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September 24, 2001  
NL-01-113

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

SUBJECT: Indian Point 2 Nuclear Power Plant  
Docket No. 50-247  
**Supplemental Response to NRC Bulletin 2001-01**  
**"Circumferential Cracking of Reactor**  
**Pressure Vessel Head Penetration Nozzles"**

- References:
1. NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Vessel Pressure Vessel Head Penetration Nozzles," dated August 3, 2001.
  2. Consolidated Edison Letter to USNRC, "Thirty-Day Response to NRC Bulletin 2001-01," dated September 4, 2001.
  3. Entergy Nuclear Operations, Inc. Letter to USNRC, "Thirty-Day Response to NRC Bulletin 2001-01," dated August 31, 2001.

Dear Sir:

Attached is Entergy Nuclear Operations Inc. (ENOI) response to NRC Bulletin 2001-01 (Reference 1) for the Indian Point 2 Nuclear Power Plant. This letter supplements the thirty-day response letter provided by Consolidated Edison Company of New York, Inc. (Reference 2), and specifically addresses bulletin requested information items 4a and 5. As noted in Reference 2, Consolidated Edison did not develop plans for future inspection activities at Indian Point 2 because of the recent transfer of license and ownership.

ENOI is participating in the Electric Power Research Institute, Inc., Materials Reliability Program associated with this issue, and is committed to its timely and complete resolution.

Due to similarities between Indian Points 2 and 3, ENOI believes that the planned inspection activities for Indian Point 3 (Reference 3) would also be appropriate for Indian Point 2. Because of the difficulties associated with removing taped and cemented asbestos insulation from the

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vessel head, we are not proposing to conduct "bare metal" inspections during the next refueling outage at this time. ENOI is proposing to conduct "above the insulation" visual inspections of the vessel head penetration (VHP) nozzles, and to closely monitor the results of VHP inspections that will be conducted by other licensees during the time period before the next refueling outage at Indian Point 2. If new evidence significantly increases the potential for VHP cracks at Indian Point 2, ENOI will conduct volumetric examinations as soon as reasonable.

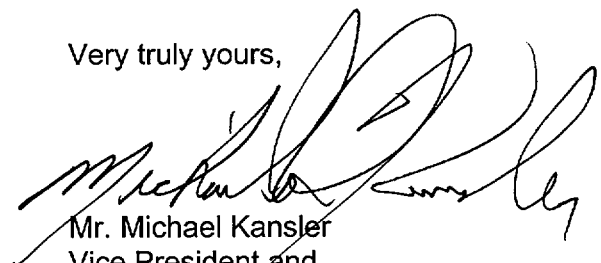
Final VHP inspection plans will be submitted to the NRC staff ninety-days before the start of the next refueling outage currently scheduled for October of 2002. The inspection plans in Attachment 1 are based on currently available information and may be revised to reflect new information.

As noted in Reference 3, Entergy is planning to form an alliance with a major NSSS vendor to develop new state-of-the-art tooling and methods for volumetric examination at known susceptible cracking areas of CRDM penetrations. This alliance will include the development of both mitigation and repair methods.

If you have any questions, please contact Mr. John McCann at 914-734-5074.

I declare under penalty of perjury that the foregoing is true and correct.

Very truly yours,



Mr. Michael Kansler  
Vice President and  
Chief Operating Officer

Executed on 9/24/2001  
(Date)

cc: Next page.

Attachments:

1. Supplemental Response to NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Vessel Pressure Vessel Head Penetration Nozzles.
2. Summary of Commitments

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**Supplemental Response to NRC Bulletin 2001-01  
"Circumferential Cracking of Reactor Vessel  
Pressure Vessel Head Penetration Nozzles"**

Entergy Nuclear Operations, Inc.  
Indian Point 2 Nuclear Power Plant  
Docket No. 50-247

**REQUEST 4a - MODERATE SUSCEPTIBILITY INFORMATION REQUEST**

4. *If the susceptibility ranking for your plant is greater than 5 EFPY and less than 30 EFPY of ONS3, addressees are requested to provide the following information:*
- a. *your plans for future inspections (type, scope, qualification requirements, and acceptance criteria) and the schedule;*

**RESPONSE 4a**

1. ENOI will conduct "above the insulation" visual inspections of the Indian Point 2 RPV head and nozzles. These inspections will be conducted using an enhanced CRDM nozzle inspection program, similar to that committed for Indian Point 3. This program will include the following elements:
- Research and evaluate improved camera delivery systems to improve access for VT2 visual. This should facilitate inspections of greater than 60% of the VHPs.
  - Increased camera resolution will improve the ability of inspectors to see signs of leakage.
  - If leakage is identified during these visual examinations
    - A volumetric examination of the suspect area will be conducted to further characterize the flaw
    - "Extent of condition" inspection sample size will be increased based on MRP and/or plant specific recommendations.
    - Repairs will be performed, as required, to meet acceptance criteria requirements.
2. A detailed inspection plan will be submitted to the NRC no less than 90 days before the start of the next (RO15) refueling.
3. ENOI will continue to monitor the results of VHP inspections (visual and volumetric) conducted at similar commercial nuclear power plants. If the results of these examinations significantly increase the probability of PWSCC cracks in VHP at Indian Point 2, ENOI will consider expanding its inspection plans to include a volumetric sampling examination of the reactor vessel head.

4. ENOI will visually inspect (by VT2) any VHP that may be exposed to bare metal during an outage.
5. ENOI will assess the effectiveness of acoustic emission monitoring systems for on the head during pressure testing.

**REQUEST 5 - REFUELING OUTAGE PLANS**

5. *Addressees are requested to provide the following information within 30 days after plant restart following the next refueling outage:*
  - a. *a description of the extent of VHP nozzle leakage and cracking detected at your plant, including the number, location, size, and nature of each crack detected;*
  - b. *if cracking is identified, a description of the inspections (type, scope, qualification requirements, and acceptance criteria), repairs, and other corrective actions you have taken to satisfy applicable regulatory requirements. This information is requested only if there are any changes from prior information submitted in accordance with this bulletin.*

**RESPONSE 5**

Entergy Nuclear Operations, Inc. will submit the information requested within 30 days after plant restart from the next refueling outage, which is currently scheduled to begin in October 2002.

**REFERENCES**

1. NRC Bulletin 2001-01, "Circumferential Cracking of Reactor Vessel Pressure Vessel Head Penetration Nozzles," dated August 3, 2001.
2. Consolidated Edison Letter to USNRC, "Thirty-Day Response to NRC Bulletin 2001-01," dated September 4, 2001.
3. Entergy Nuclear Operations, Inc. Letter to USNRC, "Thirty-Day Response to NRC Bulletin 2001-01," dated August 31, 2001.

Attachment II to NL-01-113

Summary of Commitments

Commitment ID	Description	Due Date
NL-01-113-01	<p>ENOI will conduct "above the insulation" visual inspections of the Indian Point 2 RPV head and nozzles during the next (RO15) refueling outage. These inspections will be conducted using an enhanced CRDM nozzle inspection program, similar to that committed for Indian Point 3. This program will include the following elements:</p> <ul style="list-style-type: none"> <li>• Research and evaluate improved camera delivery systems to improve access for VT2 visual. This should facilitate inspections of greater than 60% of the VHPs.</li> <li>• Increased camera resolution will improve the ability of inspectors to see signs of leakage.</li> <li>• If leakage is identified during these visual examinations                             <ul style="list-style-type: none"> <li>• A volumetric examination of the suspect area will be conducted to further characterize the flaw</li> <li>• "Extent of condition" inspection sample size will be increased based on MRP and/or plant specific recommendations.</li> <li>• Repairs will be performed, as required, to meet acceptance criteria requirements.</li> </ul> </li> </ul>	During the next (RO15) refueling outage.
NL-01-113-02	<p>ENOI will continue to monitor the results of VHP inspections (visual and volumetric) conducted at similar commercial nuclear power plants. If the results of these examinations significantly increase the probability of PWSCC cracks in VHP at Indian Point 2, ENOI will consider expanding its inspection plans to include a volumetric sampling examination of the reactor vessel head.</p>	Ongoing.
NL-01-113-03	<p>ENOI will visually inspect (by VT2) any VHP that may be exposed to bare metal during an outage.</p>	As-required.

Attachment II to NL-01-113

Commitment ID	Description	Due Date
NL-01-113-04	ENOI will assess the effectiveness of acoustic emission monitoring systems for on the head during pressure testing.	Ongoing.
NL-01-113-05	<p>Provide the following information:</p> <p>a. a description of the extent of VHP nozzle leakage and cracking detected at your plant, including the number, location, size, and nature of each crack detected;</p> <p>b. if cracking is identified, a description of the inspections (type, scope, qualification requirements, and acceptance criteria), repairs, and other corrective actions you have taken to satisfy applicable regulatory requirements. This information is requested only if there are any changes from prior information submitted in accordance with this bulletin.</p>	Within 30 days after plant restart following the next refueling outage.
NL-01-113-06	Final VHP inspection plans will be submitted to the NRC staff.	Ninety-days before the start of the next refueling outage.