September 27, 2007

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AFFECTED DOCUMENT: **IP3 ITS/BASES/TRM**

DOC #	REV #	TITLE	INSTRUCTIONS

TECH SPEC AMENDMENT 236

**************** **FOLLOW THE ATTACHED INSTRUCTIONS****************************

************ **PLEASE NOTE EFFECTIVE DATE*************

RECEIPT OF THE ABOVE LISTED DOCUMENT(S) IS HEREBY ACKNOWLEDGED. I CERTIFY THAT ALL SUPERSEDED, VOID, OR INACTIVE COPIES OF THE ABOVE LISTED DOCUMENT(S) IN MY POSSESSION HAVE BEEN REMOVED FROM USE AND ALL UPDATES HAVE BEEN PERFORMED IN ACCORDANCE WITH EFFECTIVE DATE(S) (IF APPLICABLE) AS SHOWN ON THE DOCUMENT(S).

NAME (PRINT)	SIGNATURE	DATE	CC# 518

Distribution of IP3 Technical Specification Amendment 236
(Approved by NRC June 9, 2008)

Pages are to be inserted into your controlled copy of the IP3 Improved Technical Specifications following the instructions listed below. The **TAB** notation indicates which section the pages are located.

REMOVE PAGE	INSERT PAGE
TAB – Facility Operating License	
FOL Page 3, Amd 235	FOL Page 3, Amd 236
TAB – List of Effective Pages	
Pages 1 through 3, (Amd 235)	Pages 1 through 3, (Amd 236)
TAB – List of Amendments	
Page 14	Page 14
TAB – Table of Contents	
Page ii, Amd 228	Page ii, Amd 236
TAB 3.6 – Containment Systems	
3.6.7-1, Amd 205	3.6.7-1, Amd 236
3.6.7-2, Amd 205	DELETED

(4) ENO pursuant to the Act and 10 CFR Parts 30, 40 and 70, to receive, possess, and use in amounts as required any byproduct, source or special nuclear material without restriction to chemical or physical form, for sample analysis or instrument calibration or associated with radioactive apparatus or components; — Amdt. 203 11/27/00

(5) ENO pursuant to the Act and 10 CFR Parts 30 and 70, to possess, but not separate, such byproduct and special nuclear materials as may be produced by the operation of the facility. — Amdt. 203 11/27/00

C. This amended license shall be deemed to contain and is subject to the conditions specified in the following Commission regulations in 10 CFR Chapter I: Part 20, Section 30.34 of Part 30, Section 40.41 of Part 40, Sections 50.54 and 50.59 of Part 50, and Section 70.32 of Part 70; and is subject to all applicable provisions of the Act and to the rules, regulations, and orders of the Commission now or hereafter in effect; and is subject to the additional conditions specified or incorporated below:

(1) Maximum Power Level

ENO is authorized to operate the facility at steady state reactor core power levels not in excess of 3216 megawatts thermal (100% of rated power).

(2) Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 236 are hereby incorporated in the License. ENO shall operate the facility in accordance with the Technical Specifications.

(3) (DELETED) — Amdt. 205 2-27-01

(4) (DELETED) — Amdt. 205 2-27-01

D. (DELETED) — Amdt.46 2-16-83

E. (DELETED) — Amdt.37 5-14-81

F. This amended license is also subject to appropriate conditions by the New York State Department of Environmental Conservation in its letter of May 2, 1975, to Consolidated Edison Company of New York, Inc., granting a Section 401 certification under the Federal Water Pollution Control Act Amendments of 1972.

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The latest amendment reflected in this list is: **Amendment 236**

AMENDMENT	SUBJECT	LETTER DATE
232	Adoption of TSTF-258, TSTF-308, and Related Administrative Control Changes Based on NUREG-1431	12/13/2006
233	Adoption of TSTF-449 - Steam Generator Tube Integrity	02/13/2007
234	Adoption of TSTF-485 and Miscellaneous Editorial Changes	08/16/2007
235	Extension of the RCS pressure/temperature limits and corresponding OPS limits from 20 to 27.2 EFPY.	10/04/2007
236	Replace Sodium Hydroxide Buffer with Sodium Tetraborate	06/09/2008

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3.6 CONTAINMENT SYSTEMS

3.6.7 Recirculation pH Control System

LCO 3.6.7 The Recirculation pH Control System shall be OPERABLE.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Recirculation pH Control System inoperable.	A.1 Restore Recirculation pH Control System to OPERABLE status.	72 hours
B. Required Action and associated Completion Time not met.	B.1 Be in MODE 3. AND B.2 Be in MODE 5.	6 hours 84 hours

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.6.7.1	Perform a visual inspection of eight sodium tetraborate storage baskets to verify each of the following: a. Each storage basket is in place and intact; and, b. Collectively contain $\geq$ 8096 pounds (160 cubic feet) of sodium tetraborate decahydrate, or equivalent.	24 Months

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DOC #	REV #	TITLE	INSTRUCTIONS
IP3 BASES			

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NDIAN POINT 3
TECHNICAL SPECIFICATION BASES

For immediate distribution, regarding implementation of License Amendment 236

INSTRUCTIONS FOR UPDATE: **26-06/27/2008**

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REVISION HISTORY FOR IP3 BASES

AFFECTED SECTIONS	REV	EFFECTIVE DATE	DESCRIPTION
ALL	0	03/19/01	Initial issue of Bases derived from NUREG-1431, in conjunction with Technical Specification Amendment 205 for conversion of 'Current Technical Specifications' to 'Improved Technical Specifications'.
		BASES UPDATE PACKAGE 01-031901	
B 3.4.13 B 3.4.15	1	03/19/01	Changes regarding containment sump flow monitor per NSE 01-3-018 LWD Rev 0. Change issued concurrent with Rev 0.
		BASES UPDATE PACKAGE 02-051801	
Table of Contents	1	05/18/01	Title of Section B 3.7.3 revised per Tech Spec Amend 207
B 3.7.3	1	05/18/01	Implementation of Tech Spec Amend 207
		BASES UPDATE PACKAGE 03-111901	
B 3.3.2	1	11/19/01	Correction to statement regarding applicability of Function 5, to be consistent with the Technical Specification.
B 3.3.3	1	11/19/01	Changes to reflect reclassification of certain SG narrow range level instruments as QA Category M per NSE 97-3-439, Rev 1.
B 3.4.13 B 3.4.15	2	11/19/01	Changes to reflect installation of a new control room alarm for 'VC Sump Pump Running'. Changes per NSE 01-3-018, Rev 1 and DCP 01-3-023 LWD.
B 3.7.11	1	11/19/01	Clarification of allowable flowrate for CRVS in 'incident mode with outside air makeup.'
		BASES UPDATE PACKAGE 04-012202	
B 3.3.2	2	01/22/02	Clarify starting logic of 32 ABFP per EVL-01-3-078 MULTI, Rev 0.
B 3.8.1	1	01/22/02	Provide additional guidance for SR 3.8.1.1 and Condition Statements A.1 and B.1 per EVL-01-3-078 MULTI, Rev 0.
B 3.8.4	1	01/22/02	Revision of battery design description per plant modification and to reflect Tech Spec Amendment 209.
B 3.8.9	1	01/22/02	Provide additional information regarding MCC in Table B 3.8.9-1 per EVL-01-3-078 MULTI, Rev 0.
		BASES UPDATE PACKAGE 05-093002	
B 3.0	1	09/30/02	Changes to reflect Tech Spec Amendment 212 regarding delay period for a missed surveillance. Changes adopt TSTF 358, Rev 6.
B 3.3.1	1	09/30/02	Changes regarding description of turbine runback feature per EVAL-99-3-063 NIS.
B 3.3.3	2	09/30/02	Changes to reflect Tech Spec Amendment 211 regarding CETs and other PAM instruments.
B 3.7.9	1	09/30/02	Changes regarding SWN -35-1 and -2 valves per EVAL-00-3-095 SWS, Rev 0.

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B 3.3.2 B 3.6.6 B 3.7.1 B 3.7.6	3 1 1 1	12/04/02	Changes to reflect Tech Spec Amendment 213 regarding 1.4% power uprate.
BASES UPDATE PACKAGE 07-031703			
B 3.3.8 B 3.7.13 B 3.9.3	1 1 1	03/17/2003	Changes to reflect Tech Spec Amendment 215 regarding implementation of Alternate Source Term analysis methodology to the Fuel Handling Accident.
BASES UPDATE PACKAGE 08-032803			
B 3.4.9	1	03/28/2003	Changes to reflect Tech Spec Amendment 216 regarding relaxation of pressurizer level limits in MODE 3.
BASES UPDATE PACKAGE 09-062003			
B 3.4.9	2	06/20/2003	Changes to reflect commitment for a dedicated operator per Tech Spec Amendment 216.
B 3.6.5	1	06/20/2003	Implements Corrective Action 11 from CR-IP3-2002-02095; 4 FCUs should be in operation to assure representative measurement of containment air temperature.
B 3.7.11	2	06/20/2003	Correction to Background description regarding system response to Firestat detector actuation per ACT 02-62887.
B 3.7.13	2	06/20/2003	Revision to Background description of FSB air tempering units to reflect design change per DCP 95-3-142.
B 3.8.7 B 3.8.8 B 3.8.9	1 1 2	06/20/2003 06/20/2003 06/20/2003	Changes to reflect replacement of Inverter 34 per DCP-01-022.
BASES UPDATE PACKAGE 10-102704			
B 3.1.3	1	10/27/2004	Clarification of the surveillance requirements for TS 3.1.3 per 50.59 screen.
B 3.3.5	1	10/27/2004	Clarify the requirements for performing a Trip Actuating Device Operational Test (TADOT) on the 480V degraded grid and undervoltage relays per 50.59 screen.
B 3.4.3 B 3.4.12	1 1	10/27/2004	Extension of the RCS pressure/temperature limits and corresponding OPS limits from 16.17 to 20 EFPY (TS Amendment 220).
B 3.5.1	1	10/27/2004	Changes to reflect Tech Spec Amendment 222 regarding extension of completion time for Accumulators.
BASES UPDATE PACKAGE 11-121004			
B 3.7.7	1	12/17/2004	Addition of valves CT-1300 and CT-1302 to Surveillance SR 3.7.7.2 to verify that all city water header supply isolation valves are open. Reflects Tech Spec Amendment 218.
BASES UPDATE PACKAGE 12-012405			
B 3.7.11	3	01/24/2005	Temporary allowance for use of KI/SCBA for unfiltered inleakage above limit.

AFFECTED SECTIONS	REV	EFFECTIVE DATE	DESCRIPTION
BASES UPDATE PACKAGE 13-022505			
B 3.7.5	1	02/25/2005	Clarification on Surveillance Requirement 3.7.5.3 as it relates to plant condition/frequency of performance of Auxiliary Feedwater Pump full flow testing.
BASES UPDATE PACKAGE 14-030705			
B 3.9.6	1	03/07/2005	Changes to reflect that the decay time prior to fuel movement is a minimum of 84 hours per Tech Spec Amendment 215.
BASES UPDATE PACKAGE 15-041105			
B 3.3.2 B 3.3.6 B. 3.3.7 B 3.7.11 B 3.7.12 B 3.7.14 B 3.9.6	4 1 1 4 1 1 2	04/11/2005	Changes to reflect AST as per Tech Spec Amendment 224. NOTE: In addition to the AST changes to B. 3.7.11, the temporary allowance for use of KI/SCBA for unfiltered inleakage above limit is being removed. Tracer Gas testing is complete.
BASES UPDATE PACKAGE 16-060305			
B 2.1.1 B 2.1.2 B 3.1.1 B 3.2.2 B 3.3.1 B 3.3.8 B 3.4.1 B 3.4.3 B 3.4.6 B 3.4.9 B 3.4.13 B 3.4.16 B 3.5.2 B 3.6.2 B 3.6.6 B 3.6.7 B 3.6.9 B 3.6.10 B 3.7.1 B 3.7.2 B 3.7.5 B 3.7.6 B 3.7.8 B 3.7.9 B 3.7.10 B 3.7.13 B 3.7.17 B 3.9.3	1 1 1 1 2 2 1 2 1 3 3 1 1 1 2 1 1 1 2 1 2 2 1 2 1 3 1 2	06/03/2005	Changes to reflect SPU as per Tech Spec Amendment 225.

AFFECTED SECTIONS	REV	EFFECTIVE DATE	DESCRIPTION
BASES UPDATE PACKAGE 17-081005			
TOC B 3.0 B 3.3.3 B 3.3.4 B 3.4.11 B 3.4.12 B 3.4.15 B 3.4.16 B 3.5.3 B 3.6.8 B 3.7.4 B 3.7.5 B 3.7.11 B 3.8.1	2 2 3 1 1 2 3 2 1 1 1 3 5 2	08/10/2005	B 3.3.3, B 3.6.8 – Removal of Hydrogen Recombiners from the bases as per Technical Specification Amendment 228. B 3.3.3 is also affected by Amendment 226. B 3.7.11 - Add reference that if the primary coolant source of containment is in question, refer to ITS 5.5.2. All other bases changes for this revision are associated with Technical Specification Amendment 226 regarding increase flexibility in Mode Restraints.
BASES UPDATE PACKAGE 18-091605			
B 3.5.2 B 3.6.10	2 2	09/16/2005	Reflect implementation of ER-04-2-029 as part of Stretch Power Uprate (SPU) – HHSI Modification. Update LCO and Condition B to clarify required actions consistent with FSAR.
BASES UPDATE PACKAGE 19-110405			
B 3.8.1	3	11/04/2005	Include operability criteria for 138 kV and 13.8 kV offsite circuits.
BASES UPDATE PACKAGE 20-070606			
B 3.9.1	1	07/06/2006	Clarification on effective method for ensuring shutdown margin.

AFFECTED SECTIONS	REV	EFFECTIVE DATE	DESCRIPTION
BASES UPDATE PACKAGE 21-11072006			
B 3.0	3	11/07/2006	Reflect allowing a delay time for entering a supported system TS when the inoperability is due solely to an inoperable snubber, if risk is assessed and managed. Limiting Condition of Operation 3.0.8 is added to provide this allowance and define the requirements and limitations of its use. (Amendment 229)
BASES UPDATE PACKAGE 22-04112007			
TOC B 3.4.4 B 3.4.5 B 3.4.6 B 3.4.7 B 3.4.13 B 3.4.17	3 1 1 2 1 4 0	04/11/2007	Implement TS Amendment 233 related to steam generator tube integrity.
BASES UPDATE PACKAGE 23-05162007			
B 3.7.2	2	05/16/2007	Removal of extraneous information regarding testing frequency.
BASES UPDATE PACKAGE 24-10052007			
B 3.3.1 B 3.8.2	3 1	10/05/2007	B 3.3.1 – The TS and bases currently allow a normal shutdown without the SR testing by reducing power below the modes of applicability for SR 3.3.1.8. Clarify that testing is not required if such testing was done within the prior 92 days, even if a mode of applicability was still met. B 3.8.2 – Clarify LCO with regard to the required power sources for modes 5 and 6.
BASES UPDATE PACKAGE 25-11022007			
B 3.4.3 B 3.4.10 B 3.4.12	3 1 3	11/2/2007	Revise LTOP arming temperature and EFPY expiration date for RCS P/T curves to reflect implementation of License Amendment 235.
BASES UPDATE PACKAGE 26-06272008			
TOC B 3.6.6 B 3.6.7	4 3 2	6/27/2008	Revise sections to reflect Amendment 236 changing sodium hydroxide to sodium tetraborate

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B 3.6 CONTAINMENT SYSTEMS

B 3.6.6 Containment Spray System and Containment Fan Cooler System

BASES

BACKGROUND

The Containment Spray System and Containment Fan Cooler System provide containment atmosphere cooling to limit post accident pressure and temperature in containment to less than the design values. Reduction of containment pressure and the iodine removal capability reduces the release of fission product radioactivity from containment to the environment, in the event of a Design Basis Accident (DBA), to within limits. The Containment Spray and Containment Fan Cooler systems are designed to meet the requirements of 10 CFR 50, Appendix A, GDC 38, "Containment Heat Removal," GDC 39, "Inspection of Containment Heat Removal Systems," GDC 40, "Testing of Containment Heat Removal Systems," GDC 41, "Containment Atmosphere Cleanup," GDC 42, "Inspection of Containment Atmosphere Cleanup Systems," and GDC 43, "Testing of Containment Atmosphere Cleanup Systems" (Ref. 1).

The Containment Spray System and Containment Fan Cooler System are Engineered Safety Feature (ESF) systems. They are designed to ensure that the heat removal capability required during the post accident period can be attained. The Containment Spray System and the Containment Fan Cooler System provide redundant methods to limit and maintain post accident conditions to less than the containment design values.

Containment Spray System

The Containment Spray System consists of two separate trains. Each train includes a containment spray pump, piping and valves and is independently capable of delivering one-half of the design flow needed to maintain the post-accident containment pressure below 47 psig. The spray water is injected into the containment through spray nozzles connected to four 360 degree ring headers located in the containment dome area. Each train supplies two of the four ring headers. Each train is powered from a separate safeguards power train. The refueling water storage tank (RWST) supplies borated water to the Containment Spray System during the injection phase of operation.

(continued)

BASES

BACKGROUND (continued)

After the Refueling Water Storage Tank has been exhausted, the containment recirculation pumps or the Residual Heat Removal (RHR) pumps are used to supply the Containment Spray ring headers for the long-term containment cooling and iodine removal during the containment recirculation phase. In this configuration, the RHR heat exchangers provide the necessary cooling of the recirculated containment spray.

The Containment Spray System provides a spray of cold borated water into the upper regions of containment to reduce the containment pressure and temperature. Additionally, these systems reduce fission products from the containment atmosphere during a DBA. The RWST solution temperature is an important factor in determining the heat removal capability of the Containment Spray System during the injection phase. In the recirculation mode of operation, heat is removed from the containment sump or recirculation sump water by the residual heat removal heat exchangers. Both trains of the Containment Spray System are needed to provide adequate spray coverage to meet the system design requirements for containment heat removal assuming the Fan Cooler System is not available.

The Recirculation pH Control System functions by dissolving STB into the Containment Spray Water. The resulting alkaline pH of the spray enhances the ability of the spray to scavenge fission products from the containment atmosphere. The STB dissolved in the spray also ensures an alkaline pH for the solution recirculated in the containment sump. The alkaline pH of the containment sump water minimizes the evolution of iodine and minimizes the occurrence of chloride and caustic stress corrosion on mechanical systems and components exposed to the fluid.

The Containment Spray System is actuated either automatically by a containment High-High pressure signal or manually. An automatic actuation starts the two containment spray pumps, opens the containment spray pump discharge valves, and begins the injection phase. A manual actuation of the Containment Spray System requires the operator to actuate two separate push buttons on the main control board to begin the same sequence. The injection phase continues until the RWST water supply is exhausted. After the Refueling Water Storage Tank has been exhausted, the containment recirculation pumps or the

(continued)

BASES

BACKGROUND (continued)

residual heat removal (RHR) pumps may be used to supply the Containment Spray ring headers for the long-term containment cooling and iodine removal during the containment recirculation phase. In this configuration, the RHR heat exchangers provide the necessary cooling of the recirculated containment spray. The Containment Spray function in the recirculation mode may be used to maintain an equilibrium temperature between the containment atmosphere and the recirculated sump water. The Containment Spray function in the recirculation mode is controlled by the operator in accordance with the emergency operating procedures.

Containment Fan Cooler System

The Containment Fan Cooler System consists of five 20% capacity Fan Cooler Units (FCUs) located inside containment. These FCUs are used for both normal and post accident cooling of the containment atmosphere. Each FCU consists of a motor, fan, cooling coils, moisture separators, HEPA filters, carbon filters, dampers, duct distribution system, instrumentation and controls. Service water is supplied to the cooling coils to perform the heat removal function.

During normal plant operation, the moisture separators, HEPA filters and activated carbon filter assembly are isolated from the main air recirculation stream. In this configuration, service water is supplied to all five FCUs and two or more FCUs fans are typically operated to limit the ambient containment air temperature during normal unit operation to less than the limit specified in LCO 3.6.5, "Containment Air Temperature." This temperature limitation ensures that the containment temperature does not exceed the initial temperature conditions assumed for the DBAs.

In post accident operation following an actuation signal, the Containment Cooling System fans are designed to start automatically. Additionally, the actuation signal causes the air flow (air-steam mixture) in each FCU to be split into two parts by a bypass flow control damper that fails to a pre-set position for accident operation. A minimum of 8000 cfm is directed through the FCU filtration section (moisture separators, HEPA filters, and carbon filter assembly) with the remainder of the air flow bypassing the

(continued)

BASES

BACKGROUND (continued)

filtration section. Both the filtered and unfiltered FCU flow passes through the cooling coils. The temperature of the service water is an important factor in the heat removal capability of the fan units. The accident analysis assumes 1400 gpm of service (cooling) water with a maximum river water inlet temperature of 95° F is supplied to each FCU.

Containment Cooling and Iodine Removal Function

The containment cooling and iodine removal functions are provided by a combination of the containment spray and the containment fan cooler systems.

Requirements for Containment Spray Trains may be designated by the number of the containment spray pump or the associated safeguards power train. Containment Spray Train 31 is associated with Safeguards Power Train 5A which is supported by DG 33. Containment Spray Train 32 is associated with Safeguards Power Train 6A which is supported by DG 32.

Requirements for the five fan cooler units are designated by grouping the 5 fan cooler units into three trains based on the safeguards power train needed to support Operability. This results in the following designations:

Fan Cooler Train 5A consists of FCU 31 and FCU 33;

Fan Cooler Train 2A/3A consists of FCU 32 and FCU 34; and

Fan Cooler Train 6A consists of FCU 35.

The configuration with one containment spray train and two fan cooler trains is the configuration available following the loss of any safeguards power train (e.g., diesel failure).

(continued)

BASES

APPLICABLE SAFETY ANALYSES

The Containment Spray System and Containment Fan Cooler System limit the temperature and pressure that could be experienced following a DBA. The limiting DBAs considered are the loss of coolant accident (LOCA) and the steam line break (SLB). The LOCA and SLB are analyzed using computer codes designed to predict the resultant containment pressure and temperature transients. No DBAs are assumed to occur simultaneously or consecutively. The postulated DBAs are analyzed with regard to containment ESF systems, assuming the loss of one safeguards power train, which is the worst case single active failure and results in one train of Containment Spray and one train of Fan Coolers being rendered inoperable.

The analysis and evaluation show that under the worst case scenario, the highest peak containment pressure and temperature may result from either a LOCA or SLB, depending on the cycle specific analysis (Refs. 4 and 6). Both results meet the intent of the design basis. (See the Bases for LCO 3.6.4, "Containment Pressure," and LCO 3.6.5 for a detailed discussion.) The analyses and evaluations assume a unit specific power level of 102% and initial (pre-accident) containment conditions of 130 °F and 2.5 psig and a service water inlet temperature of 95 °F. The analyses also assume a response time delayed initiation to provide conservative peak calculated containment pressure and temperature responses.

For certain aspects of transient accident analyses, maximizing the calculated containment pressure is not conservative.

In particular, the effectiveness of the Emergency Core Cooling System during the core reflood phase of a LOCA analysis increases with increasing containment backpressure. For these calculations, the containment backpressure is calculated in a manner designed to conservatively minimize, rather than maximize, the calculated transient containment pressures in accordance with 10 CFR 50, Appendix K (Ref. 2).

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The effect of an inadvertent containment spray activation has been analyzed. An inadvertent spray activation results in a rapid reduction of containment pressure and is associated with the sudden cooling effect in the interior of a leak tight containment. Additional documentation is provided in the Bases for LCO 3.6.4.

The modeled Containment Spray System actuation from the containment analysis is based on a response time associated with exceeding the containment High-High pressure setpoint to achieving full flow through the containment spray nozzles. The Containment Spray System total response time includes diesel generator (DG) startup (for loss of offsite power), loading of equipment, containment spray pump startup, and spray line filling.

Containment cooling train performance for post accident conditions is given in References 3, 4 and 6. The result of the analysis is that accident analysis assumptions regarding containment air cooling and iodine removal are met by one containment spray train and any two fan cooler trains (i.e., at least three fan cooler units).

This configuration is the configuration available following the loss of any safeguards power train (e.g., diesel failure).

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The modeled Containment Cooling System actuation from the containment analysis is based upon a response time associated with exceeding the containment High-High pressure setpoint to achieving full Containment Fan Cooler System air and safety grade cooling water flow.

The Containment Cooling System total response time includes signal delay, DG startup (for loss of offsite power), and service water pump startup times (Ref.4).

The Containment Spray System and Containment Fan Cooler System satisfy Criterion 3 of 10 CFR 50.36.

LCO

Accident analysis assumptions regarding containment air cooling and iodine removal are met by one containment spray train and any two fan cooler trains (i.e., at least three fan cooler units).

This configuration is the configuration available following the loss of any safeguards power train (e.g., diesel failure).

Each Containment Spray System includes a spray pump, spray headers, nozzles, valves, piping, instruments, and controls to ensure an OPERABLE flow path capable of taking suction from the RWST upon an ESF actuation signal.

Each FCU consists of a motor, fan, cooling coils, moisture separators, HEPA filters, carbon filters, dampers, duct distribution system, instrumentation and controls necessary to maintain an OPERABLE flow path for the containment atmosphere through both the filtration unit and cooling coils and an OPERABLE flow path for service water through the cooling coils.

(continued)

BASES

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment and an increase in containment pressure and temperature requiring the operation of the containment spray trains and containment cooling trains.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations of these MODES. Thus, the Containment Spray System and Containment Fan Cooler System are not required to be OPERABLE in MODES 5 and 6.

ACTIONS

A.1

With one containment spray train inoperable, the inoperable containment spray train must be restored to OPERABLE status within 72 hours. In this Condition, the remaining OPERABLE spray and fan cooler trains are adequate to perform the iodine removal and containment cooling functions. The 72 hour Completion Time takes into account the redundant heat removal capability afforded by the Containment Spray System, reasonable time for repairs, and low probability of a DBA occurring during this period.

The 10 day portion of the Completion Time for Required Action A.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3, "Completion Times," for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

B.1 and B.2

If the inoperable containment spray train cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS

B.1 and B.2 (continued)

The extended interval to reach MODE 5 allows additional time for attempting restoration of the containment spray train and is reasonable when considering the driving force for a release of radioactive material from the Reactor Coolant System is reduced in MODE 3.

C.1

With one of the required containment fan cooler trains inoperable, the inoperable required containment fan cooler train must be restored to OPERABLE status within 7 days. The components in this degraded condition provide iodine removal capabilities and are capable of providing at least 100% of the heat removal needs. The 7 day Completion Time was developed taking into account the redundant heat removal capabilities afforded by combinations of the Containment Spray System and Containment Fan Cooler System and the low probability of DBA occurring during this period. The 10 day portion of the Completion Time for Required Action C.1 is based upon engineering judgment. It takes into account the low probability of coincident entry into two Conditions in this Specification coupled with the low probability of an accident occurring during this time. Refer to Section 1.3 for a more detailed discussion of the purpose of the "from discovery of failure to meet the LCO" portion of the Completion Time.

D.1

With two required containment fan cooler trains inoperable, one of the required containment cooling trains must be restored to OPERABLE status within 72 hours. This allowable out of service time is acceptable because the minimum required containment cooling and iodine removal function is maintained even though this configuration is a substantial degradation from the design capability, and may be a loss of redundancy for this function.

(continued)

BASES

ACTIONS (continued)

E.1 and E.2

If the Required Action and associated Completion Time of Condition C or D of this LCO are not met, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant 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 plant conditions from full power conditions in an orderly manner and without challenging plant systems.

F.1

With two containment spray trains or any combination of three or more containment spray and fan cooler trains inoperable, the unit could be in a condition outside the accident analysis. Entering this Condition represents a substantial degradation of the containment heat removal and iodine removal function. Therefore, LCO 3.0.3 must be entered immediately.

SURVEILLANCE REQUIREMENTS

SR 3.6.6.1

Verifying the correct alignment for manual, power operated, and automatic valves in the containment spray flow path provides assurance that the proper flow paths will exist for Containment Spray System operation. This SR does not apply to valves that are locked, sealed, or otherwise secured in position, since these were verified to be in the correct position prior to locking, sealing, or securing. This SR does not require any testing or valve manipulation. Rather, it involves verification, through a system walkdown, that those valves outside containment (check valves are inside containment) and capable of potentially being mispositioned are in the correct position. Valves in containment with remote position indication may be checked using remote position indication.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6.2

Operating each containment fan cooler unit for ≥ 15 minutes ensures that all fan cooler units are OPERABLE and that all associated controls are functioning properly. It also ensures that blockage, fan or motor failure, or excessive vibration can be detected for corrective action. The 92 day Frequency was developed considering fan coolers are operated during normal plant operation, the known reliability of the fan units and controls, the two train redundancy available, and the low probability of significant degradation of the containment fan cooler units occurring between surveillances. It has also been shown to be acceptable through operating experience.

SR 3.6.6.3

Verifying that the service water flow rate to each fan cooler unit is ≥ 1400 gpm provides assurance that the design flow rate assumed in the safety analyses will be achieved (Ref. 3). The 92 day Frequency was developed considering the known reliability of the Cooling Water System, the redundancy available, and the low probability of a significant degradation of flow occurring between surveillances.

SR 3.6.6.4

Verifying each containment spray pump's developed head at the flow test point is greater than or equal to the required developed head ensures that spray pump performance has not degraded during the cycle. Flow and differential pressure are normal tests of centrifugal pump performance required by Section XI of the ASME Code (Ref. 5). Since the containment spray pumps cannot be tested with flow through the spray headers, they are tested 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 abnormal performance. The Frequency of the SR is in accordance with the Inservice Testing Program.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.6.6.5 and SR 3.6.6.6

These SRs require verification that each automatic containment spray valve actuates to its correct position and that each containment spray pump starts upon receipt of an actual or simulated actuation of a containment High-High pressure signal. This Surveillance is not required for valves that are locked, sealed, or otherwise secured in the required position under administrative controls. The tests are performed with the isolation valves in the spray supply lines at the containment and the spray additive tank isolation valves blocked closed.

The 24 month Frequency is based on the need to perform these Surveillances under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillances were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillances when performed at the 24 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

SR 3.6.6.7

This SR requires verification that each containment fan cooler unit starts and damper re-positions to the emergency mode upon receipt of an actual or simulated safety injection signal. The 24 month Frequency is based on engineering judgment and has been shown to be acceptable through operating experience. See SR 3.6.6.5 and SR 3.6.6.6, above, for further discussion of the basis for the 24 month Frequency.

SR 3.6.6.8

This SR verifies that the required Fan Cooler Unit testing is performed in accordance with Specification 5.5.10, Ventilation Filter Testing Program (VFTP). The VFTP includes testing the performance of the HEPA filter, charcoal adsorber efficiency, minimum flow rate, and

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.6.6.8 (continued)

the physical properties of the activated charcoal. Specific test Frequencies and additional information are discussed in detail in the VFTP.

SR 3.6.6.9

With the containment spray inlet valves closed and the spray header drained of any solution, low pressure air or smoke can be blown through test connections. This SR ensures that each spray nozzle is unobstructed and provides assurance that spray coverage of the containment during an accident is not degraded. Due to the passive design of the nozzle, a test at 10 year intervals is considered adequate to detect obstruction of the nozzles.

REFERENCES

1. 10 CFR 50, Appendix A.
2. 10 CFR 50, Appendix K.
3. FSAR, Sections 6.3 and 6.4.
4. FSAR, Section 14.3 Table 14.3-56.
5. ASME, Boiler and Pressure Vessel Code, Section XI.
6. WCAP - 16212P, Indian Point Nuclear Power Generating Unit No. 3 Stretch Power Uprate NSSS and BOP Licensing Report, June 2004.

B 3.6 CONTAINMENT SYSTEMS

B 3.6.7 Recirculation pH Control System

BASES

BACKGROUND

The Recirculation pH Control System is a passive safeguard with baskets of sodium tetraborate decahydrate (STB), or equivalent, that assists in reducing the iodine fission product inventory in the containment atmosphere resulting from a Design Basis Accident (DBA).

Radioiodine in its various forms is the fission product of primary concern in the evaluation of a DBA. It is absorbed by the spray from the containment atmosphere. To enhance the iodine retention capacity of the spray during recirculation from the sump, the spray solution is adjusted to an alkaline pH that promotes iodine hydrolysis, in which iodine is converted to nonvolatile forms. The sodium tetraborate decahydrate (STB) is stored in baskets in the containment building. The initial spray, a boric acid solution from the refueling water storage tank has a pH of about 4.5. As the initial spray solution and, subsequently the recirculation solution comes in contact with the STB, the STB dissolves raising the pH of the sump solution. Reference 2 indicates that the pH should be between 7.0 and 9.5 and that the potential for increased hydrogen generation from aluminum should be addressed at pH greater than 7.5. An alkaline pH minimizes the evolution of iodine as well as the occurrence of chloride and caustic stress corrosion on mechanical systems and components.

BASES

APPLICABLE SAFETY ANALYSES

Following the assumed release of radioactive materials into containment, the containment is assumed to leak at its design value volume following the accident. The analysis assumes that 80% of containment is covered by the spray (Ref. 1). The pH of the initial spray from the RWST is about 4.5.

The Recirculation pH Control System is a passive safeguard with the baskets of STB located in the containment. The initial spray solution and subsequently the recirculation solution come in contact with the STB in the baskets and dissolves to raise the pH. The Recirculation pH System is OPERABLE when there is sufficient STB available to guarantee a sump pH of $\geq$7.0 during the recirculation phase of a postulated LOCA. Calculation of pH was performed for STB. The mass of STB required to provide an equilibrium sump pH solution of about 7.1 is 8,096 pounds. A 10,000 mass of STB provides a sump pH of about 7.2.

The Recirculation pH Control System satisfies Criterion 3 of 10 CFR 50.36.

LCO

The Recirculation pH Control System reduces the release of radioactive material to the environment in the event of a DBA. To be considered OPERABLE, the STB baskets must be in place and intact and collectively contain $\geq$8,096 pounds (160 cubic feet) of STB or equivalent.

APPLICABILITY

In MODES 1, 2, 3, and 4, a DBA could cause a release of radioactive material to containment requiring the operation of the Recirculation pH Control System. The Recirculation pH Control System assists in reducing the iodine fission product inventory prior to release to the environment.

In MODES 5 and 6, the probability and consequences of these events are reduced due to the pressure and temperature limitations in these MODES. Thus, the Recirculation pH Control System is not required to be OPERABLE in MODE 5 or 6.

(continued)

BASES

ACTIONS

A.1

If the Recirculation pH Control System is inoperable, it must be restored to OPERABLE within 72 hours. The pH adjustment for corrosion protection and iodine removal enhancement is reduced in this condition. The Containment Spray System and Containment Fan Cooler System are available and would remove iodine from the containment atmosphere in the event of a DBA. The 72 hour Completion Time takes into account the redundant flow path capabilities and the low probability of the worst case DBA occurring during this period.

B.1 and B.2

If the Recirculation pH Control System cannot be restored to OPERABLE status within the required Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 84 hours. The allowed Completion Time of 6 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems. The extended interval to reach MODE 5 allows 48 hours for restoration of the Recirculation pH Control System in MODE 3 and 36 hours to reach MODE 5. This is reasonable when considering the reduced pressure and temperature conditions in MODE 3 for the release of radioactive material from the Reactor Coolant System.

SURVEILLANCE REQUIREMENTS

SR 3.6.7.1

This SR provides visual verification that each of the eight storage sodium tetraborate baskets is in place and intact and collectively contain $\geq$ 8,096 pounds (160 cubic feet) of sodium tetraborate decahydrate, or equivalent. This amount of STB is sufficient to ensure that the recirculation solution following a LOCA is at the correct pH level. The 24 month frequency is sufficient to ensure that the stainless steel baskets are intact and contain the appropriate amount of STB.

(continued)

BASES

REFERENCES

1. FSAR, Chapters 6 and 14.
2. NUREG-0800, "Standard Review Plan," Section 6.5.2, "Containment Spray as a Fission Product Cleanup System," Revision 4 dated March 2007 containing Branch Technical Position 6-1 "pH For Emergency Coolant Water for Pressurized Water Reactors" Revision 0 dated March 2007.