



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

August 11, 2003  
NOC-AE-03001565  
10CFR50  
STI: 31632423

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 Generic Letter 2003-01,  
Control Room Habitability

- Reference:
1. Generic Letter 2003-01, "Control Room Habitability," June 12, 2003
  2. Letter from Al Passwater to the NRC Document Control Desk, "Submittal of the Strategic Teaming and Resource Sharing (STARS) Engineering Report on Control Room In-leakage" (ULNRC-04402) March 5, 2001.
  3. Letter from D. R. Woodlan to the NRC Document Control Desk, "Submittal of Strategic Teaming and Resource Sharing (STARS) Additional Information on Control Room Habitability" (STARS-01002) August 31, 2001.
  4. Letter from D. R. Woodlan to the NRC Document Control Desk, "Strategic Teaming and Resource Sharing (STARS) Demonstration of the Component Test Method for Determining Control Room In-leakage" (STARS-02008) June 7, 2002.

This letter is a response to the Nuclear Regulatory Commission's (NRC) request for information pursuant to Reference 1. This "60-day" response letter is submitted because STPNOC believes that all the information requested can not be provided by the requested completion date of 180 days from the date of the generic letter. Specifically, Generic Letter 2003-01 requests that licensees confirm the most limiting inleakage into the control room envelope by testing. STPNOC does not expect all confirmatory testing to be completed prior to the 180-day completion date.

Since late 1999, STPNOC has pro-actively participated in a joint effort with the Strategic Teaming and Resource Sharing (STARS<sup>1</sup>) alliance to confirm control room habitability of its facility. This effort included a series of peer assessments performed during the year 2000 to demonstrate that control room habitability is maintained in accordance with regulatory

<sup>1</sup> STARS consists of six plants operated by TXU Generation Company LP, AmerenUE, Wolf Creek Nuclear Operating Corporation, Pacific Gas and Electric Company, STP Nuclear Operating Company and Arizona Public Service Company.

A102

requirements and the facilities' design and licensing bases. The assessments concluded that each facility's control room(s) is designed and maintained such that the likelihood of unfiltered inleakage is low. In the absence of confirmatory testing, the assessments concluded that regulatory requirements and the design and licensing bases are met at each facility. In addition, the assessments concluded that confirmatory testing is necessary. The results of these assessments and the STARS plan to perform inleakage testing were reported to the NRC on March 5, 2001 (Reference 2).

STARS developed the "component test" referenced in NRC Regulatory Guide 1.197, "Demonstrating Control Room Envelope Integrity at Nuclear Power Reactor," May 2003. STARS developed the component test because this test is a more suitable method for determining control room inleakage for the late vintage, robust design, low-leakage control rooms characteristic of the STARS facilities. STARS provided information to the NRC in a letter dated August 31, 2001, (Reference 3) regarding the suitability of component testing at their facilities.

During the last few years, STARS has actively participated in various industry forums with the NRC to address issues surrounding control room habitability. A central issue of those forums was what constitutes an acceptable test for control room inleakage. A number of licensees had tested their control rooms using a version of American Society for Testing and Materials (ASTM) consensus standard E741, "Standard Test Method for Determining Air Change in a Single Zone by Means of a Tracer Gas Dilution". STARS performed comparison testing between the ASTM E741 method and the component test method for two facilities' control rooms to validate the acceptability of the component test method. The testing demonstrated that the results of the two test methods correlated. In addition, the testing confirmed the previous assessment findings that the control rooms had a robust design and were maintained such that inleakage could be expected to be low. The tests determined that there was no control room unfiltered inleakage at each facility. The results of these tests were reported to the NRC in a letter dated June 7, 2002 (Reference 4). This letter stated that STARS plants planned to use the component test method for any future baseline testing of their control rooms.

NRC Regulatory Guide 1.197 provides conditions for component testing to be acceptable for determining control room envelope integrity. The regulatory guide states that:

- (1) an integrated test (i.e., the ASTM E741 method) should be conducted in concert with the component test;
- (2) the results of the two methods should correlate; and
- (3) the components tested should account for no less than 95% of the control room envelope inleakage as determined by the integrated test.

The regulatory guide states these conditions are necessary when subsequent control room envelope integrity tests are intended to be component tests. STPNOC has completed inleakage testing in both unit control rooms using the component test method. The results of these tests confirm STPNOC's safety analyses assumption that there is no unfiltered inleakage into either control room. The component method has been demonstrated to be an acceptable stand-alone

test. However, though not considered necessary, STPNOC plans to conduct correlation testing of its control room design between the two methods to be responsive to the intent of Generic Letter 2003-01 and NRC Regulatory Guide 1.197.

STPNOC will endeavor to complete correlation testing within one year of the date of Reference 1. Planning has started for the testing. STPNOC will submit a supplementary response within 180 days of the date of Reference 1. This response will provide as much requested information as feasible in the absence of inleakage confirmation test results, and this will include a detailed status of the test schedule. After testing is completed, a summary of the test results to confirm the most limiting inleakage and any impact of those results that may modify previously submitted information will be submitted within 90 days of test completion.

Attachment 1 is a preliminary response by STPNOC to the requested information of NRC Generic Letter 2003-01. Attachment 2 contains commitments for making a final response to this generic letter.

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,  
Engineering & Technical Services

KJT/

Attachments:

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

cc:  
(paper copy)

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

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

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

Jeffrey Cruz  
U. S. Nuclear Regulatory Commission  
P. O. Box 289, Mail Code: MN116  
Wadsworth, TX 77483

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

(electronic copy)

A. H. Gutterman, Esquire  
Morgan, Lewis & Bockius LLP

L. D. Blaylock  
City Public Service

Mohan C. Thadani  
U. S. Nuclear Regulatory Commission

R. L. Balcom  
Texas Genco, LP

A. Ramirez  
City of Austin

C. A. Johnson  
AEP Texas Central Company

Jon C. Wood  
Matthews & Branscomb

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

The following is the STP Nuclear Operating Company (STPNOC) preliminary response to NRC Generic Letter 2003-01, Control Room Habitability, dated June 12, 2003. The Generic Letter's "Requested Information" is shown in bold. This response will be supplemented at a later date as explained in the cover letter for this attachment.

### **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 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.

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

STPNOC, assisted by peers from the Strategic Teaming and Resource Sharing (STARS) alliance, performed a control room habitability assessment on April 10-13, 2000. In the absence of confirmatory testing for control room inleakage, the assessment concluded that the control room habitability systems were designed, constructed, configured, operated, and maintained consistent with the control room habitability design and licensing bases. Some issues regarding control room design were identified during the assessment. These issues did not prevent meeting the General Design Criteria. These issues were summarized in a report to the NRC on March 5, 2001, "Submittal of the Strategic Teaming and Resource Sharing (STARS) Engineering Report on Control Room In-leakage (ULNRC-04402)". The reported issues have been resolved with one exception. The control room dose calculations assume that the control room ventilation system transfers to the emergency mode immediately in response to a fuel handling accident. Instead, plant design and operation does not transfer the control room ventilation system until the effects of the accident are sensed by the radiation monitors in the control room supply air intake ducting. This calculation is planned for revision once the control room inleakage value is confirmed.

STPNOC plans to review the assessment findings and conduct any additional assessments as required to confirm that regulatory requirements and the control room habitability design and licensing bases continue to be met. The results of any additional assessments will be reported in STPNOC's 180-day response to this Generic Letter.

STPNOC has established administrative controls that ensure continued compliance with the control room habitability design and licensing bases. These controls are:

- Control Room Envelope boundary breach controls are controlled by plant procedure 0PGP03-HZ-0001, "Breaching of HVAC Boundaries" and plant procedure 0POP02-HE-0001, "Electrical Auxiliary Building HVAC System". Procedures require that an individual be administratively stationed to close any breached door in an emergency. STPNOC's Technical Specifications allow all three trains of CRE HVAC to be inoperable for 12 hours. The Technical Specification Bases state compensatory actions are put in place for this condition so that administrative controls are in place when opening plenums or other openings such that appropriate communication is established with the control room to assure timely closing of the system if necessary.
- Procedure controls are controlled by plant procedure 0PAP01-ZA-0102, "Plant Procedures". This procedure includes a technical review of new and revised procedures to ensure that configuration control, plant conditions and design requirements are met.
- Hazardous chemicals used on site are controlled by plant procedure 0PGP03-ZI-0008, "Control of Expendable Materials". STPNOC plans to assess whether chemical controls include a review of new chemicals brought onsite and whether this review considers the impact of a potential release on the control room.
- Permanent plant design changes and safety analyses are controlled by plant procedure 0PGP04-ZE-0309, "Design Change Package". This procedure provides requirements regarding post-modification testing. Interdisciplinary reviews are designed to prompt the control room HVAC system engineer to review related change packages. The procedure has guidance for consulting the system engineer regarding additions or deletions of components, changes to operating parameters, and changes to functions of systems or components. Accident analysis engineers including dose analysts are to be consulted for impact of changes to operating parameters or setpoints. This procedure contains a design checklist that specifically requires an evaluation to determine if the change impacts control room habitability. Temporary plant changes are controlled by plant procedure, 0PGP03-ZO-0003, "Temporary Modifications". This procedure requires coordination of temporary changes with the appropriate system engineer. This procedure requires that the design checklist of procedure 0PGP04-ZE-0309 be reviewed.

STPNOC plans to continue to work in alliance with STARS 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:**

STPNOC's design basis radiological analysis that results in the highest control room operator doses is the Loss of Coolant Accident. This analysis has recently been 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 analysis is expected to receive final station approval in August 2003. 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.

In addition to the above, the STPNOC Technical Specifications allow the Personnel Access Door and the Containment Equipment Hatch to be open during refueling 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 just 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.

Assessments performed in 2000 determined that STPNOC and each of the other STARS facilities control room envelopes had minimal vulnerability to unfiltered inleakage. Integrated testing and component testing, as described in NRC Regulatory Guide 1.197, were performed at Comanche Peak and Palo Verde. Palo Verde has a minimal number of vulnerable components to test whereas Comanche Peak has a larger diverse number of vulnerable components to test. These test results validated the assessment findings for these facilities. This correlation testing at these two facilities represent the spectrum of control rooms in the STARS group. This testing demonstrated that one test method could be benchmarked to the other because:

- The assessment methods to identify the vulnerable components for testing were the same,
- The test results were correlated between the two testing methods, and

- Although not identical, the STARS control rooms have the same design attributes to support confidence that component testing should identify inleakage.

STPNOC has completed inleakage testing in both unit control rooms using the component test method. The results of these tests confirms STPNOC's safety analyses assumption that there is no unfiltered inleakage into either control room. The component method has been demonstrated to be an acceptable stand-alone test.

Although not considered necessary but to be responsive to the Generic Letter, STPNOC will perform component testing in concert with integrated testing based on ASTM E741 for one unit's control room. The results from the two test methods are expected to meet the conditions specified in NRC Regulatory Guide 1.197. 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 are being planned. This is to justify use of component tests for subsequent testing and benchmarking the second STPNOC unit control room. STPNOC will complete this confirmatory testing as soon as feasible but does not expect that the testing will be completed within 180 days of the date of Generic Letter 2003-01. Confirmatory testing is expected to be completed within one year of the date of the Generic Letter.

- 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:**

During the 2000 assessments, STPNOC determined that there is no offsite storage or transportation of chemicals that present a hazard to control room habitability. In addition, there are no onsite chemicals that pose a credible hazard to control room habitability. Engineered controls for the control room are not required to ensure habitability against a hazardous chemical threat. Therefore, the amount of unfiltered inleakage is not incorporated into STPNOC's hazardous chemical assessment.

STPNOC plans to update the offsite and onsite hazardous chemical analyses to confirm the conclusion of the 2000 assessments and report the results in the 180-day response to the Generic Letter.

The 2000 assessments did not evaluate the reactor control capability in the event of smoke since this issue was not fully developed at that time. STPNOC plans to complete this

confirmation consistent with Regulatory Position 2.6 of NRC Regulatory Guide 1.196, "Control Room Habitability at Light-Water Nuclear Power Reactors," May 2003, and report the results in the 180-day response to this Generic Letter.

- 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  $\Delta P$  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  $\Delta P$  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:**

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 incorporate a Control Room Integrity Program that will include periodic verification of control room inleakage. This change is expected to mirror Industry/TSTF Standard Technical Specification Change Traveler TSTF-448. STPNOC acknowledges that the NRC is currently reviewing TSTF-448 and has not approved it yet. It is anticipated that any issues that the staff may have with TSTF-448 will be resolved in the near future to support submittal of a schedule in the 180-day response to this Generic Letter for changing Technical Specifications.

No plant modifications are expected to be required to incorporate a Control Room Integrity Program into Technical Specifications as described above.

- 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:**

STPNOC does not use compensatory measures to demonstrate control room envelope habitability.

STPNOC performed a self-assessment of control room habitability in 2000 and concluded that regulatory requirements and the design and licensing bases were being met. STPNOC plans to perform additional assessments and confirmatory inleakage testing. STPNOC plans to submit a Technical Specification change to incorporate a Control Room Integrity Program that will include periodic verification of control room inleakage. These additional measures should provide assurance 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.

<b>Commitment</b>	<b>Due Date</b>
Submit a supplementary response to Generic Letter 2003-01. This response will provide as much requested information as feasible in the absence of control room inleakage confirmation testing results. This supplementary response will provide a detailed status of the test schedule.	December 9, 2003
Complete testing to confirm the accident analyses control room inleakage assumption.	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