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December 30, 2005

U.S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555-0001

**Subject: License Amendment Request To Establish a Combined Main Steam Line Leakage Rate Technical Specification
Cooper Nuclear Station, Docket No. 50-298, DPR-46**

The purpose of this letter is for the Nebraska Public Power District (NPPD) to request Nuclear Regulatory Commission (NRC) approval to establish a combined Main Steam line leakage rate in the Cooper Nuclear Station (CNS) Technical Specifications (TS). This aggregate allowable leakage rate will replace the current individual Main Steam Isolation Valve (MSIV) leakage rate contained in TS Surveillance Requirement (SR) 3.6.1.3.10.

The Loss-of-Coolant Accident (LOCA) analysis is the only CNS design basis accident for which the TS MSIV leakage rate is an input. That analysis assumes the MSIVs leak at their TS leakage rate, thus providing an aggregate input into the dose calculation. This License Amendment Request will maintain TS controls over MSIV leakage that are consistent with that aggregate amount, rather than on an individual MSIV basis. NRC approval is requested by September 15, 2006, with a 30-day implementation period. This requested approval date is in support of Refueling Outage 23, which is scheduled to begin in October 2006. The NRC has previously approved an amendment to the Technical Specifications for the James A. FitzPatrick Nuclear Power Plant, Amendment 275 to License No. DPR-59, that allows use of a combined Main Steam line leakage rate limit.

Attachment 1 provides a description of the License Amendment Request, the basis for the amendment, the No Significant Hazards Consideration evaluation pursuant to 10 CFR 50.91(a)(1), and the environmental impact evaluation pursuant to 10 CFR 51.22. Attachment 2 provides the proposed changes to the current CNS TS on marked up pages. Attachment 3 provides the revised TS pages in final typed format. Attachment 4 provides the corresponding changes to the current Bases on marked up pages for your information.

These proposed TS changes have been reviewed by the necessary safety review committees (Station Operations Review Committee and Safety Review and Audit Board). Amendments to the CNS Facility Operating License through Amendment 214 issued December 15, 2005, have been incorporated into this request. NPPD has concluded that the proposed changes do not

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involve a significant hazards consideration and that they satisfy the categorical exclusion criteria of 10 CFR 51.22(c)(9). This request is submitted under oath pursuant to 10 CFR 50.30(b). By copy of this letter and its attachments, the appropriate State of Nebraska official is notified in accordance with 10 CFR 50.91(b)(1). Copies to the NRC Region IV office and the CNS Resident Inspector are also being provided in accordance with 10 CFR 50.4(b)(1).

Should you have any questions concerning this matter, please contact Paul Fleming, Licensing Manager, at (402) 825-2774.

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

Executed on 12/30/05
(Date)

Sincerely,



Stewart B. Minahan
General Manager of Plant Operations

/wv

Attachments

cc: Regional Administrator w/attachments
USNRC - Region IV

Senior Project Manager w/attachments
USNRC - NRR Project Directorate IV-1

Senior Resident Inspector w/attachments
USNRC - CNS

Nebraska Health and Human Services w/attachments
Department of Regulation and Licensure

NPG Distribution w/o attachments

CNS Records w/attachments

ATTACHMENT 1

**License Amendment Request To Establish a Combined
Main Steam Line Leakage Rate Technical Specification**

Cooper Nuclear Station, Docket 50-298, DPR-46

Revised TS Page

3.6-14

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**LICENSE AMENDMENT REQUEST TO
ESTABLISH A COMBINED MAIN STEAM LINE
LEAKAGE RATE TECHNICAL SPECIFICATION**

1.0 DESCRIPTION

This letter is a request to amend Operating License DPR-46 for Cooper Nuclear Station (CNS).

The proposed change to the CNS Technical Specifications (TS) establishes a combined leakage rate limit for the sum of the four Main Steam line leakage rates that is equal to four times the current individual Main Steam Isolation Valve (MSIV) leakage rate limit.

The implementation of these changes will help reduce the duration and radiation dose for planned outages without any reduction in safety margin. Under the current TS, a single MSIV whose as-found testing nominally exceeds the existing 11.5 standard cubic feet per hour (scfh) leakage limit will require valve maintenance to restore compliance with the TS prior to startup, even though the combined leakage is within 46 scfh. Such unscheduled emergent maintenance during an outage may result in unnecessary worker radiation dose. Under the proposed TS, this valve maintenance could be planned for a subsequent outage in a manner that is more appropriate from an ALARA perspective, provided the combined Main Steam line leakage was not exceeded.

Nuclear Regulatory Commission (NRC) approval is requested by September 15, 2006, with a 30-day implementation period. This is to support utilization of this License Amendment Request for Refueling Outage 23, which is scheduled to begin in October 2006.

2.0 PROPOSED CHANGE

The following TS change is proposed:

TS Surveillance Requirement (SR) 3.6.1.3.10 will be modified to reflect a combined total Main Steam line leakage rate limit (see Attachments 2 and 3):

“Verify combined main steam line leakage rate is ≤ 46 scfh when tested ≥ 29 psig.”

Approval of this License Amendment Request will result in the necessary revisions to the associated TS Bases in accordance with TS 5.5.10 (Technical Specifications Bases Control Program). The implementing TS Bases change is provided for information in Attachment 4 of this submittal.

3.0 BACKGROUND

The Loss-of-Coolant Accident (LOCA) dose calculation models a release pathway via the Main Steam system from Primary Containment to the Main Condenser, with release to the

environment from the Turbine Building. As described in Chapter XIV of the Updated Safety Analysis Report (USAR), the LOCA is the only analyzed accident for which TS-controlled MSIV leakage is an input. The LOCA analysis assumes a combined leakage rate of 46 scfh. The purpose of the proposed amendment is therefore to preserve the TS alignment of the Main Steam line allowable leakage with the LOCA licensing and design basis, without the unnecessary restriction of an individual MSIV leakage rate limit. Reference 7.2-1 provides the most recent precedent that is applicable to this License Amendment Request.

4.0 TECHNICAL ANALYSIS

The Nebraska Public Power District proposes to revise TS SR 3.6.1.3.10. Specifically, this change will establish a total leakage rate limit for the sum of the four Main Steam lines of 46 scfh, which is equal to four times the current individual MSIV leakage rate limit of 11.5 scfh.

The Cooper Nuclear Station Primary Containment system (BWR Mark 1) consists of a drywell, which encloses the reactor vessel and recirculation pumps, a pressure suppression chamber which stores a large amount of water, a connecting vent system between the drywell and the suppression chamber, and isolation valves. The four Main Steam lines that penetrate the Primary Containment boundary each have two 24-inch diameter isolation valves installed in series for a total of eight valves. The MSIVs prevent damage to the fuel barrier by limiting the loss of reactor coolant and limit release of radioactive materials by maintaining the Primary Containment barrier. After exiting Secondary Containment, the four Main Steam lines connect with a common equalizing header. The seismically analyzed Main Steam piping from the MSIVs to the Main Condenser is referred to as the Alternative Leakage Treatment pathway.

The basis for controlling MSIV leakage is to ensure the direct release of fission products from the Primary Containment to the environment via the Main Steam lines during the LOCA is within analyzed limits. Permanent approval of the LOCA dose consequences analysis was approved by the NRC in License Amendment 206 (Reference 7.1-1). MSIV leakage has a nexus to safety in two respects for this event. First, the LOCA assumes the inboard and outboard MSIVs on each of the four Main Steam lines leak at their TS leak rate of 11.5 scfh, for a total Main Steam line leakage of 46 scfh to the Main Condenser. With the proposed TS change, the leakage of the MSIVs on one Main Steam line may be as high as 46 scfh, with no leakage in the remaining three Main Steam lines. Once the leakage has migrated to the equalizing header, the individual leakage contributions of the four Main Steam lines are combined and they lose their identity. Prior to the equalizing header, a higher leakage in one Main Steam line could affect iodine deposition on the horizontal runs of the line. However, the CNS LOCA analysis takes no credit for iodine deposition on the Main Steam piping. Therefore, increasing leakage in one Main Steam line (and corresponding reduction in the others) will have no effect on the dose consequences. Second, License Amendment 206 approved certain manual actions to configure the seismically analyzed Alternative Leakage Treatment pathway. One of the key bases for NRC acceptance of these actions was that these actions could be performed before MSIV leakage migration along the Main Steam piping could pose a radiological concern to station personnel performing the evolution. For this License Amendment Request, the MSIV leakage migration

was reevaluated in a more precise manner, taking into consideration the potential for a higher MSIV leakage value in one line. Although there will be some increased dose to station personnel performing certain parts of the configuration, it was determined that the entire evolution will still be completed before local radiological conditions would become a concern. The required completion time was reduced for configuring certain valves (30 hours to 7.5 hours), but the actual time needed to perform this aspect of the evolution remains well within this time frame. This methodology revision with its effect on resultant mission times and local dose effects has been reviewed under the provisions of 10 CFR 50.59, and NRC approval is not requested as part of this application.

The proposed change has no adverse effect on CNS compliance to 10 CFR 50 Appendix J, as discussed in Section 5.2. The practical effect is that Appendix J Type C testing operability leakage limits for the inboard and outboard MSIVs on a single Main Steam line would increase from 11.5 scfh to 46 scfh (assuming that the leakage from the remaining six MSIVs on the other three Main Steam lines was zero). The acceptability of increased MSIV leakage was addressed generically in Boiling Water Reactor Owners' Group (BWROG) topical report NEDC-31858P, Revision 2, "BWROG Report For Increasing MSIV Leakage Rate Limits and Elimination of Leakage Control Systems," dated September 1993. In this report, the BWROG specifies that increasing MSIV leakage up to as high as 200 scfh per valve would not inhibit the valves' ability to perform their isolation safety function. In the Safety Evaluation on the BWROG topical report, dated March 3, 1999, the NRC staff accepted the topical report as a basis for increasing allowable MSIV leakage. (Refer to Reference 7.1-2 which contains both the BWROG topical report and NRC Safety Evaluation). Therefore, allowing an MSIV to leak up to 46 scfh is not considered to be a precursor to valve failure.

5.0 REGULATORY SAFETY ANALYSIS

5.1 No Significant Hazards Consideration

In accordance with 10 CFR 50.92, a proposed change to the operating facility involves no "significant hazards" if operation of the facility, in accordance with the proposed change, would not 1) involve a significant increase in the probability or consequences of any accident previously evaluated, 2) create the possibility of a new or different kind of accident from any accident previously evaluated, or 3) involve a significant reduction in a margin of safety.

The Nebraska Public Power District (NPPD) has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

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

Response: No

The proposed amendment does not involve a change to structures, systems, or components that would affect the probability of an accident previously evaluated in the Cooper Nuclear Station (CNS) Updated Safety Analysis Report (USAR). The proposed amendment results in no change in the radiological consequences of the design basis Loss-of-Coolant Accident (LOCA) as currently analyzed for CNS. That analysis was calculated for a combined Main Steam Isolation Valve (MSIV) leakage for determining acceptance to the regulatory limits for the offsite and Control Room radiation doses, as contained in 10 CFR 100 and 10 CFR 50 Appendix A, General Design Criterion (GDC) 19. The aggregate Main Steam line leakage rate limit has no adverse effect on the environmental qualification of equipment important to safety, as provided for in 10 CFR 50.49.

Based on the above conclusions, this proposed amendment does not involve a significant increase in the probability or consequences of an accident previously evaluated.

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

Response: No

The proposed change does not modify the MSIVs or any other plant system or structure associated with this amendment and therefore, will not affect their capability to perform their design function. The combined total Main Steam line leakage rate is included in the current radiological analyses for the assessment of radiation exposure following an accident. This License Amendment Request revises the allowable leakage rate from a per valve limit to a total combined leakage rate limit for all four Main Steam lines but does not change the cumulative limit.

Therefore, the proposed changes do not create the possibility of a new or different kind of accident from any previously analyzed.

3. Do the proposed changes involve a significant reduction in the margin of safety?

Response: No

The leakage rate limit specified for the MSIVs is used to quantify the maximum amount of Secondary Containment bypass leakage assumed in the LOCA radiological analysis. Results of the analysis are evaluated against the dose limits contained in 10 CFR 50 Appendix A GDC 19 and 10 CFR 100. The margin of safety in this context is considered to be the difference between the calculated dose exposures and the limits provided by GDC 19 and 10 CFR 100.

Therefore, since the proposed combined Main Steam line leakage rate limit is unchanged from the assumed maximum leakage rate for MSIVs, for the purpose of calculating

potential radiation dose, the margin of safety is not affected because the postulated radiation doses remain the same.

Based on the above, NPPD 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.

5.2 Applicable Regulatory Requirements/Criteria

The construction of CNS predated the 1971 issuance of 10 CFR 50 Appendix A, "General Design Criteria for Nuclear Power Plants." CNS is designed to be in conformance with the intent of the Draft GDCs, published in the Federal Register on July 11, 1967, except where commitments have been made to specific 1971 GDCs. There is one Draft GDC and one 1971 GDC that are specifically applicable to this License Amendment Request:

Draft GDC 57 - Provisions for Testing of Isolation Valves

"Capability shall be provided for testing functional operability of valves and associated apparatus essential to the containment function for establishing that no failure has occurred and for determining that valve leakage does not exceed acceptable limits."

Establishing an aggregate Main Steam line leakage rate limit in lieu of individual MSIV leakage rate limits in the Technical Specifications does not affect CNS conformance to this Draft GDC. Leak rate testing will still provide assurance that valve leakage does not exceed acceptable limits.

1971 GDC 19 - Control Room

NPPD is committed to the provisions of 1971 GDC 19 relating to radiological exposures to Control Room personnel. This License Amendment Request does not affect the fundamental LOCA analytical assumption of a combined MSIV leakage rate of 46 scfh migrating to the Main Condenser. Accordingly, there is no affect on the calculated LOCA dose results to Control Room occupants.

Other regulatory requirements have been considered as discussed below:

10 CFR 50.49

The allowance of increased MSIV leakage of up to 46 scfh in one Main Steam line has no adverse effect on the environmental qualification (EQ) of electrical equipment important to safety that is in the vicinity of that leakage pathway. The EQ radiation dose calculation uses the total 46 scfh to model the radioactive material transport, and is insensitive as to which Main Steam line contains the leakage.

10 CFR 50 Appendix J

10 CFR 50 Appendix J requires that periodic Type C local leakage rate testing be performed on the MSIVs to verify that any leakage past them would be less than the allowable limit. Type C leak rate testing of the MSIVs is performed in accordance with the requirements of 10 CFR 50 Appendix J (as modified by approved exemptions). CNS has an exemption which allows MSIV Type C testing at 29 psig rather than P_a . This License Amendment Request does not invalidate the bases relied on by the NRC in granting that exemption.

10 CFR 100

This License Amendment Request does not affect the fundamental LOCA analytical assumption of a combined MSIV leakage rate of 46 scfh migrating to the Main Condenser. Accordingly, there is no affect on the calculated LOCA dose results to members of the public located at the Exclusion Area Boundary or Low Population Zone.

5.3 Summary

In conclusion, 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.

6.0 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. 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 effluent 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.

7.0 REFERENCES

7.1 General References

1. Letter from M. Honcharik (NRC) to R. Edington (NPPD), dated September 1, 2004, "Cooper Nuclear Station (CNS) – Issuance of Amendment On Loss-of-Coolant Accident (LOCA) Dose Methodology and Resolution of Remaining License Condition 2.C.(6) Issues (TAC No. MC1572)."

2. NEDC-31858P-A, "BWROG Report for Increasing MSIV Leakage Rate Limits and Elimination of Leakage Control Systems," August 1999.

7.2 Precedent

There are several NRC-approved precedents for replacing the individual MSIV leakage rate TS limits with a combined Main Steam line leakage rate limit. The following example is the most recently approved License Amendment of this kind for a BWR of similar design to CNS, and was used in the development of this License Amendment Request.

1. Letter from G. Vissing (NRC) to M. Kansler (Entergy Nuclear Operations), dated August 13, 2002, "James A. Fitzpatrick Nuclear Power Plant – Amendment Re: Changes to the Technical Specification Leakage Limit For the Main Steam Isolation Valves From an Individual to an Aggregate Limit (TAC No. MB3333)."

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Attachment 2

ATTACHMENT 2

**Proposed Technical Specifications
Markup Format**

Cooper Nuclear Station, Docket 50-298, DPR-46

Listing of Revised Pages

TS Pages

3.6-14

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.6	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.7	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	18 months
SR 3.6.1.3.8	Verify a representative sample of reactor instrumentation line EFCVs actuate to the isolation position on an actual or simulated instrument line break.	18 months
SR 3.6.1.3.9	Remove and test the explosive squib from each shear isolation valve of the TIP System.	18 months on a STAGGERED TEST BASIS
SR 3.6.1.3.10	Verify leakage rate through each MSIV is <u>≤ 11.5 combined main steam line leakage rate is ≤ 46 scfh when tested at ≥ 29 psig.</u>	In accordance with the Primary Containment Leakage Rate Testing Program

(continued)

ATTACHMENT 3

**Proposed Technical Specifications
Final Typed Format**

Cooper Nuclear Station, Docket 50-298, DPR-46

Listing of Revised Pages

TS Pages

3.6-14

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE		FREQUENCY
SR 3.6.1.3.6	Verify the isolation time of each MSIV is ≥ 3 seconds and ≤ 5 seconds.	In accordance with the Inservice Testing Program
SR 3.6.1.3.7	Verify each automatic PCIV actuates to the isolation position on an actual or simulated isolation signal.	18 months
SR 3.6.1.3.8	Verify a representative sample of reactor instrumentation line EFCVs actuate to the isolation position on an actual or simulated instrument line break.	18 months
SR 3.6.1.3.9	Remove and test the explosive squib from each shear isolation valve of the TIP System.	18 months on a STAGGERED TEST BASIS
SR 3.6.1.3.10	Verify combined main steam line leakage rate is ≤ 46 scfh when tested at ≥ 29 psig.	In accordance with the Primary Containment Leakage Rate Testing Program

(continued)

ATTACHMENT 4

**Proposed Technical Specifications Bases Revisions
Markup Format**

Cooper Nuclear Station, Docket 50-298, DPR-46

Listing of Revised Pages

TS Bases Pages

B 3.6-28

BASES

SURVEILLANCE
REQUIREMENTS
(continued)SR 3.6.1.3.9

The TIP shear isolation valves are actuated by explosive charges. An in place functional test is not possible with this design. The explosive squib is removed and tested to provide assurance that the valves will actuate when required. The replacement charge for the explosive squib shall be from the same manufactured batch as the one fired or from another batch that has been certified by having one of the batch successfully fired. The Frequency of 18 months on a STAGGERED TEST BASIS is considered adequate given the administrative controls on replacement charges and the frequent checks of circuit continuity (SR 3.6.1.3.4).

SR 3.6.1.3.10

The analyses in References 8 and 9 are based on leakage that is less than the specified leakage rate. ~~Leakage through each MSIV~~ The combined main steam line leakage rate must be ≤ 41.5 46 scfh when tested at $\geq P_t$ (29 psig). The Frequency is required by the Primary Containment Leakage Rate Testing Program.

SR 3.6.1.3.11

Verifying each inboard 24 inch primary containment purge and vent valve (PC-230 MV, PC-231 MV, PC-232 MV, and PC-233 MV) is blocked to restrict the maximum opening angle to 60° is required to ensure that the valves can close under DBA conditions within the times assumed in the analysis of References 7 and 8. If a LOCA occurs, the purge and vent valves must close to maintain containment leakage within the values assumed in the accident analysis. At other times, pressurization concerns are not present, thus the purge valves can be fully open. The 18 month Frequency is appropriate because the blocking devices may be removed during a refueling outage.

(continued)

