Nebraska Public Power District

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NLS950102
May 15, 1995

Director, Office of Enforcement
U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: Reply to a Notice of Violation;
NRC Inspection Report No. 50-298/95-03;
Cooper Nuclear Station, NRC Docket 50-298, DPR-46

Reference: Letter from Mr. A. B. Beach (USNRC) to Mr. G. R. Horn (NPPD), dated April 5, 1995, NRC Inspection Report 50-298/95-03 and Notice of Violation.

This letter, including Attachment 1, constitutes Nebraska Public Power District's (the District) reply to the referenced Notice of Violation (NOV) in accordance with 10 CFR 2.201. Inspection Report 50-298/95-03 documented the results of an NRC inspection conducted from January 22 through March 4, 1995, and consisted of selected examinations of procedures and representative records, interviews with personnel, and observation of activities in progress. In addition to replying to the specific violations, the District was also requested to address the measures that will be taken to define the types of activities that are considered to be within the skill of the craft. This issue is discussed in Violation A, Skill of the Craft Issues, of Attachment 1.

In summary, the District admits nonfulfillment of the NRC requirements cited in Violations A and B (298/9503-01 and 298/9503-02) and has completed all corrective actions that are necessary to return Cooper Nuclear Station (CNS) to full compliance with regard to the referenced violations. Per discussion with Mr. T. Reis of NRC Region IV, the submittal date for this reply was extended to May 15, 1995.

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

J. H. Mueller
Site Manager

Attachment

cc: Regional Administrator
USNRC Region IV

NRC Resident Inspector
Cooper Nuclear Station

NPG Distribution

IE01

REPLY TO APRIL 5, 1995, NOTICE OF VIOLATION
COOPER NUCLEAR STATION
NRC DOCKET NO. 50-298, LICENSE DPR-46

During NRC inspection activities conducted from January 22 through March 4, 1995, violations of NRC requirements were identified. The particular violations and the District's replies are set forth below:

I. Violation A

Violation A contained in the referenced inspection report cites the following:

"Criterion III of Appendix B to 10 CFR Part 50 states, in part, that design changes, including field changes, shall be subject to design control measures commensurate with those applied to the original design and be approved by the organization that performed the original design.

"Contrary to the above, a design field change was made without being subject to design control measures in that several stem caps were replaced on various motor-operated valves, the replacement stem caps were not fabricated to the same tolerances as were the original stem caps, and an approved design change was not issued to authorize the use of the new tolerances."

Admission or Denial to Violation

The District admits the violation.

Reasons for Violation

On February 11, 1995, during a realignment of the Residual Heat Removal (RHR) System, motor-operated valve (MOV) RHR-MOV-MO15D failed to stroke completely closed. Investigations revealed that an overinserted stem cap was binding the MOV stem locking nut during its rotation. The cause of the overinsertion could not be established with certainty, but it has been attributed to either vibration or repeated contact between the stem locking nut and stem cap during valve stroking over time. Since periodic operation has demonstrated the functionality of the MOV, improper installation was not considered to be a direct causal factor.

Although RHR-MOV-MO15D is a normally closed MOV which is not credited with stroking in the accident analyses, the unavailability of remote actuation of MOVs with passive or active safety functions is not consistent with their design. Accordingly, a 100% inspection was performed of rising stem motor-operated globe and gate valves that are classified as Essential. Of the 114 MOVs inspected, five additional MOVs were found to have stem caps which protruded below the inside surface of the operator covers rendering them potentially susceptible to this same failure mechanism. Two of the five stem caps appeared to have been fabricated by the CNS Maintenance Department to replace the stem caps that would have originally been supplied by the valve manufacturer. Maintenance records indicate that the fabrications occurred prior to 1990. Another two stem caps appeared to have been vendor supplied. The origin of the last stem cap could not be determined.

The principal reason for this Violation was that a previously unrecognized MOV failure mechanism was introduced by the stem cap fabrications. MOV stem caps were considered component parts that were simple in construction and had only a passive non-safety-related function. Accordingly, CNS

adopted the practice of fabricating replacement stem caps when vendor replacement parts were not immediately available. However, it was not recognized that (absent specific installation controls on stem cap protrusion into the operator) thread length or pitch could be critical characteristics of an equivalent replacement. Accordingly, excessive stem cap protrusion offered a failure mechanism for the MOVs that had not existed to the same degree with the previous vendor part. This constituted a change in design characteristics not covered by the CNS design control process.

An additional factor in this Violation was that the previous work control process was not sufficiently rigorous in assuring the acceptability of Non-Essential replacement piece/parts when the overall parent component function was safety-related. Although current industry guidance allows discretion in determining equivalency in nonsafety-related piece/parts (EPRI NP-6404, "Guidelines for the Technical Evaluation of Replacement Items in Nuclear Power Plants (NCIG-11)"), it is now considered prudent at CNS to perform acceptability evaluations to prevent the introduction of new credible failure modes of Non-Essential piece/parts that could adversely affect a safety-related component.

Corrective Steps Taken and the Results Achieved

The stem cap for RHR-MOV-MO15D was shortened to remove the interference with the stem locking nut. The other five MOV stem caps whose threads extended into the motor operator were evaluated and found not to impact component operability. The two CNS fabricated stem caps were shortened to prevent the potential interference. The two vendor supplied stem caps had only a nominal extension and were judged to be acceptable as is. The stem cap of the remaining MOV was found acceptable, but as a precaution was staked to prevent further protrusion. With these actions, the failure mechanism of the Non-Essential stem caps on the motor operators of the Essential MOVs has been eliminated. Since the form, fit, and function is now equivalent to vendor procured replacements, the CNS fabricated stem caps no longer constitute a design change, but are considered to be equivalent parts.

On February, 13, 1995, the failure of RHR-MOV-MO15D was communicated to the nuclear industry by an entry made in the INPO Nuclear Network. Information was provided about the motor operator failure, the conclusion that stem cap interference with the stem locking nut caused the failure, and the immediate corrective actions.

A search was performed of the Nuclear Corrective Action Program data base for other examples of safety-related component failures caused by Non-Essential piece/part failure mechanisms resulting from inappropriate substitutions. No other examples were found, which provides confidence that the issue was limited to the safety-related MOVs.

A review was performed of the applicable CNS procedures to assure that adequate barriers are presently in place to control the installation of Non-Essential piece/parts in safety-related components that are not like-for-like replacements. The procedures require that if the parent component is safety-related (as in the MOVs noted by this Violation), the entire Maintenance Work Request (MWR) package is classified as Essential. The Maintenance Planner identifies the spare parts that may be needed. For Essential MWRs, CNS Engineering assesses and approves the acceptability of spare parts that are not like-for-like replacements of existing parts in both Non-Essential and Essential piece/part applications. Also, the warehouse will not issue Non-Essential parts for an Essential component unless the end use has received approval as documented by reference to a specific piece/part safety classification evaluation. These requirements did not exist to the same degree at the

time of the stem cap fabrications. They have proven to be effective in ensuring that no new failure modes are introduced and that the new replacement component applications can remain non-Essential (i.e., have no credible impact on the safety-related functions of the parent component). Accordingly, the barriers currently in place are considered acceptable to prevent recurrence.

Corrective Steps That Will Be Taken to Avoid Further Violations

To prevent future stem cap installations from similarly impacting the function of MOV motor operators, the Limitorque operator maintenance procedures will be revised to include guidance to prevent overinsertion into the operator covers.

Date When Full Compliance Will Be Achieved

CNS is now in full compliance with the design control requirements of Criterion III of 10 CFR 50 Appendix B as they apply to the fabrication and use of replacement MOV stem caps.

Skill of the Craft Issues

The District acknowledges the NRC's contention that this Violation is attributable to a previous over-reliance on "skill of the craft", and recognizes and agrees with the weaknesses observed in this area by previous third party reviews. However, after careful review the District believes that Violation A was fundamentally not the result of an inappropriate reliance on the skill of the craft versus formal proceduralization when conducting maintenance.

The fabricated stem caps were Non-Essential parts having equivalent form, fit, and function to vendor supplied parts with the exception of thread length and pitch tolerances. In retrospect, it can be seen that these could be critical characteristics of an equivalent replacement. However, there had been no previous MOV failures of this type at CNS and there were no published vendor or industry operating experience documents that described this particular failure mode. Also, two of the additional five stem caps that were initially screened as being susceptible to this failure mechanism were vendor supplied parts. As such, improper CNS fabrication was not a factor for the potential vulnerability of these two stem caps. For these reasons, it is doubtful that more descriptive fabrication instructions would have prevented this issue.

The current procedural guidance on MWR generation defines activities that are considered by Management to be within the skill of the craft (Attachment 5 of CNS Procedure 7.0.1.2). For these types of activities, Special Instructions need not be generated as long as the work is performed within the context of the MWR. Additionally, Maintenance Work Practice No. 5.0.4 provides guidance for defining the procedural detail of Maintenance procedures. These enhancements were put in place in response to previously acknowledged deficiencies in controlling skill of the craft maintenance activities. Although this guidance has been successful to date, additional measures will be taken as they are found to be necessary.

II. Violation B

Violation B contained in the referenced inspection report cites the following:

"Criterion V of Appendix B to 10 CFR Part 50 states, in part, that activities affecting quality shall be prescribed by documented procedures,

of a type appropriate to the circumstances, and shall be accomplished in accordance with these procedures.

"Contrary to the above, on January 31, 1995, a health physics technician failed to accomplish an activity prescribed by Procedure 9.2.3 in that the technician was observed taking smears of the control rod drive hydraulic control units without wearing hand protection to prevent the spread of contamination, as was specified in the procedure."

Admission or Denial to Violation

The District admits the violation.

Reasons for Violation

Decontamination of a bank of Control Rod Drive Hydraulic Control Units was nearing completion. As part of final clearance as a contaminated area, smears were being taken by Health Physics (HP) personnel. One HP technician inappropriately took smears past the radiological boundary ropes without protective clothing for his hands. The smears indicated no detectable activity and the contaminated area was released for unrestricted access shortly thereafter.

CNS procedures permit HP technicians to authorize deviations from the specified dress requirements on a case-by-case basis. This is meant to provide flexibility to the HP staff and is consistent with standard radiological practices at other nuclear facilities. However, it is management's expectation that this is only acceptable under conditions of low contamination levels where there is little likelihood for the spread of contamination. Additionally, such deviations are acceptable only after a conscious decision is made by HP technicians based on the risk for cross-contamination, not as a "shortcut" of the posted protective clothing requirements.

The reason for this Violation is inadequate communication of management expectations. Specifically, discussions with other HP technicians indicated some confusion as to when the above practice was appropriate. Furthermore, the procedural guidance had purposely been written with a lack of prescriptiveness to allow HP technicians the latitude for making on-the-spot judgments. However, the guidance as written did not ensure that the circumstances under which latitude is acceptable was clearly understood and consistently applied.

Corrective Steps Taken and the Results Achieved

Radiological Department tailgate sessions were conducted which detailed this event, discussed the governing procedural issues, and clearly conveyed Management's expectations of compliance with the posted protective clothing requirements (including when deviations were considered appropriate).

Continuing programmatic action is being taken by CNS Management and Supervision to observe and correct radiological protection deficiencies (CNS Directive 7, "Manager/Supervisor Field Observations").

Corrective Steps That Will Be Taken to Avoid Further Violations

The HP procedures governing compliance with Special Work Permits or posted dress out requirements will be enhanced to more explicitly state the conditions under which HP technicians may exercise discretion.

Date When Full Compliance Will Be Achieved

CNS is now in full compliance with the requirement that activities affecting quality be accomplished in accordance with documented procedures as this applies to the tasks performed by HP technicians.

Correspondence No: NLS950102

The following table identifies those actions committed to by the District in this document. Any other actions discussed in the submittal represent intended or planned actions by the District. They are described to the NRC for the NRC's information and are not regulatory commitments. Please notify the Licensing Manager at Cooper Nuclear Station of any questions regarding this document or any associated regulatory commitments.

COMMITMENT	COMMITTED DATE OR OUTAGE
The Limitorque operator maintenance procedures will be revised to include guidance to prevent overinsertion into the operator covers.	NONE
The HP procedures governing compliance with Special Work Permits or posted dress out requirements will be enhanced to more explicitly state the conditions under which HP technicians may exercise discretion.	NONE