

January 7, 2003

Mr. William T. Cottle  
President and Chief Executive Officer  
STP Nuclear Operating Company  
South Texas Project Electric  
Generating Station  
P. O. Box 289  
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS  
RE: EXTENSION OF THE INTERVALS BETWEEN OPERABILITY TESTS OF  
THE NORMAL AND SUPPLEMENTARY CONTAINMENT PURGE VALVES  
(TAC NOS. MB4048 and MB4049)

Dear Mr. Cottle:

The Commission has issued the enclosed Amendment No. 147 to Facility Operating License No. NPF-76 and Amendment No. 135 to Facility Operating License No. NPF-80 for the South Texas Project, Units 1 and 2, respectively. The amendments consist of changes to the Technical Specifications (TSs) in response to your application dated February 18, 2002, as supplemented by letter dated July 23, 2002.

The amendments revise TS 3/4.6.1.7, "Containment Ventilation System", to extend the intervals between operability tests of the normal and supplementary containment purge valves, from 6 and 3 months, respectively, to 18 months for both.

A copy of our related Safety Evaluation is also enclosed. The Notice of Issuance will be included in the Commission's next biweekly *Federal Register* notice.

Sincerely,

**/RA/**

Mohan Thadani, Senior Project Manager, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosures: 1. Amendment No. 147 to NPF-76  
2. Amendment No. 135 to NPF-80  
3. Safety Evaluation

cc w/encls: See next page

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STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-498

SOUTH TEXAS PROJECT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 147  
License No. NPF-76

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by STP Nuclear Operating Company\* acting on behalf of itself and for Texas Genco, LP, the City Public Service Board of San Antonio (CPS), Central Power and Light Company (CPL), and the City of Austin, Texas (COA) (the licensees), dated February 18, 2002, as supplemented by letter dated July 23, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and 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;
  - D. The issuance of this license 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.

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\*STP Nuclear Operating Company is authorized to act for Texas Genco, LP, the City Public Service Board of San Antonio, Central Power and Light Company, and the City of Austin, Texas, and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

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 Facility Operating License No. NPF-76 is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendix A, as revised through Amendment No. 147, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The STP Nuclear Operating Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Robert A. Gramm, Chief, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: January 7, 2003

STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-499

SOUTH TEXAS PROJECT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 135  
License No. NPF-80

1. The Nuclear Regulatory Commission (the Commission) has found that:
  - A. The application for amendment by STP Nuclear Operating Company\* acting on behalf of itself and for Texas Genco, LP, the City Public Service Board of San Antonio (CPS), Central Power and Light Company (CPL), and the City of Austin, Texas (COA) (the licensees), dated February 18, 2002, as supplemented by letter dated July 23, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;
  - B. The facility will operate in conformity with the application, as amended, the provisions of the Act, and the rules and 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;
  - D. The issuance of this license 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.

---

\*STP Nuclear Operating Company is authorized to act for Texas Genco, LP, the City Public Service Board of San Antonio, Central Power and Light Company, and the City of Austin, Texas, and has exclusive responsibility and control over the physical construction, operation, and maintenance of the facility.

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 Facility Operating License No. NPF-80 is hereby amended to read as follows:

- (2) Technical Specifications

- The Technical Specifications contained in Appendix A, as revised through Amendment No. 135, and the Environmental Protection Plan contained in Appendix B, are hereby incorporated in the license. The STP Nuclear Operating Company shall operate the facility in accordance with the Technical Specifications and the Environmental Protection Plan.

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

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

Robert A. Gramm, Chief, Section 1  
Project Directorate IV  
Division of Licensing Project Management  
Office of Nuclear Reactor Regulation

Attachment: Changes to the Technical  
Specifications

Date of Issuance: January 7, 2003

ATTACHMENT TO LICENSE AMENDMENT NOS. 147 AND 135

FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80

DOCKET NOS. 50-498 AND 50-499

Replace the following page of the Appendix A Technical Specifications with the attached revised page. The revised page is identified by amendment number and contains marginal lines indicating the areas of change.

REMOVE

3/4 6-13

INSERT

3/4 6-13

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 147 AND 135 TO

FACILITY OPERATING LICENSE NOS. NPF-76 AND NPF-80

STP NUCLEAR OPERATING COMPANY, ET AL.

SOUTH TEXAS PROJECT, UNITS 1 AND 2

DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

By application dated February 18, 2002, as supplemented by letter dated July 23, 2002, STP Nuclear Operating Company (the licensee) requested changes to the South Texas Project (STP), Units 1 and 2, Technical Specifications (TSs). The proposed changes would revise TS 3/4.6.1.7, "Containment Ventilation System," to extend the intervals between operability tests of the normal and supplementary containment purge valves to 18 months.

The supplement dated July 23, 2002, provided clarifying information that did not change the scope of the original *Federal Register* notice (67 FR 12608 dated March 19, 2002) or the original no significant hazards consideration determination.

2.0 BACKGROUND

Two subsystems are provided for purging the reactor containment atmosphere; one to be used under cold shutdown and refueling conditions only (normal containment purge), and one to be used during plant operation (supplementary containment purge). Both of these subsystems are used to purge the containment atmosphere to reduce the concentration of gaseous and particulate contamination to enable safe personnel access.

The normal containment purge isolation valves are required to remain closed during operational conditions other than cold shutdown and refueling. The valves are used to purge the containment atmosphere during cold shutdown and refueling only. The supplemental containment purge isolation valves are primarily opened during operational conditions, other than cold shutdown and refueling, in response to changes in containment air pressure, and may also be opened during cold shutdown and refueling.

The proposed change to the TSs will extend the intervals between operability tests of the normal and supplementary containment purge valves. The current intervals are six months and three months, respectively. The proposed interval for each is 18 months. The purpose of this proposed change is to allow the purge valve operability tests to be performed no more frequently than refueling outages.

### 3.0 REGULATORY EVALUATION

In the late 1980s, when the STP, Units 1 and 2, received their operating licenses, Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, Appendix J, "Primary Reactor Containment Leakage Testing for Water-Cooled Power Reactors," required containment isolation valves, including containment purge and vent valves, to be subjected to local leakage rate tests at every refueling outage, but not to exceed two year intervals. Compliance with Appendix J provides assurance that the leakage rate of the containment, including those systems and components which penetrate the containment, does not exceed the allowable leakage rate specified in the TS and Bases. The allowable leakage rate is determined so that the leakage rate assumed in the safety analyses is not exceeded.

However, in the 1970s, the NRC staff had determined that containment purge and vent valves were, as a class, a special problem in terms of leakage rate. Experience had shown that containment purge and vent valves with resilient seals were more susceptible than other containment isolation valves to degradation caused by environmental factors (such as temperature extremes, and changes in humidity and barometric pressure) and mechanical factors (such as wear and tear, and hardening of resilient seals due to aging and exposure to radiation). This degradation not only could cause high and rapidly increasing leakage rates, but the radiological consequences of such leaks were more significant than for other valves because of the containment purge and vent valves' typically large diameters and the direct connection they provided between the containment atmosphere and the outside environment.

As part of the resolution of Generic Issue B-20, "Containment Leakage Due to Seal Deterioration," the NRC staff decided to increase the frequency of local leakage rate testing of containment purge and vent valves, beyond the frequency required by Appendix J (additional background may be found in IE Circular 77-11, "Leakage of Containment Isolation Valves with Resilient Seals," issued September 6, 1977). This would limit the time in which the valves might be inoperable due to excessive leakage, and made it more likely that a licensee would catch and correct advancing degradation before it became extreme. Although there was some variation, a typical testing arrangement was to have "passive" valves (those not opened during plant operation) tested every 6 months and "active" valves (those opened during plant operation) tested every 3 months. This is the current testing arrangement at STP, Units 1 and 2, where the normal purge valves are "sealed closed" (equivalent to locked closed) during plant operation and the supplemental purge valves are sometimes opened during plant operation.

The NRC staff would like to note that the NRC did not impose the increased testing frequencies through regulations, but rather through plant TSs. Appendix J does not contain any special requirements for containment purge and vent valves, and the 3 and 6 month tests are not Appendix J tests per se, although the same tests are usually used to fulfill Appendix J requirements when they come due.

In 1995, the NRC revised Appendix J to add a new, performance-based option for testing, called Option B. The NRC also published Regulatory Guide (RG) 1.163, "Performance-Based Containment Leak-Test Program," dated September 1995, which was developed as a method acceptable to the NRC staff for implementing Option B. This RG states that the Nuclear Energy Institute (NEI) guidance document NEI 94-01, Rev. 0, "Industry Guideline for

Implementing Performance-Based Option of 10 CFR Part 50, Appendix J," dated July 26, 1995, provides methods acceptable to the NRC staff for complying with Option B, with four exceptions which are described therein. Virtually all of the plants that have adopted Option B, including STP, Units 1 and 2, have committed to complying with the provisions of RG 1.163.

RG 1.163 allows an extension in Type A (integrated leakage rate) test frequency to at least one test in 10 years based upon two consecutive successful tests. Type B tests (local leakage rate tests of containment penetrations such as electrical penetrations) may be extended up to a maximum interval of 10 years based upon completion of two consecutive successful tests. Type C tests (local leakage rate tests of containment isolation valves) may be extended up to 5 years based on two consecutive successful tests.

However, despite the fact that most other containment isolation valves may have test intervals of up to 5 years, RG 1.163 does not let the containment purge and vent valves go to an extended interval. This is in consideration of their past poor operating experience and the safety significance of their large diameter and direct connection between the containment atmosphere and the outside environment. Also, this still did not directly affect the more frequent (3 and 6 month) tests contained in plant TSSs, which, as stated before, go beyond the requirements of Appendix J.

Subsequent to the problems observed in the 1970s, the industry has made considerable strides in correcting the deficiencies of containment purge and vent valves with resilient seals. Improved seal materials, quality control, and modifications of equipment and environmental conditions have largely corrected valve deficiencies in many plants. Several plants have requested, and the NRC staff has granted, TS changes to eliminate the more frequent testing requirements, allowing testing at what is essentially a refueling outage interval (e.g., see Amendment Nos. 169 and 173 for Point Beach Nuclear Plant, Units 1 and 2, dated October 9, 1996; Amendment No. 49 for Seabrook Station, Unit 1, dated February 24, 1997; and Amendment Nos. 207 and 188 for McGuire Nuclear Station, Units 1 and 2, dated September 4, 2002). The NRC staff has granted these reliefs on the basis of good valve performance demonstrated by plant-specific historical leakage rate testing results. Each plant must show that their containment purge and vent valves have had consistently good performance and are thus unlikely to experience significant degradation between tests when the test interval is lengthened.

#### 4.0 TECHNICAL EVALUATION

##### 4.1 Containment Purge Valve Performance

The licensee's initial letter, dated February 18, 2002, did not sufficiently address the factors discussed above, so the NRC staff requested additional information, which the licensee provided in their letter dated July 23, 2002. Also, the NRC staff noted that an earlier request from the same licensee related to frequency of leakage rate testing of the normal and supplementary containment purge valves was submitted on May 1, 1996. At that time, the NRC staff denied the proposed license amendment as documented in a letter to the licensee dated August 13, 1996.

The licensee provided detailed information on test failures since the units began operation, including causes, corrections, and effectiveness of corrective actions. Unit 1 experienced

seven test failures from various causes over the eight years of plant operation prior to May of 1996, compared with only two in the subsequent six years. Similarly, Unit 2 had six failures prior to 1996, and none since. This indicates a substantial improvement in component reliability since submittal of the initial license amendment request in 1996. Further, there was only one recurrence of a failure in a valve, and that was in 1989. This indicates effective corrective actions.

The licensee states that test performance has improved due to understanding previous failures and implementation of effective corrective actions. Past failures were primarily caused by incorrect limit switch settings. Resilient seals have not been a significant source of test leakage since early in the plant operating history. Since 1996, the only test failure involving a resilient seal was penetration M-41 in Unit 1, which occurred in April 1999. Application of lessons learned from experience with previous test failures is the greatest contributing factor for the improvement in test performance.

Based on the test results and maintenance history, and the improved performance since 1996, the NRC staff finds it acceptable to extend the maximum interval between leakage rate tests on the containment purge and vent valves to 18 months, as requested.

#### 4.2 Radiological Consequences Assessment

The licensee performed and provided the radiological consequences assuming that (1) the containment normal purge valves are open at the time of a postulated fuel handling accident (FHA) during refueling operation and (2) the containment supplemental purge valves are open at the time of a postulated loss-of-coolant-accident (LOCA) during reactor power operation. The resulting radiological consequences of the postulated FHA at the exclusion area boundary (EAB) and the low population zone (LPZ) calculated by the licensee are well within the dose reference values specified in 10 CFR Part 100. The contribution of the radiological consequence due to the containment supplemental purge valves open at the time of a postulated LOCA during reactor power operation is small and overall doses at the EAB and the LPZ are within the dose reference values specified in 10 CFR Part 100.

The NRC staff finds that the assumptions used in its dose calculations by the licensee are conservative and therefore acceptable. In addition, the NRC staff independently confirmed the licensee's dose calculations.

#### 4.3 Probabilistic Risk Assessment (PRA)

The licensee provided risk insights in support of the proposed changes. It is stated that only the supplemental purge isolation valves are modeled in the PRA to represent the containment ventilation system since the normal purge valves are normally locked closed during power operation. The STP PRA estimates that the failure of the containment supplemental purge valves contributes approximately 6 percent to the large early release frequency (LERF). The licensee argues that this estimate, which is based on current historical mean failure rates of the STP, Units 1 and 2, containment supplemental purge valves to close on demand, indicates that any potential increase in the plant LERF due to the proposed change will be insignificant (as defined in RG 1.174).

The NRC staff finds this argument to be reasonable and consistent with PRA insights for other similar plants. Furthermore, the NRC staff notices that the proposed change is related to a test whose objective is to demonstrate purge valve operability by verifying that the measured leakage rate is within design limits. Therefore, the proposed extension in the testing interval is not expected to have a significant impact, if any, on the mean failure rate of these valves to close on demand. Thus, any increase in risk associated with the proposed changes will be insignificant.

## 5.0 STATE CONSULTATION

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

## 6.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and 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 (67 FR 12608, dated March 19, 2002). Accordingly, the amendments meet 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 amendments.

## 7.0 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 Contributors: J. Pulsipher  
J. Lee  
N. Saltos

Date: January 7, 2003