

March 12, 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, UNITS 1 AND 2 - ISSUANCE OF
AMENDMENT RE: ELIMINATION OF RESPONSE TIME TESTING FOR CERTAIN
REACTOR PROTECTION SYSTEM AND ISOLATION ACTUATION SYSTEM
INSTRUMENTATION (TAC NOS. MB0516 AND MB0517)

Dear Mr. Byram:

The Commission has issued the enclosed Amendment No. 191 to Facility Operating License No. NPF-14 and Amendment No. 166 to Facility Operating License No. NPF-22 for the Susquehanna Steam Electric Station, Units 1 and 2. These amendments consist of changes to the Technical Specifications (TSs) in response to your application dated November 16, 2000.

These amendments eliminate response time testing requirements for certain reactor protection system and isolation actuation system instrumentation.

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/

Robert G. Schaaf, Project Manager, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-387 and 50-388

Enclosures: 1. Amendment No. 191 to
License No. NPF-14
2. Amendment No. 166 to
License No. NPF-22
3. Safety Evaluation

cc w/encls: See next page

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Units 1 and 2

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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. 191
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 November 16, 2000, 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 license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-14 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 191 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PPL Susquehanna, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/ G. Vissing for

Marsha Gamberoni, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 12, 200177

ATTACHMENT TO LICENSE AMENDMENT NO. 191

FACILITY OPERATING LICENSE NO. NPF-14

DOCKET NO. 50-387

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.3-6
3.3-8
3.3-56
3.3-57

INSERT

3.3-6
3.3-8
3.3-56
3.3-57

PPL SUSQUEHANNA, LLC

ALLEGHENY ELECTRIC COOPERATIVE, INC.

DOCKET NO. 50-388

SUSQUEHANNA STEAM ELECTRIC STATION, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 166
License No. NPF-22

1. The Nuclear Regulatory Commission (the Commission or the NRC) having found that:
 - A. The application for the amendment filed by the PPL Susquehanna, LLC, dated November 16, 2000, 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 license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment and paragraph 2.C.(2) of the Facility Operating License No. NPF-22 is hereby amended to read as follows:

(2) Technical Specifications and Environmental Protection Plan

The Technical Specifications contained in Appendix A, as revised through Amendment No. 166 and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. PPL Susquehanna, LLC shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

3. This license amendment is effective as of its date of issuance and shall be implemented within 30 days.

FOR THE NUCLEAR REGULATORY COMMISSION

/RA/ G. Vissing for

Marsha Gamberoni, Chief, Section 1
Project Directorate I
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical
Specifications

Date of Issuance: March 12, 2001

ATTACHMENT TO LICENSE AMENDMENT NO. 166

FACILITY OPERATING LICENSE NO. NPF-22

DOCKET NO. 50-388

Replace the following pages of the Appendix A Technical Specifications with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.3-6
3.3-8
3.3-56
3.3-57

INSERT

3.3-6
3.3-8
3.3-56
3.3-57

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
RELATED TO AMENDMENT NO. 191 TO FACILITY OPERATING LICENSE NO. NPF-14
AND AMENDMENT NO. 166 TO FACILITY OPERATING LICENSE NO. NPF-22
PPL SUSQUEHANNA, LLC
ALLEGHENY ELECTRIC COOPERATIVE, INC.
SUSQUEHANNA STEAM ELECTRIC STATION, UNITS 1 AND 2
DOCKET NOS. 50-387 AND 50-388

1.0 INTRODUCTION

By letter dated November 16, 2000, PPL Susquehanna, LLC (PPL, the licensee), submitted a request for changes to the Susquehanna Steam Electric Station, Units 1 and 2, Technical Specifications (TSs). The requested changes would eliminate response time tests (RTT) for the following instrumentation channels:

- a. Reactor Protection System (RPS) Instrumentation:
 - 1) Reactor Vessel Steam Dome Pressure - High
 - 2) Reactor Vessel Water Level - Low, Level 3
- b. Isolation Actuation System, Main Steam Line Isolation:
 - 1) Main Steam Line Flow - High
 - 2) Reactor Vessel Water Level - Low Low Low, Level 1

Specifically, the proposed changes involve the following TS changes:

- a. Delete Note 2 from SR 3.3.1.1.17
- b. Delete SR 3.3.1.1.17 from Table 3.3.1.1-1, Function 3, Reactor Vessel Steam Dome Pressure - High and Function 4, Reactor Vessel Water Level - Low, Level 3
- c. Delete Functions 1.a and 1.c from Note 1 to SR 3.3.6.1.6
- d. Delete SR 3.3.6.1.6 from Table 3.3.6.1-1, Function 1.a, Reactor Vessel Water Level - Low Low Low, Level 1 and Function 1.c, Main Steam Line Flow - High
- e. Changes to the associated Bases

2.0 EVALUATION

The licensee stated that the proposed TS changes are consistent with the following Boiling Water Reactor Owners Group (BWROG) Topical Reports and comply with the conditions of the associated Nuclear Regulatory Commission (NRC) safety evaluations (SEs):

1. The BWROG issued NEDO-32291-A, "System Analyses for Elimination of Selected Response Time Testing Requirements," in January 1994. The NRC approved this report by letter dated December 28, 1994, and the NRC-approved report was issued in October 1995.
2. BWROG issued NEDO-32291-A, Supplement 1, "System Analyses for Elimination of Selected Response Time Testing Requirements," in November 1997. The NRC approved this report by letter dated June 11, 1999, and the NRC-approved report was issued in October 1999.

The licensee stated that the following components were applicable to the requested changes:

- Agastat EGPI
- GE HFA
- RPS Scram Contactors GE CR105, CR205, or CR305

In approving the above BWROG reports, the NRC stipulated that in requesting elimination of RTT the licensee must ensure that the TS changes conform to the BWROG reports and address the specific conditions specified in the NRC's SEs approving the BWROG reports. The licensee addressed those specific conditions as follows:

Agastat Relay Component Group

1. NRC's Condition: Before installation, or after any maintenance or repair of the relays, the normally open contacts of the relays are confirmed to open in 70 milliseconds (ms) or less after power is removed from the coil.

Licensee's Response: "Appropriate testing will be required for all affected relays. PPL has developed a post-maintenance instruction to bench test these relays to confirm that the normally open contacts of the relays open in 70 ms or less after power is removed from the coil. This instruction will be referenced in any work plan for any maintenance or repair of the relays."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

2. NRC's Condition: The relays are within their qualified life.

Licensee's Response: "All relays are located in the Control Structure relay rooms, which have mild environments under design basis accident conditions. The service life of these relays are maintained in accordance with panel conditions and their continuously energized state."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

3. NRC's Condition: The relays are procured by the utility as "nuclear safety related", or are dedicated for nuclear-safety-related application under a utility dedication program.

Licensee's Response: "All relays are classified as "nuclear safety related" requiring that the components are procured from a vendor in accordance with the provisions of 10CFR50 Appendix B, or are dedicated for safety-related service in accordance with the Susquehanna quality programs."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

GE HFA Relay Component Group

1. NRC's Condition: The HFA manufacturer's instructions are followed for setup and adjustment of the relay before initial operation and after any repair or maintenance.

Licensee's Response: "PPL has developed a post maintenance instruction to setup and adjust these relays before initial operation and after any repair or maintenance. The instruction will be referenced in any work plan for any maintenance or repair of the relays. Appropriate maintenance and testing will be required for all affected relays."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

2. NRC's Condition: Before installation, or after any maintenance or repair of the relays, the normally open contacts of the relays are confirmed to open in 20 ms or less after power is removed from the coil.

Licensee's Response: "PPL has developed a post maintenance instruction to bench test these relays to confirm that the normally open contacts of the relays open in 20 ms or less after power is removed from the coil. This instruction will be referenced in any work plan for any maintenance or repair of the relays."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

3. NRC's Condition: The relays are procured by the utility as "nuclear safety related", or are dedicated for nuclear-safety-related application under a utility dedication program.

Licensee's Response: "All relays are classified as "nuclear safety related" requiring that the components are procured from a vendor in accordance with the provisions of 10CFR50

Appendix B, or are dedicated for safety-related service in accordance with the Susquehanna quality programs."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

RPS Scram Contactor Component Group

1. NRC's Condition: One GE CR105, GE CR205, or GE CR305 magnetic contactor directly operates a set of scram pilot solenoid valves.

Licensee's Response: "These contactors have been confirmed to directly operate a set of Scram Pilot Solenoid Valves."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

2. NRC's Condition: RPS scram contactor components are tested as part of the average power range monitor (APRM) upscale trip RTT.

Licensee's Response: "The APRM upscale trip response time test is currently performed in overlapping partial tests. The APRM section is tested separately from the scram contactors."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

3. NRC's Condition: Determine that one of the two postulated test methods is used.

Licensee's Response: "See 2, above."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

4. NRC's Condition: Use the appropriate bounding response time (BRT) for the test method used.

Licensee's Response: "The conservative value associated with the "total loop" APRM RTT is used in the calculation for BRT. There is no restriction on the method used for APRM RTT under this calculation."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A, Supplement 1.

Trip Channel Sensors

The licensee stated that the sensors for each trip channel are Barton 288A, Barton 760, and Barksdale B1T or B2T switches. Elimination of RTT of these switches is justified for these trip channels in accordance with BWROG reports.

The licensee further stated that the BRT for plant process sensors are statistically determined from plant surveillance records. The elimination of response time testing for sensors in the RPS Reactor Vessel Water Level - Low Level 3 and Isolation Actuation System Main Steam Line Flow - High and Reactor Vessel Water Level - Low Low Low, Level 1 channels were previously approved by License Amendments Nos. 171 for Unit 1 and 144 for Unit 2.

This elimination of the RTT is now extended to the RPS Reactor Vessel Steam Dome Pressure – High pressure switches. The RPS Reactor Vessel Steam Dome Pressure – High pressure switch response time measurements over the past 11 years have averaged approximately 60 ms. This average effectively eliminates inherent measurement biases that result from normal switch repeatability effects. The addition of two standard deviations to this average produces a limiting value that is well below the administrative limit for the response time measurement. This administrative limit (330 ms) is used as the BRT for the affected trip channels. The NRC staff finds the licensee's justification acceptable.

Reactor Protection System, Reactor Vessel Steam Dome Pressure - High Pressure Sensors

In approving NEDO-32291-A, the NRC stipulated seven conditions which the licensee addressed as follows:

1. NRC's Condition: Prior to installation of a new transmitter/switch or following refurbishment of a transmitter/switch (e.g., sensor cell or variable damping components) a hydraulic RTT shall be performed to determine an initial sensor-specific response time value.

Licensee's Response: "I&C [instrumentation & controls] and Design Engineers will be trained in these requirements for the switches. I&C post maintenance test procedures will be revised to reflect these requirements for the switches. Design guidance documents will be revised to reflect these requirements."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A.

2. NRC's Condition: For transmitters and switches that use capillary tubes, capillary tube testing shall be performed after initial installation and after any maintenance or modification activity that could damage the capillary tubes.

Licensee's Response: "No transmitters and switches that use capillary tubes are employed in this application."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A.

3. NRC's Condition: Calibration is performed with equipment designed to provide a step function or fast ramp in the process variable.

Licensee's Response: "A post calibration functional response test will be performed by the reactor vessel steam dome high calibration procedures. This test will provide a fast ramp signal to the instrument at plus or minus 10 percent of the setpoint. The pressure source will "ramp through" the setpoint in less than 5 seconds. This will meet the intent of the need for detecting a sluggish response of the instrument during a calibration."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A.

4. NRC's Condition: Provisions have been made to ensure that operators and technicians are aware of the consequences of instrument response time degradation, and that applicable procedures have been reviewed and revised as necessary to assure that technicians monitor for response time degradation during the performance of calibrations and functional tests.

Licensee's Response: "I&C technicians and operators will be trained. A statement requiring that technicians monitor for response time degradation during the performance of calibrations and functional tests will be added to the applicable test procedures as a standard prerequisite."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A.

5. NRC's Condition: Surveillance testing procedures have been reviewed and revised if necessary to ensure calibrations and functional tests are being performed in a manner that allows simultaneous monitoring of both the input and output response of the units under test.

Licensee's Response: "All functional tests and calibrations presently allow simultaneous monitoring of both the input and output response of the units under test. This is done by either monitoring of the output at or near the input calibration source, or via the use of headsets to communicate between locations, if necessary."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A.

6. NRC's Condition: For any request involving the elimination of RTT for Rosemount pressure transmitters, the licensee is in full compliance with the guidelines of Supplement 1 to Bulletin 90-01, "Loss of Fill-Oil in Transmitters Manufactured by Rosemount."

Licensee's Response: "The trip channels being addressed do not use Rosemount transmitters."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A.

7. NRC's Condition: For those instruments where the manufacturer recommends periodic RTT as well as calibration to ensure correct function, the licensee has ensured that elimination of RTT is nevertheless acceptable for the particular application involved.

Licensee's Response: "The Barksdale switch manufacturer has no requirement to perform periodic response time testing of their switches."

Staff Evaluation: The NRC staff finds that the licensee's response complies with the condition set forth in the NRC's SE approving BWROG Topical Report NEDO-32291-A.

Applicability of Barksdale Pressure Switch Models B1T, B2T

The licensee stated that the Barksdale model B2T series switch is not specifically addressed in the process analysis documented in NRC's SE on NEDO-32291-A. Barksdale B2T sensor model switches are used for the reactor vessel steam dome high pressure RPS trip actuation channels on both units.

The Barksdale B2T switch is similar to the B1T switch, and is addressed in NEDO-32291-A, Appendix K, but is not formally addressed in the topical report SE because of a transcription problem in the original report. Because the only difference between the B1T and B2T model lines is that the B2T has two internal microswitches vs. one in the B1T, the Barksdale B2T switch is considered equivalent to the B1T model for the purpose of RTT analysis. No new failure mode is introduced with the B2T. Therefore, the methodology established in NEDO-32291-A, Supplement 1, for eliminating RTT is applicable to the Barksdale B2T model series. Therefore, the NRC staff finds that the licensee's response ensures conformance with the NRC-approved BWROG Topical Reports NEDO-32291-A, and NEDO-32291-A, Supplement 1, and complies with the conditions set forth in the NRC's SEs approving these topical reports.

Trip Channel Bounding Response Times

The licensee stated that a BRT has been determined for each trip channel analyzed, and was compared to the current RTT limit from the Final Safety Analysis Report (FSAR) Tables 7.3-28 (RPS) and 7.3-29 (Isolation). The Channel BRT is the sum of the sensor and channel logic component BRTs. In each case the FSAR Limit exceeds the channel BRT:

| <u>Channel</u> | <u>Channel BRT (sec)</u> | <u>FSAR Limit (sec)</u> | <u>Margin (msec)</u> |
|--|----------------------------------|---------------------------------|--------------------------|
| Reactor Vessel Water Level--Low Level 3 | 0.705 | 1.05 | +345 |
| Reactor Vessel Steam Dome Pressure--High | 0.435 | 0.55 | +115 |
| Main Steam Line Flow--High | 0.780 | 1.0 | +220 |
| Reactor Vessel Water Level--Low Low Low, Level 1 | 0.320 | 0.5 | +180 |

The NRC staff finds that in accordance with the provisions of the BWROG reports, the elimination of response time testing for the channels analyzed is justified.

Summary

The staff finds that the licensee has conducted detailed evaluation to ensure that the proposed TS changes on elimination of RTT for certain RPS and isolation actuation system instrumentation conform to the NRC-approved BWROG Topical Reports NEDO-32291-A, and NEDO-32291-A, Supplement 1, and comply with the conditions set forth in the NRC's SEs approving these topical reports. Based on the justifications provided by the licensee, the NRC staff finds the proposed TS changes acceptable.

The applicable TS bases will be updated by the licensee in accordance with TS 5.5.10, "Technical Specifications (TS) Bases Control Program." Marked-up Bases pages were provided for information to reflect the TS Bases changes the licensee intends to implement.

3.0 STATE CONSULTATION

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

4.0 ENVIRONMENTAL CONSIDERATION

The amendments change surveillance requirements. The NRC staff has determined that the amendments involve 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 amendments involve no significant hazards consideration, and there has been no public comment on such finding (66 FR 2022). Accordingly, the amendments meet 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 amendments.

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 amendments will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributor: S. Mazumdar

Date: March 12, 2001