

FEB 18 1992

In Reply Refer To:  
License No. DPR-46  
Docket No. STN 50-298

Nebraska Public Power District  
ATTN: Guy R. Horn, Nuclear Power  
Group Manager  
P.O. Box 499  
Columbus, Nebraska 68602-0499

Gentlemen:

SUBJECT: NRC INSPECTION REPORT NO. 50-298/91-25

Thank you for your letter of January 10, 1992, in response to our letter and Notice of Violation dated December 12, 1992. We have reviewed your reply and find it responsive to the concerns raised in our Notice of Violation. We will review the implementation of your corrective actions during a future inspection to determine that full compliance has been achieved and will be maintained.

Sincerely,

Original signed by

A. Bill Beach, Director  
Division of Reactor Projects

cc:  
Nebraska Public Power District  
ATTN: G. D. Watson, General Counsel  
P.O. Box 499  
Columbus, Nebraska 68602-0499

Cooper Nuclear Station  
ATTN: John M. Meacham, Division  
Manager, Nuclear Operations  
P.O. Box 98  
Brownville, Nebraska 68321

\*RIV:FIPS  
ADGaines;dm  
/ /92

\*FIPS  
REBaer  
/ /92

C:FIPS  
BMurray  
/ /92

D:DRSS  
LJCallan  
2/14/92

D:DRP  
ABBeach  
2/14/92

\*Previously concurred

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*Handwritten signature/initials*  
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FEB 18 1992

Nebraska Department of Environmental  
Control

ATTN: Randolph Wood, Director  
P.O. Box 98922  
Lincoln, Nebraska 68509-8922

Nemaha County Board of Commissioners

ATTN: Larry Bohlken, Chairman  
Nemaha County Courthouse  
1824 N Street  
Auburn, Nebraska 68305

Nebraska Department of Health

ATTN: Harold Borchert, Director  
Division of Radiological Health  
301 Centennial Mall, South  
P.O. Box 95007  
Lincoln, Nebraska 68509-5007

Kansas Radiation Control Program Director

bcc to DMB (IE35)

bcc with nonsafeguards portion of licensee's letter:

R. D. Martin  
Resident Inspector  
Section Chief, DRP/C  
Lisa Shea, RM/ALF  
MIS System  
DRS  
RSTS Operator  
Security/RPEPS File  
RIV File  
ADGaines  
Section Chief, NMSIS  
LJCallan  
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Project Engineer, DRP/C  
BMurray  
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Senior Resident Inspector - Fort Calhoun  
Senior Resident Inspector - Cooper

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Project Engineer, DRP/C  
BMurray  
REBaer  
Senior Resident Inspector - Fort Calhoun  
Senior Resident Inspector - Cooper

To: P. Harrell

1/22/92

10:08 AM

GENERAL OFFICE  
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## Nebraska Public Power District

www

January 10, 1992

U. S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, DC 20555

Gentlemen:

Subject: NPPD Response to Inspection Report 50-298/91-25 (Reply to a Notice of Violation)

During an NRC inspection conducted October 28, 1991 through November 1, 1991, two violations were issued for 1) a failure to properly place personnel dosimeters on workers and 2) a failure to maintain up-to-date special work permits. Following is a statement of each violation and our response thereto in accordance with 10CFR2.201

### Statement of Violation

10 CFR 20.202 (a)(3) states, in part, that each licensee shall supply appropriate personnel monitoring equipment and shall require the use of such equipment by each individual who enters a high radiation area.

Contrary to the above, on October 31, 1991, the inspectors determined that from October 21-24, 1991, the licensee did not place personnel monitoring equipment on the backs of workers involved with removal of insulation from the feedwater nozzles. Radiation surveys indicated that workers were exposed to localized radiation levels of about 1.4 Rem per hour to their lower backs.

This is a Severity Level IV violation (Supplement 4) (298/9125-01).

### Reason for Violation

Prior to commencing removal of insulation from the feedwater nozzles, a full scale mockup was constructed to assist in the evaluation and selection of the most efficient insulation removal process and to determine the correct placement of dosimetry on the workers. During this evaluation, which was conducted by project engineering and insulator craft personnel, the Health Physicist and ALARA Coordinator observed the insulators' physical proximity to the feedwater nozzle. Based on the actual feedwater nozzle radiation gradients and the positioning of the workers observed in the mockup, the Health Physicist and ALARA Coordinator determined that dosimetry placement should be on the workers' heads, chests, and elbows.

After the mock-up training and evaluation had been completed, it was determined that the insulator craft personnel would not be able to perform this work due to their limited availability, the need for their expertise for

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other work, and the assumed simplicity of the job in question. Pipefitter and sheetmetal craft personnel were substituted and received insulation removal training on the full scale feedwater mockup on October 19, 1991. This training involved limited participation by Health Physics and ALARA personnel due to their significant involvement with the ongoing outage, and the fact that the insulation removal process was considered to be well organized. On October 21, 1991, the pipefitter and sheetmetal personnel received a pre-job Health Physics and ALARA briefing by the Lead Health Physics Technician and ALARA Coordinator. All known questions, requests, and concerns presented by the pipefitter and sheetmetal craft personnel were addressed during this briefing. Upon completion of the pre-job briefing, the removal of insulation from the feedwater nozzles began.

During the course of work, several of the involved craft personnel claimed to have positioned themselves to facilitate removal of portions of the insulation such that, at various times, their lower back could have received the major portion of the job-related exposure. The four Contract Health Physics Technicians providing radiological coverage for this job apparently failed to recognize the significance of this situation and did not relocate or obtain additional dosimetry, nor convey the workers' claims to Health Physics Supervision.

#### Corrective Steps and the Results Achieved

On October 24, 1991 the Radiological Manager became aware of the situation and immediately stopped further work on the feedwater nozzle insulation removal project, until the workers' claims could be evaluated by Health Physics Supervision. In addition, the involved sheetmetal and pipefitter workers were restricted from the Radiologically Controlled Area of Cooper Nuclear Station until the evaluation could be completed. The Radiological Manager also notified NRC Region IV on October 25, 1991, of the workers' claims of inadequate dosimetry placement, and outlined the plans to evaluate the workers' doses and determine correct dosimetry placement prior to recommencing the feedwater insulation removal project.

To ensure immediate feedback and corrective measures needed as a result of this event, the Health Physics Technicians (including contract technicians) were briefed by Health Physics Supervision on the dosimetry placement requirements for all work involving significant radiation gradients. Health Physics Supervision also briefed the Health Physics Technicians on the dosimetry placement concerns raised by the sheetmetal and pipefitter personnel.

The results of the dose evaluations were completed on October 28, 1991, and showed that the workers did not receive doses in excess of 10CFR20 limits and that the doses assigned, although conservative, were similar to the doses that could be reasonably expected for this task. Subsequently, additional whole body dosimetry was assigned to insulation craft personnel, who then completed the remaining feedwater insulation removal on October 29, 1991.

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To further evaluate the doses received by the sheetmetal and pipefitter craft personnel, the services of a consulting firm with extensive expertise in radiation protection program assessment was obtained to perform an independent evaluation of the incident and make recommendations regarding the doses received by the workers. The results of this independent evaluation confirmed the correctness of the dose assignments made by the Radiological Department.

#### Corrective Steps Which Will Be Taken To Avoid Further Violations

The CNS Health Physics Technician and Contract Health Physics Technician Training Program lesson plans will be reviewed and revised as necessary to ensure that radiation protection personnel better understand the requirements for dosimetry placement. CNS Procedures 9.1.1.3, Personnel Dosimeter Program, and 9.1.1.4, Special Work Permit, will be reviewed and revised as necessary to ensure that adequate instructions are provided for the proper placement of personnel dosimetry.

The methods for conducting pre-job briefings and mock-up training will be evaluated and revised as necessary to ensure that appropriate pre-job surveys and dosimeter placement considerations are effectively incorporated into the mock-up training and its associated pre-job briefing. A video camera will be utilized so that mock-up training and pre-job briefings can be video taped. This will allow Radiological Department personnel, and craft personnel who are unable to attend the original briefing or mock-up training, to be able to view the video tape prior to beginning work.

#### Date When Full Compliance Will Be Achieved

NPPD is currently in compliance with the requirements stated in the violation. The other corrective steps identified above will be completed by July 1, 1992.

#### Statement of Violation

Technical Specification 6.3.4 requires that radiation control procedures shall be maintained.

Health Physics Procedure 9.1.1.4, "Special Work Permit," Section II.C.3 requires that Special Work Permits specify necessary personnel dosimetry.

Contrary to the above, on October 31, 1991, the inspectors determined that four special work permits (91-10-15, 91-10-29, 91-10-44, and 91-10-77) did not specify the need for multiple dosimetry even though multiple dosimetry was determined to be necessary to properly monitor personnel radiation exposures.

This is a Severity Level IV violation (Supplement 1) (298/9125-02).

Reason for Violation

This violation occurred as a result of inadequate Special Work Permit (SWP) procedural guidance and an oversight on the part of Health Physics personnel to modify the SWP to reflect actual personnel dosimetry requirements. Although the Health Physics Technicians providing job coverage required workers to wear multiple dosimetry, the SWP procedure did not specifically direct the Technicians to update the SWPs to reflect the changes in dosimetry requirements. As a result, the actual dosimetry requirements, although more restrictive, differed from those specified on the SWPs.

Corrective Steps Which Have Been Taken And The Results Achieved

In addition to the four SWPs noted in the violation which were immediately corrected, all remaining active SWPs were reviewed to ensure that the SWP dosimetry requirements reflected actual personnel dosimetry requirements. No additional SWPs required revision.

Corrective Steps Which Will Be Taken To Avoid Further Violations

An assessment of the SWP program has been completed. This assessment indicated that the SWP procedure, and its associated SWP form, are not adequately human factored. It was also determined that the issuance and revisions of SWPs, as currently defined, is very time consuming, increasing the difficulty factor for updates as radiological conditions or entry requirements change. In addition, it was noted that generic terms, such as "as required", were used to specify instructions and monitoring requirements.

As a result of this assessment, the SWP program will be restructured to achieve the following objectives:

- Facilitate a means to effectively correct human factor weaknesses, by providing a timely means for updating changes to radiological conditions, dosimetry requirements, job coverage requirements, and personnel entry requirements posted on the SWP.
- Provide a means of identifying task specific radiological control requirements for multiple tasks occurring within the same job.
- Incorporate a section on the SWP to document special considerations.
- Eliminate the use of generic terms such as "as required" by providing a means for specific delineation of job coverage, personnel monitoring, and protective equipment and clothing requirements.

These objectives will be accomplished by revising station procedures and Special Work Permit forms to provide detailed task specific information and by

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conducting specialized training for Health Physics Technicians in their use. Additionally, radiation worker training will be revised to include the new procedures to ensure compliance and understanding at every level in the organization.

#### Date When Full Compliance Will Be Achieved

NPPD is currently in compliance with the requirements stated in the violation. The remaining corrective steps identified above will be completed by July 1, 1992.

In addition to the two violations discussed above, you also indicated that other weaknesses may exist in our radiation protection program. Following is the statement of the concerns and our response to them:

#### Statement of Concern

We believe that the violations are an indication that other weaknesses exist in your radiation protection program. For example, we noted that poor communications, controls, and coordination of radiological work activities were major contributors to the identified problem areas. The groups where these weaknesses were observed included radiation protection supervision, radiation protection technicians at the job site, the ALARA section, and the radiation workers. Accordingly, we request that you also include in your response steps you plan to take to address weaknesses regarding communications, controls, and coordination of radiological work activities.

#### Discussion

The Division Manager of Nuclear Operations directed the Senior Manager of Operations and the Radiological Manager to conduct an evaluation of the CNS radiation protection program to determine whether significant communications, radiological controls and radiological work coordination weaknesses exist in the program. The results of this evaluation are summarized as follows:

#### Radiological Controls

The Special Work Permit (SWP) is the governing document which establishes the radiological work control requirements for work involving significant radiological hazards. As discussed in our response to Notice of Violation 298/9125-C2, a significant restructuring to the SWP program will be conducted to provide specific job coverage requirements, personnel monitoring requirements, and protective equipment and clothing requirements. These upgrades should significantly enhance controls over radiological work activities conducted at CNS.



Radiological Work Coordination and Communications

Good communications and work coordination are essential to the successful completion of any work evolution, especially work involving significant radiological hazards. CNS has always taken pride in the ability to effectively incorporate the radiological concerns of workers into all phases of job planning and performance. Examples of excellent communications and work coordination have been identified in monthly performance reports, outage critiques, and project summaries. During the 1991 CNS Refueling Outage, several projects, such as the Reactor Recirculation Pump Upgrade, which required intensive and detailed radiological coordination and controls, were performed and completed successfully with low accumulated exposures and aggressive work schedules. This can be attributed to thorough, effective work planning and coordination by all individuals associated with these projects, including Radiological Department Supervision, Health Physics Technicians, ALARA personnel, and the craft work force.

The feedwater nozzle insulation removal work, which served as a basis for the violations and weaknesses discussed in this inspection report, began with several pre-job work review and ALARA meetings involving project engineering, Radiological, ALARA, and insulator craft personnel. As a result of these meetings, a full-scale mockup was fabricated to evaluate tooling and equipment, physical interferences, dosimetry, and radiological control requirements.

After the mockup evaluations were completed, pipefitter and sheetmetal workers were substituted for the insulator craft originally scheduled to perform the insulation removal. However, these individuals also attended insulation removal training conducted on the full-scale mockup, and then attended an ALARA pre-job meeting held by ALARA and Health Physics personnel. The workers were informed of the low dose areas, dose rates, contamination levels, and dosimetry requirements. Radiological control and ALARA questions asked by the workers were addressed during this meeting.

During the actual feedwater nozzle insulation removal, communications were allowed to break down due to the lack of direct CNS Health Physics Technician involvement in the job coverage and the apparent lack of sensitivity by the Contract Health Physics Technicians to the pipefitter and sheetmetal workers concerns or apprehensions. The workers developed a sense of apprehension and mistrust which, when combined with the Contract Health Physics Technician's insensitivity, led to a rapid deterioration of communications and work coordination.

In order to prevent future deficiencies such as this from occurring, CNS Radiological Department Supervision will either only assign CNS personnel to coordinate Health Physics coverage for projects where communications and radiological controls are critical, or provide specific overview by CNS personnel. Consideration will also be given to assigning teams of Contract and CNS Health Physics Technicians to cover long duration jobs requiring

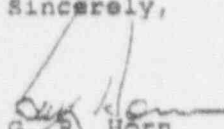
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Page 7

significant radiological work controls and coordination, as opposed to the current practice of assigning Health Physics Technicians on a day-to-day basis. The team concept will ensure better continuity, responsibility, and accountability of Contract Health Physics Technicians, and will instill a sense of ownership, when the technicians know that they will be assigned to the job from beginning to end. Finally, future refueling outage craft contractor Radiological Coordinators will be assigned to work directly for the CNS Radiological Department, rather than for the craft contractor as was the case during the 1991 Refueling Outage. This will eliminate any conflicts in priority between the Radiological Coordinator's radiological control and coordination responsibilities and outage schedule deadlines. This practice worked well at CNS for the Reactor Recirculation Pump Upgrade and the Reactor Recirculation Pipe Replacement Projects.

Nebraska Public Power District is committed to providing a safe and productive work environment for all individuals working within the radiological program at its Cooper Nuclear Station. As such, the correction of the radiation protection program deficiencies identified in this inspection report is one of NPPD's utmost priorities.

Should you have any questions concerning this matter, please contact me.

Sincerely,

  
G. R. Horn  
Nuclear Power Group Manager  
Cooper Nuclear Station

GRH:cl-38X

cc: Regional Administrator  
U. S. NRC - Region IV  
NRC Resident Inspector  
Cooper Nuclear Station

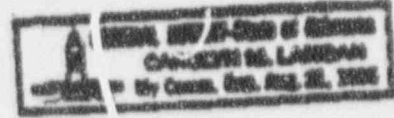
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STATE OF NEBRASKA )  
PLATTE COUNTY )

G. R. Horn, being first duly sworn, deposes and says that he is an authorized representative of the Nebraska Public Power District, a public corporation and political subdivision of the State of Nebraska; that he is duly authorized to submit this information on behalf of Nebraska Public Power District; and that the statements contained herein are true to the best of his knowledge and belief.

G. R. Horn  
G. R. Horn



Subscribed in my presence and sworn to before me this 10<sup>th</sup> day of January, 1992.

Charles M. Ladd  
NOTARY PUBLIC