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QUESTIONS for Technical Specification Branch (CTSB)

16-128

LCO 3.3.1, Protection System

Provide additional information and any necessary changes needed to identify and include the Acquisition and Processing Unit (APU) functional assignments in the EPR Generic Technical Specification (GTS).

The EPR Protection System (PS) uses 20 APUs (5 per division) that support all Reactor Trip functions, ESFAS functions and permissives. An inoperable APU affects multiple safety functions simultaneously. APU guidance in the Table 3.3.1-1 (C.2) states "refer to Table 3.3.1-2" for each of the following columns:

- "Applicable Modes or Specified Conditions"
- "Minimum Required for Functional Capability"
- "Condition"

APU "functional assignments" need to be identified to determine which safety functions and permissives are affected when individuals APUs are declared inoperable.

This additional information is needed to ensure that the APU information is complete and accurate, so that the TS can be properly implemented.

16-129

LCO 3.3.1, Protection System

Provide the additional information needed to explain the "Lockout" function with respect to inoperable APUs, Actuation Logic Units (ALUs), and Remote Acquisition Units (RAUs) in the EPR Bases, B 3.3.1.

A bad or invalid signal processor sensor input will automatically change the redundant voting logic from a "2 of 4" to a "2 of 3" logic. However, LCO 3.3.1, Required Action D.2, requires an inoperable signal processor to be placed in "Lockout" position. The "Lockout" position is more significant in that it affects multiple safety functions (Reactor Trip/ESFAS) as well as any related permissives.

The impact to safety functions and permissives resulting from placing each type of signal processing component (APUs, ALUs, and RAUs) in “Lockout” needs to be described in the Bases.

This additional information is needed to understand the effects of placing different signal processors in the “Lockout” position.

16-130

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to explain the impact on the Protection System Trip/Actuation functions when APUs are declared inoperable under Condition D of the EPR GTS, LCO 3.3.1, Protection System. Provide a similar but separate discussion for Condition F of LCO 3.3.1.

The Protection System (PS) is an integrated digital Reactor Protection System and ESF Actuation System that detects the onset of Anticipated Operational Occurrences (AOOs) and postulated accidents, and actuates safety-related process systems required to mitigate the event. APUs in each division acquire sensor measurements, perform processing or calculations using these sensor measurements, and compare the results to relevant setpoints. If a setpoint is breached, a trigger is generated that can potentially affect multiple safety functions simultaneously. The impact to safety functions and permissives resulting from inoperable APUs needs to be described in the Bases.

This additional information is needed to understand the aggregate impact to plant safety resulting from multiple inoperable Reactor Trip and ESF Actuation System functions.

16-131

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to explain the impact on the Protection System Trip/Actuation Functions when ALUs are declared inoperable under Condition D of the EPR GTS, LCO 3.3.1, Protection System. Provide a similar but separate discussion for Condition F of LCO 3.3.1.

The Protection System (PS) is an integrated digital Reactor Protection System and ESF Actuation System that detects the onset of AOOs and postulated accidents, and actuates safety-related process systems required to mitigate the event. ALUs in each division acquire partial trigger signals from APUs in all four PS divisions. When partial triggers are provided from two or more divisions, the ALUs in all four divisions generate trip/actuation signals potentially affecting multiple safety functions simultaneously. The impact to safety functions and permissives resulting from inoperable ALUs needs to be described in the Bases.

This additional information is needed to understand the aggregate impact to plant safety resulting from multiple inoperable Reactor Trip and ESF Actuation System functions.

16-132

LCO 3.3.1, Protection System

Provide the additional information needed to explain the impact of not “Locking Out” the inoperable signal processor associated with the EPR GTS, Table 3.3.1-2, Trip/Actuation Functions B.10.a and B.10.b, with respect to the remaining functions supported by that signal processor.

The EPR GTS, LCO 3.3.1, Required Action D.2, requires placing the inoperable signal processor in “Lockout” for all functions not associated with Table 3.3.1-2, Trip/Actuation Functions B.10.a and B.10.b. If the inoperable signal processor associated with Functions B.10.a and B.10.b is not placed in the “Lockout” position in accordance with Note D.2, then the remaining functions supported by that signal processor will not be subject to a “Lockout” condition. The aggregate impact of not placing the inoperable signal processor in “Lockout” needs to be described in the Bases.

This additional information is needed to understand the effects of not placing the inoperable signal processing component associated with Functions B.10.a and B.10.b in the “Lockout” position.

16-133

LCO 3.3.1, Protection System

Provide the additional information needed to describe the impact of EPR GTS, LCO 3.3.1, Required Action F.1, with respect to inoperable APUs and ALUs.

Required Action F.1, directs entry into the Conditions specified in Table 3.3.1-1. For inoperable APUs, this may require entering multiple LCOs as listed in Table 3.3.1-2. Depending upon which Trip/Actuation functions are affected based on APU functional assignments, the potential exists for implementation of Required Actions whose requirements are different and may conflict.

For inoperable ALUs, LCO 3.3.1, Required Action F.1, requires entry into Condition N. Condition N requires entry into Mode 3 within 6 hours and Mode 5 within 36 hours. Considering the fact that APUs and ALUs are both similar in that they support Reactor Trip functions, ESFAS functions, and Permissives, it is unclear as to why ALUs are not required to enter the same Condition(s). ALUs affect multiple safety functions just like the APUs. Upon loss of an ALU, entering Condition N alone does not appear to consider the potential affects on multiple safety functions.

This additional information is needed to address the potential for conflicting Required Actions associated with the implementation of Conditions specified in Table 3.3.1-1, and to ensure the accuracy and completeness of Required Actions relating to the failure of ALUs.

16-134

LCO 3.3.1, Protection System

Provide a technical justification for not referencing ALUs and RAUs as signal processing components in Condition D of the EPR GTS, LCO 3.3.1.

LCO 3.3.1, Condition D states that “one or more signal processors inoperable for reasons other than Condition C.” Required Action D.1 only references APUs. Provide a technical justification for not referencing other signal processing components such as ALUs. Required Action D.2 only references APUs. Provide a technical justification for not referencing other signal processing components such as ALUs and RAUs.

This technical justification is needed to ensure the accuracy and completeness of the EPR GTS, LCO 3.3.1, Condition D, Required Actions D.1 and D.2.

16-135

LCO 3.3.1, Protection System

Provide a technical justification for specifying “N/A” in the EPR GTS, Table 3.3.1-2, “Condition” column for functions B.10.a and B.10.b.

The EPR GTS, Table 3.3.1-2, Condition column specifies “N/A” for ESFAS functions B.10.a (Emergency Diesel Generator Start on Degraded Grid Voltage) and B.10.b (EDG Start on LOOP). It appears that Condition O, “Declare associated EDG inoperable,” at a minimum, should apply to both of these functions. Condition O is referenced in Table 3.3.1-1 (A.1) for the 6.9 Kv Bus Undervoltage Sensors which provide the associated input signals.

This technical justification is needed to ensure the accuracy and completeness of the EPR GTS, Table 3.3.1-2, Conditions B.10.a and B.10.b.

16-136

LCO 3.3.1, Protection System

Provide the additional information or necessary changes to clarify the intent of EPR Bases, B 3.3.1-17 with respect to the High Core Power Level Reactor Trip Function.

The EPR GTS, Bases, B 3.3.1, Applicable Safety Analyses, LCO and Applicability, Section A.4 (High Core Power Level), states that “the LTSP is low enough for the system to maintain a margin to unacceptable fuel cladding damage due to an excessive reactivity increase from an intermediate high power level including nominal power.”

The wording, “from an intermediate high power level including nominal power” is not clear. Confirm that this statement is intended to include intermediate power levels and above, up to and including 100 percent power operation. If so, then revise the statement to more clearly explain this intent. If not, then an explanation of the actual intent and a revision of the Bases statement to more clearly reflect this intent is required.

This additional information is required to ensure the accuracy, completeness and clear presentation of the applicable Bases information.

16-137

LCO 3.3.1, Protection System

Provide a technical justification for the omission of safety-related Reactor Trip initiation signals in Table 3.3.1-2, Section A (Reactor Trip).

Table 3.3.1-2, Section A, does not identify the following safety-related Reactor Trip initiation signals:

"Safety Injection System (SIS) Actuation"
"Emergency Feedwater System (EFWS) Actuation"
"Manual RT signals from SICS"

Each of these actuation signals are indentified in the FSAR, Section 7.2.1.2 (Pg 7.2-3) as safety-related Reactor Trip Initiation Signals. Provide a technical justification for not including these signals in Table 3.3.1-2, or revise Table 3.3.1-2, accordingly.

This technical justification is needed to ensure the accuracy and completeness of the Reactor Trip Initiation Signals referenced in the EPR GTS, Table 3.3.1-2.

16-138

LCO 3.3.1, Protection System

Provide a technical justification for the omission of Permissive Signals from LCO 3.3.1 "Protection System."

NUREG-1431, "Standard Technical Specifications Westinghouse Plants," includes "Permissives" and "Interlocks" in the STS, Section 3.3.1, "Reactor Trip System (RTS) Instrumentation," and Section 3.3.2, "Engineered Safety Features Actuation System (ESFAS) Instrumentation." The EPR Bases, B 3.3.1, Applicable Safety Analyses, LCO, and Applicability, Section C, "Protection System Permissives," page B 3.3.1-48, implies that the permissive functions are required to be operable in the same modes that associated Reactor Trip and ESFAS function operability is required on the basis of the statement "the permissive Functions do not need to be OPERABLE when the associated reactor trip or ESF functions are outside the applicable MODES." In addition, Permissive signals are used to enable, disable, or modify the operation of Reactor Trip and Engineered Safety Features Actuation functions based on plant conditions, which is relative to the information required to be included in TS.

The staff recognizes that the EPR Bases, B 3.3.1, Background Section, Sensors, last paragraph, states that permissive setpoints "are generally considered as nominal values without regard to measurement accuracy and are therefore not considered to be SL-LSSS" (setpoints that directly protect against violating reactor core or RCS pressure boundary safety limits). Although the staff does not want to debate the "degree of directness" to which Permissives affect the reactor core or RCS pressure boundary, we still believe this information is relative and necessary.

On the bases of this information, provide additional technical justification for omitting "Permissive" signals associated with specific Reactor Trip and ESFAS functions or revise Table 3.3.1-1 and Table 3.3.1-2, accordingly.

This technical justification is needed to determine whether or not Permissive signals should be included in the EPR GTS, Section 3.3.1, "Protection System."

16-139

LCO 3.3.1, Protection System

Provide the additional information needed to clarify the potential inconsistency in the EPR Bases, B 3.3.1, regarding the reactor trip contactors divisional references.

The EPR GTS, Bases, B 3.3.1, Background Section, page B 3.3.1-10, second bullet, states that "Division 1, 2, and 3 contains eleven groups of CRDMs." The references to Divisions 2 and 3 appear to be inconsistent with the EPR FSAR, Section 7.2.1.1 (pg 7.2-2, second bullet) and Figure 7.2-4.

This additional information is required to ensure the accuracy, completeness and clear presentation of the applicable Bases information.

16-140

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to verify the EPR Bases, B 3.3.1 statement regarding the functions supported by the PS sensors, manual actuation switches, signal processors, and specified actuation devices.

The EPR GTS, Bases, B 3.3.1, Applicable Safety Analyses, LCO, and Applicability Section, page B 3.3.1-12, last paragraph, states that the "PS sensors, manual actuation switches, signal processors, and specified actuation devices that support reactor trips. . . ." The first sentence in the preceeding paragraph already states "the PS sensors, manual actuation switches, signal processors and specified actuation devices that support reactor trips. . ." Confirm the accuracy of this statement. Identify the correct functional reference and provide the reasoning behind this conclusion. Incorporate any additional information or changes to the Bases to clearly present this conclusion.

This additional information is required to ensure the accuracy, completeness and clear presentation of the applicable Bases information.

16-141

LCO 3.3.1, Protection System

Provide the additional information regarding the LTSP values associated with the SG Pressure Drop function (A.14) in the EPR GTS, Table 3.3.1-2. Incorporate additional

information in the EPR Bases document to better describe the variable low setpoint that decreases in a rate-limited manner.

In the EPR GTS, Table 3.3.1-2, the LTSP values associated with SG Pressure Drop Function (A.14), are 29 psi/min, 102 psi < SS, Max 1088 psia. The basis for the LTSP values of 102 psi < SS and Max 1088 psia and their relation to the SG Pressure Drop function are not described in the GTS Bases. In addition, the bases for the rate-limited variable low setpoint needs to be added to the GTS Bases as well.

This additional information is required to ensure the accuracy, completeness and clear presentation of the applicable Bases information.

16-142

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes needed to verify and correct the potential discrepancies associated with the setpoint value for permissive P13, Hot Leg Temperature, in the EPR Bases.

The EPR GTS Bases, Applicable Safety Analyses, LCO, and Applicability Section (A.17), page B 3.3.1-26, last sentence regarding Low SG Level, specifies a permissive Hot Leg Temperature (P13) of 200º F. The EPR FSAR, Section 7.2.1.3.8, specifies a P13 permissive setpoint of 203º F. Identify the correct setpoint and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the setpoint.

This additional information is required to verify and correct potential discrepancies between the EPR FSAR and Bases document.

16-143

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to verify and correct the potential discrepancies associated with the setpoint value for permissive P13, Hot Leg Temperature, in the EPR Bases.

The EPR GTS Bases, Applicable Safety Analyses, LCO, and Applicability Section (A.18), page B 3.3.1-27, fourth paragraph regarding High SG Level, specifies a permissive Hot Leg Temperature (P13) of 200º F. The EPR FSAR, Section 7.2.1.3.8, specifies a P13 permissive setpoint of 203º F. Identify the correct setpoint and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the setpoint.

This additional information is required to verify and correct potential discrepancies between the EPR FSAR and Bases document.

16-144

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, (A.10) mode applicability for Hot Leg Temperature Wide Range (WR) with respect to Reactor Trip functions A.17 (Low SG Level) and A.18 (High SG Level).

The EPR GTS, Table 3.3.1-1, specifies Mode 3(e) for Hot Leg Temperature WR. Hot Leg Temperature WR is used in Permissive P13. The P13 permissive signal (Figure 7.2-32) enables/disables Reactor Trip Functions A.17 (Figure 7.2-21) and A.18 (Figure 7.2-22) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1 and 2 for Reactor Trip Functions A.17 and A.18. Determine Hot Leg Temperature WR mode applicability required to support Reactor Trip Functions A.17 and A.18. Identify and correct any potential discrepancies that may exist.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support Reactor Trip functions in the applicable modes.

16-145

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, Mode applicability for P6 permissive instrumentation, with respect to Reactor Trip Function A.8 (High Neutron Flux - Intermediate Range) and validate the LTSP value.

P6 permissive instrumentation and applicable modes specified in the EPR GTS, Table 3.3.1-1, consist of the following:

Cold Leg Temperature NR	($\geq$ 10 percent RTP)
Hot Leg Temperature NR	(1, 2(c))
Hot Leg Pressure WR	(1, 2, 3)

P6 permissive (Figure 7.2-28) enables/disables Reactor Trip Function A.8 (Figure 7.2-13) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1(g), 2 and 3(e) for Reactor Trip Function A.8. Determine P6 permissive instrumentation mode applicability required to support Reactor Trip Function A.8 and validate function A.8 LTSP value on the basis of both the aforementioned and following list of inconsistencies:

a. Cold Leg Temperature NR mode applicability is $\geq$ 10 percent RTP in Mode 1. The EPR GTS, Table 3.3.1-2, Reactor Trip Function A.8 mode applicability is $\leq$ 10 percent RTP in Mode 1 (footnote (g), Table 3.3.1-2.)

b. Hot Leg Temperature NR mode applicability is 1, 2(c). The EPR GTS, Table 3.3.1-2, Reactor Trip Function A.8 Mode applicability is 2. Footnote (c) specifies $\geq$ 10 to the minus 5 percent power on Intermediate Range Detectors.

c. Reactor Trip Function A.8 LTSP is $\leq$ 15 percent RTP. The P6 permissive enables Reactor Trip Function A.8 below the low-power setpoint of 10 percent RTP.

d. Reactor Trip Function A.8 LTSP is ≤ 15 percent RTP. The EPR GTS, Table 3.3.1-2, Reactor Trip Function A.8 mode applicability is ≤ 10 percent RTP in Mode 1 (footnote (g) of Table 3.3.1-2.)

This additional information is required to ensure operability of permissive instrumentation necessary to support the associated Reactor Trip Function in the applicable modes and to validate Function A.8 LTSP value.

16-146

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding EPR GTS, Table 3.3.1-1, mode applicability for P6 permissive instrumentation, with respect to Reactor Trip Function A.9 (Low Doubling Time - Intermediate Range (IR).)

P6 permissive instrumentation and applicable Modes specified in the EPR GTS, Table 3.3.1-1, consist of the following:

Cold Leg Temperature NR	(≥ 10 percent RTP)
Hot Leg Temperature NR	(1, 2(c))
Hot Leg Pressure WR	(1, 2, 3)

P6 permissive (Figure 7.2-28) enables/disables Reactor Trip Function A.9 (Figure 7.2-14) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1(g), 2 and 3(e) for Reactor Trip Function A.9. Determine P6 permissive instrumentation mode applicability required to support Reactor Trip Function A.9 on the basis of both the aforementioned and following list of inconsistencies:

Cold Leg Temperature NR mode applicability is ≥ 10 percent RTP in Mode 1. The EPR GTS, Table 3.3.1-2, Reactor Trip Function A.9 mode applicability is ≤ 10 percent RTP in Mode 1 (footnote (g), Table 3.3.1-2.)

Hot Leg Temperature NR mode applicability is 1, 2(c). The EPR GTS, Table 3.3.1-2, Reactor Trip Function A.9 Mode applicability is 2. Footnote (c) specifies ≥ 10 to the minus 5 percent power on Intermediate Range Detectors.

This additional information is required to ensure operability of permissive instrumentation necessary to support the associated Reactor Trip Function in the applicable modes.

16-147

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, mode applicability for A.14 (Pressurizer Pressure Narrow Range (NR)) with respect to Reactor Trip Function A.13 (Low Hot Leg Pressure.)

The EPR GTS, Table 3.3.1-1 specifies Modes 1, 2, and 3(h) for Pressurizer Pressure NR (A.14). Pressurizer Pressure NR is used in Permissive P12. The P12 permissive

signal (Figure 7.2-31) enables/disables Reactor Trip Function A.13 (Figure 7.2-17) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2, 3(e) and 3(h) for Reactor Trip Function A.13. Determine Pressurizer Pressure NR mode applicability required to support Reactor Trip Function A.13. Determination to include an evaluation of mode applicability both above and below 2500 psia in Mode 3. Identify and correct any potential discrepancies that may exist.

This additional information is required to ensure operability of permissive instrumentation necessary to support the associated Reactor Trip Function in the applicable modes.

16-148

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, mode applicability for A.14 (Pressurizer Pressure Narrow Range (NR)) with respect to Reactor Trip Function A.15 (Low SG Pressure.)

The EPR GTS, Table 3.3.1-1 specifies Modes 1, 2, and 3(h) or Pressurizer Pressure NR (A.14). Pressurizer Pressure NR is used in Permissive P12. The P12 permissive signal (Figure 7.2-31) enables/disables Reactor Trip Function A.15 (Figure 7.2-19) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2, 3(e) and 3(h) for Reactor Trip Function A.15. Determine Pressurizer Pressure NR mode applicability required to support Reactor Trip Function A.15. Determination to include an evaluation of mode applicability both above and below 2500 psia in Mode 3. Identify and correct any potential discrepancies that may exist.

This additional information is required to ensure operability of permissive instrumentation necessary to support the associated Reactor Trip Function in the applicable modes.

16-149

LCO 3.3.1, Protection System

Provide a technical justification for not including the Safety Injection Signal (SIS) Actuation Signal on RCS Loop Low Level in the EPR GTS, Table 3.3.1-2 and associated Bases.

The EPR GTS, Section 3.3.1, Table 3.3.1-2 and the EPR Bases, Section B.3.3.1, do not include a SIS Actuation on RCS Loop Low Level. Supporting Hot Leg Loop Level sensors are missing from the EPR GTS, Table 3.3.1-2, and the EPR Bases as well. In accordance with the EPR FSAR, Section 7.2.1.2 (Pg 7.3-2), a SIS actuation is initiated by RCS water level measurements below a fixed setpoint in any two of the four Protection System divisions. Identify and correct any omissions in the EPR GTS and the EPR Bases. Include the necessary discussions to ensure a clear understanding of the bases.

This additional information is needed to ensure the completeness and accuracy of the EPR GTS, Table 3.3.1-2, and associated Bases.

16-150

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to explain and correct inconsistencies associated with Emergency Safety Features Actuation Signal (ESFAS) Function B.3.b (SIS Actuation on Low Delta Psat) mode applicability in the EPR GTS, Table 3.3.1-1, Table 3.3.1-2, and EPR Bases.

The EPR GTS, Table 3.3.1-1, specifies mode applicability for sensors (including P12 and P15 permissive instrumentation) associated with ESFAS Function B.3.b. Corresponding Bases Section B.3.b, does not contain all the information regarding mode applicability for either the sensors or the function.

The EPR Bases, Section B.3.b (pg. B 3.3.1-34), states that these "sensors and processors are required to be OPERABLE in MODE 3 when Trip/Actuation Function B.3.a / SIS Actuation on Low Pressurizer Pressure is disabled." The Bases, Section B.3.b (pgs B 3.3.1-33 & 34), also states that "this function ensures SIS actuation in the Hot and Cold Shutdown conditions with LHSI/RHR in operation and at least one of the RCPs are operating" (Hot and Cold Shutdown conditions are Modes 4 and 5). The EPR GTS, Table 3.3.1-2, does not specify Modes 4 and 5 for function B.3.b, only Mode 3(k). In addition, ESF Function 9.b, Containment Isolation (Stage 1) on SIS Actuation, specifies Modes 1, 2, 3 and 4 which may be an indication that Mode 4 should be included.

In addition, the following potential inconsistencies in mode applicability have been identified in the EPR GTS, Table 3.3.1-1, regarding Delta Psat sensor instrumentation:

i. The EPR GTS, Table 3.3.1-1, Pressurizer Pressure NR (A.14) currently specifies Modes 1, 2 and 3(h). Pressurizer Pressure NR (A.14) would be required in Modes 3, 4 and 5 to support Permissive P12. This would indicate that Pressurizer Pressure NR would need to be operable during Modes 1, 2, 3, 4 and 5 to support ESFAS Functions B.3.a and B.3.b. The Pressurizer Pressure NR instrument range is 1615 – 2515 psia and cannot support both ESFAS Functions. Identify the intended Pressurizer Pressure NR application(s) for Modes 1, 2, 3, 4 and 5 in support of ESFAS Functions B.3.a and B.3.b.

   Determine which application(s) are consistent with Pressurizer Pressure NR capability and which application(s) (if any) are not consistent with its capability. Provide the necessary corrections for those beyond the Pressurizer Pressure NR capability in both the EPR GTS and FSAR. Provide any necessary corrections and sufficient descriptions in the EPR Bases for Pressurizer Pressure NR Mode applicablity in support of ESFAS Functions B.3.a and B.3.b.

ii. The EPR GTS, Table 3.3.1-1, Hot Leg Temperature WR (A.10) currently specifies Mode 3(e). Hot Leg Temperature WR (A.10) would be required in Modes 3(e), 4 and 5 to support the Delta Psat Function and Permissive P15. In addition, this

instrumentation would also be required in Mode 5 to support the P15 Permissive input signal into the SIS Actuation on Low Hot Leg Loop Level Logic. Provide any necessary corrections in the EPR GTS and sufficient descriptions in the EPR Bases for Hot Leg Temperature WR (A.10) mode applicability in support of ESFAS Function B.3.b and Permissive P15.

iii. The EPR GTS, Table 3.3.1-1, Hot Leg Pressure WR (A.8) currently specifies Modes 1, 2, 3 and (d). Hot Leg Pressure WR (A.8) would be required in Modes 3(e), 4 and 5 to support the Delta Psat Function and Permissive P15. In addition, this instrumentation would also be required in Mode 5 to support the P15 Permissive input signal into the SIS Actuation on Low Hot Leg Loop Level Logic. Provide any necessary corrections in the EPR GTS and sufficient descriptions in the EPR Bases for Hot Leg Pressure WR (A.8) mode applicability in support of ESFAS Function B.3.b and Permissive P15.

iv. The EPR GTS, Table 3.3.1-1, RCP Current (A.17) currently specifies Modes 1, 2 and 3. RCP Current (A.17) would be required in Modes 3(e), 4 and 5 to support Permissive P15 . In addition, this instrumentation would also be required in Mode 5 to support the P15 Permissive input signal into the SIS Actuation on Low Hot Leg Loop Level Logic. Provide any necessary corrections in the EPR GTS and sufficient descriptions in the EPR Bases for RCP Current (A.17) mode applicability in support of Permissive P15.

This additional information is needed to ensure the completeness and the accuracy of the EPR GTS, Table 3.3.1-1, Table 3.3.1-2, and associated Bases, as well as the operability of all sensors (including permissive instrumentation) necessary to support Function B.3.b in the applicable modes.

16-151

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to explain and correct inconsistencies associated with ESFAS Function B.3.b (SIS Actuation on Low Delta Psat) in the EPR Bases.

The EPR Bases, Applicable Safety Analyses, LCO, and Applicability Section, (pg B 3.3.1-34, 6th paragraph), states that the "P15 permissive automatically enables the SIS Actuation on Low Delta Psat function when at least two Reactor Coolant Pumps (RCP) are running, the hot leg pressure is greater than or equal to 464 psia, and when the hot leg temperature is greater than or equal to 365 degrees F." On the basis of a review of logic drawings 7.2-34 and 7.3-2, only one (not two) RCP pumps need to be running. In addition, the logic drawings indicate that the "and" should be replaced by an "or" in the statement "hot leg pressure is greater than or equal to 464 psia, *and* when the hot leg temperature . . ." Determine the technically correct information, provide any necessary details, and correct any errors in the EPR Bases and EPR FSAR.

This additional information is required to verify and correct potential discrepancies between the EPR Bases and EPR FSAR.

16-152

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to explain and correct inconsistencies associated with a High Containment Pressure in the EPR Bases.

The EPR Bases, Applicable Safety Analyses, LCO, and Applicability Section, page B 3.3.1-27, last paragraph refers to a “High SG Pressure Trip.” On the basis of the paragraph content, it appears that the reference to the High SG Pressure Trip should read “High Containment Pressure Trip.” Verify the information in question and provide a technical justification for the reference to a "High SG Pressure Trip" or revise the paragraph to read “High Containment Pressure Trip.”

In addition, the last paragraph of the referenced EPR Bases Section should specify the Containment Service Compartment Pressure Sensor “instrument range” consistent with the EPR FSAR, Table 7.2-1 (Reactor Trip Variables).

This additional information is required to verify and correct potential discrepancies in the EPR Bases.

16-153

LCO 3.3.1, Protection System

Provide additional information needed to identify the mode applicability for sensors in the EPR GTS, Table 3.3.1-1 (including P12 and P15 permissive instrumentation), associated with ESFAS Function B.9.b. Provide any necessary changes to EPR Table 3.3.1-1 and Bases Section B.9.b to include the required sensor and mode applicability information.

The EPR GTS, Table 3.3.1-2, specifies Modes 1, 2, 3 and 4 for ESFAS Function B.9.b, Containment Isolation (Stage 1) on SIS Actuation. The EPR Bases, Section B.9.b (pg. B 3.3.1-42), does not specify the required sensors, including sensor modes of applicability necessary to support the SIS Actuation function.

SIS Actuation Functions consist of B.3.a (SIS Actuation on Low Pressurizer Pressure) and B.3.b (SIS Actuation on Low Delta Psat). SIS function, supporting instrumentation, and associated Modes of applicability are as follows:

The EPR GTS, Table 3.3.1-2, Function B.3.a, SIS Actuation on Low Pressurizer Pressure, currently specifies Modes 1, 2, and 3(h).

The EPR GTS, Table 3.3.1-1, Pressurizer Pressure NR (A.14) currently specifies Modes 1, 2 and 3(h). Pressurizer Pressure NR (A.14) would be required in Modes 1, 2 and 3 for Permissive P12 to support Function B.3.a and also to support Function B.3.a directly (sensor inputs). Pressurizer Pressure NR instrumentation operability should extend both above and below 2005 psia in Mode 3 in order to ensure Function B.9.b is not compromised with respect to function B.3.a.

The EPR GTS, Table 3.3.1-2, (B.3.b) SIS Actuation on Low Delta Psat currently specifies Mode 3(k). Low Delta Psat would be required in Modes 3(k) and 4 to support Function B.9.b.

Note: Mode applicability associated with SIS Actuation on Low Delta Psat (B.3.b) is being evaluated under a separate RAI on the basis of B.3.b Bases statements on pages B 3.3.1-33 and B 3.3.1-34 which state “this function ensures SIS actuation in the Hot and Cold Shutdown conditions with LHSI/RHR in operation and at least one of the RCPs are operating.” (Hot and Cold Shutdown conditions are Modes 4 and 5).

The EPR GTS, Table 3.3.1-1, Pressurizer Pressure NR (A.14) currently specifies Modes 1, 2 and 3(h). Pressurizer Pressure NR (A.14) would be required in Modes 3 and 4 for Permissive P12 to support Function B.3.b. Pressurizer Pressure NR instrumentation operability should extend both above and below 2005 psia in order to ensure Function B.9.b is not compromised with respect to function B.3.b. Pressurizer Pressure NR instrument range is 1615 – 2515 psia.

The EPR GTS, Table 3.3.1-1, Hot Leg Temperature WR (A.10) currently specifies Mode 3(e). Hot Leg Temperature WR (A.10) would be required in Modes 3(e), and 4 for Permissive P15 to support Function B.3.b and also to support Function B.3.a directly (sensor inputs).

The EPR GTS, Table 3.3.1-1, Hot Leg Pressure WR (A.8) currently specifies Modes 1, 2, 3 and (d). Hot Leg Pressure WR (A.8) would be required in Modes 3(e), and 4 for Permissive P15 to support Function B.3.b and also to support Function B.3.a directly (sensor inputs).

The EPR GTS, Table 3.3.1-1, RCP Current (A.17) currently specifies Modes 1, 2, and 3. RCP Current (A.17) would be required in Modes 3(e) and 4 for Permissive P15 to support function B.3.b.

This additional information is needed to ensure the completeness and accuracy of the EPR GTS, Table 3.3.1-1, Table 3.3.1-2, and associated Bases, as well as the operability of all sensors (including permissive instrumentation) necessary to support Function B.9.b in the applicable modes.

16-154

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to identify the range of the Containment Service Compartment Pressure sensors in the EPR Bases Document, Section B.9.a, consistent with the EPR FSAR.

The EPR Bases, Applicable Safety Analyses, LCO, and Applicability Section (pg B 3.3.1-41), lists the sensors and processors required for the Stage 1 Isolation on High Containment Pressure Function. The Containment Service Compartment Pressure

sensors should specify the "instrument range" consistent with the EPR FSAR, Table 7.3-1 (ESF Actuation Variables) to distinguish between sensor types.

This additional information is needed to ensure the completeness and accuracy of the EPR Bases document consistent with the EPR FSAR.

16-155

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to validate instrumentation applicability and to identify the range of the Containment Service Compartment Pressure sensors in the EPR Bases Document, Section B.9.c consistent with the EPR FSAR.

The EPR Bases, Applicable Safety Analyses, LCO, and Applicability Section (pg B 3.3.1-42), lists the sensors and processors required for the Stage 2 Isolation on High-High Containment Pressure Function. The Containment Service Compartment Pressure sensors should specify the "instrument range" consistent with the EPR FSAR, Table 7.3-1 (ESF Actuation Variables) and to distinguish between sensor types.

In addition, verify the reference to "Containment Equipment Compartment Pressure Monitors" in the EPR Bases, Section B.9.c. There is no supporting information that these instruments are used in the High-High Containment Pressure Isolation Function (Figure 7.3-20). Provide a technical justification for referring to these instruments and revise the Bases as necessary to ensure consistency with the EPR FSAR.

This additional information is needed to ensure the completeness and accuracy of the EPR Bases document consistent with the EPR FSAR.

16-156

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to identify Containment Pressure sensor designations associated with Containment Pressure (A.7) in the EPR GTS, Table 3.3.1-1, consistent with the EPR Bases.

The EPR GTS, Table 3.3.1-1, currently specifies four Containment Pressure sensors associated with Containment Pressure (A.7). The EPR Bases identifies a total of 12 Containment Pressure sensors (8 Service Compartment and 4 Equipment Compartment) that support Reactor Trip and ESFAS Containment Isolation functions (Figure 7.2-23 and Figure 7.3-20). The 12 Containment Pressure sensors include the follows:

a. Containment Service Compartment Pressure Narrow Range (4)
b. Containment Service Compartment Pressure Wide Range (4)
c. Containment Equipment Compartment Pressure (4)

This additional information is needed to ensure the completeness and accuracy of the EPR GTS, Table 3.3.1-1, consistent with the EPR Bases information.

16-157

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes needed to verify and correct the potential discrepancies associated with the setpoint value for Permissive P13, Hot Leg Temperature, in the EPR Bases and EPR FSAR.

The EPR GTS Bases, Applicable Safety Analyses, LCO, and Applicability Section, page B 3.3.1-37, first paragraph regarding EFWS Actuation on Low-Low SG Level, specifies a permissive Hot Leg Temperature (P13) of 200º F. The EPR FSAR, Section 7.2.1.3.8, specifies a P13 permissive setpoint of 203º F. Identify the correct setpoint and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the setpoint.

This additional information is needed to ensure the completeness and accuracy of the EPR Bases document consistent with the EPR FSAR.

16-158

LCO 3.3.1, Protection System

Provide the additional information and any changes needed to explain and correct inconsistencies associated with Permissive P13 as it applies to ESF Function B.6.b (EFWS Actuation on Loss of Offsite Power and SIS Actuation) in the EPR Bases.

The EPR FSAR, Section 7.3.1.2.2 and logic drawing 7.3-3, indicate that the EFWS is actuated on either “Low-Low SG Level” or “Loss of Offsite Power and SIS Actuation.” The EPR FSAR, Section 7.3.1.2.2 states that “in both cases, EFWS actuation is bypassed when hot leg temperature is below the P13 permissive setpoint.” The EPR Bases, Section B.6.b (pg B 3.3.1-37, last sentence) states that “there are no automatic permissives associated with this function.” These statements are inconsistent. The correct permissive logic needs to be identified and documented consistently throughout the EPR Bases and FSAR. Conflicting statements need to be corrected with sufficient information to provide a clear understanding of the facts, as appropriate.

This additional information is needed to ensure the accuracy, completeness and consistency between the EPR Bases and FSAR.

16-159

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding EPR GTS, Table 3.3.1-1, (A.10) mode applicability for Hot Leg Temperature Wide Range with respect to ESFAS Function B.6.a (EFWS Actuation on Low-Low SG Level).

The EPR GTS, Table 3.3.1-1, specifies Mode 3(e) for Hot Leg Temperature WR. Hot Leg Temperature WR is used in Permissive P13. The P13 permissive signal (Figure 7.2-32) enables/disables ESFAS Function B.6.a (Figure 7.3-3) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2 and 3 for ESFAS Function B.6.a. Determine Hot Leg Temperature WR mode applicability required to support ESFAS Function B.6.a and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-160

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding EPR GTS, Table 3.3.1-1, (A.10) mode applicability for Hot Leg Temperature Wide Range with respect to ESFAS Function B.6.c (EFWS Isolation on High SG Level).

The EPR GTS, Table 3.3.1-1, specifies Mode 3(e) for Hot Leg Temperature WR. The Hot Leg Temperature WR is used in Permissive P13. The P13 permissive signal (Figure 7.2-32) enables/disables the ESFAS Function B.6.c (Figure 7.3-5) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2 and 3 for ESFAS Function B.6.c. Determine Hot Leg Temperature WR mode applicability required to support ESFAS Function B.6.c and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of Mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-161

LCO 3.3.1, Protection System

Provide the additional information or necessary changes to clarify the intent of EPR Bases, B.5, with regards to the LTSP for Partial Cooldown Actuation.

The EPR GTS, Table 3.3.1-2, identifies Partial Cooldown Function B.5 LTSP value as “N/A.” The EPR Bases, Applicable Safety Analyses, LCO, and Applicability Section B.5, (pg B 3.3.1-36), states that the “LTSP for Partial Cooldown Actuation on SIS Actuation is set high enough to avoid spurious operation but low enough to ensure adequate flow from the MHSI pumps to maintain core cooling.” The information in Table 3.3.1-2 and Bases B.5 is not consistent. Determine the correct application for Partial Cooldown Function B.5 LTSP and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the Partial Cooldown Actuation.

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

16-162

LCO 3.3.1, Protection System

Provide additional information needed to identify the mode applicability for sensors in the EPR GTS, Table 3.3.1-1 (including Permissives P12 and P15 instrumentation) associated with ESFAS Function B.5. Provide any necessary changes to EPR Table 3.3.1-1 and Bases Section B.5 to include the required sensor and mode applicability information.

The EPR GTS, Table 3.3.1-2, specifies Modes 1, 2 and 3 for ESFAS Function B.5, Partial Cooldown Actuation on SIS Actuation. The EPR Bases, Section B.5 (pg B.3.3.1-36), does not specify the required sensors, including sensor modes of applicability necessary to support the SIS Actuation function.

SIS Actuation Functions consist of B.3.a (SIS Actuation on Low Pressurizer Pressure) and B.3.b (SIS Actuation on Low Delta Psat). SIS function, supporting instrumentation, and associated modes of applicability are as follows:

The EPR GTS, Table 3.3.1-2, Function B.3.a, SIS Actuation on Low Pressurizer Pressure, currently specifies Modes 1, 2 and 3(h).

The EPR GTS, Table 3.3.1-1, Pressurizer Pressure NR (A.14), currently specifies Modes 1, 2 and 3(h). Pressurizer Pressure NR (A.14) would be required in Modes 1, 2 and 3 for Permissive P12 to support Function B.3.a and to support Function B.3.a directly (sensor inputs). Pressurizer Pressure NR instrumentation operability should extend both above and below 2005 psia in Mode 3 in order to ensure Function B.5 is not compromised with respect to Function B.3.a.

The EPR GTS, Table 3.3.1-2, Function B.3.b, SIS Actuation on Low Delta Psat, currently specifies Mode 3 (k).

The EPR GTS, Table 3.3.1-1, Pressurizer Pressure NR (A.14), currently specifies Modes 1, 2 and 3(h). Pressurizer Pressure NR (A.14) would be required in Mode 3 for Permissive P12 to support function B.3.b. Pressurizer Pressure NR instrumentation operability should extend both above and below 2005 psia in Mode 3 in order to ensure Function B.5 is not compromised with respect to Function B.3.b.

The EPR GTS, Table 3.3.1-1, Hot Leg Temperature WR (A.10) instrumentation currently specifies Mode 3(e). Hot Leg Temperature WR (A.10) would be required in Mode 3(e) for Permissive P15 to support Function B.3.b and also to support Function B.3.b directly (sensor inputs).

The EPR GTS, Table 3.3.1-1, Hot Leg Pressure WR (A.8), currently specifies Modes 1, 2, 3 and (d). Hot Leg Pressure WR would be required in Mode 3(e) for

Permissive P15 to support Function B.3.b and to support Function B.3.b directly (sensor inputs).

The EPR GTS, Table 3.3.1-1, RCP Current (A.17) currently specifies Modes 1, 2, and 3. RCP Current (A.17) would be required in Mode 3(e) for Permissive P15 to support function B.3.b.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of all sensors (including permissive instrumentation) necessary to support Function B.5 in the applicable modes.

16-163

LCO 3.3.1, Protection System

Provide the additional information and any corrections necessary to clarify the intent of the EPR GTS, Table 3.3.1-2, footnote regarding ESFAS Functions B.8.a and B.8.b.

The EPR GTS, Table 3.3.1-2, Footnote (l), "Except when all MSIVs are closed", specifies Mode 3 for ESF Function B.8.b (MSIV Closure on Low SG Pressure). Footnote (l) does not specify Mode 3 for ESF Function B.8.a (MSIV Closure on SG Pressure Drop). Footnote (l) wording is included in Bases B.8.b (pg B 3.3.1-41) but not in Bases B.8.a. Provide clarification with respect to the footnote and Bases. Explain why Footnote (l) does not apply to both ESF functions. Provide the changes needed to ensure that the referenced information is clearly stated in the EPR GTS and Bases.

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

16-164

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, (A.10) mode applicability for Hot Leg Temperature Wide Range with respect to ESFAS Function B.7.a (MSRT Actuation on High SG Pressure).

The EPR GTS, Table 3.3.1-1 specifies Mode 3(e) for Hot Leg Temperature WR. The Hot Leg Temperature WR is used in Permissive P14. Permissive signal P14 (Figure 7.2-33) determines which value of "Max1p" is selected to provide SG overpressure protection for ESFAS Function B.7.a (Figures 7.3-9 & 7.3-10). Table 3.3.1-2 specifies Modes 1, 2 and 3 for ESFAS Function B.7.a. Determine Hot Leg Temperature WR mode applicability required to support ESFAS Function B.7.a and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-165

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, (A.14) mode applicability for Pressurizer Pressue Narrow Range (NR) with respect to ESFAS function B.7.b (MSRT Isolation on Low SG Pressure).

The EPR GTS, Table 3.3.1-1 specifies Modes 1, 2 and 3(h) for Pressurizer Pressure NR . Pressurizer Pressure NR is used in Permissive P12. Permissive signal P12 (Figure 7.2-31) enables/disables ESFAS Function B.7.b (Figure 7.3-13) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2 and 3(h) for ESFAS Function B.7.b.

Determine Pressurizer Pressure NR mode applicability required to support ESFAS Function B.7.b. The determination is to include an evaluation of mode applicability both above and below 2500 psia in Mode 3 in order to ensure Function B.7.b is not compromised. Identify and correct any potential discrepancies that may exist. Include any discussions necessary to ensure a clear understanding of mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-166

LCO 3.3.1, Protection System

Provide additional information regarding the LTSP values associated with ESFAS Function B.8.a (MSIV Closure on SG Pressure Drop) in EPR GTS, Table 3.3.1-2. Incorporate additional information in the EPR Bases document to better describe the variable low setpoint that decreases in a rate-limited manner.

In the EPR GTS, Table 3.3.1-2, the LTSP values associated with MSIV Closure on SG Pressure Drop, Function B.8.a, are 29 psi/min, 102 psi < SS, Max 1088 psia. The basis for the LTSP values of 102 psi < SS and Max 1088 psia and how they relate to the SG Pressure Drop are not described in the GTS Bases. In addition, the bases for the rate-limited variable low setpoint need to be added to the GTS Bases as well.

This additional information is required to ensure the accuracy, completeness and clear presentation of the applicable Bases information.

16-167

LCO 3.3.1, Protection System

Provide additional information regarding the LTSP values associated with ESFAS Function B.2.c (Startup and Shutdown Feedwater Isolation on SG Pressure Drop) in EPR GTS, Table 3.3.1-2. Incorporate additional information in the EPR Bases

document to better describe the variable low setpoint that decreases in a rate-limited manner.

In the EPR GTS, Table 3.3.1-2, the LTSP values associated with Startup and Shutdown Feedwater Isolation on SG Pressure Drop, Function B.2.c, are 29 psi/min, 247 psi < SS, Max 943 psia. The basis for the LTSP values of 247 psi < SS and Max 943 psia and how they relate to the SG Pressure Drop are not described in the GTS Bases. In addition, the bases for the rate-limited variable low setpoint need to be added to the GTS Bases as well.

This additional information is required to ensure the accuracy, completeness and clear presentation of the applicable Bases information.

16-168

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, (A.14) mode applicability for Pressurizer Pressue Narrow Range (NR) with respect to ESFAS Function B.8.b.(MSIV Closure on Low SG Pressure).

The EPR GTS, Table 3.3.1-1 specifies Modes 1, 2 and 3(h) for Pressurizer Pressue NR . Pressurizer Pressue NR is used in Permissive P12. The P12 permissive signal (Figure 7.2-31) enables/disables ESFAS Function B.8.b (Figure 7.3-14 and Figure 7.2-19) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2 and 3(l) for ESFAS Function B.8.b.

Determine Pressurizer Pressure NR mode applicability required to support ESFAS Function B.8.b. Determination to include an evaluation of mode applicability both above and below 2500 psia in Mode 3 in order to ensure Function B.8.b is not compromised. Identify and correct any potential discrepancies that may exist. Include any discussions necessary to ensure a clear understanding of mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-169

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to clarify the applicability of the EPR GTS, Table 3.3.1-1, Footnote (g), to Mode 2 for Reactor Trip Circuit Breaker Position Indication (A.21).

The EPR GTS, Table 3.3.1-1, Footnote (g) states that “with the Reactor Control, Surveillance and Limitation (RCSL) System capable of withdrawing a Rod Cluster Control Assembly (RCCA) or one or more RCCAs not fully inserted.” Mode 2 is classified as “Startup” with a Reactivity Condition of Keff $\geq$ 0.99 and a RTP $\leq$ 5 percent.

Under normal conditions, one or more RCCAs would have to be “not fully inserted” in order to achieve a Keff $\geq$ 0.99. Provide clarification and any changes needed to resolve the applicability of this footnote with respect to Mode 2 for Reactor Trip Circuit Breaker Position Indication in the EPR GTS and Bases.

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

16-170

LCO 3.3.1, Protection System

Provide additional information and any corrections needed to explain the “10-second time delay” in the LTSP column of the EPR GTS, Table 3.3.1-2, for ESFAS Function B.2.b.

The EPR GTS, Table 3.3.1-2, specifies a 10-second time delay in the LTSP column for ESFAS Function B.2.b, MFW Full Load Closure on High SG Level. This time delay does not appear in the logic diagram (Figure 7.3-16) and is not described in either the EPR Bases or EPR FSAR, Section 7.3.1.2.8. Determine the applicability of this 10 second time delay and correct the EPR GTS, or provide the necessary discussion in the EPR Bases and FSAR to ensure a clear understanding for this time delay.

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

16-171

LCO 3.3.1, Protection System

Provide the additional information and any corrections needed to explain the reference to “low load isolation valves” in the EPR Bases, Section B.2.b.

The EPR Bases, Section B.2.b, Applicable Safety Analyses, LCO, and Applicability Section (pg B 3.3.1-29, last paragraph), states that “except when all MFW full load and low load isolation valves are closed.” This statement is confusing in that the low load isolation valves are not isolated by ESFAS Function B.2.b. The statement also conflicts with Modes 2 and 3, Footnote (i), which states “except when all MFW full load isolation valves are closed.” Determine the correct statement and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the correct statement.

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

16-172

LCO 3.3.1, Protection System

Provide additional information and any necessary changes regarding EPR GTS, Table 3.3.1-1, (A.10) Mode applicability for Hot Leg Temperature Wide Range with respect to ESFAS function B.2.b (MFW Full Load Closure on High SG Level).

The EPR GTS, Table 3.3.1-1 specifies Modes 3(e) for Hot Leg Temperature WR. Hot Leg Temperature WR is used in Permissive P13. The P13 permissive signal (Figure 7.2-32) enables/disables ESFAS Function B.2.b (Figure 7.3-16) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Mode 1, 2(i) and 3(i) for ESFAS Function B.2.b. Determine Hot Leg Temperature WR mode applicability required to support ESFAS Function B.2.b and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of Mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-173

LCO 3.3.1, Protection System

Provide additional information and any corrections needed to accurately describe ESFAS Function B.2.c in the EPR GTS, Table 3.3.1-2, and EPR Bases, Section B.2.c with respect to the “All SGs” designation.

The EPR GTS, Table 3.3.1-2, ESF Function B.2.c (Startup and Shutdown Feedwater Isolation on SG Pressure Drop) currently specifies “All SGs.” In addition, the EPR Bases, Section B.2.c, Applicable Safety Analyses, LCO, and Applicability Section (pg B 3.3.1-30, title line and first paragraph), specifies “All SGs” as well. The EPR FSAR, Section 7.3.1.2.8 (pg 7.3-11, bottom paragraph) and applicable logic diagram (Figure 7.3-17) indicate that ESF Function B.2.c should specify “Affected SGs.” Determine the correct SG applicability and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding associated with SG functional references in the Bases and FSAR documents.

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

16-174

LCO 3.3.1, Protection System

Provide additional information and any corrections needed to explain the reference to “full load isolation valves” in the EPR Bases, Section B.2.c. Reformat the Bases sensor operability and mode information.

The EPR Bases, Section B.2.c, Applicable Safety Analyses, LCO, and Applicability Section (pg B 3.3.1-30, last paragraph), states that “except when all MFW full load and low load isolation valves are closed.” This statement is confusing in that the full load

isolation valves are not isolated by ESFAS Function B.2.c. This statement also conflicts with Modes 2 and 3, Footnote (j), which states "(e)xcept when all MFW low load isolation valves are closed." Determine the correct statement and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the correct statement.

Reformat Bases B.2.c "sensor operability and mode information" on pg B 3.3.1-30 so that the presentation is similar to the layout in Bases section B.2.d (pg B 3.3.1-31) which is very clear and concise.

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

16-175

LCO 3.3.1, Protection System

Provide additional information and any necessary changes regarding EPR GTS, Table 3.3.1-1, (A.14) mode applicability for Pressurizer Pressue Narrow Range (NR) with respect to ESFAS Function B.2.d (Startup and Shutdown Feedwater Isolation on Low SG Pressure).

The EPR GTS, Table 3.3.1-1, specifies Modes 1, 2 and 3(h) for Pressurizer Pressure NR . Pressurizer Pressure NR is used in Permissive P12. Permissive signal P12 (Figure 7.2-31) enables/disables ESFAS Function B.2.d (Figure 7.3-17) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2(j) and 3(h)(j) for ESFAS Function B.2.d.

Determine Pressurizer Pressure NR mode applicability required to support ESFAS Function B.2.d. The determination is to include an evaluation of mode applicability both above and below 2500 psia in Mode 3 in order to ensure Function B.2.d is not compromised. Identify and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in applicable modes.

16-176

LCO 3.3.1, Protection System

Provide additional information and any corrections needed to accurately describe ESFAS Function B.2.d in the EPR GTS, Table 3.3.1-2, and EPR Bases, Section B.2.d with respect to the "All SGs" designation.

The EPR GTS, Table 3.3.1-2, ESF Function B.2.d (Startup and Shutdown Feedwater Isolation on Low SG Pressure), currently specifies "All SGs." In addition, the EPR Bases, Section B.2.d, Applicable Safety Analyses, LCO, and Applicability Section (pg B

3.3.1-31, title line and first paragraph), specifies “All SGs” as well. The EPR FSAR, Section 7.3.1.2.8 (pg 7.3-11, bottom paragraph) and applicable logic diagram (Figure 7.3-17) indicate that ESF Function B.2.d should specify “Affected SGs.” Determine the correct SG applicability and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding associated with SG functional references in the Bases and FSAR documents.

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

16-177

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, (A.10) mode applicability for Hot Leg Temperature Wide Range with respect to ESFAS function B.2.e (Startup and Shutdown Isolation on High SG Level for Period of Time).

The EPR GTS, Table 3.3.1-1, specifies Mode 3(e) for Hot Leg Temperature WR. Hot Leg Temperature WR is used in Permissive P13. The P13 permissive signal (Figure 7.2-32) enables/disables ESFAS Function B.2.e (Figure 7.3-16) as designated in the EPR GTS, Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2(j) and 3(j) for ESFAS Function B.2.e. Determine Hot Leg Temperature WR mode applicability required to support ESFAS Function B.2.e, and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-178

LCO 3.3.1, Protection System

Provide a technical justification for the omission of the Steam Generator Isolation function from the EPR GTS, Table 3.3.1-2, and the corresponding Bases.

In accordance with the EPR FSAR, during a SG tube rupture, partial cooldown is initiated to depressurize the RCS to the point where Medium Head Safety Injection (MHSI) becomes effective. The SG containing the tube rupture is isolated after the partial cooldown is initiated if a high SG level or high main steam activity is detected. This is done to prevent the release of contaminated fluid from the affected SG, and to prevent other water sources from adding to the uncontrolled SG level increase. SG isolation consists of the following ESF actuations/actions:

a. “MSRT opening setpoint increase”
b. “MSIV, MSIV bypass and SG blowdown closure”
c. “MFW and SSS Isolation”

d. “EFWS isolation”

The EPR GTS, Table 3.3.1-2, Section B (Engineered Safety Features Actuation System Signals), and the corresponding EPR Bases do not include the Steam Generator Isolation function or the main steam activity sensors that input directly into the SG isolation logic.

On the bases of this information, provide additional technical justification for omission of the Steam Generator Isolation function and associated main steam activity sensors or revise the EPR GTS, Table 3.3.1-2, the corresponding Bases, and the EPR FSAR accordingly to ensure consistency among these documents and sufficient detailed information to adequately explain this function.

This additional information is needed to ensure the accuracy, completeness, and consistency amongst the EPR GTS, Bases and FSAR.

16-179

LCO 3.3.1, Protection System

Provide additional information needed to adequately explain if the SG isolation function is bypassed below the P13 setpoint consistent with logic Figure 7.3-25.

The EPR FSAR, Section 7.3.1.2.14 (pg 7.3-20), states there is no operating bypass explicitly associated with the SG isolation function. This statement is inconsistent with logic Figure 7.3-25 which identifies Permissive P13 as a functional input into the isolation logic. The SG isolation is bypassed below the P13 setpoint according to the logic. Determine if the bypass function exists and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of this function.

The EPR GTS and Bases make no mention of this bypass function. If the SG isolation function is capable of being bypassed, this information will need to be added to both the EPR GTS and Bases.

This additional information is needed to ensure the accuracy, completeness, and consistency amongst the EPR GTS, Bases and FSAR.

16-180

LCO 3.3.1, Protection System

Provide the additional information and any necessary changes regarding the EPR GTS, Table 3.3.1-1, (A.6) mode applicability for Cold Leg Temperature Wide Range with respect to ESFAS Function B.11.a (CVCS Charging Line Isolation on High-High Pressurizer Level).

The EPR GTS, Table 3.3.1-1, specifies Modes 1 and 2(c) for Cold Leg Temperature WR. Cold Leg Temperature WR is used in Permissive P17. The P17 permissive signal (Figure 7.2-36) enables/disables ESFAS Function B.11.a (Figure 7.3-21) as designated in Table 3.3.1-2. Table 3.3.1-2 specifies Modes 1, 2 and 3 for ESFAS Function B.11.a. Determine Cold Leg Temperature WR mode applicability required to support ESFAS

Function B.11.a and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of the mode applicability.

This additional information is needed to ensure the accuracy and completeness of the EPR GTS and Bases, as well as the operability of permissive instrumentation necessary to support the associated ESFAS function in the applicable modes.

16-181

LCO 3.3.1, Protection System

Provide a technical justification for omission of the ESFAS function for “CVCS Charging Isolation on Pressurizer Level above the Max1p setpoint” from the EPR GTS, Table 3.3.1-2, and Bases.

The EPR FSAR, Section 7.3.1.2.10, states that the CVCS Charging isolation is performed in two stages with staggered setpoints. The following initiating conditions are used to perform this two-stage CVCS isolation:

“Pressurizer Level > Max1p”
“Pressurizer Level > Max2p”

If two out of four level measurements exceed the Max1p setpoint, the normal and auxiliary pressurizer spray lines are isolated. If two out of four level measurements exceed the Max2p setpoint, the CVCS charging flow is isolated as well (ESFAS function B.11.a).

The EPR FSAR information regarding the CVCS Charging isolation functions is not consistent with omission of the ESFAS function for “CVCS Charging Isolation on Pressurizer Level above the Max1p setpoint” from the EPR GTS, Table 3.3.1-2 and Bases. Determine if omission of this function is warranted and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of this function.

The EPR GTS and Bases make no mention of the “CVCS Charging isolation on Pressurizer Level above the Max1p setpoint” function. If omission of the function is unwarranted, then information will need to be added to the EPR GTS and Bases. Include any discussions necessary to ensure a clear understanding of this function.

This additional information is needed to ensure the accuracy, completeness, and consistency amongst the EPR GTS, Bases and FSAR.

16-182

LCO 3.3.1, Protection System

Provide a technical justification for omission of the ESF Function for “CVCS Isolation on Anti-Dilution Mitigation (ADM) at Power Operation” from the EPR GTS, Table 3.3.1-2 and Bases.

In accordance with the EPR FSAR, an on-line calculation of the boron concentration in the RCS is performed during power operation based on the boron concentration measurements in the CVCS charging line and the measured CVCS charging flow. The calculated boron concentration is compared to a fixed setpoint corresponding to the critical boron concentration of the core at hot zero power with the highest worth rod not inserted.

The EPR FSAR information regarding the CVCS Isolation for Anti-Dilution functions is not consistent with omission of the ESFAS function for "CVCS Isolation on Anti-Dilution Mitigation (ADM) at Power Operation" from the EPR GTS, Table 3.3.1-2 and Bases. Determine if omission of this function is warranted and correct any potential discrepancies. Include any discussions necessary to ensure a clear understanding of this function.

The EPR GTS and Bases make no mention of the "CVCS Isolation on ADM at Power Operation" Function. If omission of the function is unwarranted, then information will need to be added to the EPR GTS and Bases. Include any discussions necessary to ensure a clear understanding of this function.

This additional information is needed to ensure the accuracy, completeness, and consistency amongst the EPR GTS, Bases and FSAR.

16-183

LCO 3.3.1, Protection System

Provide the additional information and any corrections necessary to clarify the intent of the EPR GTS, Table 3.3.1-1 and Table 3.3.1-2 footnote applicability for RCP operation with respect to "CVCS Isolation on ADM at Shutdown Condition" ESFAS Functions.

The EPR GTS, Table 3.3.1-1, sensors A.2, A.3, A.4. A.6 and A.19 support ESFAS Functions B.11.b and B.11.c. The footnotes from Table 3.3.1-1 and 3.3.1-2 that are associated with Reactor Coolant Pump operation are not applied consistently and appear to conflict in several cases. Specific examples include the following:

a. The EPR GTS, Table 3.3.1-1, A.6 (Cold Leg Temperature WR), specifies Footnote (b) for Mode 6 (Refueling with one or more reactor vessel head closure bolts less than fully tensioned). Footnote (b) states that "with three or more reactor coolant pumps (RCPs) in operation." It is highly unlikely that there would be three or more RCPs in operation in Mode 6. The EPR GTS, Table 3.3.1-1, A.2 (Boron Concentration) and A.3 (Boron Temperature) both do not include Footnote (b) during Mode 6 operation.

b. The EPR GTS, Table 3.3.1-1, A.6 (Cold Leg Temperature WR), does not specify Footnote (b) during Modes 3, 4, and 5, however, Footnote (b) is specified during Modes 3 and 4 for sensors A.2 and A.3, and during Modes 3, 4, and 5 for sensor A.4. Aside from the fact that Footnote (b) is not applied uniformly with respect to sensors that support ESFAS Functions B.11.b and B.11.c, an operational situation could develop requiring the operability of sensors A.2, A.3, and A.4 during Modes 3(b), 4(b), and 5(b) with two or less RCPs in operation.

c. The EPR GTS, Table 3.3.1-1, A.19 (RCP speed sensor) mode applicability is ≥ 10 percent RTP. Sensor A.19 Mode applicability should include Modes 3, 4, and 5 (and possibly Mode 6) to align with the applicable modes and footnotes specified for sensors A.2, A.3, and A.4.

d. The EPR GTS, Table 3.3.1-2, Function B.11.c does not specify Footnote (o) during Mode 3 operations. However, EPR Bases, B.11.c (pg B 3.3.1-46), states "MODE 3, with three or more RCPs in operation."

Provide clarification associated with footnote applicability. Explain why the footnotes are not applied consistently. Provide the changes needed to ensure that the referenced information is made consistent and clearly stated in the EPR GTS and Bases.

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

16-184

LCO 3.3.1, Protection System

Provide a technical justification as to how the "Minimum Required for Functional Capability" requirements specified in EPR GTS Table 3.3.1-2 for ESFAS Functions B.11.b and B.11.c are met with respect to the Actuation Logic Units (ALUs).

The EPR GTS, Table 3.3.1-2, "Minimum Required For Functional Capability" column specifies three divisions for ESFAS Functions B.11.b (CVCS Charging Line Isolation on ADM at Shutdown Condition, RCP not operating) and B.11.c (CVCS Charging Line Isolation on ADM at Standard Shutdown Conditions).

In the EPR GTS, Table 3.3.1-2, there are four divisions of APUs that generate partial trigger signals for Functions B.11.b and B.11.c compared to only two divisions of ALUs (divisions 1 and 4) that generate actuation signals for Functions B.11.b and B.11.c. This is consistent with the information provided in Logic Figure 7.3-22 and EPR Bases, Sections B.11.b (pg B 3.3.1-46) and B.11.c (B 3.3.1-47). However, a technical justification is needed in the EPR Bases (at a minimum) to explain how two divisions of ALUs (1 and 4) can support the three division "Minimum Requirement for Functional Capability" specified in the EPR GTS, Table 3.3.1-2 for ESFAS Functions B.11.b and B.11.c.

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

16-185

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to clarify the EPR GTS, Table 3.3.1-2, LTSP values for ESFAS Functions B.11.b and B.11.c.

The EPR GTS, Table 3.3.1-2, ESFAS Function B.11.b (CVCS Charging Line Isolation on ADM at Shutdown Condition, RCP not operating), specifies a LTSP value of 927 ppm. The EPR GTS, Table 3.3.1-2, ESFAS Function B.11.c (CVCS Charging Line Isolation on ADM at Standard Shutdown Conditions), specifies a LTSP value referenced in Footnote (d), "[a]s specified in the COLR." Provide an explanation as to why the LTSP values for ESFAS Functions B.11.b and B.11.c are not both specified as either specific valves or Footnotes referencing the COLR.

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

16-186

LCO 3.3.1, Protection System

Provide the additional information and any corrections necessary to clarify and correct a potential discrepancy identified in the EPR FSAR, ESFAS Function B.11.b and B.11.c Anti-Dilution Mitigation Logic Diagram.

The EPR FSAR, ESFAS Function B.11.b and B.11.c Anti-Dilution Mitigation Logic Diagram, Figure 7.3-22, appears to have a missing electrical connection tie between the "Temperature Compensation of Boron Measurement" block and the "Calculation of Reactor Coolant Boron Concentration Variable Coolant Mass" block. Verify the overall correctness of Figure 7.3-22. Correct the logic diagram as necessary. If it is determined that an electrical connection tie is not needed between the "Temperature Compensation of Boron Measurement" block and the "Calculation of Reactor Coolant Boron Concentration Variable Coolant Mass" block, provide an explanation as to how the "Reactor Coolant Boron Concentration Variable Coolant Mass" can be calculated without a "Temperature Compensated Boron Measurement" input.

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

16-187

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to clarify and correct a potential discrepancy identified in the EPR Bases, Section B 3.3.1, ACTIONS Section, Subparagraph F.1.

The EPR Bases, ACTIONS Section, Subparagraph F.1 (pg B 3.3.1-67), last sentence, references Required Action C.1. Should this reference be "Required Action F.1?" If the reference needs to be corrected, change as appropriate. If the correct reference is not "Required Action F.1," provide a technical justification for the different reference.

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

16-188

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to clarify and correct a potential inconsistency regarding the completion time between the EPR GTS, L.C.O 3.3.1, and the associated Bases.

The EPR GTS, L.C.O 3.3.1, Condition "I" specifies a 6-hour Completion Time to be in Mode 2. The EPR Bases, Section 3.3.1, ACTIONS Section I.1 (pg B 3.3.1-68) states that "the allowed Completion Time of 8 hours is reasonable, based on operating experience, to reach MODE 2 from full power conditions in an orderly manner and without challenging unit systems." Six hours is a typical Completion Time for reaching Mode 3 throughout the EPR GTS.

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

16-189

LCO 3.3.1, Protection System

Provide additional information needed to identify the mode applicability for sensors in the EPR GTS, Table 3.3.1-1 (including P12 and P15 permissive instrumentation) associated with ESFAS Function B.4. Provide any necessary changes to the EPR, Table 3.3.1-1, and Bases Section B.4, to include the required sensor and mode applicability information.

The EPR GTS, Table 3.3.1-2, specifies Modes 1, 2 and 3 for ESFAS Function B.4, RCP Trip on Low Delta P across RCP with SIS Actuation. The EPR Bases, Section B.4 (pg B 3.3.1-35) does not specify the required sensors, including sensor modes of applicability necessary to support the SIS Actuation function.

SIS Actuation Functions consist of B.3.a (SIS Actuation on Low Pressurizer Pressure) and B.3.b (SIS Actuation on Low Delta Psat). SIS function, supporting instrumentation, and associated modes of applicability are as follows:

The EPR GTS, Table 3.3.1-2, Function B.3.a, SIS Actuation on Low Pressurizer Pressure, currently specifies Modes 1, 2, and 3(h).

The EPR GTS, Table 3.3.1-1, Pressurizer Pressure NR (A.14) currently specifies Modes 1, 2 and 3(h). Pressurizer Pressure NR (A.14) would be required in Modes 1, 2 and 3 for Permissive P12 to support Function B.3.a and also to support Function B.3.a directly (sensor inputs). Pressurizer Pressure NR instrumentation operability should extend both above and below 2005 psia in Mode 3 in order to ensure Function B.4 is not compromised with respect to Function B.3.a.

The EPR GTS, Table 3.3.1-2, Function B.3.b, SIS Actuation on Low Delta Psat, currently specifies Mode 3(k).

The EPR GTS, Table 3.3.1-1, Pressurizer Pressure NR (A.14) currently specifies Modes 1, 2 and 3(h). Pressurizer Pressure NR (A.14) would be required in Mode 3 for Permissive P12 to support Function B.3.b. Pressurizer Pressure NR instrumentation operability should extend both above and below 2005 psia in Mode 3 in order to ensure Function B.4 is not compromised with respect to Function B.3.b.

The EPR GTS, Table 3.3.1-1, Hot Leg Temperature WR (A.10) instrumentation currently specifies Mode 3(e). Hot Leg Temperature WR (A.10) would be required in Mode 3(e) for Permissive P15 to support Function B.3.b and also to support Function B.3.b directly (sensor inputs).

The EPR GTS, Table 3.3.1-1, Hot Leg Pressure WR (A.8) currently specifies Modes 1, 2, 3 and (d). Hot Leg Pressure WR would be required in Mode 3(e) for Permissive P15 to support Function B.3.b and also to support Function B.3.b directly (sensor inputs).

The EPR GTS, Table 3.3.1-1, RCP Current (A.17) currently specifies Modes 1, 2, and 3. RCP Current (A.17) would be required in Mode 3(e) for Permissive P15 to support function B.3.b.

This additional information is needed to ensure the accuracy, completeness and consistency within the EPR GTS and Bases, as well as the operability of all sensors (including permissive instrumentation) necessary to support Function B.4 in the applicable modes.

16-190

LCO 3.3.1, Protection System

Provide additional information and any necessary changes to clarify and correct potential inconsistencies associated with EPR Bases Table B 3.3.1-1. Provide a description of the purpose, scope, and proposed use of the table in the Bases.

The EPR Bases, Table B 3.3.1-1, Protection System (PS) Functional Dependencies, was apparently compiled to identify functions with multiple inputs and functions that do not have four divisions of Actuation Logic Units (ALUs). The table may be used as an aid to assess divisional operability in applying EPR GTS, Table 3.3.1-2 Footnote (a), which states that "[a] division is OPERABLE provided: a) the minimum sensors required for functional capability for all sensors providing input to the Trip/Actuation Function are OPERABLE; and b) the associated APU is OPERABLE." This information is relevant and needs to be included in the text of the Bases.

Provide a technical justification and the necessary corrections for the following apparent inconsistencies:

a. The EPR Bases (pgs. B 3.3.1-79, 80), regarding Reactor Coolant Pump Speed, specifies "1 of 2" sensors per division. The EPR GTS, Table 3.3.1-1 (A.19), specifies a total of 4 RCP Speed sensors (one per pump). EPR FSAR Figure 7.2-12 is consistent with Section 7.2.1.2.7 of the FSAR which states that "[t]he loss of

four RCPs is detected based on measurements of RCP speed (one measurement per pump)."

b. The EPR Bases (pg. B 3.3.1-82), regarding Hot Leg Temperature NR instrumentation associated with the "Low Saturation Margin" Reactor Trip Function, does not specify the minimum number of sensors required for functional capability. However, EPR Bases Table B 3.3.1-1, Item 4 (pg B 3.3.1-81), "High Core Power Level" Reactor Trip, specifies "3 of 4" sensors per division, indicating a total of 16 sensors (4 per division). The EPR GTS, Table 3.3.1-1 (A.9), specifies a minimum of 3 per division.

c. The EPR Bases (pgs. B 3.3.1-79, 80, 81, 82), regarding RCS Loop Flow, specifies "3 of 4" sensors. EPR FSAR Figures 7.2-10 and 7.2-11, RCS Loop Flow Logics, show four different loop flow sensors (one for each of the RCS loops) per division, not four flow sensors within the same loop per division. The EPR GTS, Table 3.3.1-1 (A.20), specifies a minimum of "3 sensors per loop."

   These inconsistencies are a potential problem if the "minimum number of sensors required for functional capability" is based on "3 of 4" loop flow sensors within the same division. If two RCS Loop Flow sensors within the same loop (different divisions) became inoperable, the "Minimum Required for Functional Capability" specified in the EPR GTS, Table 3.3.1-1, would be less than the three required (resulting in entry into Condition "J"). While this configuration would satisfy the "3 of 4" minimum DIVISIONAL requirement of Bases Table B 3.3.1-1, it would be non-conservative with respect to the intent of the table. If the intent is to interpret/evaluate "3 of 4" as the minimum sensors required for functional capability for all sensors providing input to the Trip Function (all divisions across the board as opposed to individual divisions), then the integrity of the table is maintained. The "3 of 4" logic as currently presented in the EPR GTS, Table B 3.3.1-1, is not clear with respect to the RCS Loop Flow Function.

d. The EPR Bases (pg. B 3.3.1-84), regarding RCP Current, specifies "2 of 3" sensors. EPR FSAR Figure 7.2-27, RCP Current Logic, shows three different current sensors (each associated with a different RCP) per division, not three current sensors for the same pump per division. The EPR GTS, Table 3.3.1-1 (A.17), specifies a minimum of "2 sensors per RCP."

   These inconsistencies are a potential problem if the "minimum number of sensors required for functional capability" is based on "2 of 3" RCP current sensors within the same division. If two RCP Current sensors associated with the same pump (different divisions) became inoperable, the "Minimum Required for Functional Capability" specified in the EPR GTS, Table 3.3.1-1, would be less than the two required (resulting in entry into Condition "M"). While this configuration would satisfy the "2 of 3" minimum DIVISIONAL requirement of Bases Table B 3.3.1-1, it would be non-conservative with respect to the intent of the table. If the intent is to interpret/evaluate "2 of 3" as the minimum sensors required for functional capability for all sensors providing input to the trip function (all divisions across the board as opposed to individual divisions), then the integrity of the table is maintained. The "2 of 3" logic as currently presented in the EPR GTS, Table B 3.3.1-1, is not clear with respect to the RCP Current Function.

e. The EPR Bases, Table B 3.3.1-1 (pg B 3.3.1-84), regarding ESFAS Function B.11.a, shows two divisions of ALUs (1 and 4). It appears that there are actually four divisions of ALUs associated with ESFAS Function B.11.a, Divisions 2 and 3 to isolate the Normal Pressurizer Spray Lines, and Divisions 1 and 4 to isolate the Auxiliary Spray Lines and the Charging Line. Verify Division 2 and 3 ALU applicability with respect to ESFAS Function B.11.a and either provide a technical justification for not including these ALUs in Bases Table 3.3.1-1 or revise the table accordingly. In addition, a value of "2" is specified in the EPR Bases, Table B 3.3.1-1, under the column "Complete Divisions For Functional Capability-Sensors / Processors." Two appears to be the correct number for ESFAS Function B.11.a with respect to ALU functional assignments. However, an informational note should be added to the table to clarify the fact that this column value applies to the individual pairing of ALUs within either divisions "1 and 4" or "2 and 3".

f. The EPR Bases, Table B 3.3.1-1 (pages B 3.3.1-79, 80), specifies "One Remote Acquisition Unit per division with a required OPERABLE SPND." This information does not appear to be consistent with EPR FSAR Logic Figures 7.2-2 and 7.2-7. In accordance with the Logics, RAUs in each division acquire one-fourth (18) of the total SPND measurements and distribute those measurements to APU in all four divisions allowing for an accurate calculation over the whole reactor core in each division. If this information is correct, the table should read "One Remote Acquisition Unit per division with the required OPERABLE SPNDs."

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

16-191

LCO 3.3.1, Protection System

Provide the technical justifications and necessary corrections for apparent inconsistencies in the EPR GTS, Tables 3.3.1-1 and 3.3.1-2.

CONDITION assignments appear to have been applied inconsistently throughout Tables 3.3.1-1 and 3.3.1-2 of the EPR GTS. The Required Actions associated with the Conditions specified do not always encompass all modes of applicability and appear to conflict in a number cases as indicated in the following examples:

a. The EPR GTS, Table 3.3.1-1 (A.15), Radiation Monitor – Containment High Range, specifies Condition "K" which requires being in MODE 3 and "Opening" the reactor trip breakers within 6 hours. Function A.15 modes of applicability are Modes 1, 2, 3, 4. Required Action for Condition "K" does not include Mode 4 operations. In addition, Mode 4 operation is not required for either the Reactor Trip Circuit Breakers or Reactor Trip Circuit Breaker Position Indication in accordance with the EPR GTS, Tables 3.3.1-1, D.2 and 3.3.1-1, A.21 respectively.

b. The EPR GTS, Table 3.3.1-1 (A.16), Radiation Monitor – Control Room HVAC Intake Activity, specifies Condition "N" while in Modes 1, 2, 3, 4 and Condition "R" while in Modes 5, 6(i). Required Action for Condition "R" requires declaring both

Control Room Emergency Filtration trains inoperable (immediately). It would appear that declaration of CREF inoperability (Condition "R") is applicable in Modes 1, 2, 3 and 4 as well.

c. The EPR GTS, Table 3.3.1-2 (B.13), Control Room HVAC Reconfiguration to Recirculation Mode on High Intake Activity, specifies Condition "N" while in Modes 1, 2, 3, 4 and Condition "R" while in Modes 5, 6(r). Required Action for Condition "R" requires declaring both Control Room Emergency Filtration trains inoperable (immediately). It would appear that declaration of CREF inoperability (Condition "R") is applicable in Modes 1, 2, 3 and 4 as well.

d. The EPR GTS, Table 3.3.1-1 (C.3), Actuation Logic Units, specifies Condition "N" while in Modes 1, 2, 3, 4 and Condition "T" in Modes 5, 6(i). Required Action for Condition "T" requires declaring the associated Actuation Logic Units inoperable (Immediately) and "Opening" reactor trip breakers within 1 hour. It would appear that declaration of ALU inoperability (Condition "T") is applicable in Modes 1, 2, 3 and 4 as well. In addition, operability is not required for either the Reactor Trip Circuit Breakers or Reactor Trip Circuit Breaker Position Indication in Modes 4, 5 and 6(i) in accordance with the EPR GTS, Tables 3.3.1-1, D.2 and 3.3.1-1, A.21 respectively.

e. The EPR GTS, Table 3.3.1-2, ESFAS functions B.10.a (EDG Start on Degraded Grid Voltage) and B.10.b (EDG Start on LOOP) both specify a Condition of "N/A." It would appear that Condition "O" is applicable. Condition "O" requires declaring the associated EDG inoperable (Immediately). Condition "O" is specified in the EPR GTS, Table 3.3.1-1 (A.1), for the 6.9 kV Bus Voltage sensors that support both of these functions.

f. The EPR GTS, Table 3.3.1-1 (B.1), Reactor Trip Manual Actuation Switches, specifies Condition "S" while in Modes 4(g), 5(g). Required Action for Condition "S" requires "Opening" the reactor trip breakers within 1 hour. Operability is not required for either the Reactor Trip Circuit Breakers or Reactor Trip Circuit Breaker Position Indication in Modes 4(g) and 5(g) in accordance with the EPR GTS, Tables 3.3.1-1, D.2 and 3.3.1-1, A.21 respectively.

g. The EPR GTS, Table 3.3.1-2 (B.11.a), CVCS Charging Line Isolation on High-High Pressurizer Level, specifies Condition "M" while in Modes 1, 2, and 3. Required Action for Condition "P" which is specified for ESFAS Functions B.11.b and B.11.c, requires declaring the associated Chemical and Volume Control System isolation valve(s) inoperable (Immediately)." It would appear that declaration of CVCS isolation valve inoperability (Condition "P") is applicable to ESFAS Function B.11.a as well, in Modes 1, 2 and 3.

This additional information is needed to ensure accuracy, completeness and consistency within the EPR GTS.

16-192

LCO 3.3.1, Protection System

Provide additional information to improve the EPR GTS, REQUIRED ACTION guidance associated with LCO Conditions O, P, Q, R and T.

The EPR GTS, LCO 3.3.1, Required Actions associated with Conditions O, P, Q, R and T are to “Immediately” declare affected equipment and components inoperable. Additional guidance is needed to ensure the operator clearly understands the equipment and components required to be declared inoperable.

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

16-193

LCO 3.3.1, Protection System

Provide additional information in the EPR Bases to describe the overall approach to Surveillance Requirement Testing with respect to Protection System Instrumentation. Include an explanation as to how that approach ensures that all Reactor Trip and ESFAS functions in the EPR GTS, Table 3.3.1-2, are adequately tested. Provide a figure which depicts a "Summary of Protection System Testing."

The Protection System (PS) is an integrated digital Reactor Protection System and ESF Actuation System. The PS detects plant conditions that indicate the occurrence of AOOs and postulated events, and actuates safety-related process systems required to mitigate an event. The PS maximizes use of the TELEPERM XS (TXS) digital I&C platform design features, including continuous on-line self-testing and diagnostics that allow early detection of failure.

Additional information is needed that describes the approach to PS Surveillance Requirement Testing with respect to the following specifics:

a. The EPR GTS, Table 3.3.1-1, use of common components/sensors by the PS to support all Reactor Trip functions, ESFAS functions and Permissives. Surveillance Requirements are specified in the EPR GTS, Table 3.3.1-1, for components/sensors only. Surveillance Requirements are not specified in EPR GTS, Table 3.3.1-2, for any of the individual Reactor Trip or ESFAS functions. This is a deviation from NUREG-1431 (WOG STS). It is unclear how Surveillance Requirement Testing specified at the component/sensor level ensures that each of the Reactor Trip Functions, ESFAS Functions, and associated permissives are properly surveilled.

b. The absence of Reactor Trip and ESFAS System "Response Time Testing." Response Time Testing ensures actuation response times are less than or equal to the maximum values assumed in the accident analysis.

c. The absence of Channel Checks. Channel Check Surveillance Requirements associated with Reactor Trip and ESFAS Instrumentation have not been included. This is a deviation from NUREG-1431.

d. The transition from a "Channelized" concept to a "Divisional" concept as it relates to surveillance testing requirements applicable to the TXS digital I&C platform design, specifically:

    1. Performance of a "CALIBRATION" vice "CHANNEL CALIBRATION"
    2. Performance of a "DIVISION OPERATIONAL TEST" vice "CHANNEL OPERATIONAL TEST"
    3. Performance of an “ACTUATING DEVICE OPERATIONAL TEST” vice “TRIP ACTUATING DEVICE OPERATIONAL TEST”
    4. Addition of a "SENSOR OPERATIONAL TEST"

e. The absence of the "DIVISIONAL OPERATIONAL TEST" from the Surveillance Requirements of LCO 3.3.1. The "DIVISIONAL OPERATIONAL TEST" is specified in the EPR GTS, "Definitions" Section of 1.0, USE AND APPLICATIONS (pg 1.1-2).

This additional information is needed to ensure that all Reactor Trip and ESFAS functions are being properly surveilled under the TELEPERM XS digital I&C platform, especially considering the fact that these functions (including permissives) share common components/sensors.

16-194

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to better describe the Limiting Trip Setpoint (LTSP) values and references to “SENSOR OPERATIONAL TEST” and “channel” in the EPR Bases.

The EPR Bases, Background Section (pg B 3.3.1-3, first paragraph), states that the “LTSP is a predetermined setting for a protective device chosen to ensure automatic actuation prior to the process variable reaching the Analytical Limit and thus ensuring that the SL would not be exceeded.” The last paragraph on page B 3.3.1-3 states that “however, there is also some point beyond which the device would have not been able to perform its function due, for example, to greater than expected drift. This LTSP specified in Table 3.3.1-2 is the least conservative value of the as-found setpoint that a channel can have during testing such that a channel is OPERABLE if the trip setpoint is found conservative with respect to the Allowable Value during a SENSOR OPERATIONAL TEST (SOT). As such, the Allowable Value differs from the LTSP by an amount greater than or equal to the expected instrument channel uncertainties, such as drift, during the surveillance interval.” The phrase “this LTSP specified in Table 3.3.1-2 is the least conservative value” implies that the least conservative values of the LTSPs have been specified in the table. Would this statement be more accurate if it stated “this as-found value of the LTSP specified in Table 3.3.1-2 is the least conservative value.”

The reference to SENSOR OPERATIONAL TEST (SOT) should be replaced by DIVISION OPERATIONAL TEST (DOT) based on the definitions in the EPR GTS, Section 1.1, “1.0, USE AND APPLICATIONS.” The DOT definition states that the test “shall include adjustments, as necessary, of the required alarm, interlock, and trip setpoints required for division OPERABILITY such that the setpoints are within the necessary range and accuracy.” The SOT definition makes no reference to setpoints.

In the EPR Bases, Background Section (pg B 3.3.1-3 last paragraph), the two references to "channel" in the Bases statement should be replaced by the word "division." The TELEPERM XS digital I&C platform utilizes a "divisional approach" as opposed to "channelized approach."

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

16-195

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to justify the Self-Powered Neutron Detector (SPND) value specified in the EPR GTS, Table 3.3.1-1, for "Minimum Required for Functional Capability."

The EPR GTS, Table 3.3.1-1, specifies 51 SPNDs as the "Minimum Required for Functional Capability." In accordance with the EPR FSAR, Section 7.1.1.5.2, there are 72 SPNDs that continuously measure the neutron flux at given positions in the core to provide a three-dimensional flux distribution. Remote Acquisition Units (RAUs) in each division acquire one-fourth (18) of the total SPND measurements and distribute those measurements to APUs in all four divisions allowing for an accurate calculation over the whole core in each division. Provide additional information or corrections as necessary to address the minimum number of SPNDs required.

This additional information is needed to ensure accuracy, completeness and consistency within the EPR GTS and FSAR.

16-196

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to justify the Limiting Trip Setpoint (LTSP) time range specified in the EPR GTS, Table 3.3.1-2, for ESFAS Function B.10.a.

The EPR GTS, Table 3.3.1-2, ESFAS Function B.10.a (EDG Start on Degraded Grid Voltage), specifies a LTSP time range of $\geq$ 270 seconds and $\leq$ 300 seconds without a Safety Injection System actuation signal. On the basis of engineering judgment, this time frame appears to be excessive considering the consequences associated with an extended degraded voltage condition. Provide additional information or corrections as necessary to address the length of time specified.

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

16-197

LCO 3.3.2, Post Accident Monitoring (PAM) Instrumentation

Provide a technical justification for omission of the Channel Check Surveillance Requirement from LCO 3.3.2.

Performance of a CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison between the parameter indicated on one channel to a similar parameter on other channels. The surveillance is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviation between the two instrument channels could be an indication of excessive instrument drift in one of the channels or an indication of something more serious. CHANNEL CHECKS will detect gross channel failure and are therefore important in verifying that instrumentation continues to operate properly between CALIBRATIONS. This is a deviation from NUREG-1431, “Standard Technical Specifications Westinghouse Plants.”

This additional information is needed to ensure that PAMs instrumentation is being properly surveilled and that deviations from STS are adequately justified.

16-198

LCO 3.3.3, Remote Shutdown System (RSS)

Provide a technical justification for omission of the Channel Check Surveillance Requirement from LCO 3.3.3.

Performance of a CHANNEL CHECK ensures that a gross failure of instrumentation has not occurred. A CHANNEL CHECK is normally a comparison between the parameter indicated on one channel to a similar parameter on other channels. This surveillance is based on the assumption that instrument channels monitoring the same parameter should read approximately the same value. Significant deviation between the two instrument channels could be an indication of excessive instrument drift in one of the channels or an indication of something more serious. CHANNEL CHECKS will detect gross channel failure and are therefore important in verifying that instrumentation continues to operate properly between CALIBRATIONS. This is a deviation from NUREG-1431, “Standard Technical Specifications Westinghouse Plants.”

This additional information is needed to ensure that Remote Shutdown System instrumentation is being properly surveilled and that deviations from STS are adequately justified.

16-199

LCO 3.3.2, Post Accident Monitoring (PAM) Instrumentation

Provide additional information necessary to explain how CONDITION “C” is implemented with respect to PAM Functions 1, 4, 5, 7, 8, 9 and 15 in the EPR GTS, Table 3.3.2-1.

The EPR GTS, LCO 3.3.2, Condition “C” states that with “One or more Functions with two required divisions inoperable,” perform Required Action C.1 to “Restore one division to OPERABLE status” within 7 days. The EPR GTS, Table 3.3.2-1, “Required Number of Divisions” column specifies “1 per loop” (Functions 1, 5, 7, 8, 9), “1 per pool” (Function 4), and “1 per line” (Function 15). The correlation between “1 per loop, 1 per pool, 1 per line” and the “Required Number of Divisions,” is not explained with respect to the implementation of Condition “C”. This information needs to be added to the EPR Bases, LCO 3.3.2, ACTIONS Section C.1.

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

16-200

LCO 3.3.1, Protection System

Provide additional information and the necessary changes to explain the frequency referenced in the EPR Bases, SURVEILLANCE REQUIREMENTS, Section SR 3.3.1.8 information.

The EPR GTS, SR 3.3.1.8, “Perform ACTUATION DEVICE OPERATIONAL TEST” (ADOT), specifies a frequency of 24-months. The EPR Bases, Surveillance Requirements, Section SR 3.3.1.8 (pg B 3.3.1-77), states the requirements for “performance of an ADOT every 31 days.” An ADOT is already being performed every 31 days in accordance with SR 3.3.1.3. NUREG-1431, “Standard Technical Specifications Westinghouse Plants,” specifies an 18-month frequency for a TRIP ACTUATING DEVICE OPERATIONAL TEST (TADOT) which appears to be consistent with the EPR GTS, SR 3.3.1.8 frequency of 24-months. Identify the correct frequency, provide a technical justification for the frequency selected, and make any necessary corrections.

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

16-201

LCO 3.3.1, Protection System

Provide additional information necessary to adequately explain the EPR Bases, ACTIONS Section P.1, LCO related information.

The EPR Bases, ACTIONS Section P.1 (pg B 3.3.1-69), states that “if Table 3.3.1-1 directs entry into Condition P, the associated CVCS isolation valves are immediately declared inoperable. The actions of LCO 3.4.9, “Pressurizer,” provide adequate compensatory actions to assure unit safety.” This information does not provide sufficient detail to adequately explain the intent. The EPR Bases needs additional information regarding the “adequacy of compensatory actions” provided by LCO 3.4.9 with respect to CVCS Charging Valve and Auxiliary Spray Valve inoperability.

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

16-202

LCO 3.3.1, Protection System

Provide additional information and any corrections necessary to explain the EPR Bases, SURVEILLANCE REQUIREMENTS, Section SR 3.3.1.1 surveillance reference.

The EPR Bases, Surveillance Requirements, Section SR 3.3.1.1 (pg B 3.3.1-73), references SR 3.3.1.2 in the first paragraph. It appears as though the actual reference should be SR 3.3.1.1 as opposed to SR 3.3.1.2. Determine the appropriate reference, provide a technical justification, and make corrections, as applicable.

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

16-203

LCO 3.3.1, Protection System

Provide a technical justification for the omission of the “Source Range Neutron Flux” Reactor Trip function from the EPR GTS, LCO 3.3.1.

In accordance with NUREG-1431, “Standard Technical Specifications Westinghouse Plants,” the Source Range Neutron Flux Reactor Trip function ensures protection against an uncontrolled RCCA bank withdrawal accident from a subcritical condition during startup. The applicable modes are Modes 2(d), 3(a), 4(a), and 5(a).

The EPR GTS, LCO 3.3.1, Protection System Reactor Trip functions “High Neutron Flux (Intermediate Range)” and “Low Doubling Time (Intermediate Range),” both protect against excessive reactivity additions during reactor startup from a subcritical or low power startup condition. Applicable modes associated with both of these functions are Modes 1(g), 2, 3(e). Although the Reactor Trip Functions are similar between NUREG-1431 and the EPR GTS, the mode applicability is different. The EPR Protection System does not provide protection against excessive reactivity additions from a subcritical condition during reactor startup in Modes 4 and 5. Provide a technical justification for this deviation from the STS and include any corrections necessary to resolve this apparent discrepancy.

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

16-204

LCO 3.3.1, Protection System

Provide a technical justification for the omission of the “Overtemperature Delta T” Reactor Trip function from the EPR GTS, LCO 3.3.1.

In accordance with NUREG-1431, “Standard Technical Specifications Westinghouse Plants,” an “Overtemperature Delta T” Reactor Trip function ensures that the design limit DNBR is met. The applicable modes are Modes 1 and 2.

The EPR GTS, LCO 3.3.1, Protection System Reactor Trip on “Low Departure from Nucleate Boiling Ratio,” protects the fuel against the risk of departure from nucleate boiling during events that lead to a decrease in the DNBR value. The EPR GTS, Table 3.3.1-2 mode applicability is Mode 1 ($\geq$ 10 percent) for Functions A.1.a through A.1.e. Although the Reactor Trip functions are similar between NUREG-1431 and the EPR GTS, the mode applicability is different. The EPR Protection System does not provide protection against Low DNBR in either Mode 1 (< 10 percent power) or Mode 2. Provide a technical justification for this deviation from the STS and include any corrections necessary to resolve this apparent discrepancy.

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

16-205

LCO 3.3.1, Protection System

Provide a technical justification for the omission of the “Overpower Delta T” Reactor Trip function from the EPR GTS, LCO 3.3.1.

In accordance with NUREG-1431, “Standard Technical Specifications Westinghouse Plants,” an “Overpower Delta T” Reactor Trip function ensures the integrity of the fuel (i.e., no fuel pellet melting and less than 1 percent cladding strain) under all possible overpower conditions. The applicable modes are Modes 1 and 2.

The EPR GTS, LCO 3.3.1, Protection System Reactor Trip on “High Linear Power Density,” protects the fuel against melting at the center of the fuel pellet during events which lead to an increase in the linear power density within the core. The EPR GTS, Table 3.3.1-2 mode applicability is Mode 1 ($\geq$ 10 percent) for Function A.2. Although the Reactor Trip functions are similar between NUREG-1431 and the EPR GTS, the mode applicability is different. The EPR Protection System does not provide protection against fuel pellet melting in either Modes 1 (< 10 percent power) or Mode 2. Provide a technical justification for this deviation from the STS and include any corrections necessary to resolve this apparent discrepancy.

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

16-206

LCO 3.3.1, Protection System (4507)

Provide the additional information and any changes needed regarding the EPR GTS, Table 3.3.1-2, and associated Bases, use of the term “Limiting Trip Setpoint” (LTSP) and the LTSP values specified.

The EPR GTS, Table 3.3.1-2, and Bases BACKGROUND Section (pg B 3.3.1-3, first paragraph), states that “the LTSP is a predetermined setting for a protective device chosen to ensure automatic actuation prior to the process variable reaching the Analytical Limit and thus ensuring that the SL would not be exceeded.”

The EPR Bases, Background Section (pg B 3.3.1-2, REVIEWER’S NOTE), states that the term “limiting Trip Setpoint (LTSP)” is generic terminology for the setpoint value calculated by means of the plant-specific setpoint methodology documented in a document controlled under 10 CFR 50.59. The term LTSP indicates that no additional margin has been added between the Analytical Limit and the calculated trip setting. Where margin is added between the Analytical Limit and trip setpoint, the term Nominal Trip Setpoint is preferred.” The EPR Bases, Background Section (pg B 3.3.1-3, last paragraph), states that "[t]his LTSP specified in Table 3.3.1-2 is the least conservative value of the as-found setpoint that a channel can have during testing such that the channel is OPERABLE if the trip setpoint is found conservative with respect to the Allowable Value during a SENSOR OPERATIONAL TEST (SOT).”

Although an approved EPR instrument setpoint methodology exits, it is unclear how a calculated LTSP value can be specified based on instrumentation uncertainties when those uncertainties would not ordinarily be determined until after completion of the detailed design. Provide a technical justification for use of the term LTSP and validate the LTSP values provided in the EPR GTS, Table 3.3.1-2. Include any discussions necessary to ensure a clear understanding of how the LTSP values specified ensure that an Allowable Value will not be exceeded and that an Analytical Limit will not be challenged.

This information is needed to ensure the completeness and accuracy of the EPR GTS, Table 3.3.1-2, and associated Bases.

16-207

LCO 3.3.1, Protection System

Provide the additional information and any changes needed regarding the EPR GTS, Table 3.3.1-2, footnote (c), and the associated Bases.

The EPR GTS, Table 3.3.1-2, footnote (c), states that “setpoints more conservative than the LTSP are acceptable provided that the as-found and as-left tolerances apply to the actual setpoint implemented in the Surveillance procedures to confirm Trip/Actuation Function performance. The methodologies used to determine the as-found and as-left tolerances are specified in a document controlled under 10 CFR 50.59.”

The EPR Bases, Background Section, REVIEWER’S NOTE (pgs B 3.3.1-2, B 3.3.1-3), states that “where the LTSP is not included in Table 3.3.1-2 for the purpose of compliance with 10 CFR 50.36, the plant-specific term for the Limiting or Nominal Trip Setpoint must be cited in Note b of Table 3.3.1-2. The brackets indicate plant-specific

terms may apply, as reviewed and approved by the NRC. The as-found and as-left tolerances will apply to the actual setpoint implemented in the Surveillance procedures to confirm channel performance. Licensees are to insert the name of the document(s) controlled under 10 CFR 50.59 that contain the LTSP and the methodology for calculating the as-left and as-found tolerances, for the phrase “a document controlled under 10 CFR 50.59” in the specifications.”

The ERP GTS, Table 3.3.1-2, does not contain any bracketed items associated with the LTSP as stated in the Reviewer’s Note. In addition, it appears as though the Reviewer’s Note reference to footnote (b) should actually be footnote (c), on the basis of the footnote contents.

Plant-specific instrumentation setpoint methodologies will not be controlled in accordance with the 10 CFR 50.59 process as implied in both footnote (c) and the Bases Reviewer’s Note. NRC staff has concluded that instrumentation setpoint processes and methodologies will be contained within the technical specifications (i.e. the Technical Specification Administrative Controls Section) rather than external to the technical specifications. As such, all references to “instrumention setpoint methodology documents controlled under 10 CFR 50.59” in the EPR GTS, Table 3.3.1-2, footnote (c), and associated Bases, BACKGROUND Section, REVIEWER’S NOTE, are not applicable.

Provide the changes needed to ensure that the referenced information is made consistent and clearly stated in both the EPR GTS and associated Bases.

16-208

LCO 3.3.1, Protection System

Provide the additional information and any changes necessary regarding the EPR GTS, Table 3.3.1-2, use of footnote (d) as a LTSP value for the Low DNBR Reactor Trip function. Incorporate additional information in the EPR Bases document to describe the COLR setpoint reference.

The EPR GTS, Table 3.3.1-2, Low Departure From Nucleate Boiling Ratio (A.1.a through A.1.e), LTSP column, specifies footnote (d) which states “as specified in the COLR.” The methodology for determining the Low DNBR Reactor Trip setpoint in accordance with the COLR, does not appear to be controlled under an approved program contained in Technical Specification Administrative Controls Section 5.5 (Programs and Manuals). The EPR Bases, APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY Section A.1, makes no reference to or mention of the COLR with respect to the Low DNBR LTSP values.

Provide a technical justification for the use of footnote (d) in Table 3.3.1-2 as a valid Low DNBR Reactor Trip LTSP value. Include the necessary discussion in the Bases to ensure a clear understanding of the COLR as it relates to the LTSP value.

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

16-209

LCO 3.3.1, Protection System

Provide the additional information and any changes necessary regarding the EPR GTS, Table 3.3.1-2, use of footnote (q) as a LTSP value for the Pressure Safety Relief Valve (PSRV) ESF Actuation function. Incorporate additional information in the EPR Bases document to describe the PTLR setpoint reference.

The EPR GTS, Table 3.3.1-2, PSRV Actuation (B.12.a and B.12.b), LTSP column, specifies footnote (q) which states “the LTOP arming temperature specified in the PTLR.” The methodology for determining the PSRV ESF Actuation setpoint in accordance with the PTLR, does not appear to be controlled under an approved program contained in Technical Specification Administrative Controls Section 5.5 (Programs and Manuals). The EPR Bases, APPLICABLE SAFETY ANALYSES, LCO, and APPLICABILITY Section B.12, makes no reference to or mention of the PTLR with respect to the PSRV Actuation LTSP values.

Provide a technical justification for the use of footnote (q) in Table 3.3.1-2 as a valid PSRV Actuation LTSP value. Include the necessary discussion in the Bases to ensure a clear understanding of the PTLR as it relates to the LTSP value.

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