

PMSTPCOL PEmails

From: Tai, Tom
Sent: Thursday, January 03, 2013 10:55 AM
To: 'Head, Scott'
Cc: STPCOL; 'wemookhoek@stpegs.com'; 'jeprice@stpegs.com'; Wunder, George; Wong, Yuken; Colaccino, Joseph; Spencer, Michael
Subject: STP - Draft RAI 6644 (FIV)
Attachments: RAI 6644 01-03-13.doc

Scott,

Attached for your information is a draft of RAI 6644 requesting additional information on Unit 3 and Unit 4 license conditions. Dr Ziada is available only in the afternoon from Tuesday to Friday (January 8 to 11, 2013). Please let me know which is the best date/time for your staff to participate in the discussion of this RAI.

Regards

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Hearing Identifier: SouthTexas34Public_EX
Email Number: 3526

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Subject: STP - Draft RAI 6644 (FIV)
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From: Tai, Tom

Created By: Tom.Tai@nrc.gov

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Request for Additional Information 420

Issue Date:

Application Title: South Texas Project Units 3 and 4 - Dockets 52-012 and 52-013

Operating Company: South Texas Project Nuclear Operating Co

Docket No. 52-012 and 52-013

Review Section: 03.09.02 - Dynamic Testing and Analysis of Systems Structures and Components

Application Section: 3.9.2

QUESTIONS

NRC Regulatory Guide 1.20, Revision 3, Section 3.1.2 states:

“The vibration measurement program may be omitted if the inspection program is implemented. However the vibration measurement program related to the evaluation of the potential adverse flow effect from pressure fluctuations and vibrations in piping systems for both PWRs and BWRs, should not be omitted.”

There is no mention of main steam line (MSL) instrumentation to monitor the acoustic resonance and the dryer load during power ascension in WCAP-17257, “STP Unit 4 Reactor Internals Flow-Induced Vibration Assessment Program,” Revision 1. The staff requests the applicant to clarify whether instrumentation will be installed on the STP Unit 4 MSLs to ensure that acoustic resonances do not occur that could cause concern for the structural integrity of the steam dryer and other MSL components during the start-up tests up to full LTP power level. In the response to this RAI, the applicant is requested to:

- (a) Provide the number of strain gages to be installed on each MSL and the measures taken to ensure sufficient redundancy.
- (b) Explain and justify the method which will be used to calibrate the strain gages mounted on the MSLs.
- (c) Include the provided information in the application.

The applicant is requested to propose detailed license conditions for the flow-induced vibration start-up test program of Unit 3. The license conditions should address the following items:

- (a) Hold point at 60% at which full measurement program will be completed and the stress predictive analysis will be re-benchmarked to update the frequency dependent end-to end bias error and uncertainties (B&U). The end-to-end B&U, which will be used in load trending and projection for the next power hold point and full power conditions, should be based on comparison of the measured and the predicted stress/strain on the dryer.
- (b) Acceptance criteria (limit curves) based on the measurements at 60% power level.
- (c) Additional specific hold points beyond the first one at 60% power level. During these hold points, full measurement program will be completed and the B&U and acceptance criteria (limit curves) will be updated based on the measured data.
- (d) Data trending and projection of pressure, strain and acceleration levels to the next hold point and full power level.
- (e) Explain the method which will be used to calibrate the strain gages mounted on the dryer.
- (f) Actions to be taken during power ascension of Unit 3 if the measured dryer stresses or pressures challenge the limit curves developed from the previous hold point.

- (g) Reporting of results to NRC at 60%, 80%, 90% and 100% during power ascension. The plant will not proceed to the next power level for at least 72 hours after reporting measurements to the NRC.
- (h) Providing a full stress analysis report and evaluation at full power level within 90 days after reaching full power level. The report should include the final dryer load definition using steam dryer instrumentation and associated end-to-end B&U.

The applicant is requested to include the provided information in the application.

The applicant is requested to propose detailed license conditions for the flow-induced vibration start-up test program of Unit 4. The license conditions should address the following items:

- (a) A requirement that strain gages be mounted on the MSLs to confirm the structural integrity of the steam dryer and MSL components up to and including full LTP power level.
- (b) Acceptance criteria to confirm the structural integrity of the steam dryer and MSL components during start-up and at full power.
- (c) Actions to be taken during the power ascension of Unit 4 if the acceptance criterion are not met.
- (d) Reporting to the NRC at 60%, 80%, 90% and 100% during power ascension the evaluation of the Unit 4 MSL data to demonstrate structural integrity of the Unit 4 steam dryer and MSL components. The plant will not proceed to the next power level for at least 72 hours after reporting measurements to the NRC.
- (e) Providing a report of the evaluation of the Unit 4 MSL data to demonstrate the structural integrity of the Unit 4 steam dryer and MSL component within 90 days after reaching full power level.

The applicant is also requested to include the provided information in the application.

In the audit from November 27 to 29, 2012, it was found that the thickness of the six cover-plate supporting ribs used in the dryer structural model is smaller than the actual thickness. The calculated natural frequencies of the cover-plate are thus lower than the actual natural frequencies of the cover-plate. The applicant is requested to provide a quantitative assessment to demonstrate that the dryer stress analysis based on the smaller thickness of the ribs is conservative.