



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

January 10, 2002  
NOC-AE-02001234  
File No.: G25  
10CFR50.55a

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

South Texas Project  
Units 1 and 2  
Docket Nos. STN 50-498, STN 50-446  
Response to Request for Additional Information Regarding Risk-Informed  
Inservice Inspection Application for Section XI Examination  
Requirements for Class 1 and 2 Piping Welds (RR-ENG-2-23)

- References:
- 1) "Request for Additional Information Re: Risk-Informed Inservice Inspection Application for South Texas Project, Units 1 and 2 (TAC Nos. MB1277 and MB1278)," Jack Donohew to William T. Cottle, dated December 10, 2001.
  - 2) "Relief Request for Application of an Alternative to the ASME Boiler and Pressure Vessel Code Section XI Examination Requirements for Class 1 Socket-Welded Piping and Class 2 Piping Welds (RR-ENG-2-23)," T. J. Jordan to NRC Document Control Desk, dated February 27, 2001 (NOC-AE-01001034).

Pursuant to your request of December 10, 2001 (reference 1), the South Texas Project submits the attached responses to the Nuclear Regulatory Commission's questions regarding our request for relief from the ASME Section XI code requirements for inservice inspection of Class 1 socket-welded piping (Category B-J) and Class 2 piping welds (Categories C-F-1 and C-F-2) (reference 2). The relief request proposes a risk-informed inservice inspection program providing an acceptable level of quality and safety as an alternative in accordance with 10CFR50.55a(a)(3)(i).

If there are any questions, please contact either Mr. M. S. Lashley at (361) 972-7523 or me at (361) 972-7902.

T. J. Jordan  
Manager,  
Nuclear Engineering

PLW

Attachment: Response to Request for Additional Information Regarding Application of Risk-Informed Inservice Inspections at the South Texas Project, Units 1 and 2

A047

cc:

Ellis W. Merschoff  
Regional Administrator, Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, Texas 76011-8064

Jon C. Wood  
Matthews & Branscomb  
112 East Pecan, Suite 1100  
San Antonio, Texas 78205-3692

John A. Nakoski  
Addressee Only  
U. S. Nuclear Regulatory Commission  
Project Manager, Mail Stop OWFN/7-D-1  
Washington, DC 20555-0001

Institute of Nuclear Power  
Operations - Records Center  
700 Galleria Parkway  
Atlanta, GA 30339-5957

Mohan C. Thadani  
Addressee Only  
U. S. Nuclear Regulatory Commission  
Project Manager, Mail Stop OWFN/7-D-1  
Washington, DC 20555

Richard A. Ratliff  
Bureau of Radiation Control  
Texas Department of Health  
1100 West 49th Street  
Austin, TX 78756-3189

Cornelius F. O'Keefe  
c/o U. S. Nuclear Regulatory Commission  
P. O. Box 910  
Bay City, TX 77404-0910

R. L. Balcom/D. G. Tees  
Reliant Energy, Inc.  
P. O. Box 1700  
Houston, TX 77251

A. H. Gutterman, Esquire  
Morgan, Lewis & Bockius  
1800 M. Street, N.W.  
Washington, DC 20036-5869

C. A. Johnson/A. C. Bakken III  
AEP - Central Power and Light Company  
P. O. Box 289, Mail Code: N5012  
Wadsworth, TX 77483

M. T. Hardt/W. C. Gunst  
City Public Service  
P. O. Box 1771  
San Antonio, TX 78296

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

A. Ramirez/C. M. Canady  
City of Austin  
Electric Utility Department  
721 Barton Springs Road  
Austin, TX 78704

**RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION REGARDING  
APPLICATION OF RISK-INFORMED INSERVICE INSPECTIONS AT THE  
SOUTH TEXAS PROJECT, UNITS 1 AND 2**

1. **Will the RI-ISI program be updated every 10 years and submitted to the NRC consistent with the current ASME Code, Section XI requirements?**

**STP Response:** The ISI program will be updated and submitted to the NRC consistent with regulatory requirements in effect at the time such update is required (currently every 10 years). This may again take the form of a relief request to implement an updated RI-ISI program depending on future regulatory requirements.

2. **Under what conditions will the RI-ISI program be resubmitted to the NRC before the end of any 10-year interval?**

**STP Response:** The RI-ISI program will be resubmitted to the NRC prior to the end of any 10-year interval if there is some deviation from the RI-ISI methodology described in the initial submittal or if industry experience determines that there is a need for significant revision to the program as described in the original submittal for that interval. The South Texas Project will ensure that the RI-ISI program is monitored and periodically reviewed for risk ranking in accordance with the commitments made in Section 4 of the initial submittal. Revisions made as a result of these reviews will be considered for submittal as outlined above.

3. **Page 8 of the submittal presents the criteria for engineering evaluation and additional examinations if unacceptable flaws or relevant conditions are found during examinations. The submittal states that the evaluation will include whether other elements in the segment or segments are subject to the same root cause conditions. The submittal further states that additional examinations will be performed on these elements up to a number equivalent to the number of elements required to be inspected on the segment or segments initially. Please address the following:**

- (a) **Please clarify the term “initially”. Specifically, does it refer to inspections planned for the current outage or the current interval?**
- (b) **Please clarify how will the elements be selected for additional examinations. Specifically, please verify that the elements will be selected based on the root cause or damage mechanism and include high risk significant as well as medium risk significant elements (if needed) to reach the required number of additional elements.**

**STP Response:**

- (a) In this application, the term “initially” refers to those examinations originally scheduled for the current refueling outage.
- (b) Elements will be selected for additional examinations based on the root cause or damage mechanism and will include high risk-significant as well as medium risk-significant elements (if needed) to reach the required number of additional elements. Currently, there are no high risk-significant elements identified in the scope of the submittal.

4. **Page 5 of the submittal states that a deviation to EPRI [Electric Power Research Institute] RI-ISI methodology has been implemented in the failure potential assessment for thermal stratification, cycling and striping (TASCS). Please state if the revised methodology for assessing TASCS potential is in conformance with the updated criteria described in EPRI letter to NRC dated March 28, 2001. Also, please confirm that as stated in the subject letter, once the final Materials Reliability Program guidance has been developed, the RI-ISI program will be updated for the evaluation of susceptibility to TASCS, as appropriate.**

**STP Response:** The methodology for assessing TASCS potential used in the South Texas Project RI-ISI submittal is identical to the methodology described in the Electric Power Research Institute (EPRI) letter to the NRC, dated March 28, 2001. The South Texas Project will update the RI-ISI program based on the final EPRI Material Reliability Program guidance as warranted.

5. **The submittal states that the scope includes Category B-J socket welds. Please state what examination method will be utilized for the inspection of socket welds.**

**STP Response:** The ASME Code through Code Case N-578-1 endorses substitution of visual (VT-2) exams for volumetric exams on socket welds. A surface exam on a socket weld on a ten-year frequency is not likely to identify any inside diameter-originating damage mechanism and is considered an unnecessary radiation exposure burden. A frequent visual examination (VT-2) focused on the area of concern is the best alternative as proposed by the Code. The industry (NEI/EPRI) met with the NRC on August 29, 2000, to discuss risk-informed issues. The VT-2 exam for socket welds was discussed and the proposed substitution was again endorsed by the industry. It was noted during the meeting that the EPRI-MRP thermal fatigue task group was due to issue a formal report in 2001. The report will be reviewed by the South Texas Project for any impact on the RI-ISI program and will be considered as new information with regard to socket welds.

6. **Section 3.6.1 states that, for medium consequence category segments, boundary estimates of 1E-4 and 1E-5 were used for the conditional core damage and large early release frequency respectively. What was used for the high consequence category segments?**

**STP Response:**

The High Consequence Category limits are:

$$\text{CCDP} > 1\text{E-}04$$

$$\text{CLERP} > 1\text{E-}05$$

The Medium Consequence Category limits are:

$$1\text{E-}06 < \text{CCDP} \leq 1\text{E-}04$$

$$1\text{E-}07 < \text{CLERP} \leq 1\text{E-}05$$

The Low Consequence Category limits are:

$$\text{CCDP} \leq 1\text{E-}06$$

$$\text{CLERP} \leq 1\text{E-}07$$

7. **Section 1.2 of your submittal states that the Level 2 probabilistic safety assessment (PSA) and individual plant examination (IPE) submittal dated August 28, 1992, supplemented by the current probabilistic risk assessment (PRA) model, STP\_1997, were used to support the RI-ISI submittal. The October 14, 1999 letter transmitting procedures and diagrams for the proposed Risk Informed Exemption included a copy of the Probabilistic Risk Assessment Program, OPGP04-ZA-0604, Rev. 3. The procedure includes the following two steps.**

**6.3.8 The overall PRA model results are updated every refueling cycle of Unit 1, not to exceed two years, or when the Risk & Reliability Analysis Administrator determines (using guidance supplied by OPGP01-ZA-0305) an update is required.**

**6.3.20 Each update cycle, the Updated PRA (including the Updated PRA Computer Model) is documented as "complete" via a signed letter from the Risk & Reliability Analysis Administrator to RMS. Computer codes are maintained in accordance with OPGP05-ZA-0014, "Software Quality Assurance Program."**

**It appears that the 1997 model (i.e., STP\_1997) referenced in the February 27, 2001, submittal would have been more than two years old when the RI-ISI submittal was being prepared; however, the update procedure indicates that the models should normally be no more than two years old. Please explain the apparent discrepancy of using a "current PRA model, STP\_1997" in the February 27, 2001 submittal.**

**STP Response:** At the time of the evaluations for this RI-ISI submittal (June to September 2000), the approved PRA model was STP\_1997. The model name refers to the data freeze date: the STP\_1997 freeze date was December 31, 1997. This model was approved for use in March 1999.

PRA model STP\_1999 was being developed during the RI-ISI evaluations. The model freeze date for STP\_1999 was December 31, 1999. Because of the effort involved in supporting this submittal and other risk-informed applications, the PRA update process for this model was extended. Model STP\_1999 was approved for use in October 2001.

Procedure OPGP04-ZA-0604 was revised in May 2001, changing the frequency at which the model is updated. The procedure currently states:

**5.3.5 The at-power PRA applicable to modes 1 and 2 (Level 1 and Level 2 PRA) Reference Model SHALL be periodically updated in accordance with the following requirements:**

- **The Reference Model Update incorporates plant design changes and procedure changes that affect PRA model components, initiating event frequency updates, and changes in SSC unavailability that affected the PRA model. These changes will be incorporated into the model on a period not to exceed 36 months. (Ref. 6.5)**
- **The comprehensive data update incorporates changes to plant specific failure rate distributions and human reliability, and any other database distribution updates (examples would include equipment failure rates,**

recovery actions, and operator actions). This second category will be updated on a period not to exceed 60 months. (Ref. 6.5)

- A necessary change to the PRA Reference Model that would result in an increase to CDF of greater than or equal to 10% (Ref. 6.8, and 6.9.1).
- Every refuel cycle, the previous cycle's significant operator experience human performance trends SHOULD be reviewed. This review shall check for adverse trends, and new information that could affect the way operator actions are currently modeled in the PRA Reference Model (Ref. 6.10.1).

**LIST OF COMMITMENTS**

<b>Commitment</b>	<b>Due Date/Event</b>
<p>The methodology for assessing TASCs potential used in the South Texas Project RI-ISI submittal is identical to the methodology described in the Electric Power Research Institute (EPRI) letter to the NRC, dated March 28, 2001. The South Texas Project will update the RI-ISI program based on the final EPRI Material Reliability Program guidance as warranted.</p>	<p>Upon issuance and review of the final EPRI material reliability program.</p>
<p>The ASME Code through Code Case N-578-1 endorses substitution of visual (VT-2) exams for volumetric exams on socket welds. The EPRI-MRP thermal fatigue task group was due to issue a formal report in 2001 endorsing the substitution of visual (VT-2) exams for volumetric exams on socket welds. The report will be reviewed by the South Texas Project for any impact on the RI-ISI program and will be considered as new information with regard to socket welds.</p>	<p>Upon issuance and review of the thermal fatigue task group formal report.</p>