

APPENDIX B

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report No. 50-298/92-09

Operating License No. DPR-46

Licensee: Nebraska Public Power District
P.O. Box 499
Columbus, Nebraska 68602-0449

Facility Name: Cooper Nuclear Station (CNS)

Inspection At: CNS, Nemaha County, NE

Inspection Conducted: June 22-26, 1992

Inspectors: D. R. Hunter, Senior Reactor Inspector, Operational Programs
Section, Division of Reactor Safety

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Section, Division of Reactor Safety

Approved: _____



T. F. Stetka, Chief, Operational Programs Section
Division of Reactor Safety

7/31/92
Date

Inspection Summary

Inspection Conducted June 22-26, 1992 (Report 50-298/92-09)

Areas Inspected: Routine, announced inspection of the development and implementation of the systematic approach to training (SAT) based program for initial operator licensing. In addition, the inspectors followed up on four previously identified inspection items and reviewed a recent occurrence associated with the performance of a surveillance procedure.

Results: Within the three areas inspected, one violation was identified regarding the failure to provide for independent verification of main flow path valve positions in a surveillance procedure. (paragraph 4).

The licensee had partially completed the planned enhancement program, for the initial licensed operator training program, which is intended to tie the program task elements to the learning objectives. The program is scheduled to be completed in early 1993 (paragraph 2.4).

The licensee's program for the training of candidates for an operating license was determined to be adequate with one weakness identified (paragraph 3).

The licensee's self-assessment and problem identification methods associated with accredited training was considered a strength (paragraph 3.5).

The following violation was identified:

- Violation (298/9209-01): Failure to provide for independent verification of main flow path valves in a surveillance procedure (paragraph 4).

DETAILS

1. PERSONS CONTACTED

CNS

- M. Bergmeier, License Program Instructor
- R. Black, Operations Supervisor
- J. Boyd, Lead Instructor
- *L. Bray, Regulatory Compliance Specialist
- D. Bremer, Operations Support Supervisor
- *R. Brungardt, Operations Manager
- *R. Creason, Operations Training Supervisor
- *M. Dean, Nuclear Licensing and Safety Supervisor
- R. Drier, Training Development Supervisor
- *J. Dutton, Training Manager
- *C. Estes, Acting Senior Manager, Operations
- *R. Gardner, Acting Division Manager, Nuclear Operations
- M. Gillan, Technical Training Supervisor
- G. Lhamon, License Program Instructor
- D. Reeves, Senior Engineer
- D. Shallenberger, Lead Instructor
- *G. Smith, Quality Assurance Manager
- *D. Whitman, Division Manager, Nuclear Support

Other licensee technical and administrative personnel were contacted during the inspection.

*Denotes those personnel attending the exit meeting conducted on June 26, 1992.

2. FOLLOWUP ON PREVIOUSLY IDENTIFIED INSPECTION FINDINGS (92701)

The inspectors reviewed the licensee actions associated with previously identified inspection findings to ensure the matters were adequately addressed.

2.1 (CLOSED) Inspection Followup Item (298/9006-01): Failure to Implement Necessary Procedures

This item related to the licensee's failure to provide the procedures necessary for the use of large bore vent paths for the post-accident venting of the primary containment.

The inspector reviewed the recent revisions made to Emergency Operating Procedure 5.8.17, "Primary Containment Venting," to address the allowable pressure for venting the primary containment and the maintenance of adequate net-positive suction pressure for the core spray and residual heat removal pumps. The evaluations and procedures were found to be acceptable.

2.2 (OPEN) Inspection Followup Item (298/9006-02): Evaluate Post-Accident Reactor Building Reentry Considerations Based on Emergency Operating Procedures (EOP) Execution Requirements.

This item identified that the licensee had not reevaluated conformance to the requirements of NUREG 0737, Item II.B.2 when the EOPs were revised to require the performance of local action steps in the reactor building.

The cover letter of NRC Inspection Report 50-298/90-06 stated that this followup item was being referred to the NRC's Office of Nuclear Reactor Regulation (NRR) for further review. This item remains open pending further discussions between the licensee and NRC staff and subsequent inspection followup.

2.3 (CLOSED) Inspection Followup Item (298/9116-01): Identify Those Tasks For Retraining of Licensed Operators in Order to Define the Licensed Operator Requalification Program

This item identified the licensee's failure to adequately define the licensed operator requalification program by including only the appropriate tasks from the initial licensed operator training in the licensed operator requalification program.

The licensee had previously defined the licensed operator requalification program by applying an algorithm designed to identify tasks for which a licensed operator should be periodically retrained on, to the initial licensed operator task list. This effort resulted in a retraining task list that was identical to the initial training task list, as the algorithm did not eliminate any of the initial training tasks that were not required in the requalification program. The licensee attributed this to an ineffective algorithm. The current task list for the licensed operator requalification program had been determined by consensus arrived at during peer and supervisory group surveys conducted by the licensee. The inspectors noted that the current requalification program task list now consisted of the appropriate tasks selected from the initial licensed operator program task list. Therefore, the appropriate tasks for continuing training of the licensed operators had been identified and the program was defined.

2.4 (OPEN) Inspection Followup Item (298/9116-02): Provide Linkage From The Licensed Operator Task Elements to The Program Training And Testing Learning Objectives.

This item identified a failure of the licensee's program development process to provide connecting linkage from the task elements to program learning objectives. Therefore, there was no certainty that the identification of task elements had resulted in the generation of sufficient learning objectives.

The licensee had undertaken an intensive effort to assure a tie between task elements and program learning objectives. The completion of this effort,

currently scheduled for April 1993 also was intended to yield a plant-specific Knowledge and Abilities (K/A) catalog.

This effort was proceeding along two parallel paths. The first path of development was to assure each task in the licensed operator program task list was supported by K/As from the NRC catalog for boiling water reactors, NUREG-1123. These K/As were being linked to learning objectives and this tabular data information was being stored in an electronic database. A second development path required a three person "consensus group" of licensed operators to review the initial task analysis, streamline the task list and the elements, and identify only those K/As needed to support the CNS task list. Combining both development efforts was intended to result in a plant-specific K/A catalog linked back to task elements resulting from new analysis and linked forward to learning objectives. The entire process had been proceduralized by memoranda issued from management and entered into the licensee's corrective action item tracking system. The licensee estimated the two development processes (parallel paths) to be 65 and 20 percent complete, respectively.

This item remains open pending completion and subsequent NRC review of this effort.

3. TRAINING AND QUALIFICATION EFFECTIVENESS (41500)

The licensee's training activities were inspected using NRC Inspection Procedure 41500, "Training and Qualification Effectiveness," and applicable portions of the guidance in NUREG-1220, "Training Review Criteria and Procedures." In evaluating the licensee's training program, emphasis was directed toward the program for training candidates for an initial NRC reactor operator or senior reactor operator license. The following observations and findings for the initial reactor operator and senior reactor operator licensing training program were focused around the five generally-recognized, fundamental elements of the systematic approach to training concept addressed in NUREG 1220 and Commission Policy Statement, "Training and Qualification of Nuclear Power Plant Personnel," amended November 18, 1988.

3.1 Initial Operator Licensing Job/Task Analysis and Task List

The inspectors selected eight tasks from the initial licensed operator training task list and the licensee provided the task analyses for these tasks. The analyses had been performed in 1987 by a training development contractor for the licensee. The inspectors validated the analyses by a review of the eight tasks against appropriate procedures. This effort revealed that the analysis process had properly identified the task elements of the broad tasks. There was indication that licensee personnel had performed a good review of the 1987-contractor input. During the inspection, it was noted that procedures were in place for licensee personnel to identify the need for task analysis and to perform the analyses when required. Training department personnel were currently performing task analyses to

support an on-going enhancement of the initial licensed operator training program.

The inspectors reviewed the licensee's development and maintenance of the task list for the initial operator licensing training program. This document consisted of two separate task lists that were maintained by the training department and controlled by the operations manager. The two lists consisted of tasks performed by the licensed operators, both inside the control room and locally. The lists identified about 500 control room tasks and about 40 local tasks. The task list identified tasks that were to be captured by the retraining process or the licensed operator requalification program. The lists also identified each training document (lesson plan or simulator scenario) that contained objectives related to a specific task. However, the individual task elements were not directly related to learning objectives.

The inspectors concluded that the program task lists and the analyses, which had been performed to support the identified tasks, were adequate to identify the training required by the program.

3.2 Development of Training Program Learning Objectives

The licensee's current procedures contained detailed instructions for the development and implementation of learning objectives.

The inspectors confirmed that learning objectives were in place to support the training and testing effort. Approximately 100 objectives, that were contained in lesson plans or simulator scenarios, were reviewed by the inspectors and were considered to be good. By searching simultaneously through task analyses and lesson plans or simulator scenarios, nearly all of these objectives could be related back to a task element that had been identified by the task analysis. Approximately five of the objectives could not be identified with a specific task element. However, this finding did not mean that those objectives were without basis, but that the path was not readily identifiable using the licensee's present system.

The inspectors concluded that the licensee's current program resulted in the development of good learning objectives. However, it could not be assured that this development was tied to the task analysis. The current, on-going program enhancement effort (as discussed in paragraph 2.4 of this report) should correct this problem.

3.3 Training Program Design and Implementation

Personnel interviews and procedure reviews by the inspectors confirmed the existence of the following elements within the CNS training organization:

The goals, objectives, responsibilities, and authority of training staff members were clearly stated;

- o There was an appropriate training and qualification program for the training staff;
- o The initial licensed operator training program was properly organized and sequenced within the appropriate training settings;
- o Classroom lesson plans provided for consistent instructional delivery; and
- o Adequate training records were maintained.

A number of NRC inspections in the past have confirmed that CNS licensed operators had experienced problems exercising proper command and control in the simulated control room setting. Therefore, the inspectors reviewed this condition with respect to its effect on the initial licensed operator training program.

The training organization had established and implemented Lesson Plan SKL008-01-02, "Licensed Operator Watchstanding Principles." This lesson plan contained learning objectives for the prospective operator requiring the candidate to be familiar with all possible methods of exchanging information safely and efficiently. Communicating face-to-face, in-plant, and offsite were also emphasized. Additionally, the lesson plan addressed the treatment of unusual plant conditions, problem recognition, problem prevention, procedural adherence, and emergency operations. The licensee had integrated the appropriate operations department instructions and the corporate office directives into this lesson plan to promote safe and effective communication.

The inspectors noted that a recent policy change required effective command and control training and evaluation during simulator sessions. The training organization had developed, but had not implemented Procedure NTG-318, "Command and Control." This procedure contained detailed guidance for training and evaluation of operator command and control. The development of this procedure was the result of an action item assigned to the training organization due to the recent NRC inspection and licensee audit findings. A parallel action item had been assigned to the CNS operations department to develop a command and control directive prior to September 30, 1992. The training organization planned to implement NTG-318 when the operations department directive was in place.

The licensee also planned to send appropriate staff members to other facilities in order to gain insight on correcting command and control problems, and how to train and evaluate operators in effective command and control. There were also plans to install complete audio and video recording capabilities in the control room simulator.

The inspectors concluded that the licensee had an organization and staff that would fully support the program for training candidates for initial licensing. Consistency of training delivery was being assured by the development of the

program training material and an effective instructor training and evaluation program. Additionally the program possessed the attributes necessary to address the identified command and control performance problems and resolve the problems through training. The training of individuals enrolled in the program could be easily tracked.

3.4 Student Performance Evaluation

Written examinations were created and administered for student performance evaluation in accordance with Nuclear Training Department Instruction NT1-05. The inspectors reviewed test items that had been developed in support of the licensee's initial licensed operator training program. These test items were maintained in an electronic database specifically reserved for the initial operator licensing program. Each test item had field identifiers which allowed a search for test items using various parameters. The inspectors noted that test items existed in various formats, including multiple choice, short answer, and true or false. Also, a majority of the of the items reviewed were of a lower cognitive (memorization or recall) level. A smaller portion of the items required the student to demonstrate comprehension, or the ability to analyze or synthesize problems.

The inspectors selected five lesson plans at random and searched the database to assess if there were sufficient test items to support the objectives listed in the lesson plans. Preferably, all objectives should be supported by test items. Of the approximate 100 listed objectives in the lesson plans, the inspectors found only one not supported by at least one test item. The licensee was apprised of this isolated discrepancy and planned to take corrective action.

Procedure NTG-311, "Simulator Training Material Development," required formal student evaluation to specific competencies as a part of the overall simulator evaluation. The CNS process was nearly identical to that required by NUREG-1021, "Operator Licensing Examiner Standards." The procedure had also been recently revised to provide a formalized post-scenario critique process. The inspectors observed simulator training sessions and a subsequent operator performance critique. The entire simulator evaluation and student critique process was considered to be effective.

In summary, the evaluation of candidates seeking an NRC license to operate the CNS facility met standards of student evaluation required by the program accrediting industry group.

3.5 Training Program Self-Assessment

Personnel interviews conducted by the inspectors identified that the following normal methods of program self-assessment were in place:

- o Students were given critique sheets to provide feedback on the training they had received,

- Instructors performed an analysis of the student's response to each question on examinations in order to assess their presentation and the validity of examination questions, and
- Instructors' performance was routinely evaluated.

Additionally, the licensee had initiated several innovative efforts to obtain input in order to identify programmatic problems. Several of these efforts were applied to all accredited training programs. These innovative efforts were:

- The licensee routinely contracted for external audit and assessment of license candidates nearing the end of training. The contracted assessment was to ensure that candidates met the standards for obtaining a license. In addition, the contract typically required program evaluation by the outside individual or group.
- The licensee had recently implemented CNS Directive 54, "Management Overview of Training and Evaluation Activities." This instruction required direct involvement of supervision and management in monitoring the conduct of training for their subordinates. Affected personnel were required to conduct observations at least 1 hour per month. The observations were scheduled and tracked with feedback required by the completion of forms.
- A Nuclear Training Strategic Plan had been developed and implemented. This document established five major training program improvement goals and assigned specific personnel (by position) to perform specific tasks that would be integrated in order to attain long-range program goals. The inspectors concluded that performing the individual tasks would result in a programmatic assessment and that corrective actions to address anomalies within accredited training programs would result.
- The training department had implemented a process for milestone progress reviews of students enrolled in a long-term training program. The findings by training staff personnel were reviewed by a minimum of two department managers. The inspectors believed that this process had the potential to identify programmatic anomalies because all students within a specific program would be subjected to the same review process. This process was formalized by Procedure NPT-10, "Milestone Progress Review," and was required for each student enrolled in the initial licensed operator program.
- Recently, in an effort to improve cooperation between the operations and training department, the training department initiated meetings with all licensed operating crews. These meetings resulted in the identification of 32 problems specific to the licensed operator requalification program. The training department personnel had initiated corrective

actions, where appropriate, regarding the initial operator licensing program.

- o The licensee planned to debrief the initial license classes after completion of the different phases of the training program to produce a problem list similar to the one that had resulted from meetings with licensed operators.

The inspectors considered the licensee's self-assessment efforts and subsequent identification of program problems for accredited training programs to be a strength. The corrective action being applied to the identified problems was appropriate.

3.6 Conclusions

The licensee's program for the training of candidates for an operating license was determined to be adequate. The licensee's efforts regarding self-assessment and problem identification was noted as a strength. A weakness continued to exist in that learning objectives did not stem directly from task elements identified from the task analysis. Therefore, it could not be assured that all task elements identified for training were captured by learning objectives. The licensee's enhancement effort described in paragraphs 2.4 and 3.2 of this report should correct this problem.

4. REPORT/EVENT FOLLOWUP (92700)

The inspectors reviewed an event which occurred on June 11, 1992. During the performance of Surveillance Procedure (SP) 6.2.2.3.4, "High Pressure Core Injection (HPCI) Suppression Chamber and Emergency Condensate Storage Tank (ECST) Water Level Calibration and Functional/Functional Test and Water Initiation," Revision 23, the normally closed HPCI suction valve (HPCI-MO-58) from the suppression chamber failed to operate properly. This failure impacted the control circuit (normal and automatic functions) of the normally open HPCI suction valve (HPCI-MO-17) from the ECST, and resulted in the licensee declaring the HPCI system inoperable.

Personnel interviews, review of the completed SP, and review of other associated information (control room and shift supervisor logs, Nonconformance Report 92-066, and Maintenance Work Request 92-1322) revealed that a degraded motor-operated valve stem nut was found on Valve HPCI-MO-58. The licensee was continuing to evaluate the cause of the degraded stem nut through the nonconformance report process at the time of this inspection. The completion of the nonconformance report will include the root cause determination, specific and generic corrective actions, and documentation of these matters. The valve was repaired, tested, returned to normal service, and the HPCI system declared operable on June 13, 1992.

The review of Procedure SP 6.2.2.3.4, by the inspectors revealed that while the procedure addressed the opening of HPCI Suction Valve HPCI-MO-17, the

procedure did not require the position of the valve to be independently verified. In addition, the inspectors noted that an additional suction valve, in the reactor core isolation cooling (RCIC) system (RCIC-MO-18), also was not required to have its position independently verified.

The inspectors reviewed Administrative Procedure 2.0.1, "Conduct of Operations," Revision 14, Step 8.14.1, and determined that this procedure required independent verification for main flow path valves. Valves HPCI-MO-17 and RCIC-MO-18 are considered to be main flow path valves. Document reviews and interviews revealed that these verifications should be performed by a qualified, second party by observation of the remote valve indications or by local observation of valve position.

The independent verification activities were discussed with licensee representatives. As the result of these discussions, the licensee acknowledged that while independent verification of these valves was appropriate it was not addressed by the SP.

The failure to provide procedures that required independent verification of Valves HPCI-MO-17 and RCIC-MO-18, as required in Administrative Procedure 2.0.1, is a violation of Criterion V of Appendix B to 10 CFR Part 50. (298/9209-01)

5. EXIT MEETING

The inspectors conducted an exit meeting with the personnel listed in paragraph 1 on June 26, 1992. The inspectors discussed the inspection scope and related findings. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspectors during this inspection.