Nuclear Operating Company
South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

July 2, 2015
NOC-AE-15003257
10 CFR 2.202

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

South Texas Project
Unit 2
Docket No. STN 50-499
Notification of Compliance with Orders EA-12-049 for Mitigation Strategies for Beyond-Design-Basis External Events and EA-12-051 for Reliable Spent Fuel Pool Instrumentation
(TAC Nos. MF0826 and MF0828)

References:

1. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events", March 12, 2012 (AE-NOC-12002268)(ML12073A195)

2. NRC Order Number EA-12-051, "Issuance of Order to Modify Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation," March 12, 2012 (AE-NOC-12002271) (ML12054A679)

3. Letter from D.L. Koehl, STPNOC, to NRC Document Control Desk, "STPNOC Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)", February 28, 2013 (NOC-AE-13002963) (ML13070A011)

4. Letter from D. L. Koehl, STPNOC, to NRC Document Control Desk, "Overall Integrated Plan Regarding Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)," February 28, 2013 (NOC-AE-13002959) (ML13070A006)

5. Letter from T. Brown, NRC, to D.L. Koehl, STPNOC, "South Texas Project, Units 1 and 2 – Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF0825, MF0826, MF0827, and MF0828)", May 6, 2015 (AE-NOC-15002661) (ML15111A465)

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The purpose of this letter is to fulfil the requirement to report to the NRC that STP Unit 2 is in full compliance with Order EA-12-049 (Reference 1) regarding mitigation strategies for beyond-design-basis external events and Order EA-12-051 (Reference 2) regarding reliable spent fuel pool instrumentation.

Orders EA-12-049 and EA-12-051 require full implementation no later than two refueling cycles after submittal of the Overall Integrated Plans (References 3 and 4) or December 31, 2016, whichever comes first.

The enclosure provides a brief summary of the key elements associated with compliance with the Orders including a completed milestone accomplishment schedule. The attachment to the enclosure provides a summary response for each of the open and pending items being tracked by the NRC staff in the Safety Evaluation (SE) Tracker as documented in the Onsite Audit Report (Reference 5).

There are no regulatory commitments in this letter.

If there are any questions, please contact Wendy Brost at (361) 972-8516 or me at (361) 972-7566.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on: July 2, 2015

G. T. Powell
Site Vice President

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Enclosure: Summary of Compliance with NRC Orders Regarding Mitigation Strategies for Beyond-Design-Basis External Events (EA-12-049) and Reliable Spent Fuel Pool Instrumentation (EA-12-051) for STP Unit 2

Attachment: Summary of Responses for Open and Pending Items on the Safety Evaluation Tracker

cc:
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ENCLOSURE

Summary of Compliance with NRC Orders Regarding Mitigation Strategies for Beyond-Design-Basis External Events (EA-12-049) and Reliable Spent Fuel Pool Instrumentation (EA-12-051) for STP Unit 2

1. Introduction

STP Nuclear Operating Company (STPNOC) developed an Overall Integrated Plan (OIP) (Reference 3) to provide diverse and flexible coping (FLEX) strategies in response to Order EA-12-049 (Reference 1). The final FLEX strategies differ substantially from the strategies described in the OIP – strategy updates have been submitted through periodic six-month update letters (References 6 - 9). STP also developed an OIP (Reference 4) to address reliable spent fuel pool level instrumentation (SFPLI) in response to Order EA-12-051 (Reference 2), also supplemented by periodic six-month updates (References 10 - 13).

The information provided in this submittal documents compliance with Orders EA-12-049 and EA-12-051 for STP Unit 2.

2. Milestone Accomplishments

Issues from the NRC Interim Staff Evaluation (ISE) for FLEX and SFPLI Order compliance (References 10 and 11) and Audit Report (Reference 5) have been addressed by STPNOC.

The issues that were identified as open and pending in the NRC tracking system are listed below:

ISE Open Item (ISE OI) - ISE OI 3.2.1.1.B

ISE Confirmatory Items (ISE CI) - ISE CI 3.2.1.2.C, ISE CI 3.2.1.3.A, ISE CI 3.2.1.4.A

Audit Questions (AQ) - AQ #25

Additional Safety Evaluation (SE) needed information – SE #9, SE #10, SE #11, SE #17

STPNOC has no remaining open or pending Licensee Identified Open Items or SFPLI Requests for Additional Information (RAIs).

A summary of the response to each of the open and pending issues is provided in the attachment to this enclosure. The open and pending items do not affect the STPNOC compliance with Order EA-12-049 nor Order EA-12-051 for STP Unit 2.

3. Milestone Schedule – Items Complete

Unit 2 FLEX and SFPLI Milestone	Unit 2 FLEX Completion Date	Unit 2 SFPLI Completion Date
Submit Overall Integrated Plan	February 28, 2013	February 28, 2013
Submit 6 Month Updates		
1st Update	August 26, 2013	August 27, 2013
2nd Update	February 27, 2014	February 27, 2014
3rd Update	August 27, 2014	August 27, 2014
4th Update	February 26, 2015	February 26, 2015
Walk-throughs or Demonstrations	April 30, 2015	N/A
Perform Staffing Analysis		
Phase 1 Staffing Assessment	June 3, 2013	N/A
Phase 2 Staffing Assessment	November 25, 2014	N/A
Revised Phase 2 Staffing Assessment	July 2, 2015	N/A
Modifications		
Unit 2 Modifications Design Completion	April 30, 2015	April 18, 2015
Unit 2 Final Modification Implementation	May 1, 2015	May 1, 2015
Storage		
Equipment Storage Complete	April 30, 2015	N/A
National SAFER Response Center (NSRC)		
NSRC Plan Requirements Complete	April 18, 2015	N/A
Procedures		
Issue Site-Specific FSGs	April 30, 2015	N/A
Issue Operations/Maintenance Procedures	April 30, 2015	April 30, 2015
Training		
Training Complete	March 2015	January 2015
Unit 2 FLEX & SFPLI Compliance Date	May 7, 2015	May 7, 2015
Submit Compliance Letter[1]	July 2, 2015	July 2, 2015

[1] Action completed with this submittal

4. Order EA-12-049 Compliance Elements – Summary

STPNOC has completed implementation of Order EA-12-049 for Unit 2 including the following elements:

Strategies – Complete

STP Unit 2 FLEX strategies are in compliance with Order EA-12-049. To meet the intent of the Order, STPNOC followed the guidance provided in NEI 12-06 (Reference 12) with the exception of the Alternate Approaches listed below. These Alternate Approaches have been presented to and discussed with the NRC review staff and are noted in the Onsite Audit Report (Reference 5):

- STP pre-staged some of the FLEX response equipment including two diesel generators in protected structures on top of the Mechanical Auxiliary Building (MAB) roof, and pumps, hoses, associated equipment inside existing Class 1 plant structures protected against design-basis external events. The primary reason for pre-staging this equipment is due to difficulties in retrieving and deploying equipment following a design-basis flooding event.

- STP utilizes two pre-staged pumps with separate injection pathways for Reactor Coolant System (RCS) fill instead of a single pump with primary and alternate connection points and injection pathways supplemented by a portable pump. In the STP strategy, the failure of a pre-staged pump would render one of the two injection pathways unavailable as opposed to the two pathways that would be available using the portable pump strategy. As a compensatory measure, STP reduced the allowed out of service time for both the positive displacement pump (PDP) and FLEX RCS makeup pump and their associated connections and flowpaths. STP FLEX strategies also rely on pre-staged pumps for Steam Generator (SG) makeup and SFP makeup, however, STP has the ability to makeup to these systems using a portable pump.

Further details and justifications for these alternate approaches to the approved NEI 12-06 guidance will be included in the Final Integrated Plan (FIP) to be submitted following the compliance outage for STP Unit 1 in the Fall of 2015.

Modifications – Complete

All modifications required to support the FLEX strategies for STP Unit 2 have been fully implemented in accordance with station processes.

Equipment – Procured and Maintenance and Testing Performed – Complete

The equipment required to implement the FLEX strategies for STP Unit 2 has been procured, received, initially tested and performance verified as recommended in accordance with NEI 12-06 (Reference 12) and is available for use.
Maintenance and testing requirements for FLEX equipment are included in the STP Preventative Maintenance Program such that equipment reliability is monitored and maintained.

Procedures – Complete

STPNOC has developed FLEX Support Guidelines (FSGs) for Unit 2 and the FSGs have been integrated into existing procedures. Other affected procedures required for FLEX implementation have also been revised. The FSGs and applicable procedures have been verified and are available for use and are being controlled in accordance with station processes.

Training – Complete

All necessary training has been completed in accordance with the Systematic Approach to Training (SAT) as recommended in NEI 12-06.

Staffing – Complete

The STPNOC Phase 1 Staffing Assessment (Reference 17) was completed in accordance with the 10 CFR 50.54(f) request for information with respect to Near-Term Task Force (NTTF) Recommendation 9.3 for Emergency Preparedness (Reference 18). The STPNOC Phase 2 Staffing Assessment (Reference 19) was also completed in accordance with the 10 CFR 50.54(f) letter.

Following the development of the FSGs, STP performed a revalidation of the Phase 2 assessment to ensure the FLEX strategies could be implemented as written. STP determined that two additional maintenance personnel are required to implement the FLEX strategies for a two unit event in addition to the minimum on-shift staff required by the Emergency Plan for a single unit event. The needed personnel are currently procedurally obligated to be onsite at all times and STP has implemented administrative controls to ensure these staffing levels are maintained.

The results of the revalidation were communicated to the NRC and the Revised Phase 2 Staffing Assessment that resulted from the revalidation efforts was submitted to the NRC on July 2, 2015 (Reference 20).

National SAFER Response Center (NSRC) – Complete

STPNOC has joined the Strategic Alliance for FLEX Emergency Response (SAFER) Team Equipment Committee for off-site facility coordination. A site-specific SAFER Response Plan has been developed (Reference 21) and the requisite equipment is available at the NSRCs to support Phase 3 FLEX implementation in the event that it is needed.

Validation – Complete

STPNOC has completed validation of the FLEX strategies using station processes and in accordance with industry developed guidance to assure required tasks, manual actions and decisions for FLEX strategies are feasible and may be executed within the constraints identified in the FLEX strategy timeline.

FLEX Program Document – Established

The STPNOC FLEX Program Document (Reference 22) has been developed in accordance with the requirements of NEI 12-06 and will be controlled in accordance with station processes.

5. Order EA-12-051 Compliance Elements – Summary

STPNOC has completed implementation of the SFP level monitoring system in Unit 2 which includes: independent level sensors in the SFP area, battery backup and level indicators in the radwaste control room area. Modifications and training are complete and applicable procedures have been verified and are available for use in accordance with the site procedure control program.

References

1. NRC Order Number EA-12-049, "Issuance of Order to Modify Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events", March 12, 2012 (AE-NOC-12002268) (ML12073A195)

2. NRC Order Number EA-12-051, "Issuance of Order to Modify Licenses with Regard to Requirements for Reliable Spent Fuel Pool Instrumentation," March 12, 2012 (AE-NOC-12002271) (ML12054A679)

3. Letter from D.L. Koehl, STPNOC, to NRC Document Control Desk, "STPNOC Overall Integrated Plan in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigation Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)", February 28, 2013 (NOC-AE-13002963) (ML13070A011)

4. Letter from D. L. Koehl, STPNOC, to NRC Document Control Desk, "Overall Integrated Plan Regarding Commission Order Modifying Licenses with Regard to Reliable Spent Fuel Pool Instrumentation (Order Number EA-12-051)," February 28, 2013 (NOC-AE-13002959) (ML13070A006)

5. Letter from T. Brown, NRC, to D.L. Koehl, STPNOC, "South Texas Project, Units 1 and 2 – Report for the Onsite Audit Regarding Implementation of Mitigating Strategies and Reliable Spent Fuel Instrumentation Related to Orders EA-12-049 and EA-12-051 (TAC Nos. MF0825, MF0826, MF0827, and MF0828)", May 6, 2015 (AE-NOC-15002661) (ML15111A465)

6. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "STPNOC First Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)", August 26, 2013 (NOC-AE-13003027)(ML13249A060)

7. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "STPNOC Second Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)", February 27, 2014 (NOC-AE-14003089)(ML14073A458)

8. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "STPNOC Third Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)(TAC Nos. MF0825 and MF0826)", August 27, 2014 (NOC-AE-14003162)(ML14251A029)

9. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "STPNOC Fourth Six-Month Status Report in Response to March 12, 2012 Commission Order Modifying Licenses with Regard to Requirements for Mitigating Strategies for Beyond-Design-Basis External Events (Order Number EA-12-049)(TAC Nos. MF0825 and MF0826)", February 26, 2015 (NOC-AE-15003224)(ML15075A019)

10. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "Six-Month Status Update of Overall Integrated Plan in Response to Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation' (TAC Nos. MF0827 and MF0828)", August 27, 2013 (NOC-AE-13003020)(ML13249A078)

11. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "2nd Six-Month Status Update of Overall Integrated Plan in Response to Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation' (TAC Nos. MF0827 and MF0828)", February 27, 2014 (NOC-AE-14003089)(ML14066A388)

12. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "3rd Six-Month Status Update of Overall Integrated Plan in Response to Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation' (TAC Nos. MF0827 and MF0828)", August 27, 2014 (NOC-AE-14003164)(ML14251A028)

13. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "4th Six-Month Status Update of Overall Integrated Plan in Response to Order EA-12-051, 'Reliable Spent Fuel Pool Instrumentation' (TAC Nos. MF0827 and MF0828)", February 26, 2015 (NOC-AE-15003225)(ML15069A220)

14. Letter from J.S. Bowen, NRC, to D.L. Koehl, STPNOC, "Interim Staff Evaluation Relating to Overall Integrated Plan in Response to Order EA-12-049 (Mitigation Strategies) (TAC Nos. MF0825 and MF0826)", January 29, 2014 (AE-NOC-14002494)(ML13339A736)

15. Letter from B.K. Singal, NRC, to D.L. Koehl, STPNOC, "South Texas Project, Units 1 And 2 - Interim Staff Evaluation and Request For Additional Information Regarding the Overall Integrated Plan for Implementation of Order EA-12-051, Reliable Spent Fuel Pool Instrumentation (TAC Nos. MF0827 AND MF0828)", September 19, 2013 (AE-NOC-13002466)(ML13254A210)

16. Nuclear Energy Institute (NEI) Guidance 12-06, "Diverse and Flexible Coping Strategies (FLEX) Implementation Guide," Revision 0, August 21, 2012 (ML12242A378)

17. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "Revised Phase 1 Staffing Assessment Submitted in Response to Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights", June 3, 2013 (NOC-AE-13003004)(ML13182A021)

18. Letter from E.J. Leeds, NRC, to All Power Reactor Licensees, "Request for Information Pursuant to Title 10 of the Code of Federal Regulations 50.54(f) Regarding Recommendations 2.1, 2.3, and 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident", March 12, 2012 (AE-NOC-12002269) (ML12053A340)

19. Letter from A. Capristo, STPNOC, to NRC Document Control Desk, "Response to Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident – Phase 2 Staffing Assessment", November 25, 2014 (NOC-AE-14003189)

20. Letter from G.T. Powell, STPNOC, to NRC Document Control Desk, "Supplement to Response to Request for Information Pursuant to 10 CFR 50.54(f) Regarding Recommendation 9.3 of the Near-Term Task Force Review of Insights from the Fukushima Dai-Ichi Accident – Phase 2 Staffing Assessment", July 2, 2015 (NOC-AE-15003255)

21. STPNOC Vendor Technical Document, VTD-A977-0003, "SAFER Response Plan for South Texas Project Electric Generating Station", Revision 0 (STI 34077493)

22. STPNOC Document, FLEX-0001, "Diverse and Flexible Coping Strategies (FLEX) Program Document", Revision 0 (STI 33759523)

23. STPNOC Calculation, STP-CP-006, "ELAP Analysis with the South Texas Project RETRAN-02 Input Model", Revision 1, April 15, 2015 (STI 34064235)

24. AREVA Nuclear Products Advisory Bulletin, NPAB-024-2015 RCP-001, "RCP Seal Testing at ELAP Temperatures – High Temperature O-Rings", January 7, 2015

25. NUREG-0800, Standard Review Plan for the Review of Safety Analysis Reports for Nuclear Power Plants, Chapter 9, Section 9.2.5, Revision 2, "Ultimate Heat Sink", July 31, 1981 (ML052350549)

26. Westinghouse Nuclear Safety Advisory Letter, NSAL 15-2, "Impact of a Break in the Reactor Coolant Pump No. 1 Seal Leak-off Line Piping on Seal Leakage During a Loss of Seal Cooling Event", March 23, 2015 (ML15105A346)

27. Westinghouse InfoGram, IG-15-1, "Elevated Transient Pressure in Reactor Coolant Pump No. 1 Leak-Off Line Following a Loss of All Seal Cooling", March 19, 2015 (WN-NOC-15000010)

28. Westinghouse Nuclear Safety Advisory Letter, NSAL 14-1, Revision 1, "Impact of Reactor Coolant Pump No. 1 Seal Leakoff Piping on Reactor Coolant Pump Seal Leakage During a Loss of All Seal Cooling", February 10, 2014 (WN-NOC-14000003)

29. STPNOC Procedure, 0POP05-EO-EC00, "Loss of All AC Power", Revision 24 (STI 34116305)

30. STPNOC FLEX Support Guideline Procedure, 0POP12-ZO-FSG04, "ELAP DC Bus Load Shed/Management", Revision 0 (STI 34093163)

31. Westinghouse Report by L.R. Gussenbauer, PWROG 14015-P, Revision 2, Task 2, "Determine Seal Flow Rates", April 2015

32. STP White paper by P. Jensen and C.R., Albury, "White Paper demonstrating the Applicability of the RETRAN-3D Code for Analysis of the ELAP", August 21, 2014

33. Westinghouse Report by L.R. Gussenbauer, PWROG 14074-P, Task 8, "Benchmarking the ITCHSEAL Code", April 2015

ATTACHMENT

Summary of Responses for Open and Pending Items on the Safety Evaluation Tracker

STPNOC provides the following responses to the Open and Pending items identified in the NRC Safety Evaluation (SE) Tracker. The NRC identified information needed from STP to resolve these open items in the Onsite Audit Report (Reference 5):

Item	Description	Information Needed by NRC	Summary Response
ISE OI 3.2.1.1.B (*Pending*)	Provide analysis of the ELAP transient that is applicable to STP and which demonstrates the adequacy of the mitigating strategy proposed for STP. This includes specification of an acceptable definition for the transition to reflux condensation cooling to ensure that the analysis is not credited beyond this juncture. A sufficient number of cases should be included in the analysis to demonstrate the acceptability of different strategies that may be necessary to mitigate an ELAP (e.g., as discussed in Section 3.2.1.6, in some cases "N" and "N+1" pumps have different capabilities, which may substantially affect the sequence of events in the integrated plan).	The staff reviewed STP's calculation during the audit. The staff is developing additional questions and will provide those to the licensee separately as part of the ongoing audit process. No additional information from the licensee is requested at this time.	STPNOC provided the requested calculation, STP-CP-0006, during the onsite audit (Reference 23). As stated in the Onsite Audit Report, no additional information is needed at this time.

Item	Description	Information Needed by NRC	Summary Response
ISE CI 3.2.1.2.C	In some plant designs, such as those with 1200 to 1300 psia SG design pressures and no accumulator backing of the main steam system PORV actuators, the cold legs could experience temperatures exceeding 580 degrees °F before cooldown commences. This is beyond the qualification temperature (550 degrees °F) of the O-rings used in the RCP seals. For such Westinghouse designs, a discussion of the information (including applicable analysis and relevant seal leakage testing data) should be provided to justify that (1) the integrity of the associated O-rings will be maintained at the temperature conditions experienced during the ELAP event, and (2) the seal leakage rate of 21 gpm/seal used in the ELAP is adequate and acceptable.	The staff requests the licensee make available for audit documentation that identifies the types of O-rings that are installed, or will be installed in future operating cycles, and justification for their survivability during the ELAP event.	The high temperature O-rings used in the STP Reactor Coolant Pump (RCP) seals are for the Model 100A pump. As described in Nuclear Products Advisory Bulletin (NPAB) 024-2015, "RCP Seal Testing at ELAP Temperatures – High Temperature O-Rings" (Reference 24), AREVA modified its test procedures and retested multiple batches of O-ring material incorporating the higher temperature of 582°F and increasing stay time from 20 hours to 58 hours. All tested O-rings passed using these higher test values with sufficient margin. The STP O-rings meet the higher temperature requirements. This NPAB was made available to the NRC review team electronically via the Inspection Management System (IMS) portal.

Item	Description	Information Needed by NRC	Summary Response
ISE CI 3.2.1.3.A	The licensee should address the following issues associated with decay heat modeling: (1) specify the value of the multiplier applied to the ANS 5.1 – 1979 decay heat standard for the ELAP event and its basis. (2) Clarify whether the multiplier would be capable of accounting for the residual heat contribution from actinides (e.g. plutonium, neptunium) and neutron absorption in fission products or whether these residual heat sources were accounted for explicitly. (3) Clarify whether the discussion applies to the RETRAN-3D thermal-hydraulic analysis or whether it applies to auxiliary calculations (e.g., the determination of steam generator makeup required during various phases of the ELAP coping analysis).	The staff requests the licensee make available for audit documentation that demonstrates the thermal/hydraulic analysis assumptions are bounding, or are well representative of the current licensing basis for long-term decay heat (i.e. Updated Final Safety Analysis Report (UFSAR) Revision 16, Table 6.2.1.3-6a); or justification that UFSAR Revision 16, Table 6.2.1.3-6, is reasonable to use for ELAP event, even if it is not the STP licensing basis for long-term decay heat.	Section 3.5 of STP calculation STP-CP-006 (Reference 23) demonstrates that the decay heat assumed in the RETRAN-3D analysis bounds the decay heat used for design basis events documented in the UFSAR. The decay heat presented in UFSAR Table 6.2.1.3-6 is based on the 1979 American National Standards Institute (ANSI) decay heat standard. This calculation was made available to the NRC review team electronically via the IMS portal. An additional comparison of the RETRAN-3D calculated decay heat and the decay heat determined by Branch Technical Position (BTP) Auxiliary Systems Branch (ASB) 9-2, "Residual Decay Energy for Light-Water Reactors for Long-Term Cooling" (Reference 25) has also been made available to the NRC review team electronically via the IMS portal. Over a 24 hour evaluation period, RETRAN-3D over predicts decay heat, which is conservative for the determination of Auxiliary Feedwater usage.
ISE CI 3.2.1.4.A *(Pending)*	Confirm that key initial plant parameters and assumptions used in the forthcoming RETRAN-3D analysis are consistent with the appropriate values from NEI 12-06, Section 3.2, or justify any deviations.	This item is open pending staff review. No additional information from the licensee is requested at this time.	As stated in the Audit Report, this item is open pending NRC staff review and no additional information is needed at this time.

Item	Description	Information Needed by NRC	Summary Response
AQ #25	Provide the manufacturer's name and model number for the reactor coolant pumps and the reactor coolant pump seals. Discuss whether or not the reactor coolant pump and seal combination complies with a seal leakage model described in WCAP-17601.	Some information has been provided by the Pressurized Water Reactor Owners Group (PWROG) to attempt to address similarity of AREVA and Westinghouse seals. The staff has identified questions associated with this information that will require further discussion with PWROG and the licensee as part of the ongoing audit process. No additional information from the licensee is requested at this time.	PWROG is working to address this issue with the NRC. As stated in the Audit Report, no additional information is needed from STPNOC at this time.
SE #9 *(Pending)*	Questions related to Westinghouse Nuclear Safety Advisory Letter 14-1, "Impact of Reactor Coolant Pump No. 1 Seal Leakoff Piping on Reactor Coolant Pump Seal Leakage During a Loss of All Seal Cooling".	This item is open pending staff review. No additional information from the licensee is requested at this time.	As stated in the Audit Report, this item is open pending NRC staff review and no additional information is needed at this time.

Item	Description	Information Needed by NRC	Summary Response
SE #10	Please provide adequate justification for the seal leakage rates calculated according to the Westinghouse seal leakage model that was revised following the issuance of NSAL-14-1. The justification should include a discussion of the following factors: a. benchmarking of the seal leakage model against relevant data from tests or operating events, b. discussion of the impact on the seal leakage rate due to fluid temperature greater than 550°F resulting in increased deflection at the seal interface, c. clarification whether the second stage reactor coolant pump seal would remain closed under ELAP conditions by the revised seal leakage model and a technical basis to support the determination, and, d. justification that the interpolation scheme used to compute the integrated leakage from the reactor coolant pump seals from a limited number of computer simulations (e.g., three) is realistic or conservative.	The PWROG is developing and validating documentation that leakage rates in PWROG-series reports are valid. The staff is reviewing the preliminary results of this work and will require further discussion with the PWROG and licensee as part of the ongoing audit process. No additional information from the licensee is requested at this time.	PWROG is working to address this issue with the NRC. As stated in the Audit Report, no additional information is needed from STPNOC at this time.

Item	Description	Information Needed by NRC	Summary Response
SE #11	The NRC staff understands that Westinghouse has recently recalculated seal leakoff line pressures under loss of seal cooling events based on a revised seal leakage model and additional design-specific information for certain plants. a. Please clarify whether the piping and all components (e.g., flow elements, flanges, valves, etc.) in your seal leakoff line are capable of withstanding the pressure predicted during an ELAP event according to the revised seal leakage model. b. Please clarify whether operator actions are credited with isolating low-pressure portions of the seal leakoff line, and if so, please explain how these actions will be executed under ELAP conditions. c. If over-pressurization of piping or components could occur under ELAP conditions, please discuss any planned modifications to the seal leakoff piping and component design and the associated completion timeline. d. Alternately, please identify the seal leakoff piping or components that would be susceptible to over-pressurization during ELAP conditions, clarify their locations, and provide justification that the seal leakage rate would remain in an acceptable range if the affected piping or components were to rupture.	The staff requests the licensee make available for audit documentation that (1) demonstrates the leakoff line piping and components up to and including the flow orifice are robust to the design pressure of the RCS and (2) that credit is not being taken for calculated leakage rates where the ¼" flow orifice unchokes (e.g., possible at RCS pressures below about 300 psia), since these flowrates may be underestimated if a rupture occurs in the piping and components downstream of the flow orifice.	STP Design Engineering performed a preliminary evaluation of pipe stresses in the leakoff lines. The evaluation indicates that no failures (i.e. ruptures) will occur in the No. 1 seal leakoff line piping in Unit 2. This evaluation was performed using the leakoff line conditions following a loss of all RCP seal cooling event: RCS cold leg temperature 582°F and 2500 psia pressure up to the leakoff line orifice. The pressure used in the STP evaluation is greater than the pressure suggested in Westinghouse Nuclear Safety Advisory Letter (NSAL) 15-2 and InfoGram (IG)15-1 (References 26 and 27). The results of the orifice plate evaluation presented in NSAL-14-1 (Reference 28) showed that there was only negligible erosion to the orifice plate after 16 hours at the worst case conditions used in the NSAL. The analysis also showed that there would be minimal deflection of the orifice plate. These results apply to the STP orifice plates in the No. 1 seal leakoff lines. The preliminary pipe stress evaluation therefore credits choked flow conditions at the orifice, resulting in lower temperatures and pressures downstream of the orifice. STP is in the process of performing and documenting a final engineering evaluation related to the No.1 seal leakoff line integrity under the described ELAP conditions for STP Unit 2. Plant modifications are not planned. In the STP emergency operating procedure for Loss of All AC Power (Reference 29), Operators are directed to close the RCP seal water return outside containment isolation valve manually at the valve location outside containment. This action can be performed in an ELAP.

Item	Description	Information Needed by NRC	Summary Response
SE #17	Load shed validation	The staff requests the licensee make available for audit validation of the battery load shed procedure.	A walkdown of the battery load shed procedure was performed with the NRC review team during the onsite audit. STPNOC performed a timed simulation of DC load shedding using procedure 0POP12-ZO-FSG04, "ELAP DC Bus Load Shed/Management" (Reference 30). The success criterion for the simulation is 90 minutes and the operators performed load shedding in 42.5 minutes. Documentation of the load shed validation demonstrating that the DC load shedding actions can be completed within the required time has been made available to the NRC review team electronically via the IMS portal.

The RCP No. 1 seal leakage model used in the analysis to support the FLEX strategy is based on results presented in PWROG 14015-P, Revision 2 (Reference 31). PWROG 14015-P defines STP as a Category 6 plant, but STP's analysis conservatively assumes the higher leak rate for a Category 1 or Category 6 plant. STP input these higher leakage rates into a site-specific model and determined that RCP seal uncovery could occur at 11.3 hours and reflux cooling could occur at 15.9 hours following the initiation of an ELAP event. In the current FLEX strategy timeline, flow can be restored to the RCS within four hours when using the positive displacement pump (PDP) or within eight hours using the FLEX RCS makeup pump if the PDP is not available.

While PWROG 14015-P has not been approved by the NRC, the following additional conservatisms provide reasonable assurance that RCP seal uncovery and reflux cooling will not occur during an ELAP event:

- The STP RETRAN-3D White Paper made available to the NRC via the IMS portal (Reference 32) provides a benchmark of the STP RETRAN-3D model compared to a STP RELAP5 model. The model assumed RCP seal leakage of 21 gpm at normal operating pressure and temperature, which was the best available information at the time. The results of the benchmarking show that the STP RETRAN-3D computer model conservatively predicts both the time to RCP seal uncover and the time to reflux cooling compared to a similar RELAP5 computer model. The model-generated times for RCP seal uncovery are 13.1 hours for RETRAN-3D versus 13.5 hours for RELAP5, and the times for reflux cooling are 17.9 hours for RETRAN-3D versus 24.9 hours for RELAP5.

- The PWROG's ITCHSEAL calculations used to determine RCP seal leakage contain known conservatisms when compared to the results of the generic analysis performed at Electricite de France's Montereau facility. As discussed in PWROG 14074-P (Reference 32), parameters within the ITCHSEAL calculations used for the STP RCP seal leakage values were adjusted to ensure significant margin when compared to the results of the Montereau RCP seal leakage test data.

- The STP FLEX procedures monitor RCS inventory (e.g. reactor pressure vessel water level) during the ELAP event and direct the operators to implement primary makeup more rapidly if signs of increased RCP leakage are detected.

STP will monitor the progress of the ongoing discussions between the NRC and the PWROG regarding RCP seal leakage and continue to answer questions as needed.