

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report Nos. 50-528/87-06  
50-529/87-07  
50-530/87-01

Docket Nos. 50-528, 50-529 and 50-530

License Nos. NPF-34, NPF-51 and CPPR-143

Licensee: Arizona Public Service Company  
P.O. Box 21666  
Phoenix, Arizona 85836

Facility Name: Palo Verde Nuclear Generating Station - Unit 3

Inspection at: Palo Verde Site - Wintersburg, Arizona

Inspection Conducted: January 5-9, 1987

Inspected by: R. F. Fish for 2/9/87  
G. Brown, Emergency Preparedness  
Analyst Date Signed

R. F. Fish for 2/9/87  
W. TenBrook, Radiation Specialist Date Signed

Team Member: A. K. Loposer, Reactor Operations Engineer, Comex  
Corporation

Approved By: R. Fish 2/9/87  
R. Fish, Chief Date Signed  
Emergency Preparedness Section

Summary:

Areas Inspected: Announced preoperational inspection of the emergency preparedness program for the Unit 3 facility, including emergency plan training and retraining of Unit 3 emergency response personnel, emergency facilities and equipment and walk-throughs with key Unit 3 personnel. The inspection included follow-up reviews of Units 1 and 2 open items and information notices sent to the licensee. Temporary Instruction Procedure 2513/55, Emergency Plan Implementation Appraisal, and Inspection Procedure 92701 were used.

Results: No violations of NRC requirements were identified.

## DETAILS

### 1. Persons Contacted

\*E. VanBrunt, Executive Vice President  
\*J. Haynes, Vice President Production  
\*J. Bynum, Plant Manager  
\*R. Baron, Compliance Supervisor  
\*T. Barsuk, Supervisor, Site Emergency Planning  
A. Brieese, Shift Technical Advisor  
D. Carnes, Shift Supervisor  
B. Cederquist, Chemical Services Manager  
E. Cesena, Assistant Shift Supervisor  
V. Elish, Training Instructor  
L. Florence, Assistant Shift Supervisor  
W. Garret, Shift Technical Advisor  
R. Gouge, Unit 1 Operations Manager  
M. Grissom, Shift Technical Advisor  
R. Gulick, Communicator  
D. Hernandez, Communicator  
D. Hettick, Radiation Protection Technician  
\*W. Ide, Corporate Director, Quality Assurance/Quality Control  
J. Jarosi, Shift Supervisor  
J. Kriner, Nuclear Licensing Engineer  
\*D. Lanier, Licensing Engineer  
M. Ledoux, Radioactive Materials Control Supervisor  
R. Lindquist, Shift Technical Advisor  
P. Lovette, Radiation Protection Technician  
\*J. Mann, Senior Health Physicist  
S. McKinney, Shift Supervisor  
W. McMurry, Radiation Protection Technician  
J. Minnick, I&C Manager  
M. Muhs, Shift Technical Advisor  
R. Oakley, Communicator  
R. Prine, Radiation Protection Technician  
W. Roberts, Communicator  
M. Sanchez, Reactor Operator  
J. Scott, Unit 3 Chemistry Supervisor  
\*T. Shriver, Compliance Manager  
D. Smith, Assistant Shift Supervisor  
W. Sneed, Unit 3 Radiation Protection Supervisor  
D. Swann, Shift Supervisor  
K. Wright, Emergency Coordinator  
\*D. Yows, Manager, Emergency Planning and Preparedness

\* Denotes attendance at the January 9, 1987 exit interview

### 2. Follow-Up On Open Items

(Closed) 85-34-01 (Unit 1). Guidance contained in Information Notice 83-29 had not been incorporated into the EIPs. EIP-4 and EIP-15 now

contain the required Protective Action Recommendation (PAR) statement for General Emergency classifications. This item is closed.

(Closed) 86-15-05 (Unit 1). Clarify method for radiation protection technicians to formulate PARs. EPIP-11 has been modified to include a table which contains simplified instructions for formulating PARs. The table circumvents the need for complicated and time-consuming computations such as evacuation time estimates and directs the technician toward automatic PARs consistent with those in EPIP-15. This item is closed.

(Closed) 86-15-06 (Unit 1). Provide the EOF with a diesel generator which is capable of operating the HVAC system. The APS Outage Report for Outage AE-NGN-160 documents that a 480-volt, 240-KW generator was installed and satisfactorily tested on 12/14/86. The generator is capable of supplying sufficient power to operate all lighting as well as the HVAC. This item is closed.

(Closed) 86-15-09 (Unit 1). Provide a hardcopy recording of meteorological parameters in the Control Rooms. In the Final Safety Analysis Report (FSAR) the licensee is committed to Regulatory Guide (RG) 1.23, Revision 0, which does not require hardcopy capability in the Control Room. Since the issuance of the FSAR there have been two proposed revisions to RG-1.23. The first proposal required hardcopy capabilities in the Control Room, but the latest omits that requirement. Since the licensee satisfies its FSAR and there appears to be no current regulatory requirements to alter the existing system, this item is closed. It was noted that the Control Rooms do have redundant digital capability and also there are hardcopy capabilities available onsite in the instrument building located at the base of the meteorological tower.

(Closed) 86-28-01 (Unit 2). The perimeter paging system was unintelligible during the emergency preparedness exercise. The licensee identified a spurious grounding in the public address system and made the necessary repairs. The system was satisfactorily demonstrated during testing of the emergency alarms for this inspection. This item is closed.

(Open) 86-15-02 (Units 1 and 2). Provide a backup communications system that would survive a loss of the communications room. Telecommunications Engineering had identified the pairs of wires required to separate the systems, however, these lines belonged to Mountain Bell. A proposal to purchase these lines from Mountain Bell will be reviewed by the Engineering and Operations (E&O) board during their January 1987 meeting. If the purchase is approved by the board, the modification to separate the lines should be completed and operable by March 1, 1987.

(Open) 86-15-03 (Units 1 and 2). Complete the ERFDADS and SPDS. The licensee has verbally resolved with NRR the issue of NRC concern regarding digital isolation devices and is now awaiting their confirmation letter. This item will remain open pending receipt of the confirmation from NRR and final acceptance of the SPDS as fully operational.



(Open) 86-15-04 (Units 1 and 2). Develop a dose assessment method which meets the 15-minute goal. A revision to EPIP-14A and EPIP-14B is now in draft form. This revision is intended to significantly shorten the time to calculate the release rate and dose projection. The licensee estimated training and implementation to be completed by June of 1987. During the exit interview the licensee committed to a March 1, 1987 corrective action date for Unit-3. This item will remain open pending completion of the revision and satisfactory demonstration that the timely calculation goal can be met using the revised procedure.

(Open) 86-15-08 (Units 1 and 2). Continue present efforts to connect the plant vent monitor to a vital bus. Status of the project at the end of this inspection was as follows:

UNIT 1: Construction was 45% completed, with construction scheduled to be completed on January 19, 1987. Connection, testing and termination are planned for the next refueling outage about September 1987.

UNIT 2: Construction has been completed. Connection, testing and termination are scheduled for completion during the six-week outage commencing January 9, 1987.

UNIT 3: QS&E/QA now has a work package for review. Work is expected to commence about January 12, 1987, and to be completed during the week of January 26, 1987.

Pending completions as described above, this item remains open.

### 3. Follow-up on Information Notices

The inspectors verified that the following Information Notices were received by the licensee, reviewed for applicability and distributed to cognizant personnel at the corporate and site levels and corrective actions were taken where appropriate.

(Closed) IN-83-28 (Unit 2), Criteria for General Emergency Protective Action Recommendations

(Closed) IN-85-44, Monthly testing of ENS and HPN

(Closed) IN-85-62 (Unit 1), Backup telephone numbers for NRC Operations Center

(Closed) IN-85-77 (Units 1 and 2), Possible loss of Emergency Notification System due to loss of AC power

(Closed) IN-85-78 (Units 1 and 2), Event notification form

(Closed) IN-85-80 (Units 1 and 2), Timely emergency classification and notification

(Closed) IN-86-10 (Unit 1), SPDS malfunctions

(Closed) IN-86-18 (Unit 1), NRC on-scene response during a major emergency

(Open) IN-86-97, Emergency Communications System - ENS and HPN  
(Licensee has received notice but not yet made distribution)

4. Emergency Preparedness Preoperational Inspection - Unit 3

a. Emergency Plan Training and Retraining

The contents of Emergency Plan training and retraining courses were reviewed and the instructors responsible for developing and teaching the courses were interviewed. The subjects addressed were Emergency Coordinator training, Satellite TSC/OSC training, Radiological Sampling and Surveys training and Dose Assessment training. This covered all specific Emergency Plan training for the onshift emergency response organization. Some examination and qualification improvements for selected emergency plan training courses were suggested. The Emergency Coordinator, STSC/OSC and Dose Assessment training would be improved if satisfactory execution of key EPIP's were a requirement for qualification. It was also noted that the course examinations for Emergency Coordinator and STSC/OSC would be improved if they contained additional questions to test the retained knowledge of applicable EPIP's.

The Emergency Planning Staffing List provides the current training status of personnel assigned emergency response positions. The Emergency Plan Report, prepared by the Training Records office, specifies personnel who have participated in Emergency Plan training, their normal position, date of training and anticipated date of retraining. The list is provided to managers of the normal onshift organization for use in establishing duty rosters for the onshift/onsite emergency response organization. These documents were compared to lists of Unit 3 personnel responsible for performing emergency duties. It was determined that each operating shift was staffed with an adequate number of trained personnel to fulfill the staffing requirements of the onshift emergency response organization.

b. Post-Accident Sampling System (PASS) Training and Drills

PASS training and the criteria for qualification of personnel designated to operate PASS were reviewed. Currently, an initial lecture presentation with a practical inplant demonstration of PASS operation are required for PASS qualification. No retraining or requalification are required. Ongoing participatory drills using the PASS are designed for testing system operability only and include the monthly PASS surveillance test and the annual emergency preparedness exercise.

The Chemical Services Manager and the Unit 3 Chemistry Supervisor were interviewed to determine the status of PASS retraining and the specific status of Unit 3 personnel PASS training and qualification. A commitment to Item II.B.3 of the Safety Evaluation Report,



Supplement 9, was cited as the impetus for several improvements in the PASS training and retraining program. The improvements include a PASS training simulator, annual rotation of all unit chemistry technicians through the PASS surveillance procedure, and the establishment of a PASS refresher training course.

The Unit 3 PASS is currently involved in testing and is not considered operable by the applicant. The Unit 3 PASS must be functional prior to 5% power operation.

Only one Unit 3 chemistry technician was qualified to operate the PASS. PASS training and qualification must be completed prior to 5% power operation such that an adequate number of trained chemistry personnel are available to obtain and analyze post-accident samples within the limits specified by NUREG-0737. This item will be tracked as Open Item No. 87-01-01.

c. Emergency Facilities and Equipment

(1) Control Room and Satellite Technical Support Center

The Control Room and Satellite Technical Support Center (STSC) design, layout and capabilities are identical for Units 1, 2 and 3. Units 1 and 2 were evaluated during previous emergency preparedness preoperational inspections and discussed in separate reports (50-528/83-14 and 50-529/85-34). The inspector verified that the Unit 3 Control Room contained current copies of the emergency plan and its implementing procedures. Communications between units is available via telephone lines and two-way radios. The Emergency Notification System (ENS) phone has not yet been installed. The ENS, required by 10 CFR 50.72(a)(1), must be installed and operational by fuel load in order to make the notifications delineated in 50.72. This item will be tracked as Open Item No. 87-01-02.

Palo Verde Nuclear Generating Station (PVNGS) utilizes the STSC as an interim TSC. Notifications, dose projections, dispatching of field monitoring teams, and onsite communications are normally performed at this facility by shift personnel until the site TSC is activated. Plans, procedures and drawings are shared by the Control Room and STSC. The following telephone equipment was installed but not functional:

Radiological Assessment Line No. 3107  
 Environmental Assessment Line No. 3108  
 STSC Line No. 3120  
 Emergency Operations Director Line No. 3109  
 Technical Line No. 3106

This equipment, which is needed to support the STSC activities during an emergency, should be functional prior to fuel load. These items will be tracked as Open Item No. 87-01-03.

(2) Operations Support Center

The Operations Support Center (OSC) is located at the 140-foot level in the auxiliary building lunchroom. The size of the facility appears sufficient to support an efficient operation. The OSC location is convenient to the I&C, maintenance and electrical shops. The following telephone equipment was installed but not functional:

Maintenance Control Line (#3EQFNT3916)  
 OSC-EOF Line (#3EQFNT3917)  
 OSC-CR Line (#3EQFNT3918)  
 OSC-TSC Line (#3EQFNT3919)

This equipment should be functional prior to fuel load. These items will be tracked as Open Item No. 87-01-04.

(3) First Aid Facility

The location of the first aid facility is at the 140-foot level of the auxiliary building near the Access Control office. At the time of the inspection the facility was not equipped or set up. This facility should be equipped and functioning prior to fuel load. This item will be tracked as Open Item No. 87-01-05.

(4) Decontamination Facilities

The applicant's Unit 3 decontamination facilities were examined during the inspection. Two facilities are located near the Access Control office, identified as East and West, and another located outside the containment air lock at the 140-foot level. The West Decontamination Room was functional and stocked with supplies, however, the East Decontamination Room was serving as a storage room and not equipped to perform its functions. The East Decontamination Room (A-318) should be equipped and functioning prior to reaching five percent power level. The decontamination facility located outside the containment air lock (A-301) needs faucet handles for the decontamination sink. These items will be tracked as Open Item No. 87-01-06.

(5) Emergency Kits and Instrumentation

Emergency kits located in the STSC and OSC of Unit 3 were examined and inventories compared with that required by Procedure EP-38. In general the equipment compared favorably with the items in Procedure EP-38. All applicable equipment was properly calibrated, serviced and functional, however, there were several items missing from both STSC and OSC emergency kits. These included:

Calculators  
 First Aid kits  
 Noble Gas sample apparatus



These items had been previously identified by the applicant and are currently on order. Upon receipt, these items should be placed in the emergency kits. This will be tracked as Open Item No. 87-01-07.

(6) Emergency Alarm System

The applicant demonstrated the capability of the emergency alarm system of Unit 3 by sounding the assembly alarm and announcing over the public address system. The audible alarms, strobe lights and PA system all functioned satisfactorily.

d. Walk Through Observations

The inspectors reviewed the training and knowledge of 24 personnel assigned to key positions in the Unit 3 emergency response organization. These personnel were examined for their familiarity with general emergency preparedness program requirements and methods, and were asked specific questions relative to their function in the emergency organization. All displayed an adequate knowledge of their functions and responsibilities. The below comments for the Control Room crews are considered minor in nature.

(1) Control Room Crews

Of the four crews interviewed, two required a little prompting to produce all of the major responsibilities of the Emergency Coordinator. It was noted that Procedure EPIP-02, "Emergency Classification", (the procedure usually referenced by the Control Room crews) lists only some of those major responsibilities. They are, however, all listed in EP-5, "Emergency Coordinator".

Only one crew was aware of the 10 CFR 50.72(a)(3) requirement to notify the NRC immediately after notification of the appropriate State and local agencies and not later than one hour after declaration of an event. It was noted that Procedure EPIP-04, "Alert, Site Area and General Emergency Implementing Actions", states only that the NRC is to be notified within one hour after declaration of an event.

One scenario provided a general emergency condition with no release greater than technical specification limits. Two crews had difficulty making PARs with this scenario.

(2) Satellite Technical Support Center

Prior to activation of the regular TSC, the radiation protection technician assigned to the STSC is responsible for performing initial offsite dose projections, assisting in the determination of protective action recommendations, directing the activities of onsite and offsite field monitoring teams and evaluating the need to administer potassium iodide. Three radiation protection technicians, who would normally be



assigned to the position, walked-through their functions in the STSC. To more easily compare their performances, each technician was given the same scenario and identical data. The following are results of the walk-throughs:

- (a) Two of the three technicians failed to use EP-11 until prompted to do so. In response to a previous NRC finding, the applicant had modified EPIP-11 and added a simplified table to facilitate determination of PARs by the technicians (see Open Item 86-15-05 discussion in Section 2 of this report).
- (b) All of the participants had significant difficulty using the sector map provided in the STSC. Two technicians incorrectly identified the affected sectors. All had difficulty translating degrees to points of the compass.
- (c) In performing dose calculations the technicians were instructed to use the procedure for manual calculations and then perform the same calculations on the computer, using current real-time meteorological data for both. Observations were as follows:
  - (i) Using the manual procedures each technician calculated different projected doses. Noble gas projected doses ranged from 3.07 rem to 319 rem. Child thyroid projected doses ranged from 1.1 rem to 389 rem. The three technicians required 30 minutes, 2 hours and 20 minutes, and 60 minutes respectively to perform the manual calculations.
  - (ii) The noble gas and child thyroid projected doses calculated by the technicians using the computer varied over the ranges of 2.5 to 4.5 rem and 1.4 to 5,700 rem, respectively.

Based on the results of this performance, it is questionable whether there is an onshift capability to provide appropriate dose projections in a timely manner to support protective action recommendations. This situation is similar to that found during the May 1986 appraisal of the emergency response facilities for Units 1 and 2 (Inspection Report Nos. 50-528/86-15 and 50-529/86-15). The licensee's response to this finding will be tracked as Open Item No. 87-01-08.

## 5. Emergency Plan Implementing Procedures

Emergency Plan Implementing Procedures (EPIPs) applicable to the Unit 3 emergency organization were reviewed. The following comments result from this review:

### a. EPIP-02, "Emergency Classification"

1) The procedure fails to note certain key responsibilities of the Emergency Coordinator (NOTE: These responsibilities are listed in EP-5). These responsibilities include:

- a) responsible for initial classification
- b) notifications
- c) making PARs
- d) authority to approve exceeding the 10 CFR 20 guidelines

2) Table 5 of Appendix B to EPIP-02 (Revision 5) describes a turbine failure causing casing penetration as an "Unusual Event" while Appendix 1 to NUREG-0654 shows this condition as an "Alert".

b. EPIP-03, "Notification of Unusual Event Implementing Actions"

Appendix F, Section 1.11 does not clearly specify that the NRC is to be notified immediately after notification of State and local agencies and not later than one hour after the declaration of the event.

c. EPIP-04, Alert, Site Area and General Emergency Implementing Actions

- (1) Appendix F, Section 1.13 does not clearly specify that the NRC is to be notified immediately after notification of State and local agencies and not later than one hour after the declaration of the event.

Disposition of these items will be tracked as Open Item No. 87-01-09.

6. Exit Interview

The scope and findings of the inspection were discussed with the applicant's representatives at an exit interview conducted on January 9, 1987. The applicant's representatives attending this exit interview are denoted in Section 1 of this report. In addition to the other findings, the applicant was advised of the deficiency in the onshift dose assessment capabilities. It was noted that similar findings had been identified during the Emergency Response Facilities Appraisal conducted in May 1986. The applicant agreed to accelerate its schedule for completion of the corrective actions addressing this concern (see Section 2, Open Item No. 86-15-04 of this report). The applicant committed to completion of a revised and simplified manual dose calculation procedure, implementation and training by March 1, 1987. The applicant also committed to obtaining a commercial dose assessment computer system which satisfied the NRC's earlier concerns, with installation and training to be completed by June 30, 1987.