

October 27, 2005

Mr. Randall K. Edington
Vice President-Nuclear and CNO
Nebraska Public Power District
P. O. Box 98
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT RE: REVISION
OF THE REQUIRED CHANNELS PER TRIP SYSTEM FOR PRIMARY AND
SECONDARY CONTAINMENT ISOLATION AND CONTROL ROOM
EMERGENCY FILTER SYSTEM INSTRUMENTATION (TAC NO. MC5031)

Dear Mr. Edington:

The Commission has issued the enclosed Amendment No. 212 to Facility Operating License No. DPR-46 for the Cooper Nuclear Station. The amendment consists of changes to the Technical Specifications (TSs) in response to your application dated October 25, 2004, as supplemented by letter dated August 1, 2005.

The amendment would revise the required channels per trip system for several instrument functions contained in TS Tables 3.3.6.1-1, "Primary Containment Isolation Instrumentation," 3.3.6.2-1, "Secondary Containment Isolation Instrumentation," and 3.3.7.1-1, "Control Room Emergency Filter System Instrumentation."

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/

Michelle C. Honcharik, 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. 212 to DPR-46
2. Safety Evaluation

cc w/encls: See next page

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Michelle C. Honcharik, Project Manager, Section 1
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NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 212
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 October 25, 2004, as supplemented by letter dated August 1, 2005, 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 Technical Specifications as indicated in the attachment to this license amendment and Paragraph 2.C.(2) of Facility Operating License No. DPR-46 is hereby amended to read as follows:

(2) Technical Specifications

The Technical Specifications contained in Appendix A, as revised through Amendment No. 212, are hereby incorporated in the license. The Nebraska Public Power District shall operate the facility in accordance with the Technical Specifications.

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/

David Terao, 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: October 27, 2005

ATTACHMENT TO LICENSE AMENDMENT NO. 212

FACILITY OPERATING LICENSE NO. DPR-46

DOCKET NO. 50-298

Replace the following pages of the Appendix A Technical Specifications with the enclosed revised pages. The revised pages are identified by amendment number and contain marginal lines indicating the areas of change.

REMOVE

3.3-51
3.3-52
3.3-53
3.3-57
3.3-63

INSERT

3.3-51
3.3-52
3.3-53
3.3-57
3.3-63

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 212 TO

FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By letter dated October 25, 2004 (Agencywide Documents and Access Management System (ADAMS) Accession No. ML043030300), as supplemented by letter dated August 1, 2005 (ADAMS Accession No. ML052170167), Nebraska Public Power District (the licensee) requested a license amendment for the Cooper Nuclear Station (CNS). The proposed changes revise CNS Technical Specification (TS) Tables 3.3.6.1-1, 3.3.6.2-1, and 3.3.7.1-1. These changes implement a change to the required channels per trip system for primary and secondary containment isolation and control room emergency filter system (CREFS) instrumentation. The supplement dated August 1, 2005, provided additional information that clarified the application, did not expand the scope of the application as originally noticed, and did not change the staff's original proposed no significant hazards consideration determination as published in the *Federal Register*.

2.0 REGULATORY EVALUATION

The function of the primary and secondary containment isolation instrumentation is to automatically initiate isolation of the primary and secondary containment to limit the release of radioactive materials during analyzed accidents or transients to within the limits as specified in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 100 and 10 CFR Part 20. The CREFS instrumentation automatically initiates action to pressurize the main control room to minimize the consequences of radioactive material in the control room environment to ensure the habitability of the control room for the safety of the control room operators under all plant conditions.

The primary and secondary containment isolation and CREFS instrumentation TSs specify the minimum number of required channels per trip system to ensure that no single failure will preclude an isolation when a valid signal is present in either trip system. The licensee proposes to revise the "REQUIRED CHANNELS PER TRIP SYSTEM" requirements in these TS tables to reflect the CNS design basis.

The NRC staff used 10 CFR Part 50, Appendix A, General Design Criterion (GDC) 21, "Protection system reliability and testability," and GDC 24, "Separation of protection and control

systems,” to evaluate the acceptability of the proposed changes to the number of required channels per trip system of reactor vessel water level, drywell pressure, and reactor building ventilation exhaust plenum radiation at which five automatic actions occur: (1) isolation of the primary containment, (2) isolation of reactor water cleanup (RWCU) system, (3) isolation of residual heat removal (RHR) shutdown cooling system, (4) isolation of secondary containment, and (5) initiation of the CREFS in TS Tables 3.3.6.1-1, 3.3.6.2-1, and 3.3.7.1-1.

3.0 TECHNICAL EVALUATION

3.1 The Proposed TS Changes

The licensee proposed the following plant TS changes to revise the required channels per trip system from four to two.

- (1) TS Table 3.3.6.1-1, “Primary Containment Isolation Instrumentation,” Function 2.a, “Reactor Vessel Water Level - Low (Level 3),” Function 2.b, “Drywell Pressure - High,” and Function 2.c, “Reactor Building Ventilation Exhaust Plenum Radiation - High.”
- (2) TS Table 3.3.6.1-1, “Primary Containment Isolation Instrumentation,” Function 5.d, “Reactor Vessel Water Level - Low Low (Level 2),” and Function 6.b, “Reactor Vessel Water Level - Low (Level 3).”
- (3) TS Table 3.3.6.2-1, “Secondary Containment Isolation Instrumentation,” Function 1, “Reactor Vessel Water Level - Low Low (Level 2),” Function 2, “Drywell Pressure - High,” and Function 3, “Reactor Building Ventilation Exhaust Plenum Radiation - High.”
- (4) TS Table 3.3.7.1-1, “Control Room Emergency Filter System Instrumentation,” Function 1, “Reactor Vessel Water Level - Low Low (Level 2),” Function 2, “Drywell Pressure - High,” and Function 3, “Reactor Building Ventilation Exhaust Plenum Radiation - High.”

The CNS TS bases have also been modified to make the appropriate changes necessary to reflect the change request. The bases change will be made under the provisions of 10 CFR 50.59 and TS 5.5.10 (TS Bases Control Program).

3.2 The CNS Protection System Design Configuration

The instrumentation functions that are affected by the proposed amendment are related to high drywell pressure, low reactor water level (level 3), low low reactor water level (level 2), and high reactor building ventilation exhaust plenum radiation signals. The high drywell pressure or low reactor water level signal will form a Group 2 primary containment isolation signal. The high drywell pressure, low reactor water level, or high reactor building ventilation exhaust plenum radiation signal will form a Group 6 primary containment isolation signal. During the Improved TS (ITS) conversion process, the number of required channels per trip system was changed from two to four. This change was based on ITS convention that defined each divisional logic to be one trip system. Since all four channels provided input signals in that division/trip system logic, the result was that there be four required channels per trip system. However, the CNS design basis defines each divisional logic as having two trip systems, with two required channels per trip system.

The licensee stated that since the ITS conversion was issued, it has been found to be confusing with the inconsistency between the design and licensing basis. The updated safety analysis report (USAR) Section VII-3.3.5 states the primary containment isolation system (PCIS) logic as follows:

The logic arrangement for important trip functions is controlled by two trip systems. Where many isolation valves close on the same signal, two trip systems control the entire group. Where just one or two valves must close in response to a special signal, two trip systems may be formed from the instruments provided to sense the special condition. Each trip system has a pair of logics. Each logic receives input signals from at least one channel for each monitored variable. Thus two channels are required for each important monitored variable to provide independent inputs to the logic of one trip system. A total of 4 channels for each important monitored variable are required for the logics of both trip systems.

The actuators associated with a logic pair provide inputs to each of the actuator logics for that trip system. Thus, either of the two logics associated with one trip system can produce a trip system trip. The logic is a 1-out-of-n arrangement, where n may be 2 or more. To initiate valve closure the actuator logics of both trip systems must be tripped. The overall logic of the system could be termed 1-out-of-2 taken twice.

The licensee performed analysis to verify that the proposed changes do not alter the instrumentation design or the physical configuration, and will not affect the operation or manner of control to ensure that the system continues to perform its intended safety function.

The proposed amendment will lower the required channels per trip system from four to two for the following four instrumentation functions: (1) high drywell pressure, (2) low reactor water level (level 3), (3) low low reactor water level (level 2), and (4) high reactor building ventilation exhaust plenum radiation signal. The proposed changes affect primary and secondary containment isolation, RWCU system isolation, RHR shutdown cooling system isolation, and CREFS instrumentation. The required channels per trip system ensures that no single failure will preclude an isolation when a valid signal is present.

During the reviews of proposed license amendment associated with changes to the TS, the NRC staff identified the need to understand the change which was introduced during the ITS conversion process and the current logic trip system configuration. To verify the current CNS design basis, NRC staff requested the licensee to provide additional information related to the ITS conversion process and the configuration of trip system and channel logic.

By letter dated August 1, 2005, the licensee provided the ITS submittal pages and the markup of the Custom TS (CTS) pages. The ITS submittal acknowledged the ITS deviation from the CNS USAR convention of having two trip system for each divisional logic, with two channels per trip system, but CNS was unable to find any additional internal documentation as to why this convention was used in the ITS submittal.

The August 1, 2005, submittal shows that there are two trip systems that input into one divisional logic, and each trip system is composed of two low reactor water level channels and two high drywell pressure channels. Although this logic is replicated for the inboard and outboard isolation valve, there is a total of four channels for both divisions.

As described in the USAR, CNS currently has two channels that input into each trip system. The two channels per trip system ensure that no single failure will preclude an isolation when a valid signal is present. Therefore, the CNS design has satisfied the GDC 21 and GDC 24 requirements with respect to the redundancy and independence of the protection system. No single failure of any component or channel of a system will result in loss of the protection function.

3.3 Evaluation of Proposed TS Changes

(1) TS Table 3.3.6.1-1, "Primary Containment Isolation Instrumentation"

Table 3.3.6.1-1 identifies plant parameters (functions) that cause isolation of primary containment. The table also identifies the plant modes in which the functions are applicable, the number of channels required for each trip system, applicable surveillance requirements (SRs), and the allowable value for each function that causes primary containment isolation. The licensee proposes to change the number of channels required for each trip system to read "2" for Function 2.a, "Reactor Vessel Water Level - Low (Level 3)," Function 2.b, "Drywell Pressure - High," Function 2.c, "Reactor Building Ventilation Exhaust Plenum Radiation - High," Function 5.d, "Reactor Vessel Water Level - Low Low (Level 2)," and Function 6.b, "Reactor Vessel Water Level - Low (Level 3)."

Based on the trip system configuration as described in Section 3.2 above, CNS currently has two channels that input into each trip system. Therefore, the maximum number of channels per trip system is two. The NRC staff finds that the change of the number of channels required per trip system does not alter the instrumentation design or the physical configuration, and that the change is in conformance with 10 CFR Part 50, Appendix A, GDC 21 and GDC 24. The revised TS is consistent with NUREG-1433, "General Electric Plants BWR/4 Standard TS." Therefore, the proposed TS changes are acceptable.

(2) TS Table 3.3.6.2-1, "Secondary Containment Isolation Instrumentation"

Table 3.3.6.2-1 identifies plant parameters that cause isolation of secondary containment. The table also identifies the plant modes in which the functions are applicable, the number of channels required for each trip system, applicable SRs, and the allowable value for each function that causes secondary containment isolation. The licensee proposes to change the number of channels required for each trip system to read "2" for Function 1, "Reactor Vessel Water Level - Low Low (Level 2)," Function 2, "Drywell Pressure - High," and Function 3, "Reactor Building Ventilation Exhaust Plenum Radiation - High."

Based on the trip system configuration as described in Section 3.2 above, CNS currently has two channels that input into each trip system. Therefore, the maximum number of channels per trip system is two. The NRC staff finds that the change of the number of channels required per trip system does not alter the instrumentation design or the physical configuration, and that the change is in conformance with 10 CFR Part 50, Appendix A, GDC 21 and GDC 24. The revised TS is consistent with NUREG-1433, "General Electric Plants BWR/4 Standard TS." Therefore, the proposed TS changes are acceptable.

(3) TS Table 3.3.7.1-1, "Control Room Emergency Filter System Instrumentation"

Table 3.3.7.1-1 identifies plant parameters that cause the actuation of the CREFS. The table also identifies the plant modes in which the functions are applicable, the number of channels required for each trip system, applicable SRs, and the allowable value for each function that actuates CREFS. The licensee proposes to change the number of channels required for each trip system to read "2" for Function 1, "Reactor Vessel Water Level - Low Low (Level 2)," Function 2, "Drywell Pressure - High," and Function 3, "Reactor Building Ventilation Exhaust Plenum Radiation - High."

Based on the trip system configuration as described in Section 3.2 above, CNS currently has two channels that input into each trip system. Therefore, the maximum number of channels per trip system is two. The NRC staff finds that the change of the number of channels required per trip system does not alter the instrumentation design or the physical configuration, and that the change is in conformance with 10 CFR Part 50, Appendix A, GDC 21 and GDC 24. The revised TS is consistent with NUREG-1433, "General Electric Plants BWR/4 Standard TS." Therefore the proposed TS changes are acceptable.

3.4 Technical Evaluation Conclusion

Based on the review submittals for the CNS license amendment request dated October 25, 2004, and August 1, 2005, the NRC staff finds that the proposed TS changes on the required channels per trip system for primary and secondary containment isolation, RWCU system isolation, RHR shutdown cooling system isolation, and CREFS instrumentation are in conformance with 10 CFR Part 50, Appendix A, GDC 21 and GDC 24. The revised TS is consistent with NUREG-1433, "General Electric Plants BWR/4 Standard TS." Therefore, the proposed TS changes are acceptable.

4.0 STATE CONSULTATION

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

5.0 ENVIRONMENTAL CONSIDERATION

The amendment changes 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 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 published January 4, 2005 (70 FR 402). Accordingly, the amendment meets 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 amendment.

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 amendment will not be inimical to the common defense and security or to the health and safety of the public.

Principal Contributors: M. Patel
B. Marcus

Date: October 27, 2005

Cooper Nuclear Station

cc:

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

Mr. Michael T. Boyce
Nuclear Asset Manager
Nebraska Public Power District
1414 15th Street
Columbus, NE 68601

Mr. John C. McClure
Vice President and General Counsel
Nebraska Public Power District
P. O. Box 499
Columbus, NE 68602-0499

Mr. Paul V. Fleming
Licensing Manager
Nebraska Public Power District
P.O. Box 98
Brownville, NE 68321

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. Mike Wells, Deputy Director
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65101

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 400
Arlington, TX 76011

Director, Missouri State Emergency
Management Agency
P. O. Box 116
Jefferson City, MO 65102-0116

Chief, Radiation and Asbestos
Control Section
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
Lucas State Office Building, 5th Floor
321 East 12th Street
Des Moines, IA 50319

Mr. Scott Clardy, Director
Section for Environmental Public Health
P.O. Box 570
Jefferson City, MO 65102-0570

Jerry C. Roberts, Director of Nuclear
Safety Assurance
Nebraska Public Power District
P.O. Box 98
Brownville, NE 68321

July 2005