



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

July 6, 2011

Brian J. O'Grady, Vice President-Nuclear
and Chief Nuclear Officer
Nebraska Public Power District
72676 648A Avenue
Brownville, NE 68321

Subject: ERRATA FOR COOPER NUCLEAR STATION - NRC SPECIAL INSPECTION
REPORT 05000298/2011008

Dear Mr. O'Grady:

This errata corrects errors that were in the original report. Please replace the first page of the cover letter, and pages 1, 3, 21, 28, and 29 of the enclosure dated July 1, 2011, with the enclosed pages. The purpose of the changes is to correct the end date of the inspection, more accurately reflect the significance of a violation, and to more clearly state why no substantial potential for an overexposure existed.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosure, and your response, if you choose to provide one, will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, your response should not include any personal privacy or proprietary information so that it can be made available to the Public without redaction.

Sincerely,

A handwritten signature in black ink that reads "Vincent G. Gaddy".

Vincent G. Gaddy, Chief
Project Branch C
Division of Reactor Projects

Docket: 50-298
License: DPR-46

Enclosure: As stated
cc w/Enclosures:
Distribution via Listserv



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612 EAST LAMAR BLVD, SUITE 400
ARLINGTON, TEXAS 76011-4125

July 1, 2011

Brian J. O'Grady, Vice President-Nuclear
and Chief Nuclear Officer
Nebraska Public Power District
72676 648A Avenue
Brownville, NE 68321

Subject: COOPER NUCLEAR STATION - NRC SPECIAL INSPECTION REPORT
05000298/2011008

Dear Mr. O'Grady:

On June 9, 2011, the U.S. Nuclear Regulatory Commission (NRC) completed a special inspection at your Cooper Nuclear Station to evaluate the facts and circumstances surrounding the exposure of three workers to higher than expected dose rates while removing an intermediate range monitor shuttle tube from beneath the reactor pressure vessel. The enclosed report documents the inspection findings that were discussed on June 9, 2011, with Mr. A. Zaremba, Director, Nuclear Safety Assurance, and other members of your staff.

The inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed plant personnel.

Based upon exceeding the deterministic criteria for radiation safety specified in NRC Management Directive 8.3, "NRC Incident Investigation Program," the NRC initiated a special inspection in accordance with Inspection Procedure 93812, "Special Inspection." The basis for initiating the special inspection was the work activity led to unplanned changes in restricted area dose rates in excess of 20 rem per hour in an area where personnel were present. The focus of the inspection was the event that took place on April 3, 2011, when three workers removed an intermediate range monitor shuttle tube from beneath the reactor pressure vessel and dose rates in the area went from 120 millirem per hour to 39 rem per hour at 30 centimeters from the tip of the shuttle tube, which was the source of the excess dose. The focus areas for review are detailed in the Special Inspection Charter (Attachment 2). On April 5, 2011, the NRC determined that the inspection would be conducted and the onsite inspection started on April 11, 2011.

This report documents six NRC-identified findings of very low safety significance (Green). Five of these findings were determined to involve violations of NRC requirements. However, because of their very low safety significance and because they are entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section 2.3.2 of the NRC Enforcement Policy. If you contest the violations or the significance of the noncited violations, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission,

**U.S. NUCLEAR REGULATORY COMMISSION
REGION IV**

Docket: 05000298

License: DPR-46

Report: 05000298/2011008

Licensee: Nebraska Public Power District

Facility: Cooper Nuclear Station

Location: 72676 648A Avenue
Brownville, NE 68321

Dates: April 11 through June 9, 2011

Inspectors: D. Overland, Resident Inspector, Waterford 3 Steam Electric Station
B. Tharakan, CHP, Resident Inspector, South Texas Project

Approved By: Vince Gaddy, Chief
Project Branch C
Division of Reactor Projects

SUMMARY OF FINDINGS

IR 05000298/2011008; 04/11/11 – 06/09/11; Cooper Nuclear Station; Special inspection to evaluate unexpected doses to workers performing under-vessel maintenance activities.

The report covered one week of onsite inspection and in-office review through May 3, 2011. Two resident inspectors performed the inspection. Five Green noncited violations and one Green finding were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." The cross-cutting aspect is determined using Inspection Manual Chapter 0310, "Components within the Cross Cutting Areas." Findings for which the significance determination process does not apply may be Green or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self Revealing Findings

Cornerstone: Occupational Radiation Safety

- Green. The inspectors identified a noncited violation of Technical Specification 5.4.1, for a failure to implement procedures described in Regulatory Guide 1.33, Appendix A. Specifically, the licensee failed to implement procedures that provide guidance on creating clear, accurate work instructions. As a result, the work instructions were not able to be completed as written and needed parts were not available. This directly contributed to three instrumentation and control technicians receiving an unexpected radiation dose. A site stand-down was held to discuss the lessons learned and the event was entered into the licensee's corrective action program as Condition Report CR-CNS-2011-4431.

This deficiency was reasonable for the licensee to foresee and prevent occurrence. The finding was more than minor because it is associated with the human performance attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation. The inspectors evaluated this finding using Inspection Manual Chapter 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process." The inspectors determined that the finding is of very low safety significance (Green) because it was not associated with ALARA planning or work controls, there was no overexposure, there was no substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised. The finding has a cross-cutting aspect in the work practices component of the human performance area because the licensee did not effectively communicate expectations regarding procedural compliance and that personnel follow procedures. Specifically, the licensee displayed a cultural behavior that unacceptable behaviors, such as failing to follow procedures, are acceptable as long as the outcome is desirable [H.4.(b)](Section 3.1).

requirements, surveys used during the ALARA briefing, and the radiation protection briefing form used for the ALARA briefing. The inspectors determined that the ALARA briefing form indicated no system breach was to be performed during this job, however, that was not true because the workers planned to breach the incore nuclear instrument system. The ALARA briefing did not cover a system breach of the nuclear instrument system, even though it was originally planned. The ALARA briefer lacked a questioning attitude with respect to gaining an understanding of the full scope of the work activity that the technicians were about to perform. The briefer did not question the special work permit dose setpoints that were set at 300 and 600 millirem/hr even though the ALARA briefing form indicated dose rates in the area of 80-120 millirem/hr. Additionally, there was no discussion or review of relevant Cooper Nuclear Station operating experience, which would have identified that high dose rates would be encountered during the performance of this work activity.

The inspectors determined that the pre-job ALARA briefing was inadequate because the workers were not made knowledgeable of the dose rates in a high radiation area while performing the activities they had planned as required by Technical Specification 5.7.2. The inspectors also determined that the licensee failed to appropriately communicate, coordinate, and cooperate with each other during the ALARA pre-job briefing and to keep personnel apprised of plant conditions that may affect work activities to ensure radiological safety was maintained.

Analysis. The failure to perform an adequate ALARA briefing to make workers knowledgeable of the dose rates in the work area is a performance deficiency. The finding is more than minor because it is associated with the human performance attribute of the Occupational Radiation Safety Cornerstone and affected the cornerstone objective to ensure the adequate protection of the worker health and safety from exposure to radiation from radioactive material during routine civilian nuclear reactor operation, in that the finding resulted in three technicians receiving an unexpected radiation dose. The inspectors evaluated the significance of the finding using NRC Inspection Manual 0609, Appendix C, "Occupational Radiation Safety Significance Determination Process," dated August 19, 2008. The inspectors determined that the finding is of very low safety significance (Green) because it was not associated with ALARA planning or work control, there was no overexposure, there was not substantial potential for an overexposure, and the licensee's ability to assess dose was not compromised. The inspectors determined that the apparent cause of this finding was that the licensee had not encouraged interdepartmental communication and coordination between workers to ensure that workers were properly prepared to begin work activities. Therefore, this finding has a cross-cutting aspect in the work control component of the human performance area because the licensee did not incorporate actions to address the need for work groups to communicate, coordinate, and cooperate with each other during activities in which interdepartmental coordination is necessary to assure human performance, in that the licensee did not address the need for work groups to communicate, coordinate, and cooperate with each other during the ALARA pre-job briefing, which was an activity in which interdepartmental coordination is necessary to assure human performance [H.3(b)].

Enforcement. Technical Specification 5.7.2 states that, in addition to the requirements of Specification 5.7.1, entry into high radiation areas accessible to personnel with dose rates such that a major portion of the whole body could receive in 1 hour a deep dose equivalent in excess of 1000 millirem shall be provided with locked doors except during periods of access by personnel under an approved special work permit which shall

therefore warrant no further analysis. The whole body dose assigned to the individual was 0.040 rem based on the electronic dosimeter readings and the time motion studies. The whole body dose is also below the annual regulatory limit of 5.0 rem. The inspectors determined that there was no substantial potential for an overexposure because the three workers immediately exited the area after their electronic dosimeters alarmed.

b. Findings

No findings were identified.

5.0 Review of Previous Activity Performance

a. Scope

The inspectors reviewed previous intermediate range monitor and source range monitor removal activities. The inspectors assessed the adequacy of prior work packages and the execution of those work orders. Previous condition reports and past operating experience were reviewed for lessons learned. The inspectors compared the previous work orders to Work Order 4741002, to determine if this method (pulling the shuttle tube from the bottom) had been used in the past.

b. Findings

No findings were identified. Operating experience showed that a shuttle tube had previously been pulled from the bottom of the vessel, however this was a necessary action resulting from a stuck detector. In this instance, the licensee also experienced elevated radiation levels. The normal (proceduralized) method for replacing the tubing assembly was to remove the assembly from the top of the core.

6.0 Review of Causal Determination and Corrective Actions

a. Scope

The inspectors reviewed the preliminary root cause evaluation report and corrective actions identified to prevent recurrence of the root causes. The inspectors interviewed members of the licensee's root cause team and licensee management. At the end of the inspection period, the inspectors did not have the opportunity to review the final version of the root cause evaluation because the final report had not been completed and reviewed by licensee management.

b. Findings

No findings were identified. Because the final root cause report had not been completed at the time of this report, the inspectors were unable to evaluate its adequacy against the licensee's corrective action program procedures. Therefore, the final root cause report will be subject to inspection at a future date. Notwithstanding the issuance of the final root cause evaluation report, the inspectors noted that the licensee's preliminary root causes were consistent with the findings identified in this report. The licensee's long term corrective actions are still in the process of being developed, however, interim actions have been taken to prevent recurrence of this event. These actions include work order process procedure revisions to include identification of materials required to

perform maintenance, implementing a work order quality review panel, revising work order risk assessment procedures, revising radiation protection briefing forms to ensure full extent of job scope is discussed at the ALARA briefing, reinforcing requirement for radiation protection to attend all locked high radiation area briefings, and developing specific expectations for supervisors to ensure procedure compliance is mandatory.

40A6 MEETINGS

On April 15, 2011, the team presented the preliminary results of this inspection at the end of the onsite week to Mr. D. Willis, General Manager Plant Operations, and other members of the licensee staff who acknowledged the findings. The team returned all proprietary information reviewed during the inspection prior to leaving the site.

On May 3, 2011, the team presented the final results of the inspection to Mr. A. Zaremba, Director of Nuclear Safety Assurance, and other members of the licensee staff via telephonic exit. The team obtained permission from the licensee to use the diagrams and photographs in this report.

On June 9, 2011, the team re-exited and presented revised results of the inspection to Mr. A. Zaremba, Director of Nuclear Safety Assurance, and other members of the licensee staff via telephonic exit.

ATTACHMENT 1: SUPPLEMENTAL INFORMATION
ATTACHMENT 2: SPECIAL INSPECTION CHARTER
ATTACHMENT 3: PICTURES AND DIAGRAMS