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Fred Dacimo  
Site Vice President  
Administration

November 15, 2006

Re: Indian Point Unit 2  
Dockets 50-247  
NL-06-116

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

SUBJECT: **Reply to Request for Additional Information Regarding Steam  
Generator Examination Results for 2006 Refueling Outage (TAC MD2783)**

- REFERENCES:
1. NRC letter to Entergy dated October 26, 2006; "Request for Additional Information Regarding Steam Generator Tube Examination Results".
  2. Entergy letter NL-06-067 to NRC dated June 14, 2006; "Steam Generator Examination Program Results, 2006 Refueling Outage (2R17)."

Dear Sir or Madam:

Entergy Nuclear Operations, Inc (Entergy) is providing, in Attachment One, a response to the request for additional information (Reference 1) regarding the Indian Point Unit 2 (IP2) steam generator examination results previously reported by Entergy (Reference 2) for the examination activities conducted during the Spring 2006 refueling outage (2R17).

There are no new commitments identified in this submittal. If you have any questions or require additional information, please contact Mr. Patric W. Conroy, IPEC Licensing Manager at (914) 734-6668.

Sincerely,

A handwritten signature in black ink, appearing to be "Fred R. Dacimo".

Fred R. Dacimo  
Site Vice President  
Indian Point Energy Center

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cc:

Mr. John P. Boska, Senior Project Manager, NRC NRR DORL  
Mr. Samuel J. Collins, Regional Administrator, NRC Region I  
NRC Resident Inspector's Office, Indian Point 2  
Mr. Peter R. Smith, NYSERDA  
Mr. Paul Eddy, NYS Department of Public Service

Attachment: as stated

**ATTACHMENT ONE TO NL-06-116**

**REPLY TO REQUEST FOR ADDITIONAL INFORMATION REGARDING  
INDIAN POINT 2 STEAM GENERATOR EXAMINATION RESULTS  
FOR 2006 REFUELING OUTAGE (2R17)**

**ENTERGY NUCLEAR OPERATIONS, INC  
INDIAN POINT NUCLEAR GENERATING UNIT NO. 2  
DOCKETS 50-247**

**NRC Question 1:**

Section 2.a.7 of your report dated June 14, 2006, indicated that the inspection program for refueling outage (RFO) 17 consisted of special interest examinations of "abnormal" indications. Please discuss the results of any special interest examinations on these indications. In addition, discuss what constitutes an "abnormal" indication.

**Entergy Reply:**

Abnormal indications are those eddy current or visual indications that require additional testing (special interest) to confirm that no flaws or degradation are present. The results of the special interest testing performed in 2R17 confirmed that no flaws or degradation were present in the Indian Point 2 steam generator (SG) tubing.

**NRC Question 2:**

Section 2.b, Secondary Side Examinations, states that the top support plate in steam generators (SGs) 23 and 24 were visually inspected. Please discuss the results of these visual inspections. If any degradation was found, please discuss the basis for the inspection scope.

**Entergy Reply:**

No degradation was found during visual inspections of the top support plates in SG 23 and SG 24. The results indicated a very thin layer of deposits on the upper surface of the support plate and in the area between the tube hole land and the tubes. The broach holes themselves were clear of any deposits.

**NRC Question 3:**

It is stated in Section 3.0 that the largest bobbin indication (28-percent) located at an anti-vibration bar (AVB) was confirmed to be single-sided wear by +Point™ examination. Please discuss whether all AVB wear scars were inspected with a rotating probe to confirm that they were also single-sided wear. If any of these indications were not single-sided wear (e.g., row 36 column 44 in SG 22), please discuss the method used to size these indications. If a "qualified" sizing technique does not exist for wear indications that are not "single-sided," please discuss your basis for leaving them in service (if any were left in service).

**Entergy Reply:**

The largest bobbin indication located at an anti-vibration bar (AVB) was examined by +Point™ to better characterize the degradation for integrity assessments. The remaining AVB wear scars were not examined with +Point™ to confirm they were single-sided. The bobbin probe is qualified to size AVB wear whether it is single or other than single-sided but can only conservatively report the result as single-sided wear. The bobbin probe responds to the wear

location as an average around the 360 degree circumference of the tube and as such the total volumetric wall loss is reported as a single wear depth. This technique was used as the basis for leaving AVB wear scars in service. If any of the AVB wear scars were other than single-sided, the single depth reported by bobbin would always exceed the maximum depth of any of the individual wear scars at that location.

**NRC Question 4:**

Please discuss whether the low levels of primary-to-secondary leakage observed during prior cycles is still present.

**Entergy Reply:**

Very low primary-to-secondary leakage is still present. The leakage is estimated to be about 0.03 gallons per day which is comparable to the previous fuel cycle. The leakage is not routinely detected because the level is at or below the detection limit. No location for the leakage has been found but it is believed to be past one or more tube end seal welds in 22 SG.

**NRC Question 5:**

For the tubes identified with permeability variations, discuss whether these locations were inspected with a rotating probe (e.g., magnetically biased +Point™ probe) to confirm the absence of degradation at these locations. Please discuss whether the size of these permeability variations limit the ability to reliably inspect these locations. If so, discuss your long-term strategy for addressing these indications.

**Entergy Reply:**

Permeability variations (PVNs) were detected with bobbin and rotating coil probes. Those tube locations with permeability variations did not receive any additional inspections but were compared to historical inspections for any change in signal. The size of the PVN indications could limit the ability to reliably detect degradation if present. However, given the limited service time on the replacement SGs and the results from examinations of neighboring tubes without PVN indications there is no reason to suspect that degradation is occurring at the locations with PVN indications. The long term strategy is to keep tubes with PVN indications in service until degradation is anticipated in those locations at which time the tubes with PVN indications will be preventatively plugged unless new inspection techniques are developed that can reliably detect degradation anticipated at these locations.

**NRC Question 6:**

In your February 13, 2006 (ML060530378), letter you indicated that you would be performing primary side visual inspections and that you would be inspecting the top of the flow distribution baffle in all 4 SGs. Please discuss the results of these inspections.

**Entergy Reply:**

The inspection of the flow distribution baffle was determined to be unnecessary and was not performed. Primary side visual inspections were performed in each channel head of the four SGs. All tube plugs were intact with no evidence of leakage. No abnormal conditions were noted during the primary side visual inspections.