

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/90-11, 50-529/90-11, and 50-530/90-11

License Nos. NPF-41, NPF-51 and NPF-74

Licensee: Arizona Public Service Company
P. O. Box 53999, Sta. 9012
Phoenix, Arizona 85836

Facility Name: Palo Verde Nuclear Generating Station
Units 1, 2 and 3

Inspection at: Palo Verde Site, Wintersburg, Arizona

Inspection dates: April 24-27, 1990

Inspector:

K. M. Prendergast
K. M. Prendergast
Emergency Preparedness Analyst

5/18/90
Date Signed

P. Qualls
P. Qualls, Reactor Inspector

5/18/90
Date Signed

Team Members:

S. Peterson, NRC, Project Manager
F. Hasselberg, Emergency Preparedness Specialist, NRC
H. Sloan, Resident Inspector, NRC
F. Ringwald, Resident Inspector, NRC
G. Martin, Pacific Northwest Laboratories

Approved by:

G. P. Yuhas
Gregory P. Yuhas, Chief
Emergency Preparedness and Radiological
Protection Branch

5/18/90
Date Signed

Summary:

Areas Inspected: Routine announced inspection of the licensee's emergency preparedness exercise. Inspection procedures 82301, 82302, and 30703 were covered.

Results: No violations of NRC requirements were identified. The licensee's scenario and objectives were approved and noted to provide an adequate framework for the scope of the 1990 exercise. Based on the scenario, the licensee satisfactorily demonstrated their capabilities to take actions to mitigate the accident and make recommendations to protect the public. One open item was identified in Section 3 which involved the licensee's ability to classify emergency events in a conservative manner.



DETAILS1. Persons Contacted:

J. Levine, Vice President, Nuclear Production
B. Adney, Plant Manager Unit 3
H. Bieling, Manager, Emergency Planning and Fire Protection
N. Willsey,, Emergency Planning Supervisor
T. Barsuk, Lead Site Emergency Planner

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

The emergency preparedness staff has the responsibility for developing and conducting the annual emergency preparedness exercise. The objectives were developed in concert with the offsite agencies. The scenario was developed by the emergency preparedness staff with the assistance of contractor support and licensee staff with appropriate expertise (e.g., health physics, maintenance, operations and etc.) In an effort to maintain strict security over the scenario, individuals involved in the scenario development were not participants in the exercise. Players were restricted access to the exercise document or the scenario. The exercise was intended to meet the requirements of Section IV.F.3 of 10 CFR 50 Appendix E.

3. Exercise Scenario (82302)

The exercise scenario and objectives were evaluated by the NRC and considered appropriate as a method to demonstrate Palo Verde Nuclear Generating Stations capabilities to respond to an emergency. The scenario started with an event classified as an unusual event and ultimately escalated to a general emergency. The exercise started with a fire in the B train emergency core cooling system (ECCS) switchgear room which resulted in the declaration of an unusual event. An alert was declared for reactor coolant system (RCS) leakage greater than 50 gallons per-minute. A site area emergency (SAE) was declared for the RCS leakage mentioned above and a failure of both trains of the emergency safety features (ESF) system to actuate, when required, resulting in the inability to maintain sub-cooling. A general emergency, the most severe emergency classification, was declared for the items mentioned above and indications of voiding in the reactor plenum.

The inspectors examined the scenario package and compared the licensee's the classification of the events during the exercise with Emergency Plan Implementing Procedure (EPIP)-02, "Emergency Classification", the Emergency Plan, and the criteria for classification described in NUREG-0654. Based upon this comparison the following were noted.

- a. The licensee's Emergency Plan, prior to Revision 8 dated November 18, 1987, contained provisions similar to NUREG-0654 to declare an alert for a fire potentially affecting safety systems and for a site area emergency to be declared for a fire compromising the function



of safety systems. The above mentioned examples of initiating events were deleted in Revision 8 of the Emergency Plan.

- b. The present Emergency Plan, Revision 9, appears to require upgrading the classification of a fire if the fire impacts a safety system. Section 5.3.2(d) states, "Security Threat, Fire onsite (Classification upgraded when situation impacts on a safety function)." However, EPIP-02 does not contain similar wording to declare an alert for a fire affecting a safety function. EPIP-02 contains verbage for an alert to be declared in TAB 4, if the "SS/EC determines that the level of plant safety is substantially reduced due to fire", however the EPIP does not require the declaration of an alert for a fire affecting a safety system unless the safety of the plant is substantially degraded.
- c. The exercise scenario described conditions where RCS leak rate was approximately 70 gallons per-minute (GPM) and system make-up was only 44 GPM. The licensee classified this condition as an alert, in accordance with EPIP-02, for RCS leakage greater than 50 GPM and would have probably classified the condition eventually as a SAE based upon the effect of the continuing loss of coolant. However, NUREG-0654 classifies a "known loss of coolant greater than make-up pump capacity as a SAE."

Because the classification of the events described the scenario were not as conservative as NUREG-0654, these items were discussed with the Manager of Emergency Preparedness. According to the Manager of Emergency Preparedness, a mini-task force will be established to review the EPIPs, the Emergency Plan, and NUREG-0654. Licensee progress in this area is will be followed as open item (90-11-01).

4. Federal Evaluators

Six NRC inspectors evaluated the licensee's response to the scenario. Inspectors were stationed in the Unit 3 Satellite Technical Support Center (TSC), which was used to simulate the Control Room, the TSC, the Operations Support Center (OSC), and the Emergency Operations Facility (EOF). The inspector in the OSC also accompanied repair/monitoring teams dispatched from the OSC.

FEMA, Region IX, did not evaluate this exercise because this was an off-year in their schedule for exercise evaluations.

5. Exercise Observations (82301)

a. Control Room

The following aspects of CR operations were observed during the exercise: detection and classification of emergency events, emergency notification, frequent use of emergency procedures, and innovative attempts to mitigate the accident. The following are NRC observations of CR activities. The observations as appropriate are intended for improving your program.



- (1) The CR staff did a good job anticipating problems and coming up with actions to mitigate the accident.
- (2) Emergency Operating Procedures were consistently used, notifications were timely and briefings were frequent and complete.
- (3) Command and control was appropriately demonstrated.
- (4) The Control Room did not declare an alert for a fire affecting a safety system. The reason for the failure to classify the fire disabling the B train of the ECCS appears to be the non-conservative verbage in EPIP-02. EPIP-02 requires substantial degradation of plant safety for an alert and is non-conservative when viewed with NUREG-0654.

The other activities observed in the CR appeared satisfactory.

B. Technical Support Center

The following aspects of TSC operations were observed: activation, accident assessment/classification, notification, and interactions between various emergency response facilities. The following represent observations of the inspectors in the TSC. The observations as appropriate are intended for improving your program.

- (1) Engineering support was well organized and innovative in their efforts to repair the HPSI system.
- (2) The TSC expediently developed a 24 hour manpower roster for two 12 hour shifts and coordinated the roster with the Emergency Operation Director in the EOF. The shifts were rotated on a staggered basis to insure continuity of accident management.
- (3) TSC personnel did not appear proactive in their response to the scenario. Plant conditions were properly trended by the engineering staff and communicated to the EC, however, predictions of future events were not evident. The following were noted for improvement in this area:
 - a. The TSC did not appear to predict when pressurizer level would reach heater cutoff.
 - b. The TSC did not appear to project the time until the core uncovers.
 - c. The TSC did not appear project core heat up rate after core uncover.
- (4) Status boards did not always indicate the proper status of operable and inoperable equipment and the difference between "non-running" and "inoperable" was not clear. This distinction may be significant in formulating accident management strategies.

- (5) TSC announcements were not always complete and were not checked to assure they were complete and accurate by the Emergency Coordinator. Consequently the announcements were timely, but not very informative in regards to degrading conditions, protective measures underway, and safety information, such as areas to avoid.
- (6) The EC appeared to have an excellent grasp of the plant conditions, however, he did not appear to share this knowledge with the full TSC staff or to conduct any interactive briefings to insure all TSC staff were aware of actions to mitigate the accident and that all concerns or questions were being addressed.

The other activities observed in the TSC appeared satisfactory. No significant findings were identified.

c. Operations Support Center

The NRC observer evaluated the OSC staff's ability to activate in a timely manner, brief and dispatch repair/survey teams, maintain communication logs, and support the CR and TSC with appropriate skills and crafts.

- (1) The OSC was staffed and activated in a timely manner. Command and control was effectively demonstrated. The process of team briefings, dispatch, tracking and debriefing was smoothly and efficiently handled.
- (2) OSC Habitability was established in a timely manner and maintained throughout the exercise.
- (3) Contamination control was effectively demonstrated during the response to the medical emergency.

The other activities observed in the OSC appeared satisfactory. No significant findings were identified.

d. Emergency Operations Facility

The NRC observer evaluated the EOF staff's ability to activate the facility in a timely manner with appropriate skills and disciplines, provide offsite dose assessment, perform appropriate and timely notifications, make protective action recommendations. The following observations were made in the EOF.

- (1) The EOF did a good job coordinating the efforts of both licensee and state field teams in their efforts to identify plume edges and centerline.
- (2) Frequent briefings were held to keep EOF staff apprised of plant conditions and actions to mitigate the accident.



- (3) There was excellent coordination between health physics, technical analysis, and the EOD in the utilization of core damage assessment, field team measurements, dose projections to make protective action recommendations to state and local agencies.
- (4) The use of scenario-provided data sheets in the EOF appeared to introduce an exercise artificiality into the response by the EOF. During the exercise the use of the data sheets appeared to provide data more complete and more quickly than expected during a real event. Since the area of information flow may have significant impact on the response to an accident, this area should be fully exercised, at every opportunity, to insure if primary methods of obtaining operational data fail that appropriate alternate methods are in place and are satisfactory.

The other activities observed in the EOF appeared satisfactory. No significant findings were identified.

6. Critiques

Immediately following the exercise, critiques were held in each of the emergency response facilities (ERFs). The controllers and players did a good job of evaluating and identifying areas for improvement. A formal critique involving site and management personnel was conducted on April 26, 1990. The purpose of the formal critique was to summarize the findings of the earlier critique sessions and to present them to plant and corporate management for inclusion into the emergency preparedness action list. The licensee concluded that all general objectives were met, however a more detailed comprehensive report will be completed by emergency preparedness to insure all areas requiring improvement are identified. The following represent some of the items discussed during this meeting.

- (a) The TSC was slow in recording status board data.
- (b) The air lock for the TSC habitability envelope was breached by not closing the door into the TSC.
- (c) The new resident inspectors had not been put on the access list for the TSC and EOF.
- (d) Access to tools after site evacuation may present some problems.
- (e) Further training in the use of the emergency response facilities data system may be beneficial in obtaining radiation protection data.

7. Exit Interview

An exit interview to discuss the preliminary NRC findings was held on April 27, 1990. Personnel present at this meeting are identified in the attachment to this report. The licensee was informed that no violations



or exercise weaknesses were identified during the inspection. Other items discussed during this meeting are described in Sections 2 through 6 of this report.



Attachment

Exit Interview Attendee's

- A. DeMichele, President and Corporate Executive Officer
- W. Conway, Executive Vice President, ANPP
- J. Levine, Vice President Nuclear Production
- B. Adney, Unit 3 Plant Manager
- B. Simpson, Vice President, Engineering and Construction
- J. Bailey, Vice President, Licensing and Nuclear Safety
- B. Page, Management Services
- P. Caudill, Director, Site Services
- B. Ballard, Director, Quality Assurance
- D. Marks, Manager, Nuclear Safety (acting)
- H. Bieling, Manager, Fire Protection and Emergency Preparedness
- N. Willsey, Supervisor, Emergency Planning
- T. Barsuk, Senior Emergency Planner
- R. Foutain, Quality Assurance
- R. Fullmer, Manager, Quality Audits and Monitoring
- R. Henry, Site Representative
- F. Casella, Project Manager, HMM Associates
- S. Peterson, NRC, Project Manager
- P. Qualls, NRC Inspector
- R. Hasselberg, NRC, Emergency Preparedness Specialist
- K. Prendergast, NRC, Emergency Preparedness Analyst
- G. Martin, PNL, Senior Scientist

