



South Texas Project Electric Generating Station P.O. Box 289 Wadsworth, Texas 77483

December 19, 2008
NOC-AE-08002378
10 CFR 50.90
10 CFR 50.91

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
One White Flint North
11555 Rockville Pike
Rockville, MD 20852

South Texas Project
Unit 2
Docket No. STN 50-499
License Amendment Request
Proposed One-Time Exigent Change to
Technical Specification 3.7.1.7, "Main Feedwater System"

STP Nuclear Operating Company (STPNOC) is submitting the attached proposed one-time exigent change for extension to the Allowed Outage Time for Technical Specification (TS) 3.7.1.7, "Main Feedwater System". This Allowed Outage Time extension is being requested to facilitate repairs to the Unit 2 Train D Main Feedwater Isolation Valve (MFIV).

The Action Statement for Technical Specification 3.7.1.7 requires that with one MFIV inoperable in MODES 1 and 2 but open, operation may continue provided the inoperable valve is restored to OPERABLE status within 4 hours; otherwise the Unit must be placed in HOT STANDBY within the next 6 hours. There is no action required for an inoperable MFIV that is closed.

The Unit 2 Train D MFIV is operable but degraded. The degraded condition is a nitrogen leak of the tubing to the valve accumulator. Temporary repairs have been unsuccessful in stopping the leak so that operator actions are required to maintain the nitrogen accumulator pressurized for assuring valve operability. Although these actions are sufficient at the present time, it is unknown if the leak could degrade to a worse condition such that the operator actions would not be successful for maintaining operability.

A plan is ready to repair the valve and parts are available. It is expected that the repair activity will make the MFIV inoperable for a period of approximately 8 hours. Repairs can be accomplished with the valve open or shut. Repair of the valve with the valve shut requires that the plant downpower to a reactor power level of approximately 6 to 8 percent. It is desired to

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make the repairs with the valve open to prevent downpower of the Unit. The repair plan is understood and straight-forward. In order to prevent an unnecessary downpower of the Unit and to provide adequate time to address unforeseen circumstances, a one-time change to the Allowed Outage Time for one inoperable MFIV to 24 hours is requested.

Exigent approval of the proposed TS change is justified because the unsuccessful temporary repair to stop the leak could not reasonably have been foreseen or anticipated. Therefore, STPNOC requests approval of this license amendment application at the earliest possible date because the conditions of the leak could rapidly degrade to the point where a Unit shutdown would be required.

The STPNOC Plant Operations Review Committee has reviewed and concurred with the proposed change to the Technical Specifications.

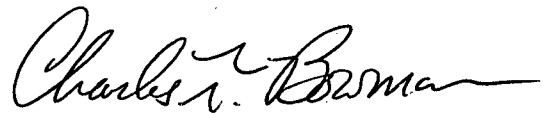
In accordance with 10 CFR 50.91(b), STPNOC is notifying the State of Texas of this request for license amendment by providing a copy of this letter and its attachments.

There are no commitments in this submittal.

If there are any questions regarding the responses, please contact Mr. A. W. Harrison at (361) 972-7298 or myself at (361) 972-7454.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 19, 2008



Charles T. Bowman
General Manager, Oversight

kjt/

Enclosure: Evaluation of the Proposed Change

cc:

(paper copy)

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ENCLOSURE

Evaluation of the Proposed Change

Subject: Proposed One-Time Exigent Change to Technical Specification 3.7.1.7, "Main Feedwater System"

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- 2.0 DETAILED DESCRIPTION
- 3.0 TECHNICAL EVALUATION
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ATTACHMENT: Technical Specification Page Markup

Evaluation of Proposed Change

1.0 Summary Description

This letter is a request to amend Operating License NPF-80 for Unit 2. The purpose of this change is to extend on a one-time basis, for an additional 20 hours, the Allowed Outage Time (AOT) for Technical Specification (TS) 3.7.1.7, "Main Feedwater System". This change would only be applicable to the Unit 2 Train D Main Feedwater Isolation Valve (MFIV).

The Unit 2 Train D MFIV is operable but degraded. The degraded condition is a nitrogen leak of the tubing to the valve accumulator that was discovered on November 24, 2008. The leak rate has progressively increased. Temporary repairs have been unsuccessful in stopping the leak so that operator actions are required for assuring the nitrogen accumulator stays pressurized for maintaining valve operability. Although these actions are sufficient at the present time, it is unknown if the leak could degrade to a worse condition such that the operator actions would not be successful for maintaining operability. Therefore, a condition could rapidly develop that would require a plant shutdown.

The plan is to permanently repair the MFIV by replacing the leaking nitrogen supply line tubing and fittings. The plan is ready for repair of the valve and parts are available. It is expected that the repair activity will make the MFIV inoperable for a period of approximately 8 hours. Repairs can be accomplished with the valve open or shut. Repair of the valve with the valve shut requires a downpower of the plant to a reactor power level of approximately 6 to 8 percent. It is desired to make the repairs with the valve open to prevent a downpower of the Unit. The repair plan is understood and straight-forward. In order to prevent an unnecessary downpower of the Unit and to provide adequate time to address unforeseen circumstances, a one-time change to the Allowed Outage Time for one inoperable MFIV to 24 hours is requested.

The degraded condition of the MFIV and the inability to complete a temporary repair to stop the leak could not reasonably have been foreseen or anticipated. Therefore, STPNOC requests approval of this license amendment application at the earliest possible date because the conditions of the leak could rapidly degrade to the point where a Unit shutdown would be required.

2.0 Detailed Description

STPNOC proposes, on a one-time basis, to change the ACTION requirement for TS 3.7.1.7 in MODES 1 and 2 by adding a note as follows.

“ACTION:

MODES 1 and 2: With one MFIV inoperable but open, operation may continue provided the inoperable valve is restored to OPERABLE status within 4 hours; otherwise be in HOT STANDBY within the next 6 hours¹.”

“¹ On a one-time basis, with the Unit 2 Train D MFIV inoperable but open, operation may continue provided the inoperable valve is restored to OPERABLE status within 24 hours; otherwise be in HOT STANDBY within the next 6 hours. This note expires 30 days after approval of the licensee amendment that approved this change.”

The TS markup is provided in the Attachment to this Enclosure. The TS Bases should not require revision since the change is self-explanatory.

The degraded condition for the 2D MFIV is a nitrogen leak of the tubing to the valve accumulator that was discovered on November 24, 2008. Nitrogen pressure is used to rapidly close the MFIV in response to a feedwater isolation actuation signal. A minimum nitrogen pressure is required to be maintained to ensure the valve closes to meet the response time assumed in the safety analysis. Nitrogen pressure is currently decreasing at a rate that requires personnel to be stationed at the valve to recharge the accumulator approximately every 2 to 3 hours.

The nitrogen leak is a tubing leak on the supply line fitting closest to the nitrogen accumulator. The tubing leak is a Parker ½-inch flexible tubing fitting. Visual inspection indicated that the tubing had full thread engagement. The cause of the leak appears to be the result of applied force on the hard tubing portion of the flexible tubing that resulted in a ferrule leak.

A temporary repair consisting of clamping an enclosure around the source of the leak and injecting sealant was chosen because this repair method has been successful in the past for similar conditions. The temporary repair was unsuccessful and the leak has increased. It has been determined that the only option for stopping the leak is to remove the temporary enclosure, bleed nitrogen pressure off of the valve, and replace the supply line tubing and fittings. This activity will result in making the MFIV inoperable.

The repair can be completed with the valve open or shut. In order to shut the valve, reactor power must be decreased to a level of approximately 6 to 8 percent. Controlling reactor power in this band presents challenges to operators because of the narrow band and this is not a condition that operators normally maintain the plant in for an extended period of time.

Therefore, it is desired to repair the valve with it open. This will allow the plant to remain at full power. The repair activity will make the MFIV inoperable and result in an

entry into the 4 hour TS ACTION. The entire repair activity is expected to require 8 hours. An additional 20 hours requested beyond the current AOT is to allow for unforeseen circumstances because this type of repair activity has not previously been attempted.

Approval of this TS change will allow restoration of the valve to its designed condition without the existence of a degraded condition that could lead to an unnecessary down power of the Unit.

3.0 Technical Evaluation

The feedwater isolation valves are opened by hydraulic oil pressure and closed by nitrogen gas pressure. To close the feedwater isolation valve, two redundant solenoid valves energize to open and dump the oil under the operating piston to the hydraulic fluid reservoir. The nitrogen pressure above the operating piston will move the operating piston down closing the feedwater isolation valve. The feedwater isolation valve will fail open on loss of nitrogen pressure.

A feedwater isolation signal prevents excessive cooldown of the Reactor Coolant System (RCS) following a reactor trip, prevents normal feedwater addition on a Safety Injection signal, and protects the main steam lines and turbine against water injection due to high steam generator level. The feedwater isolation signal also prevents containment over-pressurization following a steam line or feedwater line break inside containment. A feedwater isolation signal results in closing all four feedwater isolation valves.

The OPERABILITY of the feedwater isolation valves ensures that no more than one steam generator will blow down in the event of a steam line or feedwater line rupture. The operability of the feedwater isolation valves will minimize the positive reactivity effects of the Reactor Coolant System cool down associated with the blowdown, and limit the pressure rise within containment. The OPERABILITY of the feedwater isolation valves within the closure times of the Surveillance Requirements are consistent with the assumptions used in the safety analysis.

TS 3.7.1.7 currently provides a 4-hour action allowed outage time for one inoperable MFIV in the open position. The NUREG-1431 (ITS) (Reference 6.1) version of the main feedwater isolation valve specification provides an action completion time of 72 hours for this condition. The ITS Bases indicates that the 72-hour completion time for the MFIVs takes into account the redundancy afforded by the feedwater regulating valves and the low probability of an event occurring during this time period that would require isolation of the main feedwater flow paths. The 72-hour MFIV action AOT time is reasonable based on operating experience.

The Main Feedwater Isolation Valves isolate main feedwater flow to the secondary side of the steam generators following a high energy line break (HELB). Each MFIV has a bypass valve. In addition, the Main Feedwater Regulating Valves (MFRV) and their

associated bypass valves provide backup isolation of main feedwater flow to the secondary side of the steam generators following a HELB. A feedwater isolation signal causes closure of the MFIVs, their bypass valves, the MFRVs and their bypass valves. The Main Feedwater Regulating Valves are not full safety grade but are designed as highly reliable backups to the MFIVs. This licensing basis is reflected in Updated Final Safety Analysis Report Section 6.2.1. The NRC found this to be generically acceptable for pressurized water reactors in NUREG-0138 (Reference 6.2). Closure of the MFIV and associated bypass valves or main feedwater regulating valves and associated bypass valves isolates flow to the steam generators, terminating the event for feedwater line breaks occurring upstream of the MFIVs or feedwater regulating valves. The consequences of events occurring in the main steam lines or in the main feedwater lines downstream from the MFIV will be mitigated by their closure. Closure of the MFIV and associated bypass valves, or feedwater regulating valves and associated bypass valves, effectively terminates the addition of feedwater to an affected steam generator, limiting the mass and energy release for steam line breaks or feedwater line breaks inside containment, and reducing the cooldown effects for steam line breaks. Each MFIV, MFIV bypass valve, MFRV and bypass valve for each MFRV close upon receipt of a feedwater isolation signal.

This change does not affect the design function of the valve or the method of performing the design function. The conclusions of the accident analyses are not affected by this change because the accident analyses accounts for the failure of one MFIV to close upon a feedwater isolation signal. An additional failure of a MFIV does not have to be assumed when in a TS ACTION.

This change is more conservative than that allowed by ITS. This change is only for a 24 hour period of inoperability versus 72 hours allowed by ITS. The allowed outage requested can only be used one-time and there is a limit on the period of time when the allowed outage can be used.

The MFRVs, while not credited to perform the nuclear safety function for the events requiring feedwater isolation, are nevertheless expected to be available as non-safety grade backups to the MFIVs. Therefore, a 24 hour allowed outage time for an inoperable 2D MFIV is reasonable based on the redundancy afforded by the feedwater regulating valves and the low probability of an event occurring during the time period requested that would require isolation of the main feedwater flow paths.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10CFR50, Appendix A, General Design Criteria (GDC) 4, "Structures, systems, and components important to safety shall be designed to accommodate the effects of and to be compatible with the environmental conditions associated with normal operation, maintenance, testing, and postulated accidents, including loss of coolant accidents. These

structures, systems, and components shall be appropriately protected against dynamic effects, including the effects of missiles, pipe whipping, and discharging fluids, that may result from equipment failures and from events and conditions outside the nuclear power unit. However, dynamic effects associated with postulated pipe ruptures in nuclear power units may be excluded from the design basis when analyses reviewed and approved by the Commission demonstrate that the probability of fluid system piping rupture is extremely low under conditions consistent with the design basis for the piping.”

GDC 16, “Reactor containment and associated systems shall be provided to establish an essentially leak-tight barrier against the uncontrolled release of radioactivity to the environment and to assure that the containment design conditions important to safety are not exceeded for as long as the postulated accident conditions require.”

GDC 50, “The reactor containment structure, including access openings, penetrations, and the containment heat removal system shall be designed so that the containment structure and its internal compartments can accommodate, without exceeding the design leakage rate and, with sufficient margin, the calculated pressure and temperature conditions resulting from any loss-of-coolant accident. This margin shall reflect consideration of (1) the effects of potential energy sources which have not been included in the determination of the peak conditions, such as energy in steam generators and energy from metal water and other chemical reactions that may result from degraded emergency core cooling functioning, (2) the limited experience and experimental data available for defining accident phenomena and containment responses, and (3) the conservatism of the calculational model and input parameters.”

GDC 53, “The reactor containment shall be designed to permit (1) appropriate periodic inspection of all important areas, such as penetrations, (2) an appropriate surveillance program, and (3) periodic testing at containment design pressure of the leaktightness of penetrations which have resilient seals and expansion bellows.”

GDC 54, “Piping systems penetrating primary reactor containment shall be provided with leak detection, isolation, and containment capabilities having redundancy, reliability, and performance capabilities which reflect the importance to safety of isolating these piping systems. Such piping systems shall be designed with a capability to test periodically the operability of the isolation valves and associated apparatus and to determine if valve leakage is within acceptable limits.”

GDC 57, “Each line that penetrates primary reactor containment and is neither part of the reactor coolant pressure boundary nor connected directly to the containment atmosphere shall have at least one containment isolation valve which shall be either automatic, or locked closed, or capable of remote manual operation. This valve shall be outside the containment and located as close to the containment as practical. A simple check valve may not be used as the automatic isolation valve.”

NRC Regulatory Guide (RG) 1.22 provides guidance for ensuring the adequacy of protection system actuation functions through periodic testing.

4.2 Precedent

As described in the evaluation above, precedent for an allowed outage time up to 72 hours is established in NUREG-1431, "Standard Technical Specifications – Westinghouse Plants".

STPNOC submitted a license amendment request to extend the allowed outage time for an open and inoperable MFIV to 72 hours based on NUREG-1431 on May 23, 2002 (Reference 6.3). Subsequently on June 17, 2003 (Reference 6.4), STPNOC withdrew the application because plans had changed to submit a new risk-informed amendment request. TS 3.7.17 was not included as part of the Risk-Managed Technical Specification amendment approved on July 13, 2007 because the MFIV is not modeled in the Probabilistic Risk Assessment. STP is looking at the feasibility of risk-informing this TS in order to allow increased allowed outage times. This would permanently resolve providing the time to address the condition that is the subject of this request.

4.3 Significant Hazards Consideration

STP has evaluated whether a significant hazards consideration is involved with the proposed amendments by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response:

No. The proposed change extends the action completion time for Unit 2 Train D MFIV from 4 hours to 24 hours. Extending the completion time is not an accident initiator and thus does not change the probability that an accident will occur. However, it could potentially affect the consequences of an accident if an accident occurred during the extended unavailability of the inoperable MFIV. The increase in time that the MFIV is unavailable is small and the probability of an event occurring during this time period, which would require isolation of the main feedwater flow paths, is low.

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

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

Response:

No. The proposed change does not involve any physical alteration of plant equipment and does not change the method by which any safety-related structure, system, or

component performs its function or is tested. Closure of the MFIVs is required to mitigate the consequences of the Main Steam Line Break and Main Feedwater Line Break accidents.

Therefore, the proposed change will not create the possibility of a new or different kind of accident from any accident previously evaluated.

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

Response:

No. The proposed change does not adversely affect existing plant safety margins or the reliability of the equipment assumed to operate in the safety analysis. There are no changes being made to safety analysis assumptions, safety limits or safety system settings that would adversely affect plant safety as a result of the proposed change.

Therefore, the proposed change does not involve a significant reduction in a margin of safety.

Based on the above, STP concludes that the proposed amendment presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and accordingly, a finding of "no significant hazards consideration" is justified.

4.4 Conclusions

Based on the considerations discussed above, (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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed amendment would change a requirement with respect to installation or use of a facility component located within the restricted area, as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed amendment does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c) (9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement, or environmental assessment need be prepared in connection with the proposed amendment.

6.0 REFERENCES

- 6.1 NRC NUREG-1431, "Standard Technical Specifications for Westinghouse Plants"
- 6.2 NUREG-0138, Staff Discussion of Fifteen Technical Issues listed in attachment to November 3, 1976 memorandum from Director, NRR to NRR staff
- 6.3 Letter from J. J. Sheppard, STPNOC, to the NRC Document Control Desk, dated May 23, 2002, "License Amendment Request Proposed Changes to Technical Specifications 3.7.1.5 and 3.7.1.7," (NOC-AE-02001333) (ML021540295)
- 6.4 Letter from Scott M. Head, STPNOC, to the NRC Document Control Desk, dated June 17, 2003 "Withdrawal of Proposed Amendment to Technical Specifications 3.7.1.5 and 3.7.1.7," (NOC-AE-03001554) (ML032020205)

ENCLOSURE, ATTACHMENT
Technical Specification Page Markups

One page

PLANT SYSTEMS

MAIN FEEDWATER SYSTEM

LIMITING CONDITION FOR OPERATION

3.7.1.7 Each main feedwater isolation valve (MFIV) shall be OPERABLE.

APPLICABILITY: MODES 1, 2, and 3.

ACTION:

MODES 1 and 2: With one MFIV inoperable but open, operation may continue provided the inoperable valve is restored to OPERABLE status within 4 hours; otherwise be in HOT STANDBY within the next 6 hours¹.

MODE 3: With one MFIV inoperable, subsequent operation in MODE 3 may proceed provided the isolation valve is maintained closed. Otherwise, be in HOT SHUTDOWN within the next 6 hours.

SURVEILLANCE REQUIREMENTS

4.7.1.7 Each MFIV shall be demonstrated OPERABLE by verifying full closure within 10 seconds when tested pursuant to Specification 4.0.5. The provisions of specification 4.0.4 are not applicable for entry into MODE 3.

“1 On a one-time basis, with the Unit 2 Train D MFIV inoperable but open, operation may continue provided the inoperable valve is restored to OPERABLE status within 24 hours; otherwise be in HOT STANDBY within the next 6 hours. This note expires 30 days after approval of the licensee amendment that approved this change.”