Draft

Request for Additional Information No. 101 (931), Revision 0

10/16/2008

U. S. EPR Standard Design Certification
AREVA NP Inc.
Docket No. 52-020
SRP Section: 16 - Technical Specifications
Application Section: TS Section 3.4

QUESTIONS for Technical Specification Branch (CTSB)

16-54

FSAR subsection 15.0.0.3.1, Design Plant Conditions and Initial Conditions, states, in part, "A thermal design flow of 119, 692 gpm per loop is used in the accident analysis for the RCS response. This thermal design flow is the minimum allowed by plant TSs. The analyses bound up to five percent SG tube plugging." In addition, the Westinghouse STS, NUREG-1431, specifies both the COLR limit and the SG tube plugging limit in LCO 3.4.1.

Explain the accounting for the the minimum flow rate of 119,692 gpm per loop, as listed in FSAR Table 15.0-5, in LCO 3.4.1. Based on the accounting, revise LCO 3.4.1 and related information in the TS bases B 3.4.1, as appropriate.

16-55

Revise LCO 3.4.11, SR 3.4.11.4 and the associated bases B 3.4.11 to state LCO 3.4.11.c as a Note.

LCO line items are for listing of the minimum number of plant equipment to be OPERABLE. Special operating requirement such as "Reactor coolant pumps shall not be started unless the secondary side water temperature of each steam generator is less than or equal to 50 degree F above each of the RCS cold leg temperature" should be listed as a Note to be consistent with the format used in the STS.

16-56

Provide information to justify the addition of Condition A and its associated Required Actions and Completion Times. Revise TS 3.4.4 and related information in the TS Bases B 3.4.4, as appropriate.

Condition A allows 3-Loop operation for up to 2 hours and entails a restart of the 4th Reactor Coolant Pump (RCP). In the Westinghouse STS, NUREG-1431, the same condition would require a unit shutdown to Mode 3. Moreover, provisions are needed to ensure that the cause of the problem is identified and corrected before restarting the idle loop or this LCO could possibly put the plant in an unanalyzed condition.

This information will be used to ensure all of the conditions specified are compatible with the actions to restore LCO operability or to exit the proposed LCO applicability.

16-57

Confirm that a minimum flow rate of 2200 gpm through the core is required for the performance of SR 3.4.6.1. Revise SR 3.4.6.1 and the related information in the bases B 3.4.6, as appropriate.

The BACKGROUND of TS Bases B 3.4.6 states: "In MODE 4, the flow provided by one RCP or two RHR loops is adequate for decay heat removal." Moreover, EPR FSAR Table 6.3-2 lists a normal flow rate of 2200 gpm for each LHSI/RHR pump (4400 gpm for 2 pumps running).

16-58

Revise the second paragraph of TS Bases B 3.6.4, APPLICABLE SAFETY ANALYSES, to add discussion of results from the worst case MSLB for the maximum peak containment internal pressure.

The first paragraph of the same section in TS B 3.6.4, states "The worst case MSLB generates larger mass and energy release than the worst case LOCA. Thus, the MSLB event bounds the LOCA event from the containment peak pressure standpoint." The results from the worst case MSLB should be discussed when MSLB is determined as the limiting event.

16-59

TS Bases B 3.6.4, Containment Pressure.

Revise the TS bases B 3.6.4 to indicate where Reference 2, "10 CFR 50, Appendix K, ECCS Evaluation Models" is used within the body of the bases. Delete it from REFERENCES if not applicable.

16-60

Provide justification for the minimum run time of 15 minutes with heaters operating in SR 3.6.7.1. Revise TS 3.6.7, as appropriate.

The specified minimum 15-minute run time is not consistent the discussion in the TS bases for 3.6.7.1. Further more, WOG TST requirements for a similar application SR 3.6.13.1 states "operate each SBACS train for [>or= 10 continuous hours with heaters operating or (for systems without heaters) >or= 15 minutes]."

This RAI applies also to SR 3.7.10.1 in TS 3.7.10, and SR 3.7.12.3 in TS 3.7.12.

16-61

Revise TS 3.6.8 and related information in the TS Bases 3.6.8 to add a surveillance requirement (SR) to test a sample of trisodium phosphate (TSP) to ensure the solubility and buffering ability of TSP after exposure to the containment environment.

16-62

Provide additional information to justify the tolerance of 3% for the setpoint setting of MSSVs in SR 3.7.1.1.

ASME Code, Section III, NC 7000 (Subsection NC 7512) is listed as Reference 2 in the TS bases B 3.7.1. ASME Code Subsection NC 7512 states, in part, "the set pressure tolerance plus or minus shall not exceed the following: 2 psi (15 kPa) for pressures up to and including 70 psi (500 kPa), 3% for pressures over 70 psi (500 kPa) up to and including 300 psi (2000 kPa), 10 psi (70 kPa) for pressures over 300 psi (2000 kPa) up to and including 1000 psi (7000 kPa), and 1% for pressures over 1000 psi (7000 kPa). The set pressure tolerance shall apply unless a greater tolerance is established as permissible in the Overpressure Protection Report (NC-7200)."

16-63

Revise TS 3.7.10 to correctly incorporate the changes as approved under TSTF-448, Revision 3.

The approved changes under TSTF-448 to the descriptions of Conditions A, B and E should be incorporated verbatim to reflect the intended purpose and to be consistent with conforming changes made in the TS bases B 3.7.10.

16-64

TS Bases B 3.4.6, RCS Loops-MODE 4.

Revise the description for Actions A.1 and A.2 in the TS Bases B 3.4.6 to add a discussion for the selected Completion Time of 24 hours for Action A.2.

Justification for the 24-hour CT was not provided in the associated TS bases.

This is needed to ensure completeness of supporting information in the TS bases.

16-65

Provide justification for not providing TS requirements for Decay Time prior to fuel handling. Revise TS 3.9 and related information in the bases, as appropriate.

In EPR FSAR Subsection 15.0.3.10, Fuel Handling Accident, a minimum Decay Time of 34 hours is assumed as an initial condition in the accident analysis. Also,

10CFR50.36(c)(2)(ii) requires a limiting condition for operation (LCO) to be established for "a process variable, design feature, or operating restriction that is an initial condition of a design basis accident or transient analysis."

16-66

TS Bases B 3.4.1, RCS Pressure, Temperature, and Flow Departure from Nucleate Boiling (DNB) Limits.

Provide further explanation for measurement error in the second paragraph of the LCO 3.4.1 Bases discussion of LCO.

The Bases state "RCS total flow contains a measurement error based on performing a precision heat balance and using the result to calibrate the RCS flow rate indicators." The explanation should explicitly identify and describe the source of the measurement error. For example, the STS Bases provide a discussion of this measurement error due to fouling of the feedwater venturi used in the operating plants. A comparable discussion was not provided in the EPR TS Bases.
This information will be used to ensure the completeness of information provided in the TS Bases.

16-67

TS Bases B 3.4.10, Pressurizer Safety Valves.

Clarify the statement "the overpressure protection analysis (Ref. 3) is also based on operation of three PSRVs" in the discussion of Applicable Safety Analyses in the TS Bases B 3.4.10.

ASME OM Code, Code for Operation and Maintenance of Nuclear Power Plants, 2004 is listed as Reference 3 in the EPR TS bases. A Westinghouse topical report (WCAP-7769) on overpressure protection is also listed as Reference 3 in the STS Bases 3.4.10.

This information will be used to ensure consistency between the EPR TS and the referenced source document.

16-68

TS Bases B 3.4.11, Low Temperature Overpressure Protection (LTOP) System.

Justify that LCO 3.4.11, items a, b, c, and d, ensures LTOP is Operable and assure that it was developed from FSAR 5.2.2.2.2. Several of the mass and heat input transients were identified as being covered by other analyses without further discussion. Revise TS Bases B 3.4.11 to provide proper references or include any additional information needed to justify that LCO 3.4.11, items a, b, c, and d, ensures LTOP is Operable.

This additional information will be used to ensure that the LCO statement is accurate and complete, and adequately justified.

16-69

TS 3.4.11, Low Temperature Overpressure Protection (LTOP) System.

Provide the consequences if LCO 3.4.11 Condition A cannot be met. There appears to be no specific condition that would require entry into the related LCO under the circumstances given.

This additional information will be used to ensure that the LCO statement is adequately justified or needed.

16-70

TS Bases B 3.4.11, Low Temperature Overpressure Protection (LTOP) System.

Provide a description of the most probable vent flowpath that will be opened to achieve the related requirement associated with LCO 3.4.11. Include this information in the Bases to LCO 3.4.11.

This additional information will be used to ensure that the LCO statement is complete and adequately justified.

16-71

TS Bases B 3.4.12, RCS Pressure Isolation Valve (PIV) Leakage.

Provide the necessary changes to make SR 3.4.13.1 and the Bases consistent. SR 3.4.13.1, Frequency, currently states "in accordance with the Inservice Testing Program" and the Bases discussion for SR 3.4.13.1 identifies a frequency of 24 months. Although they are the similar in value, the requirements of the more restrictive frequency should be used; therefore, the TS and Bases should be expressed in identical units, as applicable.

This requested change in information will be used to ensure consistent use information and terminology for clarity purposes.

16-72

TS 3.4.14, RCS Leakage Detection Instrumentation

Provide a technical justification for the absence of CHANNEL (DIVISION) OPERATIONAL TEST, performed on the containment atmosphere radioactivity monitor at a frequency of every 92 days.

This additional information will be used to ensure that surveillance requirements are complete.

16-73

EDITORIAL

1. In the Bases References, there is a document that is only identified as "Chapter 5 or 15". Provide a more specific title and specific "15.x.x.x" subsection identity. This occurs in LCOs 3.4.1, 3.4.2, 3.4.4, 3.4.5, 3.4.9, through 3.4.14.

2. In LCO 3.4.2, Tavg (subcript) is used. In Condition A and SR 3.4.2.1, Tavg is used rather than Tavg (subcript). Make these terms consistent.

3. In Bases of LCO 3.4.3, correct the spelling of BACKGROUND in the left hand margin header title. The two letters, "K" and "C", are transposed for "BAKCGROUND".

4. In the Bases B 3.4.5, define "CRDM" in Applicable Safety Analyses, the last sentence of the first paragraph to read, "Such a transient" mechanical failure of a Control Rod Drive Mechanism (CRDM).

5. In the Bases discussion of Applicable Safety Analyses for LCO 3.4.5, replace the word "irregardless" with the word "regardless", in the third sentence of the first paragraph. The word "irregardless" is an informal non-standard word.

6. In LCO 3.4.6, correct the format error for the placement of the Note to Required Action A.2. It should be indented and written directly in-line after "A.2".

7. In the Applicable Safety Analyses Bases for LCO 3.4.9, the second paragraph needs to identify from what reference (FSAR?) Chapter 15.x.x.x is quoted.

8. In the Bases Background second paragraph, recommend to add "(2788 psig)" after "2803 psia" for ease of use by operators who used to reading pressure in gage value from plant instruments.

9. In the Bases Background for LCO 3.4.10, change the system name to Reactor Protection System (RPS) in the first sentence to read, "The Pressurizer Safety Relief Valves (PSRVs), in conjunction with the Reactor Protection System (RPS)." Contrary to this entry, LCO and Bases consistently refer to the system as Protection System (PS).

10. In the LCO 3.4.10, Applicability Bases discussion, 2nd paragraph, 1st sentence, there is a misplaced period at the end of PTLR that must be removed for clarity.

11. In the Bases for Action A.1 in LCO 3.4.10, add the word "relief" to the third sentence to read "An inoperable safety relief valve". Contrary to this entry, LCO and Bases consistently refer to the component as "safety relief valve".

12. In the Bases for Applicable Safety Analyses in LCO 3.4.12, punctuate the first sentence correctly by adding a closing parenthesis.

13. In LCO 3.4.13, properly align (indent) the logical connector "OR" between the Required Actions A.2.1 and A2.2.

14. In the LCO 3.4.15, Bases for Actions B.1, last sentence of second paragraph: The hyphen should be removed between "transient" and "specific" and the comma needs to be removed between "to" and "power".

15. In LCO 3.4.16, underline the logical connector AND between Required Action B.1 and Required Action B.2.

16. In the Bases for SR 3.4.16.1, the first sentence in the last paragraph refers to the Frequency as being in SR 3.4.17.1 when the reference should be SR 3.4.16.1.

16-74

TS 3.4.17, RCS Loops - Test Exceptions.

Provide a technical justification as to why there are no provisions for the use of a redundant interlock during applicable Special Test Exception to prevent THERMAL POWER from exceeding the limit. Confirm that the EPR design has a Low Power Reactor Trip permissive that enables an additional degree of core protection during this test. If so, provide additional justification for not testing this function to ensure the Operability of this protective function prior to entering this LCO.

This additional information will be used to ensure that operation limits, surveillance requirements, and restrictions are adequate and complete for the proposed LCO.

16-75

TS 3.4.6, RCS Loops - MODE 4.

Provide further clarification for Required Action B.2 that states "initiate action to restore one loop to OPERABLE status and operation". Revise TS 3.4.6 and the asociated Bases, as appropriate.

LCO 3.4.6 specifies two distict plant equipment configuration: either (1) Two RCS loops shall be OPERABLE and one RCS loop shall be in operation, or (2) Three RHR loops shall be OPERABLE and two RHR loops shall be in operation. Condition B describes two scenarios: either (1) Two or more required loops inoperable, or (2) Required loop(s) not in operation. In order to meet the LCO requirements imposed on the RHR configuration, the Required Action B.2 should restore the two required RHR loops (not just one loop) to OPERABLE status and operation.

This information is needed to ensure adequacy of the proposed Required Action to resolve the identified Condition.

16-76

TS 3.4.6, RCS Loops - MODE 4.

Provide the methodology for determining the SG secondary side water level "20%" limit that is required in SR 3.4.6.3 and verify the location of this limit in the FSAR.

The information will be used to ensure that all TS specific operating parameters are verified as correct based upon values stated in the FSAR.

This RAI applies also to TS 3.4.7.

16-77

TS 3.4.6, RCS Loops - MODE 4.

Justify the exclusion of restricting a reactor coolant pump startup with any RCS cold leg temperature less than the Low Temperature Overpressure Protection (LTOP) arming temperature. Also justify the exclusion of the secondary temperature differential restrictions when RCPs and LHSI pumps are removed from operation for a limited duration in LCO 3.4.6 .

The information will be used to ensure that all operating requirements and restrictions are adequately defined in the proposed LCOs.

16-78

TS 3.4.7, RCS Loops - MODE 5, Loops Filled.

Provide a clarification and revisions, as necessary for consistency, as to the proper designation is for the "LHSI/RHR" pump and related components in the RHR loop will be for LCOs 3.4.6, 3.4.7 and 3.4.8 in this GTS. In the "Note" for LCO 3.4.6, there is a reference to an LHSI pump and in the Bases for SR 3.4.6.3, there is a reference to an "LHSI/RHR" pump, which is correct. In the "Note" for LCO 3.4.7 and in SR 3.4.7.3, there is a reference to an LHSI pump. The 1st and 2nd paragraphs of the Bases, Background section, identifies a "RHR pump, heat exchanger, etc." as does the Bases for SR 3.4.7.3. The same inconsistency exists in SR 3.4.8.2 and the supporting Bases, Background and LCO sections.

This additional information will be used to ensure no ambiguity is created by inconsistent in terminology.

16-79

TS Bases B 3.4.9, Pressurizer.

Provide a clarification for the arrangement of the four heater groups and the half-capacity groups as presented in the Bases, LCO discussion. It is not clear that the half capacity heater groups provide the required capacity is met by the half capacity groups.

Discussion: If there are 12 heaters divided into four groups, then there are three heaters in each group. If each heater is rated at 24 kW, then each group is rated at 72 kW. The LCO states each group has a capacity of >144kW. Therefore, each "half-group" must be equal to a "full group" to be equivalent to 144kW (72 + 72). If it takes two groups to maintain the RCS at normal operating pressure, then the LCO requirement of 3 heater

groups Operable to maintain the RCS Operable represents only a verified 50% capacity over the minimum required capacity.
Justify not requiring the four heater groups being Operable. In the Bases, furnish the design value number for pressurizer heaters currently designated Q kW and the half-value currently designated Q/2 kW in LCO, the second paragraph. It appears the pressurizer heater design value is currently designated with a place holder. Provide the location in the FSAR for the above discussion. Also, identify the location in the FSAR for the statement that the pressurizer water volume of 1240 cubic feet is equivalent to a 75% water level.

The Staff will use this change to ensure that the LCO statement is adequately justified in the supporting Bases and then verified as correct per the FSAR.

16-80

TS Bases B 3.4.6, RCS Loops - MODE 4.

Provide a discussion for Required Action A.2 and its associated Completion Time in the TS Bases.

The proposed Required Actions and the selected Completion Times for an identified TS Condition should be supported by a discussion in the TS Bases, using information from the FSAR. The STS bases can be used as an example to determine the right level of content and detail that needs to be included in the bases.

This is needed to ensure complete supporting information is provided in the TS Bases.

16-81

TS 3.4.15, RCS Specific Activity.

Justify EPR GTS, Section 3.4.15, not fully reflecting the implementation of TSTF-490, Revision 1; or revise EPR GTS Section 3.4.15 to fully reflect proper implementation of TSTF -490, if determined to be applicable.

The bases indicate that TSTF-490 is incorproted into EPR GTS, but it does not seem to be fully implemented.

This additional information will be used to ensure that the applicable LCO correctly considered TSTF -490, as appropriate.

16-82

TS 3.4.5, RCS Loops - MODE 3.

Provide a the technical justification for the less restrictive change to the Completion Time from one to two hours for Required Action C.1 with regards to the capabilities of the

Control Rod Drive Control System (CRDCS). Typically, a one hour response time is considered appropriate when the plant is placed in an unanalyzed condition.

This justification is being requested to ensure the accurracy and completeness of the LCO

16-83

TS Bases B 3.9.3, Containment Penetrations.

Provide the design details of the hatch bolts capable of supporting the hatch dead weight and its associated loads, together with a sketch of the hatch showing bolts' locations and specifications.

EPR TS bases 3.9.3's BACKGROUND states, in part, "The containment equipment hatches, part of the containment pressure boundary, provide access for moving large equipment into and out of the containment. During movement of recently irradiated fuel assemblies within containment, the equipment hatch must be closed and held in place by at least four bolts. Good engineering practice dictates that the bolts required by this LCO be approximately equally spaced." Details of the bolt design are needed to support LCO 3.9.3.a requirements regarding the number of hatch bolts required to ensure the installed configuration meets the intended safety function. STS has bracketed the four-bolt configuration as preliminary information requiring further details on the hatch weight, bolt material and size to be provided by an applicant who wants to adopt this option. These brackets were removed in the EPR TS.

16-84

TS Bases B 3.5.1, Accumulators.

Provide a technical justification or revision to ensure that this LCO is consistent with the information in the applicable bases.

The Bases, Applicability section, last portion of 3rd paragraph, defines the role for accumulator trains #3 & #4 where these subsystems need to be Operable during RCS cool down operations. Therefore, determine if this LCO needs to be revised or a second LCO needs to be added to ensure Operability for two required accumulators. In addition, provide a discussion or an appropriate revision that will explain the affect of maintaining these systems Operable on the "Note" applicable to SR 3.5.1.5.

The information is required to ensure the completeness and accuracy of this LCO and SR.

16-85

TS Bases B 3.5.2, ECCS - Operating.

Provide additional information and justification for the following statement in the Bases, Applicability section, second paragraph, second sentence, that states "below 356oF, the

Protection System signal setpoint is manually bypassed by operator, and system functional requirements are relaxed as described in LCO 3.5.3, "ECCS-Shutdown." Revise the Bases accordingly to reflect this additional information.

The information is required to ensure the completeness and accuracy of this LCO.

16-86

TS 3.7.1, Main Steam Safety Valves (MSSVs)

Explain why a Required Action similar to Required Action A.1 is not necessary for Condition B.

Required Action A.1 states "[v]erify associated Main Steam Relief Train is OPERABLE." The verification is required since MSSVs together with the MSRT are credited in the accident analyses. In the TS Bases B 3.7.1, the discussion for Action B.1 states "with two MSSVs inoperable on the same SG, the resulting relief capacity of the affected SG is 50% (taking into account the MSRT) of the full load steam generation per SG." Since MSRT availability is also needed in this case of Condition B, a similar verification should be performed.

This information is needed to ensure adequacy of all proposed Required Actions.

16-87

TS Bases B 3.7.12, Safeguar Building Controlled Area Ventilation System

Clarify the statement in the TS Bases B 3.7.12 for Safeguard Building Controlled Area Ventilation System (SBVS), "there is a separate LCO with Surveillance Requirements which serves the primary purpose of ensuring OPERABILITY of the SBVS" in the discussion of SRs 3.7.12.6 and 3.7.12.7.

This statement appears to be copied from the content of TS Bases 3.6.6 for the Shield Building. In that case, a separate LCO refers to TS 3.6.7 for the Annulus Ventilation System (AVS). TS 3.7.12 covers both the building boundary and the operation of SBVS safety-related equipment.

16-88

TS Bases B 3.7.7, Component Cooling Water (CCW) System

Provide additional information to resolve an inconsistency in the TS bases B 3.7.7. The Background second paragraph states "each safety related train includes a full capacity pump," while the Applicable Safety Analyses first paragraph states "the design basis of the CCW System is for two CCW trains to remove the post loss of coolant accident (LOCA) heat load from the In-containment Refueling Water Storage Tank (IRWST) by cooling the Low Head Safety Injection System heat exchanger."

This information is required to ensure the information in the bases accurately reflect the system design described in the EPR FSAR.

16-89

TS Bases B 3.7.8, Essential Service Water (ESW) System.

Add FSAR Section 9.2.5 as Reference 5. Also, on Page B 3.7.8-2, in the 4th paragraph, change from "Reference 1" to "Reference 5".
The EPR TS 3.7.8 combines requirements from both WOG STS 3.7.8, Service Water System, and STS 3.7.9, Ultimate Heat Sink. Applicable references used to support the description of the Ultimate Heat Sink need to be included in the EPR TS bases B 3.7.8.

This is needed to ensure information provided in the TS Bases is accurate and complete.

16-90

TS Bases B 3.7.1, Main Steam Safety Valves (MSSVs).

Explain the inconsistency between the TS bases B 3.7.1, FSAR Table 15.2-1 and requirements of ASME Code, Section III, Article NC-7000.

ASME Code, Section III, Article NC-7000, Class 2 Components is listed as Reference 1 regarding lifting setpoints for the MSSVs. Article NC-7512.1, Antichattering and Lift Requirements, states "Safety valves shall be constructed to operate without chattering and to attain rated lift at a pressure which does not exceed the set pressure by more than 3% or 2 psi (15 kPa), whichever is greater." The lifting setpoints for MSSVs in EPR TS are consistent with information provided in FSAR Table 15.2-1, however, FSAR Table 15.2-1 shows each MSSV delivers its rated lift capacity immediately at the onset of the MSSV opening at the setpoint pressure. Justify assuming that the MSSV delivers its rated lift capacity immediately at the onset of the MSSV opening at the setpoint pressure.

This information is required to ensure the accident analysis assumptions reflect the as-procured equipment performance.

16-91

TS Bases B 3.7.1, Main Steam Safety Valves (MSSVs).

Revise the TS bases B 3.7.1 to indicate the location in the body of the Bases of Reference 6, "FSAR Section 15.4". Delete it from the Reference List if not applicable.

16-92

TS Bases B 3.7.3, Main Feedwater Valves (MFVs).

EPR design has 3 Main Feedwater (MFW) valves in-series which can perform the isolation function for each respective full load feedwater flow paths. With 2 valves inoperable in Condition B, single failure criteria cannot be afforded by the remaining valve. With 3 valves inoperable in Condition C, the loss of the isolation function is

eminent. The justifications in the bases for Required Actions A1, B1 and C1 are exactly the same although Condition A is for one valve inoperable, Condition B is for two valve, and Condition C is for three valves inoperable.
Clarify the availability of redundant valves when Condition B or C is entered. Revise the TS bases B 3.7.3 as appropriate.

This is required to ensure the supporting information in TS bases accurately refects requirements specified in the TS.

16-93

TS Base B 3.5.2, ECCS - Operating.

Provide additional discussion and justification regarding the available capacity of ECCS flow when "all 4 ECCS trains are Operable" to when "less than 100% ECCS flow is available." The Bases, Condition B, states that these Conditions match the assumptions in FSAR, Chapter 15 (when an additional ECCS train is out of service). This is not apparent when the ECCS trains are concurrently in Conditions B and C, especially if a single failure were to occur, when this configuration appears to be outside of the analyses. This additional information needs to be added to the Bases to ensure an accurate and clear understanding of the information.

In addition, the Bases, LCO discussion, states that "four 100% capacity independent (cross-connect closed) ECCS trains are required to ensure that sufficient ECCS flow is available." Expand upon this statement at each degraded Condition, for cross-connects open and then closed, so that it can be demonstrated that the remaining Operable ECCS trains can respond successively to the postulated accident in addition to the assumed unavailability of other ECCS trains. The information is required to ensure the completeness and accuracy of the Conditions specified for the proposed LCO statement.

16-94

TS Bases B 3.5.4, In-Containment Refueling Water Storage Tank.

Provide additional information to include the IRWST water temperature operability requirements that the must be met in the Bases discussion for this LCO.

The LCO does require water temperature limits to met for operability in Modes 1, 2, 3, and 4, however, the Bases discussion for this LCO does not include IRWST water temperature as a requirement for Operability. In addition, the Bases for Action A.1 does not include this same IRWST water temperature in the three places required.

The additional information will be used to ensure the Bases are complete and accurate for this LCO.

16-95

TS Bases B 3.5.4, In-Containment Refueling Water Storage Tank.

Provide additional information to clarify or revise the Bases, Applicable Safety Analyses, Actions for B.1, and the Bases, SR 3.5.4.2 to describe the effects of the the IRWST

exceeding a borated water volume of 523,703 gallons. Justify Condition B not explicitly stating that the water volume is not within limits. Confirm that extra IRWST water volume does not inhibit response time and is this only parameter that determines switching to hot leg recirculation following a LOCA.

In addition, provide additional information that explains the methodoology for using the FSAR Table 6.3-4 required design total volume of minimum and maximum water in the IRWST in cubic feet to meet the SR 3.5.4.2 which is expressed in gallons. Identify the installed instrumentation, including its accuracy and MCR display(s) that will be used to ensure this FSAR requirement is met.

This additional information will be used to ensure completeness and accurate of this LCO. It will also ensure that the Conditions specified are consistent with the Actions to restore Operability.

16-96

TS 3.5.5, Extra Boration System (EBS).

Provide an explanation for the exclusion of a SR to verify that the applicable valves automatically reset after the EBS containment isolation valves close, following a containment isolation signal, to permit manual opening in the MCRB.

This additional information will be used to ensure complete and accurate Surveillance Requirements are provided.

16-97

TS 3.5.5, Extra Boration System (EBS).

Provide additional information to justify the parameters for "temperature and volume limits not being within limits" not having an unique Condition that is separate from the EBS pump or MOV valve being inoperable. In addition, discuss the anticipated length of times to restore Operable status for the various problems that may occur within EBS. This discussion should be suitable for inclusion in the Bases for Actions to clearly justify the Completion Time (CT) specified.

This additional information will be used to ensure all of the Conditions specified are consistent with the Actions needed to restore LCO Operability or to exit the proposed LCO Applicability.

16-98

TS 3.5.5, Extra Boration System (EBS).

Provide justification for selecting the 12-hour Completion Time (CT) for Required Action D.1 to place the plant in Mode 3 from a higher Mode 1 or Mode 2. Revise TS 3.5.5 and related infromation in the bases, as appropriate.

The 12-hour CT is not consistent with the historical 6 hours for bringing the plant from Mode 1 to Mode 3 and in other similar situations within the EPR TS, e.g., TS 3.4.4 .

16-99

TS Bases B 3.5.5, Extra Boration System (EBS).

Provide a description of maintaining or changing the temperature of the EBS water if there is no pipe heat tracing and an explanation of influence from the fuel building ventilation system on the EBS water temperature. Confirm that the ventilation system safety-related. Provide the methodology for directly monitoring and verifying the water temperature in SR 3.5.5.1. Revise the TS and bases as appropriate to include this information.

The additional information will be used to ensure that accuracy and completeness of this SR

16-100

TS 3.5, Emergency Core Cooling Systems.

Correct the following editorial errors:

1. Revise LCO 3.5.3, Required Action B.1, to correctly state Mode 5 as "MODE 5".

2. Revise LCO 3.5.5 or FSAR 6.8 to adopt a consistent name for the Extra "Boration" System or the Extra "Borating" System.

16-101

TS 3.5.5, Extra Boration System (EBS).

Provide the additional information to justify the proposed Frequency of a "Staggered Test Basis" in the Bases for SR 3.5.5.7 or provide a different frequency and justification.

Typically, the "Staggered Test Basis" is to allow testing one subsystem, train, or designated components at a time during the interval specified by the Surveillance Frequency when the system has a large number of subsystems or components or if one of the systems need to be kept in service . The Extra Boration System (EBS) in the EPR design is a simple two-train system with only a few components that require manual actuation to perform their design function.

This additional information will be used to ensure complete and accurate Surveillance Requirements are provided.

16-102

TS Bases B 3.5.2, ECCS - Operating.

Provide a technical justification for the proposed 120 day Completion Time (CT) for restoring one MHSI pump to operable status for incorporation into the Bases for Action

A.1. In addition, the Bases for Action B.1 and B.2 does not match the Condition B Actions when a 60 day CT is proposed and a 120 days CT is stated.

There are no industry standards or regulatory guidance that permits safety-related equipment to remain inoperable for this amount of time. Industry guidance for Risk Managed Technical Specifications (RMTS), Initiative 4B, as accepted by the staff in the Safety Evaluation of NEI 06-09, NUCLEAR ENERGY INSTITUTE (NEI) TOPICAL REPORT (TR) NEI 06-09, "RISK-INFORMED TECHNICAL SPECIFICATIONS INITIATIVE 4B, RISK-MANAGED TECHNICAL SPECIFICATIONS (RMTS) GUIDELINES", (ADAMS Accession Number ML071200238) requires a backstop of 30 days for risk based extensions to TS Completion Times.

The information will be used to ensure that all operating requirements and restrictions of the Actions are compatible with Completion Times that do not invalidate assumptions of the analyses in the FSAR.

16-103

TS Bases B 3.9.5, Residual Heat Removal (RHR) Loops - Low Water Level.

Provide additional information to explain a "Note" added to the EPR GTS.
Provide additional information to explain/justify the note added to the GTS Bases SR 3.9.5.2 that states that the SR is "not required to be performed until 24 hours after a required RHR loop is not in operation."

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases.

16-104

TS Bases 3.9.3, Containment Penetrations.

Provide additional information to explain differences between the EPR Bases and the applicable STS Bases regarding TSTF-471, Rev 1.

The EPR Bases, Section B 3.9.3, Applicable Safety Analyses, 4th sentence does not contain consistent wording with the STS, Section B 3.9.3, Applicable Safety Analyses, explaining the changes of TSTF-471, Rev 1. It appears the sentence is intended to read as, "in conjunction with a minimum decay time of 100 hours prior to irradiated fuel movement with containment closure capability or a minimum decay time of [x] days without containment closure capability, ensures that the release." A technical justification for the differences between the EPR GTS and the STS should include a discussion on how the departure from a fraction of 10 CFR 100 limit to the proposed guidance in Regulatory Guide 1.1.83 has been conducted within EPR GTS to ensure consistency. Provide a comparison where the previous requirements have been uniformly replaced by the new requirements. Provide a a technical justification for the intent of the different wording or applicable changes to make the EPR Bases consistent with the STS Bases regarding TSTF-471, Rev 1.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases

16-105

TS Bases 3.9.3, Containment Penetrations.

Provide additional information to explain the differences between the EPR Bases and the applicable STS Bases.

The EPR Bases, SR 3.9.3.2, second paragraph does not contain the text from the Westinghouse STS Bases, SR 3.9.3.2, that describes the justification for selection of the 7 days Frequency. The STS Bases text in question states that "[a] surveillance before the start of refueling operations will provide two or three surveillance verifications during the applicable period for this LCO." In addition, the EPR Bases, SR 3.9.3.2, second paragraph, last sentence is missing the reference used to identify the radioactivity dose limit to the environment at the EAB.

This additional information is needed to ensure the accuracy and completeness of the EPR Bases.

16-106

TS Bases 3.9.3, Containment Penetrations.

Provide additional information to explain differences between the EPR Bases and the applicable STS Bases.
The EPR Bases, Section B 3.9.3, Background Section, 6th & 8th paragraphs refer to the plant specific name of the flow purge system / penetration as "partial" flow herein. The EPR GTS, LCO 3.6.3, refers to the same as "low" flow.
The EPR Bases, Section B 3.9.3, Background Section, the last paragraph states that an equivalent isolation method requires approval but does not identify the approving authority. In addition, according to the Westinghouse STS Bases, it appears that this option has only been approved for GPU Nuclear under SE-0002000-001, Rev. 0, May 20, 1988. Justify omitting or not updating this reference in EPR GTS.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases

16-107

TS Bases 3.9.2, Nuclear Instrumentation.

Provide a technical justification for the exception that is added to the EPR GTS, LCO 3.9.2, Action A.1.

The EPR GTS, LCO 3.9.2, Action A.1 has an exception not included in Westinghouse STS that requires licensees to "suspend positive reactivity additions, except the introduction of coolant into the RCS." Provide a technical justification for this exception

There is no stated operational basis for needing to continue inventory additions when the Bases for Action A.1 clearly state restrictions for RCS inventory additions and avoidance as the preferred Action. With the combined technical justification of Action A.1 & A.2 in this same paragraph, the related EPR Bases are confusing (especially the 4th and 5th sentences), and should be rewritten separately to address each Action appropriately. The EPR Bases description for B.1 and B.2 should be separated, as well.

This additional information is ensure the accuracy, completeness and clarity of the EPR GTS and Bases.

16-108

TS 3.7.2, Main Steam Isolation Valves (MSIVs).

Justify the removal of the TS limiting closure times from SR 3.7.2.3. Confirm that the correct closure time verified is the same as assumed in the FSAR. Also SR 3.7.2.2 and SR 3.7.2.3 have a SR Note with an inadequate justification in the Bases that consists of repeating the same words of the Note. Correct the justification for the SR Note.

This information will be used to complete the review and content of the SR and the associated Bases.

16-109

TS 3.7.15, Spent Fuel Storage Pool Boron Concentration.

Provide a technical explanation for LCO 3.7.15 and justify including "the boron enrichment shall be > or = 37%" as a parameter that must be part of the LCO statement.
FSAR 9.1.2.2.2 lacks sufficient detail as does the supporting Base proposed for this LCO. There is inconsistency in reference to the B10, B-10, or none.

This information will be used to complete the review and content of the LCO.

16-110

TS 3.7.12, Safeguard Building Controlled Area Ventilation System.

Explain the difference in the requirements for the SR 3.7.12.7 test flow rate as < and = 2640 cfm versus the Bases SR discussion as < and = 2400 cfm versus the test range in VFTP of TS Section 5.5.10.

The information will be used to ensure Operability of the required SBVS components.

16-111

TS 3.7.10, Control Room Emergency Filtration (CREF).

Explain the purpose of the Reviewer's Note on the optional adoption of Required Action for Condition D for toxic gases response in TS 3.7.10.

The information will be used to understand operation of the CREF and what must be included in the Bases to support the proposed LCO and Action statements.

16-112

TS 3.6.7, Annulus Ventilation System (AVS).

Provide a new Surveillance Requirement to ensure the normal operation filter train safety-related annulus air inlet and exhaust motor operated isolation dampers are tested to verify Operability. Provide the appropriate Conditions for inoperability and Bases to fully describe the safety feature being tested.

For those components that must continue to function or reposition for accident operation, appropriate TS requirements must be provided.

16-113

TS Bases B 3.6.7, Annulus Ventilation System.

Provide additional explanation of the design and operation of the AVS trains to resolve apparent differences between the LCO, Bases and FSAR for the following items:

Confirm that there is one normal operation filtration train and that one system ensures shield building intergity during normal operations. Confirm that there are no shared components between the normal operation filtration train and the two accident filtration trains. Confirm that the safety-related annulus air inlet and exhaust motor operated isolation dampers of the normal filtration train must function or close to seal the secondary containment boundary and to assure the accident filtration trains can perform their intended function.
When the non-safety related normal operation filtration train is not available or is inoperable, provide the operational effects on the safety-related portions of the AVS and LCO Conditions that would be entered. Confirm that there is a control room manual start for both the normal operation and the accident filtration trains of the AVS. In the Bases Background text for the fifth sentence of the sixth paragraph, compare the main HEPA filter bank to the downstream & upstream filter banks.

The Bases need to be correct, the planned operation of the trains must be stated and in agreement with the LCO requirements.

16-114

TS 3.6.6, Shielding Building.

Provide a justification for the following difference. In SR 3.6.6.4, it is required to verify the negative pressure limit can be maintained at a flow rate of < 1295 cfm. In the Bases for SR 3.6.6.3 and SR 3.6.6.4, the negative pressure limit can be maintained at a flow rate for one AVS train of < 1320 cfm.

Provide a clarification for the basis for the "selection of the annulus pressure" in the second sentence of the paragraph of the Bases for SR 3.6.6.3 and SR 3.6.6.4.

The Bases need to be correct and in agreement with the LCO requirements.

16-115

TS Bases 3.6.5, Containment Air Temperature.

Provide an explanation for inclusion into Bases SR 3.6.5.1 of methodology for developing and calculting "weighted average" and justify its preference over other methods such as arithmetic average of instrument readings.

This information is intended to ensure that the Bases statement has not introduced a difference from the initial starting points for analysis assumptions as presented in the FSAR.

The information will be used to determine whether the initial temperature point assumed in the analysis change is affected by the re-calculated reading or not.

16-116

TS Bases 3.6.3, Containment Isolation Valves.

Revise the Applicable Safety Analyses of the Bases to explain the following: "provisional operational status of the low flow purge valves is achieved and in which subject LCO", as indicated in the last sentence of the fifth paragraph. Furthermore, the sixth paragraph is incomplete as "10 CFR 50.36(c)(2)(ii)" is missing.

Confirm that the Low Flow and Full Flow purge valves have resilient seals. Identify the Condition entered when a low flow purge valve is not within its leakage limit.

Revise the LCO discussion in the second sentence of the second paragraph to clarify the status of the Full Flow Purge valves as sealed closed. Revise Bases Action discussion to remove opening allowance stated in SR 3.6.3.1 which does not exist. Also, remove Reference #5 which is no longer applicable.

16-117

TS Bases 3.6.1, Containment.

Clarify, expand, and reconcile the containment leakage limits stated in the Applicable Safety Analyses Bases 3.6.1 with the FSAR 6.2.6.1 requirements.

For the Type A test, clarify that the allowable leakage rate of 0.25% is an administrative leakage rate, or is it the allowable leakage rate versus an apparent in-service design leakage rate of 0.75 La at peak pressure. Furthermore, clarify if the stated units of "(percentage) containment air weight day" or "(percentage) containment mass per day" introduces any differences here or need for conversion factors. Explain the interpretation of the rest of the LCO paragraph using the explanation provide above for which leakage limits apply at first start-up.

The testing criteria assumed in the analyses must be consistent with the in-service permissible limits verified of the containment boundary under TS 5.5.15.

16-118

TS Bases 3.7.2, Main Steam Isolation Valves (MSIVs).

Provide additional information to explain the new staggered SR frequency for the EPR GTS, Plant Systems.

The EPR GTS, SR 3.7.2.4 Frequency is 24 months on a "STAGGERED TEST BASIS for each MSIV pilot valve." The EPR Bases should provide a more detailed description of this new staggered frequency to include a more precise testing method and representative schedule required for the proposed SR. Clarify the expected testing performed for each pilot valve in each control line at each interval. Confirm that this test inclusively initiates a full cycle of each MSIV.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases.

16-119

TS 3.7.3, Main Feedwater Valves (MFVs).

Provide a technical justification for excluding the limiting closure time for SR 3.7.3.1 or revise the SR to include closure times that are consistent with the FSAR.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases.

16-120

TS Bases 3.7.8, Essential Service Water System (ESWS).

Provide additional information needed to explain the two "Notes" in the EPR GTS, LCO 3.7.8, Action Section.

The EPR Bases, Section b 3.7.8, Action Section, with regards to the two "Notes" in the EPR GTS, LCO 3.7.8, Action Section, requires additional information to adequately provide the bases/reasons for the notes because it currently just repeats the contents of the Notes ; rather than a justification for the affect of the entry into the Action for the EPR ESW System design. Also, explain design differences and locating the Notes here; rather than previously, when located as notes only Applicable to a Required Action A.1.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases.

16-121

TS Bases B 3.7.9, Safety Chilled Water (SCW) System.

Provide additional information needed to explain and justify the Action "Note" added to LCO 3.7.9.

The EPR GTS, LCO 3.7.9, has a new "Note" that states "enter applicable Conditions and Required Actions of LCO 3.4.6, "RCS Loops - MODE 4," for residual heat removal loops made inoperable by SCW System." Provide an explanation / technical justification for this additional guidance in the EPR Bases, Section B 3.7.9.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases.

16-122

TS 3.6.6, Shield Building.

Revise SR 3.6.6.1, SR 3.6.6.3 and SR 3.6.6.4 to spell out "wg" as "water gauge", and to state that pressure is "equal to or more negative than" the limit; rather than ">" the limit. (Note that Bases use the phrase "negative pressure >" the limit.)

These changes will make TS 3.6.6 text consistent with the text content already established in the Bases B 3.6.6 and also in TS 3.7.12.

16-123

TS 3.6.6, Shield Building.

Provide clarification for the difference in limit units used between the TS and the FSAR.

TS 3.6.6 specifies a value of "0.25 inches water gauge". EPR FSAR section 6.2.3.2.2.2 states the pressure to be maintained is less than or equal to "-0.09 psig." Identify the units will the installed instrumentation will measure. There should be consistency between the SR and FSAR measuring parameters so conversion factors do not introduce calculation errors.

This information will be used to verify adequacy and completeness of TS 3.6.6 surveillance requirements.

16-124

TS 3.6.6, Shield Building.

Provide justification for not including a Surveillance Requirement to verify the structural integrity of the shield building. Revise TS 3.6.6 and the associated bases, as appropriate.

EPR GTS 3.6.6 does not have an equivalent to SR 3.6.8.3 in the Westinghouse STS for verification of the shield building structural integrity.

The information will be used to ensure all surveillance requirements are complete for EPR TS 3.6.6.