ENCLOSURE

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-482/95-12

License: NPF-42

Licensee: Wolf Creek Nuclear Operating Corporation
P.O. Box 411
Burlington, Kansas

Facility Name: Wolf Creek Generating Station

Inspection At: Burlington, Kansas

Inspection Conducted: August 14-17, 1995

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Inspection Summary

Areas Inspected: Routine, announced inspection of the licensee's performance and capabilities during the full-scale exercise of the emergency plan and implementing procedures, and followup on previous inspection findings. The inspection team observed activities in the Control Room (simulator), Technical Support Center/Operations Support Center, and Emergency Operations Facility.

Results:

- The Control Room staff's performance in the areas of event analysis, emergency classification, and notification of offsite authorities was good. Interaction between Control Room personnel was identified as a strength. One exercise weakness was identified for failure to effectively use site-wide announcements and facility briefings to inform the plant staff of major developments and the status of response activities.

- Overall, the Technical Support Center staff's performance was good. Engineering support to facilitate repair of equipment problems was excellent. Briefings were generally good, but room for improvement was noted regarding content. The radiological protection staff performed adequately. Radiological conditions in the vicinity of the failed damper were not aggressively pursued. Inconsistencies were noted in procedures governing issuance of potassium iodide.

- Overall, the Operations Support Center staff performed satisfactorily during the exercise. The practice of having potential team members don protective clothing and verifying respirator qualifications during the facility activation process was identified as a strength. Briefings and communications with in-plant teams were appropriate. Good radiological protection practices were employed. Collocation of the Technical Support Center and Operations Support Center enhanced the information flow between the facilities. An exercise weakness was identified for a failure to properly track and maintain accountability of all facility personnel.

- The Emergency Operations Facility staff's performance was generally good. The facility was promptly staffed, command and control were properly maintained, and offsite agency notifications were timely. Interactions with offsite response teams were excellent. Backup communications were effectively used. Protective action recommendations were adequate. An Inspection Followup Item involving emergency action levels was identified. Dose assessment and field team control were good. Habitability was properly maintained. An exercise weakness was identified for failure of the dose assessment staff to clearly communicate offsite dose information to the Emergency Operations Facility managers.

- The exercise scenario provided sufficient challenges to test emergency response capabilities and demonstrate exercise objectives. An exercise weakness was identified for failure of the controllers to properly control exercise activities.

- Overall, the licensee's critique process was considered adequate. Management involvement in the exercise critique process was identified as a strength. The difference between the number of issues identified by the NRC when compared to the licensee was much larger than normal for exercises.

Summary of Inspection Findings:

- Exercise Weakness 482/9320-02 was closed (Section 8.1).
- Exercise Weakness 482/9320-03 was closed (Section 8.1).
- Exercise Weakness 482/9320-04 was closed (Section 8.1).
- Exercise Weakness 482/9320-05 was closed (Section 8.1).
- Exercise Weakness 482/9320-06 was closed (Section 8.1).
- Exercise Weakness 482/9512-01 was opened (Section 2.1).
- Exercise Weakness 482/9512-02 was opened (Section 4.1).
- Inspection Followup Item 482/9512-03 was opened (Section 5.1.1)
- Exercise Weakness 482/9512-04 was opened (Section 5.1.2).
- Exercise Weakness 482/9512-05 was opened (Section 6.1).

Attachment:

- Attachment - Persons Contacted and Exit Meeting

DETAILS

1 PROGRAM AREAS INSPECTED (82301)

The licensee's emergency exercise began at 7 a.m. on August 15, 1995. The licensee activated its emergency response organization and all emergency response facilities. Offsite participation in this biennial, full participation exercise included the State of Kansas, Coffey County, and NRC Region IV. The Federal Emergency Management Agency (FEMA) evaluated the performance of State and local participants. The results of FEMA's evaluation will be documented in a separate report.

The scenario for the exercise was dynamically simulated using the Wolf Creek Generating Station simulator. The initial conditions of the scenario included plant operation at 100 percent power at the middle of core life. The operating crew was informed that the "B" residual heat removal pump was out of service for an oil change and was expected to be returned to service later in the day. The "B" safety injection pump was out of service for oil leak repairs. Containment Atmosphere Gaseous Activity Monitor GTRE-32 was out of service. Surveillance testing on the containment mini-purge supply dampers resulted in Outboard Damper GTHZ-4 failing to close. The estimated time to diagnose and repair the failure was 4 hours. The sky was partly cloudy with winds from the south-southwest at 5 miles per hour. Daytime temperatures were predicted to be in the mid to upper eighties with a chance of rain. The major events simulated were as follows:

- At 7:05 a.m., a reactor coolant system leak began on the "D" loop inside containment. Leak rate increased to 45 gallons per minute over a period of 15 minutes.

- At 7:13 a.m., Control Room operators noted the first indications of the coolant leak. At 7:23 a.m., the operators entered Procedure OFN BB-007 in an attempt to quantify and isolate the leak.

- At 7:45 a.m., a fire alarm was received on the 1974-foot level of the auxiliary building. At the same time, Centrifugal Charging Pump "A" tripped off. An operator dispatched to investigate reported that the charging pump breaker indicated an instantaneous overcurrent trip and that there were burn marks on the pump motor and electrical conduit.

- At 7:52 a.m., the shift supervisor declared an Alert based on the occurrence of a fire within the protected area that damaged a piece of safety-related equipment so that it was nonfunctional. Activation of the emergency response organization and facilities was initiated.

- At 8:15 a.m., a high vibration alarm was received on the "D" reactor coolant pump.

- At 9 a.m., while the reactor was being shut down, the pump shaft locked up causing a loss of flow in the "D" loop. Neither the automatic nor manual reactor trip features resulted in control rod insertion, so an

operator was dispatched to open the rod drive motor-generator set breakers. The loss of coolant flow and continued power generation resulted in some core damage. A Site Area Emergency was declared at 9:07 a.m.

- At 9:46 a.m., the leak on the "D" reactor coolant system loop increased rapidly to 7500 gallons per minute, causing operators to manually initiate safety injection.

- At 9:54 a.m., the simulator stopped and had to be restarted. The scenario resumed at 10:10 a.m. The simulator stopped again at 10:41 a.m., and the decision was made to complete the exercise using hard copies of the data.

- At 10:53 a.m., containment pressure began to decrease rapidly, followed by indication that inboard Containment Mini-purge Supply Valve GTHZ-5 was open. This condition resulted in an unfiltered, unmonitored release from the containment. A General Emergency was declared at 11:19 a.m.

- The remainder of the scenario consisted of efforts to recover failed equipment and terminate the release. At 2:48 p.m., efforts to close GEHZ-5 were successful, and the release was terminated.

2 CONTROL ROOM (82301-03.02)

The inspection team observed and evaluated the Control Room staff as they performed tasks in response to exercise events indicated by the Control Room simulator. These tasks included detection and classification of event-related conditions, detailed analysis of conditions, notification of licensee personnel, and notification of offsite authorities.

2.1 Discussion

The Control Room staff properly detected, analyzed, and classified emergency events during the exercise. Shortly after the Control Room staff assumed shift duties, a leak began on Reactor Coolant System Loop "D". The leak grew to 45 gallons per minute over a 15-minute period. At 7:13 a.m., 8 minutes after the leak started, operators noted a slight downward trend in pressurizer level and a slight increase in containment humidity. After monitoring these and other parameters closely for about 10 minutes, Procedure OFN BB-007 was entered in an attempt to quantify and isolate the leak. By 7:38 a.m., the Control Room staff had correctly estimated the leak rate at 45 gallons per minute. This value was compared to Technical Specification 3.4.6.2. The Limiting Condition for Operation required that the reactor be shut down and in hot shutdown within 6 hours. The emergency action level for a Notification of Unusual Event was not met, because the operators were still determining the leak location per OFN-BB-007 (unsuccessful leak isolation is a prerequisite for declaration of a Notification of Unusual Event).

Following a trip of Centrifugal Charging Pump "A" and a fire alarm at 7:45 a.m., the shift supervisor and shift engineer rapidly and correctly

determined that the reported burn marks on the pump motor and conduit, combined with smoke in the vicinity of the pump, warranted an Alert declaration in accordance with emergency plan implementing procedure Form EP 01-2.1-1, Revision 2, page 10 of 13 (fire in the protected area that damaged safety-related equipment sufficiently to render it nonfunctional). The shift supervisor promptly assumed the responsibilities of duty emergency director and initiated activation of the emergency response organization and facilities.

At 8:08 a.m., the shift engineer and supervisory operator completed an evaluation of applicable Technical Specifications and correctly determined that three different Limiting Conditions for Operation applied. Two of the conditions required the plant to be shut down to hot standby within 6 hours. At 8:21 a.m., the shutdown was begun at the rate of 1/2 percent power per minute. At 8:15 a.m., a vibration alarm was received on Reactor Coolant Pump "D". The Control Room operators monitored the vibration condition closely and reviewed applicable limits. At 8:41 a.m., the shift supervisor summarized plant status for the Control Room crew and at 8:48 a.m., the rate of power reduction was increased to 3 percent per minute with the concurrence of reactor engineering.

At 9 a.m., Reactor Coolant Pump "D" seized, resulting in a partial loss of coolant flow and a reactor trip signal without rod insertion. Use of the manual trip switches also failed to insert the rods, and power generation continued for about 1 minute until an operator was dispatched to open the rod drive motor-generator set breakers. Operators entered trip response Procedure E-0 and stabilized the reactor condition. At 9:07 a.m., a Site Area Emergency was properly declared from the Technical Support Center based on the failure of both automatic and manual reactor trips to bring the reactor subcritical. The shift engineer continuously monitored the critical safety function status trees and advised the supervisory operator of the indicated status. No orange or red paths were observed. At 9:40 a.m., efforts to isolate the reactor coolant system leak resumed in accordance with Procedure OFN BB-007.

At 9:46 a.m., multiple indications of a large reactor coolant system leak were immediately recognized by the control operators. Safety injection was manually initiated. The response to the loss of coolant continued through two interruptions of the simulator, until the lead controller decided to abandon the simulation and use the printed data sheets that had been prepared for that purpose.

At 10:53, a.m., an exercise message indicated decreasing pressure in containment. The shift supervisor immediately consulted the emergency action level flow chart and correctly recommended escalation to a General Emergency.

Offsite agency notifications were made promptly during the exercise. Initial notification forms were completed by the shift supervisor. The shift clerk completed the notification of State and local authorities 12 minutes after the Alert was declared. The NRC was notified 18 minutes after the declaration.

Interactions between the supervisory operator, control operators, and shift engineer were exemplary with regard to control of the plant and performance of procedures. Face-to-face communications were correct and formal. The supervisory operator addressed control operators by name when directing the execution of specific emergency operating procedure steps. The control operators repeated back the orders and provided clear oral reports to the supervisory operator when the actions were completed. The shift engineer continuously monitored emergency action level flow charts and critical safety function status trees and advised the supervisory operator and shift supervisor of the current status and potential changes at regular intervals.

During the exercise, the Control Room staff did not use site-wide announcements and facility briefings to inform the plant staff of major developments and the status of response activities. Failure to provide this information could have affected the protection of plant personnel and degraded the overall effectiveness of the licensee's response. The following examples were observed:

- The shift supervisor did not announce the declaration of the Alert and assumption of duty emergency director responsibilities to the Control Room staff. The licensee did not fully agree with the need to provide this information to the Control Room staff; however, the inspectors determined that Control Room personnel would benefit from this information, because it would signal emergency response facility activation (staff augmentation) and movement of plant personnel.

- The initial plant-wide announcement of the Alert declaration, which was done from the actual reactor Control Room (the Simulator Control Room does not have remote announcing capability), was not in accordance with Form EP 01-1.0-2, Revision 11. Instead of sounding the alarm first and then reading the required announcement, the announcement was read first, followed by the sounding of the alarm. The volume of the announcement was so low that it was inaudible in many locations.

- The General Emergency was announced on the plant Gaitronics system at 11:21 a.m.; however, the initial voice announcement was made concurrent with the sounding of the alarm and used the words "Site Area Emergency" instead of "General Emergency." The correct announcement was repeated twice after the alarm stopped sounding.

- No announcement was made concerning the potential radiation hazard from the containment leakage through the Auxiliary Building.

- When the shift to cold leg recirculation cooling was done at 12:02 p.m., no announcement was made to alert plant personnel to potential changes in radiological conditions in the auxiliary building.

- At 12:45 p.m., when Procedure E-1 directed the dumping of steam to reduce steam generator pressure below that in the reactor coolant system, no announcement was made to alert personnel of the loud noise and steam plume from the atmospheric relief valves.

The failure to effectively use site-wide announcements and facility briefings to inform the plant staff of major developments and the status of response activities was identified as an exercise weakness (482/9512-01).

2.2 Conclusions

The Control Room staff's performance in the areas of event analysis, emergency classification, and notification of offsite authorities was good. One exercise weakness was identified for failure to effectively use site-wide announcements and facility briefings to inform the plant staff of major developments and the status of response activities.

3 TECHNICAL SUPPORT CENTER (82301-03.03)

The inspection team observed and evaluated the Technical Support Center staff as they performed the full range of tasks necessary to respond to the exercise scenario. These tasks included detection and classification of events; notification of Federal, State, and local response agencies; analysis of plant conditions; formulation of corrective action plans; and prioritization of mitigating actions. The licensee's Technical Support Center and Operations Support Center are collocated; however, independent command and control structures are maintained.

3.1 Discussion

Technical Support Center staffing and activation were accomplished promptly and systematically. Emergency response staff started to arrive at the facility within 10 minutes of the Alert declaration (7:52 a.m.) and immediately implemented their emergency plan procedures and checklists. The emergency response data system was activated within 15 minutes of the Alert declaration. The duty emergency director relieved the shift supervisor of emergency response duties and activated the Technical Support Center in about 30 minutes following the Alert declaration.

During the exercise, the duty emergency director/Technical Support Center properly classified emergency conditions and completed corresponding emergency plan requirements. The Site Area Emergency was declared within 5 minutes after indication of the failure to scram was received. Offsite agency notifications were immediately initiated and were completed within 6 minutes of the event declaration. Appropriate protective action recommendations were communicated to offsite officials.

Command and control in the Technical Support Center were good. Noise levels and congestion were maintained at a low level. Briefings in the Technical Support Center were generally timely, concise, and informative. On some occasions important emergency response information was not disseminated to the Technical Support Center staff. Examples included: (1) the proximity of radiological release path to the Technical Support Center, (2) the trend in facility elevated dose rates, (3) the transfer of safety injection to the recirculation mode of operation, and (4) the reason for the General Emergency declaration.

Dose assessment in the Technical Support Center was performed well. Even though a release was not in progress, the Technical Support Center staff performed several calculations to determine what the offsite dose consequences would be if a release were to occur. Two environmental monitoring teams were dispatched from the Technical Support Center within 50 minutes of the Alert declaration. The Technical Support Center field team coordinator maintained radio contact with the field teams and provided the dose assessment staff with information regarding the environmental monitoring team sample results throughout the exercise.

Core damage assessment was good. The responsible engineer performed numerous assessments based upon post-accident sampling system sample results and containment radiation levels.

The Technical Support Center engineering staff's support to the Control Room was very good. The engineering staff was proactive in researching possible methods for closing the failed containment isolation ventilation damper. The engineering team began acquiring information to support repair of the damper before the event had escalated to the point where containment isolation was needed. After containment isolation was needed and radiological conditions hampered repair efforts, the team continued to devise methods for closing the damper.

The radiological protection staff in the Technical Support Center performed adequately during the exercise. The staff did not aggressively pursue assessing airborne radiological conditions in the vicinity of the failed damper. As a result, the repair had to be delayed while radiological conditions were assessed. In addition, the radiological emergency coordinator determined that there was a potential for thyroid dose commitment to exceed 25 Rem and recommended potassium iodide be administered to one repair team; however, the duty emergency director's approval was not obtained prior to making the recommendation. The inspectors reviewed applicable procedures/checklists and concluded that requirements for obtaining approval for potassium iodide administration were inconsistent with one another. The licensee agreed with this conclusion.

The Technical Support Center demonstrated a good level of initiative when the staff requested the Emergency Operations Facility to send a helicopter over the plant to verify the release path location. However, the inspectors observed that the Technical Support Center staff did not thoroughly pursue more expeditious methods for verifying the release path using available onsite resources, such as interviewing the security personnel who reported the release or dispatching an onsite team to a location where the plume source could be seen.

3.2 Conclusions

Overall, the Technical Support Center staff's performance was good. Engineering support to facilitate repair of equipment problems was excellent. Briefings were generally good, but room for improvement was noted regarding content. The radiological protection staff performed adequately. Radiological conditions in the vicinity of the failed damper were not

aggressively pursued. Inconsistencies were noted in procedures governing issuance of potassium iodide.

4 OPERATIONS SUPPORT CENTER (82301-03.05)

The inspectors evaluated the performance of the Operations Support Center staff as they performed tasks in response to the exercise. These tasks included facility activation, providing support to operations, and in-plant emergency response team coordination. The licensee's Technical Support Center and Operations Support Center are collocated; however, independent command and control structures are maintained.

4.1 Discussion

The Operations Support Center was promptly staffed, declared activated, and fully functional, along with the Technical Support Center, 31 minutes after the Alert was declared. The Operations Support Center supervisor displayed adequate command and control throughout the exercise. The supervisor performed the initial briefing of facility personnel. Subsequent briefings were conducted in conjunction with Technical Support Center briefings.

Upon arrival, facility personnel followed established procedural guidance to set-up the facility and prepare for response team dispatch. As part of the initial activation process, potential in-plant team members donned protective clothing upon arrival. Respirator qualifications and dose histories of potential team members were also determined. Accomplishing these actions during the activation process saved considerable time in preparing teams for assignment dispatch.

In-plant teams were formed in response to requests from the Technical Support Center. Team members were appropriately briefed on assigned tasks, radiological conditions, precautions, and protective measures. At times, separate briefings were conducted for craft team members and health physics technicians. Although the separate briefings did not hinder the teams' performance, the briefing process would have been more efficient if the briefings had been conducted simultaneously. A similar process was followed for team debriefings held after teams returned to the Operations Support Center.

In-plant teams communicated frequently with the Operations Support Center through the onsite field team communicator. Radiological conditions, equipment status, and progress of repair efforts were reported back to the Operations Support Center. Additional instructions, clarifications, and information on changing plant conditions were provided to the teams while they were in the plant.

The collocation of the Operations Support Center with the Technical Support Center provided for enhanced exchange of information between the two facilities. Task priorities were well coordinated and information exchanged between personnel was continuous and immediate. Personnel who had been on assignments in the field, or preparing for assignments, could interface

directly with engineering personnel. This greatly enhanced the understanding between both parties concerning conditions and expected actions.

Accountability was not always maintained in the Operations Support Center. Personnel leaving the facility can be tracked by team assignment or through the accountability clerk. On two occasions (9:04 a.m. and 10:15 a.m.), a health physics technician left the Operations Support Center to obtain a dose margin report without logging out through either of the approved methods. The onsite survey team director was aware of the technician's actions but did not properly record the individual's departure from the facility as a team assignment. On another occasion (8:38 a.m.), the operations emergency coordinator attempted to dispatch an equipment operator directly from the Technical Support Center to work on the failed ventilation damper without processing this action through the Operations Support Center as part of an assigned team. This situation was corrected before the operator was dispatched. The failure to properly track and maintain accountability of all personnel leaving the Operations Support Center was identified as an exercise weakness (482/9512-02).

Habitability checks of the Technical Support Center/Operations Support Center complex were conducted at regular intervals. Results were reported to facility occupants. When site radiological conditions changed, habitability was reassessed and necessary precautionary actions taken.

Good radiological practices were demonstrated by in-plant teams: low dose rate areas were identified and used, survey meters were properly used on entering areas of unknown dose rates, dosimeters were properly worn and read at frequent intervals, and proper contamination control practices were observed.

Several areas for improvement were noted. First, although information needed by health physics personnel, such as dose histories and respirator qualifications, was available in hard copy printouts, access to this information via a LAN terminal would have simplified and expedited the process. Moreover, it would also have eliminated the need for a technician to leave the facility to obtain reports, such as the dose margin report. Second, information on daily source check stickers on radiological survey instruments in the Operations Support Center did not clearly indicate which month the source check had been completed. Finally, the lock on the door to the east entrance of the Technical Support Center/Operations Support Center, used for teams returning to the facility, was taped-over to keep the door latch open. The licensee indicated that an action request was generated to correct the Operations Support Center door.

4.2 Conclusions

Overall, the Operations Support Center staff performed satisfactorily during the exercise. The practice of having potential team members don protective clothing and verifying respirator qualifications during the facility activation process was identified as a strength. Briefings and communications with in-plant teams were appropriate. Good radiological protection practices were employed. Collocation of the Technical Support Center and Operations

Support Center enhanced the information flow between the facilities. An exercise weakness was identified for a failure to properly track and maintain accountability of all facility personnel.

5 EMERGENCY OPERATIONS FACILITY (82301-03.04)

The inspectors observed the Emergency Operations Facility's staff as they performed tasks in response to the exercise. These tasks included facility activation; development and issuance of protective action recommendations; notification of Federal, State, and local response agencies; dose assessment and coordination of field monitoring teams; analysis of plant conditions; and direct interactions with offsite agency response teams.

5.1 Discussion

5.1.1 Command and Control

The Emergency Operations Facility was staffed in a rapid manner. At 8:05 a.m., the public address announcement for the Alert declaration directed emergency response organization personnel to report to their respective facilities. By 8:17 a.m., 19 positions were filled, including the required positions for activation. The Emergency Operations Facility was declared activated at about 9:14 a.m., within the 90 minutes required by procedure. Personnel performing key functions demonstrated knowledge of their duties and responsibilities. Plant procedures used in the Emergency Operations Facility were current and readily available, and the facility was properly equipped to perform its intended functions.

At 9:15 a.m., a public address announcement was made regarding Emergency Operations Facility activation. The inspectors noted that the announcement did not include information about which functions were being transferred. Including this type of information in turnover announcements helps to ensure that personnel are aware of their responsibilities. The correct functions were transferred to the facility.

Command and control in the Emergency Operations Facility were generally good. The duty emergency manager conducted frequent public address status updates and hourly status conferences with functional area managers. Noise was kept to a minimum, despite a large number of players and non-players in the facility. To reduce the noise level and distraction, the hourly management status conferences were conducted in an adjacent conference room. Although these conferences were usually productive, there were times when it would have been appropriate to include additional personnel. This matter will be discussed further in Section 5.1.2.

Due to the failure of the simulator computer and the conversion to hard copy data, there was substantial confusion regarding the classification of the General Emergency. At 10:57 a.m., just prior to the simulator failure, the duty emergency manager appeared ready to declare a General Emergency based, in part, on high containment radiation monitor readings. However, following a brief controller directed break in exercise activities (to coordinate the transfer to hard copy data), containment radiation monitor readings had

dropped below the General Emergency threshold value, falsely indicating that core damage had improved. This prompted the players to remain at the Site Area Emergency classification level. Controllers were forced to intervene to resolve the confusion. The General Emergency was subsequently announced at 11:19 a.m., with an effective time of 11:15 a.m. The inspectors concluded that a re-evaluation of emergency plan implementing procedure Form EP 01-2.1-1, Revision 2, page 3 and 5 of 13, (loss of reactor coolant boundary and fuel element failure) appeared warranted to ensure that the emergency action levels provide sufficient guidance to drive an appropriate emergency classification (i.e., since core damage cannot be recovered, the barrier should be considered lost). This matter was identified as an Inspection Followup Item and will be reviewed in a future inspection (482/9512-03).

Notifications to offsite response agencies were made in a timely manner and included the appropriate data. A primary communications link with the Technical Support Center was established and maintained. Primary communication systems functioned properly, with one controller-prompted exception, and backup systems were available. Emergency Operations Facility communicators responded well and immediately when required to revert to backup communications for the first offsite notification. Some confusion was observed in notifications and communications with the county. Message No. EOF-001 was communicated to the county by radio at about 9:45 a.m. At about 10:15 a.m., it was overheard that the county message indicated a General Emergency, rather than a Site Area Emergency. This mistaken classification was immediately corrected. Another discrepancy was noted in Block 3 (date/time) of Message No. EOF-001. The Emergency Operations Facility form copy showed the time as "0936"; whereas, the county form copy showed the time as "0905" (the declaration time, rather than the notification time). The licensee agreed that simple methods, such as repeat backs, could be employed to facilitate the offsite agency notifications.

The Emergency Operations Facility's performance in the area of protective action recommendations was adequate. Although State protective action decisions and implementation status were closely tracked in the facility, utility issued recommendations appeared to be based upon recommendations developed by the State, rather than an independent assessment of plant conditions or offsite radiological conditions. Moreover, the bases for the utility's protective action recommendations did not appear to be logged or otherwise documented; however, they were discussed verbally. The inspectors determined that the lack of documentation could hamper reconstruction of the decisionmaking process following an emergency. The licensee agreed with the inspectors' determination.

Interactions with offsite officials, NRC, and other organizations were excellent. Upon arrival at the Emergency Operations Facility, State and local representatives were briefed and kept informed of changing conditions without interfering with the onsite response. The NRC Site Team was collocated and integrated into the emergency response team. The utility, offsite agency, and NRC emergency response teams worked together in an effective manner.

5.1.2 Dose Assessment

The offsite dose assessment capability was promptly initiated at the Emergency Operations Facility. Upon arrival, the dose assessment supervisor immediately began discussions with the Technical Support Center dose assessment coordinator to discuss plant conditions and make recommendations to the emergency dose calculation program operator on assumptions and variables to use for dose projections. The first test case was generated at 8:15 a.m. The emergency dose calculation program operator initially chose to use the laptop computer to perform emergency dose calculations. Until the simulator failed, the other two computers at that station were used to monitor meteorology conditions and plant status.

Dose projections were made frequently (sometimes as often as once per minute) using design basis loss of coolant accident scenarios, containment release scenarios, steam generator tube rupture scenarios, and field monitoring team data, once available. Assumptions and inputs were regularly checked and verified. Updated meteorology data was also used.

Dose projections, including protective action recommendations, were communicated to the radiological assessment manager by the dose assessment supervisor on a routine basis. The radiological assessment manager used the most recent data for the hourly management status conferences. Up until 1:10 p.m., the data appeared to be accurately and clearly presented to the Emergency Operations Facility managers. After 1:10 p.m., the release rate used in the emergency dose calculation program was modified by using the most recent field team data to postulate the release rate. Integrated dose projections from this time forward were accurately represented on the status boards and notification forms; however, the information appeared confusing and could have been misinterpreted. For example, Items 9 and 10 on notification Message No. 011 had data for dose rates and integrated doses for the release after 1:10 p.m. but did not provide the total integrated dose for the entire release. Also, notification Message No. 010 indicated that the release started at 10:30 a.m., with a 3-hour duration. Message No. 011 indicated that the release started at 1:10 p.m., with a duration of 1.33 hours. Although the data on the forms were correct, the inspectors concluded that the dose assessment staff did not clearly communicate the offsite dose information so that the Emergency Operations Facility managers could correctly interpret the data and use it as the basis for making protective action recommendations. The failure of the dose assessment staff to clearly communicate offsite dose information to the Emergency Operations Facility managers was identified as an exercise weakness (482/9512-04).

Field team communications and control were good during the exercise. The teams consisted of utility, State, and county personnel, which allowed for integration of capabilities and excellent coordination. Four field teams were deployed during the exercise. Field teams were dispatched and positioned at downwind locations shortly after the release started. Based on observations made from the Emergency Operations Facility, it appeared that the teams were making appropriate measurements, including open and closed window readings and air samples. The field teams were properly advised regarding protective measures, and their doses were tracked. As appropriate, team members were

requested to take potassium iodide and were told to move to low dose rate areas.

The radiological and survey information status boards were well maintained, frequently updated, and effectively used. The information on the boards was regularly used by the dose assessment staff and the Emergency Operations Facility managers.

Habitability checks of the Emergency Operations Facility were made at frequent intervals. At one time, eating, drinking, and chewing were prohibited until facility habitability was verified. Once this occurred, an announcement was made that eating, drinking, and chewing could be resumed.

5.2 Conclusions

The Emergency Operations Facility staff's performance was generally good. The facility was promptly staffed, command and control were properly maintained, and offsite agency notifications were timely. Interactions with offsite response teams were excellent. Backup communications were effectively used. Protective action recommendations were adequate. An Inspection Followup Item involving emergency action levels was identified. Dose assessment and field team control were good. Habitability was properly maintained. An exercise weakness was identified for failure of the dose assessment staff to clearly communicate offsite dose information to the Emergency Operations Facility managers.

6 SCENARIO AND EXERCISE CONDUCT (82301)

The inspectors made observations during the exercise to assess the challenge and realism of the scenario and to evaluate the conduct of the exercise.

6.1 Discussion

The inspection team determined that the scenario was sufficiently challenging to test the licensee's emergency response capabilities and demonstrate agreed upon exercise objectives. As previously mentioned, the simulator computer failed several times during the exercise, forcing controllers to transfer to hard copy data. Exercise control was adequately maintained by controllers following the simulator failure. Response activities were frozen while controllers determined the need to transfer to printed scenario data and synchronized the resumption of exercise activities. When the determination was made to continue, the timing was communicated to all controllers and players. However, controller performance during this exercise was weak and degraded demonstration of emergency response capabilities. The following exercise conduct problems introduced significant confusion during the exercise and lessened the training value of the exercise:

- When the simulator computer failed and scenario control shifted to hard copy data, the lead Control Room controller provided the operations coordinator with a table containing operations data for the remainder of the exercise, along with instructions to transmit the data every

15 minutes. This effectively converted the operations coordinator from a player to a controller with access to data reflecting the future course of the exercise. Moreover, upon resuming the exercise, the operations coordinator delivered the 11 a.m. data instead of the 10:30 a.m. data as directed by the controller. This contributed to the confusion in the Emergency Operations Facility and delayed the General Emergency declaration.

- The hard copy data that was used following the simulator failure had a number of errors and inconsistencies that confused the operational picture and had to be corrected by the controller after the fact. For example, refueling water storage tank level decreased to 61 percent and stabilized. In fact, the level would have continued to decrease to 36 percent, the criterion for entering cold leg recirculation. Also, safety injection pump flow rate was given at 1392 gallons per minute, while the maximum flow rate for the pump is 665 gallons per minute.

- The operations emergency coordinator in the Technical Support Center requested the key to the emergency response data system computer room from a controller. The controller inappropriately provided the key instead of requiring the requestor to locate and obtain the key using prescribed methods. The licensee explained that the individual was supporting the controller organization but was not wearing an orange controller vest and had not completed controller training.

- Simulated actions in the Operations Support Center were not clearly communicated to all personnel affected by the simulation. First, dose rates in the Technical Support Center/Operations Support Center were postulated to be 5 millirem per hour during the time the release was passing over the facility; however, frisker stations were inappropriately still being used in the facility. Health physics technicians were confused by this incongruent situation. Second, a lead pig was simulated to be in use for one counting station. This information was not known by all health physics technicians. Third, there were no provisions for relocating or shielding the frisker station used for teams returning to the Technical Support Center/Operations Support Center.

- Some controllers were not proficient at providing radiological data. For example, the controller who accompanied Team 5 did not provide correct radiological data as the team traversed the 1974 foot elevation corridor of the auxiliary building. The dose rate provided by the controller was less than 2 millirem per hour, when scenario data indicated it should have been 16 millirem per hour.

- The lead exercise controller interrupted a management status meeting in the Emergency Operations Facility to inform players of a possible error involving the location of a field team sample. This controller interject was inappropriate, because the sample location error was introduced by a player, not a controller. The lead controller should have allowed players to identify the error themselves, rather than

interfering. The controller interject confused many facility personnel and prompted players to take actions to confirm sample locations.

The failure of the controllers to properly control exercise activities was identified as an exercise weakness (482/9512-05).

6.2 Conclusions

The exercise scenario provided sufficient challenges to test emergency response capabilities and demonstrate exercise objectives. An exercise weakness was identified for failure of the controllers to properly control exercise activities.

7 LICENSEE SELF-CRITIQUE (82301-03.13)

The inspectors observed and evaluated the licensee's post-exercise facility critiques and the formal management critique on August 16, 1995, to determine whether the process would identify and characterize weak or deficient areas in need of corrective action.

7.1 Discussion

The inspectors determined that the post-exercise critiques provided adequate input into the formal process. In addition to the controller organization, a special management team led by the Vice President, Plant Operations, evaluated performance during the exercise. Management involvement was identified as a strength. The leader of the management team presented the utility's findings during the formal critique on August 16, 1995. The findings included strengths, weaknesses, and observations. The licensee's organization identified three exercise weaknesses: (1) an error in the emergency dose calculation program, (2) the lack of planning for unanticipated player responses, and (3) the failure to provide appropriate data for the Operations Support Center friskers (to account for the effects from the plume). The difference between the number of issues identified by the NRC when compared to the licensee was much larger than normal for exercises.

7.2 Conclusions

Overall, the licensee's critique process was considered adequate. Management involvement in the exercise critique process was identified as a strength. The difference between the number of issues identified by the NRC when compared to the licensee was much larger than normal for exercises.

8 FOLLOWUP - PLANT SUPPORT (92904)

8.1 (Closed) Weakness 482/9320-02: Problems with Communication and Information Flow Problems in the Control Room, Technical Support Center, Operations Support Center, and Emergency Operations Facility

In response to this item, the licensee reorganized the emergency response organization to assign emergency responders to a single emergency response position in one of five emergency response teams. Each of these teams are

drilled on an annual basis. Overall, communication and information flow were improved during this exercise.

8.2 (Closed) Weakness 482/9320-03: Operations Support Center Staff Proficiency

In the previous exercise, Operations Support Center personnel were not proficient at locating materials stored in the warehouse. If assistance in the warehouse was needed, warehouse personnel were called in. The licensee has now included warehouse personnel as part of the Operations Support Center emergency response organization. During this exercise, the licensee adequately demonstrated the ability to locate and draw materials from the warehouse in an expeditious manner.

8.3 (Closed) Weakness 482/9320-04: Poor Radiological Protection Practices

In the previous exercise, in-plant response teams demonstrated several poor radiological practices. During this exercise, proper radiological practices were followed by in-plant response team members: low dose rate areas were identified and used, survey meters were properly used when teams entered areas of unknown dose rates, dosimeters were properly worn and read at frequent intervals, and proper contamination control practices were observed.

8.4 (Closed) Weakness 482/9320-05: Inconsistencies Between Offsite Radiological Assessments and Protective Action Recommendations

During the 1993 annual emergency exercise, the inspectors observed that information was communicated to offsite authorities which contained significant inconsistencies relative to recommended protective actions. The licensee implemented corrective actions included training for Emergency Operations Facility managers which emphasized the need to question and verify dose assessment information prior to releasing it to offsite authorities. During this exercise, inspectors observed that all information on estimated exposures and protective action recommendations communicated to offsite officials via the notification forms was correct. Moreover, State radiological assessment personnel were closely integrated with the licensee's dose assessment staff. This interaction appeared to enhance the overall understanding of radiological conditions and protective action recommendation coordination.

8.5 (Closed) Weakness 482/9320-06: Scenario and Exercise Conduct Problems

Numerous and significant scenario and exercise conduct problems were identified during the previous exercise. During this exercise, sufficient improvement in this area was noted. With one minor exception, late scenario changes were incorporated into the scenario and were properly controlled and disseminated. Adequate exercise control was demonstrated when the simulator computer failed. Controllers coordinated the transfer to hard copy data and synchronized the resumption of exercise activities.

ATTACHMENT

1 PERSONS CONTACTED

1.1 Licensee Personnel

*O. Maynard, Vice President, Plant Operations
*M. Blow, Superintendent, Chemistry
*G. Boyer, Manager, Training
*K. Craighead, Engineering Specialist III, Emergency Planning
*J. Dagenette, Engineering Specialist III, Emergency Planning
*T. Damashek, Supervisor, Regulatory Compliance
*T. East, Supervising Instructor, Chemistry
*R. Hagan, Vice President, Engineering
*S. Henry, Staff Specialist, Chemistry
*R. Johannes, Chief Administrative Officer
*J. Lutz, Engineer III, Reactor Engineering
*M. McKinney, Security Investigator, Security
*L. Parmeter, Supervisor, Operations Support - Procedures
*C. Redding, Engineering Specialist, Regulatory Compliance
C. Rich, Supervisor, Electrical Maintenance
*M. Schreiber, Supervisor, Emergency Planning
*R. Sims, Supervisor, Operations Support
*G. Smith, Licensed Supervising Instructor
*H. Stubby, Supervisor, Technical Training
*R. Stump, Procedure Specialist
*S. Teal, Corporate Development Specialist, Emergency Planning
*K. Thrall, Senior Engineering Specialist, Emergency Planning
*J. Weeks, Assistant to Vice President, Plant Operations
*B. Winzenried, Engineer III, Emergency Planning

1.2 NRC Personnel

*J. Ringwald, Senior Resident Inspector
*J. Dixon-Herrity, Resident Inspector

*Denotes those present at the exit meeting

2 EXIT MEETING

An exit meeting was conducted on August 17, 1995. During this meeting, the inspectors reviewed the scope and findings of the report. The licensee did not identify as proprietary any of the materials provided to, or reviewed by, the inspection team during the inspection.