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U. S. Nuclear Regulatory Commission
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Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENT NO. 242 TO OPERATING LICENSE NPF-14 TO REVISE THE UNIT 1 REACTOR PRESSURE VESSEL (RPV) MATERIAL SURVEILLANCE PROGRAM
PLA-5366 Docket No. 50-387

References:

1. *Letter, J. Strosnider (USNRC) to C. Terry (Niagara Mohawk), "BWR Integrated Surveillance Program (BWRVIP-75), dated May 16, 2000.*
2. *PLA-5325, R. G. Byram (PPL) to USNRC Document Control Desk, "Request for a One Cycle Extension for Surveillance Capsule Testing, dated June 25, 2001*
3. *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.*

In accordance with the provisions of 10CFR50.90, PPL Susquehanna, LLC (PPL) is submitting a request for an amendment to Susquehanna SES Unit 1 operating license NPF-14. Approval of the proposed amendment would revise the Unit 1 RPV material surveillance program to defer the withdrawal of the second surveillance capsule for one operating cycle to coincide with the Unit 1 Cycle 13 refueling outage planned for the Spring of 2004. This letter supercedes PPL's letter of June 25, 2001 (Reference 2).

In the June 25, 2001, letter (Reference 2), PPL proposed to revise the withdrawal schedule for the second Unit 1 surveillance capsule for one operating cycle [from 15 Effective Full Power Years (EFPY) to 17 EFPY] to allow PPL to realize the benefits of participation in the Boiling Water Reactor Vessel and Internals Project Integrated Surveillance Program (ISP) currently under review by the NRC staff. The current surveillance capsule withdrawal schedule is in accordance with ASTM-E-185-73. PPL's

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participation in the ISP is described in BWRVIP-86, BWR Integrated Surveillance Program Implementation Plan dated December 2000. The basis for the integrated program was established in BWRVIP-78, BWR Integrated Surveillance Program Plan. During an August 2001, PPL/NRC telephone call, the staff indicated that PPL's requested program change appeared to require a license amendment in accordance with the guidance provided in Administrative Letter 97-04 (Reference 3). Since the proposed change does not conform to ASTM-E-185-73, PPL is providing a proposed license amendment request via this letter in accordance with Reference 3.

Attachment 1 to this letter provides the description and evaluation of the proposed change. This includes PPL's determination that the proposed change does not involve a significant hazards consideration, and pursuant to the provisions of 10 CFR 51.22(c)(9), is exempt from environmental review. Attachment 2 contains the proposed change to the Susquehanna Steam Electric Station Final Safety Analysis Report.

The Plant Operations Review Committee and the Susquehanna Review Committee have reviewed the proposed license amendment and determined that operation of Susquehanna Steam Electric Station Unit 1 in accordance with the proposed license amendment will not endanger the health and safety of the public. Additionally, in accordance with 10 CFR 50.91(b)(1), PPL is sending a copy of this letter and enclosures to the Pennsylvania Department of Environmental Protection.

NRC approval of the proposed change is requested by December 1, 2001. This request is similar to requests approved for Peach Bottom Nuclear Power Station (07/14/2000), Dresden Nuclear Power Station Units 2 and 3 (12/22/2000), Fermi 2 (01/16/2001), and Browns Ferry Nuclear Plant Unit 2 (04/02/2001). There are no commitments contained in this letter. If you have any questions about this request, please contact Mr. C. T. Coddington at (610) 774-4019.

Sincerely,

R. G. Byram

Attachment

copy: NRC Region I
Mr. S. Hansell, NRC Sr. Resident Inspector
Mr. R. Schaaf, NRC Project Manager,
Mr. David J. Allard, PA DEP

BEFORE THE
UNITED STATES NUCLEAR REGULATORY COMMISSION

In the Matter of :

PPL Susquehanna, LLC: Docket No. 50-387

PROPOSED AMENDMENT NO. 242 TO LICENSE NPF-14:
REVISION TO THE REACTOR PRESSURE VESSEL
MATERIAL SURVEILLANCE PROGRAM
UNIT NO. 1

Licensee, PPL Susquehanna, LLC, hereby files Proposed Amendment No. 242 in support of a revision to its Facility Operating License No. NPF-14 dated July 17, 1982.

This amendment involves a revision to the Susquehanna SES Final Safety Analysis Report.

PPL Susquehanna, LLC
By:

R. G. Byram
Sr. Vice-President and Chief Nuclear Officer

Sworn to and subscribed before me
this 19th day of September, 2001.

Notary Public

Notarial Seal
Nancy J. Lannen, Notary Public
Allentown, Lehigh County
My Commission Expires June 14, 2004

Attachment 1 to PLA-5366

PROPOSED REVISION TO THE SUSQUEHANNA STEAM ELECTRIC STATION UNIT 1 REACTOR PRESSURE VESSEL (RPV) MATERIAL SURVEILLANCE PROGRAM

PROPOSED REVISION TO THE SUSQUEHANNA STEAM ELECTRIC STATION UNIT 1 REACTOR PRESSURE VESSEL (RPV) MATERIAL SURVEILLANCE PROGRAM

The following provides the basis for the proposed revision to the reactor pressure vessel material surveillance program.

I. DESCRIPTION OF THE PROPOSED CHANGE

The proposed change revises the Unit 1 RPV surveillance program to defer the withdrawal of the second surveillance capsule for one operating cycle. The current withdrawal schedule requires Unit 1 to pull the second capsule at 15 Effective Full Power Years (EFPY). The one-cycle deferral will result in an estimated capsule exposure of approximately 17 EFPY at withdrawal during Unit 1's 13th refueling outage planned for Spring 2004. A proposed revision to the Final Safety Analysis Report documenting the change is shown in Attachment 2.

II. REASON FOR THE PROPOSED CHANGE

The proposed schedule change will allow PPL to realize the benefits of participation in the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) currently under review by the NRC staff. PPL's participation in the ISP is described in BWRVIP-78, Integrated Surveillance Plan. The Unit 1 capsules were designated as representative material in the December 15, 2000, BWRVIP response to a staff request for additional information regarding BWRVIP-78. The revised test matrix as described in BWRVIP-86, BWR Integrated Surveillance Program Implementation Plan, dated December 2000, recommends withdrawal of the second capsule at 22 EFPY; therefore, the proposed deferral supports future NRC consideration of PPL's participation in the ISP with irradiated material representative of both SSES Unit 1 and other BWR reactor vessel beltline materials.

III. SAFETY ANALYSIS

In a May 16, 2000 letter [J. Strosnider (USNRC) to C. Terry (Niagara Mohawk), "BWR Integrated Surveillance Program (BWRVIP-75)] (Reference 1), NRC provided guidance for the submittal of one-cycle RPV material surveillance program deferrals while the NRC is completing its review of the ISP. The following is PPL's response to the three points contained in the May 16, 2000, letter.

1. NRC Guidance:

Explain how this deferral is consistent with the ISP plan submitted by the BWRVIP on December 28, 1999 (BWRVIP-78). It is the staff's understanding that the proposed ISP was not designed to be an "optimized" program regarding the removal schedule of the capsules that support the ISP. Likewise, additional capsules not originally scheduled to be included in the ISP may be incorporated into later ISP designs. The licensee should address how the deferral of the removal or testing their next capsule for one cycle is either (1) an express outcome of the ISP as submitted or (2) not prohibited by the current ISP proposal (i.e., that testing of the capsule at this time is not critical to achieving data which is of particular value to the ISP).

PPL's Response:

BWRVIP-78, as submitted to the NRC in December 1999 and changes made to date, identifies the Susquehanna SES Unit 1 surveillance plate C2433-1 and welds 402K9171, 411L3021. These are representative plate and weld material for the Susquehanna SES Unit 1 vessel as well as a number of other BWR vessels in the Integrated Surveillance Program (ISP). Under the ISP, the Susquehanna SES Unit 1 surveillance plate was also selected to represent Susquehanna SES Unit 1 and Vermont Yankee beltline plate materials. The surveillance weld materials were selected for Susquehanna SES Unit 1 and LaSalle. However, the limiting material for Susquehanna SES Unit 1 is a non-beltline material and weld.

The first capsule for the Susquehanna SES Unit 1 was removed during a refuel outage (RIO6) in the Spring of 1992 at approximately 6 EFPY. To meet the existing schedule for reporting the test results before April 2003 could require testing of the Susquehanna SES Unit 1 material before the BWRVIP ISP is approved by the NRC and before the testing program and contracts are initiated for implementation of the ISP. A one-cycle deferral will not affect the physical changes to the surveillance material's mechanical properties and does not affect any planned use of the data. However, deferring the testing until it can be part of the ISP project will ensure consistent test data between all the ISP capsules being tested.

The importance of the Susquehanna SES capsules to the overall ISP test matrix is recognized as an integral part of this program and therefore testing of this next capsule in 2002 would upset the ISP testing matrix.

2. NRC Guidance

Explain how the acquisition of materials property data in accordance with the facility's plant-specific Appendix H program is not necessary at this time to ensure that the integrity for the facility's RPV will be maintained through the period of deferral. Examples of rationales which the staff would find acceptable include: (1) the materials in the facility's surveillance program lack unirradiated baseline data so that no meaningful estimation of material property shift can be made; (2) the next capsule represents the first capsule to be withdrawn by the plant so that an insufficient number of data points (< 2) will be available to use the data within the Regulatory Guide 1.99, Rev. 2, "Radiation Embrittlement of Reactor Vessel Materials," Position 2 methodology for plant-specific modifications to the embrittlement correlation and the ability to monitor RPV embrittlement will not be significantly affected by a one cycle deferral; (3) the data from the capsule would not be expected to provide Charpy shift values large enough (i.e., > 56 F for welds, or > 34 F for plates and forgings) to be distinguished from the scatter in the Charpy test method.

PPL's Response:

This capsule removal from the Susquehanna SES Unit 1 reactor vessel is the second of the scheduled withdrawals. The capsule is representative of the beltline materials. The overall limiting material for Susquehanna SES Unit 1 is non-beltline material. Thus, this capsule will not provide data applicable to the limiting non-beltline material. Further, the Charpy test data from this capsule is not expected to provide any values that will fall outside the existing beltline material Charpy test scatter. The Charpy shift values from the beltline material are not expected to exceed the non-beltline material until after 32 EFPY.

During the proposed deferral period, the Susquehanna SES Unit 1 Technical Specification 3.4.10 requires the use of P/T limiting curves based on 32 EFPY rather than a lesser EFPY that reflects current conditions. This provides assurance that the Susquehanna SES Unit 1 RPV is operated within adequate safety limits to ensure its integrity.

3. NRC Guidance

Explain how deferral of the acquisition of dosimetry data from the capsule to be tested does not affect the validity of the facility's RPV integrity assessments through the period of the deferral. This is a particularly important point for facilities which intend to defer the withdrawal or testing of their first surveillance capsule. Any potential non-conservatisms in the licensee's current methodology when compared to the methodology that would be expressly acceptable to the staff, i.e., a methodology which complies with Draft Regulatory Guide (DG) 1053 (formerly DG-1025, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence"), should be evaluated, quantitatively or qualitatively. In particular, the licensee should state why their facility's currently approved P/T limit curves will be adequate over the period of deferral without the assessment of the capsule's dosimeter wire data and the associated recalculation of RPV fluences. Compensatory actions, for example, utilizing 32 EFPY P/T limit curve when the actual RPV usage is much less, may also be considered as a basis for not needing to recalculate RPV fluence for the period of deferment.

PPL's Response:

Susquehanna SES is committed by the Susquehanna Steam Electric Station Unit 1 Technical Specifications to use the 32 EFPY P/T limits. The 32 EFPY curves are based on the increased flux associated with Susquehanna SES's power uprate and documented in our submittals from testing our first surveillance capsule specimens in 1992 and 1993 (PLA-4127 dated May 19, 1994 and PLA-4126 dated May 19, 1994). The use of the limiting curve is to be continued until a new fluence determination using methods that are expressly acceptable to the staff has been completed and reported. We have also committed to perform revised fluence calculations using Regulatory Guide 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence", before the end of the next two cycles on Units 1 and 2 (PLA-5300, dated May 22, 2001).

Therefore, 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, the integrity of the Susquehanna SES Unit 1 RPV remains compliant with existing assessments and requirements for the duration of the extension and beyond.

Conclusion:

As discussed above, removal of the second capsule at 15 EFPY is not essential for continued safe operation for the following reasons:

- The deferral supports PPL's participation in the ISP.
- The capsule is not representative of the limiting non-beltline material.
- The data from the capsule is not expected to fall outside the scatter of the Charpy test data for existing beltline material or above that for the non-beltline material.
- The Technical Specification P/T curves remain bounding during the period of deferral.

IV. NO SIGNIFICANT HAZARDS CONSIDERATION DETERMINATION

PPL Susquehanna, LLC has evaluated the proposed amendment and determined that it involves no significant hazards consideration. According to 10CFR50.92 (c) a proposed amendment to an operating license involves no significant hazards consideration if operation of the facility with the proposed amendment would not:

- Involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated;

- Create the possibility of a new or different kind of accident from any previously analyzed; or

- Involve a significant reduction in a margin of safety.

PPL Susquehanna, LLC proposes to revise the Susquehanna Steam Electric Station Unit 1 reactor pressure vessel material surveillance program to allow a one operating cycle deferral of the withdrawal schedule for the second surveillance capsule.

A. Does the proposed change involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated?

Pressure-temperature (P/T) limits are imposed on the reactor coolant system to ensure that adequate safety margins against non-ductile or rapidly propagating failure exist during normal operation, anticipated operational occurrences, and system hydrostatic tests. The P/T limits are related to the nil-ductility reference temperature, RT_{ndt}. Changes in the fracture toughness properties of the Reactor Pressure Vessel (RPV) beltline materials, resulting from neutron irradiation and the thermal environment, are monitored by a surveillance program in compliance with the requirements of 10 CFR 50, Appendix H. The effect of neutron fluence on the shift in the nil-ductility reference temperature of pressure vessel steel is predicted by methods given in Regulatory Guide (RG) 1.99, Revision 2 and Regulatory Guide 1.190, Revision 0. The Susquehanna SES Unit 1 current P/T limits were established based on adjusted reference temperatures developed in accordance with the procedures prescribed in RG 1.99, Revision 2. Calculation of adjusted reference temperature by these procedures includes a margin term to ensure upperbound values are used for the calculation of the P/T limits. Revision of the second capsule withdrawal schedule will not affect the P/T limits, because they will continue to be established in accordance with NRC approved methodology in accordance with RG 1.190 Revision 0 commitments. The existing P/T limits are based on 32 EFPY rather than for the planned withdrawal at 15 EFPY. This change is not related to any accidents previously evaluated. The proposed change will not affect reactor pressure vessel performance because no physical changes are involved and the RPV vessel P/T limits will remain in accordance with RG 1.99, Revision 2 commitments. The proposed change will not cause the reactor pressure vessel or interfacing safety systems to be operated outside of their design or testing limits. Also, the proposed change will not alter any assumptions previously made in evaluating the radiological consequences of accidents.

Therefore, this proposed amendment does not involve a significant increase in the probability of occurrence or consequences of an accident previously evaluated.

B. Does the proposed change create the possibility of a new or different kind of accident from any accident previously analyzed?

The proposed change defers the second RPV material surveillance capsule withdrawal for one fuel cycle. This proposed change does not involve a modification of the design of plant structures, systems, or components. The proposed change will not impact the manner in which the plant is operated as plant operating and testing procedures will not be affected by the change. The proposed change will not degrade the reliability of structures, systems, or components important-to-safety because equipment protection features will not be deleted or modified, equipment redundancy or independence will not be reduced, supporting system performance will not be downgraded, the frequency of operation of equipment important-to-safety will not be increased, and more severe testing of equipment important-to-safety will not be imposed. No new accident types or failure modes will be introduced as a result of the proposed change.

Therefore, the proposed amendment does not create the possibility of a new or different kind of accident from previously analyzed.

C. Does the proposed change involve a significant reduction in a margin of safety?

Appendix G to 10 CFR 50 describes the conditions that require P/T limits and provide the general bases for these limits. Until the results from the reactor vessel surveillance program become available, RG 1.99, Revision 2 is used to predict the amount of neutron irradiation damage. The use of operating limits based on these criteria, as defined by applicable regulations, codes, and standards, provide reasonable assurance that nonductile or rapidly propagating failure will not occur. The P/T limits are not derived from Design Basis Accident (DBA) analyses. They are prescribed during normal operation to avoid encountering pressure, temperature, and temperature rate of change conditions that might cause undetected flaws to propagate and cause nonductile failure of the reactor coolant pressure boundary (RCPB). Since the P/T limits are not derived from any DBA, there are no acceptance limits related to the P/T limits. Rather, the P/T limits are acceptance limits themselves since they preclude operation in an unanalyzed condition. The proposed change will not affect any safety limits, limiting safety system settings, or limiting conditions of operation. The proposed change does not represent a change in initial

conditions, or in a system response time, or in any other parameter affecting the course of an accident analysis supporting the Bases of any Technical Specification. The proposed change does not involve revision of the P/T limits, but rather a revision of the withdrawal time for the second surveillance capsule. The current P/T limits were established based on adjusted reference temperatures for vessel beltline materials calculated in accordance with RG 1.99, Revision 2. P/T limits will continue to be revised, as necessary, for changes in adjusted reference temperature due to changes in fluence when two or three credible surveillance data sets become available. When two or more credible surveillance data sets become available, P/T limits will be revised as prescribed in RG 1.190, Revision 0.

Therefore, the proposed changes do not involve a significant reduction in any margins of safety.

V. ENVIRONMENTAL IMPACT CONSIDERATION

An environmental assessment is not required for the proposed change because the requested change conforms to the criteria for actions eligible for categorical exclusion as specified in 10 CFR 51.22(c)(9). The requested change will have no impact on the environment. As discussed in the "No Significant Hazards Consideration Evaluation", the proposed change does not involve a significant hazard consideration. The proposed change does not involve a change in the types or increase in the amounts of effluents that may be released off-site. In addition, the proposed change does not involve an increase in the individual or cumulative occupational radiation exposure.

Attachment 2 to PLA-5366

TABLE 5.3-3

REACTOR VESSEL MATERIAL SURVEILLANCE PROGRAM-WITHDRAWAL SCHEDULE

Specimen Holder	Vessel Location	Lead Factor *	Withdrawal Time (EFPY)
UNIT 1			
131C7717G1	300°	1.20	Spare
131C7717G2	120°	1.20	~~15~~ 17 #
131C7717G3	30°	1.20	6 (Actual Date - Fall 1992)
G3 Reconstituted Specimens	30°	1.20	Spare
UNIT 2			
131C7717G1	300°	1.20	Spare
131C7717G2	120°	1.20	15
131C7717G3	30°	1.20	6 (Actual Date - Fall 1992)
G3 Reconstituted Specimens	30°	1.20	Spare

* At 1/4 T.

Note: The Unit 1 surveillance specimens at the 30° location were removed from the vessel for testing during the Spring 1992 inspection outage and these specimens were reconstituted and replaced back into the vessel 30° location during the Fall 1993 inspection outage (U1-7RIO). The Unit 2 surveillance specimens were removed from the vessel 30° location for testing during the Fall 1992 inspection outage and these specimens were reconstituted and replaced back into the vessel 30° location during the Spring 1994 inspection outage (U2-6RIO). Details of the reconstitution process and the capsule contents can be found in Reference 5.3-4 and 5.3-5.

Approved by NRC in License Amendment No. [insert number from NRC response to this Submittal]