

October 31, 2003

Mr. Clay C. Warren  
Chief Nuclear Officer  
Nebraska Public Power District  
P. O. Box 98  
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - ISSUANCE OF AMENDMENT TO  
IMPLEMENT THE BOILING WATER REACTOR VESSEL AND INTERNALS  
PROJECT REACTOR PRESSURE VESSEL INTEGRATED SURVEILLANCE  
PROGRAM (TAC NO. MB7209)

Dear Mr. Warren:

The Commission has issued the enclosed Amendment No. 201 to Facility Operating License No. DPR-46 for the Cooper Nuclear Station (CNS). The amendment consists of changes to the Updated Safety Analysis Report in response to your application dated December 31, 2002, as supplemented by letter dated July 24, 2003.

The amendment would revise the reactor vessel material surveillance program to incorporate the boiling water reactor vessel and internals project integrated surveillance program into the CNS licensing basis.

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. 201 to DPR-46  
2. Safety Evaluation

cc w/encls: See next page

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ACCESSION NO: ML033090607

\*No substantive changes

\*\*See previous concurrence

OFFICE	PDIV-1/PM	PDIV-1/LA	EMCB/SC*	OGC**	PDIV-1/SC
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DATE	10/30/03	10/30/03	10/2/03	10/23/03	10/30/03

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NEBRASKA PUBLIC POWER DISTRICT

DOCKET NO. 50-298

COOPER NUCLEAR STATION

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 201  
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 December 31, 2002, as supplemented by letter dated July 24, 2003, 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, by Amendment No. 201, the license is amended to authorize revision to the Updated Safety Analysis Report (USAR), as set forth in the application for amendment by the licensee dated December 31, 2002, as supplemented by letter dated July 24, 2003. The licensee shall update the USAR to incorporate the revision to the basis for compliance with the requirements of Appendix H to 10 CFR Part 50 , "Reactor Vessel Material Surveillance Program Requirements," as described in the amendment application of December 31, 2002, supplemental letter dated July 24, 2003, and the staff Safety Evaluation attached to this amendment, and shall submit the revised description authorized by these amendments with the next update of the USAR.
3. The license amendment is effective as of its date of issuance shall be implemented within 30 days from the date of issuance. The USAR changes shall be implemented in the next periodic update to the USAR in accordance with 10 CFR 50.71(e).

FOR THE NUCLEAR REGULATORY COMMISSION

*/RA/*

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

Date of Issuance: October 31, 2003

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

RELATED TO AMENDMENT NO. 201 TO

FACILITY OPERATING LICENSE NO. DPR-46

NEBRASKA PUBLIC POWER DISTRICT

COOPER NUCLEAR STATION

DOCKET NO. 50-298

1.0 INTRODUCTION

By application dated December 31, 2002, as supplemented by letter dated July 24, 2003, Nebraska Public Power District (NPPD or the licensee), requested NRC review and approve a license amendment to modify the basis for their compliance with the requirements of Appendix H to Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50, "Reactor Vessel Material Surveillance Program Requirements," for Cooper Nuclear Station (CNS). The supplement dated July 24, 2003, 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* on February 4, 2003 (68 FR 5678).

The proposed changes would implement the boiling water reactor vessel and internals project (BWRVIP) reactor pressure vessel (RPV) integrated surveillance program (ISP) as the basis for demonstrating the compliance of CNS with the requirements of Appendix H to 10 CFR Part 50. Specifically, the proposed changes would revise the requirements in Section 2.7.2.13 of the Updated Safety Analysis Report (USAR) to reflect participation in the BWRVIP ISP.

The BWRVIP RPV ISP was submitted for NRC staff review and approval in topical reports BWRVIP-78, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan," and BWRVIP-86, "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan" [References 1 and 2]. Responses to NRC requests for additional information, necessary to establish the technical basis for, and proposed implementation of, the BWRVIP ISP, were provided in letters from the BWRVIP dated December 15, 2000, and May 30, 2001. The NRC staff approved the proposed BWRVIP ISP in a safety evaluation (SE) which was provided to the BWRVIP by letter dated February 1, 2002 [Reference 3]. However, the NRC staff's SE required that plant-specific information be provided by BWR licensees who wish to implement the BWRVIP ISP for their facilities. The licensee's December 31, 2002, and July 24, 2003, submittals addressed the plant-specific information required in Reference 3.

## 2.0 REGULATORY EVALUATION

The NRC staff finds that the licensee in Attachment 1 of its December 31, 2002, submittal identified the applicable regulatory requirements. The regulatory requirements for which the staff based its acceptance are described below.

Nuclear power plant licensees are required by Appendix H to 10 CFR Part 50 to implement RPV surveillance programs to “monitor changes in the fracture toughness properties of ferritic materials in the reactor vessel beltline region...which result from exposure of these materials to neutron irradiation and the thermal environment.” Two specific alternatives are provided with regard to the design of a facility’s RPV surveillance program which may be used to address the requirements of Appendix H to 10 CFR Part 50.

The first alternative is the implementation of a plant-specific RPV surveillance program consistent with the requirements of American Society for Testing and Materials (ASTM) Standard Practice E 185, “Standard Practice for Conducting Surveillance Tests for Light-Water Cooled Nuclear Power Reactor Vessels.” In the design of a plant-specific RPV surveillance program, a licensee may use the edition of ASTM Standard Practice E 185 which was current on the issue date of the American Society of Mechanical Engineers Code to which the reactor vessel was purchased, or later editions through the 1982 edition.

The second alternative provided in Appendix H to 10 CFR Part 50 is the implementation of an ISP. An ISP is defined in Appendix H to 10 CFR Part 50 as occurring when, “the representative materials chosen for surveillance for a reactor are irradiated in one or more other reactors that have similar design and operating features.” Five specific criteria are stated in Section III.C.1 of Appendix H to 10 CFR Part 50 which must be met to support approval of an ISP:

- a. The reactor in which the materials will be irradiated and the reactor for which the materials are being irradiated must have sufficiently similar design and operating features to permit accurate comparisons of the predicted amount of radiation damage.
- b. Each reactor must have an adequate dosimetry program.
- c. There must be adequate arrangement for data sharing between plants.
- d. There must be a contingency plan to assure that the surveillance program for each reactor will not be jeopardized by operation at reduced power level or by an extended outage of another reactor from which data are expected.
- e. There must be substantial advantages to be gained, such as reduced power outages or reduced personnel exposure to radiation, as a direct result of not requiring surveillance capsules in all reactors in the set.

As noted in Section 1.0 of this SE, the NRC staff approved the proposed BWRVIP ISP Reference 3. All of the criteria cited above for approval of the ISP were addressed either completely or partially in Reference 3. For those criteria which could not be fully addressed in Reference 3, plant-specific information would be required from licensees who wished to implement the BWRVIP for their facilities. As stated in Reference 3:

[L]icensees who wish to participate in the BWR ISP must provide, for NRC staff review and approval, information which defines how they will determine RPV and/or surveillance capsule fluences based on the dosimetry data which will be available for their facilities. This information must be submitted concurrently with each licensee's submittal to replace their existing plant-specific surveillance program with the BWR ISP as part of their facility's licensing basis. The information submitted must be sufficient for the staff to determine that:

- (1) RPV and surveillance capsule fluences will be established as based on the use of an NRC-approved fluence methodology that will provide acceptable results based on the available dosimetry data,
- (2) If one methodology is used to determine the neutron fluence values for a licensee's RPV and one or more different methodologies are used to establish the neutron fluence values for the ISP surveillance capsules which "represent" that RPV in the ISP, the results of these differing methodologies are compatible (i.e., within acceptable levels of uncertainty for each calculation).

Regulatory Guide (RG) 1.190, "Calculational and Dosimetry Methods for Determining Pressure Vessel Neutron Fluence," describes methods and assumptions acceptable to the NRC staff for determining the pressure vessel neutron fluence. The guide is intended to ensure the accuracy and reliability of the fluence determination required by General Design Criteria 14, 30, and 31 of Appendix A, "General Design Criteria for Nuclear Power Plants," to 10 CFR Part 50.

This plant-specific information was required by the NRC staff to ensure that Criterion III.C.1.b of Appendix H to 10 CFR Part 50 for an ISP could be met by each facility, and to confirm that data which would be shared as part of the BWRVIP ISP could be effectively utilized by each licensee for the monitoring of RPV embrittlement for their facility.

### 3.0 TECHNICAL EVALUATION

The staff has reviewed the licensee's regulatory and technical analyses in support of its proposed license amendment which are described in Attachment 1 of the licensee's submittal. The detailed evaluation below will support the conclusion 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.

In their letters dated December 31, 2002, and July 24, 2003, the licensee submitted information for CNS which addressed the information requested in Reference 3. NPPD submitted a revised Section 2.7.2.13 of the CNS USAR in their July 24, 2003, submittal, which stated:

As part of the ISP, CNS capsules are evaluated using fluence calculations that conform with Regulatory Guide 1.190. Recalculation of fluences for previously pulled capsules are also in conformance with Regulatory Guide 1.190.

The NRC staff has concluded that the inclusion of this statement in the CNS USAR is sufficient to address both items (1) and (2) from Reference 3. Regarding item (1), the licensee's use of a

methodology for determining the CNS RPV neutron fluence values which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff will provide acceptable results based upon the available dosimetry data. Regarding item (2), RPV surveillance capsules tested under the BWRVIP ISP will have their fluences determined by the use of a methodology which is consistent with the attributes of RG 1.190 and has been approved by the NRC staff. The NRC staff has concluded that any two (or more) different fluence methodologies will provide "compatible" (as defined in Reference 3) results provided that the best estimate fluence values are within each other's uncertainty bounds. In addition, the licensee provided an additional commitment in their December 31, 2002, submittal regarding when they will perform and update RPV fluence analysis for the CNS RPV:

Fluence recalculations will be performed for previously withdrawn capsules using RG 1.190 methodology by February 2004.

The NRC staff found this commitment by NPPD to be acceptable since the current RPV fluence calculations for the CNS RPV are expected to remain conservative with respect to the actual, accumulated RPV neutron fluence through the expected date of fluence recalculation consistent with the commitment above.

NPPD provided a revised Section 2.7.2.13 of the CNS USAR in their July 24, 2003, submittal, which documented the licensee's incorporation of the BWRVIP ISP into the CNS licensing basis:

CNS has adopted the Boiling Water Reactor Vessel and Internals Project (BWRVIP) Integrated Surveillance Program (ISP) as its current licensing basis for specimen withdrawal and testing. The BWRVIP meets the requirements of 10 CFR 50 Appendix H, Section III.C. The ISP program documents are BWRVIP-78, December 1999, and BWRVIP-86-A, October 2002. The schedule for the remaining capsules is provided in BWRVIP-86-A.

The NRC staff has concluded that the information provided in the revised CNS USAR is adequate to document the licensee's intent to appropriately implement the BWRVIP ISP as the method for demonstrating the compliance of CNS with the requirements of Appendix H to 10 CFR Part 50.

In addition, the licensee made associated changes to the Technical Specification (TS Bases, which consisted of revising Section B 3.4.9 of the TS Bases to include the use of BWRVIP-86-A for their reactor vessel surveillance capsule program). The NRC staff has no objection to the licensee's changes to the TS Bases, since these changes are consistent with the licensee's changes to the USAR, and meet the requirements of Appendix H to 10 CFR Part 50.

The NRC staff has concluded that the information provided by NPPD was sufficient to conclude that the BWRVIP ISP, as approved in Reference 3, can be implemented for CNS as the basis for demonstrating the facility's continued compliance with the requirements of Appendix H to 10 CFR Part 50. As part of the implementation and documentation of the licensee's intent to utilize the BWRVIP ISP for this purpose, the licensee shall modify the CNS USAR as noted in Section 3.0 of this SE and as stated in their December 31, 2002, and July 24, 2003, submittals. This document is controlled in accordance with the requirements of 10 CFR 50.59, "Changes, tests, and experiments."



#### 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 (68 FR 5678, published February 4, 2003). 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.

#### 7.0 REFERENCES

- [1] C. Terry (BWRVIP) to U.S. NRC Document Control Desk, "Project No. 704 - BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)," December 22, 1999.
- [2] C. Terry (BWRVIP) to U.S. NRC Document Control Desk, "Project No. 704 - BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan," EPRI Technical Report 1000888, December 22, 2000.
- [3] W. H. Bateman (USNRC) to C. Terry, "Safety Evaluation Regarding EPRI Proprietary Reports "BWR Vessel and Internals Project, BWR Integrated Surveillance Program Plan (BWRVIP-78)" and "BWRVIP-86: BWR Vessel and Internals Project, BWR Integrated Surveillance Program Implementation Plan," February 1, 2002.

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Date: October 31, 2003

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August 2003