



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

December 9, 2003
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10CFR50
STI: 31672327

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 and STN 50-499
Response to Request for Information on NRC Generic Letter 2003-01,
"Control Room Habitability"

- Reference: 1. Generic Letter 2003-01, "Control Room Habitability," June 12, 2003
2. Letter from T. J. Jordan, STP Nuclear Operating Company, to the NRC Document Control Desk, dated August 11, 2003 (NOC-AE-03001565)

This letter is a response to the Nuclear Regulatory Commission's (NRC) request for information pursuant to Reference 1. This "180-day" response letter is submitted to supplement information in STPNOC's "60-day" response letter (Reference 2). A detailed response is provided in Attachment 1 to this letter.

As requested by Reference 1, STPNOC has confirmed that the most limiting unfiltered inleakage into the control room envelope (CRE) is no more than the value assumed in the design basis radiological analyses for CRE habitability. The method used for this confirmation was the Component Test Method described in NEI 99-03, Revision 1, "Control Room Habitability Guidance". STPNOC will perform confirmatory inleakage testing for one of its unit's control rooms using the Integrated Test Method described in NRC Regulatory Guide 1.197. The commitments to perform this test and to report the results are described in Attachment 2 to this letter.

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Reference 1 was a preliminary response by STPNOC to the requested information of NRC Generic Letter 2003-01. This letter, in conjunction with Reference 1, completes the response to the requested information with the exception of the results of the confirmatory testing discussed in the preceding paragraph.

If you have any questions or require additional information, please contact Ken Taplett at (361) 972-8416 or me at (361) 972-7902.



T. J. Jordan
Vice President,
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KJT/

Attachments:

1. Response to the Requested Information of NRC Generic Letter 2003-01
2. List of Commitments

cc:

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Response to the Requested Information of NRC Generic Letter 2003-01

The following completes the STP Nuclear Operating Company (STPNOC) response to NRC Generic Letter 2003-01, Control Room Habitability, dated June 12, 2003 with the exception of the results of the confirmatory testing as explained in the cover letter. The plans for confirmatory testing are discussed in the response to requested information item 1(a) below. The Generic Letter's "Requested Information" is shown in bold. This response supplements the response provided in Reference 1 of this attachment.

References: 1. Letter from T. J. Jordan, STP Nuclear Operating Company, to the NRC Document Control Desk, dated August 11, 2003 (NOC-AE-03001565)

Requested Information

1. **Confirm that your facility's CRE meets its applicable habitability regulatory requirements (e.g., GDC 1, 3, 4, 5, and 19) and that the CRE and CREHSs are designed, constructed, configured, operated, and maintained in accordance with the facility's design and licensing basis.**

STPNOC Response:

STPNOC has performed a test to confirm that the most limiting unfiltered inleakage into the control room envelope (CRE) is no more than the value assumed in its design basis radiological analyses for control room habitability. See response to item 1(a) below for more detail and the plan for additional confirmatory testing.

STPNOC is committed to the General Design Criteria of Appendix A of 10CFR50 as documented in its Updated Final Safety Analysis Report.

As discussed in Reference 1, STPNOC performed a control room habitability assessment on April 10-13, 2000 and concluded that the control room habitability systems were designed, constructed, configured, operated, and maintained consistent with the control room habitability design and licensing bases.

STPNOC conducted an additional assessment in September 2003 that included an offsite peer reviewer to confirm the 2000 assessment conclusions. This assessment concluded that:

- The STPNOC control rooms continue to meet the applicable habitability regulatory requirements and the control room habitability systems are designed, constructed, configured, operated, and maintained in accordance with the facility's design and licensing basis with one exception. See below for more detail.

- A credible smoke event was identified that could affect control room habitability. See response to item 1(b) for more detail.
- Some issues were identified regarding the hazardous chemical analyses. A preliminary review indicates that the resolution of these issues will support the conclusions of the current hazardous chemical analyses.
- Administrative controls remain in place to ensure continued compliance with the control room habitability design and licensing bases. Recommendations were made for improvements or enhancements to current programs or processes.
- The design basis radiological analysis for control room habitability was confirmed. An opportunity for improvement was identified to provide clarification in the Updated Final Safety Analysis Report (UFSAR) regarding the relation of the various analyzed accidents versus dose limits. See response to item 1(a) for more detail.

The one exception to the meeting the licensing basis is that practice drills are not being conducted to ensure that personnel can don self-containing breathing apparatus within two minutes in the event of a hazardous chemical release event contrary to Regulatory Position 13 of NRC Regulatory Guide 1.78, Revision 0. STPNOC is committed to this Regulatory Guide. Operating personnel are qualified in the proper donning of self-containing breathing apparatus annually but have not been timed. This condition is currently under review for resolution.

STPNOC plans to continue to work in alliance with STARS¹ to build upon the synergy of the combined effort to ensure that control room habitability is maintained in the long-term.

- 1(a) That the most limiting unfiltered inleakage into your CRE (and the filtered inleakage if applicable) is no more than the value assumed in your design basis radiological analyses for CRE habitability. Describe how and when you performed the analyses, tests, and measurements for this confirmation.**

STPNOC Response:

Radiological Analyses

As discussed in Reference 1, STPNOC's design basis radiological analysis that results in the highest control room operator doses is the Loss of Coolant Accident. This analysis was recently updated and verified using assumptions described in NRC Regulatory Guide 1.4, Revision 2, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Loss of Coolant Accident for Pressurized Water Reactors". The calculated thyroid dose total is less than the design limit of 30 roentgen equivalent man (rem), as is the skin beta dose total. The total whole-body gamma dose is less than the design limit of 5 rem. Thus the analysis results meet the dose requirements of GDC 19 of 10CFR50, Appendix A. The most limiting unfiltered inleakage into the control room envelope is assumed to be 10 standard cubic feet per minute (scfm) occurring as a result of control room ingress and egress during the progression of the accident. The analysis results are documented in STPNOC's Updated Final Safety Analysis Report, Section 6.4.

¹STARS consists of six plants operated by TXU Generation Company LP, Ameren UE, Wolf Creek Nuclear Operating Company, Pacific Gas and Electric Company, STP Nuclear Operating Company and Arizona Public Service Company

In addition to the above, the STPNOC Technical Specifications allow the Personnel Access Door to the containment and the Containment Equipment Hatch to be open during fuel movement after the fuel has decayed for a certain period of time. This time period is based upon limiting the dose to the control room operators to less than the GDC 19 limits. These analyses were performed March, 2002, in accordance with Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors." As is assumed in the LOCA analysis, above, the most limiting unfiltered inleakage into the control room envelope is assumed to be 10 standard cubic feet per minute (scfm) occurring as a result of control room ingress and egress during the progression of the accident. The results of this analysis are documented in STPNOC's Updated Final Safety Analysis Report, Section 15.7.

The assessment performed in September 2003 noted that a fuel handling accident results in the limiting whole body dose when 3 trains of control room ventilation are operating and fuel is being moved after 42 hours following shutdown in accordance with the Technical Specification. The assessment noted that the Loss of Coolant Accident is the limiting accident for thyroid dose and that the fuel handling accident with an open Personnel Access Door and Containment Equipment Hatch during fuel movement is the limiting accident for beta dose. Therefore, STPNOC plans to revise the control room design basis accident description in Section 6.4 of the UFSAR to provide clarification as required.

Control Room Inleakage Testing

STPNOC completed inleakage testing in both unit control rooms during 2002 and 2003 using the Component Test Method described in Appendix D of NEI 99-03, Revision 1 (March 2003), "Control Room Habitability Guidance". The differential pressure across the control room envelope boundary was measured at a total of 100 locations during each of three different control room ventilation configurations. At each location, the pressure was confirmed to be positive within the CRE with respect to adjacent areas. It was determined that the test points, in aggregate, tested the entire control room boundary with the exception of concrete wall on the east side of the CRE and the concrete wall surrounding the Electrical Auxiliary Building supply riser. These walls are of poured concrete construction with a thickness greater than 12 inches. There are no penetrations through the walls into the CRE. The Electrical Auxiliary Building supply riser is a vertical ventilation shaft serving multiple levels and makes it impractical to perform a pressure measurement inside the riser. It was determined that these locations are not inleakage vulnerabilities based on the construction and the lack of penetrations.

Plant assessment and pressure testing confirmed that there were no boundary locations where the pressure outside the CRE was positive with respect to inside the envelope. Therefore, no individual components were susceptible to inleakage and thus no individual component leakage testing was required. The results of these tests confirm STPNOC's safety analyses assumption that there is no unfiltered inleakage into either control room.

STPNOC believes that the Component Test Method for measuring control room inleakage has been demonstrated to be an acceptable stand-alone test. However to be responsive to Generic Letter 2003-01, STPNOC will perform component testing in concert with integrated testing discussed in Regulatory Position 1.1 of NRC Regulatory Guide 1.197 for one unit's control room. The characteristics of a CRE design described in NEI 99-03 that support the use of component testing are met by STPNOC's design. Peer reviews were used to identify inleakage vulnerabilities. The positive pressure measurement relied on quantitative test methods. Ventilation systems that could impact differential pressure conditions were operated consistent with the licensing basis.

The results from the two test methods are expected to meet the conditions specified in Regulatory Position 1.2 of NRC Regulatory Guide 1.197 for a component test to be acceptable. STPNOC would then take credit for the component test already performed in the second unit because the unit control room designs are essentially identical. The NRC staff indicated during an industry workshop on June 17-18, 2003 that this would be an acceptable benchmark of one control room design to another as described in Appendix D of NEI 99-03, Revision 1, "Control Room Habitability Guidance," March 2003.

An integrated test and component test for one unit's control room inleakage is planned for performance in March 2004. This is to justify use of component tests for subsequent testing and benchmarking the second STPNOC unit control room as stated above. Attachment 2 describes the commitments to perform this test and to report the results to the NRC.

- 1(b) That the most limiting unfiltered inleakage into your CRE is incorporated into your hazardous chemical assessment. This inleakage may differ from the value assumed in your design basis radiological analyses. Also confirm that the reactor control capability is maintained from either the control room or the alternate shutdown panel in the event of smoke.**

STPNOC Response:

Hazardous Chemical Assessment

STPNOC's hazardous chemical analyses demonstrate that neither onsite or offsite hazardous chemical sources within the vicinity of the control room would reach toxicity limits inside the CRE within six minutes following nasal detection by operators. This meets the NRC Regulatory Guide 1.78 requirement that states operators should be able don breathing apparatus within two minutes. The hazardous chemicals are assumed to enter the control room environment via the normal control room ventilation flow path at a rate of 4000 cfm. No credit is taken for isolation of the ventilation system although manual isolation remains available to the operators for defense in depth. The normal ventilation flow exceeds any unfiltered inleakage with the ventilation system in the isolation mode. Therefore, unfiltered inleakage in this mode is not measured and is not incorporated into STPNOC's hazardous chemical assessment.

Some issues regarding the hazardous chemical analyses were noted during the 2003 assessment of control room habitability. These issues have been incorporated into the corrective action program for resolution. A preliminary review indicates that the resolution of these issues will support the conclusions of the current hazardous chemical analyses.

Evaluation of Smoke Propagation Effects on Reactor Control Capability

The reactor control capability in the event of smoke was evaluated consistent with Regulatory Position 2.6 of NRC Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," May 2003. STPNOC performed this evaluation following the guidance of Appendix A of NEI 99-03, Revision 1. This guidance is consistent with the guidance of Appendix E of NEI 99-03, Revision 0 that is referred in NRC Regulatory Guide 1.196.

A credible smoke event was identified that could affect control room habitability. A fire occurring within the CRE but in a fire area outside the control room could result in smoke migration into the control room via the control room ventilation system. The ingress of smoke into the control room could concentrate such that control room evacuation may be required. The normal egress path to the alternate shutdown stations is through the area of the fire. The evaluation determined an alternate egress path to the alternate shutdown stations was available and the control room operators were aware of this path. The alternate egress path was walked down to confirm that the required times to arrive at the alternate shutdown stations and perform operator actions per the fire safe shutdown analysis remained valid. No other smoke events were identified that could affect control room habitability.

In conclusion, the evaluation determined that the plant could be safely shut down from either the control room or the alternate shutdown stations during an internal or external smoke event.

- 1(c) That your Technical Specifications verify the integrity of your CRE and the assumed inleakage rates of potentially contaminated air. If you currently have a ΔP surveillance requirement to demonstrate CRE integrity, provide the basis for your conclusion that it remains adequate to demonstrate CRE integrity in light of the ASTM E741 testing results. If you conclude that your ΔP surveillance requirement is no longer adequate, provide a schedule for: 1) revising the surveillance requirement in your technical specification to reference an acceptable surveillance methodology (e.g., ASTM E-741), and 2) making any necessary modifications to your CRE so that compliance with your new surveillance requirement can be demonstrated.**

If your facility does not currently have a technical specification surveillance requirement for your CRE, explain how and on what frequency you confirm your CRE integrity.

STPNOC Response:

As stated in Reference 1, STPNOC's Technical Specifications require that a surveillance be performed on an 18-month basis to verify that each Control Room Makeup and Cleanup Filtration System is OPERABLE. The surveillance confirms that the system maintains the control room envelope at a positive pressure greater than or equal to 1/8-inch water gauge at less than or equal to a pressurization flow of 2000 cfm relative to adjacent areas during system operation.

The positive pressure surveillance verifies the operability of the Control Room Makeup and Cleanup Filtration System and provides an indication of control room boundary integrity, although not confirmation. In light of the ASTM E741 test results, inleakage testing appears to be the best method to confirm boundary integrity.

STPNOC plans to submit a Technical Specification change to include periodic verification of control room in-leakage. This change will take into consideration the STPNOC CRE design, the current STPNOC Technical Specifications, Standard Technical Specification Traveler TSTF-448, and the in-leakage testing previously performed at STPNOC. STPNOC is aware that the NRC is currently reviewing TSTF-448 and has not yet approved it. It is anticipated that any issues that the NRC Staff may have with TSTF-448 will be resolved in the near future. STPNOC plans to submit the Technical Specification change to include periodic verification of control room in-leakage within 90 days after TSTF-448 is published in the Federal Register as available for use by licensees. See Attachment 2.

2. **If you currently use compensatory measures to demonstrate CRE habitability, describe the compensatory measures at your facility and the corrective actions needed to retire these compensatory measures.**

STPNOC Response:

As stated in Reference 1, STPNOC does not use compensatory measures to demonstrate control room envelope habitability.

3. **If you believe that your facility is not required to meet either the GDC, the draft GDC, or the "Principle Design Criteria" regarding control room habitability, in addition to responding to items 1 and 2 above, provide the documentation (e.g., Preliminary Safety Analysis Report, Final Safety Analysis Report sections, or correspondence, etc.) of the basis for this conclusion and identify your actual requirements.**

STPNOC Response:

STPNOC is committed to the General Design Criteria of Appendix A of 10CFR50 as stated in the response to Request for Information Item #1.

LIST OF COMMITMENTS

The following table identifies those actions committed to by the STP Nuclear Operating Company in this document. Any statements in this submittal with the exception of those in the table below are provided for information purposes and are not considered commitments. Please direct questions regarding these commitments to Ken Taplett at (361) 972-8416.

Commitment	Due Date
Complete testing to confirm the accident analyses control room inleakage assumption. Testing is scheduled for March 2004.	June 12, 2004
Submit a summary of control room inleakage test results to confirm the most limiting inleakage and identify those results that may modify previously submitted information.	Within 90 days of test completion
STPNOC plans to submit a Technical Specification change to include periodic verification of control room inleakage.	Within 90 days after TSTF-448 is published in the Federal Register as available for use by licensees.