JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.1

Control Rod Block Instrumentation

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

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?

   This change deletes the specific Required Actions when operating on a limiting control rod pattern. The RBM and operations on a limiting control rod pattern is not assumed to be the initiator of any accident previously evaluated. Therefore deleting these requirements will not increase the probability of an accident previously evaluated. The proposed Actions will allow 24 hours to restore one inoperable RBM channel to Operable status if one RBM channel is inoperable and one hour to place one RBM channel in trip if both channels are inoperable. Since one channel of RBM is capable of performing its safety function the consequences of an accident will be bounded by the current analysis even if operating on the limiting control rod pattern. With both channels inoperable, the one hour Completion Time allows the operator time to evaluate and repair any discovered inoperabilities and is acceptable because it minimizes risk while allowing time for restoration or tripping of inoperable channels. This one hour allowance is not intended to allow the operator to continue rod withdrawal. Therefore, the proposed change does 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 create the possibility of a new or different kind of accident from any accident previously evaluated, because the proposed change does not introduce a new mode of plant operation and does not require physical modification to the plant.

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

   The proposed Actions will allow 24 hours to restore one inoperable RBM channel to Operable status if one RBM channel is inoperable and one hour to place one RBM channel in trip if both channels are inoperable. These actions apply even if operating on a limiting control rod pattern.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

3. (continued)

Since one channel of RBM is capable of performing its safety function the consequences of an accident will be bounded by the current analysis even if operating on the limiting control rod pattern. With both channels inoperable, the one hour Completion Time allows the operator time to evaluate and repair any discovered inoperabilities and is acceptable because it minimizes risk while allowing time for restoration or tripping of inoperable channels. This one hour allowance is not intended to allow the operator to continue rod withdrawal. Since a limiting control rod pattern is defined as operating on or above a power distribution limit (such as APLHGR or MCPR), the condition is extremely unlikely. Adequate requirements on power distribution limits are specified in the LCOs in Section 3.2. These Specifications allow 2 hours to restore the limits to within limits otherwise a reduction in power is required and the plant must reduce Thermal Power to < 25% RTP within 4 hours. Therefore, the proposed change does not involve a significant reduction in a margin of safety.

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?

   The proposed change will delete the requirement to perform a Channel Check of the RBM instrumentation. The RBM automatically re-nulls itself whenever a control rod is selected and retains the latest setting until another control rod is selected, making a Channel Check both impractical and meaningless. Proper functioning of the RBM is indirectly verified each time a control rod is selected, by the re-nulling of the setpoint. The probability of an accident is not increased by this change because the RBM is not assumed to be the initiator of any analyzed event. The purpose of the RBM is to limit a rod withdrawal error (RWE) and prevent violation of the Minimum Critical Power Ratio (MCPR) Safety Limit (SL) and fuel cladding design limit of less than 1% plastic strain. The consequences of an accident are the same regardless of whether or not a Channel Check of the RBM is performed. 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?

   This change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated or maintained. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   This change does not involve a significant reduction in a margin of safety because the change will not affect the ability of the RBM to perform its intended function. The proposed LCO and Surveillance

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

3. (continued)

Requirements are sufficient to ensure that the RBM remains Operable. As a result, the change does not affect the current analysis assumptions. Therefore, this change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES· LESS RESTRICTIVE (SPECIFIC)

L3 CHANGE

The Licensee 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 will increase the surveillance interval of the CHANNEL FUNCTIONAL TEST to once every 92 days and allow the test to be performed 1 hour after the applicable condition is entered. The Rod Worth Minimizer does not monitor core thermal conditions but simply enforces pre-programmed rod patterns as a backup intended to prevent reactor operator error in selecting or positioning control rods. The RWM is a highly accurate system, which has been shown to be reliable. Also, the additional 1 hour allows time after the appropriate conditions are established to perform the test. Therefore, this change does not significantly increase the probability of a previously analyzed accident. An increase of the surveillance interval will not affect the capability of the component or system to perform its function nor alter assumptions relative to the mitigation of an accident. Therefore, this change will not involve a significant increase in the probability or consequences of an accident previously evaluated. RAI 3.3.2.1-3

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 introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it does not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L3 CHANGE (continued)

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

The proposed change does not involve a significant reduction in a margin of safety because: a) the Rod Worth Minimizer does not monitor core thermal conditions but simply enforces pre-programmed rod patterns as a backup intended to prevent reactor operator error in selecting or positioning control rods; and b) experience has shown that the components usually pass the surveillance when performed at the proposed requency. Therefore, this change will not involve a significant reduction in a margin of safety.

RAI 3.2-13

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?

   The existing specification requires the performance of the validation of the correctness of the RWM program sequence under two conditions: (a) During startup, prior to the start of control rod withdrawal and (b) during Shutdown, prior to attaining 10% rated power during rod insertion, except by scram. The new surveillance will only be required "prior to declaring RWM OPERABLE following loading of sequence into RWM." The RWM is not the initiator of any accident therefore this change will not increase the probability of an accident previously evaluated. After the RWM program has been loaded, and verified to be correct it is very unlikely that the programmed sequence can change. Therefore, the sequence will not be altered unless a new program has been loaded and therefore this change does not significantly increase the consequences of any accident previously analyzed.

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

   This proposed change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated or maintained. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   The proposed change does not involve a significant reduction in a margin of safety because the proposed surveillance frequency will identify any errors in the programmed RWM rod pattern.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L5 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 excludes neutron detectors from Channel Calibration Surveillance Requirements. The probability of an accident is not increased by these changes because the proposed change does not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated, maintained, or modified. The consequences of an accident will not be increased because the change will not affect the ability of the Local Power Range Monitor strings or the Average Power Range Monitors to detect and respond to core conditions. The neutron detectors are excluded from the Channel Calibrations because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Changes in neutron detector sensitivity are compensated for by performance of the 7 day calorimetric calibration (SR 3.3.1.1.2) and the 1000 MWD/T LPRM calibration against the TIPs (SR 3.3.1.1.7). 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?

   This 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, or inspected. The proposed change still provides adequate assurance the neutron detectors remain capable of performing their function. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

   The proposed change excludes neutron detectors from the Channel Calibration Surveillance Requirements. The proposed change does not involve a significant reduction in a margin of safety because the change

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L5 CHANGE

3. (continued)

will not affect the ability of the Local Power Range Monitor detectors or the Average Power Range Monitors to detect and respond to core conditions. The neutron detectors are excluded from the Channel Calibration because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Changes in neutron detector sensitivity are compensated for by performance of the 7 day calorimetric calibration (SR 3.3.1.1.2) and the 1000 MWD/t LPRM calibration against the TIPs (SR 3.3.1.1.7). As a result, the change does not affect the current analysis assumptions and adequate assurance is provided that the neutron detectors will be maintained Operable. Therefore, this change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L6 CHANGE

The Licensee 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?

   CTS 4.3.B.5 requires the performance of a functional test on a RBM when a limiting control rod pattern exists prior to the withdrawal of the designated rod(s). This testing requirement is proposed to be deleted from the current Technical Specifications. The probability of an accident is not increased because the elimination of an unscheduled performance of a surveillance test is not considered an initiator of any accidents previously evaluated. The consequences of an accident will not be increased because there is adequate assurance that the RBM is Operable and will perform its design function. This change acknowledges that there is no correlation between the operability of the RBM and operating at a power distribution limit (i.e., a limiting control rod pattern). The current Technical Specification surveillance requirements and their associated testing intervals have been shown to be adequate to ensure equipment Operability. Therefore, this change will not involve a significant increase in the consequences of any accident previously evaluated.

   RAI 3.3.2.1-6

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

   This proposed change will not involve any physical changes to plant systems, structures, or components (SSC), or the manner in which these SSC are operated or maintained. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L6 CHANGE (continued)

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

The proposed change would delete a certain surveillance testing requirement which is initiated as a consequence of plant conditions while relying on the adequacy of existing regularly scheduled surveillance testing. This change is supported by the consideration that there is no correlation between the operability of the RBM and operating at a power distribution limit (i.e., a limiting control rod pattern). In addition, this change is permissible as the current Technical Specification surveillance requirements (i.e., functional/calibration testing at 92 day intervals) have been shown to be adequate to ensure equipment Operability. Therefore, reliance on this specified surveillance testing and its associated testing interval does not result in a reduced level of confidence concerning equipment availability. Consequently, this change does not affect the current analysis assumptions. Accordingly, this change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L7 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 Applicability of the RBM has been changed from ≥ 30 % RTP to ≥ 30% RTP and no peripheral control rod selected. The proposed change does not affect the probability of an accident. The RBM is not assumed to be an initiator of any analyzed event. Therefore, this change does not significantly increase the probability of an accident previously evaluated. The safety function of the RBM is to prevent violation of the MCPR SL and the cladding 1% plastic strain fuel design limit that may result from a single control rod withdrawal error (RWE) event. This change is acceptable since with a peripheral rod selected the consequences of a control rod withdrawal error event will not exceed the MCPR SL. In addition, this change is consistent with the design of the RBM circuitry. That is when a peripheral control rod is selected the RBM is automatically bypassed and the output set to zero. This change will continue to ensure the RBM is maintained consistent with analysis assumptions. The consequences of an accident are not affected by this change. This change will not alter assumptions relative to the mitigation of an accident or transient event. 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 to the Applicability will not create the possibility of an accident. This change will not physically alter the plant (no new or different type of equipment will be installed). The changes in methods governing normal plant operation are consistent with the current safety analysis assumptions. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L7 CHANGE (continued)

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

The Applicability of the RBM has been changed from ≥ 30 % RTP to ≥ 30% RTP and no peripheral control rod selected. The margin of safety will not be affected by this change. The safety function of the RBM is to prevent violation of the MCPR SL and the cladding 1% plastic strain fuel design limit that may result from a single control rod withdrawal error (RWE) event. This change is acceptable since with a peripheral rod selected the consequences of a control rod withdrawal error event will not exceed the MCPR SL. In addition, this change is consistent with the design of the RBM circuitry. That is when a peripheral control rod is selected the RBM is automatically bypassed and the output set to zero. This change will continue to ensure the RBM is maintained consistent with analysis assumptions. The safety analysis assumptions will still be maintained, thus no question of safety exists. Therefore, this change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L8 CHANGE

The Licensee 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 eliminates a requirement in CTS 3.3.B.3.d to prepare and submit a report to the NRC within 30 days of a plant startup without the RWM Operable. This Special Report states the reason for the RWM inoperability, the action taken to restore it, and the schedule for returning the RWM to an operable status. The proposed change does not involve any physical alteration of plant systems, structures, or components, changes in parameters governing normal plant operation, or methods of operation. The elimination of this Special Report is not considered an initiator of any accident previously evaluated. Accordingly, the proposed change does not involve an increase in the probability of any accident previously evaluated.

   RAI 3.3.2.1-4

   The elimination of this Special Report has no impact on the safety analysis. Specifically, the completion and submittal of this report is not credited in the mitigation of any analyzed accident. Furthermore, there is no requirement for the NRC to approve this Special Report. Therefore, completion and submittal of the report is clearly not necessary to ensure safe operation of the plant. Accordingly, the proposed change does not involve an increase in the consequence of any 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 any physical alteration of plant systems, structures, or components, changes in parameters governing normal plant operation, or methods of operation. The proposed change does not introduce any new modes of operation. The proposed change impacts only the requirements for the completion and submittal of the Special Report to the NRC. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

TECHNICAL CHANGES- LESS RESTRICTIVE (SPECIFIC)

L8 CHANGE (continued)

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

The proposed change eliminates a requirement to submittal a Special Report to the NRC. There are no margins of safety related to any safety analysis that are dependent upon the proposed change. The Quality Assurance requirements of 10 CFR 50, Appendix B, provide assurance that appropriate corrective actions will be taken with regards to RWM inoperability. Accordingly, this change does not involve a significant reduction in a margin of safety. RAI 3.3.2.1-4

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.1

Control Rod Block Instrumentation

MARKUP OF NUREG-1433, REVISION 1
SPECIFICATION

3.3 INSTRUMENTATION

3.3.2.1 Control Rod Block Instrumentation

[3.3.B.3]
[3.2.C]

LCO 3.3.2.1 The control rod block instrumentation for each Function in Table 3.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2.1-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
Table 3.2-3 Note 2, Action B A. One rod block monitor (RBM) channel inoperable.	A.1 Restore RBM channel to OPERABLE status.	24 hours
B. Required Action and associated Completion Time of Condition A not met. OR Two RBM channels inoperable.	B.1 Place one RBM channel in trip.	1 hour
[3.3.B.3.f] C. Rod worth minimizer (RWM) inoperable during reactor startup.	C.1 Suspend control rod movement except by scram. OR	Immediately

(continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued) [3.3.B.3.a] [3.3.B.3.b] [3.3.B.3.d]	C.2.1.1 Verify ≥ 12 rods withdrawn. OR C.2.1.2 Verify by administrative methods that startup with RWM inoperable has not been performed in the last calendar year.	Immediately Immediately
	AND	
[3.3.B.3.a] [3.3.B.3.b] [3.3.B.3.c]	C.2.2 Verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or ~~other qualified member of the technical staff~~.	During control rod movement by a reactor engineer — CLB1
D. RWM inoperable during reactor shutdown. [3.3.B.3.a]	D.1 Verify movement of control rods is in ~~accordance~~ with BPWS by a second licensed operator or ~~other qualified member of the technical staff~~. compliance — TA1	During control rod movement by a reactor engineer — CLB1

(continued)

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Revision F

ACTIONS (continued)

CONDITION	REQUIRED ACTION		COMPLETION TIME
[M2] E. One or more Reactor Mode Switch—Shutdown Position channels inoperable.	E.1	Suspend control rod withdrawal.	Immediately
	AND		
	E.2	Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

-----NOTES-----

[4.2.c] 1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.

[Table 3.2-5 Note 3] 2. When an RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

SURVEILLANCE		FREQUENCY
[M1] SR 3.3.2.1.1	Perform CHANNEL FUNCTIONAL TEST.	[92] days DB5

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
SR 3.3.2.1.2 [4.3.B.3.a.4] [L3]	-------NOTE------- Not required to be performed until 1 hour after any control rod is withdrawn at ≤ [10]% RTP in MODE 2. ------------ Perform CHANNEL FUNCTIONAL TEST.	DB1 [92] days DB2
SR 3.3.2.1.3 [M5]	-------NOTE------- Not required to be performed until 1 hour after THERMAL POWER is ≤ [10]% RTP in MODE 1. ------------ Perform CHANNEL FUNCTIONAL TEST.	DB1 [92] days DB2
SR 3.3.2.1.4 [M4]	DB3 -------NOTE------- Neutron detectors are excluded. ------------ Verify the RBM: is not bypassed a. ~~Low Power Range—Upscale Function is not bypassed when THERMAL POWER is ≥ 29% and ≤ 64% RTP.~~ b. ~~Intermediate Power Range—Upscale Function is not bypassed when THERMAL POWER is > 64% and ≤ 84% RTP.~~ c. ~~High Power Range—Upscale Function is not bypassed when THERMAL POWER is > 84% RTP.~~ a. When THERMAL POWER is ≥ 30% RTP; and b. When a peripheral control rod is not selected.	~~[18] months~~ 92 days DB
SR 3.3.2.1.~~5~~ 6 DB4 [M6]	Verify the RWM is not bypassed when THERMAL POWER is ≤ [10]% RTP. DB1	[~~18~~] 24 months DB6

Insert SR 3.3.2.1.5 from next page DB4

(continued)

SURVEILLANCE REQUIREMENTS (continued)

	SURVEILLANCE	FREQUENCY
[M2] SR 3.3.2.1.~~6~~ 7	-----NOTE----- Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. ----- Perform CHANNEL FUNCTIONAL TEST.	~~[180]~~ 24 months DB7
move to previous page [L5] [Table 4.2-3 function band] SR 3.3.2.1.~~6~~ 5	-----NOTE----- Neutron detectors are excluded. ----- Perform CHANNEL CALIBRATION.	92 days ~~[18] months~~ DB4
[4.3.B.3.a.1] [4.3.B.3.b.1] [L4] SR 3.3.2.1.8	Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

DB4

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Rod Block Monitor				
a. Low Power Range – Upscale	(a)	[2]	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.7	≤ [115.5/125] divisions of full scale
b. Intermediate Power Range – Upscale	(b)	[2]	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.7	≤ [109.7/125] divisions of full scale
c. High Power Range – Upscale	(c), (d)	[2]	SR 3.3.2.1.1 SR 3.3.2.1.4 SR 3.3.2.1.7	≤ [105.9/125] divisions of full scale
d. Inop	(d), (e)	[2]	SR 3.3.2.1.1	NA
e. Downscale	(d), (e)	[2]	SR 3.3.2.1.1 SR 3.3.2.1.7	≥ [93/125] divisions of full scale
f. Bypass Time Delay	(d), (e)	[2]	SR 3.3.2.1.1 SR 3.3.2.1.7	≤ [2.0] seconds
2. Rod Worth Minimizer	1(f), 2(f)	[1]	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.5 SR 3.3.2.1.8	NA
3. Reactor Mode Switch – Shutdown Position	(g)	[2]	SR 3.3.2.1.6	NA

(a) THERMAL POWER ≥ [29]% and ≤ [64]% RTP and MCPR < 1.70.

(b) THERMAL POWER > [64]% and ≤ [84]% RTP and MCPR < 1.70.

(c) THERMAL POWER > [84]% and < 90% RTP and MCPR < 1.70.

(d) THERMAL POWER ≥ 90% RTP and MCPR < 1.40.

(e) THERMAL POWER ≥ [64]% and < 90% RTP and MCPR < 1.70.

(f) With THERMAL POWER ≤ [10]% RTP.

(g) Reactor mode switch in the shutdown position.

CLB2 As specified in the COLR
DB4 DB8 DB9 DB10 DB11 DB3 DB1
[Table 3.2-3 Table 4.2-3]
[M1] [A2] [3.3.B.3] [DOC M2]
add SR 3.3.2.1.4
2.5
30
RTP and no peripheral control rod selected
Table 3.2-3 Note 1b, Note 7
1A
Rev. F

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.1

Control Rod Block Instrumentation

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

RETENTION OF EXISTING REQUIREMENT (CLB)

CLB1 The reactor engineers are the only other persons qualified at JAFNPP to verify movement of control rods therefore the phrase "other qualified member of the technical staff" has been changed to "reactor engineer" in ITS 3.3.2.1 Required Actions C.2.2 and D.1.

CLB2 The Allowable Value of the RBM upscale is located in the COLR. This was accepted in JAFNPP Technical Specification Amendment No.162. This allowance is consistent with the guidance in Generic Letter 88-16 for the removal of cycle-specific parameter limits from the Technical Specifications to the COLR.

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

PA1 None

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 The RWM is required to be Operable at ≤ 10% RTP as specified in CTS 4.3.B.3.a.4. This requirement is consistent with the design bases analysis assumptions. Therefore, the bracketed value of 10% has been retained in the ITS throughout the Specification.

DB2 The brackets have been removed and the Surveillance Frequency of 92 days is retained in ITS SR 3.3.2.1.2 and SR 3.3.2.1.3. This Frequency is justified in DOC L3.

RAI 3.3.2.1-3

DB3 ITS SR 3.3.2.1.4 has been added in accordance with M4. The bracketed Frequency of 18 months has been changed to 92 days and the bracketed Surveillance Note (Neutron detectors are excluded) retained. The surveillance has been re-written to conform to the JAFNPP plant design. The Surveillance ensures the RBM is Operable when required.

DB4 ISTS SR 3.3.2.1.7, (Channel Calibration of RBM Upscale & Downscale channels) is currently performed every 92 days therefore the surveillance has been placed in its appropriate location and renumbered as SR 3.3.2.1.5. Subsequent surveillances have been renumbered, where applicable. This Surveillance Frequency is consistent with methodology in determining the associated Allowable Values for these Functions. Since the Calibration is performed every 92 days there is no need for a CHANNEL FUNCTIONAL TEST, therefore SR 3.3.2.1.1 has been removed from

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB4 (continued)

these Functions in the Table.

DB5 SR 3.3.2.1.1, a CHANNEL FUNCTIONAL TEST, has been added in accordance with M1 for the RBM Inop function. The bracketed Frequency of 92 days is retained since it is consistent with NEDC-30851-P-A.

DB6 The bracketed Surveillance Frequency of ITS SR 3.3.2.1.6 is changed from 18 months to 24 months as justified in the associated Bases for this surveillance. The trip setpoint methodology assumes a Frequency of 24 months between calibrations.

DB7 The bracketed Surveillance Frequency of ITS SR 3.3.2.1.7 has been changed from 18 to 24 months since the test should be performed during a plant outage to minimize any unplanned transients as described in the Bases for this SR.

DB8 The brackets have been removed and the proper number of channels included for each Function in Table 3.3.2.1-1. The values are consistent with the current requirements in CTS Table 3.2.3 for Functions 1.a, 1.c, and CTS 3.3.B.3 for the Rod Worth Minimizer. The requirements for Function 1.b (RBM-Inop) and Function 3 (Reactor Mode Switch-Shutdown) have been added in accordance with M1 and M2. The specified number of channels are consistent with the plant design.

DB9 Table 3.3.2.1-1 Functions 1.b, 1.c and 1.f are not applicable to JAFNPP. Therefore these Functions have been removed from the Table. Subsequent Functions have been renumbered, where applicable.

DB10 The Table 3.3.2.1-1 Applicability for the RBM Functions have been revised to be consistent with the JAFNPP plant design. The RBM setpoint includes three different curves which vary as a Function of recirculation flow. The Allowable Values for these Functions are included in the COLR since they vary depending on the cycle. All three curves must be Functioning properly whenever Thermal Power is ≥ 30% RTP and when no peripheral control rod is selected. Therefore Table Footnotes b, c, d, and e have been deleted and (a) revised to meet the specific JAFNPP Applicability. Subsequent Applicability Footnotes have been revised, as required.

DB11 The brackets have been removed and the "Allowable Value" included consistent with the requirements in CTS Table 3.2-3.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The change presented in the Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Editorial Changes Affecting NUREG-1433 designated as NRC-ED-14 has been incorporated into the revised Improved Technical Specifications. NRC-ED-14

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: 3.3.2.1

Control Rod Block Instrumentation

MARKUP OF NUREG-1433, REVISION 1, BASES

B 3.3 INSTRUMENTATION

B 3.3.2.1 Control Rod Block Instrumentation

PA2

BASES

BACKGROUND

Control rods provide the primary means for control of reactivity changes. Control rod block instrumentation includes channel sensors, logic circuitry, switches, and relays that are designed to ensure that specified fuel design limits are not exceeded for postulated transients and accidents. During high power operation, the rod block monitor (RBM) provides protection for control rod withdrawal error events. During low power operations, control rod blocks from the rod worth minimizer (RWM) enforce specific control rod sequences designed to mitigate the consequences of the control rod drop accident (CRDA). During shutdown conditions, control rod blocks from the Reactor Mode Switch—Shutdown Position Function ensure that all control rods remain inserted to prevent inadvertent criticalities.

S bypass circuits,

The purpose of the RBM is to limit control rod withdrawal if localized neutron flux exceeds a predetermined setpoint during control rod manipulations. It is assumed to function to block further control rod withdrawal to preclude a MCPR Safety Limit (SL) violation. The RBM supplies a trip signal to the Reactor Manual Control System (RMCS) to appropriately inhibit control rod withdrawal during power operation above the low power range setpoint. The RBM has two channels, either of which can initiate a control rod block when the channel output exceeds the control rod block setpoint. One RBM channel inputs into one RMCS rod block circuit and the other RBM channel inputs into the second RMCS rod block circuit. The RBM channel signal is generated by averaging a set of local power range monitor (LPRM) signals ~~at various core heights surrounding the control rod being withdrawn. A signal from one average power range monitor (APRM) channel assigned to each Reactor Protection System (RPS) trip system supplies a reference signal for the RBM channel in the same trip system. This reference signal is used to determine which RBM range setpoint (low, intermediate, or high) is enabled. If the APRM is indicating less than the low power range setpoint, the RBM is automatically bypassed. The RBM is also automatically bypassed if a peripheral control rod is selected (Ref. 1).~~

Insert BKGD

DB1

(continued)

DB1

INSERT BKGD

. One RBM channel averages the signals of the LPRM detectors from the A and C level of the assigned LPRM assemblies, while the other RBM channel averages the signals of the LPRM detectors at the B and D level. Assignment of LPRM assemblies to be used in RBM averaging is controlled by the selection of control rods. If any LPRM detector assigned to an RBM is bypassed, the computed average signal is automatically adjusted to compensate for the number of LPRM input signals. The minimum number of LPRM inputs required for each RBM channel to prevent an instrument inoperative alarm is four when using four LPRM assemblies, three when using three LPRM assemblies, and two when using two LPRM assemblies. Each RBM also receives a recirculation loop flow signal. The RBM is automatically bypassed and the output set to zero if a peripheral rod is selected or the APRM used to normalize the RBM reading is < 30% RTP (Ref. 1). In addition, one of the two RBM channels can be manually bypassed.

When a control rod is selected, the gain of each RBM channel output is normalized to the assigned APRM channel. The assigned APRM channel is on the same RPS trip system as the RBM channel. The gain setting is held constant during the movement of the selected control rod to provide an indication of the change in the relative local power level. If the indicated local power level increases above the preset limit, a rod block will occur. There are three parallel rod block setpoint lines which have an adjustable slope. These setpoint lines provide a setpoint that is a function of the recirculation loop flow signal. Intercepts of these setpoint lines with rated recirculation loop flow are adjustable. Lights in the control room indicate which rod block setpoint line is active. Two percent below the intermediate and lower rod block setpoint are the setup permissive and setdown lines. These lines, on increasing power, light a setup permissive indicator so that the operator can evaluate the conditions and manually change the setpoint to the next higher rod block setpoint line. On decreasing power these lines provide automatic setdown. In addition, to preclude rod movement with an inoperable RBM (if not bypassed), a downscale trip and an inoperable trip are provided. A rod block signal is generated if an RBM downscale trip or an inoperable trip occurs, since this could indicate a problem with the RBM channel. The downscale trip will occur if the RBM channel signal decreases below the downscale trip setpoint after the RBM channel signal has been normalized. The inoperable trip will occur during the nulling (normalization) sequence, if the RBM channel fails to null, too few LPRM inputs are available, a module is not plugged in, or the function switch is moved to any position other than "Operate".

and shutdown PA1

BASES

BACKGROUND (continued)

The purpose of the RWM is to control rod patterns during startup, such that only specified control rod sequences and relative positions are allowed over the operating range from all control rods inserted to 10% RTP. The sequences effectively limit the potential amount and rate of reactivity increase during a CRDA. Prescribed control rod sequences are stored in the RWM, which will initiate control rod withdrawal and insert blocks when the actual sequence deviates beyond allowances from the stored sequence. The RWM determines the actual sequence based position indication for each control rod. The RWM also uses ~~feedwater flow and~~ steam flow signals to determine when the reactor power is above the preset power level at which the RWM is automatically bypassed (Ref. 2). The RWM is a single channel system that provides input into both RMCS rod block circuits.

PA1 on

DB1

Compensated for steam pressure DB1

With the reactor mode switch in the shutdown position, a control rod withdrawal block is applied to all control rods to ensure that the shutdown condition is maintained. This Function prevents inadvertent criticality as the result of a control rod withdrawal during MODE 3 or 4, or during MODE 5 when the reactor mode switch is required to be in the shutdown position. The reactor mode switch has two channels, each inputting into a separate RMCS rod block circuit. A rod block in either RMCS circuit will provide a control rod block to all control rods.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1. Rod Block Monitor

The RBM is designed to prevent violation of the MCPR SL and the cladding 1% plastic strain fuel design limit that may result from a single control rod withdrawal error (RWE) event. The analytical methods and assumptions used in evaluating the RWE event are summarized in Reference 3. A statistical analysis of RWE events was performed to determine the RBM response for both channels for each event. From these responses, the fuel thermal performance as a function of RBM Allowable Value was determined. The Allowable Values are chosen as a function of power level. Based on the specified Allowable Values, operating limits are established.

DB1

and flow

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1. Rod Block Monitor (continued)

10 CFR 50.36(c)(2)(ii) (Ref. 4) X1

The RBM Function satisfies Criterion 3 of ~~the NRC Policy Statement~~.

Two channels of the RBM are required to be OPERABLE, with their setpoints within the appropriate Allowable Value ~~for the associated power range~~, to ensure that no single ~~instrument~~ failure can preclude a rod block from this Function. The actual setpoints are calibrated consistent with applicable setpoint methodology.

specified in the COLR

DB1

CLB3

PA2

Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Values between successive CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor power), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. ~~The Allowable Values are derived from the analytic limits, corrected for calibration, process, and some of the instrument errors. The trip setpoints are then determined accounting for the remaining instrument errors (e.g., drift). The trip setpoints derived in this manner provide adequate protection because instrumentation uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for.~~

DB6

Insert ASA

30

The RBM is assumed to mitigate the consequences of an RWE event when operating ≥ ~~29%~~ RTP. Below this power level, the consequences of an RWE event will not exceed the MCPR SL and, therefore, the RBM is not required to be OPERABLE (Ref. 3). ~~When operating < 90% RTP, analyses (Ref. 3) have shown that with an initial MCPR ≥ 1.70, no RWE event will result in exceeding the MCPR SL. Also, the analyses demonstrate that when operating at ≥ 90% RTP with MCPR ≥ 1.40, no RWE event will result in exceeding the MCPR~~

and a peripheral control rod is not selected

DB1

or if a peripheral control rod is selected,

(continued)

0B6 INSERT ASA

The trip setpoints are derived from the analytical limits and account for all worst case instrumentation uncertainties as appropriate (e.g., drift, process effects, calibration uncertainties, and severe environmental errors (for channels that must function in harsh environments as defined by 10 CFR 50.49)). The trip setpoints derived in this manner provide adequate protection because all expected uncertainties are accounted for. The Allowable Values are then derived from the trip setpoints by accounting for normal effects that would be seen during periodic surveillance or calibration. These effects are instrumentation uncertainties observed during normal operation (e.g., drift and calibration uncertainties).

Revision F

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1. Rod Block Monitor (continued)

DB1

SL (Ref. 3). Therefore, under these conditions, the RBM is also not required to be OPERABLE.

2. Rod Worth Minimizer

The RWM enforces the banked position withdrawal sequence (BPWS) to ensure that the initial conditions of the CRDA analysis are not violated. The analytical methods and assumptions used in evaluating the CRDA are summarized in References ~~4, 5, 6, and 7~~ 5. The BPWS requires that control rods be moved in groups, with all control rods assigned to a specific group required to be within specified banked positions. Requirements that the control rod sequence is in compliance with the BPWS are specified in LCO 3.1.6, "Rod Pattern Control."

DB2

X1

The RWM Function satisfies Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36(c)(2)(ii) Ref. 4.

PA1

Since the RWM is a ~~hardwired~~ system designed to act as a backup to operator control of the rod sequences, only one channel of the RWM is available and required to be OPERABLE (Ref. ~~2~~ 6). Special circumstances provided for in the Required Action of LCO 3.1.3, "Control Rod OPERABILITY," and LCO 3.1.6 may necessitate bypassing the RWM to allow continued operation with inoperable control rods, or to allow correction of a control rod pattern not in compliance with the BPWS. The RWM may be bypassed as required by these conditions, but then it must be considered inoperable and the Required Actions of this LCO followed.

DB2

PA1

Compliance with the BPWS, and therefore OPERABILITY of the RWM, is required in MODES 1 and 2 when THERMAL POWER is ≤ 10% RTP. When THERMAL POWER is > 10% RTP, there is no possible control rod configuration that results in a control rod worth that could exceed the 280 cal/gm fuel damage limit during a CRDA (Refs. ~~5 and 7~~ 6 and 7). In MODES 3 and 4, all control rods are required to be inserted into the core; therefore, a CRDA cannot occur. In MODE 5, since only a single control rod can be withdrawn from a core cell containing fuel assemblies, adequate SDM ensures that the consequences of a CRDA are acceptable, since the reactor will be subcritical.

DB2

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

3. Reactor Mode Switch—Shutdown Position

PA1

During MODES 3 and 4, and during MODE 5 when the reactor mode switch is ~~required to be~~ in the shutdown position, the core is assumed to be subcritical; therefore, no positive reactivity insertion events are analyzed. The Reactor Mode Switch—Shutdown Position control rod withdrawal block ensures that the reactor remains subcritical by blocking control rod withdrawal, thereby preserving the assumptions of the safety analysis.

X1

The Reactor Mode Switch—Shutdown Position Function satisfies Criterion 3 of ~~the NRC Policy Statement~~ 10 CFR 50.36 (c)(2)(ii)(Re...

PA2

Two channels are required to be OPERABLE to ensure that no single channel failure will preclude a rod block when required. There is no Allowable Value for this Function since the channels are mechanically actuated based solely on reactor mode switch position.

During shutdown conditions (MODE 3, 4, or 5), no positive reactivity insertion events are analyzed because assumptions are that control rod withdrawal blocks are provided to prevent criticality. Therefore, when the reactor mode switch is in the shutdown position, the control rod withdrawal block is required to be OPERABLE. During MODE 5 with the reactor mode switch in the refueling position, the refuel position one-rod-out interlock (LCO 3.9.2) provides the required control rod withdrawal blocks.

PA2

"Refuel Position One Rod-Out Interlock"

ACTIONS

PA3

[Reviewer's Note: Certain LCO Completion Times are based on approved topical reports. In order for the licensee to use the times, the licensee must justify the Completion Times as required by the staff Safety Evaluation Report (SER) for the topical report.]

A.1

With one RBM channel inoperable, the remaining OPERABLE channel is adequate to perform the control rod block function; however, overall reliability is reduced because a single failure in the remaining OPERABLE channel can result in no control rod block capability for the RBM. For this

(continued)

BASES

ACTIONS

A.1 (continued)

reason, Required Action A.1 requires restoration of the inoperable channel to OPERABLE status. The Completion Time of 24 hours is based on the low probability of an event occurring coincident with a failure in the remaining OPERABLE channel.

B.1

If Required Action A.1 is not met and the associated Completion Time has expired, the inoperable channel must be placed in trip within 1 hour. If both RBM channels are inoperable, the RBM is not capable of performing its intended function; thus, one channel must also be placed in trip. This initiates a control rod withdrawal block, thereby ensuring that the RBM function is met.

The 1 hour Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities and is acceptable because it minimizes risk while allowing time for restoration or tripping of inoperable channels.

PA1

These requirements minimize the number of reactor startups initiated with RWM inoperable.

C.1, C.2.1.1, C.2.1.2, and C.2.2

With the RWM inoperable during a reactor startup, the operator is still capable of enforcing the prescribed control rod sequence. However, the overall reliability is reduced because a single operator error can result in violating the control rod sequence. Therefore, control rod movement must be immediately suspended except by scram. Alternatively, startup may continue if at least 12 control rods have already been withdrawn, or a reactor startup with an inoperable RWM [PA4: during withdrawal of one or more of the first 12 rods] was not performed in the last ~~12 months~~ [PA4: calendar year]. Required Actions C.2.1.1 and C.2.1.2 require verification of these conditions by review of plant logs and control room indications. Once Required Action C.2.1.1 or C.2.1.2 is satisfactorily completed, control rod withdrawal may proceed in accordance with the restrictions imposed by Required Action C.2.2. Required Action C.2.2 allows for the RWM Function to be performed manually and requires a double check of compliance with the prescribed rod sequence by a second licensed operator (Reactor Operator or Senior Reactor Operator) or ~~other qualified member of the technical staff~~ reactor engineer. CLB1

(continued)

These individuals shall have no other concurrent duties during rod withdrawal or insertion PA1

BASES

ACTIONS

C.1, C.2.1.1, C.2.1.2, and C.2.2 (continued)

The RWM may be bypassed under these conditions to allow continued operations. In addition, Required Actions of LCO 3.1.3 and LCO 3.1.6 may require bypassing the RWM, during which time the RWM must be considered inoperable with Condition C entered and its Required Actions taken.

RAI 3.3.2.1-4

D.1

With the RWM inoperable during a reactor shutdown, the operator is still capable of enforcing the prescribed control rod sequence. Required Action D.1 allows for the RWM Function to be performed manually and requires a double check of compliance with the prescribed rod sequence by a second licensed operator (Reactor Operator or Senior Reactor Operator) or ~~other qualified member of the technical staff~~ reactor engineer. The RWM may be bypassed under these conditions to allow the reactor shutdown to continue.

CLB1

E.1 and E.2

With one Reactor Mode Switch—Shutdown Position control rod withdrawal block channel inoperable, the remaining OPERABLE channel is adequate to perform the control rod withdrawal block function. However, since the Required Actions are consistent with the normal action of an OPERABLE Reactor Mode Switch—Shutdown Position Function (i.e., maintaining all control rods inserted), there is no distinction between having one or two channels inoperable.

In both cases (one or both channels inoperable), suspending all control rod withdrawal and initiating action to fully insert all insertable control rods in core cells containing one or more fuel assemblies will ensure that the core is subcritical with adequate SDM ensured by (LCO 3.1.1, SHUTDOWN MARGIN (SDM)). Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and are therefore not required to be inserted. Action must continue until all insertable control rods in core cells containing one or more fuel assemblies are fully inserted.

PA1

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

~~Reviewer's Note: Certain Frequencies are based on approved topical reports. In order for a licensee to use these Frequencies, the licensee must justify the Frequencies as required by the staff SER for the topical report.~~ PA3

As noted at the beginning of the SRs, the SRs for each Control Rod Block instrumentation Function are found in the SRs column of Table 3.3.2.1-1. (Note 1)

PA1 The Surveillances are modified by ~~a~~ 2 Note to indicate that when an RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. ~~5~~ 8) DB2 assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that a control rod block will be initiated when necessary.

TA1 DB8

SR 3.3.2.1.1

Insert SR 3.3.2.1.1

~~A CHANNEL FUNCTIONAL TEST is performed for each RBM channel to ensure that the entire channel will perform the intended function. It includes the Reactor Manual Control Multiplexing System input.~~

~~Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.~~ PA4 The Frequency of 92 days is based on reliability analyses (Ref. ~~8~~ 9). DB2

SR 3.3.2.1.2 and SR 3.3.2.1.3

A CHANNEL FUNCTIONAL TEST is performed for the RWM to ensure that the entire system will perform the intended function. TA1 Insert SR 3.3.2.1.2 The CHANNEL FUNCTIONAL TEST for the RWM is performed by attempting to withdraw a control rod not in compliance with

(continued)

INSERT SR 3.3.2.1.1

TA 1

A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with the applicable extensions. DB8

Testing of the Reactor Manual Control Multiplexing System input shall include inputs of "no control rod selected," "peripheral control rod selected," and other control rods selected with two, three, or four LPRM assemblies around it. In addition, testing shall include a verification that an inoperable trip occurs when a module is not plugged in, or the function switch is moved to any position other than "Operate".

TA 1

INSERT SR 3.3.2.1.2

A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with the applicable extensions.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1.2 and SR 3.3.2.1.3 (continued)

PA1

the prescribed sequence and verifying a control rod block occurs. As noted in the SRs, SR 3.3.2.1.2 is not required to be performed until 1 hour after any control rod is ~~withdrawn~~ at ≤ 10% RTP in MODE 2, and ~~As noted,~~ SR 3.3.2.1.3 is not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1. This allows entry into MODE 2 for SR 3.3.2.1.2, and entry into MODE 1 when THERMAL POWER is ≤ 10% RTP for SR 3.3.2.1.3, to perform the required Surveillance if the 92 day Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating experience and in consideration of providing a reasonable time in which to complete the SRs. The 92 day Frequencies are based on reliability analysis (Ref. ~~8~~ 9). PA1 DB2

SR 3.3.2.1.4

DB1 Insert SR 3.3.2.14

~~The RBM setpoints are automatically varied as a function of power. Three Allowable Values are specified in Table 3.3.2.1-1, each within a specific power range. The power at which the control rod block Allowable Values automatically change are based on the APRM signal's input to each RBM channel. Below the minimum power setpoint, the RBM is automatically bypassed. These power Allowable Values must be verified periodically to be less than or equal to the specified values.~~ DB1 If any ~~power range~~ bypass setpoint is nonconservative, then the affected RBM channel is considered inoperable. Alternatively, the ~~power range~~ APRM channel can be placed in the conservative condition (i.e., enabling the ~~proper RBM setpoint~~ non bypass). DB1 If placed in this condition, the SR is met and the RBM channel is not considered inoperable. As noted, neutron detectors are excluded from the Surveillance because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.~~8~~ 9. PA5 ~~The~~ ~~18 month~~ 92 day Frequency is based on the actual trip setpoint methodology utilized for these channels. DB3

Insert SR 3.3.2.1.5 from page B.3.3-53 and 54 DB4

SR 3.3.2.1.~~5~~ 6 DB4

The RWM is automatically bypassed when power is above a specified value. The power level is determined from ~~feedwater/flow and~~ steam flow signals compensated for steam pressure. DB1 The automatic bypass

(continued)

DB1

INSERT SR 3.3.2.1.4

is automatically bypassed when power is below a specified value or if a peripheral control rod is selected. The power level is determined from the APRM signals input to each RBM channel. The automatic bypass must be verified periodically to be < 30% RTP. In addition, it must also be verified that the RBM is not bypassed when a non-peripheral control rod is selected (only one non-peripheral control rod is required to be verified).

BASES

DB4

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1.9 6 (continued)

setpoint must be verified periodically to be ≤ 10% RTP. If the RWM low power setpoint is nonconservative, then the RWM is considered inoperable. Alternately, the low power setpoint channel can be placed in the conservative condition (nonbypass). If placed in the nonbypassed condition, the SR is met and the RWM is not considered inoperable. The Frequency is based on the trip setpoint methodology utilized for the low power setpoint channel.

SR 3.3.2.1.6 7 DB4

TA1 Insert SR 3.3.2.1.7

A CHANNEL FUNCTIONAL TEST is performed for the Reactor Mode Switch—Shutdown Position Function to ensure that the entire channel will perform the intended function. The CHANNEL FUNCTIONAL TEST for the Reactor Mode Switch—Shutdown Position Function is performed by attempting to withdraw any control rod with the reactor mode switch in the shutdown position and verifying a control rod block occurs.

As noted in the SR, the Surveillance is not required to be performed until 1 hour after the reactor mode switch is in the shutdown position, since testing of this interlock with the reactor mode switch in any other position cannot be performed without using jumpers, lifted leads, or movable links. This allows entry into MODES 3 and 4 if the 18 month Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating experience and in consideration of providing a reasonable time in which to complete the SRs. 24 DB5

24 The 18 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 18 month Frequency. 24 DB5

move to previous page

SR 3.3.2.1.7 5

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel DB4

(continued)

TA1

INSERT SR 3.3.2.1.7

A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with the applicable extensions.

BASES

SURVEILLANCE REQUIREMENTS

move to page B 3.3-52

DB4

SR 3.3.2.1.~~6~~ 5 (continued)

adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

As noted, neutron detectors are excluded from the CHANNEL CALIBRATION because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.~~8~~ 7 PA5

The Frequency is based upon the assumption of a~~n~~ ~~18 month~~ 92 day DB4 calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.2.1.8

The RWM will only enforce the proper control rod sequence if the rod sequence is properly input into the RWM computer. This SR ensures that the proper sequence is loaded into the RWM so that it can perform its intended function. The Surveillance is performed once prior to declaring RWM OPERABLE following loading of sequence into RWM, since this is when rod sequence input errors are possible.

DB2

3. NEDE-24011-P-A-13-US, General Electric Standard Application for Reactor Fuel, Supplement for United States, Section 5.2.2.1.5, August 1996

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

X1

REFERENCES

DB2 X1 renumbering

PA6 DB7

1. U ~~F~~SAR, Section ~~[7.6.2.2.5]~~ 5.8.2.
2. ~~F~~SAR, Section ~~[7.6.8.2.6]~~ 16.5.3.
3. ~~NEDC-30474-P, "Average Power Range Monitor, Rod Block Monitor, and Technical Specification Improvements (ARTS) Program for Edwin I. Hatch Nuclear Plants," December 1983.~~
4. ~~NEDE-24011-P-A-9-US, "General Electrical Standard Application for Reload Fuel," Supplement for United States, Section S 2.2.3.1, September 1988.~~

DB2

DB2

5. UFSAR, Section 14.6.1.2

~~5~~ 7. ~~"~~Modifications to the Requirements for Control Rod Drop Accident Mitigating Systems,~~"~~ BWR Owners' Group, July 1986. PA7

Insert from next page DB2

(continued)

BASES

DB2

X1

renumbering

move to previous page

DB2

REFERENCES (continued)

~~6. NEDO-21231, "Banked Position Withdrawal Sequence," January 1977.~~

6 ~~7~~. NRC SER, "Acceptance of Referencing of Licensing Topical Report NEDE-24011-P-A," "General Electric Standard Application for Reactor Fuel, Revision 8, Amendment 17," PA7 December 27, 1987.

9 ~~8~~. NEDC-30851-P-A, "Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation," May ~~October~~ 1988.

8 ~~9~~. GENE-770-06-1-A, "Addendum to Bases for Changes to Surveillance Test Intervals and Allowed Out-of-Service Times for Selected Instrumentation Technical Specifications," PA7 ~~February 1991~~ December 1992.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.1

Control Rod Block Instrumentation

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

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.3.2.1 - CONTROL ROD BLOCK INSTRUMENTATION

RETENTION OF EXISTING REQUIREMENT (CLB)

CLB1 The reactor engineers are the only other persons qualified at JAFNPP to verify movement of control rods therefore the phrase "other qualified member of the technical staff" has been changed to "reactor engineer" in ITS 3.3.2.1 Required Actions C.2.2 and D.1 Bases.

CLB2 This requirement to prepare a report is consistent with the current requirements in CTS 3.3.B.3.d.

CLB3 The Allowable Value of the RBM upscale is located in the COLR. This was accepted in JAFNPP Technical Specification Amendment No.162. This allowance is consistent with the guidance in Generic Letter 88-16 for the removal of cycle-specific parameter limits from the Technical Specifications to the COLR.

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

PA1 The Bases have been revised for clarity or accuracy.

PA2 The Bases have been revised to be consistent with the other places in the Bases.

PA3 The Reviewer's Note has been deleted.

PA4 The Bases has been revised to be consistent with the Specification.

PA5 The appropriate Surveillance has been included as a result of changes made to the Surveillances of ITS 3.3.1.1.

PA6 Changes have been made (additions, deletions, and/or changes to the NUREG) to reflect the plant specific nomenclature.

PA7 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 design.

DB2 The appropriate references have been included. Subsequent References have been renumbered, as applicable.

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.3.2.1 - CONTROL ROD BLOCK INSTRUMENTATION

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB3 The Frequency of ITS SR 3.3.2.1.4 has been changed from 18 months to 92 days consistent with the setpoint methodology for the associated channels.

DB4 ISTS SR 3.3.2.1.7 has been renumbered as SR 3.3.2.1.5 since the setpoint methodology for the Rod Block Monitor - Upscale trip is based on a Surveillance Frequency of 92 days instead of 24 months. Subsequent SRs have been renumbered, as applicable.

DB5 The Surveillance Frequency of ITS SR 3.3.2.1.7 has been changed from 18 to 24 months since the test should be performed during a plant outage to minimize any unplanned transients as described in the Bases.

DB6 The Bases description of the setpoint methodology has been revised to be consistent with the JAFNPP plant specific methodology.

DB7 The brackets have been removed and the appropriate Plant Specific References included.

DB8 The Bases of ISTS SR 3.3.2.1.1 has been changed to account for changes made to the Specification. The only Function tested under this Surveillance is the RBM inop circuitry. The Bases describes the actual testing required by the Surveillance.

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler number 205, Revision 3 have been incorporated into the revised Improved Technical Specifications.

TSTF-205

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. References have been renumbered, as applicable.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.1

Control Rod Block Instrumentation

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

3.3 INSTRUMENTATION

3.3.2.1 Control Rod Block Instrumentation

LCO 3.3.2.1 The control rod block instrumentation for each Function in Table 3.3.2.1-1 shall be OPERABLE.

APPLICABILITY: According to Table 3.3.2.1-1.

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
A. One rod block monitor (RBM) channel inoperable.	A.1 Restore RBM channel to OPERABLE status.	24 hours
B. Required Action and associated Completion Time of Condition A not met. <u>OR</u> Two RBM channels inoperable.	B.1 Place one RBM channel in trip.	1 hour
C. Rod worth minimizer (RWM) inoperable during reactor startup.	C.1 Suspend control rod movement except by scram. <u>OR</u>	Immediately (continued)

ACTIONS

CONDITION	REQUIRED ACTION	COMPLETION TIME
C. (continued)	C.2.1.1 Verify ≥ 12 rods withdrawn. OR C.2.1.2 Verify by administrative methods that startup with RWM inoperable has not been performed in the last calendar year.	Immediately Immediately
	AND C.2.2 Verify movement of control rods is in compliance with banked position withdrawal sequence (BPWS) by a second licensed operator or by a reactor engineer.	During control rod movement
D. RWM inoperable during reactor shutdown.	D.1 Verify movement of control rods is in compliance with BPWS by a second licensed operator or by a reactor engineer.	During control rod movement

(continued)

ACTIONS (continued)

CONDITION	REQUIRED ACTION	COMPLETION TIME
E. One or more Reactor Mode Switch - Shutdown Position channels inoperable.	E.1 Suspend control rod withdrawal.	Immediately
	AND	
	E.2 Initiate action to fully insert all insertable control rods in core cells containing one or more fuel assemblies.	Immediately

SURVEILLANCE REQUIREMENTS

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

1. Refer to Table 3.3.2.1-1 to determine which SRs apply for each Control Rod Block Function.
2. When an RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability.

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.1	Perform CHANNEL FUNCTIONAL TEST.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.2	-----NOTE----- Not required to be performed until 1 hour after any control rod is withdrawn at ≤ 10% RTP in MODE 2. ----- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.3	-----NOTE----- Not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1. ----- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.1.4	-----NOTE----- Neutron detectors are excluded. ----- Verify the RBM is not bypassed: a. When THERMAL POWER is ≥ 30% RTP; and b. When a peripheral control rod is not selected.	92 days
SR 3.3.2.1.5	-----NOTE----- Neutron detectors are excluded. ----- Perform CHANNEL CALIBRATION.	92 days

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.3.2.1.6	Verify the RWM is not bypassed when THERMAL POWER is ≤ 10% RTP.	24 months
SR 3.3.2.1.7	-----NOTE----- Not required to be performed until 1 hour after reactor mode switch is in the shutdown position. ---------- Perform CHANNEL FUNCTIONAL TEST.	24 months
SR 3.3.2.1.8	Verify control rod sequences input to the RWM are in conformance with BPWS.	Prior to declaring RWM OPERABLE following loading of sequence into RWM

Table 3.3.2.1-1 (page 1 of 1)
Control Rod Block Instrumentation

FUNCTION	APPLICABLE MODES OR OTHER SPECIFIED CONDITIONS	REQUIRED CHANNELS	SURVEILLANCE REQUIREMENTS	ALLOWABLE VALUE
1. Rod Block Monitor				
a. Upscale	(a)	2	SR 3.3.2.1.4 SR 3.3.2.1.5	As specified in the COLR
b. Inop	(a)	2	SR 3.3.2.1.1 SR 3.3.2.1.4	NA
c. Downscale	(a)	2	SR 3.3.2.1.4 SR 3.3.2.1.5	≥ 2.5/125 divisions of full scale
2. Rod Worth Minimizer	1(b),2(b)	1	SR 3.3.2.1.2 SR 3.3.2.1.3 SR 3.3.2.1.6 SR 3.3.2.1.8	NA
3. Reactor Mode Switch – Shutdown Position	(c)	2	SR 3.3.2.1.7	NA

(a) THERMAL POWER ≥ 30% RTP and no peripheral control rod selected.

(b) With THERMAL POWER ≤ 10% RTP.

(c) Reactor mode switch in the shutdown position.

B 3.3 INSTRUMENTATION

B 3.3.2.1 Control Rod Block Instrumentation

BASES

BACKGROUND

Control rods provide the primary means for control of reactivity changes. Control rod block instrumentation includes channel sensors, logic circuits, bypass circuits, switches, and relays that are designed to ensure that specified fuel design limits are not exceeded for postulated transients and accidents. During high power operation, the rod block monitor (RBM) provides protection for control rod withdrawal error events. During low power operations, control rod blocks from the rod worth minimizer (RWM) enforce specific control rod sequences designed to mitigate the consequences of the control rod drop accident (CRDA). During shutdown conditions, control rod blocks from the Reactor Mode Switch-Shutdown Position Function ensure that all control rods remain inserted to prevent inadvertent criticalities.

The purpose of the RBM is to limit control rod withdrawal if localized neutron flux exceeds a predetermined setpoint during control rod manipulations. It is assumed to function to block further control rod withdrawal to preclude a MCPR Safety Limit (SL) violation. The RBM supplies a trip signal to the Reactor Manual Control System (RMCS) to appropriately inhibit control rod withdrawal during power operation above the low power range setpoint. The RBM has two channels, either of which can initiate a control rod block when the channel output exceeds the control rod block setpoint. One RBM channel inputs into one RMCS rod block circuit and the other RBM channel inputs into the second RMCS rod block circuit. The RBM channel signal is generated by averaging a set of local power range monitor (LPRM) signals. One RBM channel averages the signals of the LPRM detectors from the A and C level of the assigned LPRM assemblies, while the other RBM channel averages the signals of the LPRM detectors at the B and D level. Assignment of LPRM assemblies to be used in RBM averaging is controlled by the selection of control rods. If any LPRM detector assigned to an RBM is bypassed, the computed average signal is automatically adjusted to compensate for the number of LPRM input signals. The minimum number of LPRM inputs required for each RBM channel to prevent an instrument inoperative alarm is four when using four LPRM assemblies, three when using three

(continued)

BASES

BACKGROUND (continued)

LPRM assemblies, and two when using two LPRM assemblies. Each RBM also receives a recirculation loop flow signal. The RBM is automatically bypassed and the output set to zero if a peripheral rod is selected or the APRM used to normalize the RBM reading is < 30% RTP (Ref. 1). In addition, one of the two RBM channels can be manually bypassed.

When a control rod is selected, the gain of each RBM channel output is normalized to the assigned APRM channel. The assigned APRM channel is on the same RPS trip system as the RBM channel. The gain setting is held constant during the movement of the selected control rod to provide an indication of the change in the relative local power level. If the indicated local power level increases above the preset limit, a rod block will occur. There are three parallel rod block setpoint lines which have an adjustable slope. These setpoint lines provide a setpoint that is a function of the recirculation loop flow signal. Intercepts of these setpoint lines with rated recirculation loop flow are adjustable. Lights in the control room indicate which rod block setpoint line is active. Two percent below the intermediate and lower rod block setpoint are the setup permissive and setdown lines. These lines, on increasing power, light a setup permissive indicator so that the operator can evaluate the conditions and manually change the setpoint to the next higher rod block setpoint line. On decreasing power these lines provide automatic setdown. In addition, to preclude rod movement with an inoperable RBM (if not bypassed), a downscale trip and an inoperable trip are provided. A rod block signal is generated if an RBM downscale trip or an inoperable trip occurs, since this could indicate a problem with the RBM channel. The downscale trip will occur if the RBM channel signal decreases below the downscale trip setpoint after the RBM channel signal has been normalized. The inoperable trip will occur during the nulling (normalization) sequence, if the RBM channel fails to null, too few LPRM inputs are available, a module is not plugged in, or the function switch is moved to any position other than "Operate".

The purpose of the RWM is to control rod patterns during startup and shutdown, such that only specified control rod sequences and relative positions are allowed over the operating range from all control rods inserted to 10% RTP.

(continued)

BASES

BACKGROUND (continued)

The sequences effectively limit the potential amount and rate of reactivity increase during a CRDA. Prescribed control rod sequences are stored in the RWM, which will initiate control rod withdrawal and insert blocks when the actual sequence deviates beyond allowances from the stored sequence. The RWM determines the actual sequence based on position indication for each control rod. The RWM also uses steam flow signals compensated for steam pressure to determine when the reactor power is above the preset power level at which the RWM is automatically bypassed (Ref. 2). The RWM is a single channel system that provides input into both RMCS rod block circuits.

With the reactor mode switch in the shutdown position, a control rod withdrawal block is applied to all control rods to ensure that the shutdown condition is maintained. This Function prevents inadvertent criticality as the result of a control rod withdrawal during MODE 3 or 4, or during MODE 5 when the reactor mode switch is required to be in the shutdown position. The reactor mode switch has two channels, each inputting into a separate RMCS rod block circuit. A rod block in either RMCS circuit will provide a control rod block to all control rods.

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1. Rod Block Monitor

The RBM is designed to prevent violation of the MCPR SL and the cladding 1% plastic strain fuel design limit that may result from a single control rod withdrawal error (RWE) event. The analytical methods and assumptions used in evaluating the RWE event are summarized in Reference 3. A statistical analysis of RWE events was performed to determine the RBM response for both channels for each event. From these responses, the fuel thermal performance as a function of RBM Allowable Value was determined. The Allowable Values are chosen as a function of power level and flow. Based on the specified Allowable Values, operating limits are established.

The RBM Function satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 4).

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

1. Rod Block Monitor (continued)

Two channels of the RBM are required to be OPERABLE, with their setpoints within the appropriate Allowable Value specified in the COLR, to ensure that no single failure can preclude a rod block from this Function. The actual setpoints are calibrated consistent with applicable setpoint methodology.

Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Values between successive CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor power), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., trip unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are derived from the analytical limits and account for all worst case instrumentation uncertainties as appropriate (e.g., drift, process effects, calibration uncertainties, and severe environmental errors (for channels that must function in harsh environments as defined by 10 CFR 50.49)). The trip setpoints derived in this manner provide adequate protection because all expected uncertainties are accounted for. The Allowable Values are then derived from the trip setpoints by accounting for normal effects that would be seen during periodic surveillance or calibration. These effects are instrumentation uncertainties observed during normal operation (e.g., drift and calibration uncertainties).

The RBM is assumed to mitigate the consequences of an RWE event when operating ≥ 30% RTP and a peripheral control rod is not selected. Below this power level, or if a peripheral control rod is selected, the consequences of an RWE event will not exceed the MCPR SL and, therefore, the RBM is not required to be OPERABLE (Ref. 3).

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY (continued)

2. Rod Worth Minimizer

The RWM enforces the banked position withdrawal sequence (BPWS) to ensure that the initial conditions of the CRDA analysis are not violated. The analytical methods and assumptions used in evaluating the CRDA are summarized in Reference 5. The BPWS requires that control rods be moved in groups, with all control rods assigned to a specific group required to be within specified banked positions. Requirements that the control rod sequence is in compliance with the BPWS are specified in LCO 3.1.6, "Rod Pattern Control."

The RWM Function satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 4).

Since the RWM is a system designed to act as a backup to operator control of the rod sequences, only one channel of the RWM is available and required to be OPERABLE (Ref. 6). Special circumstances provided for in the Required Action of LCO 3.1.3, "Control Rod OPERABILITY," and LCO 3.1.6 may necessitate bypassing the RWM to allow continued operation with inoperable control rods, or to allow correction of a control rod pattern not in compliance with the BPWS. The RWM may be bypassed as required by these conditions, but then it must be considered inoperable and the Required Actions of this LCO followed.

Compliance with the BPWS, and therefore OPERABILITY of the RWM, is required in MODES 1 and 2 when THERMAL POWER is $\leq$ 10% RTP. When THERMAL POWER is > 10% RTP, there is no possible control rod configuration that results in a control rod worth that could exceed the 280 cal/gm fuel damage limit during a CRDA (Refs. 6 and 7). In MODES 3 and 4, all control rods are required to be inserted into the core; therefore, a CRDA cannot occur. In MODE 5, since only a single control rod can be withdrawn from a core cell containing fuel assemblies, adequate SDM ensures that the consequences of a CRDA are acceptable, since the reactor will be subcritical.

3. Reactor Mode Switch - Shutdown Position

During MODES 3 and 4, and during MODE 5 when the reactor mode switch is in the shutdown position, the core is assumed

(continued)

BASES

APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY

3. Reactor Mode Switch - Shutdown Position (continued)

to be subcritical; therefore, no positive reactivity insertion events are analyzed. The Reactor Mode Switch - Shutdown Position control rod withdrawal block ensures that the reactor remains subcritical by blocking control rod withdrawal, thereby preserving the assumptions of the safety analysis.

The Reactor Mode Switch - Shutdown Position Function satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 4).

Two channels are required to be OPERABLE to ensure that no single failure will preclude a rod block when required. There is no Allowable Value for this Function since the channels are mechanically actuated based solely on reactor mode switch position.

During shutdown conditions (MODE 3, 4, or 5), no positive reactivity insertion events are analyzed because assumptions are that control rod withdrawal blocks are provided to prevent criticality. Therefore, when the reactor mode switch is in the shutdown position, the control rod withdrawal block is required to be OPERABLE. During MODE 5 with the reactor mode switch in the refueling position, the refuel position one-rod-out interlock (LCO 3.9.2 "Refuel Position One Rod - Out Interlock") provides the required control rod withdrawal blocks.

ACTIONS

A.1

With one RBM channel inoperable, the remaining OPERABLE channel is adequate to perform the control rod block function; however, overall reliability is reduced because a single failure in the remaining OPERABLE channel can result in no control rod block capability for the RBM. For this reason, Required Action A.1 requires restoration of the inoperable channel to OPERABLE status. The Completion Time of 24 hours is based on the low probability of an event occurring coincident with a failure in the remaining OPERABLE channel.

(continued)

BASES

ACTIONS (continued)

B.1

If Required Action A.1 is not met and the associated Completion Time has expired, the inoperable channel must be placed in trip within 1 hour. If both RBM channels are inoperable, the RBM is not capable of performing its intended function; thus, one channel must also be placed in trip. This initiates a control rod withdrawal block, thereby ensuring that the RBM function is met.

The 1 hour Completion Time is intended to allow the operator time to evaluate and repair any discovered inoperabilities and is acceptable because it minimizes risk while allowing time for restoration or tripping of inoperable channels.

C.1, C.2.1.1, C.2.1.2, and C.2.2

With the RWM inoperable during a reactor startup, the operator is still capable of enforcing the prescribed control rod sequence. However, the overall reliability is reduced because a single operator error can result in violating the control rod sequence. Therefore, control rod movement must be immediately suspended except by scram. Alternatively, startup may continue if at least 12 control rods have already been withdrawn, or a reactor startup with an inoperable RWM during withdrawal of one or more of the first 12 rods was not performed in the last calendar year. These requirements minimize the number of reactor startups initiated with RWM inoperable. Required Actions C.2.1.1 and C.2.1.2 require verification of these conditions by review of plant logs and control room indications. Once Required Action C.2.1.1 or C.2.1.2 is satisfactorily completed, control rod withdrawal may proceed in accordance with the restrictions imposed by Required Action C.2.2. Required Action C.2.2 allows for the RWM Function to be performed manually and requires a double check of compliance with the prescribed rod sequence by a second licensed operator (Reactor Operator or Senior Reactor Operator) or reactor engineer.

The RWM may be bypassed under these conditions to allow continued operations. In addition, Required Actions of LCO 3.1.3 and LCO 3.1.6 may require bypassing the RWM, during which time the RWM must be considered inoperable with Condition C entered and its Required Actions taken.

(continued)

BASES

ACTIONS

D.1

With the RWM inoperable during a reactor shutdown, the operator is still capable of enforcing the prescribed control rod sequence. Required Action D.1 allows for the RWM Function to be performed manually and requires a double check of compliance with the prescribed rod sequence by a second licensed operator (Reactor Operator or Senior Reactor Operator) or reactor engineer. The RWM may be bypassed under these conditions to allow the reactor shutdown to continue.

E.1 and E.2

With one Reactor Mode Switch - Shutdown Position control rod withdrawal block channel inoperable, the remaining OPERABLE channel is adequate to perform the control rod withdrawal block function. However, since the Required Actions are consistent with the normal action of an OPERABLE Reactor Mode Switch - Shutdown Position Function (i.e., maintaining all control rods inserted), there is no distinction between having one or two channels inoperable.

In both cases (one or both channels inoperable), suspending all control rod withdrawal and initiating action to fully insert all insertable control rods in core cells containing one or more fuel assemblies will ensure that the core is subcritical with adequate SDM, (LCO 3.1.1, SHUTDOWN MARGIN (SDM)). Control rods in core cells containing no fuel assemblies do not affect the reactivity of the core and are therefore not required to be inserted. Action must continue until all insertable control rods in core cells containing one or more fuel assemblies are fully inserted.

(continued)

BASES (continued)

SURVEILLANCE REQUIREMENTS

As noted (Note 1) at the beginning of the SRs, the SRs for each Control Rod Block instrumentation Function are found in the SRs column of Table 3.3.2.1-1.

The Surveillances are modified by Note 2 to indicate that when an RBM channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains control rod block capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 8) assumption of the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that a control rod block will be initiated when necessary.

SR 3.3.2.1.1

A CHANNEL FUNCTIONAL TEST is performed for each RBM channel to ensure that the entire channel will perform the intended function. It includes the Reactor Manual Control Multiplexing System input. A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with the applicable extensions. Testing of the Reactor Manual Control Multiplexing System input shall include inputs of "no control rod selected," "peripheral control rod selected," and other control rods selected with two, three, or four LPRM assemblies around it. In addition, testing shall include a verification that an inoperable trip occurs when a module is not plugged in, or the function switch is moved to any position other than "Operate". The Frequency of 92 days is based on reliability analyses (Ref. 9). TSTF-205 R3

SR 3.3.2.1.2 and SR 3.3.2.1.3

A CHANNEL FUNCTIONAL TEST is performed for the RWM to ensure that the entire system will perform the intended function. A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of TSTF-205 R3

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1.2 and SR 3.3.2.1.3 (continued)

state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with the applicable extensions. The CHANNEL FUNCTIONAL TEST for the RWM is performed by attempting to withdraw a control rod not in compliance with the prescribed sequence and verifying a control rod block occurs. As noted in the SRs, SR 3.3.2.1.2 is not required to be performed until 1 hour after any control rod is withdrawn at ≤ 10% RTP in MODE 2 and, SR 3.3.2.1.3 is not required to be performed until 1 hour after THERMAL POWER is ≤ 10% RTP in MODE 1. This allows entry into MODE 2 for SR 3.3.2.1.2, and entry into MODE 1 when THERMAL POWER is ≤ 10% RTP for SR 3.3.2.1.3, to perform the required Surveillance if the 92 day Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating experience and in consideration of providing a reasonable time in which to complete the SRs. The 92 day Frequencies are based on reliability analysis (Ref. 9). TSTF-205R3

SR 3.3.2.1.4

The RBM is automatically bypassed when power is below a specified value or if a peripheral control rod is selected. The power level is determined from the APRM signals input to each RBM channel. The automatic bypass must be verified periodically to be < 30% RTP. In addition, it must also be verified that the RBM is not bypassed when a non-peripheral control rod is selected (only one non-peripheral control rod is required to be verified). If any bypass setpoint is nonconservative, then the affected RBM channel is considered inoperable. Alternatively, the APRM channel can be placed in the conservative condition (i.e., enabling the nonbypass). If placed in this condition, the SR is met and the RBM channel is not considered inoperable. As noted, neutron detectors are excluded from the Surveillance because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.7. The 92 day Frequency is based on the actual trip setpoint methodology utilized for these channels.

SR 3.3.2.1.5

A CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1.5 (continued)

range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

As noted, neutron detectors are excluded from the CHANNEL CALIBRATION because they are passive devices, with minimal drift, and because of the difficulty of simulating a meaningful signal. Neutron detectors are adequately tested in SR 3.3.1.1.2 and SR 3.3.1.1.7.

The Frequency is based upon the assumption of a 92 day calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.2.1.6

The RWM is automatically bypassed when power is above a specified value. The power level is determined from steam flow signals compensated for steam pressure. The automatic bypass setpoint must be verified periodically to be ≤ 10% RTP. If the RWM low power setpoint is nonconservative, then the RWM is considered inoperable. Alternately, the low power setpoint channel can be placed in the conservative condition (nonbypass). If placed in the nonbypassed condition, the SR is met and the RWM is not considered inoperable. The Frequency is based on the trip setpoint methodology utilized for the low power setpoint channel.

SR 3.3.2.1.7

A CHANNEL FUNCTIONAL TEST is performed for the Reactor Mode Switch-Shutdown Position Function to ensure that the entire channel will perform the intended function. A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with the applicable extensions. The CHANNEL FUNCTIONAL TEST for the Reactor Mode Switch-Shutdown Position Function is performed by attempting to withdraw any control rod with the reactor mode switch in the shutdown position and verifying a control rod block occurs. TSTF-205R3

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.1.7 (continued)

As noted in the SR, the Surveillance is not required to be performed until 1 hour after the reactor mode switch is in the shutdown position, since testing of this interlock with the reactor mode switch in any other position cannot be performed without using jumpers, lifted leads, or movable links. This allows entry into MODES 3 and 4 if the 24 month Frequency is not met per SR 3.0.2. The 1 hour allowance is based on operating experience and in consideration of providing a reasonable time in which to complete the SRs.

The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown these components usually pass the Surveillance when performed at the 24 month Frequency.

SR 3.3.2.1.8

The RWM will only enforce the proper control rod sequence if the rod sequence is properly input into the RWM computer. This SR ensures that the proper sequence is loaded into the RWM so that it can perform its intended function. The Surveillance is performed once prior to declaring RWM OPERABLE following loading of sequence into RWM, since this is when rod sequence input errors are possible.

REFERENCES

1. UFSAR, Section 7.5.8.2.
2. UFSAR, Section 7.16.5.3.
3. NEDE-24011-P-A-13-US, General Electric Standard Application for Reactor Fuel, Supplement for United States, Section S.2.2.1.5, August 1996.
4. 10 CFR 50.36(c)(2)(ii).
5. UFSAR, Section 14.6.1.2.
6. NRC SER, Acceptance of Referencing of Licensing Topical Report NEDE-24011-P-A, General Electric Standard Application for Reactor Fuel, Revision 8, Amendment 17, December 27, 1987.
7. Modifications to the Requirements for Control Rod Drop Accident Mitigating Systems, BWR Owners' Group, July 1986.

(continued)

BASES

REFERENCES (continued)

8. GENE-770-06-1-A, Addendum To - Bases For Changes To Surveillance Test Intervals And Allowed Out-of-Service Times For Selected Instrumentation Technical Specifications, December 1992.

9. NEDC-30851P-A, Supplement 1, Technical Specification Improvement Analysis for BWR Control Rod Block Instrumentation, May 1988.

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IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

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: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

MARKUP OF CURRENT TECHNICAL SPECIFICATIONS (CTS)

Specification 3.3.2.2

(A.1)

3.2 (cont'd)

E. Drywell Leak Detection

The limiting conditions for operation for the instrumentation that monitors drywell leak detection are given in Table 3.2-5.

[3.3.2.2] F. Feedwater ~~Pump Turbine and Main Turbine~~ Water Level Trip Instrumentation

[LCO 3.3.2.2] The limiting conditions for operation for the instrumentation that provides a feedwater pump turbine and main turbine trip are given in Table 3.2-6. (A5)

G. Recirculation Pump Trip

The limiting conditions for operation for the instrumentation that trip(s) the recirculation pumps as a means of limiting the consequences of a failure to scram during an anticipated transient are given in Table 3.2-7.

H. Accident Monitoring Instrumentation

The limiting conditions for operation for the instrumentation that provides accident monitoring are given in Table 3.2-8.

I. 4kv Emergency Bus Undervoltage Trip

The limiting conditions for operation for the instrumentation that prevents damage to electrical equipment or circuits as a result of either a degraded or loss-of-voltage condition on the emergency electrical buses are given in Table 3.2-2.

4.2 (cont'd)

E. Drywell Leak Detection

See ITS: 3.4.5

Instrumentation shall be calibrated and checked as indicated in Table 4.2-5.

[3.3.2.2] F. Feedwater ~~Pump Turbine and Main Turbine~~ Water Level Trip Instrumentation

Instrumentation shall be tested ~~and~~ calibrated ~~as~~ indicated in Table 4.2-6. (A5)

G. Recirculation Pump Trip

Instrumentation shall be functionally tested and calibrated as indicated in Table 4.2-7.

System logic shall be functionally tested as indicated in Table 4.2-7.

See ITS: 3.3.4.1

H. Accident Monitoring Instrumentation

Instrumentation shall be demonstrated operable by performance of a channel check, channel calibration and functional test as indicated in Table 4.2-8, as applicable.

See ITS: 3.3.3.1

I. Not Used

See ITS: 3.3.8.1

Specification 3.3.2.2

A1

JAFNPP

TABLE 3.2-6

FEEDWATER PUMP TURBINE AND MAIN TURBINE TRIP INSTRUMENTATION REQUIREMENTS

A5

A6

Minimum Number of Operable Instrument Channels (Notes 1 & 2)	Trip Function	Trip Level Setting	Applicable Modes
[LCO 3.3.2.2] 3	Reactor Vessel Water Level - High	≤ ~~222.5~~ inches above TAF [SR 3.3.2.2.3] LA1 222.4 M1	Thermal Power ≥ 25% RTP [Applicability]

~~NOTES FOR TABLE 3.2-6~~

[LCO 3.3.2.2] 1. There shall be three operable instrument channels, except as provided for below:

[ACTION A] [ACTION C] a. With one less than the required minimum number of operable instrument channels, either restore the inoperable instrument channel to operable status, or place the inoperable instrument channel in the tripped condition, within 7 days. Otherwise, reduce reactor power to less than 25% rated thermal power within the next 4 hours. A2

[ACTION B] [ACTION C] b. With two or more channels less than the required minimum number of operable instrument channels, restore the feedwater pump turbine and main turbine trip capability within 2 hours. Otherwise, reduce reactor power to less than 25% rated thermal power within the next 4 hours.

[SR NOTE] 2. When a channel is placed in an inoperable status solely for performance of required surveillances, entry into associated Limiting Conditions for Operation and required actions may be delayed for up to 6 hours provided the associated Trip Function maintains feedwater pump turbine and main turbine trip capability.

F

add ACTIONS NOTE A3

add Required Action C.1 and associated Note L2

TSTF-297

Specification 3.3.2.2

A1

VPP

TABLE 4.2-6

FEEDWATER PUMP TURBINE AND MAIN TURBINE TRIP INSTRUMENTATION
TEST AND CALIBRATION REQUIREMENTS

A5

Instrument Channel	Instrument Functional Test Frequency (Note 2)	Logic System Functional Test Frequency	Calibration Frequency	Instrument Check Frequency
[LCO 3.3.2.2] Reactor Vessel Water Level - High	[SR 3.3.2.2.2] Note 1	[SR 3.3.2.2.4] R	[SR 3.3.2.2.3] R	[SR 3.3.2.2.1] D

24 months

24 hours

NOTES FOR TABLE 4.2-6

L1

1. Perform the instrument functional test:

[SR 3.3.2.2.2] a. Once per 24 months during each refueling outage, and

Note to SR 3.3.2.2 and SR FREQ b. Each time the plant is in cold shutdown for a period of more than 24 hours, unless performed in the previous 92 days.

2. This instrumentation is exempt from the instrument channel functional test definition. The functional test will consist of injecting a simulated electrical signal into the instrument channel as close to the sensor as practicable.

A4

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IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

DISCUSSION OF CHANGES (DOCs) TO THE CTS

DISCUSSION OF CHANGES
ITS: 3.3.2.2 - FEEDWATER AND MAIN TURBINE HIGH WATER LEVEL TRIP INSTRUMENTATION

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 Table 3.2-6 Note 1.a gives the option of either restoring the inoperable instrument channel to operable status, or placing the inoperable channel in the tripped condition within 7 days when there is one of the required feedwater pump turbine and main turbine trip instruments inoperable. ITS 3.3.2.2 Required Action A.1 requires that the channel be tripped within 7 days. The option of restoring inoperable instruments to an operable condition is always permitted in the Technical Specifications. ITS LCO 3.0.2 states that if the LCO is met prior to expiration of the specified Completion Time(s), completion of the Required Actions is not required, unless otherwise stated. Therefore, it is acceptable to restore the feedwater pump turbine and main turbine trip instrument to an operable status within 7 days and the Required Action of placing the channel in trip would not be required. Therefore the proposed change to remove this statement from the Technical specifications is considered an administrative change, and is consistent with NUREG-1433, Revision 1.

A3 This change proposes to add a Note to CTS Table 3.2-6 which allows separate Condition entry for each channel. The Note is reflected in Table 3.3.2.2-1 ACTIONS Table. This change provides explicit instructions for proper application of the Actions for Technical Specification compliance. In conjunction with the proposed Specification 1.3 - "Completion Times," the Note ("Separate condition entry...") and the Conditions of ITS 3.3.2.2 provide more explicit direction of the current interpretation of the existing Specifications. This change in presentation method provides instructions, in a manner more explicit for proper application of the Actions for Technical Specification compliance, consistent with the format and requirements of NUREG-1433, Revision 1. Therefore, this change is considered administrative.

ADMINISTRATIVE CHANGES

A4 CTS Table 4.2-6 Note 2 provides an allowance to inject a simulated electrical signal into the measurement channel as close to the sensor as practicable to satisfy the requirements of the Instrument Channel Functional Test. This explicit allowance is not retained in ITS 3.3.2.2 since it is duplicative of the current Instrument Channel Functional Test definition in CTS 1.0.F.5 and the proposed CHANNEL FUNCTIONAL TEST definition in ITS Chapter 1.0. Since the current allowance is retained in the ITS CHANNEL FUNCTIONAL TEST definition in ITS Chapter 1.0, this change is considered administrative.

A5 CTS 3.2.F specifies that the limiting condition for operation for the instrumentation that provide a feedwater pump trip and main turbine trip are given in Table 3.2-6. CTS 4.2.F requires the feedwater pump turbine and main turbine trip instrumentation to be calibrated in accordance with CTS Table 4.2-6. This cross-reference to the Tables has been deleted since ITS 3.3.2.2 does not include a Table. All of the technical requirements of CTS Tables 3.2-6 and 4.2-6 are included in the proposed ITS 3.3.2.2 LCO and Surveillances. Since this change simply deletes this cross-reference, this change is considered administrative. This change is consistent with NUREG-1433, Revision 1.

A6 CTS Table 3.2-6 includes a "Trip Level Setting" column. The setting for the Reactor Vessel Water Level—High Function is listed in this column. In ITS SR 3.3.2.2.3, the "Allowable Value" is specified. The CTS "trip level setting" is considered the "Allowable Value" as described in the ITS since the instrumentation is considered inoperable if the value is exceeded when either the CTS or the ITS is applicable. A detailed explanation of trip setpoints, allowable values and analytical limits as they relate to instrumentation uncertainties is provided below.

Trip setpoints are those predetermined values of output at which an action is expected to take place. The setpoints are compared to the actual process parameter and when the measured output value of the process parameter exceeds the setpoint in either the increasing or decreasing direction, the associated device (e.g., trip unit) changes state.

The trip setpoints are specified in the setpoint calculations, are derived from the analytical limits, and account for all worst case applicable instrumentation uncertainties (e.g., drift, process effects, calibration uncertainties, and severe environmental effects as

ADMINISTRATIVE CHANGES

A6 (continued)

appropriate). The trip setpoints derived in this manner provide adequate protection because all expected uncertainties are accounted for in the setpoint calculations.

The setpoints specified in the setpoint calculations are selected to ensure that the actual field trip setpoints do not exceed the ITS Allowable Values (i.e., the CTS "trip level setting") between successive CHANNEL CALIBRATIONS. The CTS "trip level setting" and the "ITS Allowable Value" are both the TS limit value that is placed on the actual field setpoint. The Allowable Values is derived from the trip setpoint by accounting for normal effects that would be seen during periodic surveillance or calibration. These effects are instrumentation uncertainties observed during normal operation (e.g., drift and calibration uncertainties). Accordingly, the ITS Allowable Value includes all applicable instrument channel and measurement uncertainties. A channel is inoperable if its actual field trip setpoint is not within its required ITS Allowable Value.

The analytical limit is derived from the limiting value of the process parameter obtained from the safety analysis or other appropriate documents.

The "Trip Level Setting" or "Allowable Value" has been established consistent with the NYPA Engineering Standards Manual, IES-3A, "Instrument Loop Accuracy and Setpoint Calculation Methodology." The methodology used to determine the "Allowable Value" is consistent with the methodology discussed in ISA-S67.04-1994, Part II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." This change revises the terminology used in the CTS from "Trip Level Setting" to "Allowable Values". Since the instrumentation will be declared inoperable at the same numerical value, this change is considered administrative. This change is consistent with NUREG-1433, Revision 1.

TECHNICAL CHANGES - MORE RESTRICTIVE

M1 This change replaces the setpoint or Allowable Value (A6) in CTS Table 3.2-6, Reactor Vessel Water Level - High ≤ 222.5 inches with ≤ 222.4 inches (ITS SR 3.3.2.2.3). The Allowable Value (to be included in the Technical Specifications) and the Trip Setpoint (to be included in plant procedures) have been established consistent with the NYPA Engineering Standards Manual, IES-3A, "Instrument Loop Accuracy and Setpoint Calculation Methodology." The methodology used to determine the "Allowable Value" is consistent with the methodology discussed in ISA-S67.04-1994, Part II, "Methodologies for the Determination of Setpoints for Nuclear Safety-Related Instrumentation." The proposed value will ensure the most limiting requirement is met. All design limits, applied in the methodologies, were confirmed as ensuring that applicable design requirements of the associated system is maintained.

F

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

LA1 The detail in CTS Table 3.2-6 that the Trip Level Setting of the Reactor Vessel Water Level Trip Function is referenced from the Top of Active Fuel (TAF) is proposed to be relocated to the Bases. CTS 1.0.Z definition specifies that the Top of Active Fuel, corresponding to the top of the enriched fuel column of each fuel bundle, is located 352.5 inches above vessel zero, which is the lowest point in the inside bottom of the reactor pressure vessel. (See General Electric drawing No. 919D690BD). These details are also proposed to be relocated to the Bases. The requirement in ITS LCO 3.3.2.2 that the ECCS instrumentation for each Function in Table 3.3.2.2-1 shall be OPERABLE, the specified Allowable Value in SR 3.3.2.2.3, the definition of Operability, the proposed Actions, and Surveillance Requirements are adequate to ensure the instrumentation is properly maintained. In addition, the Bases includes a statement that the Allowable Value corresponds to a level of water 352.56 inches above the lowest point in the inside bottom of the reactor pressure vessel and also corresponds to the top of a 144 inch fuel column. As such, these details are not required to be in the ITS to provide adequate protection of public health and safety. Changes to the Bases will be controlled by the provisions of the Bases Control Program described in Chapter 5 of the ITS.

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 The explicit requirement in CTS Table 4.2-6 Note 1.a to perform an Instrument Functional Test once every 24 months during each refueling outage has been deleted. This requirement to specifically perform a CHANNEL FUNCTIONAL TEST during the refueling outage is not necessary since a calibration is required to be performed every 24 months as indicated in Channel Calibration Frequency Column for the Reactor Vessel Water Level – High Function. A CHANNEL CALIBRATION will satisfy all the requirements of a CHANNEL FUNCTION TEST and therefore this explicit requirement is not necessary to ensure the associated channels remain Operable. This CHANNEL CALIBRATION is retained in ITS SR 3.3.2.2.3 and is necessary to ensure the reactor vessel water level instrumentation channels remain Operable. The Calibration Surveillance Frequency of 24 months is consistent with the methodology used to determine the Allowable values and associated Setpoints for this Function and therefore is sufficient to ensure the channels remain Operable. A Channel Check (ITS SR 3.3.2.2.1) is required to be performed every 24 hours to detect any gross failures in the instrument channels. In addition, ITS SR 3.3.2.2.2 will require a CHANNEL FUNCTIONAL TEST to be performed every 92 days, if in MODE 4 for more than 24 hours consistent with the current requirements in Table 4.2-6 Note 1.b. The current requirement to perform a CHANNEL FUNCTIONAL TEST every 24 months during the refueling outage does not normally require any additional testing since the CHANNEL CALIBRATIONS are usually scheduled at the same time. Therefore the elimination of this explicit requirement is acceptable.

L2 CTS Table 3.2-6, Note 1 requires reduction in Thermal Power if the Feedwater System and Main Turbine High Water Level Trip Instrumentation is not restored to Operable Status. The purpose of the instrumentation is to ensure MCPR limits are not exceeded during a feedwater controller failure, maximum demand event. This is accomplished by tripping the feedwater pumps and main turbine, with the main turbine trip resulting in a subsequent reactor scram. When this trip function is inoperable solely due to an inoperable feedwater pump turbine stop valve or main turbine stop valve, the unit can continue to operate with the affected stop valve(s) removed from service. Therefore, an additional Required Action is proposed, ITS 3.3.2.2, Required Action C.1, to allow removal of the associated stop valve(s) from service in lieu of reducing Thermal

TECHNICAL CHANGES - LESS RESTRICTIVE (GENERIC)

L2 (continued)

Power. This Required Action will only be used if the instrumentation is inoperable solely due to inoperable feedwater pump turbine stop valve or main turbine stop valve as stated in the Note to ITS 3.3.2.2 Required Action C.1. Since this Required Action accomplishes the functional purpose of the Feedwater System and Main Turbine High Water Level Trip Instrumentation, enables continued operation in a previously approved condition, and still ensures that a MCPR limit will not be exceeded (since the reactor scram is the result of a turbine trip signal, which is not impacted by this change), this change does not have a significant effect on safe operation. TSTF-207

TECHNICAL CHANGES - RELOCATIONS

None

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

NO SIGNIFICANT HAZARDS CONSIDERATION (NSHC) FOR LESS RESTRICTIVE CHANGES

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

New York Power Authority has evaluated the proposed Technical Specification change and has concluded that it does not involve a significant hazards consideration. Our conclusion is in accordance with the criteria set forth in 10 CFR 50.92. The bases for the conclusion 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 eliminates an explicit CHANNEL FUNCTIONAL TEST required to be performed every 24 months during an outage. The reactor vessel water level instrumentation is not considered to be an initiator of any accident previously evaluated. Therefore the elimination of this explicit surveillance will not increase the consequences of any accident previously evaluated. This requirement to specifically perform a CHANNEL FUNCTIONAL TEST during the refueling outage is not necessary since a calibration is required to be performed every 24 months. A CHANNEL CALIBRATION will satisfy all the requirements of a CHANNEL FUNCTIONAL TEST and therefore this explicit requirement is not necessary to ensure the associated channels remain Operable. This CHANNEL CALIBRATION is retained in ITS SR 3.3.2.2.3 and is necessary to ensure the reactor vessel water level instrumentation channels remain Operable. The Calibration Surveillance Frequency of 24 months is consistent with the methodology used to determine the Allowable Values and associated Setpoints for this Function and therefore is sufficient to ensure the channels remain Operable. A channel Check (ITS SR 3.3.2.2.1) is required to be performed every 24 hours to detect any gross failures in the instrument channels. In addition, ITS SR 3.3.2.2.2 will require a CHANNEL FUNCTIONAL TEST to be performed every 92 days, if in MODE 4 for more than 24 hours consistent with the current requirements in Table 4.2-6 Note 1.b. The current requirement to perform a CHANNEL FUNCTIONAL TEST every 24 months during the refueling outage does not normally require any additional testing since the CHANNEL CALIBRATIONS are usually scheduled at the same time. Therefore the elimination of this explicit requirement is acceptable. Since the existing and proposed surveillances are considered acceptable to ensure the reactor vessel water level instrument channels remain Operable, this change will not significantly increase the probability or consequences of an accident previously evaluated.

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L1 CHANGE

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

   The proposed change eliminates an explicit CHANNEL FUNCTIONAL TEST required to be performed every 24 months during an outage. It does not introduce a new mode of plant operation and does not involve physical modification to the plant. Therefore, it 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 eliminates an explicit CHANNEL FUNCTIONAL TEST required to be performed every 24 months during an outage. The current requirement to perform a CHANNEL FUNCTIONAL TEST every 24 months during the refueling outage does not normally require any additional testing since the CHANNEL CALIBRATIONS are usually scheduled at the same time. Therefore the elimination of this explicit requirement is acceptable. Since the existing and proposed surveillances are considered acceptable to ensure the reactor vessel water level instrument channels remain Operable, this change does not involve a significant reduction in a margin of safety.

TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

The Licensee has evaluated the proposed Technical Specification change and has concluded that it does not involve a significant hazards consideration. Our conclusion is in accordance with the criteria set forth in 10 CFR 50.92. The bases for the conclusion 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 provides an alternative approach to reducing Thermal Power when the Feedwater and Main Turbine High Water Level Trip Instrumentation is not capable of performing its safety function. Specifically, the alternative approach is a proposed Required Action to allow removal of the affected stop valve(s) from service in lieu of reducing Thermal Power. This Required Action will only be used if the instrumentation is inoperable solely due to inoperable feedwater pump turbine stop valve and/or main turbine stop valve as stated in the Note to ITS 3.3.2.2 Required Action C.1. The Feedwater and Main Turbine High Water Level Trip Instrumentation in not assumed to be an initiator of any analyzed event. Therefore, this change does not significantly increase the probability of any previously analyzed accident. Removing the affected inoperable stop valve(s), provides the required safety function. Therefore, this change does not significantly increase the consequences of a previously analyzed accident.

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 any physical alteration of plant systems, structures, or components, or changes in parameters governing normal plant operation. The proposed change does not introduce any new modes of operation. The proposed change addresses equipment inoperability by requiring action which will satisfy the affected safety function. Therefore, this change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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TECHNICAL CHANGES - LESS RESTRICTIVE (SPECIFIC)

L2 CHANGE

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

The Feedwater and Main Turbine High Water Level Trip Instrumentation is assumed to be capable of providing a turbine trip in the in the transient analysis for a feedwater controller failure, maximum demand event. The Level 8 trip indirectly initiates a reactor scram from the main turbine trip (above 29% RTP) and trips the feedwater pumps, thereby terminating the event. The reactor scram mitigates the reduction in MCPR. The proposed Required Action accomplishes the functional purpose of the Feedwater System and Main Turbine High Water Level Trip Instrumentation while enabling continued operation in a manner that will continue to ensure that the MCPR limit will not be exceeded (since the reactor scram is the result of a turbine trip signal, which is not impacted by this change). Accordingly, this change does not involve a significant reduction in margin of safety.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

MARKUP OF NUREG-1433, REVISION 1
SPECIFICATION

3.3 INSTRUMENTATION

3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

[T.3.2-6(1)] [T.3.2-6 Note 1] [T.4.2-6(1)] [3.2.F]

LCO 3.3.2.2 [Three] channels of feedwater and main turbine high water level trip instrumentation shall be OPERABLE. DB1

[TABLE 3.2-6] APPLICABILITY: THERMAL POWER ≥ [25]% RTP. DB2

ACTIONS

-----------------------------------NOTE-----------------------------------
[A3] Separate Condition entry is allowed for each channel.

CONDITION	REQUIRED ACTION	COMPLETION TIME
[Table 3.2-6 Note 1.a] A. One feedwater and main turbine high water level trip channel inoperable.	A.1 Place channel in trip.	7 days
[Table 3.2-6 Note 1.b] B. Two or more feedwater and main turbine high water level trip channels inoperable.	B.1 Restore feedwater and main turbine high water level trip capability.	2 hours
[Table 3.2-6 Notes 1.a & 1.b] C. Required Action and associated Completion Time not met.	C.1 ② TA1 Reduce THERMAL POWER to < [25]% RTP.	4 hours DB2
	PA1 C.1 TA1 turbine DB6 --- Note --- Only applicable if inoperable channel is the result of inoperable feedwater pump ~~Valve~~ or main turbine stop valve.	
	PA1 C.1 Remove affected ~~feedwater pump(s) and main turbine~~ Valve(s) from service. OR Stop TA1 DB6	4 hours

TSTF-297

SURVEILLANCE REQUIREMENTS

Table 3.2-6 Note 2

-----NOTE-----
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided feedwater and main turbine high water level trip capability is maintained.

	SURVEILLANCE	FREQUENCY
Table 4.2-6	SR 3.3.2.2.1 Perform CHANNEL CHECK.	24 hours DB3
Table 4.2-6 Note 4	SR 3.3.2.2.2 Perform CHANNEL FUNCTIONAL TEST.	~~[92]~~ days CLB1
Table 4.2-6, Table 3.2-6	SR 3.3.2.2.3 Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ ~~[58.0]~~ 222.4 inches.	24 DB4 ~~[18]~~ months DB5
Table 4.2-6	SR 3.3.2.2.4 Perform LOGIC SYSTEM FUNCTIONAL TEST including ~~[valve]~~ actuation. CLB2	24 ~~[18]~~ months CLB2

-----NOTE-----
Only required to be performed when in MODE 4 for >24 hours.

CLB1

1E

Revision F

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

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

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS: 3.3.2.2 - FEEDWATER AND MAIN TURBINE HIGH WATER LEVEL TRIP INSTRUMENTATION

RETENTION OF EXISTING REQUIREMENT (CLB)

CLB1 The Frequency for performing a Channel Functional Test of the Feedwater and Main Turbine High Water Level Trip Instrumentation was approved in License Amendment 225 based on the plant specific design. This Frequency is retained in the ITS SR 3.3.2.2.2.

CLB2 The LOGIC SYSTEM FUNCTIONAL TEST of ITS SR 3.3.2.2.4 includes valve actuation since a turbine trip is required to satisfy this Function. Therefore the phrase "including valve actuation" is retained. In addition, the bracketed 18 month Frequency has been extended to 24 months consistent with CTS Table 4.2-6 and the justification provided in the proposed Bases. JAFNPP refuel cycle is 24 months.

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

PA1 The Required Action and Note added as a result of TSTF-297 has been modified to be consistent with other places in the Specification. The number "C.1" has been included with the Required Action Note instead of the Required Action. TSTF-297

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB1 The brackets have been removed and "three" channels retained in the ITS LCO 3.3.2.2 in accordance with the CTS and the total number of channels existing in the plant specific design.

DB2 The Applicability of 25% has been included consistent with the CTS and with the requirements of other LCO's which protect against MCPR.

DB3 The CHANNEL CHECK surveillance is retained as ITS SR 3.3.2.2.1 consistent with current requirements in CTS Table 4.2-6 since it is useful in identifying gross channel failures.

DB4 The CHANNEL CALIBRATION is performed every 24 months consistent with the current setpoint methodology. The bracketed 18 month surveillance has been changed to 24 months in ITS SR 3.3.2.2.3.

DB5 The brackets have been removed and the proper plant specific "Allowable Value" included consistent with the current value in CTS Table 3.2-6 and the JAFNPP plant specific setpoint methodology.

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS: 3.3.2.2 - FEEDWATER AND MAIN TURBINE HIGH WATER LEVEL TRIP INSTRUMENTATION

PLANT-SPECIFIC DIFFERENCE IN THE DESIGN (DB)

DB6 The brackets in the Required Action Note added as a result of TSTF-297 have been removed and the word "pump" replaced with the "turbine stop" consistent with the plant design. In addition, since the JAFNPP feedwater and main turbine high water level trip provides a trip to all stop valves (feedwater pump turbine and main turbine), the Required Action has been modified to allow removal of affected stop valve(s) from service. TSTF-297

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler number 297, Revision 1 have been incorporated into the revised Improved Technical Specifications. TSTF-297

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: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

MARKUP OF NUREG-1433, REVISION 1, BASES

B 3.3 INSTRUMENTATION

B 3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

BASES

BACKGROUND

The feedwater and main turbine high water level trip instrumentation is designed to detect a potential failure of the Feedwater Level Control System that causes excessive feedwater flow.

With excessive feedwater flow, the water level in the reactor vessel rises toward the high water level, Level 8 reference point, causing the trip of the two feedwater pump turbines and the main turbine.

Reactor Vessel Water Level—High, Level 8 signals are provided by level sensors that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level in the reactor vessel (variable leg). Three channels of Reactor Vessel Water Level—High, Level 8 instrumentation are ~~provided as input to~~ a two-out-of-three initiation logic that trips ~~the two~~ feedwater pump turbines and the main turbine. The channels include electronic equipment (e.g., trip units) that compares measured input signals with pre-established setpoints. When the setpoint is exceeded, the channel output relay actuates, which then outputs a main feedwater and turbine trip signal to the trip logic.

DBI

three trip systems. Each system is arranged with

Each trip system

DBI

one

alarm

PAI

PAI

or

A trip of the feedwater pump turbines limits further increase in reactor vessel water level by limiting further addition of feedwater to the reactor vessel. A trip of the main turbine and closure of the stop valves protects the turbine from damage due to water entering the turbine.

APPLICABLE SAFETY ANALYSES

The feedwater and main turbine high water level trip instrumentation is assumed to be capable of providing a turbine trip in the design basis transient analysis for a feedwater controller failure, maximum demand event (Ref. 1). The Level 8 trip indirectly initiates a reactor scram from the main turbine trip (above 30% RTP) and trips the feedwater pumps, thereby terminating the event. The reactor scram mitigates the reduction in MCPR.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Feedwater and main turbine high water level trip instrumentation satisfies Criterion 3 of the NRC Policy Statement. X1

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

PA1

LCO

The LCO requires three channels of the Reactor Vessel Water Level—High, Level 8 instrumentation to be OPERABLE to ensure that no single instrument failure will prevent the feedwater pump turbines and main turbine trip on a valid Level 8 signal. Two of the three channels are needed to provide trip signals in order for the feedwater and main turbine trips to occur. Each channel must have its setpoint set within the specified Allowable Value of SR 3.3.2.2.3. The Allowable Value is set to ensure that the thermal limits are not exceeded during the event. The actual setpoint is calibrated to be consistent with the applicable setpoint methodology assumptions. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between successive CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable.

DB1

Insert LCO-1

Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., alarm ~~trip~~ unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. ~~The Allowable Values are derived from the analytic limits, corrected for calibration, process, and some of the instrument errors. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value. The trip setpoints are then determined accounting for the remaining instrument errors (e.g., drift). The trip setpoints derived in this manner provide adequate protection because instrumentation uncertainties, process effects, calibration tolerances, instrument drift, and severe environment errors (for channels that must function in harsh environments as defined by 10 CFR 50.49) are accounted for.~~

DB1

DB2

PA2

DB2

Insert LCO

(continued)

DB1 INSERT LCO-1

The Allowable Value is referenced from a level of water 352.56 inches above the lowest point in the inside bottom of the reactor pressure vessel and also corresponds to the top of a 144 inch fuel column (Ref. 3).

DB2 INSERT LCO-2

The trip setpoints are derived from the analytic limits and account for all worst case instrumentation uncertainties as appropriate (e.g., drift, process effects, calibration uncertainties, and severe environmental errors (for channels that must function in harsh environments as defined by 10 CFR 50.49)). The trip setpoints derived in this manner provide adequate protection because all expected uncertainties are accounted for. The Allowable Values are then derived from the trip setpoints by accounting for normal effects that would be seen during periodic surveillance or calibration. These effects are instrumentation uncertainties observed during normal operation (e.g., drift and calibration uncertainties).

RAI 3.3.2.2-1

Revision F

BASES (continued)

APPLICABILITY

The feedwater and main turbine high water level trip instrumentation is required to be OPERABLE at ≥ 25% RTP to ensure that the fuel cladding integrity Safety Limit and the cladding 1% plastic strain limit are not violated during the feedwater controller failure, maximum demand event. As discussed in the Bases for LCO 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," sufficient margin to these limits exists below 25% RTP; therefore, these requirements are only necessary when operating at or above this power level.

ACTIONS

A Note has been provided to modify the ACTIONS related to feedwater and main turbine high water level trip instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable feedwater and main turbine high water level trip instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable feedwater and main turbine high water level trip instrumentation channel.

A.1

With one channel inoperable, the remaining two OPERABLE channels can provide the required trip signal. However, overall instrumentation reliability is reduced because a single failure in one of the remaining channels concurrent with feedwater controller failure, maximum demand event, may result in the instrumentation not being able to perform its intended function. Therefore, continued operation is only allowed for a limited time with one channel inoperable. If the inoperable channel cannot be restored to OPERABLE status within the Completion Time, the channel must be placed in the tripped condition per Required Action A.1. Placing the

(continued)

BASES

ACTIONS

A.1 (continued)

inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue with no further restrictions. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in a feedwater or main turbine trip), Condition C must be entered and its Required Action taken.

The Completion Time of 7 days is based on the low probability of the event occurring coincident with a single failure in a remaining OPERABLE channel.

B.1

With two or more channels inoperable, the feedwater and main turbine high water level trip instrumentation cannot perform its design function (feedwater and main turbine high water level trip capability is not maintained). Therefore, continued operation is only permitted for a 2 hour period, during which feedwater and main turbine high water level trip capability must be restored. The trip capability is considered maintained when sufficient channels are OPERABLE or in trip such that the feedwater and main turbine high water level trip logic will generate a trip signal on a valid signal. This requires two channels to each be OPERABLE or in trip. If the required channels cannot be restored to OPERABLE status or placed in trip, Condition C must be entered and its Required Action taken.

The 2 hour Completion Time is sufficient for the operator to take corrective action, and takes into account the likelihood of an event requiring actuation of feedwater and main turbine high water level trip instrumentation occurring during this period. It is also consistent with the 2 hour Completion Time provided in LCO 3.2.2 for Required Action A.1, since this instrumentation's purpose is to preclude a MCPR violation.

(continued)

BASES

ACTIONS (continued)

C.1 and C.2 TA1

With the required channels not restored to OPERABLE status or placed in trip, THERMAL POWER must be reduced to < 25% RTP within 4 hours. As discussed in the Applicability section of the Bases, operation below 25% RTP results in sufficient margin to the required limits, and the feedwater and main turbine high water level trip instrumentation is not required to protect fuel integrity during the feedwater controller failure, maximum demand event. The allowed Completion Time of 4 hours is based on operating experience to reduce THERMAL POWER to < 25% RTP from full power conditions in an orderly manner and without challenging plant systems.

TA3 Insert Actions C.1 and C.2 -1 DA5

TA1 Insert Actions C.1 and C.2 -2

TSTF-297 / BWROG ED-7

SURVEILLANCE REQUIREMENTS

PA3

~~[Reviewer's Note: Certain Frequencies are based on approved topical reports. In order for a licensee to use these Frequencies the licensee must justify the Frequencies as required by the staff Safety Evaluation Report (SER) for the topical report.]~~

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains feedwater and main turbine high water level trip capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. ~~2~~ 4) assumption that 6 hours is the average time required to perform channel Surveillance. That analysis demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the feedwater pump turbines and main turbine will trip when necessary.

DB1

SR 3.3.2.2.1

Performance of the CHANNEL CHECK once every 24 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter

(continued)

Revision F

TA1

INSERT ACTIONS C.1 and C.2 - 1

TA3 DBS

TA3 stop

Alternatively, the affected feedwater pump(s) and affected main turbine valve(s) may be removed from service since this performs the intended function of the instrumentation.

TA1

INSERT ACTIONS C.1 and C.2 - 2

Required Action C.1 is modified by a Note which states that the Required Action is only applicable if the inoperable channel is the result of an inoperable feedwater pump, (valve) or main turbine stop valve. The Note clarifies the situations under which the associated Required Action would be the appropriate Required Action.

DBS

turbine stop

DBS

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.2.1 (continued)

indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels, or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Channel

PA 1

Agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limits.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.2.2.2

TA 2

Insert SR 3.3.2.2.2-1

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the ~~entire~~ channel will perform the ~~intended function.~~ Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology.

INSERT SR 3.3.2.2.2-2

CLB 1

~~The Frequency of 92 days is based on reliability analysis (Ref. 2).~~

TSTF-205

SR 3.3.2.2.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive

(continued)

Revision F

TA2

INSERT SR 3.3.2.2-1

A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions.

TSTF-205

CLB1

INSERT SR 3.3.2.2.2-2

TSTF-205

As noted, the CHANNEL FUNCTIONAL TEST is only required to be performed when in MODE 4 for > 24 hours. In MODE 4, the plant is in a condition where a loss of a feedwater pump turbine or a main turbine trip will not jeopardize steady state power operation. The design of the trip systems do not permit functional testing of this trip function without lifting electrical leads. Consequently, testing the trip systems on-line poses an unacceptable risk of an inadvertent trip of the feedwater pump turbines and main turbine, resulting in a plant transient. The 24 hours is intended to indicate an outage of sufficient duration to allow for scheduling a proper performance of the Surveillance.

The 92 day Frequency and the Note to this Surveillance was approved by the Nuclear Regulatory Commission as documented in Reference 5.

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.2.3 (continued)

calibrations consistent with the plant specific setpoint methodology.

24 DB3

The Frequency is based upon the assumption of a~~n~~ ~~18~~ month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.2.2.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The system functional test of the feedwater and main turbine valves is included as part of this Surveillance and overlaps the LOGIC SYSTEM FUNCTIONAL TEST to provide complete testing of the assumed safety function. Therefore, if a valve is incapable of operating, the associated instrumentation would also be inoperable. The ~~18~~ 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the ~~18~~ 24 month Frequency. CLB.

REFERENCES

PA

1. UFSAR, Section ~~[15.2]~~ 14.5.9

DB4

~~2~~ 4. GENE-770-06-1-A, "Bases for Changes to Surveillance Test Intervals and Allowed Out-Of-Service Times for Selected Instrumentation Technical Specifications," ~~February 1991~~ December 1992.

PA4

DB1

3. Drawing 11825-5.01-15D, Rev. D, Reactor Assembly Nuclear Boiler, (GE Drawing 919D690BD)

DB1

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

X1

5. NRC letter dated June 19, 1995, Amendment 225 for James A. Fitzpatrick Nuclear Power Plant

CLB1

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

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

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.3.2.2 - FEEDWATER AND MAIN TURBINE HIGH WATER LEVEL TRIP INSTRUMENTATION

RETENTION OF EXISTING REQUIREMENT (CLB)

CLB1 The Frequency for performing Channel Functional Tests of the Feedwater and Main Turbine High Water Level Trip Instrumentation was approved in License Amendment 225 based on the plant specific design. This Frequency has been retained in ITS SR 3.3.2.2.2.

CLB2 The 18 month Frequency has been extended to 24 months consistent with CTS Table 4.2-6 and the justification provided in the proposed Bases. The JAFNPP refuel cycle is 24 months.

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 Changes have been made to be consistent with other places in the Bases.

PA3 Reviewer's Note deleted.

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

PA5 Editorial change with no change in intent.

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 design. References have been added. Subsequent references have been renumbered, as required.

DB2 The plant specific description of the setpoint methodology has been provided.

DB3 The ITS 3.3.2.2.3 Surveillance Frequency of 18 months has been modified to 24 months consistent with the setpoint methodology for the associated channels.

DB4 The References have been modified to reflect the plant specific References.

DB5 The brackets in the Bases description of the Required Action Note added as a result of TSTF-297 have been removed and the word "pump" replaced with "turbine stop" consistent with the plant design. In addition, the Required Action description has been modified to be consistent with the Specification. TSTF-297

JUSTIFICATION FOR DIFFERENCES FROM NUREG-1433, REVISION 1
ITS BASES: 3.3.2.2 - FEEDWATER AND MAIN TURBINE HIGH WATER LEVEL TRIP INSTRUMENTATION

DIFFERENCE BASED ON AN APPROVED TRAVELER (TA)

TA1 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler number 297, Revision 1 have been incorporated into the revised Improved Technical Specifications. TSTF-

TA2 The changes presented in Technical Specification Task Force (TSTF) Technical Specification Change Traveler number 205, Revision 3 have been incorporated into the revised Improved Technical Specifications. TSTF-

TA3 The changes presented in the Industry/Technical Specification Task Force (TSTF) Standard Technical Specification Editorial Changes Affecting NUREG-1433 designated as BWROG-ED-7 have been incorporated into the revised Improved Technical Specifications. BWROG ED-7

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. Subsequent References have been renumbered, as applicable.

JAFNPP

IMPROVED STANDARD TECHNICAL SPECIFICATIONS (ISTS) CONVERSION

ITS: 3.3.2.2

Feedwater and Main Turbine High Water Level Trip Instrumentation

RETYPED PROPOSED IMPROVED TECHNICAL SPECIFICATIONS (ITS) AND BASES

3.3 INSTRUMENTATION

3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

LCO 3.3.2.2 Three channels of feedwater and main turbine high water level trip instrumentation shall be OPERABLE.

APPLICABILITY: THERMAL POWER ≥ 25% RTP.

ACTIONS

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

CONDITION	REQUIRED ACTION		COMPLETION TIME
A. One feedwater and main turbine high water level trip channel inoperable.	A.1	Place channel in trip.	7 days
B. Two or more feedwater and main turbine high water level trip channels inoperable.	B.1	Restore feedwater and main turbine high water level trip capability.	2 hours
C. Required Action and associated Completion Time not met.	C.1	--------Note-------- Only applicable if inoperable channel is the result of inoperable feedwater pump turbine or main turbine stop valve. -------------------- Remove affected stop valve(s) from service.	4 hours
	<u>OR</u>		
	C.2	Reduce THERMAL POWER to < 25% RTP.	4 hours

TSTF-297

SURVEILLANCE REQUIREMENTS

-----------------------------------NOTE-----------------------------------
When a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided feedwater and main turbine high water level trip capability is maintained.

SURVEILLANCE		FREQUENCY
SR 3.3.2.2.1	Perform CHANNEL CHECK.	24 hours
SR 3.3.2.2.2	-----------------NOTE----------------- Only required to be performed when in MODE 4 for > 24 hours. -------------------------------------- Perform CHANNEL FUNCTIONAL TEST.	92 days
SR 3.3.2.2.3	Perform CHANNEL CALIBRATION. The Allowable Value shall be ≤ 222.4 inches.	24 months
SR 3.3.2.2.4	Perform LOGIC SYSTEM FUNCTIONAL TEST including valve actuation.	24 months

B 3.3 INSTRUMENTATION

B 3.3.2.2 Feedwater and Main Turbine High Water Level Trip Instrumentation

BASES

BACKGROUND

The feedwater and main turbine high water level trip instrumentation is designed to detect a potential failure of the Feedwater Level Control System that causes excessive feedwater flow.

With excessive feedwater flow, the water level in the reactor vessel rises toward the high water level, Level 8 reference point, causing the trip of the two feedwater pump turbines and the main turbine.

Reactor Vessel Water Level - High (Level 8) signals are provided by level sensors that sense the difference between the pressure due to a constant column of water (reference leg) and the pressure due to the actual water level in the reactor vessel (variable leg). Three channels of Reactor Vessel Water Level - High (Level 8) instrumentation are provided as input to three trip systems. Each system is arranged with a two-out-of-three initiation logic. Each trip system trips one feedwater pump turbine or the main turbine. The channels include electronic equipment (e.g., alarm units) that compares measured input signals with pre-established setpoints. When the setpoint is exceeded, the channel output relay actuates, which then outputs a feedwater and main turbine trip signal to the trip logic.

A trip of the feedwater pump turbines limits further increase in reactor vessel water level by limiting further addition of feedwater to the reactor vessel. A trip of the main turbine and closure of the stop valves protects the turbine from damage due to water entering the turbine.

APPLICABLE SAFETY ANALYSES

The feedwater and main turbine high water level trip instrumentation is assumed to be capable of providing a turbine trip in the design basis transient analysis for a feedwater controller failure, maximum demand event (Ref. 1). The Level 8 trip indirectly initiates a reactor scram from the main turbine trip (above 30% RTP) and trips the feedwater pumps, thereby terminating the event. The reactor scram mitigates the reduction in MCPR.

(continued)

BASES

APPLICABLE SAFETY ANALYSES (continued)

Feedwater and main turbine high water level trip instrumentation satisfies Criterion 3 of 10 CFR 50.36(c)(2)(ii) (Ref. 2).

LCO

The LCO requires three channels of the Reactor Vessel Water Level - High (Level 8) instrumentation to be OPERABLE to ensure that no single instrument failure will prevent the feedwater pump turbines and main turbine trip on a valid Level 8 signal. Two of the three channels are needed to provide trip signals in order for the feedwater and main turbine trips to occur. Each channel must have its setpoint set within the specified Allowable Value of SR 3.3.2.2.3. The Allowable Value is set to ensure that the thermal limits are not exceeded during the event. The Allowable Value is referenced from a level of water 352.56 inches above the lowest point in the inside bottom of the reactor pressure vessel and also corresponds to the top of a 144 inch fuel column (Ref. 3). The actual setpoint is calibrated to be consistent with the applicable setpoint methodology assumptions. Nominal trip setpoints are specified in the setpoint calculations. The nominal setpoints are selected to ensure that the setpoints do not exceed the Allowable Value between successive CHANNEL CALIBRATIONS. Operation with a trip setpoint less conservative than the nominal trip setpoint, but within its Allowable Value, is acceptable. A channel is inoperable if its actual trip setpoint is not within its required Allowable Value.

Trip setpoints are those predetermined values of output at which an action should take place. The setpoints are compared to the actual process parameter (e.g., reactor vessel water level), and when the measured output value of the process parameter exceeds the setpoint, the associated device (e.g., alarm unit) changes state. The analytic limits are derived from the limiting values of the process parameters obtained from the safety analysis. The trip setpoints are derived from the analytic limits and account for all worst case instrumentation uncertainties as appropriate (e.g., drift, process affects, calibration uncertainties, and severe environmental errors (for channels that must function in harsh environments as defined by 10 CFR 50.49)). The trip setpoints derived in this manner provide adequate protection because all expected uncertainties are accounted for. The Allowable Values are

RAI 3.3.2.2-1

(continued)

BASES

LCO (continued)

then derived from the trip setpoints by accounting for normal effects that would be seen during periodic surveillance or calibration. These affects are instrumentation uncertainties during normal operation (e.g., drift and calibration uncertainties).

RAI - 3.3.2.2-1

APPLICABILITY

The feedwater and main turbine high water level trip instrumentation is required to be OPERABLE at ≥ 25% RTP to ensure that the fuel cladding integrity Safety Limit and the cladding 1% plastic strain limit are not violated during the feedwater controller failure, maximum demand event. As discussed in the Bases for LCO 3.2.1, "Average Planar Linear Heat Generation Rate (APLHGR)," and LCO 3.2.2, "MINIMUM CRITICAL POWER RATIO (MCPR)," sufficient margin to these limits exists below 25% RTP; therefore, these requirements are only necessary when operating at or above this power level.

ACTIONS

A Note has been provided to modify the ACTIONS related to feedwater and main turbine high water level trip instrumentation channels. Section 1.3, Completion Times, specifies that once a Condition has been entered, subsequent divisions subsystems, components, or variables expressed in the Condition, discovered to be inoperable or not within limits, will not result in separate entry into the Condition. Section 1.3 also specifies that Required Actions of the Condition continue to apply for each additional failure, with Completion Times based on initial entry into the Condition. However, the Required Actions for inoperable feedwater and main turbine high water level trip instrumentation channels provide appropriate compensatory measures for separate inoperable channels. As such, a Note has been provided that allows separate Condition entry for each inoperable feedwater and main turbine high water level trip instrumentation channel.

(continued)

BASES

ACTIONS (continued)

A.1

With one channel inoperable, the remaining two OPERABLE channels can provide the required trip signal. However, overall instrumentation reliability is reduced because a single failure in one of the remaining channels concurrent with feedwater controller failure, maximum demand event, may result in the instrumentation not being able to perform its intended function. Therefore, continued operation is only allowed for a limited time with one channel inoperable. If the inoperable channel cannot be restored to OPERABLE status within the Completion Time, the channel must be placed in the tripped condition per Required Action A.1. Placing the inoperable channel in trip would conservatively compensate for the inoperability, restore capability to accommodate a single failure, and allow operation to continue with no further restrictions. Alternately, if it is not desired to place the channel in trip (e.g., as in the case where placing the inoperable channel in trip would result in a feedwater or main turbine trip), Condition C must be entered and its Required Action taken.

The Completion Time of 7 days is based on the low probability of the event occurring coincident with a single failure in a remaining OPERABLE channel.

B.1

With two or more channels inoperable, the feedwater and main turbine high water level trip instrumentation cannot perform its design function (feedwater and main turbine high water level trip capability is not maintained). Therefore, continued operation is only permitted for a 2 hour period, during which feedwater and main turbine high water level trip capability must be restored. The trip capability is considered maintained when sufficient channels are OPERABLE or in trip such that the feedwater and main turbine high water level trip logic will generate a trip signal on a valid signal. This requires two channels to each be OPERABLE or in trip. If the required channels cannot be restored to OPERABLE status or placed in trip, Condition C must be entered and its Required Action taken.

(continued)

BASES

ACTIONS

B.1 (continued)

The 2 hour Completion Time is sufficient for the operator to take corrective action, and takes into account the likelihood of an event requiring actuation of feedwater and main turbine high water level trip instrumentation occurring during this period. It is also consistent with the 2 hour Completion Time provided in LCO 3.2.2 for Required Action A.1, since this instrumentation's purpose is to preclude a MCPR violation.

C.1 and C.2

With the required channels not restored to OPERABLE status or placed in trip, THERMAL POWER must be reduced to < 25% RTP within 4 hours. Alternatively, the affected stop valve(s) may be removed from service since this performs the intended function of the instrumentation. As discussed in the Applicability section of the Bases, operation below 25% RTP results in sufficient margin to the required limits, and the feedwater and main turbine high water level trip instrumentation is not required to protect fuel integrity during the feedwater controller failure, maximum demand event. The allowed Completion Time of 4 hours is based on operating experience to reduce THERMAL POWER to < 25% RTP from full power conditions in an orderly manner and without challenging plant systems. Required Action C.1 is modified by a Note which states that the Required Action is only applicable if the inoperable channel is the result of an inoperable feedwater pump turbine stop valve or main turbine stop valve. The Note clarifies the situations under which the associated Required Action would be the appropriate Required Action.

SURVEILLANCE REQUIREMENTS

The Surveillances are modified by a Note to indicate that when a channel is placed in an inoperable status solely for performance of required Surveillances, entry into associated Conditions and Required Actions may be delayed for up to 6 hours provided the associated Function maintains feedwater and main turbine high water level trip capability. Upon completion of the Surveillance, or expiration of the 6 hour allowance, the channel must be returned to OPERABLE status or the applicable Condition entered and Required Actions taken. This Note is based on the reliability analysis (Ref. 4) assumption that 6 hours is the average time required to perform channel Surveillance. That analysis

(continued)

BASES

SURVEILLANCE REQUIREMENTS (continued)

demonstrated that the 6 hour testing allowance does not significantly reduce the probability that the feedwater pump turbines and main turbine will trip when necessary.

SR 3.3.2.2.1

Performance of the CHANNEL CHECK once every 24 hours ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison of the parameter indicated on one channel to a similar parameter on other channels. It is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviations between instrument channels could be an indication of excessive instrument drift in one of the channels, or something even more serious. A CHANNEL CHECK will detect gross channel failure; thus, it is key to verifying the instrumentation continues to operate properly between each CHANNEL CALIBRATION.

Channel agreement criteria are determined by the plant staff based on a combination of the channel instrument uncertainties, including indication and readability. If a channel is outside the criteria, it may be an indication that the instrument has drifted outside its limits.

The Frequency is based on operating experience that demonstrates channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channel status during normal operational use of the displays associated with the channels required by the LCO.

SR 3.3.2.2.2

A CHANNEL FUNCTIONAL TEST is performed on each required channel to ensure that the channel will perform the intended function. A successful test of the required contacts(s) of a channel relay may be performed by the verification of the change of state of a single contact of the relay. This clarifies what is an acceptable CHANNEL FUNCTIONAL TEST of a relay. This is acceptable because all of the other required contacts of the relay are verified by other Technical Specifications and non-Technical Specifications tests at least once per refueling interval with applicable extensions. Any setpoint adjustment shall be consistent with the assumptions of the current plant specific setpoint methodology. TSTF-205R3

(continued)

BASES

SURVEILLANCE REQUIREMENTS

SR 3.3.2.2.2 (continued)

As noted, the CHANNEL FUNCTIONAL TEST is only required to be performed when in MODE 4 for > 24 hours. In MODE 4, while the plant is in a condition where a loss of a feedwater pump turbine or a main turbine trip will not jeopardize steady state power operation. The design of the trip systems do not permit functional testing of this trip function without lifting electrical leads. Consequently, testing the trip systems on-line poses an unacceptable risk of an inadvertent trip of the feedwater pump turbines and main turbine, resulting in a plant transient. The 24 hours is intended to indicate an outage of sufficient duration to allow for scheduling a proper performance of the Surveillance.

The 92 day Frequency and the Note to this Surveillance was approved by the Nuclear Regulatory Commission as documented in Reference 5.

SR 3.3.2.2.3

CHANNEL CALIBRATION is a complete check of the instrument loop and the sensor. This test verifies the channel responds to the measured parameter within the necessary range and accuracy. CHANNEL CALIBRATION leaves the channel adjusted to account for instrument drifts between successive calibrations consistent with the plant specific setpoint methodology.

The Frequency is based upon the assumption of a 24 month calibration interval in the determination of the magnitude of equipment drift in the setpoint analysis.

SR 3.3.2.2.4

The LOGIC SYSTEM FUNCTIONAL TEST demonstrates the OPERABILITY of the required trip logic for a specific channel. The system functional test of the feedwater and main turbine valves is included as part of this Surveillance and overlaps the LOGIC SYSTEM FUNCTIONAL TEST to provide complete testing of the assumed safety function. Therefore, if a valve is incapable of operating, the associated instrumentation would also be inoperable. The 24 month Frequency is based on the need to perform this Surveillance under the conditions that apply during a plant outage and the potential for an unplanned transient if the Surveillance were performed with the reactor at power. Operating experience has shown that these components usually pass the Surveillance when performed at the 24 month Frequency.

(continued)

BASES (continued)

REFERENCES

1. UFSAR, Section 14.5.9.
2. 10 CFR 50.36(c)(2)(ii).
3. Drawing 11825-5.01-15D, Rev. D, Reactor Assembly Nuclear Boiler, (GE Drawing 919D690BD).
4. GENE-770-06-1-A, Bases for Changes To Surveillance Test Intervals And Allowed Out-Of-Service Times for Selected Instrumentation Technical Specifications, December 1992.
5. NRC letter dated June 19, 1995, Amendment 225 for James A. FitzPatrick Nuclear Power Plant.