

August 20, 2003

Mr. James J. Sheppard  
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: REVISION TO SURVEILLANCE REQUIREMENT 3/4.6.2,  
"DEPRESSURIZATION AND COOLING SYSTEMS" (TAC NOS. MB9100 AND  
MB9101)

Dear Mr. Sheppard:

The Commission has issued the enclosed Amendment No. 156 to Facility Operating License No. NPF-76 and Amendment No. 144 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 in response to your application dated May 14, 2003.

The amendments require that verification of containment spray system spray nozzle operability be performed only after spray ring header maintenance that could result in nozzle obstruction, without specifying the method of verification.

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. 156 to NPF-76  
2. Amendment No. 144 to NPF-80  
3. Safety Evaluation

cc w/encls: See next page

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ACCESSION NO: ML032340230

\*See previous concurrences

NRR-058

OFFICE	PDIV-1/PM	PDIV-1/PM	PDIV-1/LA	NRR/DSSA	NRR/IROB A.	OGC	PDIV-1/SC
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STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-498

SOUTH TEXAS PROJECT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 156  
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), AEP Texas Central Company, and the City of Austin, Texas (COA) (the licensees), dated May 14, 2003, 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, AEP Texas Central 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. 156 , 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: August 20, 2003

STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-499

SOUTH TEXAS PROJECT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 144  
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), AEP Texas Central Company, and the City of Austin, Texas (COA) (the licensees), dated May 14, 2003, 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, AEP Texas Central 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. 144 , 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: August 20, 2003

ATTACHMENT TO LICENSE AMENDMENT NOS. 156 AND 144

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 contain marginal lines indicating the areas of change.

REMOVE  
3/4 6-14

INSERT  
3/4 6-14

## CONTAINMENT SYSTEMS

### 3/4.6.2 DEPRESSURIZATION AND COOLING SYSTEMS

#### CONTAINMENT SPRAY SYSTEM

#### LIMITING CONDITION FOR OPERATION

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3.6.2.1 Three independent Containment Spray Systems shall be OPERABLE with each Spray system capable of taking suction from the RWST and transferring suction to the containment sump.

APPLICABILITY: MODES 1, 2, 3, and 4.

ACTION:

With one Containment Spray System inoperable, restore the inoperable Spray System to OPERABLE status within 7 days or be in at least HOT STANDBY within the next 6 hours; restore the inoperable Spray System to OPERABLE status within the next 48 hours or be in COLD SHUTDOWN within the following 30 hours.

#### SURVEILLANCE REQUIREMENTS

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4.6.2.1 Each Containment Spray System shall be demonstrated OPERABLE:

- a. At least once per 31 days by verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position;
- b. By verifying on a STAGGERED TEST BASIS, that on recirculation flow, each pump develops a differential pressure of greater than or equal to 283 psid when tested pursuant to Specification 4.0.5;
- c. At least once per 18 months during shutdown, by:
  - 1) Verifying that each automatic valve in the flow path actuates to its correct position on a Containment Pressure High 3 test signal, and
  - 2) Verifying that each spray pump starts automatically on a Containment Pressure High 3 test signal coincident with a sequencer start signal.
- d. By verifying each spray nozzle is unobstructed following maintenance activities that could result in spray nozzle blockage.



SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 156 AND 144 TO

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

STP NUCLEAR OPERATING COMPANY, ET AL.

SOUTH TEXAS PROJECT (STP), UNITS 1 AND 2

DOCKET NOS. 50-498 AND 50-499

1.0 INTRODUCTION

By application dated May 14, 2003, STP Nuclear Operating Company (the licensee), requested changes to the Technical Specifications (TSs) for South Texas Project (STP), Units 1 and 2.

The changes would revise Surveillance Requirement (SR) 4.6.2.1.d for demonstrating operability of containment spray (CS) system (CSS) spray nozzles. Specifically, these amendments modify the frequency of performing TS SR 4.6.2.1, verification that each CS nozzle is unobstructed. The frequency for performing SR 4.6.2.1 has been changed from once every 10 years to following maintenance activities which could result in nozzle blockage. These amendments also remove specification of the method of evaluation.

Specifically, the proposed change would revise SR 4.6.2.1 as follows:

Current requirement:

4.6.2.1 Each Containment Spray System shall be demonstrated to be OPERABLE:

- d. At least once per 10 years by performing an air or smoke flow test through each spray header and verifying each spray nozzle is unobstructed.

Proposed requirement:

4.6.2.1 Each Containment Spray System shall be demonstrated to be OPERABLE:

- d. By verifying each spray nozzle is unobstructed following maintenance activities that could result in spray nozzle blockage.

The licensee stated that the existing surveillance affects the refueling activities in the reactor containment building, presents a personal safety risk for the individuals required to access the top of the containment to check the nozzle air flow, is expensive to implement, and the cost associated with this test is not commensurate with the safety benefit unless there has been an activity that could result in nozzle blockage due to foreign material.

## 2.0 REGULATORY EVALUATION

- Title 10 of the *Code of Federal Regulations* (10 CFR Part 50), Appendix A, General Design Criteria (GDC) 39, "Inspection of Containment Heat Removal Systems":

The containment heat removal system shall be designed to permit appropriate periodic inspection of important components, such as the torus, sumps, spray nozzles, and piping to assure the integrity and capability of the system.

- Section 10 CFR Part 50, Appendix A, GDC 40, "Testing of Containment Heat Removal System":

The containment heat removal system shall be designed to permit appropriate periodic pressure and functional testing to assure:

- (1) The structural and leaktight integrity of its components,
- (2) The operability and performance of the active components of the system, and
- (3) The operability of the system as a whole, and under conditions as close to the design as practical the performance of the full operational sequence that brings the system into operation, including operation of applicable portions of the protection system, the transfer between normal and emergency power sources, and the operation of the associated cooling water system.

- American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code), Section XI, Paragraph IWC-5222(d) - System Hydrostatic Test:

For open-ended portions of discharge lines beyond the last shutoff valve in non-closed systems (e.g., containment spray header), demonstration of an open flow path test shall be performed in lieu of system hydrostatic test.

## 3.0 TECHNICAL EVALUATION

### 3.1 System Design

The CSS is an Engineered Safety Feature used in response to a postulated Loss of Coolant Accident (LOCA). In response to a LOCA, the CSS is designed to:

- Maintain reactor containment building pressure within design limits.
- Reduce the quantity of airborne iodine.
- Establish the sump pH to retain elemental iodine.

These functions are performed by subcooled water sprayed into the containment atmosphere through nozzles from the spray headers located in the containment dome. The large spray drop surface-to-containment ratio enables the spray to effectively remove fission products from the containment atmosphere. The CSS consists of three independent and identical trains. Two of the three trains are assumed to be available to provide 100 percent of the required water flow to the spray headers mounted in the containment dome.

Four concentric spray headers are located in the domed roof of the containment building, providing 360-degree coverage over the containment volume. The spray headers are located as high as possible without interruption of the spray pattern by the impingement on the inside of the containment dome. Piping to the spray headers assures delivery of 100 percent of the required spray flow assuming any single active failure.

The CSS nozzles are distributed on four concentric spray ring headers located in the uppermost part of the containment. The ring headers have 12, 50, 60, and 129 nozzles, respectively.

The spray nozzles are SPARCO Type-1713A and are hollow-cone, with a 3/8-inch diameter orifice, and are fabricated from stainless steel. These nozzles have a swirl chamber design with no internal parts, such as swirl vanes, that may be subject to clogging. The 3/8-inch nozzle discharge is sufficiently large to preclude clogging by particles that pass through the 1/4-inch mesh of the containment sump screens.

### 3.2 Corrosion

The STP CSS piping and nozzles are constructed of stainless steel, and are maintained dry. Standing water is present in the system piping up to the 43-foot elevation. Formation of significant corrosion products is unlikely because the components are stainless steel. Further, the header and the nozzles are passive devices that are not normally exposed to fluids or debris. Conditions for stainless steel corrosion, such as stress, temperature, and chlorides are not present. Therefore, the nozzles are unlikely to become obstructed due to corrosion.

Review of industry experience indicates that CSS of similar design are highly reliable and not subject to plugging after testing following construction. The NRC staff reviewed industry experience and found that in general, once tested after construction, CSS have not been subject to blockage. There have been several exceptions identified in CS and fire protection systems in which water leakage resulted in corrosion which resulted in some, but not complete blockage. As described above, the STP design precludes this condition.

### 3.3 Maintenance

The pre-operational tests on Units 1 and 2 were done in 1986 and 1987, respectively, and the TS required surveillance tests were done in 1992 and 1993. The initial five-year test intervals were changed by NRC approved license amendments 94 (Unit 1) and 81 (Unit 2), dated March 11, 1998. The surveillance interval is currently 10 years. Airflow tests conducted as part of pre-operational testing and the first 5-year interval, have confirmed that there are no obstructions in the CSS nozzles. The results of each test have demonstrated unobstructed flow through each nozzle which confirms that the nozzles are free from construction debris, and also free of obstructions that could have occurred following startup and operation of the units.

A review of the maintenance and modification history since the last air flow test indicates that work orders and modifications have been implemented on the isolation valves and pumps. However, no maintenance or modification to the nozzles or spray rings has been done. Since the modifications associated with the valves were for operator adjustments, the cleanliness of the spray rings and the nozzles would not be affected by this.

In summary, once tested after construction work, CSSs have generally not been subjected to blockage and routine maintenance activities with effective controls should not require subsequent inspection or testing on the spray nozzles. Normal plant operation and maintenance activities are not expected to trigger the surveillance requirement.

### 3.4 Foreign Material Exclusion

The STP Foreign Material Exclusion Program describes the measures taken to ensure foreign material is not introduced into a system or component, or to recover if foreign material is introduced. This program specifies, when closing a component or system, an inspection needs to be performed to ensure no foreign material is present, and applies to all work activities and inspection activities performed by any group at STP. If foreign material exclusion is not maintained, a Condition Report is initiated requiring assessment of the circumstances and implementation of the corrective actions to prevent reoccurrence.

Any breached fluid system or component is to be covered when access for maintenance or inspection is not required. Therefore, when maintenance requires a breach in a fluid system or associated component integrity, the implementation of procedural guidelines for station housekeeping will prevent inadvertent introduction of foreign material into the system or component.

Due to its location at the top of the containment, introduction of foreign material into the spray header is unlikely. Foreign material introduced as a result of maintenance is the most likely cause for obstruction; therefore, verification following such maintenance would be sufficient to confirm that the nozzles are free from blockage. Therefore, the potential for unidentified nozzle obstruction is very low.

In summary, once tested after construction and with effective application of foreign material exclusion controls during routine maintenance activities, CSSs are, in general, not subject to blockage and, therefore, should not require subsequent testing of the spray nozzles. Normal plant operation and maintenance practices are not expected to trigger this surveillance requirement. This is also basically expressed in NUREG-1366, "Improvements to Technical Specification Requirements," which is a review of industry operating history to determine the cause of problems discovered when performing this surveillance and states that in all cases, the problems discovered were related to construction, and not related to operation.

NRC Generic Letter 93-05, "Line-Item Technical Specifications Improvements to Reduce Surveillance Requirements for Testing During Power Operation," dated September 27, 1993, described a problem at another unit similar to STP, that was caused because sodium silicate, a coating material applied to the CSS carbon steel piping, clogged some of the spray nozzles. Since the STP CSS piping and nozzles are stainless steel and therefore are not coated, that concern is not applicable to STP.

The licensee committed to revise the TS Bases to address the methods for verifying nozzle operability, with the added option of visual verification. The NRC staff finds that reasonable controls for the implementation and for subsequent evaluation of proposed changes pertaining to the above regulatory commitment are best provided by the licensee's administrative

processes, including its commitment management program. The above regulatory commitment does not warrant the creation of a regulatory requirement (i.e., an item requiring prior NRC approval of subsequent changes).

### 3.5 Summary

The NRC staff concludes that the design of the STP CSS, combined with the commitment to address nozzle blockage when performing maintenance in these piping systems, will minimize the potential for nozzle obstruction. Therefore, the NRC staff finds the licensee's proposal, to modify the frequency of verifying that the containment spray nozzles are unobstructed from once every 10 years to conditions following maintenance activities which could result in nozzle blockage to be acceptable.

### 4.0 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.

### 5.0 ENVIRONMENTAL CONSIDERATION

The amendments change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20 and changes 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 (68 FR 37582 dated June 24, 2003). 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.

### 6.0 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: N. Kalyanam

Date: August 20, 2003

South Texas, Units 1 & 2

cc:

Mr. Cornelius F. O'Keefe  
Senior Resident Inspector  
U.S. Nuclear Regulatory Commission  
P. O. Box 910  
Bay City, TX 77414

A. Ramirez/C. M. Canady  
City of Austin  
Electric Utility Department  
721 Barton Springs Road  
Austin, TX 78704

Mr. L. K. Blaylock  
Mr. W. C. Gunst  
City Public Service Board  
P. O. Box 1771  
San Antonio, TX 78296

Mr. C. A. Johnson/A. C. Bakken  
AEP Texas Central Company  
P. O. Box 289  
Mail Code: N5022  
Wadsworth, TX 77483

INPO  
Records Center  
700 Galleria Parkway  
Atlanta, GA 30339-3064

Regional Administrator, Region IV  
U.S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011

D. G. Tees/R. L. Balcom  
Texas Genco, LP  
P. O. Box 1700  
Houston, TX 77251

Judge, Matagorda County  
Matagorda County Courthouse  
1700 Seventh Street  
Bay City, TX 77414

A. H. Gutterman, Esq.  
Morgan, Lewis & Bockius  
1111 Pennsylvania Avenue, NW  
Washington, DC 20004

Mr. T. J. Jordan, Vice President  
Engineering & Technical Services  
STP Nuclear Operating Company  
P. O. Box 289  
Wadsworth, TX 77483

S. M. Head, Manager, Licensing  
Nuclear Quality & Licensing Department  
STP Nuclear Operating Company  
P. O. Box 289, Mail Code: N5014  
Wadsworth, TX 77483

Environmental and Natural Resources  
Policy Director  
P. O. Box 12428  
Austin, TX 78711-3189

Jon C. Wood  
Matthews & Branscomb  
112 East Pecan, Suite 1100  
San Antonio, TX 78205

Arthur C. Tate, Director  
Division of Compliance & Inspection  
Bureau of Radiation Control  
Texas Department of Health  
1100 West 49th Street  
Austin, TX 78756

Brian Almon  
Public Utility Commission  
William B. Travis Building  
P. O. Box 13326  
1701 North Congress Avenue  
Austin, TX 78701-3326

May 2003

South Texas, Units 1 & 2

-2-

Susan M. Jablonski  
Office of Permitting, Remediation  
and Registration  
Texas Commission on  
Environmental Quality  
MC-122  
P.O. Box 13087  
Austin, TX 78711-3087

Mr. Terry Parks, Chief Inspector  
Texas Department of Licensing  
and Regulation  
Boiler Division  
P. O. Box 12157  
Austin, TX 78711

Mr. Ted Enos  
4200 South Hulen  
Suite 630  
Ft. Worth, Texas 76109