



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

REVISION TO THE REACTOR VESSEL SURVEILLANCE

CAPSULE WITHDRAWAL SCHEDULE

JAMES A. FITZPATRICK NUCLEAR POWER PLANT

THE POWER AUTHORITY OF THE STATE OF NEW YORK

DOCKET NO. 50-333

1.0 INTRODUCTION

In a letter dated March 9, 1998, (the licensee also known as the Power Authority of the State of New York) submitted, for NRC approval, their revised reactor vessel surveillance capsule withdrawal schedule for the James A. FitzPatrick Nuclear Power Plant. NRC regulations, given in 10 CFR Part 50, Appendix H, Section III.B.3, require licensees to obtain NRC approval before implementation of changes to reactor vessel surveillance capsule withdrawal schedules. The proposed withdrawal schedule was based on the American Society for Testing and Materials (ASTM) E 185-70 and E 185-82 recommendations, and reflected updated fluence information from the surveillance capsules removed in 1996 from FitzPatrick. The licensee's letter also included the report GE-NE-B1100732-01, "Plant FitzPatrick RPV Surveillance Materials Testing and Analysis of 120° Capsule at 13.4 EFPY." This report provided the test results of the second surveillance specimen capsule that was removed from the FitzPatrick reactor vessel in November 1996.

The reactor vessel surveillance program for FitzPatrick was implemented to monitor the radiation-induced changes in the mechanical and impact properties of the pressure vessel materials. This surveillance program was established in accordance with 10 CFR Part 50, Appendix H, and ASTM E 185-70.

2.0 EVALUATION

Appendix H to 10 CFR Part 50, "Reactor Vessel Material Surveillance Program Requirements," requires licensees to monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region of light water nuclear power reactors. Appendix H states that "...the design of the surveillance program and the withdrawal schedule must meet the requirements of the edition of ASTM E 185 that is current on the issue date of the ASME Code to which the reactor vessel was purchased. Later editions of ASTM E 185 may be used, but including only those editions through 1982."

As indicated in the Updated Final Safety Analysis Report, the FitzPatrick reactor vessel was fabricated in accordance with the 1965 ASME Boiler and Pressure Vessel Code (ASME Code) and the Winter 1966 Addenda. The Safety Evaluation for FitzPatrick's license, dated November 20, 1972, indicates that the FitzPatrick surveillance program complies with 10 CFR Part 50, Appendix H, and ASTM E 185-70. Since the ASTM E 185-70 edition of the standard is a

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later edition of the ASME Code to which the FitzPatrick reactor vessel was purchased, the FitzPatrick surveillance capsule withdrawal schedule satisfies the requirements of 10 CFR Part 50, Appendix H. In addition, the licensee has implemented the ASTM E 185-82 Standard, for the third capsule's withdrawal schedule. The location and target neutron fluence values for the FitzPatrick surveillance capsules is summarized in the attached table. A description of how the withdrawal schedule for FitzPatrick meets the recommendations of the ASTM E 185-70 Standard and the ASTM E 185-82 Standard is provided below.

ASTM E 185-70 recommends that sets of specimens be withdrawn at three or more separate times. One set of specimens is to be withdrawn at the neutron exposure of the reactor vessel at no greater than 30 percent of its design life. Another set of specimens is to be withdrawn at the neutron exposure of the reactor vessel near the end of its design life. ASTM E 185-70 does not specify when the third set of specimens should be withdrawn. ASTM E 185-82 indicates that the last capsule is to be withdrawn and tested at the end-of-life neutron fluence.

Currently, the licensee has tested 2 capsules for FitzPatrick. The first capsule, which was located at the 30° azimuthal location, was tested in accordance with the schedule of ASTM E 185-70, at a fluence of $2.6E17$ n/cm², which corresponded to the neutron exposure no greater than 30 percent of its design life. The second capsule, which was located at the 120° azimuthal location, was tested at $5.0E17$ n/cm². And the third capsule, which is located at the 300° azimuthal location is scheduled to be tested at $1.8E18$ n/cm², which will correspond to the neutron exposure of the reactor vessel near the end of its design life, which is also in accordance to the schedule of ASTM E 185-70. The staff independently verified that the proposed withdrawal schedule for FitzPatrick is in accordance with ASTM E 185-70. The staff also verified that the proposed withdrawal schedule for FitzPatrick's third capsule is also in accordance with ASTM E 185-82.

3.0 CONCLUSION

Based on the staff's review of the licensee submittal, the FitzPatrick surveillance capsule withdrawal schedule satisfies the requirements of ASTM E 185-70 and 10 CFR Part 50 Appendix H. Therefore, the staff approves the revised withdrawal schedule for FitzPatrick.

Principal Contributor: M. Khanna

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REFERENCES:

1. Letter from Mr. J. Knubel (PASNY) to NRC Document Control Desk, dated March 9, 1998, "Revised Reactor Pressure Vessel Material Surveillance Program Summary Report and Implementation for FitzPatrick."
2. Code of Federal Regulations, Title 10, Part 50, Appendix H, "Reactor Vessel Material Surveillance Program Requirements," January 1998.
3. American Society for Testing and Materials, "Standard Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels," ASTM E 185-70.
4. American Society for Testing and Materials, "Standard Recommended Practice for Surveillance Tests for Nuclear Reactor Vessels," ASTM E 185-82.
5. NUREG-1511, "Reactor Pressure Vessel Status Report," December 1994.

STATUS OF FITZPATRICK SURVEILLANCE CAPSULES

CAPSULE LOCATION	TARGET FLUENCE	STATUS
30°	2.6E17	TESTED
120°	5.0E17	TESTED
300°	—	TO BE TESTED