

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

NRC Inspection Report: 50-482/89-30 Operating License: NPF-42

Docket: 50-482

Licensee: Wolf Creek Nuclear Operating Corporation (WCNOC)

Facility Name: Wolf Creek Generating Station (WCGS)

Inspection At: Burlington, Kansas

Inspection Conducted: December 5-7, 1989

Inspectors:

D. B. Spitzberg 12-28-89
Dr. D. B. Spitzberg, Emergency Preparedness Date
Analyst (NRC Team Leader)

Accompanying
Personnel:

M. E. Skow, NRC Resident Inspector (WCNOC)
F. L. McManus, Comex Corporation
M. I. Good, Comex Corporation

Approved:

D. D. A. Powers for 12-28-89
Dr. D. A. Powers, Chief, Security and Date
Emergency Preparedness Section

Inspection Summary

Inspection Conducted December 5-7, 1989 (Report 50-482/89-30)

Areas Inspected: Routine, announced inspection of the licensee's performance and capabilities during an annual exercise of the emergency plan and procedures. The inspection team observed activities in the control room (CR), technical support center (TSC), emergency operations facility (EOF), and operations support centers (OSC) during the exercise.

Results: Within the areas inspected, no violations or deviations were identified. Two exercise weaknesses were identified by the inspection team (paragraphs 6 and 8). Weaknesses identified included failure of the EOF staff to be aware of significant reactor conditions, and inadequacies associated with the exercise scenario. In addition, one open item was identified in the area of reliability of emergency facility telephone communications (paragraph 9).

DETAILS

1. Persons Contacted

WCNOC

- *J. Zell, Manager, Training
- *C. Parry, Manager, Site Quality
- *G. Boyer, Plant Manager
- *K. Moles, Manager, Emergency Planning
- *J. Bailey, Vice President, Engineering and Technical Services
- *W. Wond, General Counsel
- *R. Hagan, Manager, Nuclear Services
- *R. Smith, Information Administrator
- *F. Rhodes, Vice President, Nuclear Operations
- *B. Withers, President, WCNOC
- *D. Parks, Supervisor, Corporate Training
- *B. McKinney, Operations Manager
- *S. Wideman, Licensing Specialist
- *K. Craighead, Emergency Response Planner
- *H. Chernoff, Licensing Supervisor
- *C. Swartzendruber, Radiological Services Manager

The inspector also held discussions with other station and corporate personnel in the areas of security, health physics, operations, training, and emergency response.

*Denotes those present at the exit interview.

2. Followup on Previous Inspection Findings (92702)

(Closed) Emergency Assessment Improvement Item (482/8425-92): Ensure that all of the applicable initiating conditions specified in Appendix 1 of NUREG-0654 are included in EPP 01-2.1, "Emergency Classification." This item was identified during the September 1984 prelicensing emergency preparedness appraisal. By letter dated July 7, 1987, the NRC transmitted a summary review prepared by an NRC contractor of the WCGS emergency classification schemes. This letter stated that the previous NRC characterization of this item as an improvement item was understated. Further, the NRC found that the NUREG-0654 initiating conditions had not been, and perhaps could not be accommodated by the existing WCGS plan.

The inspector reviewed Revision 7 of EPP 01-2.1, dated March 31, 1989, and found that initiating conditions and emergency action levels (EALs) had been added which were consistent with Appendix 1 of NUREG-0654. The inspector also discussed the revised procedure with the NRC contractor who wrote the 1987 summary review, and with the inspector who had been tracking Improvement Item 50-482/8425-92 and providing comments to the licensee concerning the revision of EPP 01-2.1. Both stated that the

issues raised by the item had been satisfactorily addressed by the revised procedure. This item is considered closed.

(Closed) Exercise Weakness (482/8840-02): The radiological release information system (RRIS) provided information in units that were not consistent with the needs of the users. The licensee modified the RRIS meteorological units on February 24, 1989, and provided training on treatment of wind direction data in August 1989. During the 1989 exercise, the inspector observed that release information was provided that was consistent with the needs of the user.

(Closed) Exercise Weakness (482/8840-03): This weakness pertained to the implementation of Emergency Operating Procedure EMG ES-11, "Post-LOCA Cooldown and Depressurization" and involved obtaining TSC authorization to implement the approved EOP. The inspector determined that all licensed operators received training conducted by the manager of operations during each of the requalification segments of Cycle 89-3. Additionally, the plant manager issued a letter to all call superintendents on February 17, 1989. The letter and training reinforced the philosophy that the TSC and emergency response organization staff function is to provide support to the shift supervisor who is the senior licensed individual responsible for plant conditions. The inspectors noted no discrepancies in the implementation of EOPs during the 1989 exercise.

3. Program Areas Inspected

The inspection team observed licensee activities in the CR, TSC, OSC, and EOF during the exercise. The inspection team also observed emergency response organization staffing; facility activation; detection; classification, and operational assessment; notifications of licensee personnel, and offsite agencies; formulation of protective action recommendations; offsite dose assessment; in-plant corrective actions; security/accountability activities; and recovery operations. Inspection findings are documented in the following paragraphs.

There were various deficiencies identified during the course of the exercise; however, none of the observed deficiencies were of the significance as defined in 10 CFR 50.54(s)(2)(ii). Each of the observed deficiencies has been characterized as an exercise weakness according to 10 CFR 50, Appendix E.IV.F.5. An exercise weakness is a finding that a licensee's demonstrated level of preparedness could have precluded effective implementation of the emergency preparedness plan in the event of an actual emergency. It is a finding that needs licensee corrective measures.

4. Control Room (82301)(1)

The inspection team observed and evaluated the CR staff as they performed tasks in response to the exercise. These tasks included detection and classification of events, analysis of plant conditions and corrective actions, protective action decisionmaking, notifications, implementation

of protective actions, dose assessment, postaccident sampling, and environmental monitoring.

The CR staff was observed to have worked well as a team, and maintained a good flow of information. The initial response to the personnel injury and contamination report was correct. The declaration of the Notice of Unusual Event (NUE) was timely and notifications were made. A difficulty experienced with the notification of the NRC Headquarter's duty officer was unique to the simulator use of the scenario. The inspector noted that the simulator crew had the home phone number available for the senior resident inspector, but not for the other resident inspector.

Following the loss of coolant accident (LOCA), the station operator (SO) opened and utilized the appropriate off-normal and emergency procedures. During this time period, the CR staff made very few log entries. The lack of log entries would make it difficult to check on data and actions taken by CR staff. As an improvement item, the inspectors recommend that the CR staff improve log entries made during emergencies.

No violations or deviations were identified in this program area.

5. Technical Support Center (82301)(2)

The inspection team observed and evaluated the TSC staff as they performed tasks in response to the exercise. These tasks included activation of the TSC, accident assessment and classification, dose assessment, protective action decisionmaking, notifications, implementation of protective actions, technical support to the CR, postaccident sampling, and environmental monitoring.

The TSC was activated promptly and the staff was observed to be proficient and worked well as a team. The inspector noted that four emergency staff personnel were not listed on the emergency response roster as being trained for the positions they were filling. The positions were: operations emergency coordinator, technical support coordinator, TSC field team controller, and radiological status board controller. The licensee later confirmed that they all had been qualified in May through June 1989. The rosters had last been updated in November 1989. As an improvement item, the emergency response rosters should be checked and updated as necessary to ensure that all personnel listed are qualified and that current training is reflected.

The inspector observed that the TSC chemistry staff based the initial estimate of fuel cladding failure on an 8:25 a.m. PASS sample of coolant. Emergency plan implementing procedures provide for estimating fuel cladding failure based on PASS containment atmosphere activity, but not on coolant activity. In order to utilize the data available, the chemistry staff calculated a worst-case containment atmosphere activity derived from the coolant sample results. As an improvement item, the inspectors recommend that procedures be developed to directly estimate fuel cladding damage from PASS coolant sample activity data.

The inspectors noted that command and control in the TSC was clearly evident. Briefings by the duty emergency director were not always clear, however. For example, at 11:59 a.m. several personnel were noted to be eating and drinking after the duty emergency director had just announced to the staff to refrain from eating, drinking, and smoking. The inspectors also noted that facility briefings in the EOF were infrequent. As an improvement item, the inspectors recommend that emergency facility briefings be made more frequently and effectively.

No violations or deviations were identified in this program area.

6. Emergency Operations Facility (82301)(3)

The inspection team observed and evaluated the EOF staff as they performed tasks in response to the exercise. These tasks included activation of the EOF, accident assessment and classification, offsite dose assessment, protective action decisionmaking, notifications, implementation of protective actions, and interaction with state and local officials.

Emergency operations facility activation and setup was effective and well controlled. Overall command and control was evident throughout the exercise. Periodic management meetings ensured that each group manager understood the goals for mitigating the accident events. The inspector noted that the operations status board in the EOF was not maintained in an effective manner as follows:

- ° At 10:15 a.m., the status board indicated the last update was at 9:50 a.m., 25 minutes behind the scenario timeline.
- ° Hydrogen levels were not plotted on the status board.
- ° Reactor vessel level trend plot was incorrect in that the level below top of active fuel was never plotted as the scenario indicated.
- ° At one time, the operations status board stated "see the radiological status board" for containment radiation levels; however, the radiological status board did not have this information.

As an improvement item, the inspectors recommend that the maintenance and accuracy of information recorded on the operations status board be improved.

During the exercise, neither the duty emergency manager nor his EOF staff were aware of critical reactor conditions underlying a continuing degradation of the accident. Following the LOCA at 10:00 a.m., reactor vessel level dropped to 18 percent of full capacity. The scenario called for the core to be partially uncovered for 30 minutes. The reactor vessel levels were plotted versus time on the EOF operations status board. This information never showed that reactor vessel levels dropped below the top of the core (i.e., 52 percent). The EOF staff was not aware that the core became uncovered. Additionally, the EOF staff was not aware of the

hydrogen levels in containment until the hydrogen burn occurred. Finally, core exit thermocouple temperatures over 1200°F were not appropriately evaluated and relayed to EOF managers as indication of core uncovering. The failure of the EOF staff to be aware of significant reactor conditions is considered to be an exercise weakness (482/8930-01).

No violations or deviations were identified in this program area.

7. Operational Support Center (82301)(4)

The inspection team observed and evaluated the OSC staff as they performed tasks in response to the exercise. The tasks included activation of the OSC, personnel staffing, and support to the CR, TSC, and EOF.

The inspector noted that the OSC activation procedure does not address control or posting of all OSC doors during an emergency. Posting unused doors may prevent inadvertent contamination or accountability problems. Contamination control points were not well established at the OSC or TSC entrances. Friskers were available, but step-off pads and controlled frisking were not used. A similar personnel control problem was observed in the EOF where continuous accountability of personnel did not appear to be closely controlled. As an improvement item, the licensee should tighten control and accountability of emergency facilities.

Friskers in the OSC were not all located in the positions specified in EPP-01-4.2 "OSC Activation," Attachment 1.0. As an improvement item, the inspectors recommend that the location of OSC friskers be as specified in the controlling procedure.

The inspector observed the actions of teams dispatched from the OSC during the exercise. Health physics practices during the medical drill were determined to be in need of improvement as follows:

- ° The contaminated area around the injured victim was never marked. As a result, the emergency medical technician (EMT) and security personnel transitioned the contaminated/clean boundary in street shoes several times.
- ° At 7:40 a.m., the waste control operator had to remind the health physics technician to perform smear surveys of the general floor area.
- ° The lead EMT did not use gloves when handling the injury victim, even after the arrival of two additional EMTs and other support personnel.
- ° Personnel arriving subsequent to the initial responders did not put on shoe covers.

No violations or deviations were identified in this program area.

8. Scenario

The inspectors noted that several preventable scenario deficiencies existed which caused substantial deviations from the time line, large differences between actual and intended data, and one mini-scenario which resulted in failure to meet an exercise objective. Examples of scenario inadequacies are as follow:

- ° The alert, site area emergency (SAE), and general emergency (GE) were declared at different times than the scenario intended. The SAE was appropriately declared, but for different reasons than the scenario intended.
- ° AT 11:10 a.m., the inspectors were told the scenario would have to be modified to force the GE, which was a classification objective of the EOF.
- ° A major residual heat removal system break and significant additions to containment activity were necessary to force the required release.
- ° Over a 5-minute period starting about 11:15 a.m., the containment hydrogen level was listed as 0.5 percent, "indicator out of commission," and 3 percent. The scenario value was 4.2 percent for this time.
- ° At 10:38 a.m., NB02 team Nc. 4 could not give the OSC director sufficiently detailed information so that he could prioritize maintenance and repair of damaged components. The scenario lacked the detail and control information on which to evaluate expected action.
- ° The "use of fire team" objective was not met. The fire brigade team did not determine a class of fire, assemble or rig appropriate equipment, demonstrate any fire fighting skills, put out or simulate putting out a fire, rescue any personnel, clear smoke, or station a reflash watch. The scenario was inadequate to exercise this "demonstrate" objective.

Inadequacies associated with the exercise scenario was determined to be an exercise weakness (482/8930-02).

No violations or deviations were identified in this program area.

9. Communications

At 10:05 a.m., the inspectors observed that an unusually large number of telephones in the TSC and EOF began ringing simultaneously, indicating a possible problem with the function of the phone lines. The fault cleared in a few minutes and did not appear to effect exercise communications. Despite this, discussions in the facilities indicated that problems with the phone lines were not new. As a result of this observation, the

inspectors have a concern over the reliability of the phone system and whether a similar, or more protracted problem during an emergency could result in a communications failure. This is considered an open item pending inspector review of licensee action (482/8930-03).

An open item is an item that requires further review and evaluation by the inspector. Open items are used to document, track, and ensure adequate followup on matters of concern to the inspector.

No violations or deviations were identified in this program area.

10. Licensee Self-Critique

The inspectors observed and evaluated the licensee self-critique for the exercise and determined that the process of self-critique involved adequate staffing and resources and involved the participation of higher management. The licensee identified 24 weaknesses as summarized below:

- The dispatch of a nuclear station operator from the CR after OSC activation should be clarified.
- The simulator was unable to handle extreme conditions.
- Poor information flow between TSC and EOF engineering teams.
- Initial conditions for the exercise should be available to the TSC and OSC players.
- Self-contained breathing apparatus for teams ran out of air.
- Inadequate techniques employed to locate the plume centerline.
- Protective action recommendations were not communicated to the radiological assessment supervisor/joint radiological monitoring teams.
- Inadequate use of charcoal cartridge during field monitoring.
- Inadequate protective clothing sizes available for field teams.
- Inadequate maintenance of the operations status board in the EOF.
- Inadequate core damage emergency plan implementing procedure.
- Field team problems with inverters and reporting of data.
- Incorrect communication of dose rates to the county and state.
- EOF senior reactor operator position is not formalized.
- Poor contamination control onsite.

- ° Five weaknesses associated with the exercise scenario.
- ° Four weaknesses identified with the Wichita Emergency Center or media centers.

The inspectors noted that the licensee was able to properly identify a number of exercise weaknesses and that several coincide with findings by the inspection team.

No violations or deviations were identified in this program area.

11. Exit Interview

The inspection team met with the licensee representatives indicated in paragraph 1 on December 7, 1989, and summarized the scope and findings of the inspection as presented in this report. The licensee acknowledged their understanding of weaknesses and open item and agreed to examine them to find root causes in order to take adequate corrective measures. The licensee did not identify as proprietary any of the materials provided to or reviewed by the inspectors during the inspection.