July 19, 2002

Mr. David L. Wilson
Vice President of Nuclear Energy
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT RE: CONTAINMENT OVERPRESSURE TO ENSURE SUFFICIENT NET POSITIVE SUCTION HEAD (NPSH) FOR THE EMERGENCY CORE COOLING SYSTEM (ECCS) PUMPS FOLLOWING A LOSS-OF-COOLANT ACCIDENT (LOCA) (TAC NO. MB2896)

Dear Mr. Wilson:

The Commission has issued the enclosed Amendment No. 192 to Facility Operating License No. DPR-46 for the Cooper Nuclear Station (CNS). The amendment consists of changes to the CNS's licensing basis.

By letter dated July 30, 2001, as supplemented by letter dated August 23, 2001, Nebraska Public Power District (NPPD), the licensee, requested a change to the CNS licensing basis. The requested change involves the use of containment overpressure to ensure sufficient NPSH for the ECCS pumps following a loss-of-coolant accident (LOCA). The licensee also requested U. S. Nuclear Regulatory Commission (NRC) approval to use a spatial evaluation to allow the elimination of the local suppression pool temperature limits.

By letter dated July 3, 2002, the licensee requested emergency processing of the proposed amendment request submitted on July 30, 2001. The licensee provided the following rationale for its request for emergency processing.

The proposed amendment supports a subsequent amendment request dated May 20, 2002, to increase the CNS's Technical Specifications (TSs) ultimate heat sink (UHS) temperature limit and reactor equipment cooling (REC) water temperature limit from 90 to 95° F and 95 to 100° F, respectively. The licensee stated that there is an emergency situation at CNS related to UHS and REC temperatures. The situation satisfies the criteria for an emergency as outlined in 50.91(a)(5) of Title 10 of the *Code of Federal Regulations* (10 CFR). The emergency situation is caused by an environmental factor (temperature of the Missouri River) which is beyond the control of NPPD. The licensee concluded that the combination of natural phenomena and the standard regulatory process (30-day public comment period for the NPSH amendment) could result in an unwarranted plant shutdown specified in the TS.

The NRC staff evaluated the licencee's rationale against 10 CFR 50.91(a)(5). That regulation requires licensees to "explain why the emergency situation occurred and why it could not avoid the situation." The licensee's letter of July 3, 2002, did not address why the emergency could not be avoided. Therefore, the NRC staff determined not to act on the licensee's request pursuant to 10 CFR 50.91(a)(5).

However, the NRC staff determined that for safe continued operation of CNS, the licensee and the Commission must act quickly, and the time does not permit the Commission to wait for the 30 day period for prior public comment. Accordingly, the staff has processed the two amendments concerned on an exigent basis as outlined in 10 CFR 50.91(a)(6).

Since a notice of no significant hazards consideration determination for the NPSH amendment was initially published in the *Federal Register* on June 25, 2002 (67 FR 42828), the exigency requirement of 14 days of prior public comment was satisfied prior to issuance of this amendment.

A copy of our related safety evaluation is also enclosed. The Notice of Issuance is being published in the *Federal Register.*

Sincerely,

/RA/

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

Docket No. 50-298

Enclosures: 1. Amendment No. 192 to DPR-46
2. Safety Evaluation

cc w/encls: See next page

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Since a notice of no significant hazards consideration determination for the NPSH amendment was initially published in the *Federal Register* on June 25, 2002 (67 FR 42828), the exigency requirement of 14 days of prior public comment was satisfied prior to issuance of this amendment.

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ACCESSION NO.: ML022060256

OFFICE	PDIV-1/PM	PDIV-1/LA	SPLB/BC*	OGC**	PDIV-1/SC
NAME	MThadani	MMcAllister	JHannon	APH	WReckley for RGramm
DATE	7/22/02	7/19/02		07/18/02	7/19/02

NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 192
License No. DPR-46

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

   A. The application for amendment by Nebraska Public Power District (the licensee), dated July 30, 2001, as supplemented by letters dated August 23, 2001, and July 3, 2002, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, 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.

2. Accordingly the license is amended by changes to the licensing basis. The changes relate to the containment overpressure contribution to ECCS pump NPSH requirement, following a LOCA. The changes will be documented by incorporating the relevant information into the Updated Safety Analysis Report.

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

FOR THE NUCLEAR REGULATORY COMMISSION

/RA by William D. Reckley for/

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

Attachment: Changes to the Technical Specifications

Date of Issuance: July 19, 2002

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 192

TO FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By letter dated July 30, 2001 (Reference 1), as supplemented by letter dated August 23, 2001 (Reference 2), Nebraska Public Power District (NPPD), the licensee, requested a change to the Cooper Nuclear Station (CNS) licensing basis. The requested change involves the use of containment overpressure to ensure sufficient net positive suction head (NPSH) for the emergency core cooling system (ECCS) pumps following a loss-of-coolant accident (LOCA). The licensee is also requesting U. S. Nuclear Regulatory Commission (NRC) approval to use a spatial evaluation to allow the elimination of the local suppression pool temperature limits.

2.0 REGULATORY EVALUATION

The CNS licensing basis has always included reliance on containment overpressure for the residual heat removal (RHR) pumps during the long-term following a LOCA. However, due to changes in the methods of calculation and analysis assumptions, the reliance on containment overpressure has increased since CNS was originally licensed. Therefore, NPPD requested that the CNS licensing basis be changed to address the increased reliance on containment overpressure for both the short- and long-term following a LOCA. The proposed licensing basis change would apply to both the RHR and core spray (CS) pumps.

The CNS is a BWR/4 with a Mark I containment. The CNS ECCS consists of a high pressure coolant injection (HPCI) pump, an automatic pressure relief system, two trains of CS, and two trains of low pressure coolant injection (LPCI). The HPCI system is designed to inject water from the emergency condensate storage tanks or suppression pool into the reactor vessel via a feedwater line. The HPCI system provides makeup water to the reactor vessel in the event of a small-break LOCA that does not result in a rapid depressurization of the reactor vessel. Containment overpressure is not required to ensure adequate NPSH for the HPCI pumps following a small-break LOCA. The CS system injects water from the suppression pool to the reactor vessel via the CS spargers located above the core. The LPCI is designed to inject water from the suppression pool into the downcomer region of the reactor vessel. The LPCI system is an operating mode of the RHR system. Both the CS system and LPCI system provide makeup water to the reactor vessel at low pressure following a large-break LOCA and depressurization of the reactor vessel.

The licensee also proposes to delete the requirement to maintain the local suppression pool temperature below the saturation temperature of the pool during a safety relief valve (SRV) discharge. The SRVs are installed to protect the reactor from overpressurization by releasing steam from the reactor through discharge lines into the suppression pool. The local suppression pool temperature limits were established to help prevent an effect called condensation oscillation. Condensation oscillations can occur due to temperature conditions near the SRV discharge location leading to instabilities in the condensation process. These instabilities could lead to vibratory loading on containment structures. The Boiling Water Reactor Owners Group (BWROG) requested the elimination of the local suppression pool temperature limits citing a General Electric Company (GE) topical report, NEDO-30832, "Elimination of Limit on BWR [Boiling Water Reactor] Suppression Pool Temperature for SRV Discharge." The elimination of these limits for those plants with "T" or "X" quenchers on the discharge lines was approved by the NRC staff in the safety evaluation report addressing the BWROG's request dated August 29, 1994. However, the NRC staff did not approve the elimination of the local pool temperature limits for those plants with ECCS suction strainers at or above the quencher elevation. CNS uses "T" quenchers but the top of the ECCS suction strainers are at or slightly above the elevation of the quencher arm. The concern is that, during an extended SRV release, the potential still exists for steam bubbles or steam plumes to be ingested in the ECCS pump suction and result in damage to the pump. As a result, the NRC staff asked NPPD to provide additional information before it was able to approve the elimination of the local suppression pool temperature limits.

3 .0 TECHNICAL EVALUATION

3.1 NPSH Analyses

NPPD provided the relationship which was used to calculate the available NPSH (NPSHa) for the CS and RHR pumps.

$$NPSHa = h_{(abs)} + h_{(static)} - h_{(vapor\ pressure)} - h_{(suction\ piping)}$$

where

$h_{(abs)}$ absolute pressure on the surface of the liquid from which the pump draws

$h_{(static)}$ difference between the pump's centerline and the surface of the liquid

$h_{(vapor\ pressure)}$ absolute vapor pressure of the liquid

$h_{(suction\ piping)}$ head loss due to friction and turbulence between the surface of the liquid and the pump inlet

NPPD installed new large capacity ECCS strainers to meet the requested actions under NRC Bulletin 96-03 (Reference 3). For the proposed licensing basis, the strainer head loss associated with the new strainers is included in the revised NPSH calculations. This additional head loss is represented by $h_{(strainer)}$ which is added to the $h_{(suction\ piping)}$ term in the equation above. According to NPPD, additional credit for containment overpressure to maintain adequate NPSH is required due to their resolution of Bulletin 96-03.

In 1993, analyses were performed to increase the RHR heat exchanger tube plugging margin. The GE report, GENE-637-045-1293, analyzed the plant response to accidents and included a calculation of the available ECCS pump NPSH. This calculation used the same parameters as the initial licensing analysis except for the following:

1. The American Nuclear Society (ANS) 5.1-1979 decay heat curve (without 2-sigma uncertainty) was used instead of the May-Witt model.

2. A power level of 102 percent (2429 MWt) in accordance with Regulatory Guide 1.49 (Reference 4).

3. A tube plugging margin of 23 percent and an associated heat exchanger heat removal capability factor, K, of 177 Btu/sec-°F.

The results of these analyses were incorporated into the CNS USAR under 10 CFR 50.59 and form the current licensing basis.

3.1.1 Short-term NPSH Requirements

At CNS, containment overpressure is defined as available pressure above 14.7 psia. For the short-term analysis, the licensee postulated a worst case design basis accident consisting of double-ended recirculation suction line break with no off-site power and the failure of one emergency diesel. The “short-term” for this accident analysis is defined as the first 10-minutes after the LOCA. Operator action to control pump flows or to initiate containment cooling mode is not credited during the short-term. For analysis purposes, both operating RHR pumps are at the maximum LPCI flow of 9240 gallons per minute (gpm) (8800 gpm RHR pump runout flow plus 5 percent to account for uncertainties.) The only CS pump is assumed to be at runout flow of 6525 gpm.

The NPPD calculations state that the maximum suppression pool temperature at 10 minutes is 161° F. Current analyses indicate that there is not sufficient NPSH for CS pump flow of 6525 gpm without some credit for containment overpressure. From Attachment D of the CNS calculation NEDC 97-044A Revision 1 (Reference 5), the maximum amount of containment overpressure required in the first 10-minutes for the CS pump is approximately 4.94 psi. Containment overpressure is predicted to be 6.85 psi when maximum overpressure is required. Based on the licensee’s calculations, containment overpressure is not required for the RHR pumps during the first 10-minutes following a large-break LOCA.

NPPD has revised Figure VI-5-15 in the CNS USAR to depict the use of containment overpressure for the short-term. Figure VI-5-15 shows the required containment overpressure for the RHR and CS pumps from 0 to 1000 seconds. Based on the review of the containment pressure analysis, the NRC staff determined that at least 4.94 psi overpressure will be available during the short-term following the accident. The minimum overpressure margin is predicted to be about 1.9 psi during the first 10-minutes after the LOCA. Based on these analyses, the staff finds the use of containment overpressure acceptable for the first 10-minutes after the LOCA.

3.1.2 Long-term NPSH Requirements

The long-term of the accident analysis is defined as the time period from 10 minutes to the end of the accident. For the long-term analysis, the licensee postulated a worst case design-basis accident consisting of double-ended recirculation suction line break with no off-site power and the failure of one emergency diesel. Since the operators will discontinue the use of one LPCI pump to reduce the load on the remaining diesel, only one CS pump and one LPCI pump is assumed to be available. The analysis also assumes that the operators control ECCS flows after 10 minutes following the LOCA. For analysis purposes, one CS pump is operating at 4750 gpm and one LPCI pump is operating at 7700 gpm.

The NPPD calculations state that the maximum suppression pool temperature that will occur is 207.8° F. The licensee's calculations demonstrate that, at the flow described above and a maximum suppression pool temperature of up to 207.8° F, containment overpressure is required from about 2000 seconds to about 300,000 seconds following the LOCA. From Attachment D of CNS calculation NEDC 97-044A, Revision 0 (Reference 5), the maximum amount of containment overpressure required for the RHR pumps is approximately 6.47 psi. The maximum amount of containment overpressure required for the CS pumps is approximately 4.44 psi. According to the licensee's calculations, this peak containment overpressure is required about 36,700 seconds following the LOCA. During this period, the suppression pool temperature is approximately 207.8° F. Approximately 9.48 psi of containment overpressure will be available when the maximum amount of containment overpressure is required for the RHR and CS pumps. This is a margin of about 3 psi. The NRC staff noted that the amount of containment overpressure required for both the RHR and the CS pumps is reduced when the suppression pool temperature decreases below 207.8° F. The staff noted that throughout the event there was at least 1 psi margin when containment overpressure was required.

NPPD has added Figure VI-5-16 to the CNS USAR to depict the use of containment overpressure for the long-term following the LOCA. Figure VI-5-16 shows the wetwell pressure and the required containment pressure for the RHR and CS pumps from 1000 to 1,000,000 seconds. The NRC staff reviewed the containment analysis and determined that sufficient containment pressure will be available during the long-term following the LOCA to meet the overpressure requirements for the RHR and CS pumps. Based on these analyses, the staff finds the use of the containment overpressure described above acceptable for the long-term following the LOCA.

3.2 Calculation of Containment Pressure

To demonstrate adequate overpressure is maintained throughout the design-basis accident, NPPD performed a containment system response for NPSH analysis. The analysis is documented in GE-NE-T23-00786-00-01, Revision 3, dated August 2001 (Reference 6.) The analysis was performed using the SHEX-04V computer code and a plant-unique decay heat curve using the ANS 5.1-1979 decay heat model with a 2-sigma uncertainty. The ANS 5.1-1979 decay heat model is frequently used by the industry and is acceptable to the NRC. This analysis included the following assumptions which are more conservative than ones used in previous analyses performed in 1993 and 1999:

1. An initial drywell temperature of 160° F versus the Technical Specification limit of 150° F used in the previous analyses.

2. An initial suppression pool temperature of 100° F and a service water temperature of 95° F. These two values are greater than the TS values used in previous analyses.

3. The control rod drive flow was assumed to be zero. The previous analyses took credit for control rod drive flow.

A result of the August 2001 analysis was a peak suppression pool temperature of 207.8^{o} F, an increase of about 12^{o} F over the 1993 analysis. The increase in predicted suppression pool temperature resulted in a greater reliance in containment overpressure to demonstrate adequate ECCS pump NPSH.

While the GE SHEX computer program has not been approved by the NRC staff for generic use, a July 13, 1993, NRC letter approved the use of SHEX if a benchmark analysis was performed. The licensee performed an analysis in which the SHEX results were comparable to those from the calculational model used in the original Final Safety Analysis Report (FSAR).

3.3 Elimination of Local Suppression Pool Temperature Limits

The licensee proposes to delete the requirement to maintain the local suppression pool temperature below the saturation temperature of the pool during a SRV discharge. In order to justify the elimination of the local suppression pool temperature limits, the licensee performed a spatial evaluation of the likelihood of steam ingestion in the ECCS suction strainers in the event of a SRV actuation. The evaluation, “Evaluation of Steam Ingestion in the Emergency Core Cooling System (ECCS) Suction Strainers”, GE-NE-T23000786-00-09, July 2001 (Reference 7), determined that, while a steam plume may come within 8 inches of the RHR suction entrainment envelope, ingestion of steam by the ECCS suction strainers is not predicted to occur. Based on this analysis, the NRC staff finds the elimination of the local suppression pool temperature limits to be acceptable.

3.4 Evaluation Conclusions

The NRC staff reviewed the licensee’s minimum containment pressure and NPSH analyses for the RHR and CS pumps. The staff finds that the use of the requested containment overpressure, as depicted on USAR Figure VI-5-15, to ensure adequate NPSH for the CS pumps during the first 10-minutes following a LOCA acceptable. The approved amount of containment overpressure is approximately 4.94 psi above the initial airspace pressure of 14.7 psia. Approximately 6.85 psi of containment overpressure will be available when the maximum amount of containment overpressure is required for the CS pumps. The staff finds that the use of the requested containment overpressure, as depicted on USAR Figure VI-5-16, to ensure adequate NPSH for the CS pumps after the first 10-minutes following a LOCA, is acceptable. The maximum amount of containment overpressure required during the long-term is approximately 6.47 psi for RHR and 4.44 psi for CS. Approximately 9.48 psi of containment overpressure will be available when the maximum amount of containment overpressure is required for the RHR and CS pumps. The time period of the containment overpressure credit for the long-term is approximately 2000 seconds to 300,000 seconds following the LOCA. Based on these analyses, the staff concludes that there is reasonable assurance that plant operation in this manner poses no undue risk to the health and safety of the public.

Additionally, based on a review of the analysis performed by the licensee, the NRC staff finds the elimination of the local suppression pool temperature limits to be acceptable.

4.0 EXIGENT CIRCUMSTANCES

By letter dated July 3, 2002, the licensee requested emergency processing of the proposed amendment request submitted on July 30, 2001. The licensee provided the following rationale for its request for emergency processing.

The proposed amendment supports an amendment request to revise the CNS's technical specification (TS) for Ultimate heat sink (UHS) temperature and reactor equipment cooling (REC) water temperature. The licensee stated that there is an emergency situation at CNS related to UHS and REC temperatures. The situation satisfies the criteria for an emergency as outlined in 10 CFR 50.91(a)(5) in that the CNS TSs 3.7.2 and 3.7.3 require a hot shutdown of the plant in 12 hours and cold shutdown of the plant in 36 hours in the event the temperature of the Missouri River, the UHS for CNS, exceeds the TS temperature limit (90° F) or REC water temperature exceeds TS limit (95° F). The licensee stated that the emergency situation is caused by an environmental factor (temperature of the Missouri River) which is beyond the control of NPPD. During the evening of June 30, 2002, the temperature of the Missouri River exceeded 85° F. The licensee explained that, taking the uncertainty of the permanent instrumentation into account, the plant staff must begin to take action at 87° F to place the plant in shutdown. The licensee concluded that the combination of natural phenomena and the standard regulatory process (30-day public comment period for the NPSH amendment) could result in an unwarranted plant shutdown.

The NRC staff evaluated the licensee's rationale against 10 CFR 50.91(a)(5). That regulation requires licensees to "explain why the emergency situation occurred and why it could not avoid the situation." The licensee's letter of July 3, 2002, did not address why the emergency could not be avoided. Therefore, the NRC staff determined not to act on the licensee's request pursuant to 10 CFR 50.91(a)(5).

However, the NRC staff also determined that, for safe continued operation of CNS, the licensee and the Commission must act quickly, and the time does not permit the Commission to wait for the 30 day period for prior public comment. Accordingly, the staff is processing the two amendments concerned on an exigent basis as outlined in 10 CFR 50.91(a)(6). Since the notice of no significant hazards consideration determination for the NPSH amendment was initially published in the *Federal Register* on June 25, 2002 (67 FR 42828), the exigency requirement of 14 days of prior public comment has been satisfied.

There were no public comments in response to the notice published in the *Federal Register.*

5.0 FINAL NO SIGNIFICANT HAZARDS CONSIDERATION

In the regulations in 10 CFR 50.92, the Commission states that it may make a final determination that a license amendment involves no significant hazards consideration determination if operation of the facility in accordance with the amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (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.

Based on the evaluation presented in Section 3, the NRC staff has confirmed that operation of CNS in accordance with the proposed amendment will not involve a significant increase in probability or consequences of an accident previously evaluated. The requested license amendments does not result in any new accident initiators, nor are there changes being proposed to other plant systems or equipment postulated to initiate an accident previously evaluated. Thus, the proposed change does not involve a significant increase in the probability of an accident previously evaluated in the USAR.

The containment overpressure evaluation conservatively demonstrates that adequate margin between the available containment overpressure and the overpressure required to assure adequate low pressure ECCS pump NPSH are such that ECCS pump operation, as credited in the CNS accident analysis, remains unchanged. Thus, the ECCS pumps continue to be available to perform the safety functions previously evaluated, and the proposed change does not involve a significant increase in the consequences of an accident previously evaluated in the USAR.

The NRC staff has confirmed that the proposed license amendment does not introduce any new equipment or hardware changes. The only equipment affected by this license amendment are the low pressure ECCS pumps. These pumps retain their ability to function following any accident previously evaluated and no new accidents are created as a result of increased reliance on overpressure or methodology changes. Thus, the proposed change does not create the possibility of a new or different kind of accident from any accident previously evaluated in the USAR.

Although there is an increased reliance on containment overpressure, adequate low pressure ECCS pump NPSH is assured, and sufficient margin is conservatively determined to be maintained between the available overpressure and the required overpressure to provide confidence that the ECCS pumps will operate as required. The calculations are revised to show an increased absolute containment overpressure consideration from ~5 psi (original license application) to ~9.5 psi at the time of the peak suppression pool temperatures following a design basis LOCA . At this containment overpressure, the CS and RHR pumps will utilize only ~4.45 psi and ~6.47 psi, respectively, of the available overpressure. This provides a margin of ~5 psi and ~3 psi, respectively, for the CS and RHR pumps at the peak suppression pool temperature. The calculations also address both short-term and long-term reliance on containment overpressure.

In the short-term (<600 seconds), the RHR pumps do not depend on containment overpressure for adequate NPSH. However, during this short-term period following initiation of the event, the CS pump is conservatively calculated to require as much as ~4.94 psi of containment overpressure to assure adequate NPSH. At the time this overpressure is needed, ~6.85 psi of containment overpressure is available, providing a margin of ~1.9 psi. For the time periods following the peak suppression pool temperature, the required overpressure reliance reduces with time and suppression pool temperature.

During the accident, beyond the time period of the peak suppression pool temperature, a minimum margin of ~0.6 psi is provided for ECCS pump NPSH. However, this minimum margin occurs just prior to 100 hours into the event at a point when no containment overpressure is required for ECCS pump NPSH. During times when containment overpressure is credited, there is a minimum of ~1 psi containment overpressure available.

The analysis also utilizes three new methods for evaluation of the previously evaluated accidents. These are the SHEX code for the containment pressure and temperature response analysis, the ANS 5.1-1979 model for determination of core decay heat, and the use of spatial evaluation of the suppression pool SRV discharge quenchers relative to the ECCS pump intake strainers for prevention of steam bubble ingestion. A benchmark evaluation of the SHEX code is provided which indicates that the results are comparable to previous analysis. The ANS 5.1-1979 model is less conservative than the previously used May-Witt model. However, this change in conservatism is offset by the use of other input parameter changes such as reduced RHR heat exchanger heat removal assumptions and increased service water and suppression pool temperature assumptions. Additionally, both the SHEX code and the ANS 5.1 decay heat model have been previously accepted by NRC as sufficiently conservative analysis methods. The spatial evaluation of the suppression pool SRV discharge quenchers relative to the ECCS pump intake strainers shows steam bubble ingestion is not predicted. This supports the elimination of a local suppression pool temperature limit.

Therefore, sufficient margin and adequate NPSH are demonstrated with the conservatism of a two sigma (two standard deviations) uncertainty in the decay heat model, increased suction strainer debris loading, decreased RHR heat exchanger minimum performance criteria, and increases in SW and suppression pool temperatures. Thus, the proposed activity does not involve a significant reduction in a margin of safety.

Based on the above considerations, the NRC staff concludes that the amendment meets the three standard of 10 CFR 50.92. Therefore the staff has made a final determination that the proposed amendment does not involve a significant hazards consideration.

6.0 STATE CONSULTATION

In accordance with the Commission's regulations, the State of Nebraska was notified of the amendment. The State official had no comments.

7.0 ENVIRONMENTAL CONSIDERATION

The amendment changes Updated Final Safety Evaluation Report in a requirement with respect to the installation or use of a facility component located within the restricted area as defined in 10 CFR Part 20. The NRC staff has determined that the amendment involves 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 amendment involves no significant hazards consideration, and there has been no public comment on such finding June 25, 2002 (67 FR 42828). Accordingly, the amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR Part 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 amendment.

8.0 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.

9.0 REFERENCES

1. Swailes, J. H., NPPD, "Proposed License Amendment Related to Emergency Core Cooling System Pump Net Positive Suction Head Requirements - Cooper Nuclear Station, NRC Docket 50-298, DPR-46," July 30, 2001.

2. Swailes, J. H., NPPD, "Proposed License Amendment Related to Emergency Core Cooling System Pump Net Positive Suction Head Requirements - Cooper Nuclear Station, NRC Docket 50-298, DPR-46," August 23, 2001.

3. United States Nuclear Regulatory Commission, Bulletin 96-03, "Potential Plugging of Emergency Core Cooling Suction Strainers by Debris in Boiling-Water Reactors," May 6, 1996.

4. United States Nuclear Regulatory Commission, Regulatory Guide 1.49, "Power Levels of Nuclear Power Plants," Revision 1, December 1973.

5. Nebraska Public Power District, Calculation NEDC-97-044, "NPSH Margins for the RHR and CS Pumps," Revision 1, April 6, 1999.

6. GE-NE-T23-00786-00-01, Revision 3, dated August 2001.

7. General Electric Company, "Evaluation of Steam Ingestion in the Emergency Core Cooling System (ECCS) Suction Strainer for Cooper Nuclear Station," GE-NE-T23000786-00-09, July 2001.

Principal Contributors: D. Cullison
R. Lobel

Date: July 19, 2002

cc:

Mr. William R. Mayben
President and Chief Executive Officer
Nebraska Public Power District
1414 15th Street
Columbus, NE 68601

Mr. Michael T. Coyle
Site Vice President
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

Mr. John R. McPhail, General Counsel
Nebraska Public Power District
P. O. Box 499
Columbus, NE 68602-0499

D. F. Kunsemiller, Risk and
Regulatory Affairs Manager
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

Dr. William D. Leech
Manager-Nuclear
MidAmerican Energy
907 Walnut Street
P. O. Box 657
Des Moines, IA 50303-0657

Mr. Ron Stoddard
Lincoln Electric System
1040 O Street
P. O. Box 80869
Lincoln, NE 68501-0869

Mr. Michael J. Linder, Director
Nebraska Department of Environmental
Quality
P. O. Box 98922
Lincoln, NE 68509-8922

Chairman
Nemaha County Board of Commissioners
Nemaha County Courthouse
1824 N Street
Auburn, NE 68305

Ms. Cheryl K. Rogers, Program Manager
Nebraska Health & Human Services System
Division of Public Health Assurance
Consumer Services Section
301 Centennial Mall, South
P. O. Box 95007
Lincoln, NE 68509-5007

Mr. Ronald A. Kucera, Director
of Intergovernmental Cooperation
Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Senior Resident Inspector
U.S. Nuclear Regulatory Commission
P. O. Box 218
Brownville, NE 68321

Regional Administrator, Region IV
U.S. Nuclear Regulatory Commission
611 Ryan Plaza Drive, Suite 1000
Arlington, TX 76011

Jerry Uhlmann, Director
State Emergency Management Agency
P. O. Box 116
Jefferson City, MO 65101

Chief, Radiation Control Program, RCP
Kansas Department of Health
and Environment
Bureau of Air and Radiation
1000 SW Jackson
Suite 310
Topeka, KS 66612-1366

Mr. Daniel K. McGhee
Bureau of Radiological Health
Iowa Department of Public Health
401 SW 7th Street
Suite D
Des Moines, IA 50309