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Waterford 3

**W3F1-2003-0053**  
**A4.05**  
**PR**

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U.S. Nuclear Regulatory Commission  
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Washington, DC 20555

Subject: Waterford 3 SES  
Docket No. 50-382  
License No. NPF-38  
Response to NRC Generic Letter (GL) 2003-01  
Control Room Habitability, 60 day Response

Dear Sir or Madam:

The purpose of this letter is to provide Entergy's response to GL 2003-01, dated June 12, 2003, for Waterford 3 Steam Electric Station. The Generic Letter, which addresses issues related to ensuring or achieving control room habitability following radiological, toxic, or fire events, allows for either a response within 180 days or 60 days. Entergy has reviewed the actions required by the Generic Letter and has determined that the 60 day response is appropriate.

Accordingly, the 60 day response is provided in the Enclosure to this letter.

If you have any questions concerning this response, please contact Greg Scott at (504) 739-6703.

Very truly yours,

A handwritten signature in cursive script that reads "K.J. Peters".

K.J. Peters  
Director, Nuclear Safety Assurance

KJP/GCS/cbh  
Enclosure

cc: (w/Enclosure) T.P. Gwynn (NRC Region IV)  
(w/o Enclosure) N. Kalyanam, (NRC-NRR), J. Smith, N.S. Reynolds,  
NRC Resident Inspectors Office

A102

**ENCLOSURE**

**Generic Letter 2003-01 Response to Requested Information**

## **Generic Letter 2003-01 Response to Requested Information**

### **1. INTRODUCTION**

Entergy Operations, Inc. has reviewed the actions requested by this generic letter and has determined that the 180-day completion schedule cannot be met at Waterford 3 Steam Electric Station.

As requested by the generic letter, this report addresses the proposed alternative course of action Entergy proposes to take. It includes the basis for this course of action and a schedule for completion of these actions.

### **2. PROPOSED ALTERNATIVE COURSE OF ACTION**

As a proposed alternate course of action to the 180 day response, Entergy will complete each of the initial "one time actions" described in Section 3 of NEI document 99-03, Revision 1, Control Room Habitability (CRH), for Waterford 3. These actions are:

- Assemble CRH licensing and design bases for control room emergency ventilation systems (3.1.1)
- Assemble CRH analyses (3.1.2)
- Document CRH bases and analyses (3.1.3)
- Assess and evaluate licensing/design bases and operator dose analyses (3.2.1)
- Confirm that limiting DBA has been used to assure adequacy of CRH design (3.2.2)
- 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 (3.2.3)
- Assess and evaluate control room in leakage (3.2.4)
- Assess and evaluate control room during smoke events (3.2.5)
- Assess and evaluate the adequacy of existing control room emergency ventilation system technical specifications (3.2.6)

(The corresponding Section of NEI 99-03, Rev. 1 is shown in parenthesis.)

As part of the review, tracer gas testing or other appropriate testing will be conducted to ensure compliance with Waterford's licensing and design basis for control room unfiltered inleakage assumptions.

These initial actions will provide the technical and licensing basis for additional actions, such as modifications, tests, technical specification changes, license amendments, or further analyses.

Following the completion of the above actions, Entergy will submit a written report to the NRC delineating the results, including any significant discrepancies and corrective actions. Entergy will complete the actions above by September 30, 2004, as documented in Attachment 1.

### 3. BASIS FOR ACCEPTABILITY OF ALTERNATIVE COURSE OF ACTION

Entergy provides the following basis for acceptability for this alternate course of action.

The ductwork and HVAC equipment that is used to support the control room environment post accident is located inside the control room habitability envelope (CRE). The envelope includes the control room air conditioning units, the charcoal filters trains, and the suction and recirculation ductwork. A portion of ductwork for the south side emergency outside air intake is located outside the envelope. This duct is under positive pressure, unless the charcoal filter unit is operating. If the charcoal filter unit is operating, any leakage would be routed through the charcoal filter trains and be treated by the charcoal and HEPA filters.

The normal outside air intake has two isolation valves in series that are under negative pressure, as they are aligned to the suction side of the control room air conditioning units. These valves are tested independently on a quarterly basis to ensure they do not leak.

Waterford 3 has a Type II pressured control room. An existing technical specification surveillance ensures the control room is capable of pressurizing to 1/8" water gauge (inwg) positive with less than or equal to 200 cfm. Waterford 3 has permanent plant instrumentation that monitors CRE pressure. This pressure is continuously trended and monitored weekly to detect potential challenges to the CRE.

Administrative and procedural controls are provided for any activity that has the potential to alter the function of the HVAC system and/or the integrity of the CRE pressure boundary. The controls include screening all related work, performance of worker debriefings, discussions on when and how to use CRE emergency restoration kits, required communication, and other special measures required prior to breaching the CRE.

#### Hazardous chemical concerns

The Waterford 3 design/licensing basis includes provisions for the protection of control room personnel from toxic gas hazards in the vicinity of the Waterford 3 plant site. Waterford 3 employs chlorine monitors for detection of chlorine and a Broad Range Gas Detection System (BRGDS) for detection of a variety of toxic gases that pose a potential threat to control room habitability. Surveys and analyses of major industries in the vicinity of Waterford 3, which could have significant inventories of toxic chemicals, are performed every four years in accordance with Technical Specification 6.9.1.9 to determine the impact on safety. These surveys also include assessments of toxic

chemicals transported by road, rail, or river traffic in the vicinity of the Waterford 3 site. If necessary, the BRGDS is modified based on the results of survey analyses to detect any new threats. Certain transient sources of toxic chemicals were analyzed using a probabilistic risk methodology. The results of these probabilistic analyses were found to be acceptable in accordance with NRC guidance.

The analyses are performed such that the control room operators are provided adequate time to don breathing apparatus once an alarm is received from the detection system, thus assuring continued safe plant operation. In addition, the control room envelope is isolated upon detection of the toxic substances and the analyses assume an infiltration rate after isolation that is conservative with respect to the expected rate and to the rate inferred by periodic surveillance testing.

#### Radiological Inleakage concerns

The post accident radiological dose to control room operators is calculated based on inputs and assumptions consistent with current regulatory requirements and Waterford 3 control room and control room HVAC design basis. Waterford 3 has a Type II pressurized control room (R.G. 1.95). The assumed pressurized air flow (200 cfm) is consistent with the pressurization flow surveillance measurement performed every 18 months. Waterford 3 Control Room habitability is ensured through certain testing and maintenance programs as discussed below:

- 1/8 inwc pressurization surveillance test performed every 18 months
- Component testing for vulnerable components (normal isolation valves)
- Procedural control for breaching control room envelope
- Physical location of HVAC equipment (all within the control room envelope)

#### Fire and Smoke concerns

Waterford 3 is provided with alternate shutdown capability which meets the criteria of Sections III.G.3 and III.L of 10CFR 50 Appendix R. Instrumentation and Controls necessary for safe shutdown are provided at locations remote from the control room. Existing procedures for each fire area are provided which describe in detail the equipment and controls necessary to achieve and maintain safe shutdown. The Remote shutdown panel is located two elevations below the control room and it is impracticable for both areas to be impacted by a common smoke scenario. In addition there are multiple paths (in addition to the credited Appendix R path) operators can take to reach the remote shutdown panel. The control room is provided with a manifold breathing system and self-contained breathing apparatuses are staged immediately adjacent to the control room. All operators are trained in the use of these alternate breathing sources. Portable smoke ejection equipment is available for use by the fire brigade to facilitate removal of smoke from any area including the control room. The

forgoing provides adequate confidence individually or in combination that a smoke induced habitability concern for the control room is mitigated at Waterford 3.

**4. GL 2003-01 ITEM 2, COMPESATORY MEASURES.**

Currently Entergy does not use compensatory measures to demonstrate control room habitability at Waterford 3.

**5. GL 2003-01 ITEM 3, APPLICABILITY OF GDC**

Currently Waterford 3 is required to comply with the requirements of the GDC, specifically GDC 19 as documented in chapter 9 of the Waterford 3 USFAR.