ENCLOSURE

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REGION IV

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Attachment: Supplemental Information

EXECUTIVE SUMMARY

Cooper Nuclear Station
NRC Inspection Report 50-298/96-22

Routine, announced inspection of the licensee's performance and capabilities during the full-scale, biennial exercise of the emergency plan and implementing procedures. The inspection team observed activities in the control room simulator, technical support center, operational support center, and emergency operations facility.

Plant Support

- The control room staff's performance was satisfactory. Emergency conditions were promptly recognized and classified. Offsite agency notifications were made in a timely manner. Demonstrated processes for maintaining continuous personnel accountability were less than satisfactory (exercise weakness). Internal communications were less than expected. The technical, engineering, and operations staffs demonstrated strong teamwork (Section P4.2).

- Overall, the technical support center performance was generally satisfactory. Briefings and communications were usually satisfactory. Engineering support was not always effective; basic technical information concerning plant changes was not documented, and priorities were not well coordinated between the technical support center and the engineering support group. Information flow and logkeeping could have been more effective. Accountability and access control were not sufficiently implemented (incorporated into the control room exercise weakness) (Section P4.3).

- The overall performance of the operational support center was good. Operational support center management remained aware of and effectively controlled team activities. Team priorities were appropriate, closely coordinated with the technical support center, and adjusted as plant conditions changed. Methods used to brief teams expedited team dispatch and equipments repairs (Section P4.4).

- Overall, the emergency operations facility staff's performance was satisfactory. Emergency classifications, event notifications, and protective action recommendations were timely and correct; however, the efficiency of the response effort could have been affected by process implementation problems in the areas of event classification and offsite agency notifications. Internal communications could have been more effective in some instances. Dose assessment activities and field monitoring team control were good. Interactions with offsite response teams were effective (Section P4.5).

- The inspectors determined that the scenario was sufficiently challenging to test emergency response capabilities and demonstrate onsite exercise objectives; however, the initial scenario submittal was generally of poor quality and indicated that corrective actions taken following the 1994 exercise were not fully effective. Exercise control was less than expected in a number of areas. The emergency organization's response to the actual onsite fire was appropriate (Sections P4.6 and P8.1).

- The licensee's self-critique process effectively identified areas for corrective action; however, the post-exercise critiques in the control room simulator and emergency operations facility were incomplete. In the technical support center, controllers could have demonstrated a more self-critical approach. The practice of conducting a followup critique with exercise participants strengthened the overall critique process (Section P4.7).

IV. Plant Support

P4 Staff Knowledge and Performance in Emergency Preparedness

P4.1 Program Areas Inspected (82301)

The licensee conducted a full-scale, biennial exercise on November 19, 1996. The exercise was conducted to test major portions of the onsite (licensee) and offsite emergency response capabilities. The licensee activated its emergency response organization and all emergency response facilities. The Federal Emergency Management Agency evaluated the offsite response capabilities of the States of Nebraska and Missouri and Nemaha, Atchison, Richardson and Otoe counties. The Federal Emergency Management Agency will issue a separate report.

The exercise scenario was run using the control room simulator in a dynamic mode. The exercise scenario began at 7:55 a.m. with the plant operating at 100 percent power. A crew briefing was conducted prior to the start of the exercise to ensure participants were cognizant of pre-existing conditions.

At 8:17 a.m., a notification of unusual event was declared as a result of a primary leak greater than 5 gallons per minute (Emergency Action Level 2.1.3). Actions were taken to identify the source of the leakage.

At 8:45 a.m., the control room was notified of a fire near Diesel Generator 2. The station fire alarm was sounded, and the fire brigade responded. At 8:51 a.m., an alert was declared due to a fire with the potential to cause degradation to a plant system that was required to be operable (Emergency Action Level 5.2.1). Offsite assistance was requested to fight the fire. The fire was declared out at approximately 9:50 a.m. As a result of the fire, Diesel Generator 2 was rendered inoperable.

Upon declaration of the alert, the licensee initiated personnel accountability measures using Emergency Plan Implementing Procedure 5.7.10, "Personnel Assembly and Accountability," Revision 10. All personnel not exempt from the exercise were required to assemble in their designated assembly areas. The alert declaration also prompted activation of onsite and offsite emergency response facilities.

As part of the scenario, cold weather was a major contributor to plant problems. At 9:31 a.m., the control room was notified of ice buildup on the intake screens. An operator was dispatched to investigate. At 9:51 a.m., an individual investigating a control room annunciator alarm involving a fire protection storage tank contacted the control room simulator to report a large leak from a pipe on the side of the tank (caused by a frozen pipe).

At 10:00 a.m., the Mark Moore line, one offsite power source, was lost due to a problem on the electrical grid. This power source was restored at 10:59 a.m. by changing the switching alignment in the switchyard.

At 11:14 a.m., after continued buildup of ice on the intake screens, the decision was made to manually scram the plant. Several rods did not insert on the scram signal, creating an anticipated transient without a scram condition. The use of alternate rod injection did not move the rods into the core. At 11:16 a.m., a site area emergency was declared due to the failure of the reactor protection system, including alternate rod insertion, to bring the reactor subcritical (Emergency Action Level 3.3.4).

At 12:04 p.m., following problems with the high pressure coolant injection system, containment radiation levels increased above the high-high alarm setpoint. At 12:06 p.m., a general emergency was declared due to the loss of two fission product barriers and the potential for loss of the third (Emergency Action Level 2.4.1).

At 2:17 p.m., a fire was identified in the standby gas treatment charcoal beds; stored radioactive material (radioiodines) was released to the environment.

At about 2:50 p.m., a station operator (non-exercise participant) noticed smoke in the turbine building hallway that shares a common wall with the main steam tunnel (not part of the exercise scenario). At 3:01 p.m., the source of the smoke was identified to be in the seismic gap between the main steam tunnel roof and the turbine building roof. The fire brigade responded to the scene of the fire. At 3:11 p.m., a real notification of unusual event was properly declared due to a fire not being extinguished within 10 minutes. The licensee suspended the exercise at 3:03 p.m. to prevent confusion between the exercise and the real event. The licensee terminated the exercise at 3:11 p.m. Additional comments concerning the actual fire are included in Section P4.6 below.

P4.2 Control Room

a. Inspection Scope (82301-03.02)

The inspectors observed and evaluated the control room simulator staff as they performed tasks in response to the exercise scenario conditions. These tasks included detection and classification of events, analysis of plant conditions, notification of offsite authorities, and adherence to the emergency plan and implementing procedures. The inspectors reviewed applicable emergency plan implementing procedures, logs, checklists, and notification forms generated during the exercise.

b. Observations and Findings

The control room simulator staff took very good actions to mitigate the effects of simulated plant and equipment failures during the exercise. The control room staff promptly and correctly classified the notification of unusual event and alert based on observed scenario plant conditions.

Although notifications to offsite organizations, including state and local government agencies and NRC, were made within required time limits, notification forms were not always completed in accordance with expectations. For example, there were two offsite notification forms identified as Number "1." As a result, important emergency response information could have been ignored or lost if one of the forms had been treated as duplicate information.

At one point, the control room simulator operators experienced difficulty resetting the scram signal. No operator errors were identified. Even though the difficulty was suspected to be a simulator problem, a team was dispatched to the control room simulator to investigate the difficulty. Ultimately, the team discovered that the problem stemmed from the licensee's restoration from the General Electric emergency operating procedures and that the same difficulty would have occurred in the plant control room under the same conditions. The licensee took appropriate actions to resolve the procedure implementation problem, including conducting control room crew briefings and changing the emergency operating procedures to correct the problem. The inspectors identified the teamwork and aggressive response demonstrated by the technicians, engineering, and operations as a strength.

During the exercise, personnel accountability was not maintained as required by Emergency Plan Implementing Procedure 5.7.10, "Personnel Assembly and Accountability," Revision 10. The following examples were noted in the control room simulator (additional examples are included in Section P4.3 below). It should be noted that the same process is used in the actual control room (i.e., not an exercise artificiality).

First, the written record of movement into and out of the control room simulator was not maintained on Attachment 2 to Emergency Plan Implementing Procedure 5.7.10, "Continuous Accountability Log." Examples included:

- People who did sign out on the accountability log did not always enter a destination.

- There were several entries where the time entered in the "time in" column was after the time entered in the "time out" column.

Second, based on accountability logs, the number of people accounted for in the control room simulator did not match the number of exercise participants present. Examples included:

- At 12:08 p.m., the inspectors counted 9 exercise participants in the control room simulator; the accountability logs indicated there were 20 people.

- At 2:20 p.m., the inspectors counted 8 exercise participants in the control room simulator; the accountability logs indicated there were 21 people.

The failure to maintain continuous accountability was identified as an exercise weakness due to the potential impact on personnel safety (298/9622-01). Additional elements of this exercise weakness are discussed in Section P4.3 below.

Communications between the control room, operational support center, technical support center, and emergency operations facility were good. However, room for improvement was identified concerning internal control room communications. The inspectors identified the following examples:

- The shift supervisor did not announce the declaration of the notification of unusual event to the control room staff until 8 minutes after the declaration.

- The shift supervisor did not inform the control room staff of his emergency director status until 33 minutes after the notification of unusual event was declared.

- Periodic briefings were held at irregular intervals and did not always address priorities and task assignments.

- The use of three-way communications was inconsistent. Three-way communications involve: (1) information communication by provider, (2) information restatement by receiver, and (3) information confirmation by provider.

- There were no announcements concerning protective action recommendations/implementation status beyond the site boundary. This information would be of interest to those with families in the immediate vicinity.

- The location of the leak at the fire water storage tank was incorrectly reported to the control room simulator.

The inspectors noted that control room personnel need to be kept informed of emergency declarations and to maintain an ongoing awareness of plant conditions, priorities, and task assignments to ensure that individual actions do not conflict with the overall response.

Overall, command and control in the control room simulator was good. The use of emergency procedures was observed and plant conditions were trended appropriately. However, both the licensee and the inspectors observed one instance where command and control could have been more positively asserted.

Specifically, at the point in the scenario where icing on the intake screens was increasing and a plant scram was threatening, the shift supervisor contacted the emergency director to discuss the need to manually scram the plant. At the time, there were competing issues associated with the impact of the plant's loss on the electrical grid and the need to keep the plant online as long as possible. As a result, the shift supervisor continued the discussion for some time before stating that the plant would trip soon anyway. The shift supervisor subsequently made the final decision to manually scram the plant. The licensee and the inspectors acknowledged that the shift supervisor always retains control of the plant, even after the emergency director responsibilities transfer to the emergency operations facility.

The inspectors determined that the control room logs were incomplete. The following examples were observed:

- The shift supervisor's log had seven entries, none of which reflected the emergency classification or the basis for the decision to declare the emergency.

- The control room log contained the shift turnover stamp and seven entries. One of the entries concerned the notification of unusual event declaration. The remainder of the entries involved plant equipment status.

- Although the control room log keeper's log was of good quality following the declaration of the alert, the log was kept on plain paper, not a licensee-approved form. As a result, the document may not have been captured by the licensee's document control process.

Failure to maintain complete logs could adversely affect event reconstruction following an emergency.

c. Conclusions

The control room staff's performance was satisfactory. Emergency conditions were promptly recognized and classified. Offsite agency notifications were made in a timely manner. Demonstrated processes for maintaining continuous personnel accountability were less than satisfactory (exercise weakness). Internal communications were less than expected. The technical, engineering, and operations staffs demonstrated strong teamwork.

P4.3 Technical Support Center

a. Inspection Scope (82301-03.03)

The inspectors observed and evaluated the technical support center staff as they performed tasks necessary to respond to the exercise scenario conditions. These tasks included staffing and activation, personnel accountability, facility management and control, accident assessment, onsite protective action decision making and implementation, internal and external communications, assistance and support to the control room, and prioritization of mitigating actions. The inspectors reviewed applicable emergency plan implementing procedures and logs.

b. Observations and Findings

The technical support center had the minimum required staff and was activated within 35 minutes after the alert declaration. The technical support center was activated in a coordinated and efficient manner and was staffed with a sufficient number of individuals who demonstrated the appropriate professional background for their various positions. Communications were promptly established with the control room simulator, operational support center, and emergency operations facility.

In general, the technical support center director effectively communicated with the other participants and exercised good command and control of the center. Concise, informative briefings were conducted about every 30 minutes, with appropriate information for effective event response. The inspectors observed exceptions in the following areas.

First, information flow could have been more effective. Personnel conducted telephone conversations during briefings; some individuals were not asked to provide input during some briefings; and some individuals could not always be heard during technical support center discussions due to the ambient noise and plant announcing system.

Second, the technical support center director did not always set the tone for a serious event response. On one occasion, the director gave a casual response to a question about which emergency operating procedure flowchart was in force. Similarly, two different questions asked by the simulated NRC (control cell) via the emergency notification system communicator were met with amusement and not directed to the appropriate resources for a response.

The technical support center staff actively participated with the emergency operations facility staff and the simulator control room shift supervisor in the determination of the site area and general emergency classifications. All classifications were correctly determined in a timely manner.

Personnel accountability and access control processes were not fully understood or uniformly applied in the technical support center. The following examples were observed:

- At 10:30 a.m., a security officer noted that individuals had entered and exited via the technical support center's unmonitored back door but did not take appropriate action to address the problem.

- Procedures defining access to the technical support center during emergency events were ambiguous concerning required controls. As a result, implementation varied regarding personnel briefings involving expected industrial and radiation hazards.

- After the accountability announcement at 8:53 a.m., a security officer mistakenly logged technical support center entries by hand. This incorrect action delayed access, caused confusion, clogged the hallway outside the technical support center, and delayed facility activation. Although this situation was quickly corrected, the results lingered.

The personnel accountability issues identified in the technical support center are considered part of the exercise weakness described in Section P4.2 above (298/9622-01).

Although the engineering organization effectively supported the control room by identifying and working to resolve an actual problem with the emergency operating procedures (discussed in Section P4.2 above), priorities were not always well coordinated between the technical support center decision makers and the center's engineering organization. Specifically, priorities were often inconsistent, inverted, or missing (engineering work continued on some missing issues). The following examples illustrate the observed lack of coordination:

- At about 10:20 a.m., the first and third priorities in the technical support center were recovery of Emergency Diesel Generator 2 and Reactor Core Isolation Cooling Valve RCIC-MOV-131, respectively. For about 20 minutes, these priorities were in reverse order in the technical support center engineering support area.

- At 11:30 a.m., the second and third priorities in the technical support center were intake icing and Emergency Diesel Generator 2 damage assessment, respectively. These priorities were fourth and first in the engineering support group. This inconsistency lasted about 30 minutes.

- At 12:10 p.m., the technical support center priorities were: first, high pressure core injection steam line isolation (this item was not on engineering's list); second, scram reset (this item was first on engineering's list); third, startup feedwater flow controller (not on engineering's list); and

fourth, Emergency Diesel Generator 2 recovery (listed as a second top priority on engineering's list). In the engineering support area, four additional items were listed: service water operability, Breaker 3308, determination of drywell leakage and trending, and recovery of RCIC-MOV-131. These priorities had been removed from the overall technical support center priorities. These inconsistencies lasted for about 50 minutes.

- At 1:45 p.m., the technical support center priorities were: first, plant cooldown/shutdown cooling; second, reactor water and torus samples; third, startup feedwater control; fourth, torus water level restoration; fifth, reactor water clean up system restoration; and sixth, drywell leak detection. Engineering's list consisted of two priorities that were both identified as the first priority: RCIC-MOV-131 and drywell leak detection and trending. All other work items on the priority list were labeled "done."

- After 1:45 p.m., engineering worked on several other technical support center priority items, but the priorities list in the engineering support area did not change for the next hour.

- A status board (separate from the engineering priorities list) was used in the engineering support area to display the status of five different issues. However, since there were no time references entered on the board, old information could not be readily discerned.

- A 6-minute delay occurred between the technical support center's recognition that an anticipated transient without scram had occurred, and the engineering group's recognition.

The inspectors concluded that a lack of coordination between these two areas could decrease the effectiveness of engineering support.

Although the technical support center actively sought solutions to mitigate the scenario events, some event mitigation or response actions recommended and implemented by the technical support center engineering group appeared to have questionable technical basis. The following examples were observed:

- At 9:35 a.m., the engineering technical support center manager noted the fragile condition of the grid (due to weather) but no further recommendations or work on this matter was evident. The inspectors concluded that the loss of offsite power may have been more likely, given the conditions established by the exercise scenario. Discussions concerning actions such as starting and running diesels did not occur, although one diesel was degraded by a fire early in the exercise scenario.

- Carbon dioxide was used to suppress a fuel oil aspiration-type fire. This fire mitigation technique provided minimal heat absorption, compared to water

mist, and could have allowed a reflash. No discussion of the relative merits of water mist over carbon dioxide suppression for this type of fire was observed.

- Following the fire in the Emergency Diesel Generator 2 area, engineering support did not discuss the need to start and load Emergency Diesel Generator 2 to verify operability. The fuel oil fire had started during a postmaintenance surveillance run, burned for over 50 minutes, and was extinguished by offsite fire responders. The potential damage caused by a fuel oil fire (carbon plate-out on relays, effects caused by fire fighting activities, and heat effects on equipment in the upper part of the room), as well as an incomplete postmaintenance surveillance, were not addressed by other than a visual inspection of the Emergency Diesel Generator 2 equipment and room.

  Moreover, the potential effects on the redundant Emergency Diesel Generator 1 were not addressed. Fire responders were routed through the Emergency Diesel Generator 1 room, and the door between the diesels was opened, allowing heat and smoke into the operable diesel room. These concerns were magnified due to the fragile condition of the offsite power grid. Since the exercise scenario did not require either of the diesel generators to run, the operability of the diesel generators was not challenged.

- The inspectors did not observe any discussions between the technical support center or engineering support group regarding the relative risk and higher concern for continued service water degradation. Intake icing priorities and associated service water system operability were last on the technical support center priority list at 11:30 a.m., below Emergency Diesel Generator 2 recovery, anticipated transient without scram recovery, and RCIC-MOV-131. These higher priority items had stabilized at 11:30 a.m., but the service water issues were not resolved, and degradation was continuing. Mitigation actions had been initiated but were not yet successful. Degrading service water operability was not raised to a higher priority at that time.

  Regarding intake icing, the proposed actions to mitigate icing involved use of air heaters. When questioned by the inspector, the technical support center staff stated that heaters had been used successfully in the past to mitigate intake bay icing. During an actual intake icing condition 6 days later on November 26 and 27, 1996, heaters were not used. The inspectors determined that the control room staff had no knowledge of heater use or locations where heaters could be obtained and that there were no procedures or instructions available for using heaters to mitigate intake icing.

- Manual opening of RCIC-MOV-131 was not performed, even though it would have resulted in immediate availability of the reactor core isolation cooling system. Instead, exercise participants simulated replacing the old motor with an oversized motor. This resulted in higher radiation exposure and delayed availability of the reactor core isolation cooling system.

- The technical support center director incorrectly stated the threshold limit for a ground level release (i.e., secondary containment pressure greater than zero, instead of greater than or equal to zero). The incorrectly stated limit was nonconservative.

- Group 2, 3, and 6 isolations occurred but were not questioned by the engineering staff. The scenario did not include circumstances that would cause these isolations; the isolations were caused by operators. The inspectors concluded that the engineering support group's failure to question these isolations which were clearly posted on plant data screens indicated a lack of questioning attitude.

The inspectors determined that some procedures used by technical support center personnel may not have been appropriate. The inspectors noted the following examples:

- A procedure to change a system valve lineup to account for a faulted system was not considered to be an intent change; therefore, approval or evaluation by the station operations review committee was not required. Even if the change had been considered an intent change, the convention of an emergency station operations review committee was not desired by technical support center staff. The engineering coordinator and engineering support group considered the implementation of 10 CFR 50.54(x) (to operate outside procedures) to be desirable over an emergency station operations review committee meeting to approve the change.

- Evaluation and basic technical information related to plant configuration/temporary plant changes were not documented on two occasions. The first one involved installation of an oversized motor for the RCIC-MOV-131 valve, the other one involved a pipe clamp-type repair of a diesel fuel oil booster pump line crack.

Related to this matter, the inspectors noted that Procedure 2.0.7, "Plant Temporary Modification Control", Revision 23, Section 8.8, which was applicable during emergency situations, did not require that any technical documentation be provided in an emergency when modifications are made to the plant, only that documentation be performed before the plant is returned to a normal operating status. Accordingly, during the two aforementioned plant modifications, no technical documentation was recorded. The inspectors concluded that the failure to document any of the plant modification's technical or configuration information

during the event was a concern, because further failures, changes, corrective actions, and compensatory measures may be invalid or lead to unexpected failure modes if the technical basis and as-installed configuration are not available for review when a change is made to a plant.

In response, the licensee acknowledged that there may be a vulnerability associated with the current practice and that the need to document the technical basis for plant design changes and to record basic as-installed configuration information during events would be reviewed.

Mechanisms for providing information were not always effective. The following examples were noted:

- Plant announcements were unintelligible within a 50-foot radius in front of the administration building. The inspectors did note that the warning signals were audible. Since this area is a designated smoking area, there are usually up to 20 individuals present in fair weather. Personnel response to emergencies could be delayed if individuals cannot understand emergency announcements.

- Plant announcements could not always be heard in all areas of the plant accessed by exercise participants (operational support center teams). The problem was particularly noticeable in the emergency diesel generator rooms, turbine building, and main elevator.

- Periodic announcements of the current emergency classification were not made in the technical support center until the latter half of the exercise. Also, there were no postings/placards in the technical support center to display the current emergency classification level. Although the inspectors did not identify any problems concerning participant knowledge of the current emergency classification level, posted classification status would be useful to offsite responders, such as NRC site team members, who may be dispatched to the technical support center during an emergency.

- Some information on the plant data screens was difficult to read.

- Only the last few lines on the computerized log were displayed, making it difficult for responders to review past events.

With one exception, appropriate logkeeping was observed. At 10:25 a.m., the inspectors observed that the security communicator's logs were incomplete (20 words total for 8 entries). The individual's actions were continuous, and later entries were more complete. However, since a neat and complete log for this position was produced following the exercise, the inspectors concluded that the log was copied, after the fact, from scratch pads. The inspectors concluded that some information could be lost by employing this practice.

Since the last emergency exercise, the licensee made several changes to its technical support center. In addition to the visual aid difficulties noted above, the inspectors identified two problems concerning the technical support center. First, the temperature in the engineering area was uncomfortably hot. Personnel opened the door in an attempt to cool down the room; however, this action only increased the noise levels in the room. The temperature problem appeared to be a design issue. Second, the engineering space appeared too small for the number of inhabitants and equipment.

c. Conclusions

Overall, the technical support center performance was generally satisfactory. Briefings and communications were usually satisfactory. Engineering support was not always effective; basic technical information concerning plant changes was not documented, and priorities were not well coordinated between the technical support center and the engineering support group. Information flow and logkeeping could have been more effective. Accountability and access control were not sufficiently implemented (incorporated into the control room exercise weakness).

P4.4 Operational Support Center

a. Inspection Scope (82301-03.05)

The inspectors observed and evaluated the operational support center staff as they performed tasks in response to the scenario conditions. These tasks included the fire brigade response, functional staffing, and inplant emergency response team dispatch and coordination in support of control room and technical support center requests. The inspectors reviewed applicable emergency plan implementing procedures, logs, checklists, and forms generated during the exercise.

b. Observations and Findings

Following identification of the simulated fire, a reactor operator promptly notified the control room simulator. Appropriate plant alarms and announcements were made shortly thereafter. The fire brigade's response to the simulated fire was timely. Personnel arriving at the designated fire brigade staging area (turbine building closest to Emergency Diesel Generator Room 2) rapidly donned fire fighting clothing, assembled equipment, and assumed prescribed duties.

The fire brigade leader provided good command and control of the response activities. After an assessment of the fire, offsite fire support was appropriately requested. The efforts of the Auburn Volunteer Fire Company, as well as its entrance and exit from the protected area, were well coordinated between security and the onsite fire brigade leader. Proper attention was given to stay-time such that when a fire fighter's air bottle alarmed, a replacement fire fighter was immediately available to continue fire fighting activities.

The fire brigade leader appropriately kept the control room informed of the status of the simulated fire, its source, and its effects on Emergency Diesel Generator 2 and its support systems. Section P4.6 below contains additional comments concerning the fire response.

The operational support center was promptly activated following the alert declaration. Reactor operators from the control room simulator and teams designated by the operational support center were appropriately briefed and tracked as they were formed and dispatched inplant.

Operational support center briefings were informative, timely, and presented clearly and loudly to facility staff. Briefings were provided by the operational support center supervisor and the technical support center director via the public address system. The briefings were heard in the technical support center, operational support center, and crafts staging area. In addition, teams received complete operations and health physics briefings prior to dispatch. The inspectors concluded that internal and external information flow effectively supported inplant team formation and expedited team dispatch.

The operational support center was collocated with the technical support center. Team briefings were conducted in a separate, but adjacent, room. As a result, congestion and noise levels were effectively controlled. Craft personnel available for team assignments were designated on a team resources status board and grouped by discipline; however, there was no sign-in board to identify personnel occupying key positions in the operational support center. This information would be helpful to those responding to the facility (utility and NRC).

Necessary equipment was available for use by operational support center personnel. Communications with inplant repair teams were satisfactorily maintained via radios. Radiation protection equipment, including alarming dosimeters and survey instruments, were available, calibrated, and properly issued to inplant team members prior to leaving the health physics area.

Teams were formed, briefed, and dispatched in a timely manner with minimal delays observed. Over 30 teams were dispatched during the exercise. The teams maintained continuous contact with the operational support center through a radio communicator. Teams were given periodic plant condition updates and informed of emergency classification changes. However, no announcements were made in the operational support center regarding offsite protective action recommendations/implementation. As discussed in Section P4.2 above, personnel with families in the affected areas would be interested in this information.

Facility habitability was initially determined and then continuously monitored throughout the exercise. The chemistry/radiological protection operational support center lead reviewed routine habitability surveys. During the exercise, the technical support center director ordered the shield doors closed. A security officer was

placed at the primary exit/entrance to the operational support center/technical support center and logged personnel leaving or entering. No habitability, accountability, or access control problems were observed other than those documented concerning the technical support center (Section P4.3).

As returning inplant teams were debriefed, the radiation levels were reported by team members and absorbed doses were logged for each team member. Team priorities were based on the critical nature of the assignment. The operational support center supervisor and support staff continually reassessed team priority assignments and adjusted the ranking according to technical support center directions. These priorities were properly established in the technical support center and provided to the operational support center via video display.

Health physics coverage and team briefings were very thorough. Inplant teams received appropriate health physics information and equipment prior to entering the radiologically controlled area. Health physics personnel also ensured that team members were cognizant of and would employ methods to keep doses as low as reasonably achievable.

The operational support center supervisor provided effective command and control by personal oversight, by assuring that functional area leads remained cognizant of priorities and changing plant conditions, and by providing complete and comprehensive briefings. As a result, the operational support center was clearly focused on priority tasks.

c. Conclusions

The overall performance of the operational support center was good. Operational support center management remained aware of and effectively controlled team activities. Team priorities were appropriate, closely coordinated with the technical support center, and adjusted as plant conditions changed. Methods used to brief teams expedited team dispatch and equipment repairs.

P4.5 Emergency Operations Facility

a. Inspection Scope (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, event classification, notification of state and local response agencies, development and issuance of protective action recommendations, dose assessment and coordination of field monitoring teams, analysis of plant conditions, and direct interactions with offsite agency response teams.

b. Observations and Findings

The emergency operations facility was promptly activated following the 8:51 a.m. alert declaration. Sufficient personnel were present at 9:18 a.m. Following a briefing from the control room simulator, emergency director responsibilities were transferred to the emergency operations facility at 9:22 a.m.

Upon arrival, facility personnel quickly obtained and started completing positional instruction manual activation steps. With one exception, facility activation was conducted in accordance with checklist requirements. Specifically, the clocks were not synchronized as required by positional instruction manual Emergency Operations Facility 8. Step 4 required the logistics coordinator to synchronize the clocks with the technical support center and control room. The box was checked, indicating that the step had been performed, but the clocks were not synchronized. The digital clock was off by 2 minutes. The time difference caused some confusion between the emergency director and shift supervisor regarding the time the fire was logged as being out. The inspectors also observed that the overhead screen controller time had not been changed from daylight savings time. Not displaying the correct time could have led to confusion if it had been used. The inspectors concluded that nonsynchronized clocks could inhibit event reconstruction.

The emergency director properly declared the site area and general emergencies in a timely manner; however, the classifications appeared to be driven by the control room simulator and technical support center. On both occasions, when plant conditions changed, neither the emergency director nor the emergency operations facility director began to review the emergency classification procedure until called by the control room simulator and technical support center.

In response to this comment, the licensee stated that there was a procedural requirement for the technical support center director to recommend event classification changes to the emergency director. The inspectors acknowledged this comment but noted that since the emergency operations facility had the responsibility to make the event declarations, a more proactive role by the emergency director was appropriate. Under certain conditions, the control room and technical support center could be distracted by other tasks and waiting for a recommendation could delay the classification.

Although all offsite notifications were made within regulatory time limits, the inspectors observed the following notification implementation problems:

- The names of the persons contacted were not always documented on the offsite communicator incident report record as required by Step 8.2.1.4 of Emergency Plan Implementing Procedure 5.7.6, "Notifications." Failing to document the agency representative eventually led to some problems in trying to decide which agency was notified.

- The information on the site area emergency incident report was read to the receiving offsite agencies before it was determined who was on the line. Section 8.2.1 of Emergency Plan Implementing Procedure 5.7.6, required that the names be obtained before reading the incident report. Not performing the steps in the appropriate order could delay the notification process, since additional telephone calls may have to be made if all parties are not on the line.

- Due to telephone line problems, separate calls had to be made to notify the states. When this occurred, two different times were appropriately noted on the incident report record; however. the times were not labeled to show who was notified at the stated times. This could lead to confusion during event reconstruction.

- Notification Reports 7 and 8 stated that a release was in progress; however, Report 9 stated there was no release above regulatory limits but did not include a release stop time. The information provided on the reports could have been confusing to the offsite agencies, and **was** confusing to the offsite communicator and radiological control manager who had to obtain clarification from the emergency director.

- There was some difficulty reaching certain offsite emergency response organizations using the numbers in the emergency response telephone directory (the primary ringdown lines were lost due to "real" line problems). Alternate telephone numbers were obtained and used to make the notifications. The licensee stated that the telephone numbers in the directory were correct.

- Notification Report 10 incorrectly stated that the general emergency was declared on November 19, 19**95**.

The inspectors concluded that the efficiency of the response effort and event reconstruction could have been affected by the above notification problems.

Command and control in the emergency operations facility were satisfactorily maintained by the facility director, as opposed to the emergency director. Briefings were generally good; however, the effectiveness was challenged in a number of areas. First, the public address system was not consistently used to inform facility members of the briefings. Second, the public address system was only used on two occasions to announce important plant parameter changes. Third, facility briefings could not be heard in the dose assessment area; however, the radiation assessment coordinator usually conducted followup briefings for the dose assessment staff after the facility briefings. Fourth, acronyms were regularly used during the briefings and may not have been understood by everyone in the facility.

Dose assessment and field monitoring team control activities were effectively performed. Numerous dose projections were performed and used to support offsite protective action recommendations. There was good coordination between utility and state offsite field teams. Prior to the dispatch of the utility offsite field teams, an equipment check was properly performed. During the equipment check, field team members discovered that both dual channel analyzers (one for each team), were inoperable. Subsequent to the exercise, the licensee decided to remove the analyzers from the kits, since they were not part of the official offsite field team kit inventories and other methods were available to measure air sample cartridges.

Although all press releases appeared to be properly reviewed and approved by the emergency director, as required by Step 11 of positional instruction manual, Emergency Operations Facility 10, "Technical Information Coordinator," there did not appear to be a verifiable method to document that the approval had been obtained (e.g., initialled by emergency director). In all observed cases, the emergency director reviewed the press releases and made changes in red; however, if no changes were made, there would be no verification that the required approval had been obtained. The lack of a verifiable method to document the emergency director's approval could lead to the release of unapproved information.

Interactions with state (Nebraska and Missouri) response teams in the emergency operations facility were effective. Upon arrival, utility response personnel briefed the state teams on current plant status and radiological conditions. State representatives provided input to facility briefings, including the status of offsite protective actions.

Since the 1994 emergency exercise, the licensee made significant changes to its emergency operations facility. The changes included floor plan modifications and the addition of customized furniture and computerized visual aids. With the following exceptions, the facility changes were generally effective:

- Although the use of the computerized log can be an effective tool, it was somewhat limiting as a visual aid since only the last three or four lines were visible.

  There were no sign-in boards to display the names of facility emergency response personnel. Sign-in boards are especially useful to offsite agency responders (state and NRC).

- There were no placards/postings to inform emergency response personnel of the current classification level. Posted emergency classification levels are helpful to arriving offsite agency responders (state and NRC).

- Plant parameter data projected on two of the three screens was difficult read and may have limited trending capabilities.

c. Conclusions

Overall, the emergency operations facility staff's performance was satisfactory. Emergency classifications, event notifications, and protective action recommendations were timely and correct; however, the efficiency of the response effort could have been affected by process implementation problems in the areas of event classification and offsite agency notifications. Internal communications could have been more effective in some instances. Dose assessment activities and field monitoring team control were good. Interactions with offsite response teams were effective.

P4.6 Scenario and Exercise Control

a. Inspection Scope (82301)

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

b. Observations and Findings

To resolve NRC and Federal Emergency Management Agency concerns identified during the review process (see Section P8.1 below), the licensee revised the exercise scenario several weeks before the exercise. Although the scenario was slow moving, the inspectors determined that it was sufficiently challenging for emergency response personnel.

The following observations detracted from the realism and training value of the exercise and were considered areas for improvement:

- There were communication problems between the control room simulator and the fire brigade, because the radios used in the simulator are not the same as those used in the control room.

- A controller inappropriately left a participant in the field. The participant was sent to the switchyard to change the breaker lineup. Controllers are usually instructed to not leave their assigned teams without a replacement.

- The statement, "This is a drill," was not used to begin and end communications in three instances. First, one announcement from the control room (first announcement) was not prefaced with, "This is a drill." Second, during an 8:35 a.m. call to the resident inspector, the operations manager failed to end his briefing with, "This is a drill." Third, the 9:48 a.m., technical support center briefing did not end with, "This is a drill."

- Controllers did not have a thorough understanding of all available sources of information. For example, controllers did not understand that the river level

data could be obtained via the internet. Controllers understood that river level could only be obtained by operators reading a gage in the intake structure. This resulted in engineers obtaining river level before controllers could provide river levels appropriate to the scenario.

- During the fire response, while attempting to bring the CARDOX equipment cart into the area, a fire fighter wearing a self-contained breathing apparatus bumped into Emergency Diesel Generator 1 support equipment. Another fire fighter, wearing a self-contained breathing apparatus, bumped into the gaitronics system telephone in Emergency Diesel Generator Room 2. These observations indicated the need to improve oversight and control of exercise activities conducted in areas where there is plant equipment (via the use of spotters).

- Conflicting data was provided to some inplant teams. The repair team for the reactor core isolation cooling pump was unaware that the motor had already been removed and questioned how a replacement motor was obtained. Two locations for repairing the reactor feed water pump controller were provided to the responding inplant repair team.

- Doses received by inplant teams were estimated by radiological protection personnel in the operational support center, rather than by a controller. As a result, radiological protection personnel were unnecessarily and unrealistically burdened with the responsibility to compute team member doses. Since team members would normally know their values and provide them upon return, it would have been more realistic for the controllers to provide the dose estimates.

- There were numerous examples of inappropriate conversations between controllers and participants, quality assurance evaluators and participants, and observers and participants in the emergency operations facility. Conversations continued even after the inspectors mentioned the concern to the facility lead controller. The inspectors noted that even asking or responding to innocent questions can lead to changes in participant performance if they sense there is a problem in a particular area. Such conversations are only appropriate during training drills, not exercises.

- One position in the emergency operations facility was double staffed. The radiation assessment coordinator called for assistance before there was a demonstrated need for their presence. The additional staff member heavily supported offsite field team control. Based on the level of activity in the dose assessment area and comments made by the two responders, the licensee may need to review minimum staffing levels.

As previously mentioned, the licensee experienced a real fire during the exercise which correctly prompted the declaration of a notification of unusual event. Following the actual fire alarm, the licensee properly suspended exercise activities and readied the emergency response facilities for use (replaced used checklists, cleared computerized log, and erased dose assessment status boards, etc.). Exercise termination was properly coordinated with NRC and Federal Emergency Response Management personnel to ensure that exercise objectives were sufficiently demonstrated.

c. Conclusions

The inspectors determined that the scenario was sufficiently challenging to test emergency response capabilities and demonstrate onsite exercise objectives; however, the initial scenario submittal was generally of poor quality and indicated that corrective actions taken following the 1994 exercise were not fully effective. Exercise control was less than expected in a number of areas. The emergency organization's response to the actual onsite fire was appropriate.

P4.7 Licensee Self-Critique

a. Inspection Scope (82301-03.13)

The inspectors observed and evaluated the licensee's post-exercise facility critiques and the formal management critique on November 21, 1996, to determine whether the process would identify and characterize weak or deficient areas in need of corrective action.

b. Observations and Findings

The inspectors determined that the post-exercise critiques were generally thorough, open, and self-critical. With the exception of the control room simulator and emergency operations facility, critiques included input from all controllers, evaluators, and participants. In the control room simulator, the critique was conducted by one of the evaluators and was not considered to be conducive to participant input. Individuals were informed of their mistakes and were questioned as to the correct response. As such, there was very little direct input by participants other than to respond to direct criticisms. Conducting the critique in this manner reduced the critique's overall effectiveness.

Two problems were observed with the emergency operations facility's critique. First, the controllers and evaluators did not provide input to the critique. The inspectors noted that the post-exercise facility critiques provide a vehicle to discuss performance/procedural issues prior to corrective action process completion.

Second, due to the length of time between exercise termination and the start of the critique (to accommodate the states' transition to reentry/recovery phase discussions), some emergency operations facility participants left before the critique started. The inspectors concluded that the post-exercise critique in the emergency operations facility was incomplete.

The technical support center post-exercise critique was conducted in a helping, noncritical manner, without comments to indicate objective standards or to identify problems in a self-critical manner (to encourage a higher level of performance). The apparent demeanor of the technical support center staff was one of self-congratulations. Although the facility lead controller appeared knowledgeable concerning performance shortcomings, his perceived mission during the critique appeared to be that of a facilitator, rather than a critical reviewer and evaluator.

During the November 21, 1996, management critique, the facility lead controllers presented a compilation of comments from its evaluation team (controllers, evaluators, and participants). The issues identified by the licensee's team were generally consistent with those identified by the NRC inspection team; however, the licensee used a lower threshold to characterize strengths and weaknesses. The licensee's team identified strengths, weaknesses, and areas for improvement in all emergency response facilities. The licensee identified the following number of weaknesses: three in the control room simulator, one in the technical support center (personnel accountability and access control), one in the operational support center, and two in the emergency operations facility. The inspectors concluded that the licensee had performed a thorough evaluation of its performance during the exercise.

As discussed during the management critique, the licensee planned to conduct a followup critique with exercise participants to share the results of the critique process, including NRC and Federal Emergency Management Agency findings. The inspectors identified this practice as a strength, since it provided exercise participants with a complete assessment of the emergency response effort.

c. Conclusions

The licensee's self-critique process effectively identified areas for corrective action; however, the post-exercise critiques in the control room simulator and emergency operations facility were incomplete. In the technical support center, controllers could have demonstrated a more self-critical approach. The practice of conducting a followup critique with exercise participants strengthened the overall critique process.

P8 Miscellaneous Emergency Preparedness Issues (92904)

P8.1 (Closed) Inspection Followup Item 50-298/9429-02: Exercise weakness - Problems with exercise scenario. During the 1994 exercise, the inspectors identified that the scenario contained numerous significant data errors and omissions, was simplistic, provided minimal challenges, and in some areas, negative training. To address this issue, the licensee organized a formal scenario development team, developed a comprehensive drill and exercise manual, enhanced controller/evaluator training, and enhanced the scenario review process to include running the scenario on the simulator.

As previously mentioned, during a review of the 1996 scenario, the NRC identified several concerns with the originally submitted scenario. For example, the scenario was minimally challenging in some areas (including long periods with little activity), some exercise messages were missing, and some data was inconsistent. Based on the generally poor quality of the 1996 scenario, the inspectors concluded that the corrective actions taken following the 1994 exercise were not fully effective.

In response to comments concerning the 1996 scenario, the licensee revised the scenario several weeks before the exercise. The revised scenario was considered sufficient to test onsite and offsite emergency response capabilities. To ensure that a better submittal is prepared in the future, the licensee planned to take several actions, such as revising the drill and exercise manual to identify scenario package criteria and providing for an independent review of the scenario package, prior to transmittal to the NRC and Federal Emergency Management Agency. The planned actions were considered satisfactory.

P8.2 (Closed) Inspection Followup Item 50-298/9429-03: Emergency preparedness weakness - Improper use of radiation monitors in emergency classification procedure. During review of the scenario prior to the 1994 exercise, the inspectors noted errors in Emergency Plan Implementing Procedure 5.7.1, "Emergency Action Levels," used for accident classification. The following errors were identified:

- The criteria for determining "Fuel Cladding Loss" contained mixed references to both standby gas treatment and steam jet air ejector exhaust. The criteria should only refer to steam jet air ejectors.

- The procedure misinterpreted reference documents for equating containment radiation levels to percent fuel cladding failure. The referenced information was only valid for loss of coolant accident conditions.

The inspectors reviewed Emergency Plan Implementing Procedure 5.7.1, "Emergency Classification," Revision 23, and determined that the procedure was revised to correct these items.

V. Management Meetings

X1 Exit Meeting Summary

The inspectors presented the inspection results to members of licensee management at the conclusion of the inspection on November 21, 1996. The licensee acknowledged the findings presented. No proprietary information was identified. Subsequent to the exit meeting, the senior resident inspector provided clarification concerning some of the technical support center observations and findings.

ATTACHMENT

PARTIAL LIST OF PERSONS CONTACTED

Licensee

P. Graham, Vice President
R. Gardner, Manager, Operations
R. Hayden, Coordinator, Emergency Preparedness
B. Houston, Manager, Licensing
J. Kelsay, Emergency Preparedness Specialist
K. Krumland, Supervisor, Emergency Preparedness
M. Peckham, Plant Manager
J. Sayer, Coordinator, Employee Concerns Program
A. Shiever, Manager, Training

LIST OF INSPECTION PROCEDURES USED

IP 82301	Evaluation of Exercises at Power Reactors
IP 92904	Followup - Plant Support

LIST OF ITEMS OPENED AND CLOSED

Opened

50-298/96022-01	IFI	Exercise weakness - Failure to continually maintain personnel accountability in the control room simulator and technical support center (Sections P4.2 and P4.3)

Closed

50-298/94029-02	IFI	Exercise weakness - Problems with exercise scenario (Section P8.1)
50-298/94029-03	IFI	Emergency preparedness weakness - Improper use of containment radiation monitors in emergency classification procedure (Section P8.2)

LIST OF DOCUMENTS REVIEWED

Emergency Plan Implementing Procedures

5.7.1	Emergency Classification	Revision 23
5.7.2	Shift Supervisor Emergency Plan Implementing Procedure	Revision 10
5.7.6	Notification	Revision 24
5.7.7	Activation of Technical Support Center	Revision 22
5.7.8	Activation of Operational Support Center	Revision 16
5.7.8.1	Activation of Alternate Operational Support Center	Revision 0.1
5.7.9	Activation of Emergency Operations Facility	Revision 17

5.7.10	Personnel Assembly and Accountability	Revision 19
5.7.14	Stable Iodine Thyroid Blocking (KI)	Revision 10
5.7.15	Operational Support Center Team Dispatch	Revision 14
5.7.20	Protective Action Recommendations	Revision 11
5.7.22	Communications	Revision 16

Emergency Operating Procedures

5.8	Emergency Operating Procedures	Revision 7
5.8.3	Alternate Rod Insertion Methods	Revision 4
Emergency Operating Procedures Flowcharts		Revision 8

Other Documents

Cooper Nuclear Station Emergency Plan Revision 31
Positional Instruction Manual - Technical Support Center
Positional Instruction Manual - Operational Support Center
Positional Instruction Manual - Emergency Operations Facility
QAD960298 Evaluation QE 9637, Emergency Planning Dress Rehearsal Exercise Observations. October 22, 1996
Cooper Nuclear Station Technical Specifications
System Drawings for the standby gas treatment system, intake structure, service water system, drywell penetrations, and reactor core isolation cooling system

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