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Fred Dacimo  
Vice President, Operations

November 25, 2003

Re: Indian Point Unit 2  
Docket 50-247  
NL-03-181

Document Control Desk  
U.S. Nuclear Regulatory Commission  
Mail Stop O-P1-17  
Washington, DC 20555-0001

Subject: **180-Day Response to NRC Generic Letter 2003-01  
Regarding Control Room Habitability**

Reference: 1) NRC Generic Letter 2003-01, "Control Room Habitability," dated  
June 12, 2003  
2) NRC Safety Evaluation for Amendment 211 to the Indian Point 2 Facility  
Operating License, dated July 27, 2000

Dear Sir:

Entergy Nuclear Operations, Inc (Entergy) hereby submits the 180-day response to Generic Letter 2003-01 (Reference 1) for Indian Point Unit 2 (IP2).

The U.S. Nuclear Regulatory Commission (NRC) issued the Generic Letter to emphasize the importance of comprehensive surveillance testing to verify control room habitability and to request that licensees submit certain information pertaining to the control room, particularly with respect to unfiltered inleakage.

Testing of unfiltered inleakage for validation of safety analysis assumptions was performed in 1999 and 2000 as part of adopting the alternate source term at IP2 as approved by the NRC in Reference 2. The requested information regarding compliance with applicable regulatory requirements and the validity of analysis assumptions regarding unfiltered inleakage is provided in Attachment 1.

The existing IP2 technical specification surveillance for verification of the control room envelope is a positive pressure test, with acceptance criteria developed during the unfiltered inleakage testing. Entergy is participating in the industry initiative (Technical Specification Task Force, TSTF-448) to develop new technical specification requirements pertaining to control room habitability, including a new surveillance for unfiltered inleakage. Entergy's response to the Generic Letter includes a commitment, summarized in Attachment 2, to adopt appropriate new requirements for control room habitability, based on TSTF-448.

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If you have any questions regarding this submittal, please contact Kevin Kingsley at (914) 734-5581.

Sincerely,  
  
Fred R. Dacimo  
Vice President, Operations  
Indian Point Energy Center

cc: Mr. Patrick D. Milano, Senior Project Manager  
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ATTACHMENT 1 TO NL-03-181

180-DAY RESPONSE TO NRC GENERIC LETTER 2003-01

Entergy Nuclear Operations, Inc  
Indian Point Nuclear Generating Unit 2  
Docket No 50-247

## 180-DAY RESPONSE TO NRC GENERIC LETTER 2003-01 REGARDING CONTROL ROOM HABITABILITY

### Requested Information Item 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.*
- (b) That the most limiting unfiltered inleakage into your CRE is incorporated into your hazardous chemical assessments. 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.*
- (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 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.*

### Entergy Response to Item 1:

The Indian Point 2 (IP2) Control Room Ventilation System (CRVS) meets the applicable General Design Criteria (GDC). Indian Point 2 was initially licensed based on the proposed GDCs issued for comment by the Atomic Energy Commission on July 11, 1967. Since that time, the NRC issued a Confirmatory Order on February 11, 1980, which included a requirement to conduct a study regarding compliance with the regulations of 10 CFR 50. The study performed in response to this Order included a review of the GDCs contained in Appendix A of 10 CFR 50. The results of this study were reported in Reference 1 and NRC acceptance of this response was provided in Reference 2. The applicability of the GDCs to IP2 is also described in the Updated Final Safety Analysis Report (Reference 3).

The design of the CRVS was originally licensed as a 'neutral pressure control room' in which the intake air supply was isolated in the emergency mode and control room habitability was maintained with filtered recirculated air. Compliance with regulatory dose limits for control room operators was based on methods and assumptions associated with TID-14844 (Reference 4). The CRVS was subsequently modified to establish a pressurization mode of operation in which filtered outside air is added to the air being recirculated. Also, the current licensing basis for IP2 now reflects use of the alternate source term methodology. NRC approval of the modified design and licensing basis is documented in License Amendment 211 (Reference 5). Testing for unfiltered inleakage, as discussed in the following detailed responses to requested information items 1(a) and 1(b), was performed to support NRC approval of Amendment 211. Implementation of the current surveillance requirement for verifying positive pressure, also established by Amendment 211 is discussed in the response to item 1(c). The operation and maintenance of the CRVS is in accordance with the facility licensing basis, including the requirements of Technical Specification Section 3.7.10.

#### **Entergy Response to Item 1 (a):**

Control room habitability with respect to radiological release scenarios is maintained by operating the CRVS in the pressurization mode, which provides filtered makeup from outside air. This mode of operation is automatically initiated by a safety injection signal or a high radiation signal from the air intake radiation monitors.

Unfiltered inleakage into the control room envelope (CRE) was measured during a series of tests performed to support the adoption of alternate source term as the licensing basis for IP2. A series of 'as-found' tests was performed in May 1999, which included various ventilation lineups of the CRVS. Following this testing, control room envelope sealing was performed for selected penetrations and ventilation ductwork. The post-sealing inleakage testing performed in February 2000 determined that the limiting unfiltered inleakage ( $589 \pm 69$  scfm), with the CRVS operating in the pressurized mode, does not exceed the value assumed in the design basis radiological analyses (700 scfm). Testing was performed with sulfur hexafluoride tracer gas, using procedures based on the methodology described in ASTM Standard E741-93.

Measurement of filtered inleakage is not applicable to IP2 because of the design of the CRVS.

#### **Entergy Response to Item 1 (b):**

Control room habitability with respect to smoke and hazardous chemicals is maintained by operating the CRVS in the 'recirculation mode' which is 100% recirculated air with no outside air makeup. This mode of operation is automatically initiated by instrumentation that monitors for specific hazardous chemicals and by smoke monitors.

Testing of unfiltered inleakage into the CRE with the CRVS in the recirculation mode was also performed in February 2000, using the same method applied for measuring inleakage in the pressurization mode. The limiting unfiltered inleakage for the recirculation mode was  $1251 \pm 43$  scfm. The current analysis for hazardous chemicals assumes an inleakage limit of 1300 scfm. Therefore, measured inleakage is appropriately bounded by design basis analyses for hazardous chemical releases.

Reactor control capability is available from either the control room or various local control stations in the plant, in the event of smoke. Plant procedures provide for operator actions in the event of fire / smoke in the control room or fire external to the control room that affects instrumentation or control functions. The procedures provide instructions for performing plant condition monitoring and equipment operation, including reactor control functions, at the local control stations if the control room becomes uninhabitable. Breathing apparatus is available for control room operators, if needed. Operability and surveillance requirements are identified in the Technical Specifications Section 3.3.4 for those local control stations needed to place and maintain the plant in a safe shutdown condition.

**Entergy Response to Item 1 (c):**

The Indian Point 2 Technical Specifications currently have a positive pressure verification surveillance requirement that was established as part of License Amendment 211. The surveillance verifies that each CRVS train can maintain a positive pressure relative to the adjacent areas during the pressurization mode of operation at a makeup flow rate of 2000 scfm  $\pm$  10%, as committed in Reference 6. The test frequency is 24 months on a staggered test basis.

Entergy acknowledges that verification of control room envelope integrity can be further enhanced through a new surveillance requirement that provides for the periodic measurement of unfiltered inleakage. Entergy is participating in the industry initiative (Technical Specification Task Force, TSTF-448) to develop new technical specification requirements pertaining to control room habitability. Since NRC review may result in changes to the current proposed version (Revision 1) of the TSTF, Entergy cannot commit to adopt the TSTF in its entirety until such changes are available to review. However, Entergy is committing to submit proposed changes to the technical specifications regarding unfiltered inleakage testing within 9 months of NRC approval of the TSTF for adoption. This assumes that the NRC will make TSTF-448 available for adoption under the Consolidated Line Item Improvement Process. The timing of this commitment will allow for the adoption of the final version of the TSTF if Entergy concludes that the final version is acceptable for use at IP2.

**Requested Information Item 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.*

**Entergy Response:**

Entergy is not currently using compensatory measures to demonstrate control room habitability.

**Requested Information Item 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.*

**Entergy Response:**

Compliance with applicable GDCs is discussed in the response to item 1.

**References:**

1. Consolidated Edison letter to NRC dated August 11, 1980, regarding actions taken to comply with NRC Confirmatory Order of February 11, 1980.
2. NRC letter to Consolidated Edison dated January 19, 1982 regarding completion of audit of August 11, 1980 response to Order.
3. Indian Point 2 Updated Final Safety Analysis Report, Section 1.3, "General Design Criteria."
4. J. J. DiNunno, et al., "Calculation of Distance Factors for Power and Test Reactor Sites," USAEC TID-14844, U. S. Atomic Energy Commission (now USNRC), 1962.
5. NRC Safety Evaluation for Indian Point 2 License Amendment 211, dated July 27, 2000.
6. Consolidated Edison letter to NRC dated April 6, 2000, "Testing of HEPA Filter Systems"

ATTACHMENT 2 TO NL-03-181

COMMITMENTS REGARDING RESPONSE TO  
NRC GENERIC LETTER 2003-01

Entergy Nuclear Operations, Inc  
Indian Point Nuclear Generating Unit 2  
Docket No 50-247

Commitment Regarding Response to Generic Letter 2003-01  
Control Room Habitability

Commitment ID	Description	Schedule
NL-03-181-C01	Submit a License Amendment Request for proposed changes to the Indian Point 2 Technical Specifications, based on TSTF-448 regarding Control Room Habitability, and including a new surveillance requirement for periodic verification of unfiltered inleakage.	Within 9 months following NRC approval of TSTF-448 for adoption under the Consolidated Line Item Improvement Process