ENCLOSURE

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Attachment:	Supplemental Information

EXECUTIVE SUMMARY

Washington Nuclear Project-2
NRC Inspection Report 50-397/98-18

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

Plant Support

- Overall, performance was good. The control room (CR), technical support center (TSC), and emergency operations facility (EOF) successfully implemented most essential emergency plan functions including classification, protective action recommendations, and dose assessment.

- The CR staff's performance was very good. The initiating emergency event was promptly recognized and properly classified. Corresponding offsite agency notifications were timely. Operators quickly recognized changing plant conditions and took appropriate corrective actions. Three-part communications were consistently used, and good periodic briefings were conducted (Section P4.2).

- The TSC staff's performance was good. Changing plant conditions were promptly and correctly analyzed to support EOF emergency classifications. Staff briefings and technical discussions were effective. Some key technical issues, including recirculation pump vibration, reactor coolant makeup and leak rate, and standby gas treatment performance were not aggressively pursued. The method used to assign and track repair team priorities was unclear and hampered the operations support center's (OSC's) ability to manage repair team resources. Habitability was challenged because: (1) the outer airlock door was not fully closed, (2) at least one person did not frisk prior to reentry, and (3) emergency ventilation system operation was not verified until late in the exercise (Section P4.3).

- The OSC staff's performance was generally satisfactory. An exercise weakness was identified for failure to properly monitor habitability. Airborne, contamination, and area surveys were either never performed or were not regularly performed in all OSC areas. The fire brigade's performance was degraded because the response was delayed and some fire-fighting actions were inappropriate. The OSC was activated in a timely manner. Three-part communications were frequently used. Facility briefings were frequent and contained sufficient detail. Health physics briefings tended to delay repair team dispatch because only one person conducted the briefings. The process used to select field team members for tasks requiring self-contained breathing apparatus did not verify corrective lense availability. Repair team documentation was incomplete and could have affected airborne dose reconstruction. There was no emergency lighting installed in the OSC, although emergency electrical generators were available. Appropriate corrective actions were taken to address the lack of battery-powered air samplers. Public address announcements and station alarms could not be heard in all

areas of the plant. A health physics emergency locker contained degraded supplies and insufficient quantities of protective clothing (Section P4.4).

- The EOF staff's performance was good. Emergency classifications and protective action recommendations were correct and timely. Offsite agency notifications were timely with one licensee-identified exception. The Department of Energy notification for the site area emergency was slightly delayed due to the loss of the primary notification system and incorrect backup telephone numbers. One notification form was not properly completed; the date and time were omitted from the site area emergency notification form. The error was quickly recognized and verbally corrected. A discrepancy between the emergency plan and implementing procedures was identified concerning followup notifications. Appropriate corrective actions were taken to resolve the discrepancy. Dose assessment and field team control activities were properly performed to support protective action recommendations and validate dose projections. Interactions with offsite agency representatives were candid and supportive (Section P4.5).

- The exercise objectives were appropriate to meet emergency plan requirements. The initially submitted scenario was not acceptable because offsite doses were not challenging and would limit demonstration of some exercise objectives. Projected offsite doses were increased to an acceptable level in the revised scenario; however, the scenario developers incorrectly computed the offsite field team sample data. As a result, the offsite doses were not consistent with expected projected doses and did not challenge the dose assessment staff, field team members, and decision-makers. Scenario development has been a historical problem. In addition, the scenario developers failed to recognize that the loss of offsite power would affect OSC operations. Last minute controller instructions and impromptu controller actions during the exercise were thorough and conscientious (Section P4.6).

- The post-exercise and management critiques were thorough and self-critical. The critique process effectively identified positive performance and areas that needed to be corrected or improved (Section P4.7).

IV. Plant Support

P4 Staff Knowledge and Performance in Emergency Preparedness

P4.1 Exercise Conduct and Scenario Description (82301 and 82302)

The licensee conducted a full-scale, biennial emergency preparedness exercise on September 16, 1998. The exercise was conducted to test major portions of the onsite (licensee) and offsite emergency response facilities. 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 Washington and Oregon, and Benton and Franklin counties. The Federal Emergency Management Agency will issue a separate report.

The exercise scenario was run using the CR simulator in an interactive mode. The exercise scenario began at about 8:15 a.m. with the plant at 75 percent power. Standby Gas Treatment System A, the Emergency Diesel Generator 2 motor driven air compressor, and offsite power for the back-up transformer were out of service.

At 8:20 a.m., the CR received a report of a fire located in Low Pressure Core Spray Pump 1. The fire brigade was promptly dispatched. At 8:22 a.m., the shift manager declared an alert due to a fire in a safeguards building with confirmed damage. Announcements were made to activate the emergency response facilities.

At 8:50 a.m., the CR received an alarm indicating that the startup transformer locked out. This removed the second source of offsite power since the backup transformer was out of service.

At 9:35 a.m., the CR received indications of a reactor water cleanup system leak outside the primary containment. The reactor water cleanup system pump suction containment isolation valves failed to close. At 9:40 a.m., the CR received a vibration alarm on Reactor Recirculation Pump 1A and a loose parts monitor alarm. The loose parts monitor alarm was due to reactor coolant pump impeller damage. Pieces of the impeller entered the reactor vessel and caused flow restriction to several fuel assemblies.

At 9:54 a.m., the CR operators scrammed the plant due to an unisolable leak outside the containment from the reactor water cleanup system. At 9:55 a.m., Diesel Generator 2 failed to start when the starting air system piping ruptured.

At 9:54 a.m., the EOF manager/emergency director declared a site area emergency due to an unisolable leak outside containment as indicated by any temperature or radiation exceeding maximum safe operating values. At 9:57 a.m., primary containment pressure reached 1.68 psig.

At 10:37 a.m., the high pressure core spray emergency diesel failed. At 11:16 a.m., reactor water level decreased to the top of active fuel. At 11:18 a.m., the EOF manager/emergency director declared a general emergency.

At 11:38 a.m., power to the startup transformer was restored. Power was then made available to Residual Heat Removal Pumps 2B and 2C. The pumps auto-started and restored water level in the reactor vessel.

At 1:41 p.m., the reactor water cleanup system was isolated which terminated the reactor coolant system leak outside containment. At 1:42 p.m., plant stack radiological monitor readings began to decrease. The exercise was terminated at about 3 p.m.

P4.2 Control Room (CR)

a. Inspection Scope (82301-03.02)

The inspectors observed and evaluated the CR simulator staff as they performed tasks in response to the exercise scenario conditions. These tasks included event detection and classification, analysis of plant conditions, offsite agency notifications, internal and external communications, and adherence to the emergency plan and procedures. The inspectors reviewed applicable emergency plan sections and procedures, operations procedures, logs, and notification forms.

b. Observations and Findings

The inspectors observed that the CR staff was attentive to plant parameters, promptly recognized changing plant conditions, and took appropriate corrective actions. Emergency action levels were correctly used to classify the alert condition (fire). Plant personnel were immediately informed of the fire and the need to evacuate the reactor building. The fire brigade was assembled and responded to the fire. State, local, and NRC notifications were made within required time limits.

The shift manager exhibited very good command and control. The shift manager and CR supervisor held frequent and detailed briefings. The transfer of command and control to the EOF was timely (45 minutes after the alert declaration). The shift manager promptly announced emergency response facility activation status and the transfer of emergency director duties; however, the site area emergency was not announced in the CR.

CR personnel consistently used three-part communications. The CR operators used self-checking and peer-checking techniques when manipulating plant equipment. Control room personnel exhibited good teamwork and coordination. Communications between the CR and TSC were clear and focused.

The shift technical engineer made timely offsite agency notifications following the alert declaration and was an effective member of the CR team. Personnel accountability was maintained throughout the exercise.

With one exception, operators maintained good awareness of plant conditions. The operators failed to observe an annunciator on the standby gas treatment system (moisture alarm). As a result, the other emergency response facilities were not aware

that the system was operating in a degraded fashion. The licensee discussed corrective actions for this issue during the facility critique.

c. Conclusions

The CR staff's performance was very good. The initiating emergency event was promptly recognized and properly classified. Corresponding offsite agency notifications were timely. Operators quickly recognized changing plant conditions and took appropriate corrective actions. Three-part communications were consistently used, and good periodic briefings were conducted.

P4.3 Technical Support Center (TSC)

a. Inspection Scope (82301-03.03)

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

b. Observations and Findings

The TSC was rapidly activated after the 8:22 a.m. alert declaration. The TSC had the minimum staff required to operate within 22 minutes. When full staffing was achieved after 30 minutes, the TSC manager declared the TSC operational. The TSC staff signed in on the TSC staffing board and the accountability log as required by Procedure 13.10.7, "Plant Administrative Manager Duties," Revision 16. TSC personnel promptly established communications with the CR, OSC, and EOF. TSC management effectively communicated with TSC staff, and the TSC manager demonstrated effective command and control of TSC operations. Briefings were frequent and included input from key TSC positions.

The TSC staff generally analyzed and evaluated plant conditions in a timely and effective manner. However, the staff did not aggressively pursue three key technical issues, such as, the recirculation pump vibration, reactor coolant makeup and leak rate, and standby gas treatment performance monitoring. First, at 9:50 a.m., the plant status board showed that reactor recirculation pump RRC-P-1A was vibrating. At 11 a.m., the TSC staff removed the pump vibration information from the status board; however, the pump vibration was never investigated. Second, after the TSC staff established a source to makeup reactor coolant and mitigate core damage, the staff did not determine why reactor coolant inventory continued to be lost. The rate of reactor coolant loss was not determined until the NRC senior resident asked. The TSC staff estimated that the reactor coolant leak rate was 350 gallons per minute but never correctly identified the source of the coolant leak. Finally, the TSC staff did not monitor the performance of the

standby gas treatment system even after the EOF reported that offsite iodine concentrations were increasing.

The methods used by the TSC staff to assign and track repair team priorities were unclear and hampered the OSC's ability to manage repair team resources. Terms such as Priority 1, 2, 3, urgent, and more urgent were used. At times, TSC priorities and OSC repair team assignments did not correlate. Consequently, the TSC may have delayed the accomplishment of key accident mitigation and repair team tasks.

Some aspects of TSC operations challenged habitability. Procedure 13.10.4, "Radiation Protection Manager Duties," Revision 16, Section 3.1.6, required that the radiation protection manager establish, monitor, and maintain the TSC habitable if radiological conditions warranted. At 9:36 a.m., the TSC received a report that the reactor water cleanup system was leaking into secondary containment. At 9:40 a.m., the radiation protection manager instructed a health physics technician to establish TSC habitability by: (1) placing a frisker at TSC door N3, (2) ensuring that the TSC airlock door (N2) remained sealed to maintain environmental integrity, (3) ensuring that the TSC radiation monitor was activated, and (4) ensuring that the TSC emergency ventilation monitor was operable.

Although the health physics technician initially established habitability in a timely manner (by 9:55 a.m.), continued habitability was threatened by the following conditions: (1) on at least on occasion, the health physics technician did not frisk upon reentering the TSC; (2) the TSC airlock door (N2) was ajar at times (the door would not completely close without aid); and (3) the TSC emergency ventilation system was not verified as operating until 11:51 a.m. (a relatively minor release began at 9:54 a.m., and a more significant release began at 11:18 a.m.). This issue was not considered an exercise weakness because habitability was being monitored and the ventilation system was operating in the isolation mode.

c. Conclusions

The TSC staff's performance was good. Changing plant conditions were promptly and correctly analyzed to support EOF emergency classifications. Staff briefings and technical discussions were effective. Some key technical issues, including recirculation pump vibration, reactor coolant makeup and leak rate, and standby gas treatment performance, were not aggressively pursued. The method used to assign and track repair team priorities was unclear and hampered the OSC's ability to manage repair team resources. Habitability was challenged because: (1) the outer airlock door was not fully closed, (2) at least one person did not frisk prior to reentry, and (3) emergency ventilation system operation was not verified until late in the exercise.

P4.4 Operations Support Center (OSC)

a. Inspection Scope (82301-03.05)

The inspectors observed and evaluated the OSC staff as they performed tasks in response to the scenario conditions. These tasks included the fire brigade response,

facility activation and staffing, and inplant emergency repair team dispatch and coordination in support of CR and TSC requests. The inspectors reviewed applicable emergency plan implementing procedures, logs, checklists, and forms.

b. Observations and Findings

The fire brigade's response to the fire in the low pressure core spray pump room was degraded; the response was delayed and team member safety was potentially jeopardized. Observations included:

- Prior to attacking the fire, the fire brigade determined that 100 feet of hose was too much hose and removed a 50-foot section. This determination was made without measuring the distance to the door and determining how much hose was needed inside the room with the fire. Once in the room, the fire brigade could only attack the fire from one side of the pump and had to exit the room to add the 50-foot section of hose which had previously been removed.

- Entry into the room with the fire was delayed because one fire brigade member responded to the scene without fire-fighting attire. This individual was needed to fill the backup/rescue fire brigade team.

- The first attempt to fight the fire was made without adequate backup. The fourth fire brigade team member did not arrive until after the first attempt (the one made with insufficient hose). The fourth fire brigade team member arrived at the fire scene prior to donning the self-contained breathing apparatus face piece, hood, and helmet.

The licensee made similar observations and stated that the fire brigade's performance was under review by the station fire marshal. While the fire brigade's performance was not fully satisfactory and personnel safety was potentially jeopardized by the attempt to fight the fire without proper backup, the matter was not considered to be an exercise weakness because personnel entering the area of the fire were properly attired with protective clothing.

The fire in the low pressure core spray pump room led to an alert declaration and emergency response facility staffing. The OSC was promptly activated (within 30 minutes of the alert declaration). Since the OSC command area was routinely used as a lunch room, tables and chairs had to be rearranged for facility use. Upon arrival, craft personnel and functional area leads recorded arrival times on the personnel status board and quickly setup the facility equipment.

The OSC manager demonstrated good command and control. Three-part communications were frequently used, and briefings were frequent and contained sufficient detail. Information sharing within the OSC was timely, and status boards were well maintained.

In contrast, habitability monitoring of the OSC was inadequate to prevent or limit facility contamination and minimize personnel exposures. Observations included:

- Habitability surveys (airborne, contamination, and area surveys) were either never performed or were not regularly performed in all areas occupied by OSC personnel. Maps were not used to identify areas surveyed, and different health physics technicians surveyed different areas. Survey documentation was unclear since only one dose reading was recorded for all the areas surveyed.

- The continuous air monitor and portable area radiation monitor were not positioned to provide a representative sample of habitability conditions in the center. Moreover, there were multiple ventilation zones and multiple paths for air to circulate into the center and bypass the monitors.

- An alternative means of air sampling was not established following the loss of power and the corresponding loss of the continuous air and portable area radiation monitors. There were no battery-powered air samplers available for use within the plant. The licensee properly issued Problem Evaluation Request 298-1275 to address the lack of equipment.

- Potential contamination paths were not properly evaluated or controlled. For example: (1) contamination control boundaries were not established to define the areas to be monitored; (2) an exterior window in the OSC command area remained open until 1:22 p.m., about 2.5 hours after the start of the release; (3) exterior doors into the area near the conference room (the area occupied by craft personnel) was not controlled; and (4) contamination surveys were not performed in occupied areas after the window was discovered open and the continuous air monitor alarmed.

- When plant conditions worsened and a radiological release was anticipated, access to the general services building was not restricted to a single entry point, and a step off pad and frisker were not staged at this entry point as required by Procedure 13.10.10, "Health Physics, Chemistry, Operations Support Center Duties," Revision 12.

- Hourly habitability surveys were performed instead of every 30 minutes, as specified in Procedure 13.10.10, "Health Physics, Chemistry, Operations Support Center Duties," Revision 12.

The failure to properly monitor habitability in the OSC was identified as an exercise weakness, because there was a risk of personnel exposures and facility contamination (50-397/9818-01).

In response to TSC requests, the OSC assembled 27 repair teams and dispatched 21. Three of the six teams that were not dispatched were canceled due to changing priorities or radiological conditions within the plant; the other three were assembled at the end of the exercise but were not dispatched. The large number of repair teams dispatched over a short period of time and the limitations associated with exercise

participation (only a designated number of individuals were selected to participate) resulted in a shortage of health physics and craft personnel. The shortage delayed the dispatch of several priority repair teams. Additional personnel were requested from the offsite assembly area; however, there was no response to these requests (simulated or otherwise).

Although team assembly, dispatch, and tracking were performed satisfactorily, the following occurrences detracted from the effectiveness of the observed processes:

- When repair teams were instructed to use self-contained breathing apparatus, OSC personnel did not verify that the team members had corrective lense inserts. As a result, some repair team members were dispatched without corrective lense inserts (after a vision test was performed).

- The health physics briefing process appeared to be a bottleneck for dispatching repair teams; only one person performed repair team health physics briefings.

- Repair team documentation (briefing/debriefing records) was not properly completed. Team members listed on the front of repair team briefing/debriefing forms did not match those listed on back (the dose record/debriefing section). Discrepancies were identified on records for Teams 16, 18, and 20.

  The repair team briefing/debriefing form was used to document team personnel and team tracking. Occasionally, the OSC transferred people from one team to another in the field. The OSC tracked these changes on the team tracking board but did not document the changes in facility logs or on the team briefing/debriefing forms. Inspectors determined that the observed process could affect continuous accountability and accumulated airborne doses assigned to team members. Applicable emergency plan implementing procedures were unclear regarding personnel accountability. The licensee acknowledged the procedural inconsistencies.

The inspectors evaluated supplies, equipment, and communication capabilities for OSC personnel and field teams. In general, appropriate supplies and equipment were readily available and communications capabilities effectively supported field team operations. However, inspectors identified the following exceptions:

- The health physics emergency locker located in the machine shop in the general services building was not maintained in a state of readiness. The locker contained defective and insufficient quantities of protective clothing. The licensee issued Problem Evaluation Request 298-1275 (the same one issued for the lack of battery-powered portable air samplers) to address the inventory and condition of the protective clothing.

- Radios and the plant page system were used to contact personnel in the plant; however, station announcements and alarms could not be heard in the area outside the low pressure core spray pump room, in the adjacent stair well, and

on the 441-foot elevation in front of the elevator. Radio reception was poor in these areas.

- Exercise controllers simulated the loss of power by turning off the lights in the OSC command area and down-powering all electrical equipment. The inspectors observed that there was no emergency lighting installed in the OSC command area. Since the exercise was conducted during the day, the windows provided sufficient light in the OSC command area; however, at night, OSC operations could be hampered. During post-exercise discussions about this matter, the emergency preparedness manager stated that emergency electrical generators were available to provide power, if needed. The inspectors noted that the exercise participants were apparently not aware that the generators existed, since none were requested during the exercise.

Activities associated with potassium iodide issuance were satisfactorily implemented during the exercise; however, the inspectors noted one procedural discrepancy. Procedure 13.2.1, "Emergency Exposure Levels/Protective Action Guides," Revision 13, required that the date and time an individual begins and stops taking potassium be recorded on the personnel accountability log. There was no space on the form to record this information. The licensee acknowledged this comment.

c. Conclusions

The OSC staff's performance was generally satisfactory. An exercise weakness was identified for failure to properly monitor habitability. Airborne, contamination, and area surveys were either never performed or were not regularly performed in all OSC areas. The fire brigade's performance was degraded because the response was delayed and some fire-fighting actions were inappropriate. The OSC was activated in a timely manner. Three-part communications were frequently used. Facility briefings were frequent and contained sufficient detail. Health physics briefings tended to delay repair team dispatch because only one person conducted the briefings. The process used to select field team members for tasks requiring self-contained breathing apparatus did not verify corrective lense availability. Repair team documentation was incomplete and could have affected airborne dose reconstruction. There was no emergency lighting installed in the OSC, although emergency electrical generators were available. Appropriate corrective actions were taken to address the lack of battery-powered air samplers. Public address announcements and station alarms could not be heard in all areas of the plant. A health physics emergency locker contained degraded supplies and insufficient quantities of protective clothing.

P4.5 Emergency Operations Facility (EOF)

a. Inspection Scope (82301-03.04)

The inspectors observed the EOF staff as they performed tasks in response to the exercise. These tasks included facility activation, recognition and classification of emergency events, notification of state and local response agencies, development and issuance of protective action recommendations, dose projections, field team control, and

direct interactions with offsite agency response personnel. The inspectors reviewed applicable emergency plan sections and procedures, forms, dose projections, logs, and press releases.

b. Observations and Findings

The EOF was promptly staffed following the 8:22 a.m. alert declaration. Upon arrival, personnel signed in on the staffing board, initiated position checklists, and established communications with counterparts. The EOF manager verified that functional area staffing levels were met and activated the facility at 9:01 a.m. The EOF manager assumed the emergency director responsibilities (emergency classification, offsite agency notifications, dose assessment/protective action recommendations) at 9:07 a.m. The turnover was systematic; however, the turnover checklist was not used.

Briefings were frequent and comprehensive. Facility members were given a 10-minute warning to prepare, and all facility personnel participated in the briefings. At times, the EOF manager had to repeatedly remind facility personnel to stop and pay attention to the briefings. The briefings appropriately included input from operations, radiation protection, engineering, administrative, and offsite agency representatives. At the conclusion of the briefings, the EOF manager effectively summarized plant conditions and emphasized facility priorities.

The EOF manager with support from facility operations personnel, the CR, and the TSC, quickly recognized and correctly classified the site area and general emergency conditions. The site area emergency was declared at 9:54 a.m., and the general emergency was declared at 11:18 a.m.

Although offsite agency notifications were performed satisfactorily, there were some occasions when the notifications were not properly completed. The following examples were observed:

- The date and time of the site area emergency were not entered on the site area emergency classification notification form (Form 2). The time and date were added after the form was approved and transmitted, via facsimile, to the offsite agencies and after verbal notifications were made. Once the error was detected (offsite agencies called to get the declaration time), an information-only form was prepared and transmitted. However, the time noted on the form was 10:25 a.m., rather than the 9:54 a.m. declaration time. The correct time was verbally communicated. As a result, the offsite agencies did not receive a notification form with the correct site area emergency declaration time, and the offsite agencies possessed a form that was different than the one the licensee would use as an event record.

- The licensee identified that the notification to the Department of Energy was slightly delayed for the site area emergency (19 versus 15 minutes). The delay was caused by the loss of the primary notification system (CRASH telephone) and incorrect backup telephone numbers in the emergency telephone directory. Once the CRASH system failure occurred, the assistant EOF manager and the

EOF manager's secretary each began making the offsite notifications. The Benton/Franklin county and Washington State emergency operations centers were notified at 11 and 13 minutes, respectively.

- The emergency plan and Procedure 13.4.1, "Emergency Notifications," Revision 23, were inconsistent with one another concerning followup notifications. Section 4.6.6 of the emergency plan required that followup messages be transmitted; however, Procedure 13.4.1 did not specifically mention followup notifications. During the exercise, no classification notifications forms were transmitted after 11:18 a.m. (the general emergency notification).

  Provisions for and content of followup notifications are specified in Evaluation Criterion E.4 of NUREG-0654, FEMA-REP-1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants." In response, the licensee issued Problem Evaluation Request 298-1281 to correct the discrepancy. The licensee's actions were considered appropriate.

The automatic protective action recommendations were issued for the site area and general emergencies. At the site area emergency, the recommendations included evacuation of the Columbia River, several recreational areas, and schools within the 10-mile emergency planning zone. At the general emergency, the recommendations included evacuation of all sections 0-2 miles and 2-10 miles in the affected section (Section 3).

Dose assessment and field team control activities were properly performed to support protective action recommendations. The dose assessment staff calculated numerous dose projections based on plant conditions and field team data. Although standby gas treatment system line-up and flow indicated that the release was filtered, air samples collected by field teams showed higher levels of iodine than would be expected from a filtered release. The dose assessment staff repeatedly questioned the engineering staff about the status of the standby treatment system. Although the system was reported as operable, the dose assessment staff correctly concluded that the field team results meant that the efficiency of the standby gas treatment system was degraded (about 95 percent of normal efficiency).

Since offsite doses (measured and projected) were well below Environmental Protection Agency protective action guides and the wind direction remained constant, additional protective action recommendations were not necessary. The dose assessment staff correctly monitored the release duration time to determine its effect on projected integrated doses. Based on field team air sample results, even with a 6-hour release duration time (increased from 4 hours), offsite projected doses were 320 millirem thyroid committed dose equivalent and 21 millirem total effective dose equivalent at the site boundary (1.2 miles). There was good coordination between the licensee and offsite agency dose assessment and field monitoring teams.

Facility habitability, proximity of the EOF to the radiological plume, and the effect of the radiological plume on site access routes were appropriately monitored during the exercise. Required access controls were established and maintained.

Interactions with offsite response team representatives from the states of Washington and Oregon, Benton and Franklin counties, the Department of Energy, and the NRC who were stationed in the EOF were candid and supportive. Upon arrival, offsite agency representatives were appropriately briefed on plant conditions and event prognosis. Offsite agency input was solicited during periodic status briefings.

c. Conclusions

The EOF staff's performance was good. The facility was promptly activated, and briefings were frequent and comprehensive. Emergency classifications and protective action recommendations were correct and timely. Offsite agency notifications were timely with one licensee-identified exception. The Department of Energy notification for the site area emergency was slightly delayed due to the loss of the primary notification system and incorrect backup telephone numbers. One notification form was not properly completed; the date and time were omitted from the site area emergency notification form. The error was quickly recognized and verbally corrected. A discrepancy between the emergency plan and implementing procedures was identified concerning followup notifications. Appropriate corrective actions were taken to resolve the discrepancy. Dose assessment and field team control activities were properly performed to support protective action recommendations and validate dose projections. Interactions with offsite agency representatives were candid and supportive.

P4.6 Scenario and Exercise Control

a. Inspection Scope (82301 and 82302)

The inspectors evaluated the exercise to assess the challenge and realism of the scenario and exercise control.

b. Observations and Findings

The licensee submitted the exercise objectives and scenario for NRC review on June 10 and July 15, 1998, respectively. The exercise objectives were appropriate to meet emergency plan requirements (reference NRC letter dated June 25, 1998). By letter dated August 14, 1998, the licensee was informed that both the NRC and the Federal Emergency Management Agency had determined that the exercise scenario was not challenging in some areas. In order to maintain scenario confidentiality, the details were not included in the letter but were discussed verbally with the emergency preparedness staff. The licensee was informed that the offsite doses were not sufficient to demonstrate objectives involving offsite monitoring capabilities (the highest offsite dose was 1.2 millirem at the site boundary).

In response, the licensee modified the scenario to fail (degrade) the standby gas treatment system (due to moisture). Expected dose projections submitted with the

revised scenario on September 1, 1998, included exceeding the Environmental Protection Agency protective action guide for the thyroid (5 rem committed dose equivalent) out to 7 miles. The changes were considered acceptable.

However, as discussed in Section P4.5 above, based on field team data, the offsite doses reached no more than about 320 millirem thyroid committed dose equivalent at the site boundary. Since this value was significantly lower than the doses identified in the revised scenario, the inspectors determined that the scenario developers incorrectly computed the field team sample data. The licensee acknowledged that the field team data was not consistent with the expected dose projections. The inspectors concluded that the revised scenario introduced some additional challenges for dose assessment personnel (determining the degraded operability of the filtration system); however, the lack of significant offsite doses did not fully challenge the dose assessment staff, field team members, and protective action recommendation decision-makers. Problems with scenario development were also identified in 1996 (the last biennial exercise).

In addition to the field team data problem, the scenario developers failed to recognize that the loss of offsite power would affect the OSC (loss of computer terminals, lights, and electrical outlets). The licensee took appropriate and conscientious actions once the issue surfaced (the day before the exercise). Controllers were instructed to turn off electrically powered items to simulate the loss of power. During the exercise, controllers developed impromptu radiological impacts to account for the open window in the OSC command area, including making the continuous air monitor alarm. The inspectors determined that these actions were appropriate and showed good response to unplanned situations.

However, the following aspects of exercise control detracted from the realism and training value of the exercise and, with the exception of the last example, were inconsistent with pre-established performance expectations (all protective clothing and equipment would be worn, not simulated):

- Team 8 was told by the controller to simulate use of protective clothing/self-contained breathing apparatus.

- Team 17 simulated entry into the radiologically controlled area. The health physics technician did not dress out in protective clothing or self-contained-breathing-apparatus. The technician did not have the appropriate survey instrumentation for the simulated activities, and team members were directed to use defective protective clothing (from the locker discussed in Section P4.4 above).

- The Team 22 controller could not immediately locate radiological conditions for the team's work area.

c. Conclusions

The exercise objectives were appropriate to meet emergency plan requirements. The initially submitted scenario was not acceptable because offsite doses were not

challenging and would limit demonstration of some exercise objectives. Projected offsite doses were increased to an acceptable level in the revised scenario; however, the scenario developers incorrectly computed the offsite field team sample data. As a result, the offsite doses were not consistent with expected projected doses and did not challenge the dose assessment staff, field team members, and decision-makers. Scenario development has been a historical problem. In addition, the scenario developers failed to recognize that the loss of offsite power would affect OSC operations. Last minute controller instructions and impromptu controller actions during the exercise were thorough and conscientious.

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 September 18, 1998, to determine whether the process would identify and characterize weak or deficient areas in need of corrective action.

b. Observations and Findings

Post-exercise critiques in the CR simulator, TSC, OSC, and EOF were thorough, open, and self critical. With the exception of the OSC, the critiques included input from controllers, evaluators, and participants. In the OSC, the critique was divided into two portions, the craft critique and the management/controller/evaluator critique. Craft personnel were dismissed before the second portion of the critique. As a result, the opportunity for the craft personnel to provide and receive feedback, as part of the OSC team, was missed.

During the September 18, 1998, management critique, the emergency preparedness manager presented the preliminary exercise findings to senior management. The licensee's evaluation team identified three exercise weaknesses: (1) fire brigade response, (2) OSC habitability, and (3) Department of Energy notifications. Strengths were identified in all but the TSC, and areas for improvement were identified in all facilities. The inspectors concluded that the management critique was thorough and self critical.

c. Conclusions

The post-exercise and management critiques were thorough and self-critical. The critique process effectively identified positive performance and areas that needed to be corrected or improved.

P8 Miscellaneous Emergency Preparedness Issues (92904)

(Closed) Inspection Followup Item 50-397/96014-02: Exercise weakness for failure to make timely and clear offsite notifications. During the 1996 exercise: (1) conflicting

protective action recommendations were communicated via notification forms, (2) an upgrade in protective action recommendations was not communicated to the state within 15 minutes, (3) one other notification nearly missed the 15-minute limit, and (4) notification forms were not sent to offsite agencies, via facsimile, prior to the verbal notification, as required. The licensee's November 25, 1996, response to the exercise weakness stated that corrective actions included personnel training and procedure modifications. During this exercise, offsite agency notifications were satisfactorily performed. The licensee identified one instance where the Department of Energy was not notified within 15 minutes (19 minutes for the site area emergency). The delay was caused by a loss of the primary notification system (unplanned) and incorrect backup telephone numbers (the licensee planned to pursue the telephone number issue). The state and counties were notified within 15 minutes. Protective action recommendations were clearly identified on the notification forms, and forms were sent, via facsimile, concurrent with verbal notifications.

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 September 18, 1998. The licensee acknowledged the facts presented. No proprietary information was identified.

The Federal Emergency Management Agency conducted a public meeting in Richand, Washington, on September 18, 1998. Since there was no media or public attendance at the meeting, the meeting was convened and immediately adjourned.

ATTACHMENT

SUPPLEMENTAL INFORMATION

PARTIAL LIST OF PERSONS CONTACTED

Licensee

D. Atkinson, Manager, Quality
J. Baker, Vice President, Resource Development
L. Ball, Emergency Planner
R. Barbee, Manager, Work Week
P. Bemis, Vice President, Nuclear Operations
D. Coleman, Manager, Regulatory Affairs
S. Davison, Specialist, Work Control
D. Feldman, Assistant Manager, Operations
J. Hanson, Manager, Chemistry
D. Holmes, Emergency Planner
J. Ittner, Emergency Planner
R. Jorgensen, Emergency Planner
A. Klauss, Lead, Offsite Emergency Preparedness, Safety, and Health
T. Messersmith, Corporate Emergency Preparedness, Safety, and Health Officer
W. Oxenford, Manager, Operations
J. Parrish, Chief Executive Officer
R. Torres, Manager, Reactor/Fuels Engineering
R. Webring, Vice President, Operations Support

LIST OF INSPECTION PROCEDURES USED

IP 82301	Evaluation of Exercises at Power Reactors
IP 82302	Review of Exercise Objectives and Scenarios for Power Reactors
IP 82701	Operational Status of the Emergency Preparedness Program

LIST OF ITEMS OPENED AND CLOSED

Opened

50-397/98018-01	IFI	Exercise weakness - Failure to properly monitor OSC habitability (Section P4.4)

Closed

50-397/96014-02	IFI	Exercise weakness - Failure to make timely and clear offsite notifications (Section P8)

LIST OF DOCUMENTS REVIEWED

Emergency Plan Implementing Procedures

13.1.1	Classifying the Emergency	Revision 25
13.2.1	Emergency Exposure Levels/Protective Action Guides	Revision 13
13.2.2	Determining Protective Action Recommendations	Revision 10
13.4.1	Emergency Notifications	Revision 23
13.5.1	Localized and Protected Area Evacuations	Revision 14
13.5.3	Evacuation of Exclusion Area and/or Nearby Facilities	Revision 17
13.10.1	CR Operations and Shift Manager Duties	Revision 16
13.10.2	TSC Manager Duties	Revision 14
13.10.3	Technical Manager and Staff Duties	Revision 17
13.10.4	Radiation Protection Manager Duties	Revision 16
13.10.5	Operation Manager Duties	Revision 10
13.10.7	Plant Administrative Manager Duties	Revision 16
13.10.14	Maintenance Manager Duties	Revision 3
13.10.9	OSC Manager and Staff Duties	Revision 26
13.10.10	Health Physics, Chemistry, OSC Duties	Revision 12
13.10.12	Repair Team Duties	Revision 12
13.10.14	Maintenance Manager Duties	Revision 3
13.11.1	EOF Manager Duties	Revision 19
13.11.2	Assistant EOF Manager Duties	Revision 9
13.11.3	Site Support Manager and Staff Duties	Revision 14
13.11.7	Radiological Emergency Manager Duties	Revision 16
13.13.2	Emergency Event Termination and Recovery Operations	Revision 10

Other Procedures

Abnormal Condition Procedure 4.TSC1, TSC1 Annunciator Panel Alarms, Revision 3

System Operating Procedure 2.10.12, Technical Support Center HVAC, Revision 7

Other Documents

Washington Nuclear Project 2 Emergency Plan, Revision 21

Response to Exercise Weakness, GO2-96-230, dated November 25, 1996

Problem Evaluation Request 298-1275, dated September 17, 1998

Problem Evaluation Request 298-1280, dated September 17, 1998

Problem Evaluation Request 298-1281, dated September 17, 1998