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Fred Dacimo
Site Vice President
Administration

June 28, 2005

Re: Indian Point Unit 3
Docket 50-286
NL-05-085

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

Subject: **NRC Generic Letter 2003-01 "Control Room Habitability"**
Supplemental Response after Completion of Tracer Gas Testing

- Reference:
- 1) NRC Generic Letter 2003-01, "Control Room Habitability", dated June 12, 2003
 - 2) Entergy letter to NRC (NL-03-129), "60-day response to Generic Letter 2003-01", dated August 6, 2003
 - 3) Entergy letter to NRC (NL-04-118), regarding Revised Schedule for Supplemental Response to Generic Letter 2003-01", dated September 20, 2004
 - 4) NRC letter to Entergy, "IP3 License Amendment 224 – Full Scope Adoption of Alternate Source Term," dated March 22, 2005

Dear Sir:

Entergy Nuclear Operations, Inc (Entergy) hereby submits the response to Generic Letter 2003-01 (Reference 1) for Indian Point Unit 3 (IP3) as committed in References 2 and 3.

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.

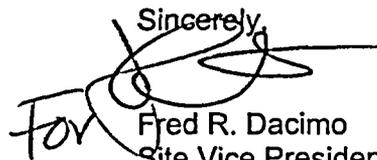
The initial response (Reference 2) to the Generic Letter outlined a course of action and schedule for IP3 that accounted for the planned adoption of alternate source term and the planned performance of the initial tracer gas testing for measuring unfiltered inleakage. A schedule update was provided in Reference 3 and in subsequent telephone discussions with NRC staff.

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The tracer gas test was performed in January / February 2005 and alternate source term for IP3 was approved by NRC (Reference 4) in March 2005. Based on the completion of these major milestones which affected the licensing basis for control room habitability at IP3, Entergy is submitting the information requested by the Generic Letter.

The existing IP3 technical specification surveillance for verification of the control room envelope is a positive pressure test. Entergy's response to the Generic Letter includes a commitment, summarized in Attachment 2, to adopt a new control room envelope surveillance test based on the Technical Specification Task Force proposed change to the Standard Technical Specifications, TSTF-448.

If you have any questions regarding this submittal, please contact Kevin Kingsley at (914) 734-6695.

Sincerely,

Fred R. Dacimo
Site Vice President
Indian Point Energy Center

cc: Mr. John P. Boska; Senior Project Manager, NRC NRR
Mr. Samuel J. Collins; Regional Administrator, NRC Region 1
Mr. Thomas R. Hipschman; NRC Senior Resident Inspector

ATTACHMENT 1 TO NL-05-085

**RESPONSE TO NRC GENERIC LETTER 2003-01
REGARDING CONTROL ROOM HABITABILITY
FOR INDIAN POINT 3**

**Entergy Nuclear Operations, Inc
Indian Point Nuclear Generating Unit 3
Docket No 50-286**

RESPONSE TO NRC GENERIC LETTER 2003-01; CONTROL ROOM HABITABILITY

Introduction:

The initial response to Generic Letter 2003-01 for Indian Point 3 (NL-03-129, dated August 6, 2003) outlined a course of action based on the steps described in Section 3 of NEI 99-03, Revision 1 (Control Room Habitability Guidance, March 2003). Entergy has accomplished these steps in conjunction with efforts related to the following projects that support resolution of the control room habitability issues discussed in the Generic Letter:

- License Amendment to adopt Alternate Source Term (Amendment 224 dated March 22, 2005)
- Control Room Envelope sealing activities
- Control Room Ventilation System flowpath and operating configuration modification
- Control Room Envelope Tracer Gas Testing

Relevant information pertaining to the steps described in NEI 99-03 is incorporated into the following responses to information requested in the Generic Letter.

Generic Letter 2003-01 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 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.

Entergy Response to Item 1:

The Indian Point 3 (IP3) Control Room Ventilation System (CRVS) meets the applicable General Design Criteria (GDC). Indian Point 3 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 are described in the Updated Final Safety Analysis Report (Reference 1).

Compliance with regulatory dose limits for control room operators was originally based on methods and assumptions associated with TID-14844 (Reference 2). NRC has recently approved (Reference 3) full scope adoption of alternate source term at IP3. The regulatory basis for NRC staff review of this license amendment was:

- Accident dose criteria in 10 CFR 50.67 and 10 CFR 50 Appendix A GDC 19
- Regulatory Position 4.4 of Reg Guide 1.183
- Standard Review Plan, NUREG 0800; Sections 6.4 and 15.0.1
- 10 CFR 50 Appendix A GDC 60
- 10 CFR 50 Appendix A GDC 61
- 10 CFR 50 Appendix A GDC 64

The licensing basis for the CRVS also includes requirements regarding protection of operators from smoke and toxic vapors. NUREG 0737 Item III.D.3.4 requires protection of the control room operators from the effects of accidental toxic chemical releases. 10 CFR 50, Appendix R requires that nuclear plants be capable of achieving a safe shutdown condition during postulated plant fires. The licensing basis safe shutdown for IP3 is cold shutdown.

The operation and maintenance of the CRVS is in accordance with the facility licensing basis, including the requirements of Technical Specification Section 3.3.3 (CRVS Actuation Instrumentation), Section 3.7.11 (CRVS), Section 3.7.12 (Control Room Air Conditioning System), and Technical Requirements Manual Section 3.3.F (Toxic Gas Monitoring Instrumentation).

Entergy Response to Item 1 (a):

NRC approved the full scope adoption of alternate source term analyses for IP3 in March 2005, in License Amendment 224 (Reference 3). Those analyses assumed an unfiltered inleakage of 700 cfm for the analyzed accidents except for Large Break LOCA which uses an inleakage assumption of 400 cfm. Also as part of AST adoption, Entergy developed a modification of the Control Room Ventilation System (CRVS) which provides for greater pressurization of the control room with the CRVS operating in the configuration (Mode 3 – Pressurization) used for radiological protection of control room personnel. NRC approved License Amendment 223 in January 2005 (Reference 4), which allowed the new system configuration to be setup temporarily for the purpose of conducting the tracer gas testing. In January / February 2005, Entergy conducted tracer gas testing to validate the unfiltered inleakage safety analysis assumptions with the CRVS in the proposed new operating alignment. Testing services were provided by NCS Corporation and Lagus Applied Technology, Inc. Six tests were conducted as summarized in the following Table. Testing was performed using sulfur hexafluoride as a tracer gas and tracer gas flow rates were measured using a procedure based on ASTM E2029-00. Air inleakage rates into the control room envelope were measured using a procedure based on ASTM E741-95. The complete tracer gas test report is available for inspection. Final acceptance of the proposed new CRVS operating modes is documented in License Amendment 224 and the modification supporting the new CRVS operating modes was installed in March 2005, during refueling outage 3R13.

TABLE ONE - SUMMARY OF TRACER GAS TEST RESULTS FOR IP3 CONTROL ROOM
CONDUCTED JANUARY / FEBRUARY 2005

TEST	CRVS MODE (Note 1)	OPERATING AIR HANDLERS (Note 1)	FILTERED MAKEUP FLOWRATE (Note 3)	INLEAKAGE (Note 3)	VENTILATION IN ADJACENT AREAS (Note 2)
1	Pressurization Mode 3	31 FBF 31 and 32 AC	1607 ± 47 SCFM	81 ± 46 SCFM	
2	Pressurization Mode 3	31 FBF 31 and 32 AC	1528 ± 47 SCFM	88 ± 33 SCFM	32 Control Building Exhaust Fan
3	Pressurization Mode 3	32 FBF 32 AC	1306 ± 46 SCFM	62 ± 70 SCFM	
4	Toxic Gas Mode 4	31 and 32 AC	None	301 ± 17 ACFM	
5	Pressurization Mode 3	31 FBF 31 AC	1402 ± 41 SCFM	42 ± 35 SCFM	One additional Turbine Building Exhaust Fan
6	Normal Mode 2	31 and 32 AC	NOTE 4		One additional Turbine Building Exhaust Fan

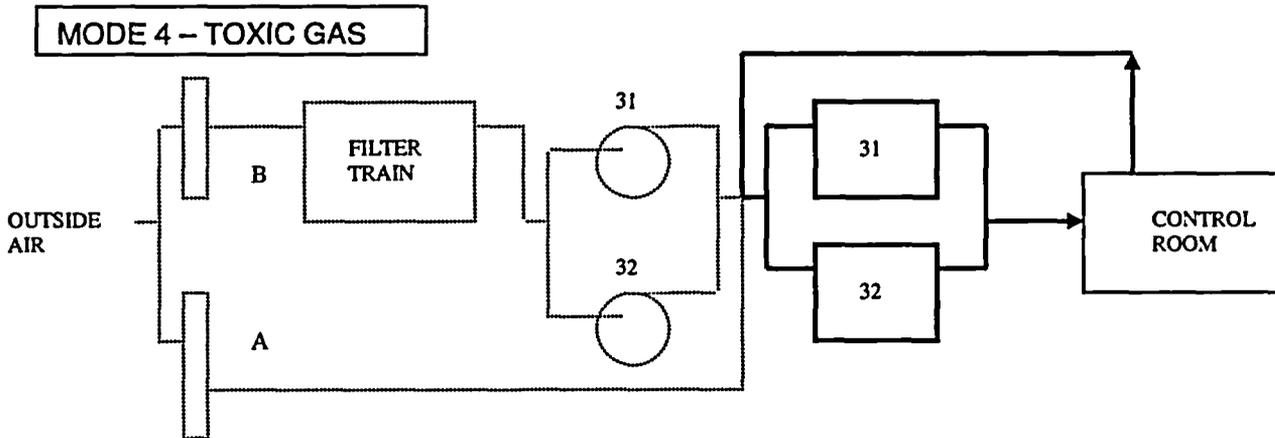
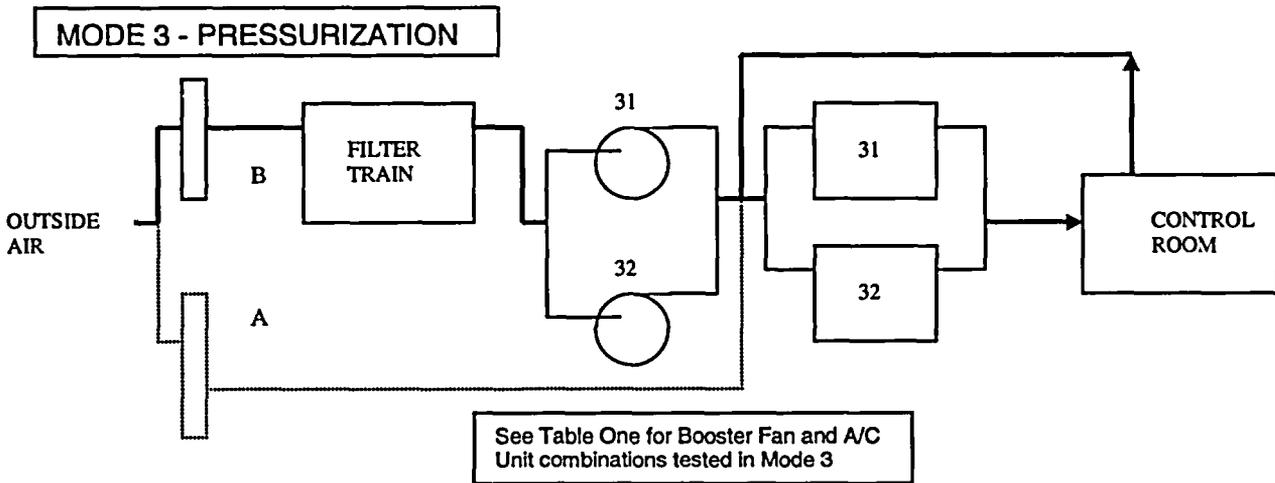
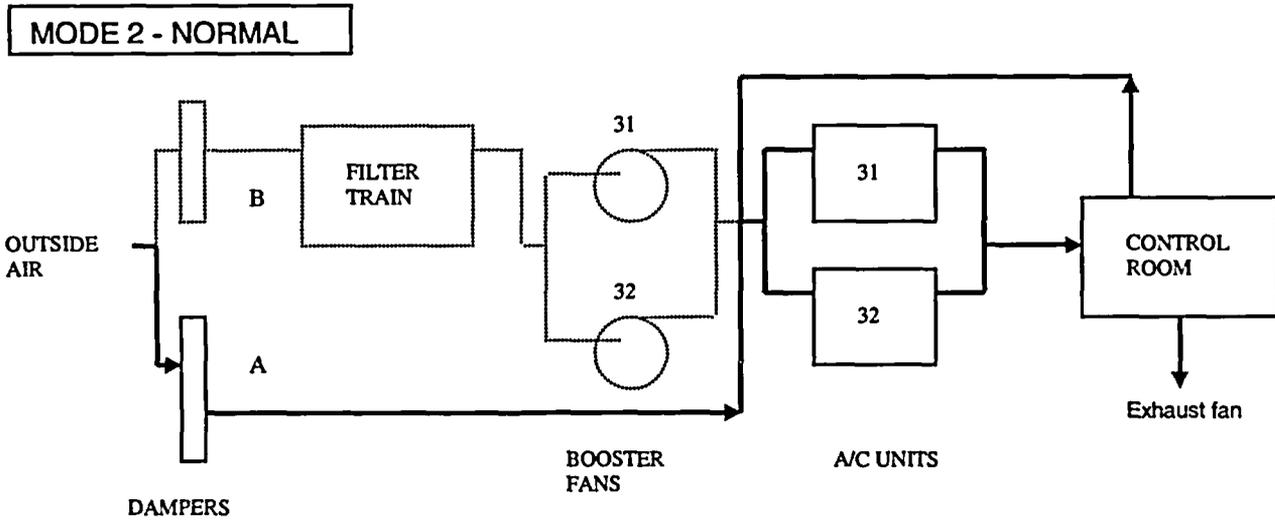
Note 1: Refer to Figure One for CRVS Modes and Air Handler nomenclature.

Note 2: Three Turbine Building Exhaust Fans were running for all tests and the CCR HVAC Equipment Room exhaust fan was running for all tests, except test 1.

Note 3: SCFM (Standard Cubic Feet per Minute) is referenced to 70°F and 14.7 psia. ACFM is Actual Cubic Feet per Minute.

Note 4: In CRVS Mode 2, the makeup flow is unfiltered (via the Damper A flowpath). The tracer gas test can not distinguish between unfiltered makeup flow and unfiltered inleakage. The inleakage measurement result of 1393 ± 177 ACFM reported for this operating configuration is primarily from the unfiltered makeup flow through Damper A.

FIGURE ONE – CCR HVAC OPERATING MODES



Entergy Response to Item 1 (b):

Control room habitability with respect to smoke and hazardous chemicals is maintained by operating the CRVS in mode 4 which consists of 100% recirculated, unfiltered air with no makeup from outside air. Operator action is required to select this mode of operation in response to toxic gas instrumentation. Two independent toxic gas monitoring systems are provided for measuring ammonia, chlorine, and oxygen. One system is installed in the control room and one system is installed in the CRVS intake duct. The analysis for control room habitability with respect to toxic gas intrusion assumes a maximum unfiltered inleakage of 1300 cfm. The tracer gas testing described item 1(a) measured an inleakage of 301 cfm (Test 4 in Summary of Results Table) which confirms that the analysis assumption is bounding.

A hazardous chemical survey, in accordance with NEI 99-03, was last performed in 2003. Entergy concluded that no additional mitigation measures are needed as a result of this survey to address control room habitability with respect to toxic gas protection of control room operators.

Reactor control capability is available from either the control room or various local control stations in the plant, in the event that the control room environment is adversely affected by fire-related conditions. Plant procedures provide for operator actions in the event of fire or smoke in the control room or fire external to the control room that affects control room habitability. 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 (Remote Shutdown) for those local control stations needed to place and maintain the plant in a safe shutdown condition in the event that the control room must be evacuated.

Entergy Response to Item 1 (c):

The Indian Point 3 Technical Specifications currently have a positive pressure verification surveillance requirement for verifying the control room envelope. The surveillance verifies that each CRVS train can maintain a slightly positive pressure relative to the adjacent areas with the system operating at a makeup flow rate of ≥ 1500 cfm. The test frequency is 24 months on a staggered-train 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 and acceptance is not yet complete, Entergy cannot commit to adopt the TSTF in its entirety until such changes are available to review for applicability to IP3. 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 IP3.

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. Indian Point 3 Updated Final Safety Analysis Report, Section 1.3, "General Design Criteria."
2. 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.
3. NRC Safety Evaluation for Indian Point 3 License Amendment 224, dated March 22, 2005.
4. NRC Safety Evaluation for Indian Point 3 License Amendment 223, dated January 19, 2005.

ATTACHMENT 2 TO NL-05-085

COMMITMENTS REGARDING RESPONSE TO
NRC GENERIC LETTER 2003-01

Entergy Nuclear Operations, Inc
Indian Point Nuclear Generating Unit 3
Docket No 50-286

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

Commitment ID	Description	Schedule
NL-05-085-01	Submit a License Amendment Request for proposed changes to the Indian Point 3 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