



Entergy Operations, Inc.
River Bend Station
5485 U. S. Highway 61N
St. Francisville, LA 70775
Fax 225 635 5068

January 25, 2005

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

Subject: Final Response to NRC Generic Letter (GL) 2003-01, Control Room
Habitability
River Bend Station – Unit 1
Docket No. 50-458
License No. NPF-47

RBF1-05-0007
RBG-46385

File Code: G9.5, G9.33.4

Dear Sir or Madam:

The purpose of this letter is to provide Entergy's final response to Generic Letter (GL) 2003-01, Control Room Habitability. In Entergy's initial response to the Generic Letter, as documented in letter RBG-46155, dated August 11, 2003, River Bend Station committed to perform certain actions to determine if control room habitability is maintained within its current licensing and design basis. The results of that review are included within this letter.

New commitments contained in this submittal are summarized in Attachment 2.

If you have questions concerning this response, please contact David N. Lorfing at 225-381-4157.

Sincerely,

A handwritten signature in black ink that reads "David N. Lorfing".

David N. Lorfing
Manager – Licensing (acting)

DNL/dhw
Attachment(s)

A102

cc: Regional Administrator
U. S. Nuclear Regulatory Commission
Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

NRC Senior Resident Inspector
River Bend Station
R-SB-14

U. S. Nuclear Regulatory Commission
Attn: Mr. Michael K. Webb
Mail Stop O-07D1
Washington, DC 20555-0001

Wise, Carter, Child & Caraway
ATTN: J. Smith
P.O. Box 651
Jackson, MS 39205

Winston & Strawn
ATTN: N.S. Reynolds
1400 L Street, NW
Washington, DC 20005-3502

Attachment 1

**Final Response to Generic Letter 2003-01, Control Room Habitability
RBG-46385
January 25, 2005**

Background

On June 12, 2003, the NRC issued Generic Letter 2003-01, "Control Room Habitability." The Letter requested licensees to submit information demonstrating that control rooms comply with the current licensing and design bases, and applicable regulatory requirements, and that suitable design, maintenance, and testing control measures are in place for maintaining this compliance. The Letter requested that we provide certain information as described below. The Letter requested that this information be provided within 180 days of the date of the letter or if unable to meet this schedule, notification of the proposed plans for completion within 60 days of the date of the letter.

On August 11, 2003, River Bend Station (RBS) submitted a response to GL 2003-01 that proposed an alternate (180 day) course of action. As a proposed alternate course of action, RBS committed to complete each of the initial "one time actions" described in Section 3 of NEI document 99-03, Revision 1, Control Room Habitability (CRH), for RBS to facilitate the responses to the above requests. These actions were to:

- Assemble CRH licensing and design bases for control room emergency ventilation systems
- Assemble CRH analyses
- Document CRH bases and analyses
- Assess and evaluate licensing/design bases and operator dose analyses
- Confirm that limiting DBA has been used to assure adequacy of CRH design
- Verify that the potential effects of hazardous chemical release on control room operators have been addressed and that surveys of onsite and offsite hazardous chemicals have been conducted
- Assess and evaluate control room in leakage
- Assess and evaluate control room habitability during smoke events
- Assess and evaluate the adequacy of existing control room emergency ventilation system technical specifications

All of the above actions have been completed. In addition, tracer gas testing was conducted to ensure compliance with the RBS licensing and design basis for control room envelope (CRE) unfiltered inleakage assumptions.

The following provides the responses to the requested information.

1. "Provide confirmation that your facility's control room meets the applicable habitability regulatory requirements (e.g., GDC 1, 3, 4, 5, and 19) and that the CRHSs are designed, constructed, configured, operated, and maintained in accordance with the facility's design and licensing bases. Emphasis should be placed on confirming:
 - 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 control room habitability. Describe how and when you performed the analyses, tests, and measurements for this confirmation.”

Response

River Bend Station has a positive pressure control room. The CRE consists of the main control room on elevation 135 ft. and the main control room HVAC equipment room located on elevation 115 ft. The control room air conditioning system equipment and the control room fresh air (CRFA) system, including all ductwork and equipment, are located within the CRE. Two separate air intakes are furnished to provide alternate sources of outside air for CRE pressurization. The local air intake is located on the roof of the control building, and the remote air intake is located inside the standby cooling tower. The remote air intake is manually aligned in accordance with emergency procedures, and supplies the CRFA system via a pipe routed through below-grade service tunnels.

The CRE is maintained at a positive pressure of ≥ 0.125 inch water gauge (w.g.) with respect to surrounding areas during all modes of plant operation. In the emergency mode, the system is designed to maintain a positive pressure of ≥ 0.25 inch w.g. with respect to surrounding areas. Baseline tracer gas tests were conducted in May 2004 to measure CRE leakage and to verify positive pressure in the CRE. The unfiltered leakage to the CRE was measured using the ASTM Standard E741 and ASTM Standard E2029-99 tracer gas methodology. The tracer gas testing was performed using site-approved procedures by a qualified contractor; Lagus Applied Technology, Inc. with the support of NCS Corporation.

The unfiltered leakage into the CRE and corresponding fresh air makeup flow rates were measured with the CRFA system operating in each pressurization mode – local intake and remote intake. The test results confirmed the measured leakage into the CRE aligned to the local intake was 18 CFM. The test performed in the remote intake mode found no measurable leakage. As detailed in the vendor’s technical report, 18 CFM is statistically zero leakage.

The CRE unfiltered leakage rate assumed in the radiological analyses is 300 CFM. These analyses had been performed based upon the methods and assumptions consistent with the guidance provided in RG 1.183. The calculated dose consequences meet the acceptance criteria of 10CFR50.67.

- b. “That the most limiting unfiltered leakage into your CRE is incorporated into your hazardous chemical assessments. This leakage 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 shut down panel in the event of smoke.”

Response

Hazardous Materials

The accidental hazardous chemical release is evaluated based upon a computer model using the site specific meteorological data. The dispersion of this airborne release is dependent on the distance from the point of release and the atmospheric stability condition in the area. The CRFA system is assumed to be operating in normal mode with the flow path aligned to the most limiting air intake location during the hazardous chemical release. Toxic chemical release evaluation was performed based upon a conservative CRE inleakage rate of 300 CFM. The measured inleakage of 18 CFM is bounded by the analytical toxic chemical and radiological inleakage of 300 CFM. The CRE air intake can be manually isolated in the event of a toxic gas release or external smoke.

Smoke Events

A dedicated smoke removal system is provided to purge the main control room in the event of fire. The main control room smoke removal system consists of a centrifugal fan, ductwork, dampers, associated accessories, instrumentation, and controls. Procedural guidance is available to operate the system as required upon detection of smoke in the area.

Smoke removal in switchgear rooms, cable vault, cable chases, and general areas of the control building is accomplished by a dedicated smoke removal system. The “miscellaneous areas” smoke removal system consists of a centrifugal fan, ductwork, dampers, associated accessories, instrumentation, and controls. Operating procedures are used to manually operate the system upon detection of smoke.

Also, procedural guidance is in place for removal of smoke from battery rooms, inverter/charger rooms, and chiller equipment rooms using their respective exhaust systems.

In development of the post-fire safe shutdown analysis, fire damage is assumed to result from heat, smoke, or ignition. Based on Reg. Guide 1.189, Section B, “Fire Protection Program Goals / Objectives,” fire damage need only be assessed on the basis of a single fire. At RBS, only two fire areas require Operators to evacuate the main control room and shut down the plant from the Division 1 remote shutdown panel due to a fire event. Those fire areas are the main control room and the CRE ventilation equipment room. The remote shutdown panel used for post-fire safe shutdown activities is located in a fire area that is physically separated from these areas.

The physical separation between the various fire areas is composed of 3-hour rated fire barriers. These fire barriers consist of concrete walls and floors, fire dampers, and fire rated doors. Penetrations (pipe sleeves, electrical block-outs, etc.) through the concrete walls and floors separating fire areas contain a sealant material that has been tested, or has been evaluated, to be capable of withstanding the fire hazard (including the prevention of smoke propagation) for the area. Fire areas at RBS are designed to completely contain any postulated fire and products of combustion that are likely to occur in the area. The egress pathway from the main control room to the Division 1 remote shutdown panel does not require traversing an area in which the fire is assumed to be occurring.

- c. "That your technical specifications verify the integrity of the 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 E741), 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 integrity, explain how and at what frequency you confirm your CRE integrity and why this is adequate to demonstrate CRE integrity."

Response

RBS has a positive pressure control room design. Currently, Technical Specification Surveillance Requirement 3.7.2.4 demonstrates that the ventilation system can maintain the CRE at a positive pressure relative to outside atmosphere. The results from the ASTM E741 tracer gas testing has demonstrated that the control room pressurization surveillance, although a good indication of the control room integrity, is not an accurate predictor of unfiltered air inleakage to the CRE.

RBS will submit a proposed licensing amendment request within six months following approval of TSTF-448. Alternately, if the TSTF is processed through the Consolidated Line Item Improvement Process (CLIIP), RBS will submit a proposed licensing amendment within 6 months after the CLIIP is published in the Federal Register. The amendment request will include a new Technical Specification Surveillance Requirement to determine inleakage in accordance

with the Control Room Integrity Program. A new section will be added to the Technical Specification Section 5.5, "Programs and Manuals," that will specify the scope of the Control Room Integrity Program. The Control Room Integrity Program will rely on the use of ASTM E741 tracer gas or other suitable inleakage testing. RBS does not anticipate that modifications to the CRE will be required to demonstrate compliance with new surveillance requirements.

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

Response

RBS does not use compensatory measures to demonstrate control room habitability.

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

Response

RBS' compliance with the General Design Criteria (GDC) Appendix A to 10CFR Part 50 is documented in its Updated Safety Analysis Report (USAR), primarily in Section 3.1 of the USAR with references to other USAR Sections, as appropriate. As described in USAR 3.1.19, the RBS main control room is designed to meet GDC 19 during all design basis events. As discussed in Section 6.4.1 and Chapter 15 of RBS USAR, the most limiting dose consequences to main control room operators was evaluated and criteria for maximum inleakage developed. The analysis concluded that the 30-day exposure to main control room operators remains within the requirements of 10CFR 50 Appendix A GDC 19 for the most limiting design basis accident (DBA) as long as the inleakage is less than or equal to 300 CFM. Amendment 132 revised the design basis accident main control room dose limit requirements from Appendix A of 10CFR50, General Design Criteria 19 to 10CFR50.67.

Attachment 2

RBG-46385

List of Regulatory Commitments

List of Regulatory Commitments

The following table identifies the action committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check One)		SCHEDULED COMPLETION DATE (If Required)
	ONE- TIME ACTION	CONTINUING COMPLIANCE	
RBS will submit a proposed licensing amendment request within six months following approval of TSTF-448. Alternately, if the TSTF is processed through the Consolidated Line Item Improvement Process (CLIP), RBS will submit a proposed licensing amendment within 6 months after the CLIP is published in the Federal Register. The amendment request will include a new Technical Specification Surveillance Requirement to determine inleakage in accordance with the Control Room Integrity Program. A new section will be added to the Technical Specification Section 5.5, "Programs and Manuals," that will specify the scope of the Control Room Integrity Program. The Control Room Integrity Program will rely on the use of ASTM E741 tracer gas or other suitable inleakage testing.		X	N/A