

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/90-24, 50-529/90-24, and 50-530/90-24

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

Licensee: Arizona Public Service Company  
P. O. Box 53999, Stat. 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: May 21 - June 14, 1990

Inspector:

*Kent M. Prendergast*  
K. M. Prendergast  
Emergency Preparedness Analyst

*7/11/90*  
Date Signed

Approved by:

*M. D. Schuster*  
M. D. Schuster, Acting Chief  
Safeguards, Emergency Preparedness, and  
Non-Power Reactor Branch

*7/11/90*  
Date Signed

Summary:

Areas Inspected: Unannounced routine inspection of the status of the Emergency Preparedness Program, follow-up on open items, emergency detection and classification, and dose calculation and assessment. Inspection procedures 92701, 82701, 82207, and 82201 were covered.

Results: Overall, the licensee's program is adequate in the area of emergency preparedness. However, a weakness in the licensee's capability to perform accountability of site personnel within the 30 minutes described in the Emergency Plan and an excessive time frame for a remedial drill is described in Section 3. Capabilities for emergency detection and classification were evaluated and some areas for improvement are identified in Section 4. Capabilities for dose assessment were satisfactorily demonstrated and are described in Section 5. No violations of NRC requirements were identified.

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DETAILS1. Persons Contacted:

J. Bailey, Assistant Plant Manager, Unit 3  
 \*D. Stover, Manager, Nuclear Safety  
 \*H. Bieling, Manager, Emergency Planning and Fire Protection  
 \*N. Wilsey, Supervisor, Emergency Planning  
 D. Carnes, Shift Manager  
 R. Taylor, Shift Manager  
 H. Lines, Emergency Planner  
 D. Coe, Senior NRC Resident Inspector

In addition, the inspection also included other members of licensee staff involved with emergency preparedness.

\* Denotes personnel attending the exit interview

2. Follow-up on Previous Inspection Findings (92701)

(Closed) open item 90-07-01, follow-up inspection regarding a violation for failing to classify a transformer fire on December 30, 1989. The licensee's timely response to the violation was examined and considered satisfactory to preclude further problems in this area. In response to the violation, licensee management has issued a memorandum on March 28, 1990, to increase plant awareness regarding conservative emergency classification and has made improvements to their classification procedure. Emergency Plan implementing procedure (EPIP)-02 now requires the declaration of an unusual event for a fire within the protected area lasting longer than 10 minutes. In addition, operations now relies on fire protection to determine the status of any fire and to quickly report this information to the Control Room. The inspector evaluated the above stated actions and they appear satisfactory. This item is closed.

(Open) open item 90-11-01, examine licensee progress regarding their evaluation of the Emergency Plan (EP) and EIPs against the guidance provided in NUREG-0654 for emergency classification. NRC Inspection Report 50-528/90-11 identified a number of examples where the licensee's classification procedure, EPIP-02, was less conservative than NUREG-0654, the federal guidance for emergency classification. The inspector examined progress in this area. The licensee has determined the names of the individuals for the task force and has established a schedule to evaluate the EP and EIPs against NUREG-0654. The evaluation is scheduled for completion by the middle of July 1990. This item is still considered open and will be examined in a subsequent inspection.

3. Operational Status of the Emergency Preparedness ProgramDrills/Exercises

Prior to the April 1990 annual exercise, the licensee requested the accountability drill, which was being considered as part of the exercise,

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be performed outside of the time period of the exercise. The reason stated for the request, was to make improvements in the accountability software associated with the installation of additional card readers to improve the process and because two of the plants were currently in an outage. The request was granted. As part of follow-up to the exercise, the inspector examined records of the last two accountability drills and discussed licensee progress regarding the schedule for the next accountability drill. The following weaknesses were noted:

- a. The EP and the licensee's administrative procedure for drills do not address a specific frequency for how often accountability drills are held. Also there is no guidance discussing the conduct or timeliness of remedial drills, should a major objective not be met.
- b. The EP and implementing procedures require the capability to perform accountability within 30 minutes, following the order to evacuate the protected area. However, based upon the results of a January 6, 1984, and an April 23, 1987, drill, the licensee has not established the fact they can perform accountability within the 30 minute time frame. Based upon drill records, both drills identified numerous problems involving training, inaudible paging systems, incorrect phone numbers, and problems encountered with the manual accountability process. Both drills failed to perform accountability within 30 minutes. In fact, according to the 1987 drill records, accountability was not completed until after the termination of the drill. There have been no subsequent accountability drills since the 1987 drill.
- c. The licensee's actions to improve accountability were completed January 1990. The improvements, involved the installation of additional card readers and accountability software and have been in process for a considerable time, but resources to get all three units operational have had priority. The discussions also indicated the licensee will be conducting an accountability drill on July 9, 1990, to determine the adequacy of their corrective actions. The adequacy of the licensee's corrective actions in this area will be examined in a subsequent inspection following the July 9, 1990, drill. (90-24-01)

Licensee performance in this program area indicates that licensee management has not been aggressive in correcting the items identified during the last accountability drills to assure themselves of the capabilities to account for missing or injured personnel within the 30 minute time frame contained in their Emergency Plan.

#### 4. Emergency Detection and Classification

To determine that there is an adequate capability for emergency classification, the EP and implementing procedures were reviewed, records of emergency response training were examined, two scenarios conducted on the plant simulator were observed, and interviews with key emergency response personnel were held. The following observations were noted:



- a. The EP and implementing procedures were noted to contain provisions for an individual to be available, 24 hours a day, to fill the position of the Emergency Coordinator (EC). This individual is responsible for initiating emergency actions, classifying the emergency, recommending protective actions to state and local agencies, and authorizing emergency exposures and site evacuation. However, during the interviews, one Shift Manager, when asked for the non-delegable duties of the EC, was slow and hesitant and took considerable time to locate the above stated responsibilities in the implementing procedures, indicating further training may be appropriate for this individual.
- b. The records of training for the EC documented that required training in emergency classification had been completed for the individuals who would become the EC during an emergency. The two scenarios observed in the simulator were also noted to require the correct classification of the emergency events using Control Room (CR) decisional aids and EPIP-02, "Emergency Classification," to satisfactorily complete the simulator training.
- c. Emergency operating procedures and EPIP-02 direct the Shift Manager to classify emergency events, based upon plant conditions, dose projections, and the results of offsite monitoring. The emergency action levels (EALs) were also noted to be consistent with Control Room instrumentation and the Emergency Response Facilities Data Acquisition System displays.
- d. The Shift Managers and Emergency Coordinators were able to use their implementing procedures to classify the events described by the inspector. However, the following examples were noted where the guidance in the classification procedure appears to result in non-conservative decision-making for emergency classification, when viewed against the guidance contained in NUREG-0654. (See Open Item 90-11-01).
  - i. EPIP-02, does not require a declaration of an unusual event for shutdown of the plant pursuant to an action statement in the Technical Specifications, unless the plant does not meet the time frame for plant shutdown. When given a scenario describing 30 gallons per-minute reactor coolant system leakage, the individuals who would become the EC said they would begin shutting down the plant, but would not declare an unusual event unless they exceeded 50 gallons per-minute or exceeded the time frame for plant shut down. NUREG-0654 lists plant shutdown pursuant to the Technical Specifications and exceeding primary to secondary leak rates as criteria for the unusual event classification.
  - ii. EPIP-02, does not appear to provide satisfactory language to upgrade the classification of an event involving known sabotage of plant equipment. During the interviews the individuals were given different scenarios involving known sabotage. The scenarios described acts such as as an unknown group or person blowing up the meteorological station in one scenario and known



sabotage to the emergency diesel generators, such that this equipment would not operate during an emergency. None of the EC's considered the act of known sabotage as a compromise of security which would require the declaration of an alert. Some of the benefits of the alert classification are increased management attention and the activation of additional emergency response facilities.

- iii. EPIP-02 does not utilize discrete wind velocities as criteria for the unusual event or alert emergency classification. EPIP-02 makes references to natural phenomena beyond the usual level experienced or projected, and to a tornado for these categories. However, during the interviews, when given scenarios describing experienced and projected wind velocities of 80 to 103 miles per-hour, no emergency classifications were made. This item has also been previously identified in NRC Inspection Report No. 50-528/89-26.

Based upon the inspection in this program area, the licensee has demonstrated their ability to use their procedures to classify emergency events. However further evaluation in this area appears necessary based upon the findings in Section 4.d.

#### 5. Dose Calculation And Assessment (82207)

To determine that there is an adequate method for assessing the consequences of a radiological release, the EP and implementing procedures were reviewed, interviews were held with individuals responsible for dose assessment, and dose projections and calculations were accomplished using primary and backup methodologies. The following observations were noted.

- a. The interviews conducted in the Satellite Technical Support Center and Emergency Operations Facility were considered satisfactory. The individuals responsible for dose assessment demonstrated they were capable of calculating and determining radiological doses and source term using computer and hand calculations for numerous release pathways including; releases from the plant stack, Turbine and Auxiliary Building vents, steam line rupture, and containment leakage. Calculations and projections were also satisfactorily performed using data from the Post Accident Sampling System, containment dome monitors, plant radiation monitors, and offsite field team results.
- b. The individuals responsible for dose assessment were able to incorporate the results of field monitoring teams and make adjustments to their projections and protective action recommendations based upon field measurements. The individuals were also aware of the errors associated with dose projections, based upon plant monitors and information provide by the site meteorological station. Plume travel time and shielding factors were also considered in their protective action recommendations.



- c. Discussions with a representative from the Arizona Radiological Regulatory Agency (ARRA) indicated that ARRA uses a manual calculation that utilizes diffusion/dispersion calculations provided by the licensee. The ARRA representative stated that their calculations show close agreement with those of the licensee and should any differences be identified, they would meet with the licensee to discuss and resolve the problem.

Licensee performance in this program area appears fully satisfactory. No violations of NRC requirements were identified.

#### 6. Exit Interview

An exit interview to discuss the preliminary NRC findings was held on May 25, 1990. Personnel present at this meeting are identified in Section 1 of this report. During this meeting, the licensee was apprised of the inspector's concern regarding the licensee's capability to perform accountability. The licensee was also requested to provide the inspector with copies of the 1984 and 1987 accountability drill findings. Accountability was identified as an open item and will be followed in a subsequent inspection. Other items discussed during this meeting are described in Sections 2-5 of this report.

