JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.3

Control Rod OPERABILITY

MARKUP OF NUREG-1433, REVISION 1 SPECIFICATION

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Control Rod OPERABILITY

[ITS 3.3.A.2]
[A1] LCO 3.1.3 Each control rod shall be OPERABLE.

[A1] APPLICABILITY: MODES 1 and 2.

ACTIONS

---NOTE---
[A1] Separate Condition entry is allowed for each control rod.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One withdrawn control rod stuck. [3.3.A.2.a] [L1] [A1]	---NOTE--- Rod worth minimizer (RWM) may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation," if required, to allow continued operation. --- A.1 (Y2) Disarm the associated control rod drive (CRD). AND	2 hours (TA1) (continued)

A.1 Verify stuck control rod separation criteria met — Immediately

AND (TA1)

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BWR/4 STS

Amendment ..
Rev 1, 04/07/95

Typ All Pages

REVISION D

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. (continued)	A.2 --------NOTE-------- Not applicable when less than or equal to the low power setpoint (LPSP) of the RWM. ---------- Perform SR 3.1.3.2 and SR 3.1.3.3 for each withdrawn OPERABLE control rod. AND	24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM.
[4.3.A.2.d]	A.3 (4) Perform SR 3.1.1.1.	72 hours
B. Two or more withdrawn control rods stuck. [3.3.A.2.a] [M2]	B.1 Disarm the associated CRD. AND B.2 Be in MODE 3.	2 hours 12 hours
C. One or more control rods inoperable for reasons other than Condition A or B. [3.3.A.2.c 3.3.A.2.d] [M1] [A1]	C.1 --------NOTE-------- RWM may be bypassed as allowed by LCO 3.3.2.1, if required, to allow insertion of inoperable control rod and continued operation. ---------- Fully insert inoperable control rod. AND	3 hours

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2 Disarm the associated CRD.	4 hours
D. ---------NOTE--------- Not applicable when THERMAL POWER > [10]% RTP. --- Two or more inoperable control rods not in compliance with banked position withdrawal sequence (BPWS) and not separated by two or more OPERABLE control rods.	D.1 Restore compliance with BPWS. OR D.2 Restore control rod to OPERABLE status.	4 hours 4 hours
E. ---------NOTE--------- Not applicable when THERMAL POWER > [10]% RTP. --- One or more groups with four or more inoperable control rods.	E.1 Restore control rod to OPERABLE status.	4 hours
Required Action and associated Completion Time of Condition A, C, D, or E not met. OR Nine or more control rods inoperable.	F.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	24 hours
SR 3.1.3.2	----------NOTE---------- Not required to be performed until 7 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of RWM. ---------- Insert each fully withdrawn control rod at least one notch.	7 days
SR 3.1.3.3	----------NOTE---------- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM. ---------- Insert each partially withdrawn control rod at least one notch.	31 days
SR 3.1.3.4	Verify each control rod scram time from fully withdrawn to notch position [06] 04 is ≤ 7 seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.3.5	Verify each control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position AND Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling

[4.3.B.1]

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.3

Control Rod OPERABILITY

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS: 3.1.3 - CONTROL ROD OPERABILITY

RETENTION OF EXISTING REQUIREMENT (CLB)

None

RAI 3.1-03

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA1 Not used

PA2 Editorial changes made for consistency.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 The brackets have been removed and the proper plant specific value has been included.

DB2 Action E of ISTS 3.1.3 is applicable to plants with ANF (Siemens Power Corporation) fuel. JAFNPP does not use ANF fuel. Therefore, this Action has been deleted. ITS 3.1.3 ACTION F has been renumbered as ACTION E.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 32, Revision 0, have been incorporated into the revised Improved Technical Specifications.

TA2 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 33, Revision 0, have been incorporated into the revised Improved Technical Specifications.

TA3 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 34, Revision 0, have been incorporated into the revised Improved Technical Specifications.

DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

None

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.3

Control Rod OPERABILITY

MARKUP OF NUREG-1433, REVISION 1, BASES

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.3 Control Rod OPERABILITY

BASES

BACKGROUND

Control rods are components of the control rod drive (CRD) System, which is the primary reactivity control system for the reactor. In conjunction with the Reactor Protection System, the CRD System provides the means for the reliable control of reactivity changes to ensure under conditions of normal operation, including ~~anticipated operational occurrences~~ abnormal operational transients, that specified acceptable fuel design limits are not exceeded. In addition, the control rods provide the capability to hold the reactor core subcritical under all conditions and to limit the potential amount and rate of reactivity increase caused by a malfunction in the CRD System. The CRD System is designed to satisfy the requirements ~~of GDC 26, GDC 27, GDC 28, and 29 (Ref. 1)~~ specified in Reference 1.

The CRD System consists of 137 locking piston ~~control rod drive mechanisms (CRDMs)~~ CRD and a hydraulic control unit for ~~each drive mechanism~~. The locking piston type CRD is a double acting hydraulic piston, which uses condensate water as the operating fluid. Accumulators provide additional energy for scram. An index tube and piston, coupled to the control rod, are locked at fixed increments by a collet mechanism. The collet fingers engage notches in the index tube to prevent unintentional withdrawal of the control rod, but without restricting insertion.

This Specification, along with LCO 3.1.4, "Control Rod Scram Times," and LCO 3.1.5, "Control Rod Scram Accumulators," ensure that the performance of the control rods in the event of a Design Basis Accident (DBA) or transient meets the assumptions used in the safety analyses of References 2, 3 and 4.

APPLICABLE SAFETY ANALYSES

The analytical methods and assumptions used in the evaluations involving control rods are presented in References 2, 3, and 4. The control rods provide the primary means for rapid reactivity control (reactor scram), for maintaining the reactor subcritical and for limiting the potential effects of reactivity insertion events caused by malfunctions in the CRD System.

(continued)

BASES

(Refs. 2 and 3) DB2

APPLICABLE SAFETY ANALYSES (continued)

The capability to insert the control rods provides assurance that the assumptions for scram reactivity in the DBA and transient analyses are not violated. Since the SDM ensures the reactor will be subcritical with the highest worth control rod withdrawn (assumed single failure), the additional failure of a second control rod to insert, if required, could invalidate the demonstrated SDM and potentially limit the ability of the CRD System to hold the reactor subcritical. If the control rod is stuck at an inserted position and becomes decoupled from the CRD, a control rod drop accident (CRDA) can possibly occur. Therefore, the requirement that all control rods be OPERABLE ensures the CRD System can perform its intended function.

The control rods also protect the fuel from damage which could result in release of radioactivity. The limits protected are the MCPR Safety Limit (SL) (see Bases for SL 2.1.1, "Reactor Core SLs," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)"), the 1% cladding plastic strain fuel design limit (see Bases for LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," and LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)"), and the fuel damage limit (see Bases for LCO 3.1.6, "Rod Pattern Control") during reactivity insertion events.

The negative reactivity insertion (scram) provided by the CRD System provides the analytical basis for determination of plant thermal limits and provides protection against fuel damage limits during a CRDA. The Bases for LCO 3.1.4, LCO 3.1.5, and LCO 3.1.6 discuss in more detail how the SLs are protected by the CRD System.

Control rod OPERABILITY satisfies Criterion 3 of the NRC Policy Statement. X1

10 CFR 50.36 (c)(2)(ii) (Ref. 4)

LCO

The OPERABILITY of an individual control rod is based on a combination of factors, primarily, the scram insertion times, the control rod coupling integrity, and the ability to determine the control rod position. Accumulator OPERABILITY is addressed by LCO 3.1.5. The associated scram accumulator status for a control rod only affects the scram insertion times; therefore, an inoperable accumulator does not immediately require declaring a control rod inoperable. Although not all control rods are required to be OPERABLE to

(continued)

BASES

LCO (continued)

satisfy the intended reactivity control requirements, strict control over the number and distribution of inoperable control rods is required to satisfy the assumptions of the DBA and transient analyses.

APPLICABILITY

In MODES 1 and 2, the control rods are assumed to function during a DBA or transient and are therefore required to be OPERABLE in these MODES. In MODES 3 and 4, control rods are not able to be withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate requirements for control rod OPERABILITY during these conditions. Control rod requirements in MODE 5 are located in LCO 3.9.5, "Control Rod OPERABILITY—Refueling."

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each control rod. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable control rod. Complying with the Required Actions may allow for continued operation, and subsequent inoperable control rods are governed by subsequent Condition entry and application of associated Required Actions.

A.1, A.2, and A.3 → A.4 TA1

A control rod is considered stuck if it will not insert by either CRD drive water or scram pressure. With a fully inserted control rod stuck, no actions are required as long as the control rod remains fully inserted. The Required Actions are modified by a Note, which allows the rod worth minimizer (RWM) to be bypassed if required to allow continued operation. LCO 3.3.2.1, "Control Rod Block Instrumentation," provides additional requirements when the RWM is bypassed to ensure compliance with the CRDA analysis. With one withdrawn control rod stuck, the associated control rod drive must be disarmed in 2 hours. The allowed Completion Time of 2 hours is acceptable, considering the reactor can still be shut down, assuming no additional control rods fail to insert, and provides a reasonable time

TA1 Insert B 3.1.3-1

(hydraulically) TA4

(continued)

TA1

Insert B 3.1.3-1:

the local scram reactivity rate assumptions may not be met if the stuck control rod separation criteria are not met. Therefore, a verification that the separation criteria are met must be performed immediately. The separation criteria are not met if a) the stuck control rod occupies a location adjacent to two "slow" control rods, b) the stuck control rod occupies a location adjacent to one "slow" control rod, and the one "slow" control rod is also adjacent to another "slow" control rod, or c) if the stuck control rod occupies a location adjacent to one "slow" control rod when there is another pair of "slow" control rods adjacent to one another. The description of "slow" control rods is provided in LCO 3.1.4, "Control Rod Scram Times." In addition,

BASES

ACTIONS A.1, A.2, and A.3 (continued)

to perform the Required Action in an orderly manner. Isolating the control rod from scram prevents damage to the CRDM. The control rod can be isolated from scram and normal insert and withdraw pressure yet still maintain cooling water to the CRD. In this manner

INSERT B 3.1.3-2

Monitoring of the insertion capability of each withdrawn control rod must also be performed within 24 hours. SR 3.1.3.2 and SR 3.1.3.3 perform periodic tests of the control rod insertion capability of withdrawn control rods. Testing each withdrawn control rod ensures that a generic problem does not exist. The allowed Completion Time of 24 hours provides a reasonable time to test the control rods, considering the potential for a need to reduce power to perform the tests. Required Action A.2 is modified by a Note, which states that the requirement is not applicable when THERMAL POWER is less than or equal to the actual low power setpoint (LPSP) of the RWM since the notch insertions may not be compatible with the requirements of rod pattern control (LCO 3.1.6) and the RWM (LCO 3.3.2.1).

INSERT B 3.1.3-3

INSERT B 3.1.3-4

To allow continued operation with a withdrawn control rod stuck, an evaluation of adequate SDM is also required within 72 hours. Should a DBA or transient require a shutdown, to preserve the single failure criterion, an additional control rod would have to be assumed to fail to insert when required. Therefore, the original SDM demonstration may not be valid. The SDM must therefore be evaluated (by measurement or analysis) with the stuck control rod at its stuck position and the highest worth OPERABLE control rod assumed to be fully withdrawn.

The allowed Completion Time of 72 hours to verify SDM is adequate, considering that with a single control rod stuck in a withdrawn position, the remaining OPERABLE control rods are capable of providing the required scram and shutdown reactivity. Failure to reach MODE 4 is only likely if an additional control rod adjacent to the stuck control rod also fails to insert during a required scram. Even with the postulated additional single failure of an adjacent control rod to insert, sufficient reactivity control remains to reach and maintain MODE 3 conditions (Ref. 5).

(continued)

TA2

Insert B 3.1.3-2:

from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM.

TA2

Insert B 3.1.3-3:

from discovery of Condition A concurrent with THERMAL POWER greater than the LPSP of the RWM

TA2

Insert B 3.1.3-4:

This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." The Required Action A.3 Completion Time only begins upon discovery of Condition A concurrent with THERMAL POWER greater than

BASES

ACTIONS (continued)

B.1 and B.2

With two or more withdrawn control rods stuck, the stuck control rods should be isolated from scram pressure within 2 hours and the plant brought to MODE 3 within 12 hours. Isolating the control rod from scram prevents damage to the CRDM. The control rod can be isolated from scram and normal insert and withdraw pressure, yet still maintain cooling water to the CRD. The allowed Completion Time is acceptable, considering the low probability of a CRDA occurring during this interval. The occurrence of more than one control rod stuck at a withdrawn position increases the probability that the reactor cannot be shut down if required. Insertion of all insertable control rods eliminates the possibility of an additional failure of a control rod to insert. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

With one or more control rods inoperable for reasons other than being stuck in the withdrawn position, operation may continue, provided the control rods are fully inserted within 3 hours and disarmed (electrically or hydraulically) within 4 hours. Inserting a control rod ensures the shutdown and scram capabilities are not adversely affected. The control rod is disarmed to prevent inadvertent withdrawal during subsequent operations. The control rods can be hydraulically disarmed by closing the drive water and exhaust water isolation valves. The control rods can be electrically disarmed by disconnecting power from all four directional control valve solenoids. Required Action C.1 is modified by a Note, which allows the RWM to be bypassed if required to allow insertion of the inoperable control rods and continued operation. LCO 3.3.2.1 provides additional requirements when the RWM is bypassed to ensure compliance with the CRDA analysis.

The allowed Completion Times are reasonable, considering the small number of allowed inoperable control rods, and provide time to insert and disarm the control rods in an orderly manner and without challenging plant systems.

(continued)

BASES

ACTIONS (continued)

D.1 and D.2

Out of sequence control rods may increase the potential reactivity worth of a dropped control rod during a CRDA. At ≤ 10% RTP, the generic banked position withdrawal sequence (BPWS) analysis (Ref. 5) requires inserted control rods not in compliance with BPWS to be separated by at least two OPERABLE control rods in all directions, including the diagonal. Therefore, if two or more inoperable control rods are not in compliance with BPWS and not separated by at least two OPERABLE control rods, action must be taken to restore compliance with BPWS or restore the control rods to OPERABLE status. Condition D is modified by a Note indicating that the Condition is not applicable when > 10% RTP, since the BPWS is not required to be followed under these conditions, as described in the Bases for LCO 3.1.6. The allowed Completion Time of 4 hours is acceptable, considering the low probability of a CRDA occurring.

DB3

E.1

In addition to the separation requirements for inoperable control rods, an assumption in the CRDA analysis for ANF fuel is that no more than three inoperable control rods are allowed in any one BPWS group. Therefore, with one or more BPWS groups having four or more inoperable control rods, the control rods must be restored to OPERABLE status. Required Action E.1 is modified by a Note indicating that the Condition is not applicable when THERMAL POWER is > 10% RTP since the BPWS is not required to be followed under these conditions, as described in the Bases for LCO 3.1.6. The allowed Completion Time of 4 hours is acceptable, considering the low probability of a CRDA occurring.

DB3

E

E.1

If any Required Action and associated Completion Time of Condition A, C, D, or E are not met, or there are nine or more inoperable control rods, 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 MODE 3 within 12 hours. This ensures all insertable control rods are inserted and places the reactor in a condition that does not require the

DB3

(continued)

BASES

ACTIONS E.1 (continued)

active function (i.e., scram) of the control rods. The number of control rods permitted to be inoperable when operating above 10% RTP (e.g., no CRDA considerations) could be more than the value specified, but the occurrence of a large number of inoperable control rods could be indicative of a generic problem, and investigation and resolution of the potential problem should be undertaken. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.3.1

The position of each control rod must be determined to ensure adequate information on control rod position is available to the operator for determining CRD OPERABILITY and controlling rod patterns. Control rod position may be determined by the use of OPERABLE position indicators, by moving control rods to a position with an OPERABLE indicator, or by the use of other appropriate methods. The 24 hour Frequency of this SR is based on operating experience related to expected changes in control rod position and the availability of control rod position indications in the control room.

SR 3.1.3.2 and SR 3.1.3.3

Control rod insertion capability is demonstrated by inserting each partially or fully withdrawn control rod at least one notch and observing that the control rod moves. The control rod may then be returned to its original position. This ensures the control rod is not stuck and is free to insert on a scram signal. These Surveillances are not required when THERMAL POWER is less than or equal to the actual LPSP of the RWM, since the notch insertions may not be compatible with the requirements of the Banked Position Withdrawal Sequence (BPWS) (LCO 3.1.6) and the RWM (LCO 3.3.2.1). The 7 day Frequency of SR 3.1.3.2 is based on operating experience related to the changes in CRD performance and the ease of performing notch testing for fully withdrawn control rods. Partially withdrawn control

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.3.2 and SR 3.1.3.3 (continued)

rods are tested at a 31 day Frequency, based on the potential power reduction required to allow the control rod movement and considering the large testing sample of SR 3.1.3.2. Furthermore, the 31 day Frequency takes into account operating experience related to changes in CRD performance. At any time, if a control rod is immovable, a determination of the control rod's ~~trippability~~ (OPERABILITY) must be made and appropriate action taken.

INSERT B 3.1.3-5

SR 3.1.3.4

Verifying that the scram time for each control rod to notch position 05 is ≤ 7 seconds provides reasonable assurance that the control rod will insert when required during a DBA or transient, thereby completing its shutdown function. This SR is performed in conjunction with the control rod scram time testing of SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," and the functional testing of SDV vent and drain valves in LCO 3.1.8, "Scram Discharge Volume (SDV) Vent and Drain Valves," overlap this Surveillance to provide complete testing of the assumed safety function. The associated Frequencies are acceptable, considering the more frequent testing performed to demonstrate other aspects of control rod OPERABILITY and operating experience, which shows scram times do not significantly change over an operating cycle.

SR 3.1.3.5

Coupling verification is performed to ensure the control rod is connected to the CRD and will perform its intended function when necessary. The Surveillance requires verifying a control rod does not go to the withdrawn overtravel position. The overtravel position feature provides a positive check on the coupling integrity since only an uncoupled CRD can reach the overtravel position. The verification is required to be performed any time a control rod is withdrawn to the "full out" position (notch position 48) or prior to declaring the control rod OPERABLE after work on the control rod or CRD System that could

(continued)

PA4

Insert B 3.1.3-5:

These SRs are modified by Notes that allows 7 days and 31 days respectively, after withdrawal of the control rod and increasing power to above the LPSP of the RWM, to perform the Surveillance. This acknowledges that the control rod must be first withdrawn and THERMAL POWER must increase to above the LPSP before performance of the Surveillance, and therefore the Notes avoid potential conflicts with SR 3.0.3 and SR 3.0.4.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.3.5 (continued)

affect coupling. This includes control rods inserted one notch and then returned to the "full out" position during the performance of SR 3.1.3.2. This Frequency is acceptable, considering the low probability that a control rod will become uncoupled when it is not being moved and operating experience related to uncoupling events.

REFERENCES

1. 10 CFR 50, Appendix A, GDC 26, GDC 27, GDC 28, and GDC 29. ← UFSAR Section 16.6 (DB1)
2. UFSAR, Section ~~[4.2.3.2.2.4]~~ 14.6 (PA2, DB2)
3. UFSAR, Section ~~[5A.4.3]~~ 14.5
4. ~~FSAR, Section [15.1]~~ 10 CFR 50.36(c)(2)(ii) (XI)
5. NEDO-21231, "Banked Position Withdrawal Sequence," Section 7.2, January 1977. (PA3)

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.3

Control Rod OPERABILITY

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.1.3 - CONTROL ROD OPERABILITY

RETENTION OF EXISTING REQUIREMENT (CLB)

CLB1 Notch Position 04 corresponds to 90% insertion consistent with the current requirements in CTS 3.3.C.3.

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA1 Typographical/grammatical error corrected.

PA2 Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature.

PA3 The quotations used in the Bases References have been removed. The Writer's Guide does not require the use of quotations.

PA4 The Bases have been revised for clarity with no change in intent.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 JAFNPP was designed and under construction prior to the promulgation of Appendix A to 10 CFR 50 - General Design Criteria for Nuclear Power Plants. The JAFNPP Construction Permit was issued on May 20, 1970. The proposed General Design Criteria (GDC) were published in the Federal Register on July 11, 1967 (32 FR 10213) and became effective on February 20, 1971 (32 FR 3256). UFSAR Section 16.6 - Conformance to AEC Design Criteria, describes the JAFNPP current licensing basis with regard to the GDC. ISTS statements concerning the GDC are modified in the ITS to reference UFSAR Section 16.6.

DB2 The Bases have been modified to reflect the JAFNPP specific references.

DB3 Action E of ISTS 3.1.3 is applicable to plants with ANF (Siemens Power Corporation) fuel. JAFNPP does not use ANF fuel. Therefore, this Action has been deleted. ITS ACTION F has been relabelled ACTION E.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 32, Revision 0, have been incorporated into the revised Improved Technical Specifications.

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.1.3 - CONTROL ROD OPERABILITY

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA2 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 33, Revision 0, have been incorporated into the revised Improved Technical Specifications.

TA3 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler Number 34, Revision 0, have been incorporated into the revised Improved Technical Specifications.

DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

X1 NUREG-1433, Revision 1, Bases reference to "the NRC Policy Statement" has been replaced with 10 CFR 50.36(c)(2)(ii), in accordance with 60 FR 36953 effective August 18, 1995.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.3

Control Rod OPERABILITY

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

3.1 REACTIVITY CONTROL SYSTEMS

3.1.3 Control Rod OPERABILITY

LCO 3.1.3 Each control rod shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each control rod.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One withdrawn control rod stuck.	----------NOTE---------- Rod worth minimizer (RWM) may be bypassed as allowed by LCO 3.3.2.1, "Control Rod Block Instrumentation," if required, to allow continued operation. --- A.1 Verify stuck control rod separation criteria met. AND A.2 Disarm the associated control rod drive (CRD). AND	 Immediately 2 hours (continued)

RAI 3.1.1-03

ACTIONS

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. (continued)	A.3	Perform SR 3.1.3.2 and SR 3.1.3.3 for each withdrawn OPERABLE control rod.	24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM
	AND		
	A.4	Perform SR 3.1.1.1.	72 hours
B. Two or more withdrawn control rods stuck.	B.1	Be in MODE 3.	12 hours
C. One or more control rods inoperable for reasons other than Condition A or B.	C.1	--------NOTE-------- RWM may be bypassed as allowed by LCO 3.3.2.1, if required, to allow insertion of inoperable control rod and continued operation. ---------- Fully insert inoperable control rod.	3 hours
	AND		
	C.2	Disarm the associated CRD.	4 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
D. ---------NOTE--------- Not applicable when THERMAL POWER > 10% RTP. ---------- Two or more inoperable control rods not in compliance with banked position withdrawal sequence (BPWS) and not separated by two or more OPERABLE control rods.	D.1 Restore compliance with BPWS. OR D.2 Restore control rod to OPERABLE status.	4 hours 4 hours
E. Required Action and associated Completion Time of Condition A, C, or D not met. OR Nine or more control rods inoperable.	E.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

	SURVEILLANCE	FREQUENCY
SR 3.1.3.1	Determine the position of each control rod.	24 hours
SR 3.1.3.2	----------NOTE---------- Not required to be performed until 7 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM. ---------- Insert each fully withdrawn control rod at least one notch.	7 days
SR 3.1.3.3	----------NOTE---------- Not required to be performed until 31 days after the control rod is withdrawn and THERMAL POWER is greater than the LPSP of the RWM. ---------- Insert each partially withdrawn control rod at least one notch.	31 days
SR 3.1.3.4	Verify each control rod scram time from fully withdrawn to notch position 04 is ≤ 7 seconds.	In accordance with SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.1.3.5	Verify each control rod does not go to the withdrawn overtravel position.	Each time the control rod is withdrawn to "full out" position AND Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect coupling

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.3 Control Rod OPERABILITY

BASES

BACKGROUND

Control rods are components of the Control Rod Drive (CRD) System, which is the primary reactivity control system for the reactor. In conjunction with the Reactor Protection System, the CRD System provides the means for the reliable control of reactivity changes to ensure under conditions of normal operation, including abnormal operational transients, that specified acceptable fuel design limits are not exceeded. In addition, the control rods provide the capability to hold the reactor core subcritical under all conditions and to limit the potential amount and rate of reactivity increase caused by a malfunction in the CRD System. The CRD System is designed to satisfy the requirements specified in Reference 1.

The CRD System consists of 137 locking piston CRDs and a hydraulic control unit for each CRD. The locking piston type CRD is a double acting hydraulic piston, which uses condensate water as the operating fluid. Accumulators provide additional energy for scram. An index tube and piston, coupled to the control rod, are locked at fixed increments by a collet mechanism. The collet fingers engage notches in the index tube to prevent unintentional withdrawal of the control rod, but without restricting insertion.

This Specification, along with LCO 3.1.4, "Control Rod Scram Times," and LCO 3.1.5, "Control Rod Scram Accumulators," ensure that the performance of the control rods in the event of a Design Basis Accident (DBA) or transient meets the assumptions used in the safety analyses of References 2, and 3.

APPLICABLE SAFETY ANALYSES

The control rods provide the primary means for rapid reactivity control (reactor scram), for maintaining the reactor subcritical and for limiting the potential effects of reactivity insertion events caused by malfunctions in the CRD System.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The capability to insert the control rods provides assurance that the assumptions for scram reactivity in the DBA and transient analyses are not violated (Refs. 2 and 3). Since the SDM ensures the reactor will be subcritical with the highest worth control rod withdrawn (assumed single failure), the additional failure of a second control rod to insert, if required, could invalidate the demonstrated SDM and potentially limit the ability of the CRD System to hold the reactor subcritical. If the control rod is stuck at an inserted position and becomes decoupled from the CRD, a control rod drop accident (CRDA) can possibly occur. Therefore, the requirement that all control rods be OPERABLE ensures the CRD System can perform its intended function.

The control rods also protect the fuel from damage which could result in release of radioactivity. The limits protected are the MCPR Safety Limit (SL) (see Bases for SL 2.1.1, "Reactor Core SLs," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)"), the 1% cladding plastic strain fuel design limit (see Bases for LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)", and LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)") and the fuel damage limit (see Bases for LCO 3.1.6, "Rod Pattern Control") during reactivity insertion events.

The negative reactivity insertion (scram) provided by the CRD System provides the analytical basis for determination of plant thermal limits and provides protection against fuel damage limits during a CRDA. The Bases for LCO 3.1.4, LCO 3.1.5, and LCO 3.1.6 discuss in more detail how the SLs are protected by the CRD System.

Control rod OPERABILITY satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 4).

LCO

The OPERABILITY of an individual control rod is based on a combination of factors, primarily, the scram insertion times, the control rod coupling integrity, and the ability to determine the control rod position. Accumulator OPERABILITY is addressed by LCO 3.1.5. The associated scram accumulator status for a control rod only affects the scram insertion times; therefore, an inoperable accumulator does not immediately require declaring a control rod inoperable. Although not all control rods are required to be OPERABLE to

(continued)

BASES

LCO (continued)

satisfy the intended reactivity control requirements, strict control over the number and distribution of inoperable control rods is required to satisfy the assumptions of the DBA and transient analyses.

APPLICABILITY

In MODES 1 and 2, the control rods are assumed to function during a DBA or transient and are therefore required to be OPERABLE in these MODES. In MODES 3 and 4, control rods are not able to be withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate requirements for control rod OPERABILITY during these conditions. Control rod requirements in MODE 5 are located in LCO 3.9.5, "Control Rod OPERABILITY – Refueling."

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each control rod. This is acceptable, since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable control rod. Complying with the Required Actions may allow for continued operation, and subsequent inoperable control rods are governed by subsequent Condition entry and application of associated Required Actions.

A.1, A.2, A.3, and A.4

A control rod is considered stuck if it will not insert by either CRD drive water or scram pressure. With a fully inserted control rod stuck, no actions are required as long as the control rod remains fully inserted. The Required Actions are modified by a Note, which allows the rod worth minimizer (RWM) to be bypassed if required to allow continued operation. LCO 3.3.2.1, "Control Rod Block Instrumentation," provides additional requirements when the RWM is bypassed to ensure compliance with the CRDA analysis. With one withdrawn control rod stuck, the local scram reactivity rate assumptions may not be met if the stuck control rod separation criteria are not met. Therefore, a verification that the separation criteria are met must be performed immediately. The separation criteria are not met if a) the stuck control rod occupies a location adjacent to

(continued)

BASES

ACTIONS

A.1, A.2, A.3, and A.4 (continued)

two "slow" control rods, b) the stuck control rod occupies a location adjacent to one "slow" control rod, and the one "slow" control rod is also adjacent to another "slow" control rod, or c) if the stuck control rod occupies a location adjacent to one "slow" control rod when there is another pair of "slow" control rods adjacent to one another. The description of "slow" control rods is provided in LCO 3.1.4, "Control Rod Scram Times." In addition, the associated control rod drive must be disarmed (hydraulically) in 2 hours. The allowed Completion Time of 2 hours is acceptable, considering the reactor can still be shut down, assuming no additional control rods fail to insert, and provides a reasonable time to perform the Required Action in an orderly manner. The control rod must be isolated from both scram and normal insert and withdraw pressure. Isolating the control rod in this manner prevents damage to the stuck CRD. In addition, the control rod should be isolated while maintaining cooling water to the CRD.

Demonstrating the insertion capability of each withdrawn control rod must also be performed within 24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the low power setpoint (LPSP) of the RWM. SR 3.1.3.2 and SR 3.1.3.3 require periodic tests of the control rod insertion capability of withdrawn control rods. Testing each withdrawn control rod ensures that a generic problem does not exist. This Completion Time allows for an exception to the normal "time zero" for beginning the allowed outage time "clock." The Required Action A.3 Completion Time only begins upon discovery of Condition A concurrent with THERMAL POWER greater than the actual LPSP of the RWM since the notch insertions may not be compatible with the requirements of rod pattern control (LCO 3.1.6) and the RWM (LCO 3.3.2.1). The allowed Completion Time of 24 hours from discovery of Condition A concurrent with THERMAL POWER greater than the LPSP of the RWM provides a reasonable time to test the control rods, considering the potential for a need to reduce power to perform the tests.

To allow continued operation with a withdrawn control rod stuck, an evaluation of adequate SDM is also required within 72 hours. Should a DBA or transient require a shutdown, to preserve the single failure criterion, an additional control

(continued)

BASES

ACTIONS

A.1, A.2, A.3, and A.4 (continued)

rod would have to be assumed to fail to insert when required. Therefore, the original SDM demonstration may not be valid. The SDM must therefore be evaluated (by measurement or analysis) with the stuck control rod at its stuck position and the highest worth OPERABLE control rod assumed to be fully withdrawn.

The allowed Completion Time of 72 hours to verify SDM is adequate, considering that with a single control rod stuck in a withdrawn position, the remaining OPERABLE control rods are capable of providing the required scram and shutdown reactivity. Failure to reach MODE 4 condition is only likely if an additional control rod adjacent to the stuck control rod also fails to insert during a required scram. Even with the postulated additional single failure of an adjacent control rod to insert, sufficient reactivity control remains to reach and maintain MODE 3 conditions (Ref. 5).

RAI 3.1-04

B.1

With two or more withdrawn control rods stuck, the plant must be brought to MODE 3 within 12 hours. The occurrence of more than one control rod stuck at a withdrawn position increases the probability that the reactor cannot be shut down if required. Insertion of all insertable control rods eliminates the possibility of an additional failure of a control rod to insert. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

C.1 and C.2

With one or more control rods inoperable for reasons other than being stuck in the withdrawn position, operation may continue, provided the control rods are fully inserted within 3 hours and disarmed (electrically or hydraulically) within 4 hours. Inserting a control rod ensures the shutdown and scram capabilities are not adversely affected. The control rod is disarmed to prevent inadvertent withdrawal during subsequent operations. The control rods

(continued)

BASES

ACTIONS

C.1 and C.2 (continued)

can be hydraulically disarmed by closing the drive water and exhaust water isolation valves. The control rods can be electrically disarmed by disconnecting power from all four directional control valve solenoids. Required Action C.1 is modified by a Note, which allows the RWM to be bypassed if required to allow insertion of the inoperable control rods and continued operation. LCO 3.3.2.1 provides additional requirements when the RWM is bypassed to ensure compliance with the CRDA analysis.

The allowed Completion Times are reasonable, considering the small number of allowed inoperable control rods, and provide time to insert and disarm the control rods in an orderly manner and without challenging plant systems.

D.1 and D.2

Out of sequence control rods may increase the potential reactivity worth of a dropped control rod during a CRDA. At ≤ 10% RTP, the generic banked position withdrawal sequence (BPWS) analysis (Ref. 5) requires inserted control rods not in compliance with BPWS to be separated by at least two OPERABLE control rods in all directions, including the diagonal. Therefore, if two or more inoperable control rods are not in compliance with BPWS and not separated by at least two OPERABLE control rods, action must be taken to restore compliance with BPWS or restore the control rods to OPERABLE status. Condition D is modified by a Note indicating that the Condition is not applicable when > 10% RTP, since the BPWS is not required to be followed under these conditions, as described in the Bases for LCO 3.1.6. The allowed Completion Time of 4 hours is acceptable, considering the low probability of a CRDA occurring.

E.1

If any Required Action and associated Completion Time of Condition A, C, or D are not met, or there are nine or more inoperable control rods, 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 MODE 3 within 12 hours. This

(continued)

BASES

ACTIONS

E.1 (continued)

ensures all insertable control rods are inserted and places the reactor in a condition that does not require the active function (i.e., scram) of the control rods. The number of control rods permitted to be inoperable when operating above 10% RTP (i.e., no CRDA considerations) could be more than the value specified, but the occurrence of a large number of inoperable control rods could be indicative of a generic problem, and investigation and resolution of the potential problem should be undertaken. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.1.3.1

The position of each control rod must be determined to ensure adequate information on control rod position is available to the operator for determining control rod OPERABILITY and controlling rod patterns. Control rod position may be determined by the use of OPERABLE position indicators, by moving control rods to a position with an OPERABLE indicator, or by the use of other appropriate methods. The 24 hour Frequency of this SR is based on operating experience related to expected changes in control rod position and the availability of control rod position indications in the control room.

SR 3.1.3.2 and SR 3.1.3.3

Control rod insertion capability is demonstrated by inserting each partially or fully withdrawn control rod at least one notch and observing that the control rod moves. The control rod may then be returned to its original position. This ensures the control rod is not stuck and is free to insert on a scram signal. These Surveillances are not required when THERMAL POWER is less than or equal to the actual LPSP of the RWM, since the notch insertions may not be compatible with the requirements of the Banked Position Withdrawal Sequence (BPWS) (LCO 3.1.6) and the RWM (LCO 3.3.2.1). The 7 day Frequency of SR 3.1.3.2 is based on operating experience related to the changes in CRD

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.3.2 and SR 3.1.3.3 (continued)

performance and the ease of performing notch testing for fully withdrawn control rods. Partially withdrawn control rods are tested at a 31 day Frequency, based on the potential power reduction required to allow the control rod movement and considering the large testing sample of SR 3.1.3.2. Furthermore, the 31 day Frequency takes into account operating experience related to changes in CRD performance. At any time, if a control rod is immovable, a determination of the control rods OPERABILITY must be made and appropriate action taken. These SRs are modified by Notes that allows 7 days and 31 days respectively, after withdrawal of the control rod and increasing power to above the LPSP of the RWM, to perform the Surveillance. This acknowledges that the control rod must be first withdrawn and THERMAL Power must increase to above the LPSP before performance of the Surveillance, and therefore the Notes avoid potential conflicts with SR 3.0.3 and SR 3.0.4.

SR 3.1.3.4

Verifying that the scram time for each control rod to notch position 04 is ≤ 7 seconds provides reasonable assurance that the control rod will insert when required during a DBA or transient, thereby completing its shutdown function. This SR is performed in conjunction with the control rod scram time testing of SR 3.1.4.1, SR 3.1.4.2, SR 3.1.4.3, and SR 3.1.4.4. The LOGIC SYSTEM FUNCTIONAL TEST in LCO 3.3.1.1, "Reactor Protection System (RPS) Instrumentation," and the functional testing of SDV vent and drain valves in LCO 3.1.8, "Scram Discharge Volume (SDV) Vent and Drain Valves," overlap this Surveillance to provide complete testing of the assumed safety function. The associated Frequencies are acceptable, considering the more frequent testing performed to demonstrate other aspects of control rod OPERABILITY and operating experience, which shows scram times do not significantly change over an operating cycle.

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.1.3.5

Coupling verification is performed to ensure the control rod is connected to the CRD and will perform its intended function when necessary. The Surveillance requires verifying a control rod does not go to the withdrawn overtravel position. The overtravel position feature provides a positive check on the coupling integrity since only an uncoupled CRD can reach the overtravel position. The verification is required to be performed any time a control rod is withdrawn to the "full out" position (notch position 48) or prior to declaring the control rod OPERABLE after work on the control rod or CRD System that could affect coupling. This includes control rods inserted one notch and then returned to the "full out" position during the performance of SR 3.1.3.2. This Frequency is acceptable, considering the low probability that a control rod will become uncoupled when it is not being moved and operating experience related to uncoupling events.

REFERENCES

1. UFSAR, Section 16.6.
2. UFSAR, Section 14.6.
3. UFSAR, Section 14.5.
4. 10 CFR 50.36(c)(2)(ii).
5. NEDO-21231, Banked Position Withdrawal Sequence, Section 7.2, January 1977.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

DISCUSSION OF CHANGES (DOCs) TO THE CTS

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

MARKUP OF NUREG-1433, REVISION 1, SPECIFICATION

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1
MARKUP OF NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

JAFNPP

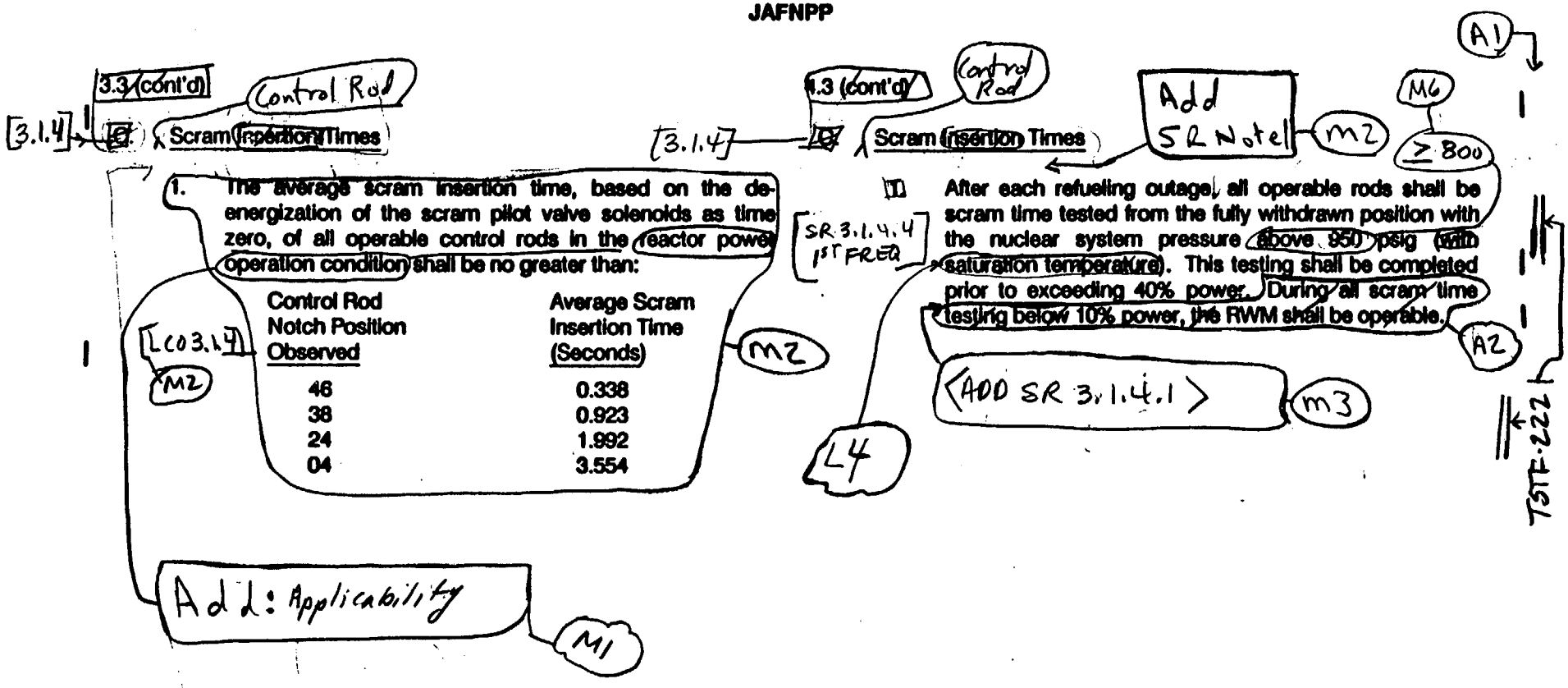
IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

Specification 3.1.4



Specification 3.1.4

A1

L1 120 days cumulative operation in MODE 1

LA1 representative samples

3.3.C (cont'd)

2. The average of the scram insertion times for the three fastest operable control rods of all groups of four control rods in a two-by-two array shall be no greater than:

Control Rod Notch Position Observed	Average Scram Insertion Time (Seconds)
46	0.361
38	0.977
24	2.112
04	3.764

M2

Enter applicable Conditions and Required Actions of LCO 3.1.3 when

Table 3.1.4-1 Note 2

The maximum scram insertion time for 90 percent insertion of any operable control rod shall not exceed 7.00 sec. A3

These control rods are inoperable in accordance with SR 3.1.3.4, and are not considered "slow"

M2

add Table 3.1.4-1 Note 1, Footnote (a)

M2

add Table 3.1.4-1 Footnote (b)

M4

4.3.C (cont'd)

2. At 16-week intervals, 10 percent of the operable control rod drives shall be scram timed above 950 psig. The same control rod drives should not be tested each interval. Whenever such scram time measurements are made, an evaluation shall be made to provide reasonable assurance that proper control rod drive performance is being maintained. [SR 3.1.4.2]

7809

M6

L2

add SR 3.1.4.3 SR 3.1.4.4; 2ND FREQ

M4

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3. All control rods shall be determined operable by demonstrating the scram discharge volume drain and vent valves are:

	Item	Frequency
a.	Verified Open	Once per 31 Days
b.	Cycled Fully Closed and Open	In accordance with the Inservice Testing Program
c.	Verified to close within 30 seconds after receipt of an actual or simulated scram signal and open when the actual or simulated scram signal is reset.	Once per 24 Months

See ITS 3.1.8

Specification 3.1.4

A1

3.3 (cont'd)

D. Reactivity Anomalies

The reactivity equivalent of the difference between the actual critical rod configuration and the expected configuration during power operation shall not exceed 1 percent Δ k. If this limit is exceeded, the reactor will be shut down until the cause has been determined and corrective actions have been taken as appropriate.

E. If Specifications 3.3.C and D above cannot be met, an orderly shutdown shall be initiated and the reactor shall be in the cold condition within 24 hr.

[ACTION A]

L3

4.3 (cont'd)

D. Reactivity Anomalies

During the Startup test program and startup following refueling outages, the critical rod configurations will be compared to the expected configurations at selected operating conditions. These comparisons will be used as base data for reactivity monitoring during subsequent power operation throughout the fuel cycle. At specific power operating conditions, the critical rod configuration will be compared to the configuration expected based upon appropriately corrected past data. This comparison will be made at least every full power month.

See ITS: 3.1.2

add Required Action A1 and Completion Time

M5

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

DISCUSSION OF CHANGES (DOCs) TO THE CTS

DISCUSSION OF CHANGES
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

ADMINISTRATIVE CHANGES

A1 In the conversion of the James A. FitzPatrick Nuclear Power Plant (JAFNPP) Current Technical Specification (CTS) to the proposed plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes. Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the conventions in NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4", Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

A2 CTS 4.3.C.1 requires the Rod Worth Minimizer (RWM) to be Operable during scram time testing when below 10% RTP. However, CTS 3.3.B.3 (ITS 3.3.2.1) already requires the RWM to be Operable when in Startup or Run MODES and less than 10% RTP. Therefore, this requirement is essentially duplicative of the normal requirement and is deleted as an administrative change. This is consistent with NUREG-1433, Revision 1.

A3 In CTS 3.3.C.3 the maximum insertion time is specified in terms of " 90% insertion". Scram times are measured from signals generated by reed switches corresponding to control rod notch positions. The proposed change will specify scram insertion time limits (in ITS Table 3.1.4-1 Note 2) in terms of "notch position" within a specified number of seconds. This terminology is consistent with the other scram time limits specified in CTS 3.3.C.1 and CTS 3.3.C.2. This will eliminate the need to convert notch position to "% insertion" to verify acceptance criteria. Since the only effect of specifying limits in terms of notch position instead of % insertion is to eliminate the need to convert the units after performance of a test, this is an administrative change.

TECHNICAL CHANGES - MORE RESTRICTIVE

M1 CTS 3.3.C.1 gives the Applicability of minimum scram times as "in the reactor power operation condition," which is defined as greater than 1% RTP. Proposed ITS LCO 3.1.4 has minimum scram times limits applicable during MODES 1 and 2. This change is more restrictive than the existing requirement because it now applies to all conditions where a reactor scram may be required by the accident analysis including reactor startup and power ascension.

M2 The proposed change to CTS 3.3.C (ITS 3.1.4 and Table 3.1.4-1) provides a different method to determine if measured scram insertion times are sufficient to insert the amount of negative reactivity assumed in the accident and transient analyses. A description and supporting analysis for the proposed method is contained in BWROG-8754, letter from R.F. Janecek (BWROG) to R.W. Starostecki (NRC), dated September 17, 1987.

TECHNICAL CHANGES - MORE RESTRICTIVE

M2 (continued)

The purpose of the control rod scram time LCO is to ensure the negative scram reactivity corresponding to that used in licensing basis calculations is supported by individual control rod drive scram time performance allowed by the Technical Specifications. CTS 3.3.C.3 accomplishes the above purpose by placing requirements on maximum individual control Rod Drive scram times (7.00 second requirement), average scram times and local scram times (average of three fastest control rods in all groups of four). Because the methodology used in the design basis transient analysis (one dimensional neutronics), all control rods are assumed to scram at the same speed. This is called the analytical scram time limit. Performing an evaluation assuming all control rods scram at the analytical limit results in the generation of a scram reactivity versus time curve, that is called the analytical scram reactivity curve. It is the purpose of the scram time LCO to ensure that, under allowed plant conditions, this analytical scram reactivity will be met. Since scram reactivity cannot be readily measured at the plant, the safety analyses use appropriately conservative scram reactivity versus insertion fraction curves to account for the variation in scram reactivity during a cycle. Therefore, the Technical Specifications must only ensure the scram times are satisfied.

If all control rods scram at least as fast as the analytical limit, the analytical scram reactivity curve will be met. However, it is also known that a distribution of scram times (some slower and some faster than the analytical limit) can also provide adequate scram reactivity. By definition, for a situation where all control rods do not satisfy the analytical scram time limits, the condition is acceptable if the resulting scram reactivity meets or exceeds the analytical scram reactivity curve. This can be evaluated using models which allow for a distribution of scram speeds. It follows that the more control rods that scram slower than the analytical limit, the faster the remaining control rods must scram to compensate for the reduced scram reactivity rate of the slower control rods. ITS 3.1.4 incorporates this, specifying scram time limits for each individual control rod instead of limits on average of all control rods or the average of groups of four control rods. This approach is similar to that currently being used for the BWR/6 STS. The LCO scram time limits have margin to the analytical scram time limits to allow for a specified number and distribution of slow control rods, a single stuck control rod and an assumed single failure.

TECHNICAL CHANGES - MORE RESTRICTIVE

M2 (continued)

Therefore, if all control rods meet the proposed LCO scram time limit found in ITS Table 3.1.4-1 (as measured from the de-energization of scram pilot valve solenoids at time zero (Note a)), the analytical scram reactivity assumptions are satisfied. If any control rods do not meet the LCO time limit, the LCO specifies the number and distribution of these "slow" control rods to ensure the analytical scram reactivity assumptions are still satisfied.

If the "slow" rods are excessive (> 7% of 137 or > 10) or do not meet the distribution requirements, the plant must be shutdown. This change is considered more restrictive on plant operation since the proposed individual times are more restrictive than the average times. That is, in the CTS, the "average time" of all rods or a group can be improved by a few fast scramming rods, even when there may be more than 10 "slow" rods, as defined in the proposed ITS specification. Therefore, the proposed Specification limits the number of slow rods to 10 and ensures each slow rod is separated by two Operable rods.

The current maximum scram time requirement, CTS 3.3.C.3, has been retained in the proposed ITS 3.1.3, for the purpose of defining the threshold between a "slow" control rod and an inoperable control rod even though the analyses to determine the LCO scram time limits assumed "slow" control rods did not scram. The proposed Note to Table 3.1.4-1 (Note 2) ensures that a control rod is not considered "slow" when the scram time exceeds 7 seconds and it should be considered inoperable.

In addition, a note is proposed to be added to the Surveillance Requirements Table requiring that, during a single control rod scram time Surveillance, the CRD pumps be isolated from the associated accumulator. This ensures that accumulator pressure alone is scramming the rod, not the CRD pump pressure (which can improve the scram times).

M3 An additional Surveillance is proposed to be added (SR 3.1.4.1) to perform scram time tests on all control rods prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days. This change represents an additional restriction on plant operation necessary to ensure control rod operability is maintained.

M4 Two Surveillance Requirements are proposed to be added requiring a scram time test after work on a control rod or CRD that could affect the scram time (proposed SRs 3.1.4.3 and 3.1.4.4 2nd Frequency) and after fuel movement within affected core cells (proposed SR 3.1.4.4 1st Frequency). SR 3.1.4.3 will require a scram time test, which may be done at any pressure, prior to

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TECHNICAL CHANGES - MORE RESTRICTIVE

M4 (continued)

declaring a control rod Operable (and thus, enabling its withdrawal during a startup). SR 3.1.4.4 will require a scram time test after reactor pressure has reached ≥ 800 psig and prior to exceeding 40% RTP.

To allow testing at less than normal operating pressures, a requirement for scram time limits at < 800 psig (any reactor steam dome pressure) is included. ITS 3.1.4-1 Note (b) indicates that the scram times as a function of reactor steam dome pressure must be within established limits when reactor steam dome pressure is < 800 psig. As indicated in the Bases, these limits are included in the Technical Requirements Manual. These limits appear to be less restrictive than the operating limits; however, due to higher reactor pressures not being available to increase the scram speed, the limits are reasonable for application as a test of Operability at these conditions. Since these tests, and therefore any limits, are not applied in the CTS, this is an added restriction. Furthermore, the existing scram time test requirement (performed at normal reactor operating pressure) is additionally required to be performed prior to exceeding 40% RTP. It is noted that if the control rod remains inoperable (which requires it to be inserted and disarmed) until normal operating pressures, a single scram time test will satisfy both new Surveillance Requirements. These changes represent additional restrictions on plant operations necessary to ensure control rod operability.

M5 The requirement to place the plant in the cold shutdown condition within 24 hours in CTS 3.3.E has been changed to require the plant to be in MODE 3 within 12 hours in ITS 3.1.4 Required Action A.1. Since the rate of negative reactivity insertion during a scram may not be within the assumptions of the safety analysis when control rod scram time requirements in this Specification are not met, placing the plant in MODE 3 ensures that the plant is brought into a MODE where LCO 3.1.4 does not apply. This reduction in the time to reach MODE 3 constitutes an additional restriction on plant operation.

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M6 CTS 4.3.C.1 and CTS 4.3.C.2 require operable control rods to be scram time tested at pressures above 950 psig. ITS SR 3.1.4.2 and SR 3.1.4.4 require scram time testing to be performed at pressure ≥ 800 psig. This pressure corresponds to the limiting pressure for CRD scram testing for the JAFNPP design. "Limiting" refers to the maximum scram time experienced at this pressure because of the competing effects of the reactor vessel pressure and the accumulator pressure scram forces. The scram time requirements are related to transients analyzed at rated pressure however, if the scram times are demonstrated at ≥ 800 psig,

TECHNICAL CHANGES - MORE RESTRICTIVE

M6 (continued)

the measured times are conservative with respect to the assumed times in the design basis transient and accident analyses. Therefore, the scram times specified are based on reactor steam dome pressures at ≥ 800 psig as indicated in Table 3.1.4-1. (See M2 for new times.)

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

LA1 A "representative sample" of control rods is proposed to be tested each 120 days of operation in MODE 1 instead of the currently required "10% of the control rods" (CTS 4.3.C.2). These details of what constitutes a representative sample are proposed to be relocated to the Bases. ITS 3.1.4 and associated SR 3.1.4.2 are adequate to ensure scram time testing is performed. As a result, the details proposed to be relocated are not necessary to ensure control rod scram time testing is performed. Therefore, the relocated details are not required to be included in the ITS to provide adequate protection of the public health and safety. Changes to the Bases will be controlled by the provisions of the proposed Bases Control Program described in Chapter 5 of the Technical Specifications.

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CTS 4.3.C.2 requires that 10% of the operable control rods be scram time tested at "16 week intervals." This 16 week interval equates to 112 days. The proposed frequency for scram time testing a representative sample of control rods is "120 days cumulative operation in MODE 1" (SR 3.1.4.2). Thus, during plant operation the frequency is being extended for 8 days. This represents less than a 7% increase in surveillance test interval. The 120 day frequency was chosen based on operating experience which has demonstrated that control rod scram times do not significantly change over an operating cycle. In addition, Surveillances performed in accordance with LCO 3.1.3 and LCO 3.1.5 provide some measure of assurance between the scram time test intervals that the control rods would perform as intended if required. Therefore, the small increase in the test frequency does not represent a reduction in safety.

L2 CTS 4.3.C.2 requires an evaluation to be made, whenever scram time surveillances are performed, to provide reasonable assurance that proper control rod drive performance is being maintained. This requirement is essentially a performance tracking requirement to help ensure control

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 (continued)

rod scram times are maintained within limits and is proposed to be deleted. ITS 3.1.4 and associated Surveillance Requirements are adequate to ensure that scram time testing is performed and scram times are maintained within limits. In addition, the requirements of 10 CFR 50.65 (Requirements for monitoring the effectiveness of maintenance at nuclear power plants), and JAFNPP implementation of these requirements, ensure equipment important to safety is adequately maintained (in this case, that control rod drive performance is being maintained). 10 CFR 50.65 requires monitoring of the performance or conditions of structures, systems, or components, against licensee-established goals in a manner sufficient to provide assurance that such structures, systems, and components are capable of fulfilling their intended function. Compliance with 10 CFR 50.65 is required by the JAFNPP Operating License. Therefore, explicit control rod drive performance trending Surveillance Requirements are not required to ensure control rod scram times are maintained within limits and are not included in the JAFNPP ITS.

L3 The requirement in CTS 3.3.E to be in a cold condition within 24 hours when CTS 3.3.C (Scram Insertion Times) is not met is proposed to be deleted. A new requirement to be in MODE 3 in 12 hours (ITS 3.1.4 Required Action A.1) has been added (M5). This action will place the plant outside the Applicability of CTS 3.3.C.1 (reactor power operation) and the proposed Applicability (M1). Placing the plant in MODE 3 ensures all control rods are fully inserted and will remain inserted since the mode switch, while in the shutdown position, enforces a rod block. Therefore, a reactivity control accident related to control rods cannot occur. Cooling down the plant does not provide any additional reactivity margin and, in some cases, could be counterproductive since positive reactivity is inserted during a cooldown. Given that the only difference between MODES 3 and 4 is the temperature requirement, the safety impact of this change as it relates to control rods and the safety analysis they affect, is negligible. Additionally, the BWR Standard Technical Specifications, NUREG-1433, Revision 1, only requires a MODE 3 entry if the control rod actions are not met. Therefore proposed change is considered acceptable.

L4 The requirement in CTS 4.3.C.1 to perform scram time testing at saturation temperatures has been deleted. This change will allow scram time testing to be performed during reactor hydrostatic pressure testing when the reactor vessel is not at saturated conditions. This testing may be performed in accordance with ITS 3.10.3 (Single Control Rod Withdrawal – Hot Shutdown) or ITS 3.10.4 (Single Control Rod

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L4 (continued)

Withdrawal – Cold Shutdown) when performing an inservice leak or hydrostatic test in accordance with ITS 3.10.1 (Inservice Leak and Hydrostatic Testing Operation). This change is acceptable since control rod scram time performance is not significantly affected by reactor coolant temperatures.

TECHNICAL CHANGES - RELOCATIONS

None

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

New York Power Authority has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. 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?

   The proposed change increases the interval between performances of a surveillance designed to verify that a sample of control rod scram times are within limits. This change increases the surveillance test interval from "16 week" intervals to "120 days cumulative operation in MODE 1". For reactor operations, this represents an increase of less than 7% in the surveillance test interval. The proposed change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated, maintained, modified, tested, or inspected. The proposed frequency of the surveillance is based on engineering judgment and the accumulated industry experience with CRD performance. The proposed change will not increase the consequences of an accident because this change is being implemented concurrently with more restrictive requirements governing continued operation with stuck and inoperable control rods. Collectively, these changes provide assurance that when a scram is required, the assumptions used in the accident analysis (i.e., most reactive control rod fully withdrawn) will be met. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The proposed change increases the interval between performances of a surveillance designed to verify that control rods can be inserted within specified times and will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated, maintained, modified, tested, or inspected. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

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

A margin of safety is not reduced even though the proposed increase in the interval between performances of a surveillance may increase the time before a control rod made inoperable because of excessive scram times is discovered. The proposed frequency of the surveillance is based on engineering judgment and the accumulated industry experience with CRD performance. Additionally, this change is being implemented concurrently with more restrictive requirements governing continued operation with stuck and inoperable control rods. Collectively, these changes provide assurance that when a scram is required, the assumptions used in the accident analysis will be met. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

New York Power Authority has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. 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 does not result in any hardware or operating procedure changes. The current requirement to perform an evaluation, whenever scram time surveillances are performed, to provide reasonable assurance that proper control rod drive performance is being maintained is not assumed in the initiation of any analyzed event. This requirement was specified in the current Technical Specifications to help ensure control rod scram times are maintained within limits. The deletion of this explicit requirement for performance trending of the control rod drives is considered administrative since the requirements of 10 CFR 50.65, and JAFNPP implementation of these requirements, ensure equipment important to safety is adequately maintained (in this case, that control rod drive performance is being maintained). Compliance with 10 CFR 50.65 is required by the JAFNPP Operating License. In addition, ITS 3.1.4 and associated Surveillance Requirements are adequate to ensure that scram time testing is performed and scram times are maintained within limits. Therefore, explicit control rod drive performance trending Surveillance Requirements are not required to ensure control rod scram times are maintained within limits. As a result, the accident consequences are unaffected by this change. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The possibility of a new or different kind of accident from any accident previously evaluated is not created because the change does not introduce a new mode of plant operation and does not involve physical modification to the plant.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

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

The deletion of the explicit requirement for performance trending of the control rod drives is considered administrative since the requirements of 10 CFR 50.65, and JAFNPP implementation of these requirements, ensure equipment important to safety is adequately maintained (in this case, that control rod drive performance is being maintained). Compliance with 10 CFR 50.65 is required by the JAFNPP Operating License. In addition, ITS 3.1.4 and associated Surveillance Requirements are adequate to ensure that scram time testing is performed and scram times are maintained within limits. As a result, the intent of the existing requirement for control rod drive performance trending is maintained. Therefore, this deletion does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L3 CHANGE

New York Power Authority has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. 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?

   The proposed change deletes the requirement to be in a cold condition in 24 hours when the control rod scram times are not within limits. Placing the plant in a cold condition does not place the plant in a less reactive condition. The reactor core is more reactive at colder temperatures, therefore the requirement to be in a cold condition does not decrease significance of control rod scram times not within limits. The new requirement (M5) will be to be in MODE 3 in 12 hours (ITS 3.1.4 Required Action A.1). With the plant in MODE 3, all rods are fully inserted, and will remain inserted since the mode switch, while in the shutdown position, enforces a rod block. Therefore, a reactivity control accident related to control rods cannot occur. In addition, this action will place the plant outside the Applicability of the current and proposed LCO. The requirement to be in a cold condition within 24 hours if control rod scram times are not within limits is not met is not considered in the initiation of any accident. Therefore this change does not significantly increase the probability of any accident previously evaluated. The proposed ACTION limit core reactivity. Thus, the consequences of an accident will not be increased as a result of this change. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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 a physical alteration of the plant (no new or different type of equipment will be installed) or changes in methods governing normal plant operation. The proposed change limits core reactivity. Therefore, this change will not create the possibility of a new or different type of accident from any accident previously analyzed.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L3 CHANGE

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

The proposed change deletes the requirement to be in a cold condition in 24 hours when the control rod scram times are not within limits. Placing the plant in a cold condition does not place the plant in a less reactive condition. The reactor core is more reactive at colder temperatures, therefore the requirement to be in a cold condition does not decrease significance of control rod scram times not within limits. The new requirement (M5) will be to be in MODE 3 in 12 hours (ITS 3.1.4 Required Action A.1). With the plant in MODE 3, all rods are fully inserted, and will remain inserted since the mode switch, while in the shutdown position, enforces a rod block. Therefore, a reactivity control accident related to control rods cannot occur. The proposed ACTION limits core reactivity. In addition, this action will place the plant outside the Applicability of the current and proposed LCO. Thus, the consequences of an accident will not be increased as a result of this change. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated. Deleting this requirement to be in a cold condition will effectively decrease the core reactivity. This change will not impact any safety analysis assumptions. As such, no question of safety is involved. Therefore, this change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L4 CHANGE

New York Power Authority has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. 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 does not result in any hardware or operating procedure changes. The current requirement to perform scram time testing when the reactor condition is at saturated temperatures, has been deleted. Scram time testing is influenced by reactor pressure conditions rather than temperature conditions. Testing a control rod at the specified reactor pressure during reactor pressure vessel hydrostatic testing will provide reasonable assurance that proper control rod drive performance is being maintained. Control rod drive scram times are not assumed in the initiation of any analyzed event. Therefore this change will not increase the probability of an accident previously evaluated. The deletion of this explicit requirement for testing at saturated temperatures is considered acceptable since scram time performance can be validated by testing during hydrostatic testing under Special Operations LCOs 3.10.1, and LCO 3.10.3 during MODE 3 and LCO 3.10.4 during MODE 4. Therefore, the explicit requirement for control rod scram testing at saturated temperatures is not required to ensure control rod scram times are maintained within limits. As a result, the accident consequences are unaffected by this change. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The possibility of a new or different kind of accident from any accident previously evaluated is not created because the change does not introduce a new mode of plant operation and does not involve physical modification to the plant.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L4 CHANGE

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

This change does not result in any hardware or operating procedure changes. The current requirement to perform scram time testing when the reactor condition is at saturated temperatures, has been deleted. Scram time testing is influenced by reactor pressure conditions rather than temperature conditions. Testing a control rod at the specified reactor pressure during reactor pressure vessel hydrostatic testing will provide reasonable assurance that proper control rod drive performance is being maintained. The deletion of this explicit requirement for testing at saturated temperatures is considered acceptable since scram time performance can be validated by testing during hydrostatic testing under Special Operations LCOs 3.10.1, and LCO 3.10.3 during MODE 3 and LCO 3.10.4 during MODE 4. Therefore, the explicit requirement for control rod scram testing at saturated temperatures is not required to ensure control rod scram times are maintained within limits. As a result, the intent of the existing requirement for control rod drive at the specified pressure is sufficient to ensure Operability is maintained. Therefore, this deletion does not involve a significant reduction in a margin of safety.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

MARKUP OF NUREG-1433, REVISION 1 SPECIFICATION

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Rod Scram Times

LCO 3.1.4 [3.3.C.1] [M2]

a. No more than [10] OPERABLE control rods shall be "slow," in accordance with Table 3.1.4-1; and (D131)

b. No more than 2 OPERABLE control rods that are "slow" shall occupy adjacent locations.

[3.3.C.1] [M1] APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
[3.3.E] [M5] A. Requirements of the LCO not met.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

----------NOTE----------
[M2] During single control rod scram time Surveillances, the control rod drive (CRD) pumps shall be isolated from the associated scram accumulator.

SURVEILLANCE	FREQUENCY
SR 3.1.4.1 Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ [800] psig. [M3] (DB1) (MOVE TO SR 3.1.4.4)	Prior to exceeding 40% RTP after fuel movement within the reactor pressure vessel (TA1) AND affected core cell (continued)

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	(continued)	Prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ [800] psig.	120 days cumulative operation in MODE 1
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR 3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ [800] psig.	Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

[M3] [4.3 C.2] [m4] [m4] PBI PBI TA1

[INSERT FROM SR 3.1.4.1 (prev. page)]

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Table 3.1.4-1 (page 1 of 1)
Control Rod Scram Times

NOTES

1. OPERABLE control rods with scram times not within the limits of this Table are considered "slow."

2. Enter applicable Conditions and Required Actions of LCO 3.1.3, "Control Rod OPERABILITY," for control rods with scram times > 7 seconds to notch position ~~[06]~~. These control rods are inoperable, in accordance with SR 3.1.3.4, and are not considered "slow."

NOTCH POSITION	SCRAM TIMES(a)(b) (seconds) when REACTOR STEAM DOME PRESSURE ≥ ~~[800]~~ psig
[46]	[0.44]
[36]	[1.08]
[26]	[1.83]
[06]	[3.35]

(a) Maximum scram time from fully withdrawn position, based on de-energization of scram pilot valve solenoids at time zero.

(b) Scram times as a function of reactor steam dome pressure, when < 800 psig are within established limits.

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IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS: 3.1.4 - CONTROL ROD SCRAM TIMES

RETENTION OF EXISTING REQUIREMENT (CLB)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA1 Typographical/grammatical error corrected.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 The brackets have been removed and the proper plant specific value included.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler number 222, Revision 1, have been incorporated into the revised Improved Technical Specifications.

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DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

X1 Not used

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IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

MARKUP OF NUREG-1433, REVISION 1, BASES

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.4 Control Rod Scram Times

BASES

BACKGROUND

The scram function of the Control Rod Drive (CRD) System controls reactivity changes during abnormal operational transients to ensure that specified acceptable fuel design limits are not exceeded (Ref. 1). The control rods are scrammed by positive means using hydraulic pressure exerted on the CRD piston.

When a scram signal is initiated, control air is vented from the scram valves, allowing them to open by spring action. Opening the exhaust valve reduces the pressure above the main drive piston to atmospheric pressure, and opening the inlet valve applies the accumulator or reactor pressure to the bottom of the piston. Since the notches in the index tube are tapered on the lower edge, the collet fingers are forced open by cam action, allowing the index tube to move upward without restriction because of the high differential pressure across the piston. As the drive moves upward and the accumulator pressure reduces below the reactor pressure, a ball check valve opens, letting the reactor pressure complete the scram action. If the reactor pressure is low, such as during startup, the accumulator will fully insert the control rod in the required time without assistance from reactor pressure.

APPLICABLE SAFETY ANALYSES

The analytical methods and assumptions used in evaluating the control rod scram function are presented in References 2, 3, and 4. The Design Basis Accident (DBA) and transient analyses assume that all of the control rods scram at a specified insertion rate. The resulting negative scram reactivity forms the basis for the determination of plant thermal limits (e.g., the MCPR). Other distributions of scram times (e.g., several control rods scramming slower than the average time with several control rods scramming faster than the average time) can also provide sufficient scram reactivity. Surveillance of each individual control rod's scram time ensures the scram reactivity assumed in the DBA and transient analyses can be met.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

The scram function of the CRD System protects the MCPR Safety Limit (SL) (see Bases for SL 2.1.1, "Reactor Core SLs," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)") and the 1% cladding plastic strain fuel design limit (see Bases for LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)"), which ensure that no fuel damage will occur if these limits are not exceeded. Above 800 psig, the scram function is designed to insert negative reactivity at a rate fast enough to prevent the actual MCPR from becoming less than the MCPR SL, during the analyzed limiting power transient. Below 800 psig, the scram function is assumed to perform during the control rod drop accident (Ref. 8) and, therefore, also provides protection against violating fuel damage limits during reactivity insertion accidents (see Bases for LCO 3.1.6, "Rod Pattern Control"). For the reactor vessel overpressure protection analysis, the scram function, along with the safety/relief valves, ensure that the peak vessel pressure is maintained within the applicable ASME Code limits.

Control rod scram times satisfy Criterion 3 of the NRC Policy Statement.

LCO

The scram times specified in Table 3.1.4-1 (in the accompanying LCO) are required to ensure that the scram reactivity assumed in the DBA and transient analysis is met (Ref. 6). To account for single failures and "slow" scramming control rods, the scram times specified in Table 3.1.4-1 are faster than those assumed in the design basis analysis. The scram times have a margin that allows up to approximately 7% of the control rods (e.g., 137 x 7% ≈ 10) to have scram times exceeding the specified limits (i.e., "slow" control rods) assuming a single stuck control rod (as allowed by LCO 3.1.3, "Control Rod OPERABILITY") and an additional control rod failing to scram per the single failure criterion. The scram times are specified as a function of reactor steam dome pressure to account for the pressure dependence of the scram times. The scram times are specified relative to measurements based on reed switch positions, which provide the control rod position indication. The reed switch closes ("pickup") when the index tube passes a specific location and then opens ("dropout") as the index tube travels upward. Verification of the specified scram times in Table 3.1.4-1 is accomplished

(continued)

BASES

LCO (continued)

through measurement of the "dropout" times. To ensure that local scram reactivity rates are maintained within acceptable limits, no more than two of the allowed "slow" control rods may occupy adjacent locations.

Table 3.1.4-1 is modified by two Notes which state that control rods with scram times not within the limits of the table are considered "slow" and that control rods with scram times > 7 seconds are considered inoperable as required by SR 3.1.3.4.

This LCO applies only to OPERABLE control rods since inoperable control rods will be inserted and disarmed (LCO 3.1.3). Slow scramming control rods may be conservatively declared inoperable and not accounted for as "slow" control rods.

APPLICABILITY

In MODES 1 and 2, a scram is assumed to function during transients and accidents analyzed for these plant conditions. These events are assumed to occur during startup and power operation; therefore, the scram function of the control rods is required during these MODES. In MODES 3 and 4, the control rods are not able to be withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate requirements for control rod scram capability during these conditions. Scram requirements in MODE 5 are contained in LCO 3.9.5, "Control Rod OPERABILITY—Refueling."

ACTIONS

A.1

When the requirements of this LCO are not met, the rate of negative reactivity insertion during a scram may not be within the assumptions of the safety analyses. Therefore, 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 MODE 3 within 12 hours. The allowed Completion Time of 12 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 (continued)

SURVEILLANCE REQUIREMENTS

The four SRs of this LCO are modified by a Note stating that during a single control rod scram time surveillance, the CRD pumps shall be isolated from the associated scram accumulator. With the CRD pump isolated, (i.e., charging valve closed) the influence of the CRD pump head does not affect the single control rod scram times. During a full core scram, the CRD pump head would be seen by all control rods and would have a negligible effect on the scram insertion times.

SR 3.1.4.1

The scram reactivity used in DBA and transient analyses is based on an assumed control rod scram time. Measurement of the scram times with reactor steam dome pressure ≥ 800 psig demonstrates acceptable scram times for the transients analyzed in References 3 and 4.

Maximum scram insertion times occur at a reactor steam dome pressure of approximately 800 psig because of the competing effects of reactor steam dome pressure and stored accumulator energy. Therefore, demonstration of adequate scram times at reactor steam dome pressure ≥ 800 psig ensures that the measured scram times will be within the specified limits at higher pressures. Limits are specified as a function of reactor pressure to account for the sensitivity of the scram insertion times with pressure and to allow a range of pressures over which scram time testing can be performed. To ensure that scram time testing is performed within a reasonable time following fuel movement within the reactor pressure vessel after a shutdown ≥ 120 days or longer, control rods are required to be tested before exceeding 40% RTP following the shutdown. In the event fuel movement is limited to selected core cells, it is the intent of this SR that only those CRDs associated with the core cells affected by the fuel movements are required to be scram time tested. However, if the reactor remains shutdown ≥ 120 days, all control rods are required to be scram time tested. This Frequency is acceptable considering the additional surveillances performed for control rod OPERABILITY, the frequent verification of adequate accumulator pressure, and the required testing of control rods affected by work on control rods or the CRD System.

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TA1

duration of

PA2

TA1

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fuel movement within the associated core cell and by

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

SR 3.1.4.2

Additional testing of a sample of control rods is required to verify the continued performance of the scram function during the cycle. A representative sample contains at least 10% of the control rods. The sample remains representative if no more than 20% of the control rods in the sample tested are determined to be "slow." With more than 20% of the sample declared to be "slow" per the criteria in Table 3.1.4-1, additional control rods are tested until this 20% criterion (i.e., 20% of the entire sample size) is satisfied, or until the total number of "slow" control rods (throughout the core, from all surveillances) exceeds the LCO limit. For planned testing, the control rods selected for the sample should be different for each test. Data from inadvertent scrams should be used whenever possible to avoid unnecessary testing at power, even if the control rods with data may have been previously tested in a sample. The 120 day Frequency is based on operating experience that has shown control rod scram times do not significantly change over an operating cycle. This Frequency is also reasonable based on the additional Surveillances done on the CRDs at more frequent intervals in accordance with LCO 3.1.3 and LCO 3.1.5, "Control Rod Scram Accumulators."

<see DB-4>

SR 3.1.4.3

When work that could affect the scram insertion time is performed on a control rod or the CRD System, testing must be done to demonstrate that each affected control rod retains adequate scram performance over the range of applicable reactor pressures from zero to the maximum permissible pressure. The scram testing must be performed once before declaring the control rod OPERABLE. The required scram time testing must demonstrate the affected control rod is still within acceptable limits. The limits for reactor pressures < 800 psig are established based on a high probability of meeting the acceptance criteria at reactor pressures ≥ 800 psig. Limits for ≥ 800 psig are found in Table 3.1.4-1. If testing demonstrates the affected control rod does not meet these limits, but is within the 7-second limit of Table 3.1.4-1, Note 2, the control rod can be declared OPERABLE and "slow."

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.4.3 (continued)

Specific examples of work that could affect the scram times are (but are not limited to) the following: removal of any CRD for maintenance or modification; replacement of a control rod; and maintenance or modification of a scram solenoid pilot valve, scram valve, accumulator, isolation valve or check valve in the piping required for scram.

The Frequency of once prior to declaring the affected control rod OPERABLE is acceptable because of the capability to test the control rod over a range of operating conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

SR 3.1.4.4

When work that could affect the scram insertion time is performed on a control rod or CRD System, testing must be done to demonstrate each affected control rod is still within the limits of Table 3.1.4-1 with the reactor steam dome pressure ≥ 800 psig. Where work has been performed at high reactor pressure, the requirements of SR 3.1.4.3 and SR 3.1.4.4 can be satisfied with one test. For a control rod affected by work performed while shut down, however, a ~~CRD~~ pressure and high pressure test may be required. This testing ensures that, prior to withdrawing the control rod for continued operation, the control rod scram performance is acceptable for operating reactor pressure conditions. Alternatively, a control rod scram test during hydrostatic pressure testing could also satisfy both criteria.

The Frequency of once prior to exceeding 40% RTP is acceptable because of the capability to test the control rod over a range of operating conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

REFERENCES

1. ~~10 CFR 50, Appendix A, GDC 10~~. VFSAR, Section 16.6.
2. VFSAR, Section ~~[4.2.3.2.2.4]~~. 14.6
3. VFSAR, Section ~~[5A.4.3]~~. 14.5

(continued)

BASES

REFERENCES (continued)

4. ~~FSAR, Section 15.1~~

NEDE-24011-P-A-~~8~~, ~~"~~General Electric Standard Application for Reactor Fuel,~~"~~ ~~Section~~ 3.2.4.3, ~~September 1988~~.

6. Letter from R.F. Janecek (BWROG) to R.W. Starostecki (NRC), ~~"~~BWR Owners Group Revised Reactivity Control System Technical Specifications,~~"~~ BWROG-8754, September 17, 1987.

5. 10 CFR 50.36(c)(2)(ii)

7. Technical Requirements Manual

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.1.4 - CONTROL ROD SCRAM TIMES

RETENTION OF EXISTING REQUIREMENT (CLB)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA1 Editorial changes made for enhance clarity or to be consistent with similar statements in the Specifications and/or Bases.

PA2 Typographical/grammatical error corrected.

PA3 Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature.

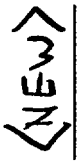
PA4 The quotations used in the Bases References have been removed. The Writer's Guide does not require the use of quotations.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific analyses. References have been renumbered, as required.

DB2 The brackets have been removed and the proper references included.

DB3 JAFNPP was designed and under construction prior to the promulgation of Appendix A to 10 CFR 50 - General Design Criteria for Nuclear Power Plants. The JAFNPP Construction Permit was issued on May 20, 1970. The proposed General Design Criteria (GDC) were published in the Federal Register on July 11, 1967 (32 FR 10213) and became effective on February 20, 1971 (32 FR 3256). UFSAR Section 16.6 - Conformance to AEC Design Criteria, describes the JAFNPP current licensing basis with regard to the GDC. ISTS statements concerning the GDC are modified in the ITS to reference UFSAR Section 16.6.



DB4 The discussion concerning use of data from inadvertent scrams (which was deleted in Revision A of the conversion) has been restored. The JAFNPP design now includes the capability of measuring or recording control rod scram times from inadvertent scrams. Thus there is no deviation from the ISTS. DB4 is included for Revision D discussion.

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.1.4 - CONTROL ROD SCRAM TIMES

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler number 222, Revision 1, have been incorporated into the revised Improved Technical Specifications.

TSTF-222

DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

X1 NUREG-1433, Revision 1, Bases references to "the NRC Policy Statement" have been replaced with 10 CFR 50.36(c)(2)(ii), in accordance with 60 FR 36953 effective August 18, 1995.

X2 Not used

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.4

Control Rod Scram Times

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

3.1 REACTIVITY CONTROL SYSTEMS

3.1.4 Control Rod Scram Times

LCO 3.1.4

a. No more than 10 OPERABLE control rods shall be "slow," in accordance with Table 3.1.4-1; and

b. No more than 2 OPERABLE control rods that are "slow" shall occupy adjacent locations.

APPLICABILITY: MODES 1 and 2.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. Requirements of the LCO not met.	A.1 Be in MODE 3.	12 hours

SURVEILLANCE REQUIREMENTS

----------NOTE----------
During single control rod scram time Surveillances, the control rod drive (CRD) pumps shall be isolated from the associated scram accumulator.

SURVEILLANCE		FREQUENCY
SR 3.1.4.1	Verify each control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig.	Prior to exceeding 40% RTP after each reactor shutdown ≥ 120 days

TSTF-222

(continued)

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.4.2	Verify, for a representative sample, each tested control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig.	120 days cumulative operation in MODE 1
SR 3.1.4.3	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with any reactor steam dome pressure.	Prior to declaring control rod OPERABLE after work on control rod or CRD System that could affect scram time
SR 3.1.4.4	Verify each affected control rod scram time is within the limits of Table 3.1.4-1 with reactor steam dome pressure ≥ 800 psig.	Prior to exceeding 40% RTP after fuel movement within the affected core cell AND Prior to exceeding 40% RTP after work on control rod or CRD System that could affect scram time

TSTF-222-A

Table 3.1.4-1 (page 1 of 1)
Control Rod Scram Times

----------NOTES----------

1. OPERABLE control rods with scram times not within the limits of this Table are considered "slow."

2. Enter applicable Conditions and Required Actions of LCO 3.1.3, "Control Rod OPERABILITY," for control rods with scram times > 7 seconds to notch position 04. These control rods are inoperable, in accordance with SR 3.1.3.4, and are not considered "slow."

NOTCH POSITION	SCRAM TIMES[a][b] (seconds) when REACTOR STEAM DOME PRESSURE ≥ 800 psig
46	0.441
36	1.08
26	1.83
06	3.35

(a) Maximum scram time from fully withdrawn position, based on de-energization of scram pilot valve solenoids at time zero.

(b) Scram times as a function of reactor steam dome pressure, when < 800 psig, are within established limits.

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.4 Control Rod Scram Times

BASES

BACKGROUND

The scram function of the Control Rod Drive (CRD) System controls reactivity changes during abnormal operational transients to ensure that specified acceptable fuel design limits are not exceeded (Ref. 1). The control rods are scrammed by positive means using hydraulic pressure exerted on the CRD piston.

When a scram signal is initiated, control air is vented from the scram valves, allowing them to open by spring action. Opening the exhaust valve reduces the pressure above the main drive piston to atmospheric pressure, and opening the inlet valve applies the accumulator or reactor pressure to the bottom of the piston. Since the notches in the index tube are tapered on the lower edge, the collet fingers are forced open by cam action, allowing the index tube to move upward without restriction because of the high differential pressure across the piston. As the drive moves upward and the accumulator pressure reduces below the reactor pressure, a ball check valve opens, letting the reactor pressure complete the scram action. If the reactor pressure is low, such as during startup, the accumulator will fully insert the control rod in the required time without assistance from reactor pressure.

APPLICABLE SAFETY ANALYSES

The Design Basis Accident (DBA) and transient analyses assume that all of the control rods scram at a specified insertion rate (Refs. 2 and 3). The resulting negative scram reactivity forms the basis for the determination of plant thermal limits (e.g., the MCPR). Other distributions of scram times (e.g., several control rods scramming slower than the average time with several control rods scramming faster than the average time) can also provide sufficient scram reactivity. Surveillance of each individual control rod's scram time ensures the scram reactivity assumed in the DBA and transient analyses can be met.

The scram function of the CRD System protects the MCPR Safety Limit (SL) (see Bases for SL 2.1.1, "Reactor Core SLs," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)")

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

and the 1% cladding plastic strain fuel design limit (see Bases for LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)"), which ensure that no fuel damage will occur if these limits are not exceeded. Above 800 psig, the scram function is designed to insert negative reactivity at a rate fast enough to prevent the actual MCPR from becoming less than the MCPR SL, during the analyzed limiting power transient. Below 800 psig, the scram function is assumed to mitigate the control rod drop accident (Ref. 4) and, therefore, also provides protection against violating fuel damage limits during reactivity insertion accidents (see Bases for LCO 3.1.6, "Rod Pattern Control"). For the reactor vessel overpressure protection analysis, the scram function, along with the safety/relief valves, ensure that the peak vessel pressure is maintained within the applicable ASME Code limits.

Control rod scram times satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 5).

LCO

The scram times specified in Table 3.1.4-1 are required to ensure that the scram reactivity assumed in the DBA and transient analysis is met (Ref. 6). To account for single failures and "slow" scramming control rods, the scram times specified in Table 3.1.4-1 are faster than those assumed in the design basis analysis. The scram times have a margin that allows 10 control rods to have scram times exceeding the specified limits (i.e., "slow" control rods) assuming a single stuck control rod (as allowed by LCO 3.1.3, "Control Rod OPERABILITY") and an additional control rod failing to scram per the single failure criterion. The scram times are specified as a function of reactor steam dome pressure to account for the pressure dependence of the scram times. The scram times are specified relative to measurements based on reed switch positions, which provide the control rod position indication. The reed switch closes ("pickup") when the index tube passes a specific location and then opens ("dropout") as the index tube travels upward. Verification of the specified scram times in Table 3.1.4-1 is accomplished through measurement of the "dropout" times. To ensure that local scram reactivity rates are maintained within acceptable limits, no more than two of the allowed "slow" control rods may occupy adjacent locations.

(continued)

BASES

LCO (continued)

Table 3.1.4-1 is modified by two Notes which state that control rods with scram times not within the limits of the table are considered "slow" and that control rods with scram times > 7 seconds are considered inoperable as required by SR 3.1.3.4.

This LCO applies only to OPERABLE control rods since inoperable control rods will be inserted and disarmed (LCO 3.1.3). Slow scramming control rods may be conservatively declared inoperable and not accounted for as "slow" control rods.

APPLICABILITY

In MODES 1 and 2, a scram is assumed to function during transients and accidents analyzed for these plant conditions. These events are assumed to occur during startup and power operation; therefore, the scram function of the control rods is required during these MODES. In MODES 3 and 4, the control rods are not able to be withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate requirements for control rod scram capability during these conditions. Scram requirements in MODE 5 are contained in LCO 3.9.5, "Control Rod OPERABILITY – Refueling."

ACTIONS

A.1

When the requirements of this LCO are not met, the rate of negative reactivity insertion during a scram may not be within the assumptions of the safety analyses. Therefore, 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 MODE 3 within 12 hours. The allowed Completion Time of 12 hours is reasonable, based on operating experience, to reach MODE 3 from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

The four SRs of this LCO are modified by a Note stating that during a single control rod scram time surveillance, the CRD pumps shall be isolated from the associated scram accumulator. With the CRD pump isolated, (i.e., charging

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

valve closed) the influence of the CRD pump head does not affect the single control rod scram times. During a full core scram, the CRD pump head would be seen by all control rods and would have a negligible effect on the scram insertion times.

SR 3.1.4.1

The scram reactivity used in DBA and transient analyses is based on an assumed control rod scram time. Measurement of the scram times with reactor steam dome pressure ≥ 800 psig demonstrates acceptable scram times for the transients analyzed in References 3 and 4.

Maximum scram insertion times occur at a reactor steam dome pressure of approximately 800 psig because of the competing effects of reactor steam dome pressure and stored accumulator energy. Therefore, demonstration of adequate scram times at reactor steam dome pressure ≥ 800 psig ensures that the measured scram times will be within the specified limits at higher pressures. Limits are specified as a function of reactor pressure to account for the sensitivity of the scram insertion times with pressure and to allow a range of pressures over which scram time testing can be performed. To ensure that scram time testing is performed within a reasonable time following a shutdown duration of ≥ 120 days, control rods are required to be tested before exceeding 40% RTP following the shutdown. This Frequency is acceptable considering the additional surveillances performed for control rod OPERABILITY, the frequent verification of adequate accumulator pressure, and the required testing of control rods affected by fuel movement within the associated core cell and by work on control rods or the CRD System.

TSTF-222 — #1

SR 3.1.4.2

Additional testing of a sample of control rods is required to verify the continued performance of the scram function during the cycle. A representative sample contains at least 10% of the control rods. The sample remains representative if no more than 20% of the control rods in the sample tested are determined to be "slow." With more than 20% of the sample declared to be "slow" per the criteria in

(continued)

BASES

SURVEILLANCE REQUIREMENTS

<see Bases JFD 004>

SR 3.1.4.2 (continued)

Table 3.1.4-1, additional control rods are tested until this 20% criterion (i.e., 20% of the entire sample size) is satisfied, or until the total number of "slow" control rods (throughout the core, from all surveillances) exceeds the LCO limit. For planned testing, the control rods selected for the sample should be different for each test. Data from inadvertent scrams should be used whenever possible to avoid unnecessary testing at power, even if the control rods with data may have been previously tested in a sample. The 120 day Frequency is based on operating experience that has shown control rod scram times do not significantly change over an operating cycle. This Frequency is also reasonable based on the additional Surveillances done on the CRDs at more frequent intervals in accordance with LCO 3.1.3 and LCO 3.1.5, "Control Rod Scram Accumulators."

SR 3.1.4.3

When work that could affect the scram insertion time is performed on a control rod or the CRD System, testing must be done to demonstrate that each affected control rod retains adequate scram performance over the range of applicable reactor pressures from zero to the maximum permissible pressure. The scram testing must be performed once before declaring the control rod OPERABLE. The required scram time testing must demonstrate the affected control rod is still within acceptable limits. The limits for reactor pressures < 800 psig are found in the Technical Requirements Manual (Ref. 7) and are established based on a high probability of meeting the acceptance criteria at reactor pressures ≥ 800 psig. Limits for ≥ 800 psig are found in Table 3.1.4-1. If testing demonstrates the affected control rod does not meet these limits, but is within the 7-second limit of Table 3.1.4-1, Note 2, the control rod can be declared OPERABLE and "slow."

Specific examples of work that could affect the scram times are (but are not limited to) the following: removal of any CRD for maintenance or modification; replacement of a control rod; and maintenance or modification of a scram pilot valve, scram valve, accumulator, isolation valve or check valve in the piping required for scram.

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.1.4.3 (continued)

The Frequency of once prior to declaring the affected control rod OPERABLE is acceptable because of the capability to test the control rod over a range of operating conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

SR 3.1.4.4

When work that could affect the scram insertion time is performed on a control rod or CRD System, or when fuel movement within the reactor pressure vessel occurs, testing must be done to demonstrate each affected control rod is still within the limits of Table 3.1.4-1 with the reactor steam dome pressure ≥ 800 psig. Where work has been performed at high reactor pressure (≥ 800 psig), the requirements of SR 3.1.4.3 and SR 3.1.4.4 can be satisfied with one test. For a control rod affected by work performed while at low pressure (< 800 psig), however, a low pressure and high pressure test may be required. This testing ensures that, prior to withdrawing the control rod for continued operation, the control rod scram performance is acceptable for operating reactor pressure conditions. Alternatively, a control rod scram test during hydrostatic pressure testing could also satisfy both criteria. When fuel movement occurs within the reactor pressure vessel, only those control rods associated with the core cells affected by the fuel movement are required to be scram time tested. During a routine refueling outage it is expected that all control rods will be affected.

The Frequency of once prior to exceeding 40% RTP is acceptable because of the capability to test the control rod over a range of operating conditions and the more frequent surveillances on other aspects of control rod OPERABILITY.

REFERENCES

1. UFSAR, Section 16.6.
2. UFSAR, Section 14.6.
3. UFSAR, Section 14.5.

(continued)

BASES

REFERENCES (continued)

4. NEDE-24011-P-A-13-US, General Electric Standard Application for Reactor Fuel, Supplement for United States, Section 2.2.3.1, August 1996.

5. 10 CFR 50.36(c)(2)(ii).

6. Letter from R.F. Janecek (BWROG) to R.W. Starostecki (NRC), BWR Owners' Group Revised Reactivity Control System Technical Specifications, BWROG-8754, September 17, 1987.

7. Technical Requirements Manual.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

DISCUSSION OF CHANGES (DOCs) TO THE CTS

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

MARKUP OF NUREG-1433, REVISION 1, SPECIFICATION

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1
MARKUP OF NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

Specification 3.1.5

A1

See IRS: 3.1.3

3.3.A (cont'd)	4.3.A (cont'd)
2. Reactivity margin - inoperable control rods	2. Reactivity margin - inoperable control rods
a. Control rods which cannot be moved with control rod drive pressure shall be considered inoperable. If a partially or fully withdrawn control rod drive cannot be moved with drive or scram pressure, the reactor shall be brought to the Cold Shutdown condition within 24 hours and shall not be restarted unless (1) investigation has shown that the cause of the failure is not a failed control rod drive mechanism collet housing, and (2) adequate shutdown margin has been demonstrated as required by Specification 4.3.A. If investigation shows that the cause of control rod failure is a cracked collet housing, or if this possibility cannot be ruled out, the reactor shall not be restarted until the affected control rod drive has been replaced or repaired.	a. Each partially or fully withdrawn operable control rod shall be exercised one notch at least once each week when operating above 30 percent power. In the event power operation is continuing with three or more inoperable control rods, this test shall be performed at least once each day, when operating above 30 percent power.
	b. The scram discharge volume drain and vent valves shall be verified open at least once per 31 days (these valves may be closed intermittently for testing under administrative control).
	[SR 3.1.5.1] c. The status of the pressure and level alarms for each accumulator shall be checked once per week.
	d. When it is initially determined that a control rod is incapable of normal insertion, an attempt to fully insert the control rod shall be made. If the control rod cannot be fully inserted, shutdown margin test shall be made to demonstrate under this condition that the core can be made subcritical for any reactivity condition during the remainder of the operating cycle with the analytically determined, highest worth control rod capable of withdrawal, fully withdrawn, and all other control rods capable of insertion fully inserted. If Specification 3.3.A.1 and 4.3.A.1 are met, reactor startup may proceed.

L2

SEE IRS: 3.1.8

Verify each control rod scram accumulator pressure is ≥ 940 psig

M1

SPECIFICATION 3.1.5 (A1)

~~3.3.A.2 (cont'd)~~

b. The control rod directional control valves for inoperable control rods shall be disarmed electrically. <See ITS 3.1.3>

c. Control rods with scram times greater than those permitted by Specification 3.3.C.3 are inoperable but if they can be inserted with control rod drive pressure they need not be disarmed electrically.

~~4.3.A.2 (cont'd)~~

e. The scram discharge volume drain and vent valves shall be full-travel cycled at least once per quarter to verify that the valves close in less than 30 seconds and to assure proper valve stroke and operation. <See ITS 3.1.8>

f. An instrument check of control rod position indication shall be performed once/day. <See ITS 3.1.3>

LCO 3.1.5 [Required Actions A.2, B.2.2, C.2]

d. Control rods with inoperable accumulators or those whose position cannot be positively determined shall be considered inoperable. <See ITS 3.1.3>

e. Inoperable control rods shall be positioned such that Specification 3.3.A.1 is met. <See ITS 3.1.1>

(1) When operating with two or more inoperable control rods in the Startup/Hot Standby or Run modes at ≤ 10% rated thermal power, control rod patterns shall be equivalent to those prescribed by the Banked Position Withdrawal Sequence (BPWS) or else the inoperable control rods shall be separated by two or more operable control rods. If this condition is not met, restore compliance with the condition within 4 hours. Otherwise be in hot shutdown within the following 12 hours. <See ITS 3.1.3>

(2) If nine or more control rods are inoperable, be in hot shutdown within 12 hours.

<ADD: ACTIONS Table Note> (A3)

<ADD: ACTIONS A, B, C, & D> (L1)

<ADD: Applicability> (A2)

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

DISCUSSION OF CHANGES (DOCs) TO THE CTS

DISCUSSION OF CHANGES
ITS: 3.1.5 - CONTROL ROD SCRAM ACCUMULATORS

ADMINISTRATIVE CHANGES

A1 In the conversion of the James A. FitzPatrick Nuclear Power Plant (JAFNPP) Current Technical Specification (CTS) to the proposed plant specific Improved Technical Specifications (ITS) certain wording preferences or conventions are adopted which do not result in technical changes. Editorial changes, reformatting, and revised numbering are adopted to make the ITS consistent with the conventions in NUREG-1433, "Standard Technical Specifications, General Electric Plants, BWR/4", Revision 1 (i.e., Improved Standard Technical Specifications (ISTS)).

A2 The CTS 3.3.A.2.d requirement governing control rod drive (CRD) hydraulic control unit (HCU) accumulators is not associated with an Applicability statement governing when the accumulator and the associated rod must be Operable. However, the Applicability is assumed to be MODES 1 and 2 since the current default actions in CTS 3.3.A.2.e are to be in hot shutdown in 12 hours. The proposed Applicability in ITS 3.1.5 is MODES 1 and 2. The proposed requirement is consistent with current requirements and is therefore considered administrative. This change is consistent with NUREG-1433, Revision 1.

A3 A new Note (ACTIONS Table Note) has been added to CTS 3.3.A.2.d ("Separate Condition entry is allowed for each control rod scram accumulator") to provide more explicit instructions for proper application for the new ACTIONS for Technical Specification compliance. In conjunction with proposed Specification 1.3 - "Completion Times," this Note provides direction consistent with the intent of the existing ACTIONS for inoperable control rod accumulators and therefore this change is considered administrative. Upon discovery of each inoperable accumulator, it is intended that each specified action be applied regardless of it having been applied previously for other inoperable accumulators. This change is consistent with NUREG-1433, Revision 1.

TECHNICAL CHANGES - MORE RESTRICTIVE

M1 CTS 4.3.A.2.c requires a check of the status of the pressure and level alarms for each control rod scram accumulator once per week. ITS SR 3.1.5.1 includes the acceptance criteria for accumulator pressure (≥ 940 psig) consistent with current JAFNPP plant practice. Although this change is consistent with current plant practice, adding this acceptance criteria in ITS SR 3.1.5.1 is an additional restriction on plant operation since control of this requirement will now be governed by Technical Specifications. This change is necessary to achieve consistency with NUREG-1433.

DISCUSSION OF CHANGES
ITS: 3.1.5 - CONTROL ROD SCRAM ACCUMULATORS

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

None

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CTS 3.3.A.2.d requires control rods with inoperable accumulators be considered inoperable immediately. The proposed change allows a short out of service time for the accumulators prior to declaring the associated control rods inoperable. New ITS 3.1.5 ACTIONS A, B, C, and D have been added to allow up to 8 hours, depending upon the number of inoperable accumulators and the reactor pressure, before the rod associated with the inoperable accumulator must be declared inoperable.

The proposed ACTION A allows one accumulator to be inoperable for up to 8 hours, provided the reactor pressure is ≥ 900 psig. An inoperable control rod accumulator affects the associated control rod scram time. However, at sufficiently high reactor pressure, the accumulators only provide a portion of the scram force. With this reactor pressure, the control rod will scram even without the associated accumulator, although probably not within the required scram times. Therefore, providing this short time to restore the accumulator to Operable status does not significantly increase the risk of a control rod not inserting upon scram.

In addition, the option to declare a control rod with an inoperable accumulator "slow" when reactor pressure is sufficient is also proposed. The existing requirement to declare the control rod inoperable would allow the control rod to remain withdrawn as long as it is disarmed. The proposed action to declare the control rod "slow" allows the rod to remain withdrawn but not disarmed. Disarming the inoperable rod is intended to prevent inadvertent operation.

The proposed limits and allowances for numbers and distribution of inoperable and "slow" control rods (found in proposed LCOs 3.1.3 and 3.1.4 respectively) are appropriately applied to control rods with inoperable accumulators whether declared inoperable or "slow." The option for declaring the control rod with an inoperable accumulator "slow" is restricted (by a Note to Required Actions A.1 and B.2.1) to control rods that were not previously known to be "slow." This restriction prevents allowing a "slow" control rod from remaining Operable with the additional degradation to scram time caused by an inoperable accumulator.

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 (continued)

The proposed ACTION B allows any number of control rod scram accumulators to be inoperable for up to 1 hour when reactor pressure is ≥ 900 psig. The requirement to declare the associated control rod scram time "slow" or the associated control rod inoperable (and the implied concurrent restoration allowed time) is provided in proposed Required Actions B.2.1 and B.2.2. This 1 hour allowance provides a reasonable time to attempt investigation and restoration of the inoperable accumulator. The time is much shorter than that allowed in ACTION A as described above, but is still sufficiently short such that it does not increase the risk significance of an ATWS event. Furthermore, proposed Required Action B.1 addresses the situation where additional accumulators may be rapidly becoming inoperable due to loss of charging pressure. Once verification of adequate charging pressure is made (20 minutes is provided), and considering that reactor pressure is adequate to assure the scram function of the control rods with inoperable accumulators, the proposed 1 hour extension is not significant.

The proposed ACTION C allows any number of accumulators to be inoperable for up to 1 hour when reactor pressure is < 900 psig. This 1 hour allowance provides a reasonable time to attempt investigation and restoration of the inoperable accumulators. Proposed Required Action C.1 addresses the situation where additional accumulators may be rapidly becoming inoperable due to a loss of charging pressure. The verification is similar to that described in ACTION B above; however, the verification must be made immediately since adequate scram pressure is not guaranteed without the CRD system in operation. Once verification of adequate charging pressure is made, and considering that reactor pressure is adequate to assure the scram function of the control rods with inoperable accumulators, the proposed 1 hour extension is not significant. In addition, since the reactor pressure may not be adequate to scram the rods in a proper time, the allowance provided in ACTIONS A and B above (to declare the rod "slow") is not provided under the lower pressure condition.

The proposed ACTION D provides the required actions if the charging water header pressure can not be maintained. If the system pressure is not adequate, an immediate scram is required. This ensures that the extensions of ACTIONS B and C will not be used unless adequate CRD pressure is available to scram the reactor.

DISCUSSION OF CHANGES
ITS: 3.1.5 - CONTROL ROD SCRAM ACCUMULATORS

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 CTS 4.3.A.2.c requires a check of the status of the pressure and level alarms for each control rod scram accumulator once per week. ITS SR 3.1.5.1 includes the acceptance criteria for accumulator pressure (≥ 940 psig). The BWR Standard Technical Specifications, NUREG-1433, do not specify requirements for equipment that only provides indication to be Operable to support Operability of a system or component. The control rod scram accumulator level alarms and pressure alarms do not necessarily relate directly to accumulator Operability. Control of the availability of, and necessary compensatory activities, for alarms, are addressed by plant procedures and policies. The requirement to verify control rod scram accumulator pressure (which does relate directly to accumulator Operability) is within limits is still maintained in SR 3.1.5.1. Therefore, the requirements associated with the control rod accumulator pressure and level alarms are proposed to be removed from the Technical Specifications.

TECHNICAL CHANGES - RELOCATIONS

None

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.5 - CONTROL ROD SCRAM ACCUMULATORS

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

New York Power Authority has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. 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?

   The proposed change extends the time allowed to declare the affected control rods inoperable from immediately to up to eight hours depending on the number of inoperable control rods. Inoperable accumulators may reduce the assurance that adequate scram insertion capability exists within the required scram times; however, reactor pressure is still expected to scram the control rods. Inoperable accumulators are not considered as initiators for any accidents previously evaluated and therefore cannot increase the probability of accidents. The consequences of an accident are also unaffected because the current analysis provides sufficient margin to account for the proposed allowances of slow and inoperable control rods. The number of these control rods is limited by requirements in other Technical Specifications. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The proposed change does not involve physical modification to the plant. The change in operation is consistent with current safety analysis assumptions and still ensures rods will insert as required. Therefore, the change does 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?

   The proposed change is consistent with the assumptions of the safety analysis. The extended time to evaluate and access one or more inoperable control rod scram accumulators and the allowance to declare any control rod with an inoperable scram accumulator "slow" when operating at a reactor pressure ≥ 900 psig proposed by this change is acceptable since adequate controls are added to the Technical

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

3. (continued)

Specifications which ensure charging water header pressure to the control rod scram accumulators is maintained and action is provided to immediately shutdown the reactor before the scram safety function is significantly impacted in the event charging water header pressure cannot be maintained. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

NO SIGNIFICANT HAZARDS CONSIDERATIONS
ITS: 3.1.5 - CONTROL ROD SCRAM ACCUMULATORS

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

New York Power Authority has evaluated the proposed Technical Specification change identified as "Technical Changes - Less Restrictive" and has determined that it does not involve a significant hazards consideration. This determination has been performed in accordance with the criteria set forth in 10 CFR 50.92. 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 does not result in any hardware or operating procedure changes. The control rod scram accumulator pressure or level alarms are not assumed in the initiation of any analyzed event. Equipment that only provides indication are not required to be Operable to support Operability of a system or component. The control rod scram accumulator level alarms and pressure alarms do not necessarily relate directly to accumulator Operability. The requirement to verify control rod scram accumulator pressure (which does relate directly to accumulator Operability) is within limits is still maintained in SR 3.1.5.1. As a result, accident consequences are unaffected by the deletion of the control rod scram accumulator pressure and level alarm requirements. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

   The possibility of a new or different kind of accident from any accident previously evaluated is not created because the proposed change does not introduce a new mode of plant operation and does not involve physical modification to the plant.

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

   The proposed deletion of the control rod scram accumulator pressure and level alarm requirements does not impact any margin of safety. Equipment that only provides indication are not required to be Operable to support Operability of a system or component. The control rod scram accumulator level alarms and pressure alarms do not necessarily relate directly to accumulator Operability. The requirement to verify control rod scram accumulator pressure (which does relate directly to accumulator Operability) is within limits is still maintained in SR 3.1.5.1. As a result, the requirements associated with the control rod

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

3. (continued)

accumulator pressure and level alarms are not required to ensure the accumulators are Operable. Therefore, this change does not involve a significant reduction in a margin of safety.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

MARKUP OF NUREG-1433, REVISION 1 SPECIFICATION

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Rod Scram Accumulators

[3.3.A.2.d] LCO 3.1.5 Each control rod scram accumulator shall be OPERABLE.

[A2] APPLICABILITY: MODES 1 and 2.

ACTIONS

---NOTE---
[A3] Separate Condition entry is allowed for each control rod scram accumulator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
[L1] A. One control rod scram accumulator inoperable with reactor steam dome pressure ≥ [900] psig. (DBI)	A.1 ---NOTE--- Only applicable if the associated control rod scram time was within the limits of Table 3.1.4-1 during the last scram time Surveillance. --- Declare the associated control rod scram time "slow."	8 hours
	OR	
[3.3.A.2.d]	A.2 Declare the associated control rod inoperable.	8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
[L1] B. Two or more control rod scram accumulators inoperable with reactor steam dome pressure ≥ [900] psig. (DB1)	B.1	Restore charging water header pressure to ≥ [940] psig. (DB1)	20 minutes from discovery of Condition B concurrent with charging water header pressure < [940] psig (DB1)
	AND		
	B.2.1	--------NOTE--------- Only applicable if the associated control rod scram time was within the limits of Table 3.1.4-1 during the last scram time Surveillance. ---	
		Declare the associated control rod scram time "slow."	1 hour
	OR		
[3.3.A.2.d]	B.2.2	Declare the associated control rod inoperable.	1 hour

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
[L1] C. One or more control rod scram accumulators inoperable with reactor steam dome pressure < [900] psig. (DB1) [3.3.A.2.d]	C.1 Verify all control rods associated with inoperable accumulators are fully inserted.	Immediately upon discovery of charging water header pressure < [940] psig (DB1)
	AND	
	C.2 Declare the associated control rod inoperable.	1 hour
[L1] D. Required Action and associated Completion Time of Required Action B.1 or C.1 not met. (PA1)	D.1 --------NOTE--------- Not applicable if all inoperable control rod scram accumulators are associated with fully inserted control rods. ---------- Place the reactor mode switch in the shutdown position.	Immediately

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SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
[4.3.A.2.c] SR 3.1.5.1 [M1]	Verify each control rod scram accumulator pressure is ≥ [940] psig. (DB1)	7 days

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS: 3.1.5 - CONTROL ROD SCRAM ACCUMULATORS

RETENTION OF EXISTING REQUIREMENT (CLB)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

RAI 3.1-05

PA1 Change made to be consistent with the Writer's Guide.

PA2 Not used

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 The brackets have been removed and the proper plant specific value provided.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

None

DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

None

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

MARKUP OF NUREG-1433, REVISION 1, BASES

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.5 Control Rod Scram Accumulators

BASES

BACKGROUND

The control rod scram accumulators are part of the Control Rod Drive (CRD) System and are provided to ensure that the control rods scram under varying reactor conditions. The control rod scram accumulators store sufficient energy to fully insert a control rod at any reactor vessel pressure. The accumulator is a hydraulic cylinder with a free floating piston. The piston separates the water used to scram the control rods from the nitrogen, which provides the required energy. The scram accumulators are necessary to scram the control rods within the required insertion times of LCO 3.1.4, "Control Rod Scram Times."

APPLICABLE SAFETY ANALYSES

The analytical methods and assumptions used in evaluating the control rod scram function are presented in References 1, 2, and 3. The Design Basis Accident (DBA) and transient analyses assume that all of the control rods scram at a specified insertion rate. OPERABILITY of each individual control rod scram accumulator, along with LCO 3.1.3, "Control Rod OPERABILITY," and LCO 3.1.4, ensures that the scram reactivity assumed in the DBA and transient analyses can be met. The existence of an inoperable accumulator may invalidate prior scram time measurements for the associated control rod.

The scram function of the CRD System, and therefore the OPERABILITY of the accumulators, protects the MCPR Safety Limit (see Bases for SL 2.1.1, "Reactor Core SLs," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)") and 1% cladding plastic strain fuel design limit (see Bases for LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)," and LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)"), which ensure that no fuel damage will occur if these limits are not exceeded (see Bases for LCO 3.1.4). In addition, the scram function at low reactor vessel pressure (i.e., startup conditions) provides protection against violating fuel design limits during reactivity insertion accidents (see Bases for LCO 3.1.6, "Rod Pattern Control").

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Control rod scram accumulators satisfy Criterion 3 of ~~the~~ NRC Policy Statement. (10 CFR 50.36(c)(2)(ii)) (Ref. 3) X1

LCO

The OPERABILITY of the control rod scram accumulators is required to ensure that adequate scram insertion capability exists when needed over the entire range of reactor pressures. The OPERABILITY of the scram accumulators is based on maintaining adequate accumulator pressure.

APPLICABILITY

In MODES 1 and 2, the scram function is required for mitigation of DBAs and transients, and therefore the scram accumulators must be OPERABLE to support the scram function. In MODES 3 and 4, control rods are ~~only allowed to be~~ withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate requirements for control rod scram accumulator OPERABILITY during these conditions. Requirements for scram accumulators in MODE 5 are contained in LCO 3.9.5, "Control Rod OPERABILITY—Refueling." (not capable of being) PA2

ACTIONS

The ACTIONS ~~T~~able is modified by a Note indicating that a separate Condition entry is allowed for each control rod scram accumulator. This is acceptable since the Required Actions for each Condition provide appropriate compensatory actions for each ~~affected~~ accumulator. Complying with the Required Actions may allow for continued operation, and subsequent affected accumulators governed by subsequent Condition entry and application of associated Required Actions. (inoperable) PA3 PA2 PA3

A.1 and A.2

With one control rod scram accumulator inoperable and the reactor steam dome pressure ≥ 900 psig, the control rod may be declared "slow," since the control rod will still scram at the reactor operating pressure but may not satisfy the required scram times in Table 3.1.4-1.

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

Required Action A.1 is modified by a Note indicating that declaring the control rod "slow" only applies if the associated control scram time was within the limits of Table 3.1.4-1 during the last scram time test. Otherwise, the control rod would already be considered "slow" and the further degradation of scram performance with an inoperable accumulator could result in excessive scram times. In this event, the associated control rod is declared inoperable (Required Action A.2) and LCO 3.1.3 is entered. This would result in requiring the affected control rod to be fully inserted and disarmed, thereby satisfying its intended function, in accordance with ACTIONS of LCO 3.1.3.

The allowed Completion Time of 8 hours is reasonable, based on the large number of control rods available to provide the scram function and the ability of the affected control rod to scram only with reactor pressure at high reactor pressures.

B.1, B.2.1, and B.2.2

With two or more control rod scram accumulators inoperable and reactor steam dome pressure ≥ 900 psig, adequate pressure must be supplied to the charging water header. With inadequate charging water pressure, all of the accumulators could become inoperable, resulting in a potentially severe degradation of the scram performance. Therefore, within 20 minutes from discovery of charging water header pressure < 940 psig concurrent with Condition B, adequate charging water header pressure must be restored. The allowed Completion Time of 20 minutes is reasonable, to place a CRD pump into service to restore the charging water header pressure, if required. This Completion Time is based on the ability of the reactor pressure alone to fully insert all control rods.

The control rod may be declared "slow," since the control rod will still scram using only reactor pressure, but may not satisfy the times in Table 3.1.4-1. Required Action B.2.1 is modified by a Note indicating that declaring the control rod "slow" only applies if the associated control scram time is within the limits of Table 3.1.4-1 during the last scram time test. Otherwise, the control rod

(continued)

BASES

ACTIONS

B.1, B.2.1, and B.2.2 (continued)

would already be considered "slow" and the further degradation of scram performance with an inoperable accumulator could result in excessive scram times. In this event, the associated control rod is declared inoperable (Required Action B.2.2) and LCO 3.1.3 entered. This would result in requiring the affected control rod to be fully inserted and disarmed, thereby satisfying its intended function in accordance with ACTIONS of LCO 3.1.3.

The allowed Completion Time of 1 hour is reasonable, based on the ability of only the reactor pressure to scram the control rods and the low probability of a DBA or transient occurring while the affected accumulators are inoperable.

C.1 and C.2

With one or more control rod scram accumulators inoperable and the reactor steam dome pressure < 900 psig, the pressure supplied to the charging water header must be adequate to ensure that accumulators remain charged. With the reactor steam dome pressure < 900 psig, the function of the accumulators in providing the scram force becomes much more important since the scram function could become severely degraded during a depressurization event or at low reactor pressures. Therefore, immediately upon discovery of charging water header pressure < 940 psig, concurrent with Condition C, all control rods associated with inoperable accumulators must be verified to be fully inserted. Withdrawn control rods with inoperable accumulators may fail to scram under these low pressure conditions. The associated control rods must also be declared inoperable within 1 hour. The allowed Completion Time of 1 hour is reasonable for Required Action C.2, considering the low probability of a DBA or transient occurring during the time that the accumulator is inoperable.

D.1

The reactor mode switch must be immediately placed in the shutdown position if either Required Action and associated Completion Time associated with loss of the CRD charging pump (Required Actions B.1 and C.1) cannot be met. This

(continued)

BASES

ACTIONS

D.1 (continued)

ensures that all insertable control rods are inserted and that the reactor is in a condition that does not require the active function (i.e., scram) of the control rods. This Required Action is modified by a Note stating that the action is not applicable if all control rods associated with the inoperable scram accumulators are fully inserted, since the function of the control rods has been performed.

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1

SR 3.1.5.1 requires that the accumulator pressure be checked every 7 days to ensure adequate accumulator pressure exists to provide sufficient scram force. The primary indicator of accumulator OPERABILITY is the accumulator pressure. A minimum accumulator pressure is specified, below which the capability of the accumulator to perform its intended function becomes degraded and the accumulator is considered inoperable. The minimum accumulator pressure of 940 psig is well below the expected pressure of 1200 psig (Ref. 1). Declaring the accumulator inoperable when the minimum pressure is not maintained ensures that significant degradation in scram times does not occur. The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.

DB1

1380 to 1510

PA1

REFERENCES

1. UFSAR, Section ~~[4.2.3.2.2.4]~~. 14.6
2. UFSAR, Section ~~[5A.4.3]~~. 14.5

DD2

~~3. FSAR, Section [15.1].~~

B 10 CFR 50.36 (c)(2)(ii)

X1

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IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

JUSTIFICATION FOR DIFFERENCES (JFDs) FROM NUREG-1433, REVISION 1, BASES

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.1.5 - CONTROL ROD SCRAM ACCUMULATORS

RETENTION OF EXISTING REQUIREMENT (CLB)

None

PLANT-SPECIFIC WORDING PREFERENCE OR MINOR EDITORIAL IMPROVEMENT (PA)

PA1 Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature.

PA2 Typographical/grammatical error corrected.

PA3 The Bases have been revised for enhanced clarity.

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 The expected normal range of accumulator pressure has been incorporated as provided by the GE Design Specification (22A1342E).

DB2 Changes have been made to reflect the plant specific references. In addition, the brackets have been removed from the References and the plant specific References have been included.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

None

DIFFERENCE BASED ON A SUBMITTED, BUT PENDING TRAVELER (TP)

None

DIFFERENCE FOR ANY REASON OTHER THAN THE ABOVE (X)

X1 NUREG-1433, Revision 1, Bases reference to "the NRC Policy Statement" has been replaced with 10 CFR 50.36(c)(2)(ii), in accordance with 60 FR 36953 effective August 18, 1995.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.1.5

Control Rod Scram Accumulators

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

3.1 REACTIVITY CONTROL SYSTEMS

3.1.5 Control Rod Scram Accumulators

LCO 3.1.5 Each control rod scram accumulator shall be OPERABLE.

APPLICABILITY: MODES 1 and 2.

ACTIONS

----------NOTE----------
Separate Condition entry is allowed for each control rod scram accumulator.

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One control rod scram accumulator inoperable with reactor steam dome pressure ≥ 900 psig.	A.1 --------NOTE-------- Only applicable if the associated control rod scram time was within the limits of Table 3.1.4-1 during the last scram time Surveillance. ---------- Declare the associated control rod scram time "slow."	8 hours
	OR	
	A.2 Declare the associated control rod inoperable.	8 hours

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
B. Two or more control rod scram accumulators inoperable with reactor steam dome pressure ≥ 900 psig.	B.1 Restore charging water header pressure to ≥ 940 psig. AND B.2.1 --------NOTE-------- Only applicable if the associated control rod scram time was within the limits of Table 3.1.4-1 during the last scram time Surveillance. ---------- Declare the associated control rod scram time "slow." OR B.2.2 Declare the associated control rod inoperable.	20 minutes from discovery of Condition B concurrent with charging water header pressure < 940 psig 1 hour 1 hour
C. One or more control rod scram accumulators inoperable with reactor steam dome pressure < 900 psig.	C.1 Verify all control rods associated with inoperable accumulators are fully inserted. AND	Immediately upon discovery of charging water header pressure < 940 psig (continued)

RAI 3.1-05

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2 Declare the associated control rod inoperable.	1 hour
D. Required Action B.1 or C.1 and associated Completion Time not met.	D.1 --------NOTE-------- Not applicable if all inoperable control rod scram accumulators are associated with fully inserted control rods. ---------- Place the reactor mode switch in the shutdown position.	Immediately

SURVEILLANCE REQUIREMENTS

SURVEILLANCE		FREQUENCY
SR 3.1.5.1	Verify each control rod scram accumulator pressure is ≥ 940 psig.	7 days

B 3.1 REACTIVITY CONTROL SYSTEMS

B 3.1.5 Control Rod Scram Accumulators

BASES

BACKGROUND

The control rod scram accumulators are part of the Control Rod Drive (CRD) System and are provided to ensure that the control rods scram under varying reactor conditions. The control rod scram accumulators store sufficient energy to fully insert a control rod at any reactor vessel pressure. The accumulator is a hydraulic cylinder with a free floating piston. The piston separates the water used to scram the control rods from the nitrogen, which provides the required energy. The scram accumulators are necessary to scram the control rods within the required insertion times of LCO 3.1.4, "Control Rod Scram Times."

APPLICABLE SAFETY ANALYSES

The Design Basis Accident (DBA) and transient analyses assume that all of the control rods scram at a specified insertion rate (Refs. 1 and 2). OPERABILITY of each individual control rod scram accumulator, along with LCO 3.1.3, "Control Rod OPERABILITY," and LCO 3.1.4, ensures that the scram reactivity assumed in the DBA and transient analyses can be met. The existence of an inoperable accumulator may invalidate prior scram time measurements for the associated control rod.

The scram function of the CRD System, and therefore the OPERABILITY of the accumulators, protects the MCPR Safety Limit (see Bases for SL 2.1.1, "Reactor Core SLs," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)") and 1% cladding plastic strain fuel design limit (see Bases for LCO 3.2.1, "AVERAGE PLANAR LINEAR HEAT GENERATION RATE (APLHGR)", and LCO 3.2.3, "LINEAR HEAT GENERATION RATE (LHGR)"), which ensure that no fuel damage will occur if these limits are not exceeded (see Bases for LCO 3.1.4). In addition, the scram function at low reactor vessel pressure (i.e., startup conditions) provides protection against violating fuel design limits during reactivity insertion accidents (see Bases for LCO 3.1.6, "Rod Pattern Control").

Control rod scram accumulators satisfy Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 3).

(continued)

BASES (continued)

LCO

The OPERABILITY of the control rod scram accumulators is required to ensure that adequate scram insertion capability exists when needed over the entire range of reactor pressures. The OPERABILITY of the scram accumulators is based on maintaining adequate accumulator pressure.

APPLICABILITY

In MODES 1 and 2, the scram function is required for mitigation of DBAs and transients, and therefore the scram accumulators must be OPERABLE to support the scram function. In MODES 3 and 4, control rods are not capable of being withdrawn since the reactor mode switch is in shutdown and a control rod block is applied. This provides adequate requirements for control rod scram accumulator OPERABILITY during these conditions. Requirements for scram accumulators in MODE 5 are contained in LCO 3.9.5, "Control Rod OPERABILITY – Refueling."

ACTIONS

The ACTIONS Table is modified by a Note indicating that a separate Condition entry is allowed for each control rod scram accumulator. This is acceptable since the Required Actions for each Condition provide appropriate compensatory actions for each inoperable accumulator. Complying with the Required Actions may allow for continued operation.

A.1 and A.2

With one control rod scram accumulator inoperable and the reactor steam dome pressure ≥ 900 psig, the control rod may be declared "slow," since the control rod will still scram at the reactor operating pressure but may not satisfy the required scram times in Table 3.1.4-1.

Required Action A.1 is modified by a Note indicating that declaring the control rod "slow" only applies if the associated control scram time was within the limits of Table 3.1.4-1 during the last scram time test. Otherwise, the control rod would already be considered "slow" and the further degradation of scram performance with an inoperable accumulator could result in excessive scram times. In this event, the associated control rod is declared inoperable (Required Action A.2) and LCO 3.1.3 is entered. This would

(continued)

BASES

ACTIONS

A.1 and A.2 (continued)

result in requiring the affected control rod to be fully inserted and disarmed, thereby satisfying its intended function, in accordance with ACTIONS of LCO 3.1.3.

The allowed Completion Time of 8 hours is reasonable, based on the large number of control rods available to provide the scram function and the ability of the affected control rod to scram only with reactor pressure at high reactor pressures.

B.1, B.2.1, and B.2.2

With two or more control rod scram accumulators inoperable and reactor steam dome pressure ≥ 900 psig, adequate pressure must be supplied to the charging water header. With inadequate charging water pressure, all of the accumulators could become inoperable, resulting in a potentially severe degradation of scram performance. Therefore, within 20 minutes from discovery of charging water header pressure < 940 psig concurrent with Condition B, adequate charging water header pressure must be restored. The allowed Completion Time of 20 minutes is reasonable, to place a CRD pump into service to restore the charging water header pressure, if required. This Completion Time is based on the ability of the reactor pressure alone to fully insert all control rods.

The control rod may be declared "slow," since the control rod will still scram using only reactor pressure, but may not satisfy the times in Table 3.1.4-1. Required Action B.2.1 is modified by a Note indicating that declaring the control rod "slow" only applies if the associated control scram time is within the limits of Table 3.1.4-1 during the last scram time test. Otherwise, the control rod would already be considered "slow" and the further degradation of scram performance with an inoperable accumulator could result in excessive scram times. In this event, the associated control rod is declared inoperable (Required Action B.2.2) and LCO 3.1.3 entered. This would result in requiring the affected control rod to be fully inserted and disarmed, thereby satisfying its intended function in accordance with ACTIONS of LCO 3.1.3.

(continued)

BASES

ACTIONS

B.1, B.2.1, and B.2.2 (continued)

The allowed Completion Time of 1 hour is reasonable, based on the ability of only the reactor pressure to scram the control rods and the low probability of a DBA or transient occurring while the affected accumulators are inoperable.

C.1 and C.2

With one or more control rod scram accumulators inoperable and the reactor steam dome pressure < 900 psig, the pressure supplied to the charging water header must be adequate to ensure that accumulators remain charged. With the reactor steam dome pressure < 900 psig, the function of the accumulators in providing the scram force becomes much more important since the scram function could become severely degraded during a depressurization event or at low reactor pressures. Therefore, immediately upon discovery of charging water header pressure < 940 psig, concurrent with Condition C, all control rods associated with inoperable accumulators must be verified to be fully inserted. Withdrawn control rods with inoperable accumulators may fail to scram under these low pressure conditions. The associated control rods must also be declared inoperable within 1 hour. The allowed Completion Time of 1 hour is reasonable for Required Action C.2, considering the low probability of a DBA or transient occurring during the time that the accumulator is inoperable.

D.1

The reactor mode switch must be immediately placed in the shutdown position if either Required Action and associated Completion Time associated with loss of the CRD charging pump (Required Actions B.1 and C.1) cannot be met. This ensures that all insertable control rods are inserted and that the reactor is in a condition that does not require the active function (i.e., scram) of the control rods. This Required Action is modified by a Note stating that the action is not applicable if all control rods associated with the inoperable scram accumulators are fully inserted, since the function of the control rods has been performed.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

SR 3.1.5.1

SR 3.1.5.1 requires that the accumulator pressure be checked every 7 days to ensure adequate accumulator pressure exists to provide sufficient scram force. The primary indicator of accumulator OPERABILITY is the accumulator pressure. A minimum accumulator pressure is specified, below which the capability of the accumulator to perform its intended function becomes degraded and the accumulator is considered inoperable. The minimum accumulator pressure of 940 psig is well below the expected pressure of 1380 to 1510 psig. Declaring the accumulator inoperable when the minimum pressure is not maintained ensures that significant degradation in scram times does not occur. The 7 day Frequency has been shown to be acceptable through operating experience and takes into account indications available in the control room.

REFERENCES

1. UFSAR, Section 14.6.

2. UFSAR, Section 14.5.

3. 10 CFR 50.36(c)(2)(ii).