

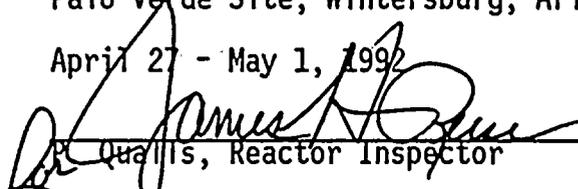
U. S. NUCLEAR REGULATORY COMMISSION
REGION V

Report Nos. 50-528/92-09, 50-529/92-09, and 50-530/92-09
License Nos. NPF-41, NPF-51, and NPF-74
Licensee: Arizona Public Service Company
P. O. Box 53999, Station 9082
Phoenix, Arizona 85837
Facility Name: Palo Verde Nuclear Generating Station Units 1, 2, and 3.

Inspection at: Palo Verde Site, Wintersburg, Arizona

Inspection Dates: April 27 - May 1, 1992

Lead Inspector:

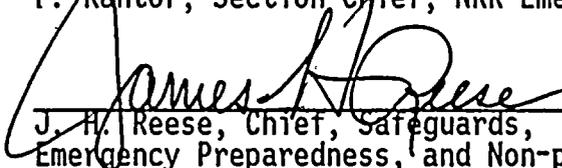

R. Qualls, Reactor Inspector

6/16/92
Date Signed

Other Inspectors:

A. McQueen, Emergency Preparedness Analyst
D. Chaney, Sr. Reactor Radiation Specialist
F. Ringwald, Resident Inspector
E. Kantor, Section Chief, NRR Emergency Preparedness

Approved by:


J. H. Reese, Chief, Safeguards,
Emergency Preparedness, and Non-power
Reactor Branch

6/16/92
Date Signed

Summary:

Areas Inspected: Announced inspection to examine the following portions of the licensee's emergency preparedness program: to follow-up on Open Items identified during previous emergency preparedness inspections and observe the 1992 annual emergency preparedness exercise and associated critiques. During this inspection, Inspection Procedure 82301 was used.

Results: Overall, the licensee's program demonstrated its ability to adequately protect the health and safety of the public during an emergency. One exercise weakness was identified during this inspection concerning health physics performance during the exercise, see Section 8.

DETAILS

1. PERSONS CONTACTED

The below listed persons were contacted during the course of the inspection.

- *W. Conway, Executive Vice-President
- *J. Levine, Vice-President, Nuclear Production
- *E. Simpson, Vice-President, Nuclear Engineering
- *R. Stevens, Director, Licensing
- *P. Caudill, Director, Site Services
- *K. Hamlin, Director, Nuclear Safety
- *R. Fullmer, Manager, Quality Assurance and Monitoring
- *T. Bradish, Manager, Compliance
- *H. Bieling, Manager, Emergency Planning
- *T. Barsuk, Supervisor(acting), Onsite Emergency Planning
- *T. Sundeen, Auditor, QA&M
- *R. Duncan, Emergency Planning Coordinator
- *F. Casella, Consultant, HMM Associates
- *K. Akers, Monitor, QA&M
- *P. Hom, Owner's Services Coordinator
- *W. Montefour, Owner's Services Coordinator
- *R. Henry, SRP Site Representative
- *J. Draper, SCE Site Representative
- *S. Gross, El Paso Electric Engineer
- *B. Wolfe, Supervisor, Offsite Emergency Planning
- A. Johnson, Compliance Supervisor
- *P. Coffin, Compliance Engineer
- J. Connelly, Consultant, HMM Associates
- D. Marks, Sr., Consultant, Nuclear Safety

The above individuals denoted with an asterisk were present during the exit meeting. The inspectors also contacted other members of the licensee's emergency preparedness, administrative, and technical staff and management during the course of the inspection.

2. Exercise Planning (responsibility, scenario/objectives development, control of scenario)

The Manager, Emergency Planning (EP) has the overall responsibility for developing, conducting and evaluating the annual emergency preparedness exercise. The EP staff developed the scenario with the assistance of licensee staff from other organizations possessing appropriate expertise (e.g. reactor operations, health physics, maintenance, etc.). In an effort to maintain strict security over the scenario, individuals who had been involved in the exercise scenario development were not participants in the exercise. NRC Region V was provided an opportunity to comment on the proposed scenario and objectives. Regional comments were satisfactorily resolved. The complete exercise document included objectives and guidelines, exercise scenario and necessary messages and data (plant parameters and radiological information). The exercise document was controlled before the exercise. Advance copies of the exercise document were provided to

the NRC evaluators and other persons having a specific need. The players did not have access to the exercise document or information on scenario events. This exercise appeared to meet the requirements of IV.F.2 of Appendix E to 10 CFR Part 50.

3. Exercise Scenario

The exercise objectives and scenario were evaluated by the NRC and considered appropriate as a method to demonstrate the Arizona Public Service Company capabilities to respond to an emergency in accordance with their Emergency Plan and implementing procedures. The exercise scenario started with an event classified as an Alert and ultimately escalated to a General Emergency (GE) classification. The opening event in the exercise involved a resin spill during transfer due a line rupture. The rupture also injured and contaminated the person conducting the transfer. This met requirements for classification of the incident as an Alert based on the radiation levels increasing by a factor of 1000. The exercise commenced with this event at 0800. At 0900, a steam generator developed a tube leak greater than 44 GPM. This also meets the criteria for an Alert. At about 1030 the tube failed resulting in a leak of 400 GPM. The transient also caused a Reactor Coolant Pump impeller to fail. The large leak rate meets the Site Area Emergency classification criteria. Pieces from the damaged impeller caused the fuel in the core to be damaged. At 1145, a Main Steam Safety Valve failed in the open position resulting in a release of steam and fission products to the environment. This met the criteria for a General Emergency.

The exercise was terminated when exercise objectives had been demonstrated to the licensee and when the plant was ready to be placed in shutdown cooling.

4. Federal Observers

Five NRC inspectors evaluated the licensee's response to the scenario. Inspectors were stationed in the Control Room/Simulator (CR), Technical Support Center (TSC), Operational Support Center (OSC), and in the Emergency Operations Facility (EOF). The inspector in the OSC also accompanied several repair/monitoring teams.

5. Exercise Observations (82301)

The following observations, as appropriate, are intended to be suggestions for improving the emergency preparedness program. An exercise weakness is a finding identified as needing corrective action in accordance with 10 CFR 50, Appendix E, Paragraph IV.F.5. All exercise times and other times indicated in this report are Mountain Standard Time (MST).

6. Control Room/Simulator (CR)

The following aspects of CR operations were observed during the exercise: detection and classification of emergency events, notification, frequent use of emergency procedures, and innovative attempts to mitigate the accident. The following are observations by the NRC inspector in the CR.



Observations

Several examples of informal communications were noted during the exercise; examples include phrases such as "I'm doing it", "Finished", "You've got SEAS Alarms coming at you".

At 1040, the control room had not been informed that the TSC had declared a Site Area Emergency. They should have been promptly informed when the event class was changed.

The licensee's Emergency Operating Procedures (EOP's) allow high pressure safety injection (HPSI) flow to be throttled when certain plant conditions are met. These conditions include adequate subcooling margin. On three occasions the operators throttled HPSI and subsequently lost subcooling margin.

A cooldown rate of 60 degrees/hour was initiated by the operators in accordance with their administrative procedures. They were not directed by licensee management to increase the cooldown rate. Increasing the rate of cooldown would have helped minimize the release.

Too few general announcements were made to the control room staff to appraise them of plant status and ensure everyone maintained the same critical focus.

Strength

Overall shift supervision did a good job of keeping operators focused on important activities during the event.

7. Technical Support Center (TSC)

The following aspects of TSC operations were observed: activation, accident assessment/classification, notification, and interactions between the various emergency response facilities. The following represent the NRC inspector's observations in the TSC.

Observations:

NRC inspectors observed that there appeared to be little problem solving or brain storming underway by the Operations Technical Staff during the exercise. For example:

- (a) Engineering did not appear to be kept up-to-date on event status, as was the TSC Command and Control Center.
- (b) Engineering appeared to be only responding to direction from the Emergency Coordinator.
- (c) Data for the maximum cooldown rate for use in an emergency was not readily available.

At 1059, the lead controller had to intervene to preclude premature declaration of a General Emergency. This had apparently resulted from a



misreading of the output from Radiation Monitor RU-149 by a factor of a full magnitude.

There appeared some confusion and delay at the TSC in obtaining emergency dose authorizations for personnel to obtain a PASS sample and repair of the MSSV. The wrong form revision had been submitted to the TSC.

Strength:

The TSC was staffed and activated within 26 minutes.

8. Operational Support Center (OSC)

The following aspects of OSC operations were observed: activation of the facility, functional capabilities of the facilities, and the disposition and management of various in-plant repair/monitoring teams.

Observations

a. Exercise Simulation

- o The drill simulation did not indicate an increase in dose rates as the resin spill continued in the room adjacent to the injured person, for approximately 10 minutes.
- o Controllers, HPTs, and the responding HP Supervisor did not recognize that the radiological exit, that was set up for personnel and contamination control, was dysfunctional. This would have occurred due to the extensive spread of highly contaminated resins by the responding HPTs, and the presence of these (and other) highly contaminated personnel and their equipment in the area of the exit point.
- o Controllers and HP Supervision did not recognize that highly contaminated personnel (security, firemen, HPTs) were somehow easily decontaminated and able to return to the OSC for assignment. These workers services would have been lost for at least several hours.
- o Controllers gave HPTs radiation dose rate readings for contamination on the injured worker (open window readings) that were lower than the ambient area dose rates. The dose rate value given would not have been measurable under the given circumstances (40 mrad/hr in a 300 mrad/hr area). The responding HPTs did not recognize this anomaly.
- o Contrary to the directions provided to the NRC in the "Exercise Objectives and Extent of Play" on January 22, 1992, and to the direction given during the licensee's controller briefing concerning the level of simulation in regards to the donning of protective clothing and use of tools, players were permitted to simulate, almost exclusively, the use of protective clothing and tools. For example:

- o The use of friskers was simulated for teams returning from the field or exiting turbine building areas. No one verified that enough friskers would have been available to support field team requirements and to replace losses due to inadvertent instrument contamination.
- o Teams were routinely sent out without verifying if communication devices were available and viable. Most, except radio equipped security officers and firemen, were told to use area phones. The relief valve gagging team did not carry any portable radios and were to rely on local telephones, which were located three levels below the relief valve room. Backup communication systems for field teams were not tested.

b. Injured Person Recovery and Radwaste Area

- o The HPTs that removed the injured person from the resin spill area did not practice effective contamination control and consequently would have contamination throughout the area.
- o Both HPTs used instrumentation that would have become highly contaminated and not able to measure low dose rates.
- o Even though the injured worker was moved from the immediate spill area, the HPT took no further action to move the injured person to a low background area or attempt to remove the highly contaminated protective clothing from the worker. The respirator was left on the worker and could have added to the discomfort of the worker.

c. OSC Activities

POSITIVE OBSERVATIONS

- o The OSC Coordinator's performance was very good.
- o OSC briefings for the most part were detailed and well thought out.

NEGATIVE FINDINGS

- o Even though site assembly had been initiated much earlier, two or more maintenance personnel were placed outside the power block, in near plume locations, to guard the radwaste building doors. The workers were told that even if their dosimeter alarmed they were not to leave their posts. These workers remained outside without HP escorts, during releases via the main steam relief valve.
- o HPTs were sent out twice to survey and post plant external areas of Unit 2. This appeared to have little value since all personnel are required by EPIP-12 to be escorted by HPTs when they leave the TSC, CR, or OSC.



- o The repair team sent to stop the radioactive release via the relief valve was unnecessarily routed via a time consuming path outside of the power block. Alternate routing that could have been more direct, was not discussed.
 - o Controllers failed to recognize that the relief valve gagging team did not follow the route agreed upon during the briefing, but instead traversed the plume getting to the relief valve.
 - o Firemen and security personnel roamed in and out of the OSC, TSC, and EOF without HP briefing of escorts.
- d. Exercise Weakness
- o Three two-person teams were sent out from the OSC into the plant and external to the plant without a HPT escorts (high radiation area guards, firemen trying to find sprinkler system valves, and firemen on standby at their fire truck). This appears to be three examples of the licensee violating EPIP-12, Appendix B, paragraph 3.1.1 requirements concerning HPT escorts when personnel are dispatched from the OSC. In addition, the 2 firemen on standby at their truck were not issued self reading dosimeters or alarming dosimeters. The health physics program problems identified during this exercise, in aggregate, constitute an exercise weakness (50-528/92-09-01) OPEN.

9. Emergency Operations Facility (EOF)

The following EOF operations were observed: activation; functional capabilities; interface with offsite officials; dose assessment; and the formulation of protective action recommendations. The following are NRC observations of EOF activities.

Observations

The EOF was fully staffed within 35 minutes and declared operational within 45 minutes of the declaration of the Alert.

Command and control in the EOF was effectively demonstrated.

Notification of offsite agencies was performed, as required, in a prompt manner.

Good public address announcements were made in the EOF.

The status board displaying Protective Actions in the EOD office did not clearly distinguish between actions recommended by the licensee and actions implemented by the state.

Engineering support from the TSC, the corporate staff, and other resources appeared to be lacking. The licensee's engineering support plans for emergency response will be evaluated in a later inspection (50-528/92-09-02) OPEN.

Dose projection, the control of the field monitoring teams, and the coordination with the Arizona Radiation Regulatory Agency (ARRA) appeared to function well.

10. Critiques

A series of exercise critiques were conducted by the licensee upon completion of the exercise. First, a facility critique was conducted at each emergency response facility with players and controllers immediately following the exercise. Upon conclusion of these critiques, a player and controller critique was conducted by the licensee on April 30, 1992, to review the items surfaced at the facility critiques. The licensee had noted several of the items also identified by the NRC observers, as well as other exercise strengths and problems for improvement.

11. Exit Interview

On May 1, 1992, at the conclusion of the site visit, the inspectors met with the licensee representatives identified in Paragraph 1 to summarize the scope and the preliminary results of this inspection. The inspectors reviewed the weakness in Section 8 above.

