UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

March 31, 2010

Mr. Edward D. Halpin
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project
P.O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - ISSUANCE OF AMENDMENTS APPROVING DEVIATIONS FROM FIRE PROTECTION PROGRAM REQUIREMENTS FOR FIRE AREAS 27 AND 31, AND REVISION TO LICENSE CONDITION 2.E (TAC NOS. ME0824, ME0825, ME1389, AND ME1390)

Dear Mr. Halpin:

The Commission has issued the enclosed Amendment No. 193 to Facility Operating License No. NPF-76 and Amendment No. 181 to Facility Operating License No. NPF-80 for the South Texas Project (STP), Units 1 and 2, respectively. The amendments consist of changes to the Licenses NPF-76 and NPF-80, in response to your applications dated February 3, 2009 (NOC-AE-08002366), and March 3, 2009 (NOC-AE-09002395), as supplemented by letters dated November 20, 2009 (NOC-AE-09002489), and January 20, 2010 (NOC-AE-10002505).

The amendments approve a revision to the STP, Units 1 and 2 Fire Protection Program for Fire Areas 27 and 31. In the event of a fire in the Fire Areas 27 and 31, the amendments would allow the licensee to perform operator manual actions to achieve and maintain safe shutdown in lieu of meeting the circuit separation and protection requirements of Title 10 of the *Code of Federal Regulations,* Part 50, Appendix R, Section III.G.2. The amendments revise the License Condition 2.E, "Fire Protection," in the facility operating licenses, to reflect the changes. The changes in the Fire Hazards Analysis Report accurately describe the deviations that are being approved by these amendments.

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,

Mohan Thadani

Mohan C. Thadani, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosures:
1. Amendment No. 193 to NPF-76
2. Amendment No. 181 to NPF-80
3. Safety Evaluation

cc w/encls: Distribution via Listserv

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-498

SOUTH TEXAS PROJECT, UNIT 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 193
License No. NPF-76

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The applications for amendment by STP Nuclear Operating Company (STPNOC)* acting on behalf of itself and for NRG South Texas LP, the City Public Service Board of San Antonio (CPS), and the City of Austin, Texas (COA) (the licensees), dated February 3 and March 3, 2009, as supplemented by letters dated November 20, 2009, and January 20, 2010, comply 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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*STPNOC is authorized to act for NRG South Texas LP, the City Public Service Board of San Antonio, 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 as indicated in the attachment to this license amendment, and Paragraph 2.E of Facility Operating License No. NPF-76 is hereby amended to read as follows:

   E. Fire Protection

   STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 55 and the Fire Hazards Analysis Report through Amendment No. 19, and submittals dated April 29, May 7, 8 and 29, June 11, 25 and 26, 1987; February 3, March 3, and November 20, 2009; January 20, 2010; and as approved in the SER (NUREG-0781) dated April 1986 and its Supplements, subject to the following provision:

   STPNOC may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating License No. NPF-76 and the Technical Specifications

Date of Issuance: March 31, 2010

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

STP NUCLEAR OPERATING COMPANY

DOCKET NO. 50-499

SOUTH TEXAS PROJECT, UNIT 2

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 181
License No. NPF-80

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by STP Nuclear Operating Company (STPNOC)* acting on behalf of itself and for NRG South Texas LP, the City Public Service Board of San Antonio (CPS), and the City of Austin, Texas (COA) (the licensees), dated February 3 and March 3, 2009, as supplemented by letters dated November 20, 2009, and January 20, 2010, comply 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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*STPNOC is authorized to act for NRG South Texas LP, the City Public Service Board of San Antonio, 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 as indicated in the attachment to this license amendment, and Paragraph 2.E of Facility Operating License No. NPF-80 is hereby amended to read as follows:

   E. Fire Protection

   STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 62 and the Fire Hazards Analysis Report through Amendment No. 19, and submittals dated April 29, May 7, 8 and 29, June 11, 25, and 26, 1987; February 3, March 3, and November 20, 2009; January 20, 2010; and as approved in the SER (NUREG-0781) dated April 1986 and its Supplements, subject to the following provisions:

   STPNOC may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

3. The license amendment is effective as of its date of issuance and shall be implemented within 60 days from the date of issuance.

FOR THE NUCLEAR REGULATORY COMMISSION

Michael T. Markley, Chief
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Attachment:
Changes to the Facility Operating
License No. NPF-80 and the
Technical Specifications

Date of Issuance: March 31, 2010

ATTACHMENT TO LICENSE AMENDMENT NOS. 193 AND 181

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

DOCKET NOS. 50-498 AND 50-499

Replace the following pages of the Facility Operating License Nos. NPF-76 and NPF-80 with the attached revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

Facility Operating License No. NPF-76

REMOVE	INSERT
-9-	-9-

Facility Operating License No. NPF-80

REMOVE	INSERT
-8-	-8-

(4) The facility has been granted a schedular exemption from Section 50.71(e)(3)(i) of 10 CFR 50 to extend the date for submittal of the updated Final Safety Analysis Report to no later than one year after the date of issuance of a low power license for the South Texas Project, Unit 2. This exemption is effective until August 1990. The staff's environmental assessment was published on December 16, 1987 (52 FR 47805).

E. Fire Protection

STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 55 and the Fire Hazards Analysis Report through Amendment No. 19, and submittals dated April 29, May 7, 8 and 29, June 11, 25 and 26, 1987; February 3, March 3, and November 20, 2009; January 20, 2010; and as approved in the SER (NUREG-0781) dated April 1986 and its Supplements, subject to the following provision:

STPNOC may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

F. Physical Security

STPNOC shall fully implement and maintain in effect all provisions of the physical security, training and qualification, and safeguards contingency plans previously approved by the Commission and all amendments and revisions to such plans made pursuant to the authority under 10 CFR 50.90 and 10 CFR 50.54(p).

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contains Safeguards Information protected under 10 CFR 73.21, is entitled: "South Texas Project Electric Generating Station Security, Training and Qualification, and Safeguards Contingency Plan, Revision 2" submitted by letters dated May 17 and 18, 2006.

G. Not Used

H. Financial Protection

The Owners shall have and maintain financial protection of such type and in such amounts as the Commission shall require in accordance with Section 170 of the Atomic Energy Act of 1954, as amended, to cover public liability claims.

(2) The facility was previously granted exemption from the criticality monitoring requirements of 10 CFR 70.24 (See Materials License No. SNM-1983 dated August 30, 1988 and Section III.E. of the SER dated August 30, 1988). The South Texas Project Unit 2 is hereby exempted from the criticality monitoring provisions of 10 CFR 70.24 as applied to fuel assemblies held under this license.

(3) The facility requires a temporary exemption from the scheduler requirements of the decommissioning planning rule, 10 CFR 50.33(k) and 10 CFR 50.75. The justification for this exemption is contained in Section 22.2 of Supplement 6 to the Safety Evaluation Report. The staff's environmental assessment was published on December 16, 1988 (53 FR 50604). Therefore, pursuant to 10 CFR 50.12(a)(1), 50.12(a)(2)(ii) and 50.12(a)(2)(v), the South Texas Project, Unit 2 is hereby granted a temporary exemption from the schedular requirements of 10 CFR 50.33(k) and 10 CFR 50.75 and is required to submit the decommissioning plan for both South Texas Project, Units 1 and 2 on or before July 26, 1990.

E. Fire Protection

STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 62 and the Fire Hazards Analysis Report through Amendment No. 19, and submittals dated April 29, May 7, 8 and 29, June 11, 25, and 26, 1987; February 3, March 3, and November 20, 2009; January 20, 2010; and as approved in the SER (NUREG-0781) dated April 1986 and its Supplements, subject to the following provisions:

STPNOC may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

F. Physical Security

The licensee shall fully implement and maintain in effect all provisions of the Commission-approved physical security, training and qualification, and safeguards contingency plans including amendments made pursuant to provisions of the Miscellaneous Amendments and Search Requirements revisions to 10 CFR 73.55 (51 FR 27817 and 27822), and the authority of 10 CFR 50.90 and 10 CFR 50.54(p). The combined set of plans, which contain Safeguards Information protected under 10 CFR 73.21, is entitled: "South Texas Project Electric Generating Station Security, Training and Qualification, and Safeguards Contingency Plan, Revision 2" submitted by letters dated May 17 and 18, 2006.

G. Not Used

UNITED STATES
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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NOS. 193 AND 181 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 applications dated February 3 and March 3, 2009 (Agencywide Documents Access and Management System (ADAMS) Accession Nos. ML090410486 and ML090680781, respectively) to the U.S. Nuclear Regulatory Commission (NRC), as supplemented by letters dated November 20, 2009 (ADAMS Accession No. ML093350537), and January 20, 2010 (ADAMS Accession No. ML100280171), STP Nuclear Operating Company (STPNOC, the licensee), requested changes to the operating licenses for South Texas Project (STP), Units 1 and 2. The licensee requested approval of a revision to the approved fire protection program (FPP) that is documented in the licensee's Fire Hazards Analysis Report (FHAR).

The supplemental letters dated November 20, 2009, and January 20, 2010, provided additional information that clarified the applications, did not expand the scope of the applications as originally noticed, and did not change the U.S. Nuclear Regulatory Commission (NRC) staff's original proposed no significant hazards consideration determination as published in the *Federal Register* on August 25, 2009 (75 FR 42929, 42930).

These amendments would approve a revision of the STP, Units 1 and 2 FPP to allow the performance of operator manual actions (OMAs) to achieve and maintain safe shutdown in the event of a fire in lieu of meeting the circuit separation and protection requirements of Title 10 of the *Code of Federal Regulations* (10 CFR), Part 50, Appendix R, Section III.G.2 (III.G.2) for Fire Areas 27 and 31. These two fire areas are located in the Mechanical Electrical Auxiliary Building (MEAB) at the 10-foot and 60-foot elevations, respectively. In the event of a fire in Fire Areas 27 or 31, these amendments would allow the licensee to perform OMAs to de-energize breakers and valves, and manually open and close valves, instead of protecting the components in accordance with the current STP licensing basis, which includes implementation of III.G.2.

The licensee stated that the proposed OMAs are to de-energize and manually open valve CV-MOV-0112C, de-energize and manually close valve CV-MOV-0112B, de-energize and

manually open valve CV-MOV-8377B, and de-energize valve CV-HCV-0218 for a fire in Fire Area 27. For a fire in Fire Area 31, the proposed OMAs are to de-energize and manually open valve CV-MOV-0112C and to de-energize and manually close valve CV-MOV-0112B.

These OMAs are to ensure that adequate boron concentration is available for reactivity control and also to ensure that adequate inventory control is maintained for safe shutdown following a fire. Based on the fire safe shutdown thermal-hydraulic analysis, these actions must be performed within 2 hours of a reactor trip initiated in response to a fire in Fire Areas 27 or 31.

2.0 REGULATORY EVALUATION

The regulatory requirements for fire protection are contained in (1) 10 CFR 50.48, "Fire protection," (2) General Design Criterion 3, "Fire protection," of Appendix A to 10 CFR Part 50, and (3) Appendix R, "Fire Protection Program for Nuclear Power Facilities Operating Prior to January 1, 1979," to 10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities." The circuit separation and protection requirements being addressed in these license amendment requests (LARs) are specified in III.G.2. Since STP, Units 1 and 2, were licensed after January 1, 1979, the licensee is not required to meet Section III.G.2; however, because the licensee has committed to meet the III.G.2 in its approved FPP as documented in License Condition 2.E, the licensee is required to meet III.G.2.

The approved FPP for both units at STP is documented in Amendment 18 of the licensee's FHAR. The current STP Unit 1 License Condition 2.E specifies, in part, that,

> STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 55 and the Fire Hazard Analysis Report through Amendment No. 18, and submittals dated April 29, May 7, 8 and 29, June 11, 25, and 26, 1987, and as approved in the SER [safety evaluation report] (NUREG-0781) dated April 1986 and its Supplements...

This license condition is being changed in these amendments.

The current STP Unit 2 License Condition 2.E specifies, in part, that,

> STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 62 and the Fire Hazard Analysis Report through Amendment No. 18, and submittals dated April 29, May 7, 8 and 29, June 11, 25, and 26, 1987, and as approved in the SER (NUREG-0781) dated April 1986 and its Supplements...

This license condition is also being changed in these amendments.

The STP FHAR provides an analysis of how the safe shutdown strategy for each fire area meets the applicable regulatory requirements. The OMAs proposed in the LARs have not been previously reviewed by the NRC. The NRC staff approves the use of the OMAs by the license amendment process, for plants licensed after January 1, 1979, that are considered to potentially

represent an adverse impact on the ability to safely shut down the plant, while ensuring adequate protection of public health and safety.

The NRC staff reviewed the licensee's request to perform OMAs in lieu of meeting the circuit separation and protection requirements specified in III.G.2 a, b, or c, with respect to: (1) the technical information published in NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," and (2) additional considerations to ensure that adequate defense in depth is provided to maintain the acceptable level of safety at the plant.

3.0 TECHNICAL EVALUATION

3.1 Area Description

Fire Areas 27 and 31 are both located in the MEAB. Fire Area 27 is located in the mechanical portion of the MEAB at the 10-foot elevation while Fire Area 31 is located in the electrical portion of the MEAB at the 60-foot elevation. Both areas are typically separated from adjacent fire areas by 3-hour rated fire barriers and have internal heavy concrete fire zone boundaries with the exception of stairwells in Fire Area 27, which have 2-hour rated fire barriers, and Fire Area 31 and Fire Area 19, which have a 1-1/2-hour rated barrier. Fire Area 27 is composed of seven fire zones, including Fire Zone Z127. Fire Area 31 contains only one fire zone, Fire Zone Z047, which has the Train B cable spreading/power cable room and the cable room.

For Fire Area 27, the STPNOC fire safe shutdown analysis credits a charging pump for providing makeup to the reactor coolant system to ensure that boron concentration is adequate upon entry into MODE 4 (Hot Shutdown) to achieve and maintain safe shutdown. The suction source for the charging pump is re-aligned from the volume control tank (VCT) to the refueling water storage tank (RWST). The power and control cables for the motor-operated charging pump suction valves from the VCT outlet (CV-MOV-0112B and CV-MOV-0113A) and the redundant cables for the charging pump suction valves from the RWST (CV-MOV-0112C and CV-MOV-0113B) are routed through Fire Area 27 and comply with the circuit separation and protection requirements contained in III.G.2, except in Fire Zone Z127, where the redundant cables are located approximately 3 feet from one another at their closest location.

The flow path from the charging pump discharge to the reactor coolant system credited in the fire safe shutdown analysis is dependent on the Train B charging pump discharge motor-operated valve (CV-MOV-8377B) and seal water injection valve (CV-HCV-0218). Both valves (CV-MOV-8377B and CV-HCV-0218) and their associated cabling are located in Fire Area 27. Fire Zone Z127 is accessible from Fire Zone Z138 within Fire Area 27.

In Fire Area 31, the redundant solid state protection system (SSPS) and redundant control cables for the charging pump suction valves from the VCT outlet valves (CV-MOV-0112B and CV-MOV-0113A) and the redundant SSPS cables for the charging pump suction valves from the RWST (CV-MOV-0112C and CV-MOV-0113B) are located in Fire Area 31. The SSPS cables have greater than 20 feet of separation, but intervening combustibles exist in the form of cabling in other trays between the redundant cables, and the redundant control cables are separated by approximately 3 feet at their closest location. Fire Area 31 (Fire Zone Z047) is

accessible by two entry points from Fire Area 4 and one from Fire Area 19, which consists of a stairwell. The cable room portion of Fire Zone Z047 is only accessible from Fire Area 4.

3.2 Defense-In-Depth Review

The regulation requires that licensees ensure that the ability to achieve and maintain safe shutdown is preserved following a fire event by extending the concept of defense in depth to:

(1) prevent fires from starting;

(2) detect rapidly, control, and extinguish promptly those fires that do occur; and

(3) provide protection for structures, systems, and components important to safety so that a fire that is not promptly extinguished by the fire suppression activities will not prevent the safe shutdown of the plant.

The stated purpose of III.G.2 is to ensure that one of the redundant trains necessary to achieve and maintain hot shutdown conditions remains free of fire damage in the event of a fire. The regulations in III.G.2 require one of the following means to ensure that a redundant train of safe shutdown cables and equipment is free of fire damage, where redundant trains are located in the same fire area outside of primary containment:

a. Separation of cables and equipment and associated non-safety circuits of redundant trains by a fire barrier having a 3-hour rating. Structural steel forming a part of or supporting such fire barriers shall be protected to provide fire resistance equivalent to that required of the barrier;

b. Separation of cables and equipment and associated non-safety circuits of redundant trains by a horizontal distance of more than 20 feet with no intervening combustible or fire hazards. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area; or

c. Enclosure of cable and equipment and associated non-safety circuits of one redundant train in a fire barrier having a 1-hour rating. In addition, fire detectors and an automatic fire suppression system shall be installed in the fire area.

STP, Units 1 and 2, are replicate plants with identical fire protection systems within the power block; therefore, the following discussion applies to both units.

3.2.1 Fire Prevention

Generic to Fire Areas 27 and 31

The licensee stated that there are administrative controls programs in place in Fire Areas 27 and 31 to strictly control transient combustible fuel loading and hot work activities.

Fire Area 27

In addition to the administrative controls program, the licensee also stated that there are limited combustible materials in Fire Zone Z127 and no other sources of ignition aside from the lighting systems. The limited combustible materials present in Fire Zone Z127 are associated with the electrical, detection, and means of egress systems and include an electrical panel, plastic and wire insulation, lubricating oil and grease, and limited transient combustibles. Self-ignited cable fires are not considered a hazard due to the fire retardant properties of the cables themselves (Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard-383 qualified or equivalent) and since thermoplastic cables are not installed in the plant and the cables that are installed are installed in steel conduit.

Fire Area 31

In addition to the administrative controls program, the licensee also stated that there are limited combustible materials in Fire Area 31, in the form of cabling, and that the only intervening combustibles are the cables located in trays between the redundant cables. Additionally, no other sources of ignition aside from the lighting systems and the cabling running through the area. Self-ignited cable fires are not considered a hazard due to the fire retardant properties of the cables themselves (IEEE-383 qualified or equivalent) and since thermoplastic cables are not installed in the plant.

3.2.2 Detection and Extinguishing Controls

Generic to Fire Areas 27 and 31

Both Fire Area 27, including Fire Zone Z127, and Fire Area 31 are equipped with ionization smoke detection systems installed in accordance with National Fire Protection Association (NFPA) 72D: Standard for the Installation, Maintenance and Use of Proprietary Protective Signaling Systems - 1975 Edition, which provide alarm annunciation locally and in the control room. Both areas are also enclosed by fire barriers, as discussed above, that limit or prevent the spread of fires from one fire area to another.

STP has an on-site fire brigade consisting of a minimum of five members per shift, 24 hours per day, trained to respond to and combat fires wherever they may occur on site. The licensee states that fire brigade drill training results for plant areas in proximity to Fire Areas 27 and 31 indicate that fire brigade response to a fire is expected to be timely, with entry into the affected area within 15 to 30 minutes of initial alarm.

Fire Area 27

Although not equipped with an automatic suppression system, Fire Zone Z127 does have two hose cabinets installed for use by the fire brigade. Additionally, automatic wet pipe fire suppression systems are installed in fire zones directly adjacent to Z127 (Fire Zones Z138 and Z139) and are designed and installed in accordance with NFPA 13: Standard for the Installation of Sprinkler Systems - 1976 Edition and NFPA 231C: Standard for Rack Storage of Materials - 1975 Edition. The presence of the automatic fire suppression systems will limit the impact of a

fire within Fire Area 27, but outside Fire Zone Z127, from impacting the equipment located in Fire Zone Z127.

Fire Area 31

Fire Area 31 is equipped with an ionization smoke detection system, as described above, and an automatic wet pipe fire suppression system installed in accordance with NFPA 13: Standard for the Installation of Sprinkler Systems - 1976 Edition and NFPA 231C: Standard for Rack Storage of Materials - 1975 Edition.

3.2.3 Preservation of Safe Shutdown Capability

Fire Area 27

As discussed above, in Fire Zone Z127, redundant cables for the charging pump suction valves from the VCT outlet (CV-MOV-0112B and CV-MOV-0113A) and the redundant cables for the charging pump suction valves from the RWST (CV-MOV-0112C and CV-MOV-0113B) are separated by approximately 3 feet at their closest location.

The flow path from the charging pump discharge to the reactor coolant system credited in the fire safe shutdown analysis is dependent on the Train B charging pump discharge motor-operated valve (CV-MOV-8377B) and seal water injection valve (CV-HCV-0218). The cabling for valve CV-MOV-8377B is located in Fire Zone Z127 and valve CV-MOV-8377B is located in a separate valve cubicle room with solid concrete walls within Fire Zone Z127. As noted above, the cabling to valve CV-MOV-8377B is in steel conduit. The licensee's analysis allows for the assumption that valve CV-MOV-8377B spuriously actuates and repositions itself into the non-desired configuration as a result of a fire in Fire Area 27.

However, with essentially no ignition source and the very low combustible loading in this zone, there is no credible fire scenario that would cause cable damage to cause spurious actuation of the normally-open valve CV-MOV-8377B. Nevertheless, in the unlikely scenario that a fire does occur in Fire Area 27, manual suppression is available to extinguish the fire. In that case, an operator may enter the area after a fire in this area has been extinguished to verify or re-open valve CV-MOV-8377B. The licensee has 120 minutes to extinguish the fire and verify the position of the valve to support safe shutdown. The licensee's analysis assumes 60 minutes for detection and suppression of the fire before the fire area can be re-entered to verify or reposition the position of the valve.

Due to the administrative controls program and a lack of combustibles and sources of ignition in close proximity to the valve, the licensee assumes that the mechanical portion of valve (CV-MOV-8377B) is not damaged by fire. In addition, the valve is of substantial steel construction, and is not expected to be damaged by fire. Although no damage is assumed to occur to the valve itself, the licensee's analysis does assume that the cabling and the circuitry in Fire Area 27 are damaged by fire, such that the valve cannot be repositioned remotely nor can its position be verified remotely. Since alignment of the charging path to the reactor coolant system is not dependent upon protecting the cables and circuitry, manual operation of the valve provides the necessary alignment function in the unlikely event that valve (CV-MOV-8377B) spuriously actuates and repositions itself into the non-desired configuration as a result of a fire.

As an alternative to protecting the cables and circuitry, the OMAs noted above provide reasonable assurance that safe shutdown capability is maintained following a fire in Fire Area 27.

The circuitry for the air-operated solenoid valves to operate CV-HCV-0218 is located in Fire Area 27. Valve CV-HCV-0218 is located in Fire Zone Z127 in a separate valve cubicle room with solid concrete walls. The licensee's analysis assumes that the mechanical portion of this valve is not damaged by fire and the analysis for aligning the charging path to the reactor coolant system is not dependent upon protecting the cables. The analysis assumes that the cabling and the circuitry in Fire Area 27 are damaged by fire. The licensee's analysis also assumes that fire damage to the air solenoid circuitry will not prevent removing power from the solenoids and failing valve CV-HCV-0218 open because the valve automatically returns to the desired open position upon loss of power. As an alternative to protecting the cables, the OMAs noted above can be performed with sufficient time margin to meet the safe shutdown thermal-hydraulic analysis and maintain safe shutdown capability following a fire in Fire Area 27.

Fire Area 31

As noted above, the redundant SSPS and redundant control cables for the charging pump suction valves from the VCT outlet valves (CV-MOV-0112B and CV-MOV-0113A) and the redundant SSPS cables for the charging pump suction valves from the RWST (CV-MOV-0112C and CV-MOV-0113B) are located in Fire Area 31. The SSPS cables have greater than 20 feet of separation, but intervening combustibles exist in the form of cabling in other trays between the redundant cables. The redundant control cables are separated by approximately 3 feet at their closest location.

The licensee's analysis assumes that the cabling for the redundant trains is damaged by fire in the fire area. However, the realignment of the charging pump is not dependent upon protecting the cables for the charging pump suction valves because valves CV-MOV-0112B and CV-MOV-0112C are located outside of Fire Area 31. Therefore, the two valves would not be damaged by the postulated fire event. As an alternative to protecting the cables, the OMAs noted above are proposed to de-energize the cabling and reposition the valves from areas remote from the fire area and to provide reasonable assurance that safe shutdown capability is maintained following a fire in Fire Area 31. No re-entry of the fire area is necessary to realign the flow path.

3.3 Feasibility and Reliability of the Operator Manual Actions

NUREG-1852, "Demonstrating the Feasibility and Reliability of Operator Manual Actions in Response to Fire," provides criteria and associated technical bases for evaluating the feasibility and reliability of post-fire OMAs in nuclear power plants. The following provides the licensee's analysis of these criteria for justifying the OMAs specified in this request for Fire Areas 27 and 31.

3.3.1 Bases for Establishing Feasibility and Reliability

The licensee's analysis addressed the factors in NUREG-1852. Those factors are environmental concerns, equipment functionality and accessibility, available indications,

communications, portable equipment, personnel protection equipment, procedures and training, staffing, and demonstrations.

Generic to Fire Areas 27 and 31

In its letter dated March 3, 2009, and further supported by its letter dated November 20, 2009, the licensee stated that environmental considerations such as radiological concerns, emergency lighting, temperature and humidity conditions, and smoke and toxic gases were evaluated and found to not represent a negative impact on the operators' abilities to complete the OMAs. The licensee also stated that sufficient emergency lighting exists at the areas where the actions are performed and along the travel routes to the areas and that the noise levels at the areas where the actions are performed should not impede the use of normal communications. Additionally, the areas are noted as having normal ambient temperature and humidity.

The licensee stated that there are no dead zones for the plant fire alarm and that operators are in constant radio communication and aware of radio communications dead zones. The licensee noted that the time to account for or compensate for radio communication dead zones is accounted for in the OMA procedure timeline and safety margin. Additionally, personnel protection equipment is also not required for operators to perform the actions since there is no radiological hazard and fire-related hazards are either removed or extinguished through fire brigade operations.

Operators are trained on the use and implementation of the OMA procedure and also receive training on the diagnosis of fires and on plant risk assessment regarding loss of function of equipment and components important to reactor safety. Licensed operators then receive continuous training on any major changes to the fire protection system, such as modifications to the detection system or software in the Licensed Operator Requalification program. This training includes the basis of how component and equipment failures affect the risk to reactor safety. Trained operators are present on site at all times in sufficient numbers to perform all of the necessary procedures to maintain safe shutdown capability during or following a fire event. Demonstrations are routinely conducted to ensure that all OMAs can be performed within the analyzed time available.

Fire Area 27

The licensee stated that the locations of the actions where operators de-energize and manually open valve CV-MOV-0112C and de-energize and manually close valve CV-MOV-0112B are in readily accessible rooms. The licensee further stated that the location for de-energizing the valve motor operators is in a non-radiologically controlled area and that the location for manually re-positioning the valves is in a radiologically controlled area (RCA) but that the RCA is a low-dose radiation area and protective clothing is not required.

With regard to smoke and products of combustion, in its letter dated March 3, 2009, the licensee stated that, with the exception of the action that is performed in Fire Zone Z127,

> Smoke from a fire in Fire Area 27 should not propagate in a manner that impedes performance of manual actions. The manual actions to operate the valves are performed in the mechanical portion of the MEAB. The location to de-energize

> the valve motors is several rooms away in the electrical portion of the MEAB. Fire Area 27 has doors and the majority of smoke is expected to remain within this fire area.

The action for an operator to re-enter Fire Area 27 following a fire would require the operator to pass through Fire Zones Z138 or Z139 to Fire Zone Z127 where the operator then verifies that the normally-open valve, CV-MOV-8377B, has not spuriously closed and re-open it, if necessary. The operator would also de-energize seal water injection valve CV-HCV-0218. The locations of the valves are in separate valve cubicle rooms with concrete walls within Fire Zone Z127, which is located within Fire Area 27. Due to the lack of ignition sources and low combustible fuel loading in close proximity to the valves, and the presence of interior concrete zone barrier walls and other fire protection systems, it is highly unlikely that the mechanical components of the valves will be damaged during a fire in Fire Area 27. The presence of an ionization smoke detection system throughout the entire fire area and automatic suppression systems in the two adjacent zones provides assurance that the path to access Fire Zone Z127 is adequately protected to prevent fires from occurring and preserve a tenable environment for responding operators. The licensee's analysis assumes that Fire Area 27 is re-entered after 60 minutes following a fire allowing adequate time for operators and the fire brigade to identify and extinguish the postulated fire before operators attempt to re-enter the area and perform the action. The other actions that are necessary for a fire in Fire Area 27 occur in fire areas remote to the fire area of origin.

The licensee stated that the equipment to be manipulated during the OMA procedure is properly maintained and located in readily accessible areas free of fire damage for a fire in Fire Area 27 with the exception of the cabling to the charging pump suction motor-operated valves in Fire Zone Z127, as noted above. Additionally, adequate diagnostic indications are provided by the ionization smoke detection system as well as other control room indicators. Once a fire is detected, an alarm notifies operators locally and in the control room and an operator is dispatched to confirm the presence of fire that is likely to negatively impact the ability to maintain safe shutdown capability. The plant procedure includes a table so operators can readily determine the fire area in which a detector is alarming.

With regard to the use of portable equipment to complete the OMAs, in its letter dated March 3, 2009, the licensee stated that,

> The use of portable equipment is not required to perform the operator manual actions or to support the feasibility and reliability analyses. Although portable exhaust fans and flexible ductwork are used to remove smoke and heat after the fire is extinguished in Fire Area 27, the manual actions can be accomplished without removal of the smoke and heat. If the removal of the smoke and heat is in progress before the manual actions outside of Fire Area 27 are accomplished, the pre-planned pathway for removal will not interfere with the performance of the manual actions.

Fire Area 31

The licensee stated that the locations of the actions where operators de-energize and manually open valve CV-MOV-0112C and de-energize and manually close valve CV-MOV-0112B are in

readily accessible rooms that can be reached without re-entering Fire Area 31. The licensee further stated that the location for de-energizing the valve motor operators is in a non-radiologically controlled area and that the location for manually re-positioning the valves is in an RCA but that the RCA is a low-dose radiation area and protective clothing is not required.

With regard to smoke and products of combustion, in its letter dated February 3, 2009, the licensee stated that,

> Smoke from a fire in Fire Area 31 should not propagate in a manner that impedes performance of manual actions. Fire Area 31 is the electrical portion of the MEAB and the manual actions to operate the valves are performed in the mechanical portion of the MEAB. The location to de-energize the valve motors is several rooms away in the electrical portion of the MEAB. Fire Area 31 has doors and the majority of smoke is expected to remain within this fire area.

The licensee stated that the equipment to be manipulated during the OMA procedure is properly maintained and located several rooms away from the area in readily accessible areas free of fire damage for a fire in Fire Area 31. Additionally, adequate diagnostic indications are provided by the ionization smoke detection system, automatic suppression system as well as other control room indicators. Once a fire is detected, an alarm notifies operators locally and in the control room and an operator is dispatched to confirm the presence of fire that is likely to negatively impact the ability to maintain safe shutdown capability. The plant procedure includes a table so operators can readily determine the fire area in which a detector is alarming.

With regard to the use of portable equipment to complete the OMAs, in its letter dated February 3, 2009, the licensee stated that,

> The use of portable equipment is not required to perform the operator manual actions or to support the feasibility and reliability analyses. Although portable exhaust fans and flexible ductwork are used to remove smoke and heat after the fire is extinguished in Fire Area 31, the manual actions can be accomplished without removal of the smoke and heat. If the removal of the smoke and heat is in progress before the manual actions outside of Fire Area 31 are accomplished, the pre-planned pathway for removal will not interfere with the performance of the manual actions.

Additionally, personnel protection equipment is also not required for operators to perform the actions since there is no radiological hazard and fire-related hazards are either removed or extinguished through fire brigade operations.

3.3.2 Feasibility

Fire Area 27

The licensee's analysis demonstrates that, for the expected scenario, the OMAs to diagnose fires and execute an operator action can be achieved in 74 minutes while the time available to complete them is 120 minutes. The licensee's analysis also demonstrates that various factors,

as discussed above, have been considered to address uncertainties in estimating the time available.

Fire Area 31

The licensee's analysis demonstrates that, for the expected scenario, the OMAs to diagnose fires and execute an operator action can be achieved in 59 minutes while the time available to complete them is 120 minutes. The licensee's analysis also demonstrates that factors in NUREG-1852, as discussed above, have been considered to address uncertainties in estimating the time available.

STP has demonstrated that the OMAs included in this review are feasible because there is adequate time available for the operator to perform the required manual actions to achieve and maintain hot shutdown after a fire.

3.3.3 Reliability

Fire Area 27

The stated completion time of 74 minutes provides reasonable assurance that the OMA can reliably be performed under a wide range of conceivable conditions by different plant crews because, in conjunction with the 46-minute margin and other installed fire protection features, the completion time accounts for sources of uncertainty such as variations in fire and plant conditions, factors unable to be recreated in demonstrations and human-centered factors.

Fire Area 31

The stated completion time of 59 minutes provides reasonable assurance that the OMA can reliably be performed under a wide range of conceivable conditions by different plant crews because, in conjunction with the 61-minute margin and other installed fire protection features, the completion time accounts for sources of uncertainty such as variations in fire and plant conditions, factors unable to be recreated in demonstrations and human-centered factors.

The licensee has demonstrated the OMAs included in this review are reliable because there is adequate time available to account for uncertainties not only in estimates of the time available, but also in estimates of how long it takes to diagnose a fire and execute the OMAs (e.g., as based, at least in part, on a plant demonstration of the actions under non-fire conditions).

3.4 NRC Staff Conclusion

These amendments would allow STP to rely on OMAs, in conjunction with the other installed fire protection features, to ensure that at least one means of achieving and maintaining hot shutdown remains available during and following a postulated fire event, as part of its FPP, in lieu of meeting the requirements specified in III.G.2 for a fire in Fire Areas 27 or 31.

In summary, the defense-in-depth concept for a fire in Fire Areas 27 or 31 provides a level of safety that results in the unlikely occurrence of fires; rapid detection, control, and extinguishment of fires that do occur; and the protection of structures, systems, and

components important to safety. Based on the above, the licensee has provided preventative and protective measures in addition to feasible and reliable OMAs that together demonstrate the licensee's ability to preserve or maintain safe shutdown capability at STP in the event of a fire in Fire Areas 27 or 31. Therefore, the NRC staff concludes that the proposed changes are acceptable.

3.5 Changes to License Condition 2.E

In its letters dated February 3 and March 3, 2009, the licensee proposed to revise License Condition 2.E for both STP units. The revised license condition for STP, Unit 1, Facility Operating License No. NPF-76, which also reference the letters associated with this review, will read as follows:

E. Fire Protection

STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 55 and the Fire Hazards Analysis Report through Amendment No. 19, and submittals dated April 29, May 7, 8 and 29, June 11, 25 and 26, 1987; February 3, March 3, and November 20, 2009; January 20, 2010; and as approved in the SER (NUREG-0781) dated April 1986 and its Supplements, subject to the following provision:

STPNOC may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

The revised license condition for STP, Unit 2, Facility Operating License No. NPF-80, which also reference the letters associated with this review, will read as follows:

E. Fire Protection

STPNOC shall implement and maintain in effect all provisions of the approved fire protection program as described in the Final Safety Analysis Report through Amendment No. 62 and the Fire Hazards Analysis Report through Amendment No. 19, and submittals dated April 29, May 7, 8 and 29, June 11, 25, and 26, 1987; February 3, March 3, and November 20, 2009; January 20, 2010; and as approved in the SER (NUREG-0781) dated April 1986 and its Supplements, subject to the following provisions:

STPNOC may make changes to the approved fire protection program without prior approval of the Commission, only if those changes would not adversely affect the ability to achieve and maintain safe shutdown in the event of a fire.

In its letters dated February 3 and March 3, 2009, the licensee proposed to change the amendment number of its FHAR in License Condition 2.E because the proposed deviation to the FPP in the application will be contained within that report. The Final Safety Analysis Report is not being changed because of the deviation. The FHAR that will contain the deviation is stated to be Amendment No. 19 for both units because the FHAR applies to both units. Based on the above, the NRC staff concludes that the proposed changes to License Condition 2.E for STP, Units 1 and 2, are acceptable.

The NRC staff has reviewed these changes and concluded that they accurately describe the deviation that is being approved by these amendments. In addition, in Attachment 3 to the enclosures of its letters dated February 3 and March 3, 2009, the licensee provided the proposed changes to the FHAR. The NRC staff has reviewed the changes to the FHAR and concludes that they accurately describe the deviations that are being approved by these amendments.

4.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of Texas' 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. 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 published in the *Federal Register* on August 25, 2009 (74 FR 42929, 42930). 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 Contributors: D. Frumkin
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G. Cooper

Date: March 31, 2010

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 C. Thadani, Senior Project Manager
Plant Licensing Branch IV
Division of Operating Reactor Licensing
Office of Nuclear Reactor Regulation

Docket Nos. 50-498 and 50-499

Enclosures:
1. Amendment No. 193 to NPF-76
2. Amendment No. 181 to NPF-80
3. Safety Evaluation

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