



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

August 7, 2012

LICENSEE: STP Nuclear Operating Company

FACILITY: South Texas Project, Units 1 and 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON JULY 24, 2012, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND STP NUCLEAR OPERATING COMPANY, CONCERNING SELECTIVE LEACHING OF ALUMINUM BRONZE - FOLLOWUP, PERTAINING TO THE SOUTH TEXAS PROJECT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION (TAC NOS. ME4936 AND ME4937)

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of STP Nuclear Operating Company (STPNOC or the applicant) held a telephone conference call on July 24, 2012, to discuss staff aging management concerns related to selective leaching of aluminum bronze, in the South Texas Project, Units 1 and 2 license renewal application (LRA). The telephone conference call was useful in clarifying staff concerns on the issue.

Enclosure 1 provides a listing of the participants and Enclosure 2 contains a summary of the discussion.

The applicant had an opportunity to comment on this summary.

A handwritten signature in black ink, which appears to read "John Daily", is positioned above the printed name.

John Daily, Senior Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosures:

1. List of Participants
2. Discussion summary

cc w/encls: Listserv

TELEPHONE CONFERENCE CALL  
SOUTH TEXAS PROJECT  
LICENSE RENEWAL APPLICATION

LIST OF PARTICIPANTS  
July 24, 2012

PARTICIPANTS	AFFILIATIONS
John Daily	Nuclear Regulatory Commission (NRC)
Bill Holston	NRC
John Wise	NRC
Arden Aldridge	STP Nuclear Operating Company (STPNOC)
Ken Taplett	STPNOC
Richard Kersey	STPNOC
Geoff Egan	Intertek
Russell Cippolla	Intertek
Gary Warner	STARS Worley Parsons Center of Business

REQUEST FOR ADDITIONAL INFORMATION CONFERENCE CALL  
SOUTH TEXAS PROJECT, UNITS 1 AND 2  
LICENSE RENEWAL APPLICATION  
SELECTIVE LEACHING OF ALUMINUM BRONZE - FOLLOWUP  
RAI B2.1.37-4

July 24, 2012

The U.S. Nuclear Regulatory Commission (NRC or the staff) and representatives of STP Nuclear Operating Company (STPNOC or the applicant) held a telephone conference call on July 24, 2012, to discuss staff aging management concerns related to selective leaching of aluminum bronze, in the South Texas Project, Units 1 and 2 license renewal application (LRA). The telephone conference call was useful in clarifying staff concerns on the issue.

**RAI B2.1.37-4 discussion**

The staff provided its concerns on this issue and discussed them with the applicant. The concerns with the applicant's response to RAI B2.1.37-3 are what led to issuance of this follow-up RAI.

1. It is understood that components with an external indication will be replaced at the first available opportunity; however, the staff has not been presented with sufficient information to conclude that when external leakage is identified, the applicant's external visual examinations and crack correlation methodology are sufficient to detect an internal crack in the dealloyed region and project its size. Cracks in a dealloyed region could result in a failure of the piping during a seismic event. An insufficient basis was provided for why the destructive examination of a limited number of samples provides a conservative correlation for estimating internal crack size.

The staff's question related to detection of cracks in the dealloyed region with UT techniques was not adequately addressed. In some instances, due to configuration, it may not be possible to perform volumetric examinations on all affected fittings; however, the staff believes that there must be some means provided in order to conclude with reasonable assurance that cracks are not approaching a critical size, beyond the currently proposed correlation.

2. Fracture toughness testing was not listed as an example of a parameter to be tested in the testing of the six samples discussed in Commitment No. 44 and those to be conducted starting 10 years prior to the period of extended operation and proceeding through the period of extended operation. In addition, the response to Part (i) of the RAI did not include trending of fracture toughness properties. Given that cracking has been observed in dealloyed specimens, the staff cannot conclude that the method of calculating critical bending stress is conservative without the test results including fracture toughness properties.
3. No detail was included on how the percentage of dealloying has been or will be determined. Given that past calculations have described the percentage of dealloying and evaluations of structural integrity have relied, in part, on this measurement, the staff needs to understand how the value was determined.

4. Since it is possible that the six samples from three recently removed aluminum bronze components which will be tested for chemical composition and mechanical properties may not be 100 percent dealloyed, the staff lacks sufficient information to understand how these results will be extrapolated to reflect the potential degree of degradation existing in the system.
5. Although the RAI response (B2.1.37-3) described the basis for the flaw size assumed in Appendix 9A of the UFSAR, it did not respond to the staff's question regarding the maximum tolerable flaw size. The applicant needs to identify the maximum size flaw that would not proceed to failure or would only exhibit minor leakage until a transient occurred. Then, utilizing the transient inputs, the response needs to identify the maximum size leak path in the affected component.
6. The staff does not find the response to RAI B2.1.37-3, Part (i), acceptable because fracture toughness and yield strength properties are not listed as being trended. In addition, given that the progression rate of dealloying could change with time, the staff believes that prevalence of dealloying should be trended in order to determine if more frequent samples should be obtained.
7. The staff does not find the response to RAI B2.1.37-3, Part (i), acceptable because given that the current analyses are based on a minimum 30 ksi ultimate tensile strength, the staff does not accept the position that an average value equal to or greater than 30 ksi is acceptable to demonstrate that the intended function of the susceptible components will be met. In addition, acceptance criteria for fracture toughness and yield strength values were not established.
8. A review of plant-specific operating experience associated with the essential cooling water system demonstrates that cavitation erosion is occurring in the system. The staff does not know if any of the cavitation erosion has occurred or could occur in the vicinity of dealloying. If cavitation erosion could occur in the vicinity of dealloyed material, the staff does not know how the potential change in the rate of erosion is accounted for in the intervals between inspections of the components.

The staff also noted that in the applicant's letter dated May 31, 2012, STPNOC committed (Commitment No. 44) to do the following: (a) conduct testing of existing components that have been recently removed from service in order to confirm the ultimate tensile strength and obtain dealloyed fracture toughness and yield strength data used in structural integrity analyses; (b) revise structural analyses as required; and (c) provide results of the tests and any revisions to the applicant's analyses to the staff for review. Irrespective of the timing of the responses to the parts of the current RAI, the staff believes that a complete evaluation of the Selective Leaching of Aluminum Bronze Program will not be possible until these test results and any revisions to the applicant's structural integrity analyses have been provided to the staff for review in accordance with Commitment No. 44.

The applicant agreed that it would take the staff's concerns into account as it prepares its responses to the RAI. Both the staff and the applicant agreed that the discussion was useful in clarifying the RAI.

August 7, 2012

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John Daily, Senior Project Manager  
Projects Branch 1  
Division of License Renewal  
Office of Nuclear Reactor Regulation

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2. List of Requests for Additional Information

cc w/encls: Listserv

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OFFICIAL RECORD COPY

Memorandum to STP Nuclear Operating Company from J. Daily dated August 7, 2012

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