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Fred Dacimo
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November 10, 2004

Indian Point Unit 2
Docket Nos. 50-247
NL-04-143

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, D.C. 20555-0001

Subject: **Proposed Revision to Reactor Vessel Surveillance Capsule Withdrawal Schedule Per 10 CFR 50, Appendix H**

References:
1. NRC Administrative Letter 97-04, "NRC Staff Approval For Changes to 10 CFR 50, Appendix H, Reactor Vessel Surveillance Specimen Withdrawal Schedules," Dated September 30, 1997.
2. ASTM Standard E185-82, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels".

Dear Sir:

Entergy Nuclear Operations, Inc. (Entergy) hereby requests NRC approval of a revision to the reactor vessel surveillance specimen withdrawal schedule. Reference 1 allows NRC approval of the proposed changes to the withdrawal schedule without a license amendment if the changes conform with the American Society for Testing and Materials (ASTM) standard E 182-82 (Reference 2). The proposed changes comply with Reference 2 as discussed in Attachment 1. Indian Point Unit 2 is currently in refuel outage 16 and the current schedule for entry into mode 2 is 0100 hours on November 18, 2004.

The proposed change revises the withdrawal schedule as follows:

- Capsule S withdrawal date is changed from "End of Cycle 16" to "retired in place"
- Capsule U withdrawal date is changed from "spare" to "End of Cycle 19"
- Capsule W withdrawal date is changed from "spare" to "End of Life"

In addition, because of the similarity of the remaining capsules, the schedule will allow the withdrawal of Capsules U, W, and another spare (Capsule X) to be interchangeable.

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Entergy is making this request due to the inability to withdraw capsule S from its location in the vessel. Several unsuccessful attempts were made to withdraw the capsule and a conclusion was reached that increasing the force to remove the capsule could result in damage and/or loose parts from the specimen and / or tooling. Based on this concern, it was concluded that the capsule should be retired in place.

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

Sincerely,

for Fred R. Dacimo
Site Vice President
Indian Point Energy Center

cc:

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ATTACHMENT 1 TO NL-04-143

PROPOSED REVISION TO REACTOR VESSEL SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE PER 10 CFR 50, APPENDIX H

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

1.0 REQUIREMENTS

Appendix H of 10 CFR 50 (Reference 1) describes reactor vessel material surveillance program requirements. Paragraph (III)(B)(3) requires "A proposed withdrawal schedule must be submitted with a technical justification as specified in Section 50.4. The schedule must be approved prior to implementation." Reference 2 allows NRC approval of the proposed changes to the withdrawal schedule without a license amendment if the changes conform with the American Society for Testing and Materials (ASTM) standard E 182-82 (Reference 3).

2.0 PROPOSED CHANGES

The proposed amendment revises the withdrawal schedule for three of the surveillance capsules. The current schedule and proposed changes are identified in Tables 1 and 2, respectively.

Table 1 - Current Withdrawal Schedule

Capsule	Capsule Location	Lead Factor	Withdrawal Outage
T	320^0	3.42	RFO1
Y	140^0	3.48	RFO2
Z	40^0	3.53	RFO5
V	4^0	1.18	RFO8
S	140^0	3.5	RFO16
U	176^0	1.2	N/A
W	184^0	1.2	N/A
X	356^0	1.2	N/A

Table 2 - Proposed Withdrawal Schedule

Capsule	Capsule Location	Lead Factor	Withdrawal Outage	Withdrawal EFPY (vessel)	Capsule Fluence (n/cm^2)
T	320^0	3.42	RFO1	1.42	2.53×10^{18}
Y	140^0	3.48	RFO2	2.34	4.55×10^{18}
Z	40^0	3.53	RFO5	5.17	1.02×10^{19}
V	4^0	1.18	RFO8	8.6	4.92×10^{18}
U	176^0	1.2	RFO19[1]	26.0 (Approx.)	1.3×10^{19} [3] (approx.)
W	184^0	1.2	EOL[1,2]	EOL (32 EFPY)	1.5×10^{19} [3] (approx.)
X	356^0	1.2	N/A[1]	Spare	N/A
S	140^0	3.5	N/A	Retired	N/A

Notes: 1. The withdrawal schedule for these three capsules are interchangeable due to the common lead factor and the common materials in the

capsules.
2. Withdrawal schedule for this capsule may be adjusted if the current IP2 license is extended beyond the current 40 year life.
3. Fluence values obtained from Westinghouse letter IPP-01-079, dated April 26, 2001.

3.0 TECHNICAL ANALYSIS

This request proposes to revise the surveillance capsule withdrawal schedule to allow capsule S to be retired in place, for the existing spare capsules U and W to be removed at a future time, and to allow the capsules to be interchanged. The current withdrawal schedule was established in License Amendment 67 (Reference 4) based on the 1979 Edition of ASTM E 185. The surveillance capsule schedule was subsequently relocated from the IP2 Technical Specifications to the IP2 FSAR in License Amendment 231 (Reference 5).

The surveillance capsules are used to monitor the beltline materials. The surveillance capsules are located closer to the core than the reactor vessel beltline materials so that fracture toughness testing can be used to determine the nil-ductility transition temperature of the vessel at a later time in life. The current IP2 Pressure – Temperature (P-T) Limit Curves specified in the Technical Specifications were developed per 10 CFR 50 Appendix G and are based upon 25 Effective Full Power Years (EFPY) of operation (Reference 6). These limits are controlled by intermediate shell plate B-2002-3 which has a calculated 3/4T Adjusted Reference Temperature (ART) of 145^0 F and a 1/4T ART of 195^0 F. Plate B-2002-3 has valid surveillance data obtained from surveillance capsules T, Y and Z. This plate has been exposed to a fluence of 1.02×10^{19} n/cm^2 in capsule Z, which is well in excess of the calculated 1/4T fluence of 6.08×10^{18}n/cm^2 used in the calculation of the current 25 EFPY P-T curves. The proposed change in the capsule withdrawal schedule does not adversely affect the validity of the existing P-T curves for the 25 EFPY period that are projected to expire in 2009. In addition, the next extension of the P-T curves does not require data from another surveillance capsule. The existing P-T curves were also evaluated with respect to operation at stretch power uprate conditions. The small increase in vessel fluence and EFPYs for operation at the stretch power uprate conditions has a negligible impact on the existing P-T limit curves (Reference 7). The proposed change in the capsule withdrawal schedule does not affect that conclusion.

The proposed change to the surveillance capsule schedule is based on the requirements of the 1982 Edition of ASTM E-185, to the extent practicable as provided in 10 CFR 50, Appendix H. Since the ΔRT_{PTS} is greater than 200^0 F, ASTM E-185 (1982 Edition) requires the withdrawal of five (5) capsules with the first four (4) required to be tested. IP2 has already removed four (4) capsules and cannot backfit conformance to ASTM E-185 (1982 Edition). Entergy will remove two additional IP2 capsules (i.e. Capsules U and W) as specified in the proposed new withdrawal schedule. Since ASMT E-185-82 only requires that one additional capsule be removed, this proposed schedule exceeds the requirements of the 1982 Edition of ASTM E-185 and therefore assures compliance with 10CFR50, Appendix H.

4.0 REFERENCES

1. 10 CFR 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements."

2. NRC Administrative Letter 97-04, "NRC Staff Approval For Changes to 10 CFR 50, Appendix H, Reactor Vessel Surveillance Specimen Withdrawal Schedules," dated September 30, 1997.

3. ASTM Standard E185-82, "Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels".

4. Indian Point 2 License Amendment 67, dated February 10, 1981.

5. Indian Point 2 License Amendment 231, dated July 30, 2002.

6. Indian Point 2 License Amendment 224, dated February 15, 2002.

7. Indian Point 2 License Amendment 241, dated October 27, 2004.