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October 6, 2010

NL-10-072

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Proposed Technical Specification Change Regarding RWST Surveillance Requirement
Indian Point Unit Number 3
Docket No. 50-286
License No. DPR-64

Dear Sir or Madam:

Pursuant to 10 CFR 50.90, Entergy Nuclear Operations, Inc, (Entergy) hereby requests a License Amendment to Operating License DPR-64, Docket No. 50-286 for Indian Point Nuclear Generating Unit No. 3 (IP3). The proposed amendment will revise the note from the Refueling Water Storage Tank (RWST) Technical Specification Surveillance Requirement (SR) 3.5.4.1. The note is considered to be non-conservative since a single failure of the heating system could raise the temperature beyond the allowable value and this would not be detected without a more timely surveillance.

Attachment 1 provides a description and assessment of the proposed change. The marked-up pages showing the proposed changes are provided in Attachment 2. Attachment 3 provides the marked up pages of the Technical Specification Bases for information. A copy of this application and the associated attachments are being submitted to the designated New York State official in accordance with 10 CFR 50.91.

Entergy requests approval of the proposed amendment within 12 months and an allowance of 30 days for implementation. There are no new commitments being made in this submittal. If you have any questions or require additional information, please contact Mr. Robert Walpole, Manager, Licensing at (914) 734-6710.

A001
NRR

I declare under penalty of perjury that the foregoing is true and correct. Executed on 10-7, 2010.

Sincerely,

JEP/sp

Attachments:
1. Analysis of Proposed Technical Specification Change Regarding RWST Surveillance Requirements
2. Markup of Technical Specification Page for Proposed Change Regarding RWST Surveillance Requirements
3. Markup of Technical Specification Bases for Proposed Change Regarding RWST Surveillance Requirements

cc: Mr. John P. Boska, Senior Project Manager, NRC NRR DORL
Mr. Samuel J. Collins, Regional Administrator, NRC Region 1
NRC Resident Inspector, IP3
Mr. Francis J. Murray, Jr., President and CEO, NYSERDA
Mr. Paul Eddy, New York State Dept. of Public Service

ATTACHMENT 1 TO NL-10-072

# ANALYSIS OF PROPOSED TECHNICAL SPECIFICATION CHANGE

# REGARDING RWST SURVEILLANCE REQUIREMENTS

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET NO. 50-286

## 1.0 DESCRIPTION

Entergy Nuclear Operations, Inc (Entergy) is requesting a License Amendment to Operating License DPR-64, Docket No. 50-286 for Indian Point Nuclear Generating Unit No. 3 (IP3). The proposed amendment will revise the note in the Refueling Water Storage Tank (RWST) Technical Specification (TS) Surveillance Requirement (SR) 3.5.4.1.

## 2.0 PROPOSED CHANGES

The requested amendment will change Technical Specification surveillance requirement 3.5.4.1 as follows:

From:

> ----------NOTE----------
> Only required to be performed when ambient air temperature is < 35°F or > 110°F.
> ----------
>
> Verify RWST borated water temperature is ≥ 35°F and ≤ 110°F.

To:

> ----------NOTE----------
> Not required to be performed when ambient air temperature is ≥ 35°F and ≤ 110°F if heating steam supply isolation valves are locked closed.
> ----------
>
> Verify RWST borated water temperature is ≥ 35°F and ≤ 110°F.

Associated changes to the Bases are attached for information.

## 3.0 BACKGROUND

SR 3.5.4.1 is based on the NUREG 1431, "Standard Technical Specifications Westinghouse Plants," (Reference 1) which contained a bracketed note "[Only required to be performed when ambient air temperature is < [35]° F or > [100]°F. ]." The bases explained the note: "The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperatures are within the operating limits of the RWST. With ambient air temperatures within the band, the RWST temperature should not exceed the limits."

The optional note was adopted during the conversion to the standard Technical Specifications. The note was added as part of the original submittal and was regarded as a more restrictive change since there was no existing requirement in the Technical Specifications at the time. The potential for single failure was not identified at the time. The heat is supplied by auxiliary steam

which is isolated during the preparations for warm weather and reopened during preparations for cold weather. When not isolated, the failure of the steam heat supply in the open position creates the potential for higher than allowable temperatures. Administrative controls are in place to assure daily surveillances to eliminate the potential for overheating when the steam heat supply isolation are not locked closed.

## 4.0 TECHNICAL ANALYSIS

The RWST supplies the ECCS and the Containment Spray System through separate supply lines during the injection phase of a loss of coolant accident (LOCA). In the ECCS analysis, the containment spray temperature is assumed to be equal to the RWST lower temperature limit of 35°F. The analysis minimizes containment backpressure in accordance with 10 CFR 50 Appendix K by assuming 35°F RWST water. This establishes the lower temperature limit. The upper temperature limit of 110°F is used in the containment integrity analysis since this maximizes pressure. Exceeding this temperature will result in higher containment pressures due to reduced containment spray cooling capacity.

The contents of the Refueling Water Storage Tank are kept above 35°F during the cold weather months by a steam heated, austenitic stainless steel pipe coil near the bottom of the tank. Steam is supplied to this coil through a single supply header. In the remote case of loss of steam to this tank, there would be a time period of at least 24 hours available for repair or connection to another steam source before freezing problems would arise, even under the most severe weather conditions. If the electrical heat tracing on the tank discharge line remains operable it is very probable that a freezing problem would not arise.

The steam to the heating coil is automatically flow controlled. In response to low RWST temperature, steam is admitted by temperature control valve TCV-1116, and the pressure is controlled automatically by pressure control valve PCV-1250 to maintain a nominal 7 psig steam pressure in the coil.

The current TS SR 3.5.4.1 requirement is to verify the water temperature of the RWST is within the required temperature band every 24 hours. The SR contains a note that eliminates the SR if the ambient air temperature is within the RWST required temperature band. This note does not recognize that a single failure of the steam heating supply to the RWST could potentially cause the RWST temperature to rise above the upper temperature limit of 110°F if the temperature were not monitored (a failure of the steam supply to open would be detected by the surveillances required when the ambient temperature is below 35°F). The single failure could be a failed open TCV-1116 or an inadvertently opened TCV-1116 bypass line isolation valve. When the steam heating line is isolated, during warm weather, the single failure of the steam heating line TCV does not have to be postulated. By locking the isolation valve on the steam heating line and the bypass line no inadvertent actuation needs to be postulated. Locking a valve closed also eliminates the need for periodic surveillance (e.g., containment isolation valves are not subject to surveillance when locked in the required position). The 1-¼ inch steam trap on the RWST heating line return and the ¾ inch steam trap at the outlet of TVC-1116 are not considered to be a credible means of over heating the RWST. Each line has a check valve in the line and no steam supply.

The revision of the note in SR 3.5.4.1 will not require monitoring of the RWST temperature every 24 hours when the RWST heating steam supply isolation valves are locked closed. The locked valves will assure no credible single failure can allow heating steam to raise the RWST

temperature above the allowable value. The TS SR will require the RWST temperature to be verified every 24 hours whenever the heating steam supply isolation valves are not locked closed as well as when the ambient air temperature limits are exceeded.

The proposed change, revising the note in SR 3.5.4.1, does not:

1. Require any plant modifications which affect the performance capability of the structures, systems, and components relied upon to mitigate the consequences of postulated accidents.
2. Does not alter accident analysis assumptions, add any initiators, or affect the function of plant systems or the manner in which systems are operated, maintained, modified, tested, or inspected.
3. Does not reduce the plant margin since it increases the surveillances when a single failure could overheat the RWST.

## 5.0 REGULATORY ANALYSIS

### 5.1 No Significant Hazards Consideration

Entergy Nuclear Operations, Inc (Entergy) has evaluated the safety significance of the proposed change to the Indian Point 3 Technical Specifications that revises the RWST surveillance note that eliminates the requirement to perform Surveillance Requirement 3.5.4.1. The proposed revision adds a requirement that heating steam supply isolation valves be locked closed when the surveillance is not being performed and ambient air temperatures are within the operating limits of the RWST. This proposed change has been evaluated according to the criteria of 10 CFR 50.92, "Issuance of Amendment". Entergy has determined that the proposed change does not involve a Significant Hazards Consideration, as discussed below.

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

No. The proposed change revises the existing Indian Point 3 Refueling Water Storage Tank (RWST) Technical Specification (TS) Surveillance Requirement (SR) 3.5.4.1 to revise the note that eliminates the requirement to perform SR 3.5.4.1 when ambient air temperatures are within the operating limits of the RWST. The revision to the note adds a requirement that the steam heating supply isolation valves be locked closed when not performing the surveillance. The additional requirement does not increase the probability of an accident occurring since it is not an accident initiator and does not increase the consequences of an accident since it is providing additional assurance that the RWST is within the temperature limits assumed for accident analyses. The change increases observation of the RWST temperature when the steam supply isolation valves are not locked closed and does not otherwise affect the affect the performance capability of the structures, systems, and components relied upon to mitigate the consequences of postulated accidents. Therefore the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

No. The proposed change revises the note that eliminates the requirement to perform SR 3.5.4.1 when ambient air temperatures are within the operating limits of the RWST. The revision adds the additional requirement of locking closed the steam supply isolation valves. The proposed change does not involve installation of new equipment or modification of existing equipment, so that no new equipment failure modes are introduced. Also, the proposed change does not result in a change to the way that the equipment or facility is operated so that no new accident initiators are created. Therefore the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

No. The proposed change revises the note that eliminates the requirement to perform SR 3.5.4.1 when ambient air temperatures are within the operating limits of the RWST. The revision adds the additional requirement of locking closed the steam supply isolation valves. The change does not reduce margin since it increases the temperature surveillance frequency for the RWST to provide further assurance that the required water temperature is maintained at all times. Therefore the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, Entergy concludes that the proposed amendment to the Indian Point 3 Technical Specifications presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of 'no significant hazards consideration' is justified.

5.2 Applicable Regulatory Requirements / Criteria

General Design Criteria (GDC) 43 dated July 11, 1967 formed part of the plant design basis. The GDC required "Protection against any action of the engineered safety features which would accentuate significantly the adverse after-effects of a loss of normal cooling shall be provided." IP3 Final Safety Analysis Report (FSAR) Section 6.1 discusses compliance with the GDC. Section 6.1 notes that the delivery of safety injection water limits the potential for significant metal-water reaction and does not cause further loss of integrity. Chapter 14.3 discusses loss of coolant accident (LOCA) analyses and concludes that the acceptance criteria for the LOCA described in 10 CFR 50.46 are met. The revision to the note and the additional surveillances performed do not adversely affect compliance with this criterion and will serve to increase assurance of compliance.

The NRC Order of February 11, 1980 required an evaluation of the degree of compliance with the GDC at the time. GDC 35 says "A system to provide abundant emergency core cooling shall be provided. The system safety function shall be to transfer heat from the reactor core following any loss of reactor coolant at a rate such that (1) fuel and clad damage that could interfere with continued effective core cooling is prevented and (2) clad metal-water reaction is limited to negligible amounts." FSAR Section 1.3 discusses the level of compliance. The discussion talks about the ability of the ECCS system to perform its function and references sections 6.2 and 14.3. The RWST is part of the ECCS for the injection phase and maintaining the RWST within required temperature limits is part of that ECCS function. The revision to the note in SR 3.5.4.1 increases the periods for which the temperature limits are verified and helps assure continued compliance with maintaining the RWST temperatures within required limits.

5.3 Environmental Evaluation

The proposed change to the Indian Point 3 Technical Specifications does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in the individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with this proposed amendment.

5.4 Precedence

There is no direct precedence for the proposed technical specification change because it is an optional requirement in the NUREG – 1431 Standard Technical Specifications. The revision to the note adds the additional requirement of locking closed the steam supply isolation valves when the temperature surveillance is not to be performed. This eliminates the potential for a single failure in the steam heating system to overheat the RWST. A modification to the note rather than eliminating the note was chosen because the temperature indicator is within a locked enclosure and this eliminates some operator burden.

## 6.0 REFERENCES

1. NUREG 1431, Standard Technical Specifications for Westinghouse Plants, Revision 2, dated April 2001.

ATTACHMENT 2 TO NL-10-072

**MARKUP OF TECHNICAL SPECIFICATION PAGE FOR PROPOSED CHANGE**

**REGARDING RWST SURVEILLANCE REQUIREMENTS**

Changes indicated by lineout for deletion and **Bold**/*Italics* for additions

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET 50-286

SURVEILLANCE REQUIREMENTS

| | SURVEILLANCE | FREQUENCY |
|---|---|---|
| SR 3.5.4.1 | ----------NOTE----------<br><br>~~Only~~ ***Not*** required to be performed when ambient air temperature is ~~<~~ ≥ 35°F ~~or~~***and*** ~~>~~ ≤ 110°F ***if heating steam supply isolation valves are locked closed.***<br>----------<br><br>Verify RWST borated water temperature is ≥ 35°F and ≤ 110°F. | 24 hours |
| SR 3.5.4.2 | Verify RWST borated water level is ≥ 35.4 feet. | 7 days |
| SR 3.5.4.3 | Verify RWST boron concentration is ≥ 2400 ppm and ≤ 2600 ppm. | 31 days |
| SR 3.5.4.4 | Perform CHANNEL CHECK of RWST level. | 7 days |
| SR 3.5.4.5 | Perform CHANNEL CALIBRATION of RWST level switch and ensure the low level alarm setpoint is ≥10.5 ft. and ≤12.5 ft. | 184 days |
| SR 3.5.4.6 | Perform CHANNEL CALIBRATION of RWST level transmitter and ensure the low level alarm setpoint is ≥10.5 ft. and ≤12.5 ft. | 18 months |

ATTACHMENT 3 TO NL-10-072

**MARKUP OF TECHNICAL SPECIFICATION BASES FOR PROPOSED CHANGE REGARDING RWST SURVEILLANCE REQUIREMENTS**

Changes indicated by lineout for deletion and **Bold**/*Italics* for additions

ENTERGY NUCLEAR OPERATIONS, INC.
INDIAN POINT NUCLEAR GENERATING UNIT NO. 3
DOCKET 50-286

B 3.5 EMERGENCY CORE COOLING SYSTEMS (ECCS)

B 3.5.4 Refueling Water Storage Tank (RWST)

BASES

BACKGROUND

The RWST supplies borated water to the Chemical and Volume Control System (CVCS) during abnormal operating conditions, to the refueling cavity during refueling, to the ECCS to fill accumulators, and to the ECCS and the Containment Spray System during accident conditions.

The RWST supplies the ECCS and the Containment Spray System through separate supply headers during the injection phase of a loss of coolant accident (LOCA). Motor operated isolation valves are provided to isolate the RWST from the ECCS subsystems once the system has been transferred to the recirculation mode. The switchover to the cold leg recirculation phase is manually initiated when the RWST level has reached the low-alarm setpoint and sufficient coolant inventory to support pump operation in recirculation mode is verified to be in the containment. Use of a single RWST to supply all of the injection trains of the ECCS and Containment Spray System is acceptable since the RWST is a passive component, and passive failures are not required to be assumed to occur coincidentally with Design Basis Events.

During normal operation in MODES 1, 2, and 3, the high head safety injection (HHSI) and residual heat removal (RHR) pumps are aligned to take suction from the RWST.

The ECCS and Containment Spray System pumps are provided with recirculation lines that ensure each pump can maintain minimum flow requirements when operating at or near shutoff head conditions.

This LCO ensures that:

a. The RWST contains sufficient borated water to support the ECCS during the injection phase;

(continued)

BASES

BACKGROUND (continued)

b. Sufficient water volume exists in the recirculation sump or the containment sump to support continued operation of the ECCS and Containment Spray System pumps at the time of transfer to the recirculation mode of cooling; and

c. The reactor remains subcritical following a LOCA or MSLB.

Insufficient water in the RWST could result in insufficient cooling capacity when the transfer to the recirculation mode occurs. Improper boron concentrations could result in a reduction of SDM or excessive boric acid precipitation in the core following the LOCA, as well as excessive caustic stress corrosion of mechanical components and systems inside the containment due to improper pH in the sumps.

APPLICABLE SAFETY ANALYSES

During accident conditions, the RWST provides a source of borated water to the ECCS and Containment Spray System pumps. As such, it provides containment cooling and depressurization, core cooling, and replacement inventory and is a source of negative reactivity for reactor shutdown (Ref. 1). The design basis transients and applicable safety analyses concerning each of these systems are discussed in the Applicable Safety Analyses section of B 3.5.2, "ECCS – Operating"; B 3.5.3, "ECCS – Shutdown"; and B 3.6.6, "Containment Spray System and Containment Fan Cooler System." These analyses are used to assess changes to the RWST in order to evaluate their effects in relation to the acceptance limits in the accident analyses.

The RWST must also meet volume, boron concentration, and temperature requirements for non-LOCA events. The volume is not an explicit assumption in non-LOCA events since the required volume is a small fraction of the available volume. The deliverable volume limit is set by the LOCA and containment analyses. For the RWST, the deliverable volume is different from the total volume contained since, due to the design of the tank, more water can be contained than can be delivered.

For a large break LOCA analysis, the minimum water volume limit of 195,800 gallons and the lower boron concentration limit of 2400 ppm are used to compute the post LOCA sump boron concentration necessary

(continued)

APPLICABLE SAFETY ANALYSES (continued)

to assure subcriticality. The large break LOCA is the limiting case since the safety analysis assumes that all control rods are out of the core.

The RWST level required by Technical Specifications includes allowances for instrument accuracy, the unusable volume in the RWST, and the maximum volume expected to remain in the RWST when the plant is switched from the injection to recirculation modes of operation.

The upper limit on boron concentration of 2600 ppm is used to determine the maximum allowable time to switch to hot leg recirculation following a LOCA. The purpose of switching from cold leg to hot leg injection is to avoid boron precipitation in the core following the accident.

In the ECCS analysis, the containment spray temperature is assumed to be equal to the RWST lower temperature limit of 35·F. If the lower temperature limit is violated, the containment spray further reduces containment pressure, which decreases the rate at which steam can be vented out the break and increases peak clad temperature. The upper temperature limit of 110·F is used in the LOCA containment integrity analysis. Exceeding this temperature will result in higher containment pressures due to reduced containment spray cooling capacity. The minimum boron concentration is an explicit assumption in the main steam line break (MSLB) analysis to ensure the required shutdown capability. For the containment response following an MSLB, the lower limit on boron concentration and the upper limit on RWST water temperature are used to maximize the total energy release to containment.

Following a LOCA, switchover from the injection phase to the recircuation phase must occur before the RWST empties to prevent damage to the pumps and a loss of cooling capability. For similar reasons, switchover must not occur before there is sufficient water in the containment to support recirculation pump suction. Furthermore, early switchover must not occur to ensure that sufficient borated water is injected from the RWST.

(continued)

APPLICABLE SAFETY ANALYSES (continued)

The IP3 ESFAS design does not include automatic switchover from the safety injection mode to the recirculation mode of operation based on low level in the RWST coincident with a safety injection signal. This function is performed manually by the operator who must be alerted by redundant RWST low level alarms. The switchover to the cold leg recirculation phase is manually initiated when the RWST level has reached the low alarm setpoint and sufficient coolant inventory to support pump operation in recirculation mode is verified to be in the containment.

The RWST low level alarm setpoint has both upper and lower limits. The upper limit is set to ensure that switchover does not occur until there is adequate water inventory in the containment to provide ECCS pump suction. (This is confirmed by recirculation and/or containment sump level indication.) The lower limit is set to ensure switchover occurs before the RWST empties, to prevent ECCS pump damage.

Requiring 2 channels of RWST low level alarm ensures that the alarm function will be available assuming a single failure of one channel.

The RWST satisfies Criterion 3 of 10 CFR 50.36.

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LCO

The RWST ensures that an adequate supply of borated water is available to cool and depressurize the containment in the event of a Design Basis Accident (DBA), to cool and cover the core in the event of a LOCA, to maintain the reactor subcritical following a DBA, and to ensure adequate level in the recirculation sump and the containment sump to support ECCS pump operation in the recirculation mode.

To be considered OPERABLE, the RWST must meet the water level, boron concentration, and temperature limits established in the SRs.

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APPLICABILITY

In MODES 1, 2, 3, and 4, RWST OPERABILITY requirements are dictated by ECCS and Containment Spray System OPERABILITY

(continued)

APPLICABILITY (continued)

requirements. Since both the ECCS and the Containment Spray System must be OPERABLE in MODES 1, 2, 3, and 4, the RWST must also be OPERABLE to support their operation. Core cooling requirements in MODE 5 are addressed by LCO 3.4.7, "RCS Loops – MODE 5, Loops Filled," and LCO 3.4.8, "RCS Loops – MODE 5, Loops Not Filled." MODE 6 core cooling requirements are addressed by LCO 3.9.4, "Residual Heat Removal (RHR) and Coolant Circulation-High Water Level," and LCO 3.9.5, "Residual Heat Removal (RHR) and Coolant Circulation-Low Water Level."

ACTIONS

A.1

With RWST boron concentration or borated water temperature not within limits of SR 3.5.4.3 and SR 3.5.4.1, respectively, they must be returned to within limits within 8 hours. Under these conditions neither the ECCS nor the Containment Spray System can perform its design function. Therefore, prompt action must be taken to restore the tank to OPERABLE condition. The 8 hour limit to restore the RWST temperature or boron concentration to within limits was developed considering the time required to change either the boron concentration or temperature and the fact that the contents of the tank are still available for injection.

B.1

Condition B applies when one channel of RWST low level alarm is inoperable. Required Action B.1 requires restoring the inoperable channel to OPERABLE status within 7 days. The 7 day Completion Time for restoration of redundancy to the alarm function is needed because the IP3 ESFAS design does not include automatic switchover from the safety injection mode to the recirculation mode of operation based on low level in the RWST coincident with a safety injection signal. This function is performed manually by the operator who is alerted by the RWST low level alarm as the primary indicator for determining the time for the switchover. The 7 day Completion Time for restoration of redundancy for this alarm function is acceptable because of the remaining alarm channel and the availability of containment and recirculation sump level indication in the containment.

(continued)

ACTIONS (continued)

C.1

With the RWST inoperable for reasons other than Condition A (e.g., water volume) or B (e.g., two level alarms inoperable), it must be restored to OPERABLE status within 1 hour.

In this Condition, neither the ECCS nor the Containment Spray System can perform its design function. Therefore, prompt action must be taken to restore the tank to OPERABLE status or to place the plant in a MODE in which the RWST is not required. The short time limit of 1 hour to restore the RWST to OPERABLE status is based on this condition simultaneously affecting redundant trains.

D.1 and D.2

If the RWST cannot be returned to OPERABLE status within the associated Completion Time, the plant must be brought to a MODE in which the LCO does not apply. To achieve this status, the plant must be brought to at least MODE 3 within 6 hours and to MODE 5 within 36 hours. The allowed Completion Times are reasonable, based on operating experience, to reach the required plant conditions from full power conditions in an orderly manner and without challenging plant systems.

SURVEILLANCE REQUIREMENTS

SR 3.5.4.1

The RWST borated water temperature should be verified every 24 hours to be within the limits assumed in the accident analyses band. This Frequency is sufficient to identify a temperature change that would approach either limit and has been shown to be acceptable through operating experience.

The SR is modified by a Note that eliminates the requirement to perform this Surveillance when ambient air temperatures are within the operating limits of the RWST ***and the heating steam isolation valves are locked closed.*** With ambient air temperatures within the band, the RWST temperature should not exceed the limits.

(continued)

SURVEILLANCE REQUIREMENTS (continued)

SR 3.5.4.2

The RWST water volume should be verified every 7 days to be above the required minimum level in order to ensure that a sufficient initial supply is available for injection and to support continued ECCS System pump operation on recirculation.

Since the RWST volume is normally stable and is protected by an alarm, a 7 day Frequency is appropriate and has been shown to be acceptable through operating experience.

SR 3.5.4.3

The boron concentration of the RWST should be verified every 31 days to be within the required limits. This SR ensures that the reactor will remain subcritical following a LOCA. Further, it assures that the resulting sump pH will be maintained in an acceptable range so that boron precipitation in the core will not occur and the effect of chloride and caustic stress corrosion on mechanical systems and components will be minimized. Since the RWST level is normally stable, a 31 day sampling Frequency to verify boron concentration is appropriate and has been shown to be acceptable through operating experience.

SR 3.5.4.4

Performance of the CHANNEL CHECK every 7 days ensures that a gross failure of the RWST level instruments has not occurred. A CHANNEL CHECK is normally the 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 channel should read approximately the same value. Significant deviations between the two instrument channels could be an indication of excessive instrument drift in one of the channels or of something even more serious. A CHANNEL CHECK will detect gross channel failure: thus, it is key to verifying that the RWST level instruments continue to operate properly between each CHANNEL CALIBRATION.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.4.4 (continued)

Agreement criteria are determined by the unit staff, based on a combination of the channel instrument uncertainties, including isolation, indication, and readability. If a channel is outside the criteria, it may be an indication that the RWST level instrument channel has drifted outside the limit. If the channels are within criteria, it is an indication that the RWST level instrument channels are OPERABLE.

The frequency of 7 days is based on operating experience that demonstrates that channel failure is rare. The CHANNEL CHECK supplements less formal, but more frequent, checks of channels during normal operational use of displays associated with the LCO required RWST level instruments.

SR 3.5.4.5

A CHANNEL CALIBRATION of the RWST level switch is performed at least every 184 days. CHANNEL CALIBRATION is a complete check of the level switch loop including the required alarm. The test verifies the RWST level switch responds to RWST level within the required range and accuracy. The test also verifies that the RWST level switch will cause the low level alarm to annunciate at $\geq$10.5 feet and $\leq$12.5 feet to ensure the operator is alerted to start the switchover to the recirculation mode during accident conditions. The frequency is based on operating experience and previous license commitments.

SR 3.5.4.6

A CHANNEL CALIBRATION of the RWST level transmitter is performed at least every 18 months. CHANNEL CALIBRATION is a complete check of the RWST level transmitter loop including the required alarm. The test verifies the RWST level transmitter responds to RWST level within the required range and accuracy.

(continued)

SURVEILLANCE REQUIREMENTS

SR 3.5.4.6 (continued)

The test also verifies that the RWST level transmitter will cause the low level alarm to annunciate at $\geq$10.5 feet and $\leq$12.5 feet to ensure the operator is alerted to start the switchover to the recirculation mode during accident conditions. The frequency is based on operating experience and previous license commitments.

REFERENCES

1. FSAR, Chapter 6 and Chapter 14.