated CVT) automatically in the event of an inverter failure. However, the backup CVTs for inverters 31, 32, and 33 are supplied from non-safety related buses that are stripped and not automatically re-connected following a safety injection (SI) signal or a loss of offsite power (LOOP). Therefore, operator action is required to re-energize VIBs 31, 32, or 33 following an SI or LOOP if the associated inverter is being bypassed or fails during the event. Additionally, the potential exists that the bus powering the backup CVT may not be available following an event.

Inverter 34 has two associated backup 480 V/120 V constant voltage transformers (CVTs). The CVTs associated with inverter 34 are powered from separate safeguards power trains using buses that are automatically re-energized following an SI or LOOP. Inverter 34 can be manually bypassed such that either of the associated CVTs can be used to power VIB 34. Inverter 34 will not automatically transfer to a backup power supply (i.e., the associated CVTs) in the event of an inverter failure. Manual

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BASES

BACKGROUND (Continued)

operator action is also needed to transfer between the CVTs capable of powering VIB 34.

Using a separate battery and inverter to power each VIB ensures a continuous source of power for the instrumentation and controls of the engineered safety features (ESF) systems and the reactor protection system (RPS) during postulated events including the loss of offsite power. This is consistent with requirements described in Generic Letter 91-011 (Ref. 1). Continuity of power to the VIBs is assured because each of the four station batteries is sized to carry its expected shutdown loads for a period of 2 hours (Ref. 2). Additionally, four battery chargers have been sized to recharge these batteries while carrying the normal DC subsystem load (Ref. 2).

Note that battery charger 34 is not required by LCO 3.8.4. This is acceptable because VIB 34 can be powered by either of the two CVTs supplied by separate safeguard power trains if battery charger 34 is not available following an event. Specific details on inverters and their operating characteristics are found in the FSAR, Chapter 8 (Ref. 2).

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 3), assumes Engineered Safety Feature systems are OPERABLE. The inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the RPS and ESFAS instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. This includes maintaining required 120 V AC vital instrument buses OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite AC electrical power or all onsite AC electrical power; and

b. A worst case single failure.

The 2 CVTs capable of supplying VIB 34 are needed to ensure the availability of power to VIB 34 following the depletion of battery 34. Although battery charger 34 would normally be used to supply VIB 34 via inverter 34, battery charger 34 is not safety related and may not be available after a design basis event.

Inverters are a part of the distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36.

LCO

The inverters (and CVTs associated with VIB 34) ensure the availability of AC electrical power for the systems instrumentation required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.

Maintaining the required inverters (and CVTs associated with VIB 34) OPERABLE ensures that the redundancy incorporated into the design of the RPS and ESFAS instrumentation and controls is maintained. The four inverters ensure an uninterruptible supply of AC electrical power to the AC vital buses even if the 480 V safety buses are de-energized.

Operable inverters require the associated 120 V AC vital instrument bus to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a 125 VDC station battery.

BASES

APPLICABILITY

The inverters are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters – Shutdown."

ACTIONS

With an inverter inoperable, its associated VIB becomes inoperable until it is re-energized from its associated backup CVT. For this reason a Note to the Actions requires entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating." This ensures that the vital bus is re-energized within 2 hours.

A.1

With one of the two CVTs capable of supplying VIB 34 not OPERABLE, VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours following the initiation of any event. After battery 34 is depleted, the second CVT capable of powering VIB 34 will maintain power to VIB 34 even if non-safety related battery charger 34 is not available. A 30 day Completion Time to restore both CVTs to OPERABLE is needed because a failure of the safeguards power train supporting the remaining CVT would result in the loss of two VIBs (i.e, VIB 34 and the VIB associated with the failed safeguards power train) but only after the associated batteries are depleted. A 30 day Completion Time to restore both CVTs to OPERABLE is acceptable because of the low probability of an accident in conjunction with the loss of a specific safeguards power train.

BASES

ACTIONS (continued)

B.1

With both of the CVTs capable of supplying VIB 34 not OPERABLE, VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours following the initiation of any event. After battery 34 is depleted, inverter 34 may not be available to power VIB 34 because battery charger 34 is not safety related and is powered from a non-safety related bus. Therefore, at least one CVT must be restored within 7 days.

A 7 day Completion Time to restore at least one of the two CVTs to OPERABLE is needed and is acceptable because of the following: VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours; non-safety related battery charger 34 may be available following an event; and, the low probability of an event during this 7 day period.

C.1 and C.2

With an inverter inoperable, its associated VIB must be powered from its associated backup CVT. However, the backup CVTs for inverters 31, 32, and 33 are supplied from non-safety related buses that are stripped and not automatically re-connected following a SI signal or a LOOP. Both backup CVTs for inverter 34 are powered from safety related buses that may be de-energized until the associated safeguards power train is energized (i.e., diesel generator starts). Therefore, a VIB powered from a backup CVT when the associated inverter is inoperable will be and could remain de-energized following a SI signal or a LOOP.

If a VIB will be de-energized as a result of SI signal or LOOP, a loss of safety function could exist for any VIB powered function that requires power to perform the required safety function (e.g., automatic actuation of core spray, Regulatory Guide 1.97 instrumentation, etc.) if the redundant required feature is inoperable. Therefore, Required Action C.1 requires declaring required feature(s) supported by associated inverter inoperable when its required redundant feature(s) is inoperable. As specified in the associated Note, this requirement only applies

BASES

ACTIONS

C.1 and C.2 (continued)

to feature(s) that require power to perform the required safety function. The 2 hour Completion Time is consistent with LCO 3.8.9, AC Distribution System - Operating, requirements for an inoperable VIB.

With an inverter inoperable and its associated VIB powered from its associated backup CVT, there is increased potential for inadvertent actuation for ESFAS or RPS functions, especially if redundant channels are inoperable and in the tripped condition. This is because these de-energize to actuate functions are relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the VIBs is the preferred source for powering instrumentation trip setpoint devices. Therefore, only one inverter may be inoperable at one time and an inoperable inverter must be restored to OPERABLE within 7 days. The 7 day Completion Time is needed because it ensures that the VIBs are powered from the uninterruptible inverter source. The 7 day Completion Time is acceptable because Required Action C.1 ensures that an inoperable inverter does not result in a loss of any safety function. The 7 day Completion Time is consistent with commitments made in response to Generic Letter 91-011 (Ref. 1).

D.1 and D.2

If the inoperable devices or components cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

SR 3.8.7.2

This Surveillance verifies that the power supply to VIB 34 can be manually transferred from the inverter to each of the required CVTs. This SR ensures that power to VIB 34 can be maintained after the depletion of battery 34. The 24 month Frequency takes into account that either of the CVTs is capable of performing this safety function and the demonstrated reliability of this equipment.

REFERENCES

1. Generic Letter 91-011, Resolution of Generic Issues 48, "LCOs for Class 1E Vital Instrument Buses," and 49, "Interlocks and LCOS for Class 1E Tie Breakers" pursuant to 10 CFR 50.54(f).

2. FSAR, Chapter 8.

3. FSAR, Chapter 14.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.7:
"Inverters - Operating"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-1	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-2	132 TSCR 98-044	132 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A

(A.1)

3.7 AUXILIARY ELECTRICAL SYSTEMS

(A.2)

~~Applicability~~

~~Applies to the availability of electrical power for the operation of plant auxiliaries.~~

~~Objective~~

~~To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation, and (2) to provide for the continuing availability of engineered safety features.~~

Specification

Mode 1, 2, 3 and 4 (A.1)

LCO 3.8.7 Applicability

A. The reactor shall not be brought above the cold shutdown condition unless the following requirements are met:

SEE ITS 3.8.1

1. Two physically independent transmission circuits to Buchanan Substation capable of supplying engineered safeguards loads.

2. 6.9 KV buses 5 and 6 energized from either 138 Kv feeder 95331 or 95332.

3. Either 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 KV power.

SEE ITS 3.8.9

4. The four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A, and between buses 3A and 6A, opened.

SEE ITS 3.8.1 3.8.3

5. Three diesel generators operable with a minimum onsite supply of 6671 gallons of fuel in each of the three individual underground storage tanks. In addition to the underground storage tanks, 30,026 gallons of fuel compatible for operation with the diesels shall be available onsite or at the Buchanan substation. This 30,026 gallon reserve is for Indian Point Unit No. 3 usage only

Add Note to LCO 3.8.7 Actions — A.3

SEE ITS 3.8.3 — and is in addition to the fuel requirements for other nuclear units on the site.

SEE ITS 3.8.4 — 6. Three batteries plus three chargers and the D.C. distribution systems operable.

LCO 3.8.7 — 7. No more than one 120 volt A.C. Instrument Bus on the backup power supply. — M.1 M.2

B. The requirements of 3.7.A may be modified to allow any one of the following power supplies to be inoperable at any one time.

1. One diesel or any diesel fuel oil system or a diesel and its associated fuel oil system may be inoperable for up to 72 hours provided the 138 KV and the 13.8 KV sources of offsite power are available, and the engineered safety features associated with the remaining diesel generator buses are operable. If the inoperable diesel generator became inoperable due to any cause other than preplanned maintenance or testing, then within 24 hours, either:

   a. Determine by evaluation, that the remaining operable diesel generators are not inoperable due to common-cause failure.

   <u>OR</u>

   b. Verify by testing, that the remaining diesel generators are operable.

2. The 138 KV or the 13.8 KV sources of power may be inoperable for 48 hours provided the three diesel generators are operable. This operation may be extended beyond 48 hours provided the failure is reported to the NRC within the 48 hour period with an outline of the plans for restoration of offsite power and NRC approval is granted.

Add LCO 3.8.7 — M.1

Add Conditions A, B and C and associated Req. Acts — M.2

Add SR 3.8.7.1 — M.4

Add SR 3.8.7.2 — M.5

TSCR 98-044

C. If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

LCO 3.8.7

Req. Act D.1, D.2

~~1.~~ If the reactor is critical, it shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours.

M.3

~~2.~~ ~~If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.~~

SEE ITS 3.8.1

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

SEE ITS 3.8.2

F. As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:

1. One transmission circuit to Buchanan Substation, except for testing.

2. Either:

   a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,

   or

   b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

SEE ITS 3.8.10

3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

Indian Point 3
Improved Technical Specifications (ITS)
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Technical Specification 3.8.7: "Inverters - Operating"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.7 Inverters - Operating

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

A.3 ITS 3.8.7 Actions are modified by a note requiring the entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating," if an inoperable inverter results in a 120 volt A.C. Instrument Bus being de-energized (i.e., neither the inverter nor backup 480 V/120 V constant voltage transformer is supplying the bus). This note is needed because it allows LCO 3.8.7 to provide requirements for the loss of an inverter without regard to whether a bus is de-energized. LCO 3.8.9 provides the appropriate restrictions for a de-energized train and ensures that the vital bus is re-energized within 2 hours. This is an administrative change with no impact on safety because it is a more explicit statement of an existing requirement.

MORE RESTRICTIVE

M.1 CTS 3.7.A does not include any specific requirements for inverters that support the 120 volt A.C. Instrument Buses except CTS 3.7.A.7 which permits "No more than one 120 volt A.C. Instrument Bus on the backup power supply." In conjunction with CTS 3.7.A.6, which requires three batteries plus three chargers when above the cold shutdown, CTS 3.7.A.7 is interpreted as requiring three of the four inverters Operable with one of the three required inverters allowed to be inoperable indefinitely. (Note that administrative controls establish requirements for the fourth inverter, inverter 34, consistent with commitments made in Response to Generic letter 91-011.)

Under the same conditions, ITS LCO 3.8.7 requires that all four inverters and that the 2 constant voltage transformers (CVTs) capable of supplying 120 V AC vital instrument bus (VIB) 34 are OPERABLE.

This change adds Technical Specification requirements for inverter 34 (See ITS LCO 3.8.5, DOC M.1 for supporting battery 34 and charger 34) which was installed in 1979 (along with associated battery 34 and charger 34) to provide a more stable and reliable power supply to 120 V AC vital instrument bus 34 that supports RPS and ESFAS channel III. Additionally, this change adds Technical Specification requirements for the 2 CVTs capable of supplying VIB 34.

This change is needed to ensure Technical Specifications are consistent with FSAR requirements, to ensure a stable and reliable power supply for RPS and ESFAS channel III, and to incorporate commitments made in response to Generic Letter 91-011, "Resolution of Generic Issues 48, "LCOs for Class 1E Vital Instrument Buses," AND 49, "Interlocks and LCOs for Class 1E Tie Breakers" Pursuant to 10 CFR 50.54(f)." This change is acceptable because it is consistent with FSAR requirements and commitments made in response to GL 91-011. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases.

These more restrictive changes are acceptable because they do not introduce any operation that is un-analyzed while requiring more conservative requirements for limiting the time instrumentation and controls for RPS and ESFAS are not powered from the preferred un-interruptible power source. This change has no negative impact on safety.

M.2 CTS 3.7.A.7 is interpreted as requiring three of the four inverters Operable with one of the three required inverters allowed to be inoperable indefinitely. Otherwise, CTS 3.7.C requires a plant shutdown. Under the same conditions, ITS LCO 3.8.7 requires that all four inverters and the 2 CVTs capable of supplying VIB 34 are OPERABLE (See ITS 3.8.7, DOC M.1). This change establishes Conditions A, B and C and the associated Required Actions when any one of the four inverters and or one or both CVTs associated with VIB 34 are inoperable. This is a more restrictive change because CTS 3.7.A.7 allows operation to continue indefinitely with two of the four inverters inoperable and CTS 3.7.A does not place any restrictions on operation of the 2 CVTs capable of supplying VIB 34. A detailed description and justification for LCO 3.8.7 Conditions A, B and C and the associated Required Actions, is incorporated into the IP3 ITS Bases.

These more restrictive changes are acceptable because they do not introduce any operation that is un-analyzed while requiring more conservative requirements for allowable out of service times for inverters and the CVTs associated with VIB 34. This change has no negative impact on safety.

M.3 CTS 3.7.C establishes the Actions required if the electrical distribution system (including inverters) is not restored to meet CTS requirements within specified completion times when above cold shutdown

(Mode 5). CTS 3.7.C.1 specifies that, if the reactor is critical when requirements are not met, then the reactor shall be in hot shutdown (Mode 3) within 6 hours and cold shutdown (Mode 5) within the following 30 hours. However, if the reactor is subcritical when requirements are not met, CTS 3.7.C.2 requires only that reactor coolant system temperature and pressure not be increased more than 25°F and 100 psi, respectively, over existing values with no requirement to continue to cold shutdown (Mode 5).

Under the same conditions, ITS 3.8.7, Required Actions B.1 and B.2, require that the reactor be in Mode 3 in 6 hours and Mode 5 in 36 hours regardless of the status of the unit when the Condition is identified. The allowance provided in CTS 3.7.C.2 is deleted. This change is needed to eliminate the ambiguity created by CTS 3.7.C.2 when performing a reactor shutdown and cooldown required by CTS 3.7.C.1 and to ensure that the plant is placed outside the LCO Applicability when the LCO requirements are not met. This change is acceptable because placing the plant outside the LCO Applicability when LCO requirements are not met is conservative and there is no change in the CTS 3.7.C.1 requirement. This change has no significant adverse impact on safety.

M.4 CTS 3.7 and CTS 4.6 do not establish any specific requirements for testing inverters that supply the four 120 volt AC instrument vital buses from associated 125 volt DC buses. ITS SR 3.8.7.1 establishes a new requirement for periodic verification that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage output ensures that the required power is available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions. This more restrictive change is acceptable because it does not introduce any operation that is un-analyzed while requiring a more conservative requirements for verification of the Operability of the un-interruptible power sources for instrumentation and controls for RPS and ESFAS. This change has no negative impact on safety.

M.5 CTS 3.7 and CTS 4.6 do not establish any specific requirements for Operability or testing of the CVTs associated with VIB 34. ITS LCO 3.8.7 adds new requirements for the Operability of the 2 CVTs associated with VIB 34 (See ITS 3.8.7, DOC M.1). In conjunction with this change, ITS SR 3.8.7.2 is added to verify Operability of these CVTs by demonstrating that the power supply to VIB 34 can be manually transferred from the inverter to each of the required CVTs. This SR ensures that power to VIB 34 can be maintained after the depletion of battery 34. The 24 month Frequency takes into account that either of the CVTs is capable of performing this safety function and the demonstrated reliability of this equipment.

This more restrictive change is acceptable because it does not introduce any operation that is un-analyzed while requiring a more conservative requirements for verification of the Operability of the CVTs associated with VIB 34. This change has no negative impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
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Technical Specification 3.8.7:
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PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.7 Inverters - Operating

LESS RESTRICTIVE
<u>("L.1" Labeled Comments/Discussions)</u>

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS)
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Technical Specification 3.8.7:
"Inverters - Operating"

PART 5:

NUREG-1431
Annotated to show differences between
NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.7

This ITS Specification is based on NUREG-1431 Specification No. **3.8.7**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
N/A	N/A	NO GENERIC CHANGES ARE POSTED AGAINST THIS SPECIFICATION.	Not Applicable	Not Applicable	N/A

<CTS> 3.8 ELECTRICAL POWER SYSTEMS

<3.7.A.7> 3.8.7 Inverters—Operating

Insert: 3.8-34-01

DB.1

CLB.1

<DOC M.1> LCO 3.8.7 ~~The required Train A and Train B inverters shall be OPERABLE.~~

~~------------------------------NOTE------------------------------~~
~~[One/two] inverter[s] may be disconnected from [its/their] associated DC bus for ≤ 24 hours to perform an equalizing charge on [its/their] associated [common] battery, provided:~~

~~a. The associated AC vital bus(es) [is/are] energized from [its/their] [Class 1E constant voltage source transformers] [inverter using internal AC source]; and~~

~~b. All other AC vital buses are energized from their associated OPERABLE inverters.~~
~~---~~

<3.7.A> APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
~~A. One [required] inverter inoperable.~~	A.1 ---------NOTE-------- Enter applicable Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating" with any vital required bus de-energized. -------------------------- Restore inverter to OPERABLE status.	24 hours

PA.1

Insert: 3.8-34-02

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.7 Inverters - Operating

INSERT: 3.8-34-01:

DB.1
CLB.1

Inverters 31, 32, 33 and 34 shall be OPERABLE: and

Two constant voltage transformers (CVTs) capable of supplying 120 V AC vital instrument bus (VIB) 34 shall be OPERABLE.

INSERT: 3.8-34-02:

<DOC M.2>	A. One required CVT inoperable.	A.1 Restore CVT to OPERABLE status.	30 days
<DOC M.2>	B. Two required CVTs inoperable.	B.1 Restore one CVT to OPERABLE status.	7 days
<DOC M.2>	C. One inverter inoperable.	C.1 --------NOTE-------- Only applicable to feature(s) that require power to perform the required safety function. -------------------- Declare required feature(s) supported by associated inverter inoperable when the required redundant feature(s) is inoperable.	2 hours from discovery of Condition C concurrent with inoperability of redundant required feature(s)
		AND	
		C.2 Restore inverter to OPERABLE status.	7 days

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D ~~B~~. Required Action and associated Completion Time not met.	D ~~B~~.1 Be in MODE 3.	6 hours
	AND	
	D ~~B~~.2 Be in MODE 5.	36 hours

<3.7.C.1>
<Doc M.3>

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.7.1	Verify correct inverter voltage, 120 V ~~frequency,~~ and alignment to required AC instrument vital buses.	7 days

<Doc M.4>

Insert: 3.8-35-01

NUREG-1431 Markup Inserts
ITS SECTION 3.8.7 Inverters - Operating

INSERT: 3.8-35-01:

<DOC M.5>	SR 3.8.7.2	Verify manual transfer of the AC power source for VIB 34 from inverter 34 to each required CVT.	24 months

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.7 Inverters—Operating

BASES

BACKGROUND

120 V

instrument

The inverters are the preferred source of power ~~for the AC~~ vital buses because of the stability and reliability they achieve. The function of the inverter is to provide AC electrical power to the vital buses. ~~The inverters can be powered from an internal AC source/rectifier or from the station battery. The station battery provides an uninterruptible power source for the instrumentation and controls for the Reactor Protective System (RPS) and the Engineered Safety Feature Actuation System (ESFAS).~~ Specific details on inverters and their operating characteristics are found in the FSAR, Chapter ~~[8]~~ (Ref. 1).

9

Insert: B3.8-71-01

2

APPLICABLE SAFETY ANALYSES

14

3

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 2) ~~and Chapter [15] (Ref. 3)~~, assume Engineered Safety Feature systems are OPERABLE. The inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the RPS and ESFAS instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

A

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and is based on meeting the design basis of the unit. This includes maintaining required AC vital buses OPERABLE during accident conditions in the event of:

120 V

instrument

a. An assumed loss of all offsite AC electrical power or all onsite AC electrical power; and

b. A worst case single failure.

Insert: B 3.8-71-02

Inverters are a part of the distribution system and, as such, satisfy Criterion 3 of ~~the NRC Policy Statement~~.

10 CFR 50.36

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.7 Inverters - Operating

INSERT: B 3.8-71-01:

There are four 120 volt AC vital instrument buses (VIBs), Nos. 31, 32, 33 and 34. The preferred power supplies to these buses are static inverters, Nos. 31, 32, 33 and 34, which are in turn supplied from separate 125 volt DC buses, Nos. 31, 32, 33 and 34. Each of the four 125 volt DC buses is powered by a battery and associated battery charger.

Inverters 31, 32, and 33 each have an associated backup 480 V/120 V constant voltage transformer (CVT). Each of these inverters has a manual bypass switch that causes the associated VIB to receive AC power from plant AC sources via the backup CVT instead of the DC powered inverter. Inverters 31, 32, and 33 will transfer to the backup power supply (i.e., the associated CVT) automatically in the event of an inverter failure. However, the backup CVTs for inverters 31, 32, and 33 are supplied from non-safety related buses that are stripped and not automatically re-connected following a safety injection (SI) signal or a loss of offsite power (LOOP). Therefore, operator action is required to re-energize VIBs 31, 32, or 33 following an SI or LOOP if the associated inverter is being bypassed or fails during the event. Additionally, the potential exists that the bus powering the backup CVT may not be available following an event.

Inverter 34 has two associated backup 480 V/120 V constant voltage transformers (CVTs). The CVTs associated with inverter 34 are powered from separate safeguards power trains using buses that are automatically re-energized following an SI or LOOP. Inverter 34 can be manually bypassed such that either of the associated CVTs can be used to power VIB 34. Inverter 34 will not automatically transfer to a backup power supply (i.e., the associated CVTs) in the event of an inverter failure. Manual operator action is also needed to transfer between the CVTs capable of powering VIB 34.

Using a separate battery and inverter to power each VIB ensures a continuous source of power for the instrumentation and controls of the engineered safety features (ESF) systems and the reactor protection system (RPS) during postulated events including the loss of offsite power. This is consistent with requirements described in Generic Letter 91-011 (Ref. 1).

INSERT: B 3.8-71-01: (continued)

Continuity of power to the VIBs is assured because each of the four station batteries is sized to carry its expected shutdown loads for a period of 2 hours (Ref. 2). Additionally, four battery chargers have been sized to recharge these batteries while carrying the normal DC subsystem load (Ref. 2).

Note that battery charger 34 is not required by LCO 3.8.4. This is acceptable because VIB 34 can be powered by either of the two CVTs supplied by separate safeguard power trains if battery charger 34 is not available following an event.

INSERT: B 3.8-71-02:

The 2 CVTs capable of supplying VIB 34 are needed to ensure the availability of power to VIB 34 following the depletion of battery 34. Although battery charger 34 would normally be used to supply VIB 34 via inverter 34, battery charger 34 is not safety related and may not be available after a design basis event.

BASES (continued)

LCO

The inverters ensure the availability of AC electrical power for the systems instrumentation required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA.

and CVTs associated with VIB 34

Maintaining the required inverters OPERABLE ensures that the redundancy incorporated into the design of the RPS and ESFAS instrumentation and controls is maintained. The four inverters ~~[(two per train)]~~ ensure an uninterruptible supply of AC electrical power to the AC vital buses even if the 480 V ~~[4.16 kV]~~ safety buses are de-energized.

Operable inverters require the associated 120 V AC vital instrument bus to be powered by the inverter with output voltage and frequency within tolerances, and power input to the inverter from a [125 VDC] station battery. ~~Alternatively, power supply may be from an internal AC source via rectifier as long as the station battery is available as the uninterruptible power supply.~~

~~This LCO is modified by a Note that allows [one/two] inverters to be disconnected from a [common] battery for ≤ 24 hours, if the vital bus(es) is powered from a [Class 1E constant voltage transformer or inverter using internal AC source] during the period and all other inverters are operable. This allows an equalizing charge to be placed on one battery. If the inverters were not disconnected, the resulting voltage condition might damage the inverter[s]. These provisions minimize the loss of equipment that would occur in the event of a loss of offsite power. The 24 hour time period for the allowance minimizes the time during which a loss of offsite power could result in the loss of equipment energized from the affected AC vital bus while taking into consideration the time required to perform an equalizing charge on the battery bank.~~

~~The intent of this Note is to limit the number of inverters that may be disconnected. Only those inverters associated with the single battery undergoing an equalizing charge may be disconnected. All other inverters must be aligned to their associated batteries, regardless of the number of inverters or unit design.~~

(continued)

BASES (continued)

APPLICABILITY

The inverters are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Inverter requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.8, "Inverters—Shutdown."

ACTIONS

A.1

With a required inverter inoperable, its associated AC vital bus becomes inoperable until it is ~~[manually]~~ re-energized from its [Class 1E constant voltage source transformer ~~or~~ inverter using internal AC source].

For this reason a Note has been included in Condition A requiring the entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems—Operating." This ensures that the vital bus is re-energized within 2 hours.

Required Action A.1 allows 24 hours to fix the inoperable inverter and return it to service. The 24 hour limit is based upon engineering judgment, taking into consideration the time required to repair an inverter and the additional risk to which the unit is exposed because of the inverter inoperability. This has to be balanced against the risk of an immediate shutdown, along with the potential challenges to safety systems such a shutdown might entail. When the AC vital bus is powered from its constant voltage source, it is relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the AC vital buses is the preferred source for powering instrumentation trip setpoint devices.

Insert: B3.8-73-01

(continued)

INSERT: B 3.8-73-01: (page 1 of 4)

With an inverter inoperable, its associated VIB becomes inoperable until it is re-energized from its associated backup CVT. For this reason a Note to the Actions requires entry into the Conditions and Required Actions of LCO 3.8.9, "Distribution Systems - Operating." This ensures that the vital bus is re-energized within 2 hours.

A.1

With one of the two CVTs capable of supplying VIB 34 not OPERABLE, VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours following the initiation of any event. After battery 34 is depleted, the second CVT capable of powering VIB 34 will maintain power to VIB 34 even if non-safety related battery charger 34 is not available. A 30 day Completion Time to restore both CVTs to OPERABLE is needed because a failure of the safeguards power train supporting the remaining CVT would result in the loss of two VIBs (i.e, VIB 34 and the VIB associated with the failed safeguards power train) but only after the associated batteries are depleted. A 30 day Completion Time to restore both CVTs to OPERABLE is acceptable because of the low probability of an accident in conjunction with the loss of a specific safeguards power train.

INSERT: B 3.8-73-01: (page 2 of 4)

B.1

With both of the CVTs capable of supplying VIB 34 not OPERABLE, VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours following the initiation of any event. After battery 34 is depleted, inverter 34 may not be available to power VIB 34 because battery charger 34 is not safety related and is powered from a non-safety related bus. Therefore, at least one CVT must be restored within 7 days.

A 7 day Completion Time to restore at least one of the two CVTs to OPERABLE is needed and is acceptable because of the following: VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours; non-safety related battery charger 34 may be available following an event; and, the low probability of an event during this 7 day period.

INSERT: B 3.8-73-01: (page 3 of 4)

C.1 and C.2

With an inverter inoperable, its associated VIB must be powered from its associated backup CVT. However, the backup CVTs for inverters 31, 32, and 33 are supplied from non-safety related buses that are stripped and not automatically re-connected following a SI signal or a LOOP. Both backup CVTs for inverter 34 are powered from safety related buses that may be de-energized until the associated safeguards power train is energized (i.e., diesel generator starts). Therefore, a VIB powered from a backup CVT when the associated inverter is inoperable will be and could remain de-energized following a SI signal or a LOOP.

If a VIB will be de-energized as a result of SI signal or LOOP, a loss of safety function could exist for any VIB powered function that requires power to perform the required safety function (e.g., automatic actuation of core spray, Regulatory Guide 1.97 instrumentation, etc.) if the redundant required feature is inoperable. Therefore, Required Action C.1 requires declaring required feature(s) supported by associated inverter inoperable when its when its required redundant feature(s) is inoperable. As specified in the associated Note, this requirement only applies to feature(s) that require power to perform the required safety function. The 2 hour Completion Time is consistent with LCO 3.8.9, AC Distribution System - Operating, requirements for an inoperable VIB.

INSERT: B 3.8-73-01: (page 4 of 4)

With an inverter inoperable and its associated VIB powered from its associated backup CVT, there is increased potential for inadvertent actuation for ESFAS or RPS functions, especially if redundant channels are inoperable and in the tripped condition. This is because these de-energize to actuate functions are relying upon interruptible AC electrical power sources (offsite and onsite). The uninterruptible inverter source to the VIBs is the preferred source for powering instrumentation trip setpoint devices. Therefore, only one inverter may be inoperable at one time and an inoperable inverter must be restored to OPERABLE within 7 days. The 7 day Completion Time is needed because it ensures that the VIBs are powered from the uninterruptible inverter source. The 7 day Completion Time is acceptable because Required Action C.1 ensures that an inoperable inverter does not result in a loss of any safety function. The 7 day Completion Time is consistent with commitments made in response to Generic Letter 91-011 (Ref. 1).

BASES

ACTIONS (continued)

D D
~~B~~.1 and ~~B~~.2

If the inoperable devices or components cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.8.7.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC vital buses energized from the inverter. The verification of proper voltage ~~and frequency~~ output ensures that the required power is readily available for the instrumentation of the RPS and ESFAS connected to the AC vital buses. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

Insert: B3.8-74-01

REFERENCES

Insert: B3.8-74-02

2 ~~1~~. FSAR, Chapter ~~[~~8~~]~~.

3 ~~2~~. FSAR, Chapter ~~[~~6~~]~~.

~~3. FSAR, Chapter [15].~~

NUREG-1431 Markup Inserts
ITS SECTION 3.8.7 Inverters - Operating

Insert: B 3.8-74-01

SR 3.8.7.2

This Surveillance verifies that the power supply to VIB 34 can be manually transferred from the inverter to each of the required CVTs. This SR ensures that power to VIB 34 can be maintained after the depletion of battery 34. The 24 month Frequency takes into account that either of the CVTs is capable of performing this safety function and the demonstrated reliability of this equipment.

Insert: B 3.8-74-02

1. Generic Letter 91-011, Resolution of Generic Issues 48, "LCOs for Class 1E Vital Instrument Buses," and 49, "Interlocks and LCOS for Class 1E Tie Breakers" pursuant to 10 CFR 50.54(f).

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.7:
"Inverters - Operating"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.7 Inverters - Operating

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

CLB.1 NUREG-1431, Rev 1, Section 3.8.7, was modified as needed to reflect the IP3 design and current licensing basis. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.8:
"Inverters - Shutdown"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters – Shutdown

LCO 3.8.8 Inverters shall be OPERABLE to support the onsite 120 V AC vital instrument bus (VIB) electrical power distribution subsystems required by LCO 3.8.10, "Distribution Systems – Shutdown."

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One or more required inverters inoperable.	A.1	Declare affected required feature(s) inoperable.	Immediately
	<u>OR</u>		
	A.2.1	Suspend CORE ALTERATIONS.	Immediately
	<u>AND</u>		
	A.2.2	Suspend movement of irradiated fuel assemblies.	Immediately
	<u>AND</u>		
	A.2.3	Initiate action to suspend operations involving positive reactivity additions.	Immediately
	<u>AND</u>		
			(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.8.1	Verify correct inverter voltage and alignments to required 120 V AC vital instrument buses.	7 days

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Inverters – Shutdown

BASES

BACKGROUND

A description of the inverters is provided in the Bases for LCO 3.8.7, "Inverters – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 1), assume Engineered Safety Feature systems, including inverters that supply required 120 V AC vital instrument buses, are OPERABLE. The DC to AC inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the Reactor Protective System and Engineered Safety Features Actuation System instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of one inverter to each VIB bus during MODES 5 and 6 and when moving irradiated fuel ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is available to mitigate events postulated during shutdown, such as a fuel handling accident.

The inverters were previously identified as part of the

BASES

APPLICABLE SAFETY ANALYSES (continued)

distribution system and, as such, satisfy Criterion 3 of 10 CFR 50.36.

LCO

The inverters ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. The battery powered inverters provide uninterruptible supply of AC electrical power to the VIBs even if the 480 V safety buses are de-energized. OPERABILITY of the inverters requires that the VIB be powered by the inverter. This ensures the availability of sufficient inverter power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

This LCO does not require OPERABILITY of the constant voltage transformers (CVTs) capable of supplying VIB 34 even if inverter 34 is required to be OPERABLE. This is acceptable because VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours and electrical buses may be cross connected as needed to support inverter 34 prior to the depletion of battery 34.

APPLICABILITY

The inverters required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

BASES

APPLICABILITY (continued)

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.7.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3 and A.2.4

If more than one VIB is are required by LCO 3.8.10, "Distribution Systems – Shutdown," the remaining OPERABLE Inverters may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for positive reactivity additions. By the allowance of the option to declare required features inoperable with the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3 and A.2.4 (continued)

quickly as possible in order to minimize the time the unit safety systems may be without power or powered from a constant voltage source transformer.

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and VIBs energized from the inverter. The verification of proper voltage output ensures that the required power is readily available for the instrumentation connected to the VIBs. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

REFERENCES

1. FSAR, Chapter 14.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.8:
"Inverters - Shutdown"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A

SEE ITS 3.8.1 3.8.3 3.8.4 3.8.7

C. If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

1. If the reactor is critical, it shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours.

2. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.

SEE ITS 3.8.1

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

F. As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:

SEE ITS 3.8.2

1. One transmission circuit to Buchanan Substation, except for testing.

2. Either:

a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,

or

b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

SEE ITS 3.8.10

3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

Amendment No. 34

Add LCO 3.8.8
Condition A and associated Req. Act.
SR 3.8.8.1

M.1

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.8:
"Inverters - Shutdown"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

ADMINISTRATIVE

None

MORE RESTRICTIVE

M.1 CTS 3.7.F and CTS 4.6 do not establish any requirements for the operability or surveillance testing of inverters that supply the 120 volt AC instrument vital buses (VIBs) when in cold shutdown, refueling operations, or when moving irradiated fuel. Even when features powered from VIB are required to be operable, CTS would allow all VIBs to be powered from the backup constant voltage transformers (CVTs) supplied from associated 480 volt MCCs.

Under the same conditions, ITS LCO 3.8.8 requires the operability and surveillance testing of any inverter needed to support the DC electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems — Shutdown." The adoption of ITS LCO 3.8.8 is a more restrictive change because it requires that inverters must be operable, which includes meeting the required SR, if the inverter is needed to support the operability of any other features required to be Operable. In conjunction with this change, ITS LCO 3.8.8 allows the option of suspending core alterations, suspending movement of irradiated fuel assemblies, and suspending operations involving positive reactivity additions if an inverter is not Operable. These actions are sufficiently conservative so that it is acceptable to avoid the administrative burden of declaring each of the supported features inoperable and taking the Required Actions for each of these features.

These more restrictive changes are acceptable because they do not introduce any operation which is un-analyzed while requiring a more conservative requirements for ensuring that inverters are operable whenever needed to support features required to prevent or mitigate an accident. This change has no negative impact on safety.

LESS RESTRICTIVE

None

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.8:
"Inverters - Shutdown"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.8 Inverters - Shutdown

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

There are no less restrictive changes for the adoption of this ITS.

Indian Point 3
Improved Technical Specifications (ITS) Conversion Package

Technical Specification 3.8.8: "Inverters - Shutdown"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.8

This ITS Specification is based on NUREG-1431 Specification No. **3.8.8**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-008 R1	**036 R1**	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	Rejected by TSTF	Not Incorporated	**N/A**
BWROG-008 R3	**036 R3**	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	NRC Rejects: TSTF to Revise	Not Incorporated	**N/A**
BWROG-017	**051**	REVISE CONTAINMENT REQUIREMENTS DURING HANDLING IRRADIATED FUEL AND CORE ALTERATIONS (REQUIREMENTS LIMITED TO "RECENTLY" IRRADIATED FUEL)	NRC Review	Not Incorporated	**N/A**
WOG-062	**204**	REVISE DC SOURCES - SHUTDOWN AND INVERTERS - SHUTDOWN TO ADDRESS SPECIFIC SUBSYSTEM REQUIREMENTS	NRC Review	Not Incorporated	**N/A**

3.8 ELECTRICAL POWER SYSTEMS

3.8.8 Inverters—Shutdown

instrument (VIB) PA.1

⟨DOC M.1⟩ LCO 3.8.8 Inverters shall be OPERABLE to support the onsite ~~Class 1E~~ AC vital bus electrical power distribution subsystem(s) required by LCO 3.8.10, "Distribution Systems—Shutdown."

120 V

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
⟨DOC M.1⟩ A. One or more [required] inverters inoperable.	A.1	Declare affected required feature(s) inoperable.	Immediately
	OR		
	A.2.1	Suspend CORE ALTERATIONS.	Immediately
	AND		
	A.2.2	Suspend movement of irradiated fuel assemblies.	Immediately
	AND		
	A.2.3	Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND		
			(continued)

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<DOC M.1>	A. (continued)	A.2.4 Initiate action to restore required inverters to OPERABLE status.	Immediately

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE		FREQUENCY
<DOC M.1>	SR 3.8.8.1	Verify correct inverter voltage, ~~[frequency,]~~ and alignments to required {120 V} AC vital {instrument} buses.	7 days

PA.1

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.8 Inverters—Shutdown

BASES

BACKGROUND

A description of the inverters is provided in the Bases for LCO 3.8.7, "Inverters—Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis 14 Accident (DBA) and transient analyses in the FSAR, Chapter [6] (Ref. 1) ~~and Chapter [15] (Ref. 2)~~, assume Engineered Safety Feature systems , including inverters that supply required 120 V AC vital instrument buses, are OPERABLE. The DC to AC inverters are designed to provide the required capacity, capability, redundancy, and reliability to ensure the availability of necessary power to the Reactor Protective System and Engineered Safety Features Actuation System instrumentation and controls so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. PA.1

The OPERABILITY of the inverters is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of ~~the minimum~~ one inverter~~s~~ to each ~~AC vital~~ bus during MODES 5 and 6 and when moving irradiated fuel ensures that: VIB

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is available to mitigate events postulated during shutdown, such as a fuel handling accident.

The inverters were previously identified as part of the distribution system and, as such, satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

(continued)

BASES (continued)

LCO

The inverters ensure the availability of electrical power for the instrumentation for systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence or a postulated DBA. The battery powered inverters provide uninterruptible supply of AC electrical power to the ~~AC vital buses~~ VIBs even if the 480 V ~~4.16 KV~~ safety buses are de-energized. OPERABILITY of the inverters requires that the ~~AC vital bus~~ VIB be powered by the inverter. This ensures the availability of sufficient inverter power sources to operate the unit in a safe manner and to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

Insert: B 3.8-76-01

APPLICABILITY

The inverters required to be OPERABLE in MODES 5 and 6 and during movement of irradiated fuel assemblies provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition or refueling condition.

Inverter requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.7.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4

If more than one VIB is ~~two trains are~~ required by LCO 3.8.10, "Distribution Systems—Shutdown," the remaining OPERABLE Inverters may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS, fuel movement, and operations with a potential for positive reactivity additions. By the allowance of the option to declare

(continued)

INSERT: B 3.8-76-01

This LCO does not require OPERABILITY of the constant voltage transformers (CVTs) capable of supplying VIB 34 even if inverter 34 is required to be OPERABLE. This is acceptable because VIB 34 will be powered from battery 34 via inverter 34 for a minimum of 2 hours and electrical buses may be cross connected as needed to support inverter 34 prior to the depletion of battery 34.

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, and A.2.4 (continued)

required features inoperable with the associated inverter(s) inoperable, appropriate restrictions will be implemented in accordance with the affected required features LCOs' Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions). The Required Action to suspend positive reactivity additions does not preclude actions to maintain or increase reactor vessel inventory, provided the required SDM is maintained.

Suspension of these activities shall not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required inverters and to continue this action until restoration is accomplished in order to provide the necessary inverter power to the unit safety systems.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required inverters should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power or powered from a constant voltage source transformer.

SURVEILLANCE REQUIREMENTS

SR 3.8.8.1

This Surveillance verifies that the inverters are functioning properly with all required circuit breakers closed and AC ~~vital buses~~ energized from the inverter. The verification of proper voltage ~~and frequency~~ output ensures that the required power is readily available for the instrumentation connected to the AC ~~vital buses~~. The 7 day Frequency takes into account the redundant capability of the inverters and other indications available in the control room that alert the operator to inverter malfunctions.

VIBs

(continued)

BASES (continued)

REFERENCES

1. FSAR, Chapter 6. 14

~~2. FSAR, Chapter [15].~~

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.8:
"Inverters - Shutdown"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.8 Inverters - Shutdown

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

None

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.9:
"Distribution Systems - Operating"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems – Operating

LCO 3.8.9 AC, DC, and 120 V AC vital instrument bus VIB electrical power distribution subsystems for safeguards power trains 5A, 6A and 2A/3A shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One AC electrical power distribution subsystem inoperable with no loss of safety function.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours <u>AND</u> 16 hours from discovery of failure to meet LCO
B. One VIB inoperable no loss of safety function.	B.1 Restore VIB to OPERABLE status.	2 hours <u>AND</u> 16 hours from discovery of failure to meet LCO

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
C. One DC electrical power distribution subsystem inoperable with no loss of safety function.	C.1	Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
D. Required Action and associated Completion Time not met.	D.1 AND D.2	Be in MODE 3. Be in MODE 5.	6 hours 36 hours
E. One or more trains with inoperable distribution subsystems that result in a loss of safety function.	E.1	Enter LCO 3.0.3.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.9.1	Verify correct breaker alignments and voltage to required AC, DC, and VIB electrical power distribution subsystems.	7 days

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems - Operating

BASES

BACKGROUND

The onsite AC, DC, and 120 V AC vital instrument bus VIB electrical power distribution systems are divided into three safeguards power trains (5A, 2A/3A and 6A) consisting of four 480 VAC safeguards buses and associated AC electrical power distribution subsystems, four 125 VDC bus subsystems, and four VIBs.

The safeguards subsystems are arranged in three trains such that any two trains are capable of meeting minimum requirements for accident mitigation or safe shutdown. The three safeguards subsystems consist of 480 volt bus 5A (associated with DG 33), 480 volt bus 6A (associated with DG 32), and 480 volt buses 2A and 3A (associated with DG 31). Buses 2A and 3A are considered a single safeguards bus. The electrical subsystems are identified in Table B 3.8.9-1.

The AC electrical power subsystem for each train consists of an Engineered Safety Feature (ESF) 480 V bus and motor control centers. Each 480 V bus has at least one offsite source of power as well as a dedicated onsite diesel generator (DG) source. Each of the four 480 V volt buses can receive offsite power from either the normal (138 kV) or alternate (13.8 kV) offsite source. The normal offsite power source uses either of the two 138 kilovolt (kV) ties from the Buchanan substation. The alternate offsite power source uses either of the two 13.8 kV ties from the Buchanan substation. There is no automatic transfer from the normal to the alternate source of offsite power.

Offsite power to 480 V buses 5A and 6A is supplied from 6.9 kV buses 5 and 6, respectively, which in turn receive power from either 138 kV offsite feeder via the Station Auxiliary Transformer (SAT). Alternately, 6.9 kV buses 5 and 6 can be supplied from either of the two 13.8 kV ties via an auto-transformer associated with the 13.8 kV feeder being used.

When the plant is at power, 480 V buses 2A and 3A are normally powered from the Main Generator via the Unit Auxiliary

BASES

BACKGROUND (Continued)

Transformer (UAT) and the 6.9 kV buses 2 and 3 via SSTs 2 and 3. When the plant is not operating, buses 2A and 3A are supplied from 6.9 kV buses 5 and 6, respectively, via tie breakers. Following a unit trip, power to 480 V buses 2A and 3A is maintained by a fast transfer that connects buses 2A and 3A to power supplied from offsite to 6.9 kV buses 5 and 6. If the 138 kV system is not available, either of the two independent 13.8 kV feeders can be connected to the 6.9 kV buses through associated 20 MVA 13.8 KV/6.9 KV auto-transformers. When the 13.8 kV power source is used to feed 6.9 kV buses 5 and 6 and the main generator is used to feed 6.9 kV buses 1, 2, 3 and 4, automatic transfer of the 6.9 KV buses 1, 2, 3 and 4 to the 13.8 kV source following a unit trip must be prohibited to prevent overloading of the 13.8 kV auto-transformer. Therefore, a unit trip when a 13.8 kV power source is used to feed 6.9 kV buses 5 and 6 will result in 480 V busses 2A and 3A being de-energized and subsequently being powered from DG 31.

Each of the three 480 V safeguards subsystems receives DC control power from its associated battery charger and battery source. Battery No. 31 supplies DC control power to safeguards power train 5A including DG 33. Battery No. 32 supplies DC control power to safeguards power train 6A including DG 32. Battery No. 33 supplies DC control power to safeguards power train 2A/3A including DG 31. Batteries 31 and 32 also supply ESFAS and RPS trains A and B, respectively. Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources – Operating," and the Bases for LCO 3.8.4, "DC Sources – Operating."

The AC electrical power distribution system for each train includes the safety related motor control centers shown in Table B 3.8.9-1.

The VIBs are arranged in four load groups and are normally powered from the inverters. There are four 120 volt vital AC instrument buses (VIBs). The four VIBs are powered by static inverters that are powered from the four separate 125 volt DC buses.

BASES

BACKGROUND (Continued)

Inverters 31, 32, and 33 each have an associated backup 480 V/120 V constant voltage transformer (CVT). Each of these inverters has a manual bypass switch that causes the associated VIB to receive AC power from plant AC sources via the backup CVT instead of the DC powered inverter. Inverters 31, 32, and 33 will transfer to the backup power supply (i.e., the associated CVT) automatically in the event of an inverter failure. However, the backup CVTs for inverters 31, 32, and 33 are supplied from non-safety related buses that are stripped and not automatically re-connected following a safety injection (SI) signal or a loss of offsite power (LOOP). Therefore, operator action is required to re-energize VIBs 31, 32, or 33 following an SI or LOOP if the associated inverter is being bypassed or fails during the event. Additionally, the potential exists that the bus powering the backup CVT may not be available following an event.

Inverter 34 has two associated backup 480 V/120 V constant voltage transformers (CVTs). The CVTs associated with inverter 34 are powered from separate safeguards power trains using buses that are automatically re-energized following an SI or LOOP. Inverter 34 can be manually bypassed such that either of the associated CVTs can be used to power VIB 34. Inverter 34 will not automatically transfer to a backup power supply (i.e., the associated CVTs) in the event of an inverter failure. Manual operator action is also needed to transfer between the CVTs capable of powering VIB 34.

The 125 volt DC system is divided into four buses with one battery and battery charger (supplied from the 480 volt system) serving each. The battery chargers supply the normal DC loads as well as maintaining proper charges on the batteries. The DC system is redundant from battery source to actuation devices which are powered from the batteries. Four batteries feed four DC power panels, which in turn feed major loads, such as instrument bus inverters and switchgear control circuits. DC power panels 31 and 32 feed DC distribution panels, which in turn feed relaying and instrumentation loads. Continuity of power to

BASES

BACKGROUND (Continued)

the VIBs is assured because each of the four station batteries is sized to carry its expected shutdown loads for a period of 2 hours. Additionally, four battery chargers have been sized to recharge these batteries while carrying the normal DC subsystem load (Ref. 2).

Note that battery charger 34 is not required by LCO 3.8.4, DC Sources - Operating. This is acceptable because VIB 34 can be powered by either of the two CVTs supplied by separate safeguard power trains if battery charger 34 is not available following an event. The 2 CVTs capable of supplying VIB 34 are needed to ensure the availability of power to VIB 34 following the depletion of battery 34. Although battery charger 34 would normally be used to supply VIB 34 via inverter 34, battery charger 34 is not safety related and may not be available after a design basis event.

The list of all required distribution buses is presented in Table B 3.8.9-1.

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter 14 (Ref. 1), assume ESF systems are OPERABLE. The AC, DC, and AC vital instrument bus electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

The OPERABILITY of the AC, DC, and VIB electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design

BASES

APPLICABLE SAFETY ANALYSES (continued)

basis of the unit. This includes maintaining power distribution systems OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC electrical power; and

b. A worst case single failure.

The distribution systems satisfy Criterion 3 of 10 CFR 50.36.

LCO

The required power distribution subsystems listed in Table B 3.8.9-1 ensure the availability of AC, DC, and VIB electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The AC, DC, and VIB electrical power distribution subsystems are required to be OPERABLE.

Maintaining the AC, DC, and VIB electrical power distribution subsystems OPERABLE ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution subsystems will not prevent safe shutdown of the reactor.

OPERABLE AC electrical power distribution subsystems require the associated buses and safety related motor control centers to be energized to their proper voltages. OPERABLE DC electrical power distribution subsystems require the associated buses to be energized to their proper voltage from either the associated battery or charger. OPERABLE vital instrument bus electrical power distribution subsystems require the associated buses to be energized to their proper voltage from the associated inverter via inverted DC voltage or constant voltage transformer.

In addition, tie breakers between redundant safety related AC, DC, and VIB power distribution subsystems must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could

BASES

LCO (continued)

cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant 480 V buses from being powered from the same offsite circuit.

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution subsystem requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.10, "Distribution Systems – Shutdown."

ACTIONS

A.1

With one or more required AC buses or motor control centers (except VIBs) in one train inoperable, the remaining AC electrical power distribution subsystems in the other trains are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure and that redundant required features are OPERABLE. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required AC buses

BASES

ACTIONS

A.1 (continued)

and motor control centers must be restored to OPERABLE status within 8 hours.

Condition A worst scenario is one train without AC power (i.e., no offsite power to the train and the associated DG inoperable). In this Condition, the unit is more vulnerable to a loss of the minimum required AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining trains by stabilizing the unit, and on restoring power to the affected train. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train, to the actions associated with taking the unit to shutdown within this time limit; and

b. The potential for an event in conjunction with a single failure of a redundant component in the train with AC power.

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DC bus is inoperable and subsequently restored OPERABLE, the LCO may already have been not met for up to 2 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the AC distribution system. At this time, a DC circuit could again become inoperable, and AC distribution restored OPERABLE. This could continue indefinitely.

The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition A was entered. The 16 hour Completion Time is an acceptable

BASES

ACTIONS

A.1 (continued)

limitation on this potential to fail to meet the LCO indefinitely.

B.1

With one VIB inoperable, the remaining OPERABLE AC vital inststrument buses are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition assuming redundant required features are inoperable. Overall reliability is reduced, however, since an additional single failure could result in the minimum required ESF functions not being supported. Therefore, the required AC vital instrument bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated inverter via inverted DC, or constant voltage transformer.

Condition B represents one VIB without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of minimum required noninterruptible power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining vital instrument buses and restoring power to the affected vital instrument bus.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that are without adequate vital instrument bus AC power. Taking exception to LCO 3.0.2 for components without adequate vital instrument bus AC power, that would have the Required Action Completion Times shorter than 2 hours if declared inoperable, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue;

BASES

ACTIONS

B.1 (continued)

b. The potential for decreased safety by requiring entry into numerous Applicable Conditions and Required Actions for components without adequate VIB AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train; and

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time takes into account the importance to safety of restoring the VIB to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action B.1 establishes a limit on the maximum allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the VIB distribution system. At this time, an AC train could again become inoperable, and VIB distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

C.1

With one DC bus inoperable, the remaining DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain

BASES

ACTIONS

C.1 (continued)

it in a safe shutdown condition, assuming no single failure and that redundant required features are OPERABLE. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required DC buses must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger.

Condition C represents one train without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a loss of minimum required DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train; and

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. 2). The second Completion Time for

BASES

ACTIONS

C.1 (continued)

Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC train could again become inoperable, and DC distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1

With one or more trains with inoperable distribution subsystems that result in a loss of safety function, adequate core cooling, containment OPERABILITY and other vital functions for DBA mitigation would be compromised, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

This Surveillance verifies that the AC, DC, and AC vital instrument bus electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital instrument bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. FSAR, Chapter 14.
2. Regulatory Guide 1.93, December 1974.

Table B 3.8.9-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	Safeguards Power Train 5A (DG 33)	Safeguards Power Train 2A/3A (DG 31)	Safeguards Power Train 6A (DG 32)	
AC Electrical Power Distribution subsystems	480 V	bus 5A[1] MCC 36A MCC 36E	bus 2A[1] bus 3A[1] MCC 36C	bus 6A[1] MCC 36B MCC 36D	
AC vital instrument buses (VIBs)	120 V	bus 31 bus 31A	bus 33 bus 33A	bus 32 bus 32A	bus 34[3] bus 34A[3]
DC buses	125 V	bus 31[2]	bus 33[2]	bus 32[2]	bus 32[2]

(1) Tie breakers must be open between buses 5A and 2A and between buses 3A and 6A.

(2) Tie breakers between DC buses must be open.

(3) The AC Power supply to the VIB 34 and VIB 34A is supplied from MCC 36B or MCC 36C as described in the Bases for LCO 3.8.7, Inverters - Operating.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.9:
"Distribution Systems - Operating"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-1	161	161	No TSCRs	No TSCRs for this Page	N/A
3.7-2	132 TSCR 98-044	132 TSCR 98-044	IPN 98-044	DG Testing when a DG is Inoperable	
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A

3.7 AUXILIARY ELECTRICAL SYSTEMS

A.2

~~Applicability~~

~~Applies to the availability of electrical power for the operation of plant auxiliaries.~~

~~Objective~~

~~To define those conditions of electrical power availability necessary (1) to provide for safe reactor operation, and (2) to provide for the continuing availability of engineered safety features.~~

Specification

A.1

Mode 1, 2, 3 and 4

A. ~~The reactor shall not be brought above the cold shutdown condition unless the following requirements are met~~:

SEE ITS 3.8.1

1. Two physically independent transmission circuits to Buchanan Substation capable of supplying engineered safeguards loads.

2. 6.9 KV buses 5 and 6 energized from either 138 KV feeder 95331 or 95332.

3. Either 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 KV power.

LCO 3.8.9

4. The four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A, and between buses 3A and 6A, opened

LA.1

M.1

SEE ITS 3.8.1 3.8.3

5. Three diesel generators operable with a minimum onsite supply of 6671 gallons of fuel in each of the three individual underground storage tanks. In addition to the underground storage tanks, 30,026 gallons of fuel compatible for operation with the diesels shall be available onsite or at the Buchanan substation. This 30,026 gallon reserve is for Indian Point Unit No. 3 usage only

SEE ITS 3.8.1, 3.8.3 and is in addition to the fuel requirements for other nuclear units on the site.

SEE ITS 3.8.4

LCO 3.8.9

6. Three batteries plus three chargers ~~and~~ the D.C. distribution systems operable.

SEE ITS 3.8.7

7. ~~No more than one 120 volt A.C. Instrument Bus on the backup power supply.~~

SEE ITS 3.8.1 3.8.3

B. The requirements of 3.7.A may be modified to allow any one of the following power supplies to be inoperable at any one time.

1. One diesel or any diesel fuel oil system or a diesel and its associated fuel oil system may be inoperable for up to 72 hours provided the 138 KV and the 13.8 KV sources of offsite power are available, and the engineered safety features associated with the remaining diesel generator buses are operable. If the inoperable diesel generator became inoperable due to any cause other than preplanned maintenance or testing, then within 24 hours, either:

   a. Determine by evaluation, that the remaining operable diesel generators are not inoperable due to common-cause failure.

   OR

   b. Verify by testing, that the remaining diesel generators are operable.

2. The 138 KV or the 13.8 KV sources of power may be inoperable for 48 hours provided the three diesel generators are operable. This operation may be extended beyond 48 hours provided the failure is reported to the NRC within the 48 hour period with an outline of the plans for restoration of offsite power and NRC approval is granted.

TSCR 98-044

Add Condions A, B, C and associated Req Act.

Add Condition E and associated Req Act

L.1

C. If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

LCO 3.8.9

Req Act D.1, D.2

1. ~~If~~ the reactor is critical, it shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours.

M.3

2. ~~If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.~~

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

SEE ITS 3.8.1

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

F. As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:

SEE ITS 3.8.2

1. One transmission circuit to Buchanan Substation, except for testing.

2. Either:

a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,

or

b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

SEE ITS 3.8.10

3. Two of the four 480-volt buses 2A, 3A, 5A and 6A energized.

Add SR 3.8.9.1

M.2

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.9:
"Distribution Systems - Operating"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.9 Distribution Systems - Operating

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases that are designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

MORE RESTRICTIVE

M.1 When above cold shutdown, CTS 3.7.A.4 requires that the four 480-volt buses 2A, 3A, 5A and 6A are energized and the bus tie breakers between buses 5A and 2A, and between buses 3A and 6A, are open. Additionally, CTS 3.7.A.6 requires that the D.C. distribution systems are operable. Finally, CTS 3.7.A.7 implies a requirement that four 120 volt AC instrument vital instrument buses (VIBs) are Operable.

Under the same conditions, ITS LCO 3.8.9 requires that AC, DC, and Vital Instrument Bus (VIB) electrical power distribution subsystems for safeguards power trains 5A, 2A/3A and 6A are Operable. A detailed list of what constitutes AC, DC, and AC instrument bus electrical power distribution subsystems for safeguards power trains 5A, 2A/3A and 6A is found in the Bases in Table B 3.8.9-1.

This is a more restrictive change only because ITS Table B 3.8.9-1 includes a detailed list of the specific buses required to be operable. This change is needed to ensure the availability of all AC, DC, and VIB buses assumed to be available to support the systems required to shut down the reactor and maintain it in a safe condition following an accident. This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring more conservative requirements for ensuring that all AC, DC, and VIB buses are operable whenever needed to support features required to prevent or mitigate an accident. This change has no significant adverse impact on safety.

M.2 CTS 3.7 and CTS 4.6 do not establish any requirements for surveillance testing of AC and DC distribution systems. ITS SR 3.8.9.1 is added to require periodic verification that the required AC, DC, and VIB electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. This change is needed to ensure the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital instrument bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions. This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring more conservative requirements for ensuring that all AC, DC, and AC vital instrument buses are operable whenever needed to support features required to prevent or mitigate an accident. This change has no adverse impact on safety.

M.3 CTS 3.7.C establishes the Actions required if the electrical distribution system is not restored to meet CTS requirements within specified completion times when above cold shutdown (Mode 5). CTS 3.7.C.1 specifies that, if the reactor is critical when requirements are not met, then the reactor shall be in hot shutdown (Mode 3) within 6 hours and cold shutdown (Mode 5) within the following 30 hours. However, if the reactor is subcritical when requirements are not met, CTS 3.7.C.2 requires only that reactor coolant system temperature and pressure not be increased more than 25°F and 100 psi, respectively, over existing values with no requirement to proceed to cold shutdown (Mode 5).

Under the same conditions, ITS 3.8.9, Required Actions D.1 and D.2, require that the reactor is in Mode 3 in 6 hours and Mode 5 in 36 hours regardless of the status of the unit when the Condition is identified. The allowance provided in CTS 3.7.C.2 is deleted. This change is needed to eliminate the ambiguity created by CTS 3.7.C.2 when performing a reactor shutdown and cooldown required by CTS 3.7.C.1 and to ensure that the plant is placed outside the LCO Applicability when the LCO requirements are not met. This change is acceptable because placing the plant outside the LCO Applicability when LCO requirements are not met is conservative and there is no change in the CTS 3.7.C.1 requirement. This change has no significant adverse impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.7 does not establish any Conditions, Required Actions, or Completion Times for inoperable electrical distribution subsystems when any of these required features are inoperable above the cold shutdown condition, therefore, if any one or more of these features becomes inoperable, CTS 3.7.C requires that a reactor shutdown be initiated immediately and be completed within 6 hours and that the reactor be in cold shutdown within the following 30 hours.

Under the same conditions, ITS LCO 3.8.9, Required Actions A.1 and B.1 and C.1, establishes allowable out of service times of 8 hours for one AC electrical power distribution subsystem, 2 hours for one AC vital instrument bus, and 2 hours for one DC electrical power distribution

subsystem. In conjunction with this change, ITS LCO 3.8.9 establishes a requirement that the LCO must be met for all distribution subsystems within 16 hours of the discovery of failure to meet the LCO. ITS 3.8.9, Conditions E, is added to require immediate entry into ITS LCO 3.0.3 if the loss of any electrical power distribution subsystem, in conjunction with any other inoperable component, results in the loss of any safety functions.
Extending the allowable out of service time (AOT) for an electrical power distribution subsystem is acceptable because the AOT cannot be applied unless there is no resulting loss of any safety function (otherwise entry into Condition E is required). Therefore, whenever the new AOT is applicable, the remaining electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The required electrical distribution subsystems must be restored to operable status within the specified time limit to minimize the time in this condition because the overall reliability is reduced and because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported.

REMOVED DETAIL

LA.1 CTS 3.7.A.4 requires the four 480-volt buses 2A, 3A, 5A and 6A energized and the bus tie breakers between buses 5A and 2A, and between buses 3A and 6A, opened. ITS LCO 3.8.9 requires that AC, DC, and AC bus electrical power distribution subsystems for safeguards power trains 5A, 2A/3A and 6A are Operable. Details about which buses are covered by ITS LCO 3.8.9 and the stipulation that specific bus tie breakers must be open is maintained in the Bases for ITS LCO 3.8.9, specifically Table B 3.8.9-1 (See ITS 3.8.9, DOC M.1).

This change is acceptable because ITS 3.8.9 still requires that safeguards power trains 5A, 2A/3A and 6A AC, DC, and AC vital instrument bus electrical power distribution subsystems are Operable. Additionally, the definition of Operability ensures that required buses are Operable because for any required component to be Operable the normal or emergency electrical power source must also be capable of performing their related support function. Therefore, the details about which buses are covered is not an essential element of the requirement and can be relocated to the ITS Bases. Furthermore, the ITS 5.5.13, Technical Specifications (TS) Bases Control Program, is designed to assure that changes to the ITS Bases do not result in changes to the Specification requirements and do not result in significant increases in the probability or consequences of accidents previously evaluated, do not create the possibility of a new or different kind of accident, and do not result in a significant reduction in a margin of safety. Additionally, IP3 programs that implement ITS Bases changes in accordance with ITS 5.5.13 require periodic submittal of Bases changes to the NRC for review.

This change is a less restrictive administrative change with no impact on safety because no requirements are being deleted from Technical Specifications and an appropriate change control process and an appropriate level of regulatory oversight are maintained for the information being relocated out of the Technical Specifications.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.9: "Distribution Systems - Operating"

PART 4:

No Significant Hazards Considerations for Changes between CTS and ITS that are Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.9 Distribution Systems - Operating

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed changes do not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change eliminates the requirement for an immediate plant shutdown if required AC or DC electrical power distribution subsystem are not Operable. This change establishes allowable out of service times of 8 hours for one AC electrical power distribution subsystem, 2 hours for one AC vital instrument bus, and 2 hours for one DC electrical power distribution subsystem. In conjunction with this change, ITS LCO 3.8.1 establishes a requirement that the LCO must be met for all distribution subsystems within 16 hours of the discovery of failure to met the LCO. ITS 3.8.1, Conditions E, is added to require immediate entry into ITS LCO 3.0.3 if the loss of any electrical power distribution subsystem, in conjunction with any other inoperable component, results in the loss of any safety functions.

   This change will not result in a significant increase in the probability of an accident previously evaluated because the inoperability of any electrical power distribution subsystem that does not result in a loss of safety function has no affect on the initiator of any analyzed event. This change will not result in a significant increase in the consequences of an accident previously evaluated because the new AOT cannot be applied unless there is no loss of any safety function (otherwise entry into Condition E is required). Therefore, whenever the new AOT is applicable, the remaining electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. Additionally, the required electrical distribution subsystems must be restored to operable status within the specified time limit to minimize the time in this condition because the overall reliability is reduced and because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed changes will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal Plant operation are consistent with the current safety analysis assumptions because there is no change to the way in which any system of component is operated. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the new AOT cannot be applied unless there is no loss of any safety function (otherwise entry into Condition E is required). Therefore, whenever the new AOT is applicable, the remaining electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. Additionally, the required electrical distribution subsystems must be restored to operable status within the specified time limit to minimize the time in this condition because the overall reliability is reduced and because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.9:
"Distribution Systems - Operating"

PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.9

This ITS Specification is based on NUREG-1431 Specification No. **3.8.9**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-016 R1	**016 R1**	ADD ACTION TO LCO 3.8.9 (3.8.7) TO REQUIRE ENTRY INTO LCO 3.0.3 WHEN THERE IS A LOSS OF FUNCTION	NRC Review	Not Incorporated	**N/A**

<CTS>

3.8 ELECTRICAL POWER SYSTEMS

3.8.9 Distribution Systems—Operating

<3.7.A.4>
<3.7.A.6>
<DOC M.1>

LCO 3.8.9 ~~Train A and Train B~~ AC, DC, and 120 V AC ~~vital~~ instrument bus (VIB) electrical power distribution subsystems for safeguards power trains 5A, 6A and 2A/3A shall be OPERABLE. DB.1

<3.7.A>

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

	CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.7.C> <DOC L.1>	A. One AC electrical power distribution subsystem inoperable with no loss of safety function.	A.1 Restore AC electrical power distribution subsystem to OPERABLE status.	8 hours AND 16 hours from discovery of failure to meet LCO
<3.7.C> <DOC L.1>	B. One ~~AC vital bus~~ VIB inoperable with no loss of safety function.	B.1 Restore ~~AC vital bus subsystem~~ VIB to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO
<3.7.C> <DOC L.1>	C. One DC electrical power distribution subsystem inoperable with no loss of safety function.	C.1 Restore DC electrical power distribution subsystem to OPERABLE status.	2 hours AND 16 hours from discovery of failure to meet LCO

PA.2

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
<3.7.c> <Doc M.3> D. Required Action and associated Completion Time not met.	D.1 Be in MODE 3. AND D.2 Be in MODE 5.	6 hours 36 hours
<3.7.c> <Doc L.1> E. ~~Two~~ One or more trains with inoperable distribution subsystems that result in a loss of safety function.	E.1 Enter LCO 3.0.3.	Immediately PA2

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<Doc M.2> SR 3.8.9.1 Verify correct breaker alignments and voltage to ~~[required]~~ AC, DC, and ~~AC vital bus~~ VIB electrical power distribution subsystems.	7 days

DB.1

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.9 Distribution Systems—Operating

BASES

120 V

instrument

VIB

BACKGROUND

Insert: B 3.8-79-01

The onsite ~~Class 1E~~ AC, DC, and AC vital bus electrical power distribution systems are divided ~~by train into [two] redundant and independent AC, DC, and AC vital bus electrical power distribution subsystems~~.

480 V

and

an

480V

The AC electrical power subsystem for each train consists of ~~a primary~~ Engineered Safety Feature (ESF) ~~4.16 kV~~ bus ~~and secondary [480 and 120] V buses~~, ~~distribution panels~~, motor control centers ~~and load centers~~. Each ~~[4.16 kV ESF bus]~~ has at least [one ~~separate and independent~~ offsite source of power] as well as a dedicated onsite diesel generator (DG) source. ~~Each [4.16 kV ESF bus] is normally connected to a preferred offsite source. After a loss of the preferred offsite power source to a 4.16 kV ESF bus, a transfer to the alternate offsite source is accomplished by utilizing a time delayed bus undervoltage relay. If all offsite sources are unavailable, the onsite emergency DG supplies power to the 4.16 kV ESF bus. Control power for the 4.16 kV breakers is supplied from the Class 1E batteries.~~ Additional description of this system may be found in the Bases for LCO 3.8.1, "AC Sources—Operating," and the Bases for LCO 3.8.4, "DC Sources—Operating."

Insert: B 3.8-79-02

The ~~secondary~~ AC electrical power distribution system for each train includes the safety related ~~load centers,~~ motor control centers~~, and distribution panels~~ shown in Table B 3.8.9-1.

VIBs

four

The ~~120 VAC vital buses~~ are arranged in ~~two~~ load groups ~~per train~~ and are normally powered from the inverters. ~~The alternate power supply for the vital buses are Class 1E constant voltage source transformers powered from the same train as the associated inverter, and its use is governed by LCO 3.8.7, "Inverters—Operating." Each constant voltage source transformer is powered from a Class 1E AC bus.~~

Insert: B 3.8-79-03

Insert: B 3.8-79-04

~~There are two independent 125/250 VDC electrical power distribution subsystems (one for each train).~~

The list of all required distribution buses is presented in Table B 3.8.9-1.

(continued)

NUREG-1431 Markup Inserts
ITS SECTION 3.8.9 Distribution Systems - Operating

DB.1

INSERT B 3.8-79-01

into three safeguards power trains (5A, 2A/3A and 6A) consisting of four 480 VAC safeguards buses and associated AC electrical power distribution subsystems, four 125 VDC bus subsystems, and four VIBs.

The safeguards subsystems are arranged in three trains such that any two trains are capable of meeting minimum requirements for accident mitigation or safe shutdown. The three safeguards subsystems consist of 480 volt bus 5A (associated with DG 33), 480 volt bus 6A (associated with DG 32), and 480 volt buses 2A and 3A (associated with DG 31). Buses 2A and 3A are considered a single safeguards bus. The electrical subsystems are identified in Table B 3.8.9-1.

INSERT B 3.8-79-02

Each of the four 480 V volt buses can receive offsite power from either the normal (138 kV) or alternate (13.8) offsite source. The normal offsite power source uses either of the two 138 kilovolt (kV) ties from the Buchanan substation. The alternate offsite power source uses either of the two 13.8 kV ties from the Buchanan substation. There is no automatic transfer from the normal to the alternate source of offsite power.

Offsite power to 480 V buses 5A and 6A is supplied from 6.9 kV buses 5 and 6, respectively, which in turn receive power from either 138 kV offsite feeder via the Station Auxiliary Transformer (SAT). Alternately, 6.9 kV buses 5 and 6 can be supplied from either of the two 13.8 kV ties via an auto-transformer associated with the 13.8 kV feeder being used.

When the plant is at power, 480 V buses 2A and 3A are normally powered from the Main Generator via the Unit Auxiliary Transformer (UAT) and the 6.9 kV buses 2 and 3 via SSTs 2 and 3. When the plant is not operating, buses 2A and 3A are supplied from 6.9 kV buses 5 and 6, respectively, via tie breakers. Following a unit trip, power to 480 V buses 2A and 3A is maintained by a fast transfer that connects buses 2A and 3A to power supplied from offsite to 6.9 kV buses 5 and 6.

DB.1

INSERT B 3.8-79-02 (continued)

If the 138 kV system is not available, either of the two independent 13.8 kV feeders can be connected to the 6.9 kV buses through associated 20 MVA 13.8 KV/6.9 KV auto-transformers. When the 13.8 kV power source is used to feed 6.9 kV buses 5 and 6 and the main generator is used to feed 6.9 kV buses 1, 2, 3 and 4, automatic transfer of the 6.9 KV buses 1, 2, 3 and 4 to the 13.8 kV source following a unit trip must be prohibited to prevent overloading of the 13.8 kV auto-transformer. Therefore, a unit trip when a 13.8 kV power source is used to feed 6.9 kV buses 5 and 6 will result in 480 V busses 2A and 3A being de-energized and subsequently being powered from DG 31.

Each of the three 480 V safeguards subsystems receives DC control power from its associated battery charger and battery source. Battery No. 31 supplies DC control power to safeguards power train 5A including DG 33. Battery No. 32 supplies DC control power to safeguards power train 6A including DG 32. Battery No. 33 supplies DC control power to safeguards power train 2A/3A including DG 31. Batteries 31 and 32 also supply ESFAS and RPS trains A and B, respectively.

DB.1

INSERT B 3.8-79-03

There are four 120 volt vital AC instrument buses (VIBs). The four VIBs are powered by static inverters that are powered from the four separate 125 volt DC buses.

Inverters 31, 32, and 33 each have an associated backup 480 V/120 V constant voltage transformer (CVT). Each of these inverters has a manual bypass switch that causes the associated VIB to receive AC power from plant AC sources via the backup CVT instead of the DC powered inverter. Inverters 31, 32, and 33 will transfer to the backup power supply (i.e., the associated CVT) automatically in the event of an inverter failure. However, the backup CVTs for inverters 31, 32, and 33 are supplied from non-safety related buses that are stripped and not automatically re-connected following a safety injection (SI) signal or a loss of offsite power (LOOP). Therefore, operator action is required to re-energize VIBs 31, 32, or 33 following an SI or LOOP if the associated inverter is being bypassed or fails during the event. Additionally, the potential exists that the bus powering the backup CVT may not be available following an event.

Inverter 34 has two associated backup 480 V/120 V constant voltage transformers (CVTs). The CVTs associated with inverter 34 are powered from separate safeguards power trains using buses that are automatically re-energized following an SI or LOOP. Inverter 34 can be manually bypassed such that either of the associated CVTs can be used to power VIB 34. Inverter 34 will not automatically transfer to a backup power supply (i.e., the associated CVTs) in the event of an inverter failure. Manual operator action is also needed to transfer between the CVTs capable of powering VIB 34.

DB.1

INSERT B 3.8-79-04

The 125 volt DC system is divided into four buses with one battery and battery charger (supplied from the 480 volt system) serving each. The battery chargers supply the normal DC loads as well as maintaining proper charges on the batteries. The DC system is redundant from battery source to actuation devices which are powered from the batteries. Four batteries feed four DC power panels, which in turn feed major loads, such as instrument bus inverters, switchgear control circuits and DC motors. DC power panels 31 and 32 feed DC distribution panels, which in turn feed relaying and instrumentation loads.

Continuity of power to the VIBs is assured because each of the four station batteries is sized to carry its expected shutdown loads for a period of 2 hours. Additionally, four battery chargers have been sized to recharge these batteries while carrying the normal DC subsystem load (Ref. 2).

Note that battery charger 34 is not required by LCO 3.8.4, DC Sources - Operating. This is acceptable because VIB 34 can be powered by either of the two CVTs supplied by separate safeguard power trains if battery charger 34 is not available following an event. The 2 CVTs capable of supplying VIB 34 are needed to ensure the availability of power to VIB 34 following the depletion of battery 34. Although battery charger 34 would normally be used to supply VIB 34 via inverter 34, battery charger 34 is not safety related and may not be available after a design basis event.

BASES (continued) PA.1

APPLICABLE SAFETY ANALYSES

14

The initial conditions of Design Basis Accident (DBA) and transient analyses in the FSAR, Chapter ~~[6]~~ (Ref. 1), ~~and in the FSAR, Chapter [15] (Ref. 2),~~ assume ESF systems are OPERABLE. The AC, DC, and AC vital instrument bus electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded. These limits are discussed in more detail in the Bases for Section 3.2, Power Distribution Limits; Section 3.4, Reactor Coolant System (RCS); and Section 3.6, Containment Systems.

VIB

The OPERABILITY of the AC, DC, and ~~AC vital bus~~ electrical power distribution systems is consistent with the initial assumptions of the accident analyses and is based upon meeting the design basis of the unit. This includes maintaining power distribution systems OPERABLE during accident conditions in the event of:

a. An assumed loss of all offsite power or all onsite AC electrical power; and

b. A worst case single failure.

The distribution systems satisfy Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36.

LCO

VIB

The required power distribution subsystems listed in Table B 3.8.9-1 ensure the availability of AC, DC, and ~~AC vital bus~~ electrical power for the systems required to shut down the reactor and maintain it in a safe condition after an anticipated operational occurrence (AOO) or a postulated DBA. The AC, DC, and ~~AC vital bus~~ electrical power distribution subsystems are required to be OPERABLE.

VIB

Maintaining the ~~Train A and Train B~~ AC, DC, and ~~AC vital bus~~ electrical power distribution subsystems OPERABLE ensures that the redundancy incorporated into the design of ESF is not defeated. Therefore, a single failure within any system or within the electrical power distribution subsystems will not prevent safe shutdown of the reactor.

(continued)

BASES

LCO (continued)

and

OPERABLE AC electrical power distribution subsystems require the associated buses, ~~load centers,~~ motor control centers, and distribution panels to be energized to their proper voltages. OPERABLE DC electrical power distribution subsystems require the associated buses to be energized to their proper voltage from either the associated battery or charger. OPERABLE vital bus electrical power distribution subsystems require the associated buses to be energized to their proper voltage from the associated inverter via inverted DC voltage, inverter using internal AC source, or ~~Class 1E~~ constant voltage transformer.

instrument

VIB

In addition, tie breakers between redundant safety related AC, DC, and AC vital bus power distribution subsystems, ~~if they exist,~~ must be open. This prevents any electrical malfunction in any power distribution subsystem from propagating to the redundant subsystem, that could cause the failure of a redundant subsystem and a loss of essential safety function(s). If any tie breakers are closed, the affected redundant electrical power distribution subsystems are considered inoperable. This applies to the onsite, safety related redundant electrical power distribution subsystems. It does not, however, preclude redundant 480V Class 1E 4.16 kV buses from being powered from the same offsite circuit.

APPLICABILITY

The electrical power distribution subsystems are required to be OPERABLE in MODES 1, 2, 3, and 4 to ensure that:

a. Acceptable fuel design limits and reactor coolant pressure boundary limits are not exceeded as a result of AOOs or abnormal transients; and

b. Adequate core cooling is provided, and containment OPERABILITY and other vital functions are maintained in the event of a postulated DBA.

Electrical power distribution subsystem requirements for MODES 5 and 6 are covered in the Bases for LCO 3.8.10, "Distribution Systems—Shutdown."

(continued)

BASES (continued)

ACTIONS

A.1

A

or

With one or more required AC buses, ~~load centers,~~ motor control centers~~, or distribution panels~~ except AC vital buses, in one train inoperable, the remaining AC electrical power distribution subsystem in the other train is capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. The overall reliability is reduced, however, because a single failure in the remaining power distribution subsystems could result in the minimum required ESF functions not being supported. Therefore, the required AC buses, ~~load centers,~~ motor control centers~~, and distribution panels~~ must be restored to OPERABLE status within 8 hours.

A

are

PA-1

and

and that redundant required features are OPERABLE.

Condition A worst scenario is one train without AC power (i.e., no offsite power to the train and the associated DG inoperable). In this Condition, the unit is more vulnerable to a complete loss of AC power. It is, therefore, imperative that the unit operator's attention be focused on minimizing the potential for loss of power to the remaining train by stabilizing the unit, and on restoring power to the affected train. The 8 hour time limit before requiring a unit shutdown in this Condition is acceptable because of:

the minimum required

A

a. The potential for decreased safety if the unit operator's attention is diverted from the evaluations and actions necessary to restore power to the affected train, to the actions associated with taking the unit to shutdown within this time limit; and

b. The potential for an event in conjunction with a single failure of a redundant component in the train with AC power.

The second Completion Time for Required Action A.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition A is entered while, for instance, a DC bus is inoperable and subsequently restored OPERABLE, the LCO may already have been ~~not~~ met for up to 2 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the AC distribution system. At this time, a DC circuit could again

(continued)

BASES

ACTIONS

A.1 (continued)

become inoperable, and AC distribution restored OPERABLE. This could continue indefinitely.

The Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition A was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

B.1

VIB

VIBs

With one AC vital bus inoperable, the remaining OPERABLE AC vital buses are capable of supporting the minimum safety functions necessary to shut down the unit and maintain it in the safe shutdown condition. Overall reliability is reduced, however, since an additional single failure could result in the minimum [required] ESF functions not being supported. Therefore, the required AC vital bus must be restored to OPERABLE status within 2 hours by powering the bus from the associated [inverter via inverted DC, ~~inverter using internal AC source~~, or ~~Class 1E~~ constant voltage transformer].

assuming no redundant required features are inoperable

PA.1

instrument

VIB

Condition B represents one AC vital bus without power; potentially both the DC source and the associated AC source are nonfunctioning. In this situation, the unit is significantly more vulnerable to a complete loss of all noninterruptible power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining vital buses and restoring power to the affected vital bus.

minimum required

instrument

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that are without adequate vital AC power. Taking exception to LCO 3.0.2 for components without adequate vital AC power, that would have the Required Action Completion Times shorter than 2 hours if declared inoperable, is acceptable because of:

instrument bus

(continued)

BASES

ACTIONS

B.1 (continued)

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) and not allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous Applicable Conditions and Required Actions for components without adequate vital AC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train; and VIB

c. The potential for an event in conjunction with a single failure of a redundant component.

VIB

The 2 hour Completion Time takes into account the importance to safety of restoring the AC vital bus to OPERABLE status, the redundant capability afforded by the other OPERABLE vital buses, and the low probability of a DBA occurring during this period.

The second Completion Time for Required Action B.1 establishes a limit on the maximum allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition B is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the vital bus distribution system. At this time, an AC train could again become inoperable, and vital bus distribution restored OPERABLE. This could continue indefinitely. VIB

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition B was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

(continued)

BASES

ACTIONS (continued)

C.1

one

With DC bus~~(es)~~ ~~in one train~~ inoperable, the remaining DC electrical power distribution subsystems are capable of supporting the minimum safety functions necessary to shut down the reactor and maintain it in a safe shutdown condition, assuming no single failure. and that redundant required features are OPERABLE. The overall reliability is reduced, however, because a single failure in the remaining DC electrical power distribution subsystem could result in the minimum required ESF functions not being supported. Therefore, the ~~[required]~~ DC buses must be restored to OPERABLE status within 2 hours by powering the bus from the associated battery or charger. PA.1 1

Condition C represents one train without adequate DC power; potentially both with the battery significantly degraded and the associated charger nonfunctioning. In this situation, the unit is significantly more vulnerable to a ~~complete~~ loss of ~~all~~ minimum required DC power. It is, therefore, imperative that the operator's attention focus on stabilizing the unit, minimizing the potential for loss of power to the remaining trains and restoring power to the affected train.

This 2 hour limit is more conservative than Completion Times allowed for the vast majority of components that would be without power. Taking exception to LCO 3.0.2 for components without adequate DC power, which would have Required Action Completion Times shorter than 2 hours, is acceptable because of:

a. The potential for decreased safety by requiring a change in unit conditions (i.e., requiring a shutdown) while allowing stable operations to continue;

b. The potential for decreased safety by requiring entry into numerous applicable Conditions and Required Actions for components without DC power and not providing sufficient time for the operators to perform the necessary evaluations and actions for restoring power to the affected train; and

c. The potential for an event in conjunction with a single failure of a redundant component.

The 2 hour Completion Time for DC buses is consistent with Regulatory Guide 1.93 (Ref. ~~3~~ 2).

(continued)

BASES

ACTIONS

C.1 (continued)

The second Completion Time for Required Action C.1 establishes a limit on the maximum time allowed for any combination of required distribution subsystems to be inoperable during any single contiguous occurrence of failing to meet the LCO. If Condition C is entered while, for instance, an AC bus is inoperable and subsequently returned OPERABLE, the LCO may already have been not met for up to 8 hours. This could lead to a total of 10 hours, since initial failure of the LCO, to restore the DC distribution system. At this time, an AC train could again become inoperable, and DC distribution restored OPERABLE. This could continue indefinitely.

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." This will result in establishing the "time zero" at the time the LCO was initially not met, instead of the time Condition C was entered. The 16 hour Completion Time is an acceptable limitation on this potential to fail to meet the LCO indefinitely.

D.1 and D.2

If the inoperable distribution subsystem cannot be restored to OPERABLE status within the required Completion Time, the unit must be brought to a MODE in which the LCO does not apply. To achieve this status, the unit must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required unit conditions from full power conditions in an orderly manner and without challenging plant systems.

E.1

one or more

With two trains with inoperable distribution subsystems that result in a loss of safety function, adequate core cooling, containment OPERABILITY and other vital function~~s~~ for DBA mitigation would be compromised, and immediate plant shutdown in accordance with LCO 3.0.3 is required.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.9.1

This Surveillance verifies that the ~~[required]~~ AC, DC, and AC vital instrument bus electrical power distribution systems are functioning properly, with the correct circuit breaker alignment. The correct breaker alignment ensures the appropriate separation and independence of the electrical divisions is maintained, and the appropriate voltage is available to each required bus. The verification of proper voltage availability on the buses ensures that the required voltage is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the redundant capability of the AC, DC, and AC vital instrument bus electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. FSAR, Chapter ~~[6]~~ 14.

~~2. FSAR, Chapter [15].~~

2 ~~3~~. Regulatory Guide 1.93, December 1974.

Table B 3.8.9-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	TRAIN A*	TRAIN B*
AC safety buses	[4160 V]	[ESF Bus] [NB01]	[ESF Bus] [NB02]
	[480 V]	Load Centers [NG01, NG03]	Load Centers [NG02, NG04]
	[480 V]	Motor Control Centers [NG01A, NG01I, NG01B, NG03C, NG03I, NG03D]	Motor Control Centers [NG02A, NG02I, NG02B, NG04C, NG04I, NG04D]
	[120 V]	Distribution Panels [NP01, NP03]	Distribution Panels [NP02, NP04]
DC buses	[125 V]	Bus [NK01]	Bus [NK02]
		Bus [NK03]	Bus [NK04]
		Distribution Panels [NK41, NK43, NK51]	Distribution Panels [NK42, NK44, NK52]
AC vital buses	[120 V]	Bus [NN01]	Bus [NN02]
		Bus [NN03]	Bus [NN04]

* Each train of the AC and DC electrical power distribution systems is a subsystem.

Insert:
B 3.8-88-01

INSERT: B 3.8-88-01

Table B 3.8.9-1 (page 1 of 1)
AC and DC Electrical Power Distribution Systems

TYPE	VOLTAGE	Safeguards Power Train 5A (DG 33)	Safeguards Power Train 2A/3A (DG 31)	Safeguards Power Train 6A (DG 32)	
AC Electrical Power Distribution subsystems	480 V	bus 5A[1] MCC 36A MCC 36E	bus 2A[1] bus 3A[1] MCC 36C	bus 6A[1] MCC 36B MCC 36D	
AC vital instrument buses (VIBs)	120 V	bus 31 bus 31A	bus 33 bus 33A	bus 32 bus 32A	bus 34[3] bus 34A[3]
DC buses	125 V	bus 31[2]	bus 33[2]	bus 32[2]	bus 32[2]

(1) Tie breakers must be open between buses 5A and 2A and between buses 3A and 6A.

(2) Tie breakers between DC buses must be open.

(3) The AC Power supply to to VIB 34 and VIB 34A is supplied from MCC 36B or MCC 36C as described in the Bases for LCO 3.8.7, Inverters - Operating.

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.9:
"Distribution Systems - Operating"

PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.9 Distribution Systems - Operating

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PA.2 NUREG-1431, Rev 1, Section 3.8.9, was modified to clarify that allowable out of service times for inoperable electrical distribution subsystems apply only if the inoperable subsystem does not result in the loss of a safety function as the result of the inoperability of a redundant required feature. This is a clarification consistent with the intent of LCO 3.8.9. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. A detailed description of the design, accident analysis assumptions, and Operability requirements are incorporated into the IP3 ITS Bases. These changes maintain the IP3 current licensing basis except as identified and justified in the CTS/ITS discussion of changes. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.9 Distribution Systems - Operating

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.10: "Distribution Systems - Shutdown"

PART 1:

Indian Point 3
Improved Technical Specifications and Bases

3.8 ELECTRICAL POWER SYSTEMS

3.8.10 Distribution Systems – Shutdown

LCO 3.8.10 The necessary portion of AC, DC, and 120 AC vital instrument bus (VIB) electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital instrument bus electrical power distribution subsystems inoperable.	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
		(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate actions to restore required AC, DC, and AC vital instrument bus electrical power distribution subsystems to OPERABLE status. AND A.2.5 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.8.10.1	Verify correct breaker alignments and voltage to required AC, DC, and 120 V AC vital instrument bus (VIB) electrical power distribution subsystems.	7 days

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems – Shutdown

BASES

BACKGROUND

A description of the AC, DC, and 120 V AC vital instrument bus (VIB) electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems – Operating."

APPLICABLE SAFETY ANALYSES

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter 14 (Ref. 1), assumes Engineered Safety Feature (ESF) systems are OPERABLE. The AC, DC, and VIB electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

The OPERABILITY of the AC, DC, and VIB electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC, DC, and VIB electrical power distribution subsystems during MODES 5 and 6, and during movement of irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

BASES

APPLICABLE SAFETY ANALYSES (continued)

The AC and DC electrical power distribution systems satisfy Criterion 3 of 10 CFR 50.36.

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energization of the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components – all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of irradiated fuel assemblies, provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

BASES

APPLICABILITY (continued)

The AC, DC, and VIB electrical power distribution subsystems requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.9.

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4 and A.2.5

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions).

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring RHR inoperable, which results in taking the appropriate RHR actions.

BASES

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4 and A.2.5 (continued)

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

This Surveillance verifies that the AC, DC, and VIB electrical power distribution subsystems are functioning properly, with all the buses energized. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. FSAR, Chapter 14.

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Technical Specification 3.8.10:
"Distribution Systems - Shutdown"

PART 2:

CURRENT TECHNICAL SPECIFICATION PAGES

Annotated to show differences between CTS and ITS

CTS pages and associated TSCRs annotated for this ITS Specification :

CTS Page No.	Effective Amendment	Annotated Amendment	TSCR No.	TSCR Description	ITS Status of TSCR
3.7-3	34	34	No TSCRs	No TSCRs for this Page	N/A

A.1 A.2

SEE ITS 3.8.1 3.8.3 3.8.4 3.8.7 3.8.9

C. If the electrical distribution system is not restored to meet the requirements of 3.7.A within the time periods specified in 3.7.B, then:

1. If the reactor is critical, it shall be in the hot shutdown condition within six hours and in the cold shutdown condition within the following 30 hours.

2. If the reactor is subcritical, the reactor coolant system temperature and pressure shall not be increased more than 25°F and 100 psi, respectively, over existing values.

SEE ITS 3.8.9

D. The requirements of Specification 3.7.A.1 may be modified during an emergency system-wide blackout condition as follows:

Two of the three 13.8 KV feeders (13W92, 13W93 and/or 13W94) to the Buchanan substation 138 KV buses operable with at least 37 MV power from any combination of gas turbines (nameplate rating at 80°F) at the Buchanan Substation and onsite and onsite available for exclusive use on Indian Point Unit No. 3.

SEE RELOCATED

E. Whenever the reactor critical, the circuit breaker on the electrical feeder to emergency lighting panel 318 inside containment shall be locked open except when containment access is required.

F. ~~As a minimum, under all conditions including cold shutdown, the following A.C. electrical power sources shall be operable:~~ Mode 5 and 6 and movement of irradiated fuel L.2

SEE ITS 3.8.2

1. One transmission circuit to Buchanan Substation, except for testing.

2. Either:

a. 6.9 KV buses 5 or 6 energized from the 138 KV feeder 95331 or 95332,

or

b. 13.8 KV feeder 13W92 or 13W93 and its associated 13.8/6.9 KV transformer available to supply 6.9 power,

3. Two ~~of the four~~ 480-volt buses 2A, 3A, 5A and 6A energized. M.1 L.1

Add Condition and associated Req Act M.2

Add SR 3.8.10.1 M.3

Indian Point 3
Improved Technical Specifications (ITS)
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Technical Specification 3.8.10:
"Distribution Systems - Shutdown"

PART 3:

DISCUSSION OF CHANGES

Differences between CTS and ITS

DISCUSSION OF CHANGES
ITS SECTION 3.8.10 Distribution Systems - Shutdown

ADMINISTRATIVE

A.1 In the conversion of the Indian Point Unit 3 Current Technical Specifications (CTS) to the plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes (either actual or interpretational). Additionally, editorial changes, reformatting, and revised numbering are adopted to make ITS consistent with the conventions in NUREG-1431, Standard Technical Specifications, Westinghouse Plants, Rev. 1, i.e., the improved Standard Technical Specifications.

The CTS Bases are deleted and replaced with comprehensive ITS Bases that are designed to support interpretation and implementation of the associated Technical Specifications. The Bases explain, clarify, and document the reasons (i.e., bases) for the associated Technical Specifications, and reflect the IP3 plant specific design, analyses, and licensing basis. In accordance with 10 CFR 50.36(a), the ITS Bases are included with the proposed ITS conversion application; however, deletion of the CTS Bases and the adoption of the ITS Bases is an administrative change with no impact on safety.

A.2 CTS Limiting Conditions for Operation (LCOs) and Surveillance Requirements (SRs) include statements of the objective and the applicability. The CTS statements of objective and applicability are deleted because these statements do not establish any requirements and do not provide any guidance for the application of CTS requirements. Therefore, deletion of these statements has no significant adverse impact on safety.

MORE RESTRICTIVE

M.1 CTS 3.7.F.3 requires that two of the four 480-volt buses 2A, 3A, 5A and 6A are energized under all conditions including cold shutdown. ITS LCO 3.8.10 requires operability of all portions of AC, DC, and AC vital instrument bus (VIB) electrical power distribution subsystems required to support equipment required to be operable by other ITS LCOs. This is a more restrictive change because some combinations of two of the four 480-volt buses 2A, 3A, 5A and 6A will not be sufficient to support all equipment required to be Operable in Modes 5 and 6 and/or when moving irradiated fuel. This change is needed because AC, DC, and VIB electrical power distribution subsystems are support systems that must be operable as necessary to support features required by other ITS LCOs. This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring more conservative requirements for ensuring that all AC, DC, and AC vital insrument buses are operable whenever needed to support features required to prevent or mitigate an accident. This change has no negative impact on safety.

M.2 CTS 3.7.F and CTS 4.6 do not establish any required action if AC subsystem, DC subsystem, or VIBs required to support equipment required to be operable by other ITS LCOs are not operable. Therefore, CTS 3.7.F indirectly requires that any equipment powered from an inoperable source be declared inoperable and the associated required actions taken. Under the same conditions, ITS LCO 3.8.10 provides an additional option that permits suspending core alterations, suspending movement of irradiated fuel assemblies, and suspending operations involving positive reactivity additions in lieu of taking actions for each individual component except that these actions may not be sufficient to address the concerns relating to coolant circulation and heat removal if an operating residual heat removal subsystem is de-energized. Therefore, the option in ITS LCO 3.8.10 to suspend core alterations, movement of irradiated fuel and positive reactivity additions in lieu of taking actions for each individual component does not apply to residual heat removal subsystems. This is a more restrictive change because the CTS does not specify actions for inoperable components when in cold shutdown (except RHR pumps); therefore, the addition of the option to suspend certain activities (in conjunction with new ITS required actions for equipment when in cold shutdown which are discussed in the ITS LCOs for that equipment) is more conservative than the CTS. This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring more conservative required actions when AC subsystems, DC subsystems, or VIBs needed to support features required to prevent or mitigate an accident are not operable. This change has no negative impact on safety.

M.3 CTS 3.7 and CTS 4.6 do not establish any requirements for surveillance testing of distribution systems when these systems are required to be Operable. ITS SR 3.8.10.1 is added to require periodic verification that the required AC, DC, and AC vital insrument bus electrical power distribution subsystems are functioning properly and that all the buses are properly energized. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions. This more restrictive change is acceptable because it does not introduce any operation which is un-analyzed while requiring more conservative requirements for ensuring that all AC, DC, and AC vital insrument buses are operable whenever needed to support features required to prevent or mitigate an accident. This change has no negative impact on safety.

LESS RESTRICTIVE

L.1 CTS 3.7.F.3 requires that two of the four 480-volt buses 2A, 3A, 5A and 6A are energized under all conditions including cold shutdown. ITS LCO 3.8.10 requires operability of only those portions of AC, DC, and AC vital instrument bus (VIB) electrical power distribution subsystems required to support equipment required to be operable by other ITS LCOs. This change is less restrictive because LCO 3.8.10 could be satisfied in some cases with only one of the 480-volt buses operable. This change is acceptable because AC, DC, and AC vital insrument bus electrical power distribution subsystems are support systems that must be operable only as necessary to support features required by other ITS LCOs. Therefore, this change has no impact on safety.

L.2 CTS 3.7.F specifies that AC electrical power sources and distribution must be operable under all conditions including cold shutdown. ITS LCO 3.8.10 specifies that the AC electrical power sources and distribution must be operable in Modes 5 and 6 and during movement of irradiated fuel assemblies. The ITS definition of Mode applies only when fuel is in the reactor vessel; therefore, ITS 3.8.10 eliminates Technical Specification requirements for when there is no fuel in the reactor vessel unless irradiated fuel assemblies are being moved. This change is acceptable because the ITS LCO 3.8.10 Applicability ensures that: the unit can be maintained in the shutdown or refueling condition for extended periods; sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and, adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident. In general, when the plant is shut down, ITS LCO 3.8.10 requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents. Therefore, this change has no significant adverse impact on safety.

REMOVED DETAIL

None

Indian Point 3
Improved Technical Specifications (ITS)
Conversion Package

Technical Specification 3.8.10:
"Distribution Systems - Shutdown"

PART 4:

No Significant Hazards Considerations
for
Changes between CTS and ITS
that are
Less Restrictive

No Significant Hazard Considerations for Changes that are Administrative, More Restrictive, and Removed Details are the same for all Packages. A Copy is included at the end of the Package.

NO SIGNIFICANT HAZARDS EVALUATION
ITS SECTION 3.8.10 Distribution Systems - Shutdown

LESS RESTRICTIVE
("L.1" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed changes do not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change eliminates a requirement to have a specified number of 480-volt buses energized and replaces it with a requirement to ensure the operability of those portions of AC, DC, and AC vital insrument bus electrical power distribution subsystems required to support equipment required to be operable by other ITS LCOs. This change will not result in a significant increase in the probability of an accident previously evaluated because ensuring the operability of those portions of AC, DC, and AC vital insrument bus electrical power distribution subsystems required to support equipment required to be operable by other ITS LCOs has no affect on the initiators of any analyzed events. This change will not result in a significant increase in the consequences of an accident previously evaluated because the change requires that all equipment assumed to be operable for the mitigation of an event will be powered from an operable bus.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed changes will not involve any physical changes to plant systems, structures, or components (SSC). The changes in normal Plant operation are consistent with the current safety analysis assumptions because there is no change in the way the electrical distribution system is operated. Therefore, these changes will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the change requires that all equipment assumed to be operable for the mitigation of an event must be powered from an operable bus.

LESS RESTRICTIVE
("L.2" Labeled Comments/Discussions)

New York Power Authority has evaluated the proposed Technical Specification change identified as "Less Restrictive" in accordance with the criteria set forth in 10 CFR 50.92, and has determined that the proposed change does not involve a significant hazards consideration. The bases for the determination that the proposed change does not involve a significant hazards consideration are discussed below.

1. Does the change involve a significant increase in the probability or consequences of an accident previously evaluated?

   This change modifies the applicability of Technical Specification requirements for AC and DC distribution when shutdown from under all conditions to Modes 5 and 6 and during movement of irradiated fuel assemblies. The ITS definition of Mode applies only when fuel is in the reactor vessel; therefore, ITS 3.8.10 eliminates Technical Specification requirements for when there is no fuel in the reactor vessel unless irradiated fuel assemblies are being moved. This change does not involve a significant increase in the probability or consequences of an accident previously evaluated because the ITS LCO 3.8.10 Applicability ensures that: the unit can be maintained in the shutdown or refueling condition for extended periods; sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and, adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident. In general, when the plant is shut down, ITS LCO 3.8.10 requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents.

2. Does the change create the possibility of a new or different kind of accident from any accident previously evaluated?

   The proposed change will not involve any physical changes to systems, structures, or components, or involve a change in normal plant operation. Therefore, it will not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does this change involve a significant reduction in a margin of safety?

   This change does not involve a significant reduction in a margin of safety because the ITS LCO 3.8.10 Applicability ensures that: the unit can be maintained in the shutdown or refueling condition for extended periods; sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and, adequate AC electrical power is provided to mitigate events postulated during shutdown, such as a fuel handling accident. In general, when the plant is shut down, ITS LCO 3.8.10 requirements ensure that the unit has the capability to mitigate the consequences of postulated accidents.

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Technical Specification 3.8.10:
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PART 5:

NUREG-1431
Annotated to show differences between NUREG-1431 and ITS

Status of NUREG 1431 Generic Changes for ITS 3.8.10

This ITS Specification is based on NUREG-1431 Specification No. **3.8.10**
as modified by the following Generic Changes:

OG No.	TSTF No.	Generic Change Description	NRC STATUS	IP3 STATUS	JD No.
BWROG-008 R1	**036 R1**	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	Rejected by TSTF	Not Incorporated	**N/A**
BWROG-008 R3	**036 R3**	ADDITION OF LCO 3.0.3 N/A TO SHUTDOWN ELECTRICAL POWER SPECIFICATIONS	NRC Rejects: TSTF to Revise	Not Incorporated	**N/A**
BWROG-017	**051**	REVISE CONTAINMENT REQUIREMENTS DURING HANDLING IRRADIATED FUEL AND CORE ALTERATIONS (REQUIREMENTS LIMITED TO "RECENTLY" IRRADIATED FUEL)	NRC Review	Not Incorporated	**N/A**

3.8 ELECTRICAL POWER SYSTEMS

<CTS>

3.8.10 Distribution Systems—Shutdown

120 V AC vital instrument bus (VIB)

<3.7.F3>
<Doc M.1>
<DOC L.1>

LCO 3.8.10 The necessary portion of AC, DC, and AC vital bus electrical power distribution subsystems shall be OPERABLE to support equipment required to be OPERABLE.

<DOC L.2>

APPLICABILITY: MODES 5 and 6,
During movement of irradiated fuel assemblies.

ACTIONS

<Doc M.2>

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One or more required AC, DC, or AC vital bus electrical power distribution subsystems inoperable. instrument	A.1 Declare associated supported required feature(s) inoperable.	Immediately
	OR	
	A.2.1 Suspend CORE ALTERATIONS.	Immediately
	AND	
	A.2.2 Suspend movement of irradiated fuel assemblies.	Immediately
	AND	
	A.2.3 Initiate action to suspend operations involving positive reactivity additions.	Immediately
	AND	
		(continued)

X.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2.4 Initiate actions to restore required AC, DC, and AC vital instrument bus electrical power distribution subsystems to OPERABLE status. AND A.2.5 Declare associated required residual heat removal subsystem(s) inoperable and not in operation.	Immediately Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE	FREQUENCY
<Doc M3> SR 3.8.10.1 Verify correct breaker alignments and voltage to required AC, DC, and ~~AC vital bus~~ 120V AC vital instrument bus (VIB) electrical power distribution subsystems.	7 days

B 3.8 ELECTRICAL POWER SYSTEMS

B 3.8.10 Distribution Systems—Shutdown

120 VAC vital instrument bus (VIB)

BASES

BACKGROUND

A description of the AC, DC, and AC vital bus electrical power distribution systems is provided in the Bases for LCO 3.8.9, "Distribution Systems—Operating."

APPLICABLE SAFETY ANALYSES

14

The initial conditions of Design Basis Accident and transient analyses in the FSAR, Chapter [6] (Ref. 1) ~~and Chapter [15] (Ref. 2)~~, assume Engineered Safety Feature (ESF) systems are OPERABLE. The AC, DC, and AC vital bus VIB electrical power distribution systems are designed to provide sufficient capacity, capability, redundancy, and reliability to ensure the availability of necessary power to ESF systems so that the fuel, Reactor Coolant System, and containment design limits are not exceeded.

VIB

The OPERABILITY of the AC, DC, and AC ~~vital bus~~ electrical power distribution system is consistent with the initial assumptions of the accident analyses and the requirements for the supported systems' OPERABILITY.

The OPERABILITY of the minimum AC, DC, and AC vital bus electrical power distribution subsystems during MODES 5 and 6, and during movement of irradiated fuel assemblies ensures that:

a. The unit can be maintained in the shutdown or refueling condition for extended periods;

b. Sufficient instrumentation and control capability is available for monitoring and maintaining the unit status; and

c. Adequate power is provided to mitigate events postulated during shutdown, such as a fuel handling accident.

The AC and DC electrical power distribution systems satisfy Criterion 3 of ~~the NRC Policy Statement~~.

10 CFR 50.36

(continued)

BASES (continued)

LCO

Various combinations of subsystems, equipment, and components are required OPERABLE by other LCOs, depending on the specific plant condition. Implicit in those requirements is the required OPERABILITY of necessary support required features. This LCO explicitly requires energization of the portions of the electrical distribution system necessary to support OPERABILITY of required systems, equipment, and components—all specifically addressed in each LCO and implicitly required via the definition of OPERABILITY.

Maintaining these portions of the distribution system energized ensures the availability of sufficient power to operate the unit in a safe manner to mitigate the consequences of postulated events during shutdown (e.g., fuel handling accidents).

APPLICABILITY

The AC and DC electrical power distribution subsystems required to be OPERABLE in MODES 5 and 6, and during movement of irradiated fuel assemblies, provide assurance that:

a. Systems to provide adequate coolant inventory makeup are available for the irradiated fuel in the core;

b. Systems needed to mitigate a fuel handling accident are available;

c. Systems necessary to mitigate the effects of events that can lead to core damage during shutdown are available; and

d. Instrumentation and control capability is available for monitoring and maintaining the unit in a cold shutdown condition and refueling condition.

V18

The AC, DC, and ~~AC vital bus~~ electrical power distribution subsystems requirements for MODES 1, 2, 3, and 4 are covered in LCO 3.8.9.

(continued)

BASES (continued)

ACTIONS

A.1, A.2.1, A.2.2, A.2.3, A.2.4, and A.2.5

Although redundant required features may require redundant trains of electrical power distribution subsystems to be OPERABLE, one OPERABLE distribution subsystem train may be capable of supporting sufficient required features to allow continuation of CORE ALTERATIONS and fuel movement. By allowing the option to declare required features associated with an inoperable distribution subsystem inoperable, appropriate restrictions are implemented in accordance with the affected distribution subsystem LCO's Required Actions. In many instances, this option may involve undesired administrative efforts. Therefore, the allowance for sufficiently conservative actions is made (i.e., to suspend CORE ALTERATIONS, movement of irradiated fuel assemblies, and operations involving positive reactivity additions).

Suspension of these activities does not preclude completion of actions to establish a safe conservative condition. These actions minimize the probability of the occurrence of postulated events. It is further required to immediately initiate action to restore the required AC and DC electrical power distribution subsystems and to continue this action until restoration is accomplished in order to provide the necessary power to the unit safety systems.

Notwithstanding performance of the above conservative Required Actions, a required residual heat removal (RHR) subsystem may be inoperable. In this case, Required Actions A.2.1 through A.2.4 do not adequately address the concerns relating to coolant circulation and heat removal. Pursuant to LCO 3.0.6, the RHR ACTIONS would not be entered. Therefore, Required Action A.2.5 is provided to direct declaring RHR inoperable, which results in taking the appropriate RHR actions.

The Completion Time of immediately is consistent with the required times for actions requiring prompt attention. The restoration of the required distribution subsystems should be completed as quickly as possible in order to minimize the time the unit safety systems may be without power.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.8.10.1

VIB

This Surveillance verifies that the AC, DC, and ~~AC vital bus~~ electrical power distribution subsystems are functioning properly, with all the buses energized. The verification of proper voltage availability on the buses ensures that the required power is readily available for motive as well as control functions for critical system loads connected to these buses. The 7 day Frequency takes into account the capability of the electrical power distribution subsystems, and other indications available in the control room that alert the operator to subsystem malfunctions.

REFERENCES

1. FSAR, Chapter [6]. 14

~~2. FSAR, Chapter [15].~~

Indian Point 3
Improved Technical Specifications (ITS)
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PART 6:

Justification of Differences between

NUREG-1431 and IP3 ITS

JUSTIFICATION OF DIFFERENCES FROM NUREG-1431
ITS SECTION 3.8.10 Distribution Systems - Shutdown

RETENTION OF EXISTING REQUIREMENT (CURRENT LICENSING BASIS)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT

PA.1 Corrected typographical error or made a minor editorial improvement to improve clarity and ensure requirements are fully understood and consistently applied. There are no technical changes to requirements as specified in NUREG 1431, Rev. 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN OR DESIGN BASIS

DB.1 Design or implementation details are incorporated or revised as necessary to more precisely describe IP3 current design or practice. These changes are intended to describe the design, improve clarity, or ensure requirements are fully understood and consistently applied. Unless identified and described blow, these changes are self-explanatory. There are no technical changes to requirements as specified in NUREG 1431, Rev 1; therefore, this change is not a significant or generic deviation from NUREG 1431, Rev 1.

DIFFERENCE BASED ON A GENERIC CHANGE TRAVELER FOR NUREG-1431

None

DIFFERENCE FOR ANY REASON OTHER THAN ABOVE

None