



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

November 17, 2011
NOC-AE-11002762
10 CFR 54
STI: 33052691
File: G25

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852-2746

South Texas Project
Units 1 and 2
Docket Nos. STN 50-498, STN 50-499
Response to Requests for Additional Information for the
South Texas Project License Renewal Application, Set 6 (TAC Nos. ME4936 and ME4937)

- References:
1. STPNOC Letter dated October 25, 2010, from G. T. Powell to NRC Document Control Desk, "License Renewal Application" (NOC-AE-10002607) (ML103010257)
 2. NRC letter dated October 18, 2011, "Requests for Additional Information for the Review of the South Texas Project, Units 1 and 2 License Renewal Application – Aging Management Review, Set 6 (TAC Nos. ME4936 and ME4937)" (ML11277A047)


By Reference 1, STP Nuclear Operating Company (STPNOC) submitted a License Renewal Application (LRA) for South Texas Project (STP) Units 1 and 2. By Reference 2, the NRC staff requests additional information for review of the STP LRA. STPNOC's response to the request for additional information is provided in Enclosure 1 to this letter. Changes to LRA pages described in Enclosure 1 are depicted in line-in/line-out pages provided in Enclosure 2.

There are no regulatory commitments in this letter.

Should you have any questions regarding this letter, please contact either Arden Aldridge, STP License Renewal Project Lead, at (361) 972-8243 or Ken Taplett, STP License Renewal Project regulatory point-of-contact, at (361) 972-8416.

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

Executed on 11/17/2011
Date


D. W. Rencurrel
Senior Vice President,
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- AJA
Enclosures:
1. STPNOC Response to Requests for Additional Information
 2. STP LRA Changes with Line-in/Line-out Annotations

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Enclosure 1

STPNOC Response to Requests for Additional Information

STPNOC Response to Requests for Additional Information

**SOUTH TEXAS PROJECT
LICENSE RENEWAL APPLICATION
RESPONSE TO REQUESTS FOR ADDITIONAL INFORMATION -
AGING MANAGEMENT REVIEW SET 6**

**One-Time Inspection of ASME Code Class 1 Small-Bore Piping
RAI B2.1.19-2**

Background:

In its response to RAI B2.1.19-1 dated September 15, 2011, the applicant stated that license renewal application (LRA) Appendix A1.19, Appendix B2.1.19 and LRA Basis Document AMP XI.M35 (B2.1.19) will be revised to include the weld population and inspection sample size. It further provided a paragraph with the specific weld population and inspection sample size.

Issue

The applicant did not revise LRA Appendix B2.1.19 or the updated final safety analysis report Supplement in LRA Section A2.1. In addition, LRA Appendix A1.19 and Appendix B2.1.19 did not include any statement regarding actions to be taken in case evidence of cracking is revealed by the applicant's program.

Request:

Provide the proposed revision of LRA Appendix A1.19 and Appendix B2.1.19 consistent with the changes discussed in the response to RAI B2.1.19-1. In addition, update LRA Appendix A1.19 and Appendix B2.1.19 to include the statement, "Should evidence of cracking be revealed by the One-Time Inspection of ASME Code Class 1 Small-Bore Piping program, periodic inspection will be proposed, as managed by a plant-specific AMP."

STPNOC Response:

The revisions to LRA Appendix A1.19 and Appendix B2.1.19 in response to RAI B2.1.19-1 are provided in STP letter NOC-AE-11002750, dated November 4, 2011.

In addition, LRA Appendices A1.19, B2.1.19, and LRA Bases Document AMP XI.M35, One-Time Inspection of ASME Code Class 1 Small-Bore Piping program, will be revised to include the following statement:

Should evidence of cracking be revealed by the One-Time Inspection of ASME Code Class 1 Small-Bore Piping program, periodic inspection will be proposed, as managed by a plant-specific aging management program.

Enclosure 2 provides line-in/line-out revisions to LRA Appendices A1.19, and B2.1.19.

Enclosure 2

STP LRA Changes with Line-in/Line-out Annotations

List of Revised LRA Sections

RAI Number	Affected LRA Section	Reason for Change
RAI B2.1.19-2	Appendix A1.19 Appendix B2.1.19	Revised to include the statement, "Should evidence of cracking be revealed by the One-Time Inspection of ASME Code Class 1 Small-Bore Piping program, periodic inspection will be proposed, as managed by a plant-specific aging management program."

A1.19 ONE-TIME INSPECTION OF ASME CODE CLASS 1 SMALL-BORE PIPING

The One-Time Inspection of ASME Code Class 1 Small-Bore Piping program manages cracking of ASME Code Class 1 piping less than or equal to four inches nominal pipe size (NPS 4). This program is implemented as part of the fourth interval of the STP Inservice Inspection (ISI) program.

For ASME Code Class 1 small-bore piping, the ISI program requires volumetric examinations on selected butt weld locations to detect cracking. Weld locations are selected based on the guidelines provided in EPRI TR-112657, *Revised Risk-Informed Inservice Inspection Evaluation Procedure*. Volumetric examinations of butt welds are conducted in accordance with ASME Section XI with acceptance criteria from Paragraph IWB-3000 and IWB-2430. Unit 1 has 182 Class 1 small-bore butt welds and 49 Class 1 small-bore socket welds. The inspection sample for the Unit 1 Class 1 small-bore butt welds is 19 and the inspection sample for the Unit 1 Class 1 small-bore socket welds is 5, which is 10 percent of each population. In Unit 2, there are 190 Class 1 small-bore butt welds and 59 Class 1 small-bore socket welds. The inspection sample size for the Unit 2 Class 1 small-bore butt welds is 19 and the inspection sample size for Unit 2 Class 1 small-bore socket welds is 6, which is 10 percent for each population. Socket welds that fall within the weld examination sample will be examined following ASME Section XI Code requirements. If a qualified volumetric examination procedure for socket welds endorsed by the industry and the NRC is available and incorporated into the ASME Section XI Code at the time of STP small-bore socket weld inspections, then this will be used for the volumetric examinations. If no volumetric examination procedure for ASME Code Class 1 small bore socket welds has been endorsed by the industry and the NRC and incorporated into ASME Section XI at the time STP performs inspections of small-bore piping, a plant procedure for volumetric examination of ASME Code Class 1 small-bore piping with socket welds will be used.

The One-Time Inspection of ASME Code Class 1 Small-Bore Piping program is a new program and inspections will be completed and evaluated within six years prior to the period of extended operation.

Should evidence of cracking be revealed by the One-Time Inspection of ASME Code Class 1 Small-Bore Piping program, periodic inspection will be proposed, as managed by a plant-specific aging management program.

B2.1.19 One-Time Inspection of ASME Code Class 1 Small-Bore Piping

Program Description

The One-Time Inspection of ASME Code Class 1 Small-Bore Piping program manages cracking of ASME Code Class 1 piping less than or equal to four inches nominal pipe size (NPS 4). This piping is ASME examination category B-J. This program is implemented as part of the fourth interval of the ISI Program.

For ASME Code Class 1 small-bore piping, the ISI Program requires volumetric examinations (by ultrasonic testing) on selected butt weld locations to detect cracking. Weld locations are selected based on the guidelines provided in EPRI TR-112657, *Revised Risk-Informed Inservice Inspection Evaluation Procedure*. Ultrasonic examinations are conducted in accordance with ASME Section XI with acceptance criteria from paragraph IWB-3000 and IWB-2430 for butt welds. Unit 1 has 182 Class 1 small-bore butt welds and 49 Class 1 small-bore socket welds. The inspection sample for the Unit 1 Class 1 small-bore butt welds is 19 and the inspection sample for the Unit 1 Class 1 small-bore socket welds is 5, which is 10 percent of each population. In Unit 2, there are 190 Class 1 small-bore butt welds and 59 Class 1 small-bore socket welds. The inspection sample size for the Unit 2 Class 1 small-bore butt welds is 19 and the inspection sample size for Unit 2 Class 1 small-bore socket welds is 6, which is 10 percent for each population.

Socket welds that fall within the weld examination sample will be examined following ASME Section XI Code requirements. If a qualified volumetric examination procedure for socket welds endorsed by the industry and the NRC is available and incorporated into the ASME Section XI Code at the time of STP small-bore socket weld inspections, then this will be used for the volumetric examinations. If no volumetric examination procedure for ASME Code Class 1 small-bore socket welds has been endorsed by the industry and the NRC and incorporated into ASME Section XI at the time STP performs inspections of small-bore piping, a plant procedure for volumetric examination of ASME Code Class 1 small-bore piping with socket welds will be used.

The One-Time Inspection of ASME Code Class 1 Small-Bore Piping program inspections will be completed and evaluated within six years prior to the period of extended operation.

Should evidence of cracking be revealed by the One-Time Inspection of ASME Code Class 1 Small-Bore Piping program, periodic inspection will be proposed, as managed by a plant-specific aging management program.

In conformance with 10 CFR 50.55a(g)(4)(ii), the STP ISI Program is updated during each successive 120-month inspection interval to comply with the requirements of the latest edition of the ASME Code specified 12 months before the start of the inspection interval. STP will use the ASME Code Edition consistent with the provisions of 10 CFR 50.55a during the 10 year period prior to the period of extended operation (fourth interval) and during the period of extended operation.

NUREG-1801 Consistency

The One-Time Inspection of ASME Code Class 1 Small-Bore Piping program is a new program that, when implemented, will be consistent, with exception to NUREG-1801, Section XI.M35, One-Time Inspection of ASME Code Class 1 Small-Bore Piping.

Exceptions to NUREG-1801

Program Elements Affected

Scope of Program (Element 1)

The STP risk-informed process examination requirements are performed consistent with EPRI TR-112657, *Revised Risk-Informed Inservice Inspection Evaluation Procedure*, Revision B-A, instead of EPRI Report 1000701, *Interim Thermal Fatigue Management Guidance (MRP-24)*. Guidelines for identifying piping susceptible to potential effects of thermal stratification or turbulent penetration that are provided in EPRI Report 1000701 are also provided in EPRI TR-112657. The recommended inspection volumes for welds in EPRI Report 1000701 are identical to those for inspection of thermal fatigue in RI-ISI Programs; thus, the STP risk-informed process examination requirements meet the recommendations of NUREG-1801.

Enhancements

None

Operating Experience

In order to estimate the extent of cracking in Class 1 piping socket welds, NEI conducted a review of LERs. Of 141 LERs reviewed, 48 were determined to be associated with failures of Class 1 socket welds. For the 46 LERs where a cause was identified, 42 of the failures were due to either vibration-induced high cycle fatigue or improper installation and are not age-related. Of the four remaining failures, one was due to randomly applied loads during maintenance and not age-related, and three were related to aging: two due to insulation contamination on the outside surface, and one associated with IGSCC, although there were other contributing factors not associated with aging (poor weld fit up, weld repair, nearby missing support, etc.).

The NEI review indicates that there have been a relatively small number of Class 1 socket weld failures of which only three were related to aging.

A review of plant-specific operating experience indicates that no cracking has been observed for ASME Code Class 1 small-bore pipe welds less than or equal to NPS 4.

Based on a review of operating experience, cracking of ASME Code Class 1 small-bore pipe welds less than or equal to NPS 4 has not been observed. This provides confidence that the One-Time Inspection of ASME Code Class 1 Small-Bore Piping program is adequate to manage cracking in ASME Code Class 1 small-bore piping.

As additional industry and plant-specific applicable operating experience becomes available, it will be evaluated and incorporated into the program through the STP condition reporting and operating experience programs.

Conclusion

The implementation of the One-Time Inspection of ASME Code Class 1 Small-Bore Piping program will provide reasonable assurance that aging effects will be managed such that the systems and components within the scope of this program will continue to perform their intended functions consistent with the current licensing basis for the period of extended operation.