

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-397/88-29

Docket No. 50-397

License No. NPF-21

Licensee: Washington Public Power Supply System
P. O. Box 968
3000 George Washington Way
Richland, Washington 99352

Facility Name: Washington Nuclear Project No. 2 (WNP-2)

Inspection at: WNP-2 Site, Benton County, Washington

Inspection Conducted: September 12-15, 1988

Inspector: R. F. Fish
G. M. Good, Emergency Preparedness Analyst
Team Leader

10/21/88
Date Signed

Team Members: C. Bosted, Senior Resident Inspector, WNP-2
R. A. Meck, Emergency Preparedness Specialist
G. Wehmann, EG&G Services

Approved by: R. F. Fish
R. F. Fish, Chief
Emergency Preparedness Section

10/21/88
Date Signed

Summary:

Inspection on September 12-15, 1988 (Report No. 50-397/88-29)

Areas Inspected: Announced inspection to follow-up on open items identified during the 1987 exercise and to observe the emergency preparedness exercise and associated critique. Inspection procedures 92701 and 82301 were used.

Results: No deficiencies or violations of NRC requirements were identified. This report documents concerns regarding the licensee's ability to implement part of its radiation safety program during an emergency. Specific examples include the failure to establish a contamination control point at the entrance to the General Service Building and ALARA principles were not followed when dose rates near the windows in the Operations Support Center (OSC) reached 3 R/hr. Another concern regarding the Technical Data Center's (TDC's) ability to provide its intended level of support was identified. A third concern was identified in the area of environmental monitoring. All three of these concerns have been categorized as exercise weaknesses. The exercise weaknesses are described in Sections 8 and 9 of this report.

DETAILS

1. Persons Contacted

D. Anderson, Supervisor, Mechanical Maintenance
F. Bartel, Oversight Team, Bonneville Power Authority (BPA)
J. Chasse, Environmental Engineer
R. Chitwood, Manager, Emergency Planning and Environmental Programs (EP&EP)
R. Corcoran, Staff Assistant to Plant Manager
C. Eggen, Principal Fire Protection Engineer
J. Fulfer, Maintenance Engineer
T. Hull, Senior Training Specialist
J. Kleam, Shop Coordinator, Electrical Maintenance
D. Mannion, Senior Emergency Planner
J. Massey, Senior Technical Engineer
J. McDonald, Environmental Scientist
R. Mogle, Senior Emergency Planner
D. Pisarcik, Health Physicist
R. Pohto, Instructor
A. Rapacz, Nuclear Engineer, BPA
S. Rejniak, Training Specialist
C. Seilhymer, Training Specialist
L. Sharp, Principal Engineer
R. Tanska, Senior Training Specialist
D. Thompson, Principal Nuclear Engineer
R. Welch, Environmental Scientist
D. Williams, Nuclear Engineer, BPA
K. Wise, Supervisor, Equipment Engineering

2. Action on Previous Inspection Findings (Inspection Procedure 92701)

(Closed) Open Item (87-20-01): Notifications to plant personnel were not made in complete accordance with Emergency Plan Implementing Procedure (EPIP) 13.1.2, "Plant Emergency Director (PED) Duties". In general, notifications to plant personnel were observed to be improved over last year; however, some isolated imperfections were observed during this exercise. These observations have been included in Section 7. This item is considered closed.

(Closed) Open Item (87-20-02): Information flow between and within the Control Room (CR)/Simulator, Technical Support Center (TSC) and Emergency Operations Facility (EOF) could be improved. Communication between and within these Emergency Response Facilities (ERFs) was observed to be improved over last year. This item is considered closed.

(Open) Open Item (87-20-03): Accountability was not completed in a timely manner. The licensee continued to experience problems with its accountability process during this exercise. It was observed that it took 20 minutes to obtain the computer printouts from security. Although the reason for the delay was not specifically determined, a delay of this nature severely handicaps the licensee's ability to meet its stated time

constraint of 30 minutes. In addition, the prescribed method for obtaining accountability logs/information from the various ERFs was not utilized during this exercise. Based on the observations made during this exercise and the importance of having a workable accountability process that can identify missing/potentially injured individuals in a timely manner, this item will remain open.

(Closed) Open Item (87-20-04): The program for the Meteorological and Unified Dose Assessment Center's (MUDAC's) utilization and control of field teams needs to be reexamined. Observations made in MUDAC and with the field teams during this exercise indicated improvement in this area. This item is considered closed.

3. Emergency Preparedness Exercise Planning (Inspection Procedure 82301)

The licensee's EP&EP staff has the overall responsibility for developing, conducting and evaluating the emergency preparedness exercise. A scenario committee was organized to develop the scenario package. Approximately eighteen people were involved, including individuals with expertise in reactor operations and health physics (HP). Licensee representatives and representatives from the offsite agencies who were involved in the development of the scenario were not participants in the exercise. The Manager, EP&EP was designated as the Exercise Director. The EP&EP group, in concert with the offsite agencies, established the exercise objectives. NRC Region V and the Federal Emergency Management Agency (FEMA), Region X, were provided with an opportunity to comment on the exercise objectives and scenario package. The exercise package, generated in accordance with EPIP 13.14.8, "Drills and Exercises", included the objectives and exercise limitations, player information (guidelines), exercise scenario, messages used during the exercise, initial and subsequent plant parameters, meteorological and radiological data, controller/evaluator instructions and the critique worksheets. Advance copies of the scenario package were provided to the NRC evaluators and other persons having a specific need. The players did not have access to the exercise package or information on the scenario events. The exercise was intended to meet the requirements of IV.F.3 of Appendix E to 10 CFR Part 50.

Licensee controllers and evaluators were stationed at each of the ERFs (e.g., CR, TSC, OSC and EOF) to provide messages/data where appropriate. Controllers were also dispatched with every repair/monitoring team. A final briefing of the controllers was conducted on September 12, 1988.

4. Exercise Scenario

The exercise scenario started with an event classified as an Unusual Event (UE) and ultimately escalated to a General Emergency (GE) condition. The scenario provided for a UE based on high winds (greater than 80 miles per hour (mph)), an Alert when the winds reached 107 mph, and a Site Area Emergency (SAE) when a station blackout occurred. A loss of coolant accident (LOCA) without Emergency Core Cooling System (ECCS) capability coincided with the station blackout to prompt a GE declaration. A monitored, unfiltered release started when power was restored and High Pressure Core Spray (HPCS) began injecting. Peripheral

scenario events included an intruder (a disgruntled employee) who gained access to the site and sabotaged a diesel generator, a fire in the vicinity of another diesel generator and injuries to a repair team. Due to free play during the exercise, the SAE was declared prior to the station blackout, based on the apparent ongoing security compromise. The GE was declared 21 minutes after the station blackout occurred and was based on plant conditions.

Originally, exercise activities were also planned for September 14, 1988, the day after the 10 mile Emergency Planning Zone (EPZ) portion of the exercise. Ingestion Pathway planning was scheduled to be exercised on day 2. Due to circumstances beyond its control, the State of Washington's participation was very limited. Due to this last minute change, only environmental field teams (State and licensee) were dispatched on day 2.

5. Federal Evaluators

Five NRC inspectors evaluated the licensee's response. Inspectors were stationed in the CR/Simulator, TSC, OSC and EOF. The inspector who evaluated the CR/Simulator also evaluated the TDC in the EOF. One inspector accompanied and evaluated one of the licensee's field (offsite) monitoring teams. The inspector who was assigned to the OSC accompanied repair/monitoring teams in order to evaluate their performance. Two NRC inspectors accompanied the licensee's environmental monitoring teams who were dispatched on day 2.

FEMA, Region X, evaluators were also present during the exercise, since this was the biennial, full scale exercise. The FEMA team of evaluators (approximately 20 individuals) were evaluating those portions of the exercise that involved State and local agencies, as well as the interface occurring at the EOF. FEMA evaluators also accompanied the State's environmental field teams who were dispatched on day 2. The results of FEMA's evaluation of the State and local participation will be described in a separate report issued by FEMA.

6. Control Room/Simulator

The following aspects of CR operations were observed: detection and classification of emergency events, mitigation, notification and protective action recommendations (PARs). The following are NRC observations of the CR activities. The observations, as appropriate, are intended to be suggestions for improving the program.

- A. Communications between the CR/Simulator and drill players in the field were conducted on the same frequency used by the real CR and real operators. In addition to tying up the real CR's communication channel, on several occasions, the CR had to sort out actual plant conditions from simulated conditions when players forgot to preface messages with the phrase "This is a drill".
- B. Clocks between various locations were not synchronized; therefore, the times for various events were different at each location. This could make event reconstruction difficult.

7. Technical Support Center

The following aspects of TSC operations were observed: activation, accident assessment/classification, dose assessment, notifications, PARS and CR Support. The following are NRC observations of the TSC activities. The observations, as appropriate, are intended to be suggestions for improving the program.

- A. The Radiation Protection Manager (RPM) in the TSC did not inform his staff that the release was unfiltered due to the damage to the Standby Gas Treatment (SBGT) System. As a result, all dose calculations performed in the TSC used a 95% efficiency for iodine removal. MUDAC was using 0%. It is important to note that MUDAC had the lead for performing dose calculations during this portion of the exercise.
- B. The TSC was isolated from security information/support because security did not have a representative in the TSC. This affected the emergency response in the following manner:
 1. A controlled evacuation of the protected area was called for when the SAE was declared. Since the SAE was declared because there were known intruders onsite, the evacuation should have been coordinated with security. Under the circumstances, it is possible that security could have vetoed the evacuation due to the potential danger to evacuating personnel and because it could hamper security's ability to identify intruders.
 2. The need to consider protection for TSC personnel was not considered by the staff until 0912, about one hour after the security situation became known.
 3. Individuals in the TSC did not appear to understand the meaning of the different security conditions (e.g., yellow, orange)
- C. The following observations were related to notifications to plant personnel.
 1. The wrong signal was used to announce the controlled evacuation at the SAE. The wailing siren was used instead of the pulsed alert tone. This was quickly corrected; however, mistakes of this nature could cause confusion.
 2. The public address (PA) announcement at the SAE did not include information about the possibility of intruders (a hazard).
 3. Step 7 and the checklist in EPIP 13.1.2, "PED Duties", are inconsistent with one another. Step 7 calls for tone-announcement-announcement. The checklist calls for tone-announcement-tone-announcement. During the exercise, the sequencing was conducted both ways, depending on the individual making the announcement. Consistency should be achieved so that plant personnel know what to expect.

- D. The lack of coordination between the on-call PED and the TSC Director during the final activation process (i.e., transfer of responsibilities between CR and TSC) could have caused confusion. At 0733 the TSC Director declared the TSC "operational". The Plant Manager did not formally assume the duties of the PED/Recovery Manager until 0744, 11 minutes later. The TSC staff was not informed of the formal transfer until 0750. Since the formal transfer includes duties such as classification, notification and PARs, the licensee should assure that a clean transfer is made.
- E. The guidance provided in EPIP 13.14.1, "Emergency Exposure Levels/Protective Action Guides" is unclear. Examples are as follows:
1. Attachment D to EPIP 13.14.1 refers to critical and non-critical functions; however, these two terms have not been defined.
 2. Attachment D refers to critical and non-critical personnel; however, these two terms have not been defined. Additionally, other EIPs refer to essential and non-essential personnel. It is unclear whether these terms are interchangeable.
 3. Attachment D refers to critical areas; however, the OSC has not been included in the list of critical areas.
- F. Some of the emergency lighting in the TSC was inoperable during the exercise.

8. Operations Support Center

The following aspects of OSC operations were observed: activation, functional capabilities and disposition of various implant repair/monitoring teams. The following are NRC observations of the OSC activities. An exercise weakness is a finding identified as needing corrective action in accordance with 10 CFR Part 50, Appendix E, Paragraph IV.F.5. The other observations, as appropriate, are intended to be suggestions for improving the program.

- A. The OSC did not inform the other ERFs of the SBTG filter failure.
- B. A positive method (e.g., checkoff list, signature form) of notifying and assuring that all OSC workers had taken potassium iodide (KI) tablets was not utilized. Two verbal announcements were made by the OSC Director; however, there were a number of repair/monitoring teams in the plant at the time.
- C. The following radiation safety related problems were observed:
1. Contamination control points were not established at the entrances to the General Service Building and the OSC in accordance with EPIP 13.10.9, "OSC operations and OSC Director Duties".

2. Two women were allowed to continue to sit within 15-18 feet of the 3 R/hr area (at the windows).
3. No smears or air samples were taken in the OSC following the simulated release. EPIP 13.10.10, "HP, Chemistry and Maintenance Support Duties" provides for monitoring for habitability.
4. It took 24 minutes to post the high radiation area in the OSC (near windows) after the radiation survey was made.
5. Radiological members of two different reentry teams did not follow suit-up procedures. Tape was not used on the front closure of the protective clothing (PC).
6. The radiation technician accompanying one reentry team did not demonstrate the proper use of a survey instrument. The technician did not hold the meter in front and he did not periodically refer to it for dose rates. Dose rates would have been provided by the controller.
7. The OSC did not assist in the coordination of the security response to Building 17. A radiation technician was not dispatched to provide monitoring capabilities for the officers and officers were not directed to don PCs.
8. Personnel remaining within the OSC were never reminded to check their dosimeters, even after the dose rate at one end of the room reached 3 R/hour.
9. Racks of spare dosimeters were left within 10-15 feet of the 3 R/hour area.
10. The radiation technician in the OSC made no attempt to perform a detailed radiation survey after being told of the 3 R/hour dose rate at the window. The technician did not attempt to determine whether the source of the radiation was due to sky shine, ground deposition or airborne material.

Collectively, the above findings represent a breakdown in the management and control of radiation safety in the OSC and with OSC associated responsibilities. This matter is considered to be an exercise weakness and it will be tracked as open item 88-29-01.

9. Emergency Operations Facility

The following EOF operations were observed: activation, functional capabilities, interface with offsite officials, PARs, notifications and MUDAC operations (offsite dose assessment and field monitoring/environmental sampling capabilities). The following are NRC observations of the EOF activities. An exercise weakness is a finding identified as needing corrective action in accordance with 10 CFR Part 50, Appendix E, Paragraph IV.F.5. The other observations, as appropriate, are intended to be suggestions for improving the program.



- A. In general, staff members in the EOF's TDC appeared to be extremely weak on the plant and technical requirements to run the plant. The following observations provide the basis for this concern:
1. Following the loss of the second diesel generator (DG) no one in the TDC was sure of the requirements for plant operation.
 2. The technical staff asked why HPCS was not injecting in addition to the Reactor Core Isolation Cooling (RCIC) System. The Division 3 DG had been declared inoperable at that time.
 3. Erroneous values corresponding to the levels associated with the top of active fuel (TAF) and the bottom of active fuel (BAF) were overheard.
 4. Several TDC staff members became highly involved with a concern that the control rods were not fully inserted and that the reactor may not have been shutdown. Since this occurred after the announcement that core level was at -267 inches, it appeared that the TDC staff did not know where -267 inches was in relation to fuel height.
 5. Due to poor communication between the CR, TSC and TDC it took the TDC staff 1½ hours to determine the cause of the loss of reactor coolant. During this time, discussions within the TDC were often informal and not related to the issue at hand.
 6. After the Division 3 DG was started and HPCS began injecting the technical staff could not understand why RPV level could not be increased beyond -165 inches (approximately 2/3 core height).
 7. Information provided by the TDC was questionable. The following examples were noted:
 - a. At 1023, MUDAC asked if there was any indication that > 20% core damage could occur. The answer was not at this time. (The core level had been below BAF since about 1000).
 - b. The TDC staff thought that the containment hydrogen-oxygen analyzer was being powered by batteries during the blackout. Although the instrument rack power was from batteries, sampling capabilities were lost because the power to the sample pump was lost.
 8. The TSC requested the TDC to develop a method to backfeed power from the Division 3 bus to the hydrogen recombiners. This request was not completed because the loads on the SM-7 and 8 buses were too high. No consideration was given for stripping the buses or running power directly to the desired load (a common casualty control method).

The above findings represent a situation where the demonstrated level of preparedness could have precluded effective implementation of the Emergency Plan in the event of an actual emergency. Specifically, the TDC's staffs' ability to support MUDAC, by providing timely plant conditions so that PARs could be developed, was impaired. This matter is considered to be an exercise weakness and will be tracked as open item 88-29-02.

- B. During the latter stages of the exercise, MUDAC experienced difficulty in its record keeping, due to the level of incoming data and information.
- C. The strategy used in the direction and control of field teams should be reviewed to assure that it is consistent with ALARA concepts. The value associated with information gained and field team exposures needs to be balanced.
- D. Field team survey techniques would have contaminated instrument probes during ground level radiation surveys (day 2).
- E. Environmental samples were not double bagged.
- F. Although MUDAC instructed all field teams to review Step 9 of EPIP 13.9.1, "Environmental Field Team Operations", to aid the team in finding the plume, the step proved to be too obscure and difficult for the team to use.
- G. During the first hour of the exercise, field team SS-1 had difficulty with its radio communications with MUDAC. The problem was corrected.
- H. Use of open and closed window readings to discriminate between shine and immersion was inconsistent.
- I. Early in the exercise, MUDAC had trouble tracking the exact location of field team SS-2.
- J. No sample identification paperwork was prepared for the second air sample taken by SS-1 and the sample was not submitted for analysis upon return to the EOF.
- K. One field team member (day 2) inappropriately chose an ionization chamber with 1 mr/hr incremental scale readings, rather than a micro-R meter, to survey low activity milk, soil and vegetation samples.
- L. The field teams did not consider marking sample locations. This would make it difficult if a duplicate sample was requested later.

Collectively, the observations in Items D, E, F, H, J and K indicate a need for improvement in environmental monitoring related to the emergency preparedness program. This matter is considered to be an exercise weakness and it will be tracked as open item 88-29-03.



10. Critiques

Immediately following the exercise, critiques were held in each of the ERFs. Players completed "After Action Reports" and submitted them to the lead controller at each facility. The critique process included input from each of the controllers and evaluators. A summary of the critique findings submitted by the controllers and evaluators was presented to the NRC evaluation team by the exercise coordinators during a meeting on September 15, 1988. In addition to the EP&EP staff, the Manager, Regulatory Programs and the Director, Support Services were present for this meeting. Since the licensee had not had time to categorize the significance of its findings or to review the "After Action Reports" submitted by the players, arrangements were made for the licensee to provide the Region with a copy of the final exercise report, upon its completion.

The following represent some of the critique findings presented during the September 15, 1988 meeting.

- A. Difficulties with the accountability process were experienced. The exercise objective may not have been met.
- B. There was no HP coverage for security personnel and the security response was not coordinated through the OSC.
- C. There were problems with command and control in the OSC.
- D. The OSC failed to pass along the information on the damage to the SGBT filters and the DG-3 foam problem.
- E. Some PA announcements made from the TSC did not include information about major plant status.
- F. Information flow within the TSC sometimes went directly between the technical staff and the PED, bypassing the TSC Director.
- G. The portable emergency lighting in the TSC did not work.
- H. Some communication equipment did not work properly.
- I. ALARA concerns for near plant field teams were identified.
- J. Forms in the field kits for the environmental teams were out-of-date.

11. Exercise Summary

FEMA held briefings on September 15, 1988 to present its findings to the offsite participants and to Supply System management. Due to conflicting schedules, the NRC Team Leader was not able to attend FEMA's briefing to the offsite participants; however, the FEMA briefing to the Supply System management was attended. A public briefing was conducted at 7:00 p.m. on September 15, 1988. The briefing was held at the Federal Building in Richland, Washington. The purpose of the briefing was to present a

summary of the exercise findings to interested members of the general public and the media. FEMA, NRC, representatives from the offsite agencies and the Supply System made presentations.

12. Exit Interview

An exit interview was held on September 15, 1988 to discuss the preliminary findings of the NRC inspection team. The attachment to this report identifies the personnel who were present at the meeting. The licensee was informed that no deficiencies or violations of NRC requirements were identified during the inspection. The findings described in Sections 2 and 6-9 of this report were summarized. The licensee was informed that an exercise weakness, involving the demonstrated level of preparedness in the OSC, had been identified (see open item 88-29-01 in Section 8). Some of the OSC findings presented were questioned by OSC exercise participants. These questions appeared to be adequately answered. The NRC Team Leader stated that she would be interested in getting feedback regarding corrective actions for the OSC exercise weakness.

Subsequent to the inspection, based upon further review of the findings from the TDC, it was determined that the TDC's demonstrated level of preparedness also warranted the category of exercise weakness (see open item 88-29-02 in Section 9). On the same basis, the findings associated with environmental monitoring were also identified as an exercise weakness (see open item 88-29-03 in Section 9).

ATTACHMENTEXIT INTERVIEW ATTENDEESA. Licensee Personnel

G. Bouchey, Director, Licensing and Assurance
A. Brown, Project Manager, Systems
R. Chitwood, Manager, EP&EP
D. Coleman, Manager, Corporate Licensing and Environmental
R. Corcoran, Staff Assistant to Plant Manager
Y. Derrer, Principal Training Specialist
R. Givin, Manager, Security Training
G. Godfrey, Manager, Performance Evaluation
J. Harmon, Assistant Manager, Maintenance
D. Injerd, Senior Systems Engineer
A. Klauss, Senior Emergency Planner
R. Koenigs, Manager, Technical
D. Larson, Manager, Radiological Programs and Instrument Control
D. Mannion, Senior Emergency Planner
R. Mogle, Senior Emergency Planner
M. Monopoli, Manager, Support Services
A. Oxsen, Assistant Managing Director, Operations
J. Perry, Senior Training Specialist
R. Quay, Manager, General and Technical Support Training
G. Ray, Emergency Planner
R. Romanelli, Information Officer
L. Sharp, Principal Engineer
G. Sorensen, Manager, Regulatory Programs
S. Telander, Manager, Security
R. Wardlow, Health Physicist
D. Werlau, Supervisor, HP/Chemistry and General Employee Training

B. Other Personnel

S. May, Washington State Emergency Response (DSHS)
A. Mohseni, Washington State Emergency Response (DSHS)
D. Williams, Nuclear Engineer, BPA