

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION  
GENERIC IMPLICATIONS OF SALEM ATWS EVENT  
GENERIC LETTER 83-28, ITEM 4.5.1  
ARIZONA PUBLIC SERVICE COMPANY, ET AL.  
PALO VERDE NUCLEAR GENERATING STATION, UNITS 1, 2 AND 3  
DOCKET NOS. STN 50-528, 50-529 AND 50-530

I. INTRODUCTION

On February 25, 1983, during startup of the Salem Unit 1 Nuclear Plant, both circuit breakers in the Reactor Trip System failed to open automatically upon receipt of a valid trip signal. As a result of that event, the NRC's Office of Inspection and Enforcement issued IE Bulletin 83-01 which described the event and requested specified prompt corrective and preventive actions by licensees. As the cause and ramifications of the event were more clearly developed, the NRC's Office of Nuclear Reactor Regulation issued on July 8, 1983, Generic Letter 83-28, "Required Actions Based on Generic Implications of Salem ATWS Events." This letter addressed issues related to reactor trip system reliability and general management capability. The letter was sent to all licensees of operating reactors, applicants for operating licenses and holders of construction permits.

One of the areas of reactor trip system reliability considered in Generic Letter 83-28 (GL 83-28), is that of system functional testing. This is identified in GL 83-28 as Item 4.5.1. This evaluation addresses the acceptability of the response to this item provided by Arizona Public Service Company, et al. (APS) for the Palo Verde Nuclear Generating Station, Units 1, 2 and 3 (PVNGS).

II. EVALUATION

Item 4.5.1. of GL 83-28 states "On-line functional testing of the reactor trip system, including independent testing of the diverse trip features, shall be performed on all plants.

"1. The diverse trip features to be tested include the breaker undervoltage and shunt trip features on ... CE Plants."

By letter dated November 3, 1983, APS responded to a number of GL 83-28 items, including Item 4.5.1.

Regarding Item 4.5.1, this letter stated testing of undervoltage and shunt trip features would be covered by station procedures in accordance with the requirements of the PVNGS Technical Specifications. APS added that the design of the system permitted and the applicable procedures would require that such testing be performed while the plant was on-line, and that the procedures should be approved by January 1, 1984.

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In reviewing this matter, the staff noted facility technical specification 4.3.1.1, Table 4.3-1, requires a functional test of the reactor trip breakers both monthly and every 18 months. However, although the specification requires independent testing of both the undervoltage and shunt trips "At least once per 18 months and following maintenance or adjustment of the reactor trip breakers...", there is no explicit requirement this be done while the plant is on-line. Therefore, because 18 months is a typical interval between refueling outages, it would be possible (within the wording of the technical specifications and if breaker maintenance was infrequent) for all independent testing of the redundant trip features to be performed when the plant was shutdown for refueling, i.e. not "on-line".

In addition to the 18 month test requirement, the other factor controlling the frequency of testing the diverse trip features is the performance of maintenance on the reactor trip breakers. This maintenance is the subject of Item 4.2.1 of Generic Letter 83-28. In Attachment 2 to the APS letter of April 19, 1985, APS addresses this item and commits to perform preventive maintenance on each reactor trip breaker each six months. APS also states in response to this item that a surveillance test will be performed following any maintenance on the reactor trip breakers, and that the surveillance will verify the independent trip functions of the undervoltage and shunt trip coils. Inasmuch as the six month maintenance interval will frequently occur while the plant is operating, we conclude independent testing of the undervoltage and shunt trip features will occur both when the plant is "on-line" and when it is shutdown.

Note: The acceptability of the six month test interval, as implicitly defined by the preventive maintenance program for the reactor trip breakers, is addressed by Item 4.5.3 of Generic Letter 83-28.

### III. CONCLUSION

Based on the surveillance requirements of facility technical specification 4.3.1.1, and the commitment by APS to perform preventive maintenance and post-maintenance surveillance on the reactor trip breakers at six month intervals, we conclude APS will acceptably perform for PVNGS, the actions requested by Item 4.5.1 of Generic Letter 83-28. Accordingly, this item is closed.

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