

Arizona Public Service Company

PALO VERDE NUCLEAR GENERATING STATION  
P.O. BOX 52034 • PHOENIX, ARIZONA 85072-2034

102-03309-JML/AKK/RJH

April 7, 1995

JAMES M. LEVINE  
VICE PRESIDENT  
NUCLEAR PRODUCTION

Mr. T. P. Gwynn  
Director, Division of Reactor Safety, Region IV  
U. S. Nuclear Regulatory Commission  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

References: Letter dated December 5, 1994, from T. P. Gwynn, Director, Division of Reactor Safety, NRC, to W. L. Stewart, Executive Vice President, Nuclear, APS

Letter dated March 2, 1995, from A. B. Beach, Director, Division of Reactor Projects, NRC, to W. L. Stewart, Executive Vice President, Nuclear, APS

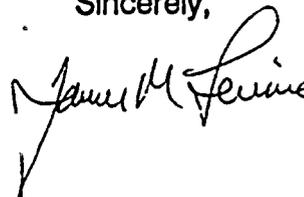
Dear Mr. Gwynn:

**Subject: Palo Verde Nuclear Generating Station (PVNGS)  
Units 1, 2, and 3  
Docket Nos. STN 50-528/529/530  
Response to NRC Inspection Report 50-528/529/530/94-21**

Arizona Public Service Company (APS) has reviewed NRC Inspection Report 50-528/529/520/94-21 dated December 5, 1994. Enclosure 1 provides a restatement of the NRC concerns. Enclosure 2 provides the APS response to the NRC concerns.

If you have any questions or need further information, please call Robert Nunez at (602) 393-6580.

Sincerely,



JML/AKK/RJH/pv

Enclosures

cc: J. L. Pellet                      K. E. Perkins  
T. O. McKernon                    K. E. Johnston

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**ENCLOSURE 1**

**RESTATEMENT OF NRC CONCERN**

**NRC INSPECTION CONDUCTED  
OCTOBER 11 THROUGH NOVEMBER 9, 1994**

**INSPECTION REPORT Nos.  
50-528/529/530/94-21**



### Restatement of NRC Concern

During the inspection, three of six initial license applicant crews examined did not initiate emergency boration when presented with a simulated anticipated transient without scram. This behavior is of special concern to the NRC because it reflects failure to perform properly the required emergency operating procedure immediate actions to control reactivity. Further, as documented in the report, informal training on procedure usage and operating philosophy contributed to the observed misperformance. This concern is exacerbated because similar performance was observed on the 1993 initial license examinations, as documented in Operator License Report 93-03. While this misperformance was not observed in the 1994 licensed operator requalification examinations, the NRC is concerned that adherence to the operator's emergency operations safety function flow charts and the importance of maintaining reactivity control through emergency boration, as well as other methods, may not be sufficiently stressed in your initial licensed operator training program.

### NRC Request for Response

The NRC requested that APS respond to the following items within 30 days of the receipt of the inspection report:

1. Describe why the misperformance observed in 1993 license examinations was substantially repeated again this year.
2. Describe what future actions will be taken to preclude recurrence.
3. Explain how PVNGS emergency operating procedures under development, including the implementing training program, will enhance completion of immediate action steps.

A Public Meeting was held on February 9, 1995, at the NRC Region IV Office, Arlington, Texas, to discuss the above concerns. Based on the discussions during this meeting, the NRC concluded that a response to Inspection Report 94-21 was not required. APS elected to provide a response to the subject inspection report to include the results of the discussion at the Public Meeting.



**ENCLOSURE 2**

**APS RESPONSE TO NRC CONCERNS**

**NRC INSPECTION CONDUCTED  
OCTOBER 11 THROUGH NOVEMBER 9, 1994**

**INSPECTION REPORT Nos.  
50-528/529/530/94-21**



## APS Response

1. Describe why the misperformance observed in 1993 license examinations was substantially repeated again this year.

The Reactivity Control concern identified by the NRC during the 1993 Initial Operator Licensing Exam was that alternative methods of shutting down the reactor were not examined and considered after the removal of power steps were exhausted (reference Operator Licensing Report 93-03 page 4, para 4). Palo Verde training materials have been upgraded based on concerns raised during the 1993 Initial Operator Licensing Exam process and used in the preparation of the operators for the 1994 Operator Licensing Exams. The upgrade included placing emphasis on the importance of sending area operators to open the Reactor Trip Switchgear (RTSG) breakers.

During the 1994 Initial Operator Licensing Exams, the operators did perform alternative methods of shutting down the reactor. These actions included dispatching an area operator to locally open the RTSG breakers. All six operating crews clearly demonstrated appropriate immediate actions to control reactivity. The first priority immediate action is to manually trip the reactor by pushing the four reactor trip push buttons in the control room, which all six crews did. The second priority action is to deenergize L-03 and L-10 load centers. While attempting to deenergize L-03 and L-10, all six crews also attempted to accomplish the third immediate action by sending an AO out to manually open the RTSG breakers. The operating crews, as evidenced by their efforts to deenergize L-03 and L-10 both from the control room and locally, were addressing the Safety Function Flow Chart (SFFC) block A-5, Reactivity Control. The fourth priority action is to emergency borate. All crews either emergency borated, or prepared to emergency borate.

The scenario involved a total loss of main feedwater and ATWS\* with the reactor at 40% power and Steam Generator dryout imminent. Based on these specific circumstances presented to the operators during the moments prior to dryout, the Control Room Supervisors' decision to utilize their resources to remove power from the RTSG was an appropriate response. In accordance with SFFC emergency procedure technical guidelines, boration is required to be performed when attempts to remove power from the RTSG have been exhausted. In accordance with CEN-152, boration is primarily utilized to ensure adequate shutdown margin if one or more control rods are not inserted. Training conducted with respect to procedure implementation was consistent with operating procedures and facility operating philosophy. This consistency was demonstrated by uniform crew actions taken to deenergize L-03 and L-10 up to and including opening the 13.8 Kv breakers. It is important to note that subsequent operator



actions in the pursuit of deenergizing L-03 and L-10, affected lower priority safety functions, which were not directly being addressed at that time.

These actions were directed to remove power from the Control Element Drive Mechanism Motor Generator sets. The operator actions addressed reactivity control in accordance with emergency procedure technical guidelines and operations philosophy.

\* This ATWS scenario involved not only a failure of the automatic Reactor Protection System (RPS) but a failure of the manual trip buttons to open the RTSG. In addition, one of the two required 480 V Load Center breakers, and two upstream 13.8 Kv breakers failed to open from the control room. The main turbine also failed to automatically or manually trip when required. The area operator was not able to locally open the RTSG breaker when directed.

APS also acknowledges that one operator action was inappropriate. Specifically, the action to de-energize the vital electrical buses was inappropriate and inconsistent with maintaining the safety function.

2. Describe what future actions will be taken to preclude recurrence.

The PVNGS Licensed Operator Initial Training (LOIT) program placed great emphasis on procedural compliance, safety function hierarchy, and concern for public health and safety. It was this emphasis that manifested itself in the operators efforts to successfully shut down the reactor as quickly as possible. The boration contingency, while vital to shutdown margin concerns and a facet of reactivity control, was identified as secondary to immediate shutdown due to the length of time required to shut down the reactor by boration.

APS recognized the need to streamline the EOPs and submitted an action plan to Region V NRC in October 1993 in response to NRC Inspection Report 93-33. This action plan provided a detailed schedule for revising the EOPs. The intent of the EOP rewrite was to simplify the EOP format to conform to CEN-152 guidelines and to improve useability of the EOPs. The rewrite process also focused on simplification of operator post trip initial recovery actions to assist operating crews in a more timely progression through SFFCs. This rewrite project is currently on schedule as committed in our previous response. APS believes that the action plan previously provided to the NRC, when implemented, will further enhance operator performance.



3. Explain how PVNGS emergency operating procedures under development, including the implementing training program, will enhance completion of immediate action steps.

The Emergency Operating Procedures (EOP) under development have Standard Post Trip Actions (SPTA) that incorporate the same steps as specified in generic CEN-152 guidelines. The Reactor Operator checks for the following conditions:

- a. Reactor power is dropping;
- b. A negative start-up rate; and
- c. That all full length CEAs are inserted.

Should these conditions not exist, the Reactor Operator will perform contingency actions that accomplish the following:

- a. If the Reactor is NOT tripped, THEN perform the following:
  - 1) Manually depress the reactor trip push-buttons;
  - 2) Open the Load Center supply breakers that feed the CEDM MGs; and
  - 3) Direct an AO to open the RTSG Breakers locally.
- b. If any full length CEA is not inserted, then emergency boration will start until the required Shutdown Margin is met.

If these actions are not successful, then go to the Functional Recovery Procedure.

This allows the completion of the ATWS actions and does not delay emergency boration initiation by extensive efforts to deenergize L-03 and L-10 from the control room.

EOP training materials will be revised to support training on the rewritten EOPs by May 1995, and the EOPs will be implemented by August 1995.



## **Conclusion**

For the reasons previously stated, APS does not agree that the weaknesses identified in the 1993 initial license examinations were repeated during the 1994 initial license examinations. APS believes that appropriate corrective actions were taken to address the NRC concerns identified in the 1993 examinations, and during the 1994 examinations, operating crews performed their duties in accordance with the changes implemented as a result of the 1993 examination concerns.

Based on the meeting held on February 9, 1995, APS believes the Region IV NRC has a better understanding of our EOP procedure philosophy and how future changes to our EOPs will enhance operating crew performance.

During the March 1995 Requalification/EOP Program Inspection, the NRC inspection team evaluated operating crew performance to implement SFFC requirements as a follow up to this issue. The inspection team concluded that the EOPs adequately addressed SFFC actions, and operating crews demonstrated appropriate performance.

