

December 20, 2001

Mr. Robert G. Byram  
Senior Vice President  
and Chief Nuclear Officer  
PPL Susquehanna, LLC  
2 North Ninth Street  
Allentown, PA 18101

SUBJECT: SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1 - ISSUANCE OF  
AMENDMENT RE: REACTOR PRESSURE VESSEL MATERIAL  
SURVEILLANCE CAPSULE WITHDRAWAL SCHEDULE (TAC NO. MB3045)

Dear Mr. Byram:

The Commission has issued the enclosed Amendment No. 197 to Facility Operating License No. NPF-14 for the Susquehanna Steam Electric Station (SSES), Unit 1. This amendment is in response to your application dated September 19, 2001, and supplement dated October 26, 2001. The amendment authorizes a change to your second reactor pressure vessel material surveillance capsule withdrawal schedule. Specifically, the amendment defers the withdrawal of the second SSES Unit 1 surveillance capsule from the facility's scheduled refueling outage in spring 2002 (equivalent to approximately 15 effective full-power years (EFPY) of operation) until the facility's spring 2004 refueling outage (equivalent to approximately 17 EFPY of operation).

A copy of our safety evaluation is also enclosed. Notice of Issuance will be included in the Commission's Biweekly Federal Register Notice.

Sincerely,

**/RA/**

Daniel S. Collins, Project Manager, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket No. 50-387

Enclosures: 1. Amendment No. 197 to  
License No. NPF-14  
2. Safety Evaluation

cc w/encls: See next page

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PPL SUSQUEHANNA, LLC  
ALLEGHENY ELECTRIC COOPERATIVE, INC.  
DOCKET NO. 50-387  
SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1  
AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 197  
License No. NPF-14

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
  - A. The application for the amendment filed by PPL Susquehanna, LLC, dated September 19, 2001, as supplemented October 26, 2001, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, the provisions of the Act, and the regulations of the Commission;
  - C. There is reasonable assurance: (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations set forth in 10 CFR Chapter I;
  - D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and
  - E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the licensee is authorized to delay the removal of the second reactor pressure vessel material surveillance capsule until the Cycle 13 outage. (No text changes to the operating license or its appendices are involved.)
3. This license amendment is effective as of its date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

L. Raghavan, Acting Chief, Section 1  
Project Directorate I  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Date of Issuance:

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
RELATED TO AMENDMENT NO. 197 TO FACILITY OPERATING LICENSE NO. NPF-14  
PPL SUSQUEHANNA, LLC  
ALLEGHENY ELECTRIC COOPERATIVE, INC.  
SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 1  
DOCKET NO. 50-387

## 1.0 INTRODUCTION

By letter dated September 19, 2001, as supplemented October 26, 2001, PPL Susquehanna, LLC (PPL, the licensee), submitted a request for review and approval of a license amendment to modify the Susquehanna Steam Electric Station (SSES), Unit 1, reactor pressure vessel (RPV) surveillance capsule withdrawal schedule. The proposed change would defer the withdrawal of the second SSES Unit 1 surveillance capsule from the facility's scheduled refueling outage in spring 2002 (equivalent to approximately 15 effective full-power years (EFPY) of operation) until the facility's spring 2004 refueling outage (equivalent to approximately 17 EFPY of operation). The licensee's submittal was made in accordance with the provision of Appendix H to Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, paragraph B.3, which specifies that "[a] proposed withdrawal schedule must be submitted with a technical justification as specified in [10 CFR 50.4]. The proposed schedule must be approved prior to implementation." The October 26, 2001, letter provided clarifying information that did not change the initial proposed no significant hazards consideration determination.

## 2.0 EVALUATION

### 2.1 Regulatory Requirements and Staff Positions

Nuclear power plant licensees are required by Appendix H to 10 CFR Part 50 to implement RPV surveillance programs to "monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region...which result from exposure of these materials to neutron irradiation and the thermal environment." Regarding RPV surveillance program design and specimen testing, Appendix H to 10 CFR Part 50 incorporates by reference the editions of the American Society for Testing and Materials (ASTM) Standard Practice E-185, "Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels," through the 1982 edition. Under Appendix H to 10 CFR Part 50, the licensee's RPV surveillance program design and withdrawal schedule is required to meet the requirements of the edition of ASTM E-185 that is current on the issue date of the American Society of Mechanical Engineers Code to which the RPV was purchased, although later editions may be used, up to and including the 1982 edition. The test procedures and reporting requirements must, however, meet the requirements of the 1982 edition of ASTM E-185, to the extent practical for the configuration of the specimens in the capsules.

The licensee stated that the SSES Unit 1 RPV surveillance program was designed in accordance with the 1982 edition of the ASTM E-185 standard (ASTM E-185-82). ASTM E-185-82 sets forth general requirements regarding the withdrawal schedule for RPV surveillance capsule programs. Table 1 of ASTM E-185-82 states that the second capsule for a surveillance program like SSES's should be withdrawn when the RPV reaches an operating time of 15 EFY or "when the accumulated neutron fluence of the capsule corresponds to the approximate end-of-life fluence at the reactor vessel inner wall location, whichever comes first. The licensee noted that since the proposed change does not conform to ASTM E-185-82, PPL provided the proposed license amendment request in order to be consistent with the guidance previously issued in Nuclear Regulatory Commission (NRC) Administrative Letter 97-04, "NRC Staff Approval for Changes to 10 CFR Part 50, Appendix H, Reactor Vessel Surveillance Specimen Withdrawal Schedules," dated September 30, 1997.

Additional NRC staff guidance has been published regarding licensee requests to obtain one-cycle capsule withdrawal deferrals to support the Integrated Surveillance Program (ISP) proposed by the Boiling Water Reactor Vessel and Internals Project (BWRVIP). The ISP withdrawal schedule proposed by the BWRVIP was originally submitted in topical report BWRVIP-78 (Reference 1), updated in topical report BWRVIP-86 (Reference 2), and modified in the most recent BWRVIP response (Reference 3) to the NRC staff's request for additional information. The ISP was designed to integrate and share data from the surveillance programs from all existing BWR reactors in the United States. The BWRVIP noted that, for some licensees, it would be necessary to obtain at least one-cycle capsule deferrals to support obtaining high quality data from some existing surveillance capsules. In addition, since some existing surveillance capsules would not need to be tested if the ISP were approved by the NRC staff, licensees having such capsules desired to seek deferral of their removal and testing to reduce monetary expenditures and personnel exposure. The NRC staff has noted its general support for the ISP proposal, and, by letter to the BWRVIP, dated May 16, 2000 (Reference 4), identified criteria to be addressed by licensees requesting one cycle capsule deferrals to support the ISP.

The first criterion addressed in the staff's May 16, 2000, letter requested that licensees explain how their deferral request is consistent with the ISP plan submitted in Topical Report BWRVIP-78 (which would at this time be superceded by the information submitted in References 2 and 3). Principally, this requested that licensees examine how their surveillance capsules would be used (or not used) under the proposed ISP and confirm that their request for a one-cycle deferral would not affect the ability of the ISP to meet its objectives. The second criterion requested that licensees provide a justification as to why the material property data to be acquired from the capsule in question was not necessary to support safe operation of the facility over the period of the deferral. Several options were given in the staff's letter regarding possible responses to this criterion. Finally, the staff's third and final criterion requested that licensees explain why the dosimetry data to be acquired from the capsule in question was not necessary to support safe operation of the facility over the period of the deferral.

## 2.2 Licensee's Determination

In its September 19, 2001, letter, the licensee stated that its reason for requesting this deferral of the second SSES Unit 1 surveillance capsule was to support its involvement in the ISP. The

licensee then addressed, as described below, the three criteria cited in the NRC staff's May 16, 2000, letter.

Regarding the first criterion, the licensee noted that the SSES Unit 1 surveillance capsules would be included within the ISP proposed by the BWRVIP. The licensee noted that based upon the proposed ISP withdrawal schedule that was current at the time of its submittal, the second SSES Unit 1 surveillance capsule is to be withdrawn at approximately 22 EFPY. Thus, the licensee concluded that the proposed deferral supports future NRC consideration of SSES Unit 1's participation in the ISP.

To address the second criterion, the licensee concluded that the material test data from the capsule to be deferred was not necessary to ensure continued safe operation of the SSES Unit 1 RPV. The licensee noted that the limiting material for the establishment of SSES Unit 1 RPV pressure-temperature (P-T) limit curves is a non-beltline material, and based on current predictions no beltline material is expected to become limiting until after 32 EFPY of operation. The licensee stated that, although the SSES Unit 1 surveillance materials are representative of materials in the beltline of the SSES Unit 1 RPV, the Charpy V-notch shifts from the second RPV surveillance capsule, if withdrawn in spring 2002, are not expected to exceed the scatter inherent in the test method. Therefore, no new information would be available from this data which would indicate the current 32 EFPY P-T limit curves are not still valid and acceptable for continued, safe RPV operation. In response to the second criterion, the licensee also confirmed that the use of bounding 32 EFPY P-T limit curves is required through the period of deferral by facility Technical Specification 3.4.10.

Finally, regarding the third criterion, the licensee concluded that the dosimetry information from the capsule to be deferred was not necessary to ensure continued safe operation of the SSES Unit 1 RPV. The licensee noted that since 32 EFPY P-T limit curves are required to be used for RPV operation, the fluence prediction on which these curves are based is for an operating time far in excess of where the RPV will be through the period of the capsule deferral. The licensee confirmed that the use of these limiting curves is to be continued until a new fluence determination using methods that are expressly acceptable to the staff has been completed and reported. Therefore, the licensee concluded that, "because of the extreme conservatism that is assured by using a [P-T] limit curve based on 32 EFPY rather than a limit curve representing an actual EFPY [level], the integrity of the Susquehanna SES Unit 1 RPV remains compliant with existing assessments and requirements for the duration of the extension [i.e. capsule deferral] and beyond."

For these reasons, the licensee concluded that their request to defer withdrawal of the second SSES Unit 1 surveillance capsule was justified and consistent with their intent to support the BWRVIP ISP.

### 2.3 NRC Staff's Evaluation

The NRC staff reviewed the information supplied by the licensee and the regulatory requirements and guidance stated in Section 2.1 above. The NRC staff's conclusions on the technical justifications provided in response to the three criteria given in the NRC staff's May 16, 2000, letter are given below.

First, the staff accepts that deferral of the second SSES Unit 1 capsule is consistent with the provisions of the BWRVIP ISP plan. The staff noted that in the most recent revision of the proposed ISP withdrawal schedule, the second SSES Unit 1 surveillance capsule is to be withdrawn in 2011 (Reference 3). This change was incorporated to increase the projected capsule fluence to levels which would be more representative of the RPVs which the capsule materials are to represent. Therefore, the licensee's request to defer the second capsule withdrawal to during the unit's spring 2004 refueling outage (corresponding to about 17 EFPY) is acceptable since the requested deferral does not exceed the 2011 withdrawal date specified in the proposed ISP.

Second, the staff accepts the justification provided by the licensee in response to why the material property information from the second surveillance capsule is not necessary to support safe operation of the SSES Unit 1 RPV through the period of the deferral. When data from a capsule is not expected to be distinguishable from the scatter in the Charpy test method, this constitutes an acceptable technical justification for capsule deferral as the data would not be expected to provide information which would support a modification to the assessment of the embrittlement of the RPV. Hence, continued operation of the RPV based on the use of P-T limit curves developed from current information about the limiting non-beltline material and for projected beltline material fluences at 32 EFPY of operation, as is the case with SSES Unit 1, is acceptable through the period of the deferral.

Finally, regarding the third criterion, the staff also agrees that since the existing SSES Unit 1 P-T limit curves have been found to be acceptable for up to 32 EFPY of operation and are not based on a limiting beltline material, the licensee is justified in operating the SSES Unit 1 RPV through the requested period of capsule deferral without the need to acquire the dosimetry data from the second SSES Unit 1 surveillance capsule.

Based on the preceding information, the NRC staff concludes that the proposed deferral of the withdrawal and testing of the second SSES Unit 1 surveillance capsule for one cycle is acceptable. This approved change modifies the time of withdrawal of the second surveillance capsule until the unit's spring 2004 refueling outage (about 17 EFPY of operation). The licensee may modify the withdrawal schedule of the RPV surveillance program to reflect this change.

### 3.0 STATE CONSULTATION

In accordance with the Commission's regulations, the Pennsylvania State official was notified of the proposed issuance of the amendment. The State official had no comments.

### 4.0 ENVIRONMENTAL CONSIDERATION

The amendment changes a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that the amendment involves no significant hazards consideration, and there has been no public comment on such finding



(66 FR 57122). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b) no environmental impact statement or environmental assessment need be prepared in connection with the issuance of the amendment.

## 5.0 CONCLUSION

The Commission has concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

## 6.0 REFERENCES

1. Topical Report BWRVIP-78, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)," December 1999.
2. Topical Report BWRVIP-86, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan," December 2000.
3. C. Terry, BWRVIP, to U.S. Nuclear Regulatory Commission, Document Control Desk, "PROJECT NO. 704 - BWRVIP Response to Second NRC Request for Additional Information on the BWR Integrated Surveillance Program," May 30, 2001.
4. J. R. Strosnider, USNRC, to C. Terry, BWRVIP, "BWR Integrated Surveillance Program (BWRVIP-78) (TAC No. M99894)," May 16, 2000.

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Date: December 20, 2001

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