



**UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION IV
611 RYAN PLAZA DRIVE, SUITE 400
ARLINGTON, TEXAS 76011-4005**

November 3, 2003

MEMORANDUM TO: Nancy L. Salgado, Senior Resident Inspector

FROM: Arthur T. Howell III, Director, Division of Reactor Projects */RA/*

SUBJECT: CHARTER FOR THE NRC SPECIAL INSPECTION TEAM AT
PALO VERDE NUCLEAR GENERATING STATION (PVNGS) -
REVIEW OF LICENSEE ACTIONS RELATED TO THE JULY 28
GRID DISTURBANCE AND CONSEQUENT TRIP OF UNIT 3

In response to our initial evaluation of impact of the July 28 grid disturbance, a Special Inspection Team is being chartered. The inspection team is being dispatched to better understand the response of all three units to the grid disturbance. You are hereby designated as the Special Inspection Team leader.

A. Basis

On July 28, 2003, Unit 3 of the PVNGS tripped due to an offsite power perturbation caused by a maintenance error in a nearby electrical switchyard. On the basis of the offsite power configuration of the facility, all three units sensed the disturbance, but only Unit 3 tripped. Unit 3 reactor coolant pumps lost power during the transient, resulting in reduced reactor coolant system flow and the automatic reactor trip due to a low departure from nucleate boiling ratio. During restoration of forced flow, the licensee discovered that the third stage seal for Reactor Coolant Pump 2A was leaking. The grid disturbance also caused a loss of power and lock-out of instrument air compressors and normal chilled water chillers on Units 1, 2, and 3.

This significant operational event was evaluated for risk because: it potentially involved operations that did not meet the design basis as described in General Design Criteria 17; there are potential generic implications associated with the seal failure; there were potential unexpected system interactions in the form of loss of power and equipment lock-outs on all three units and anomalous turbine trip annunciation on Unit 1; and there may be design errors associated with the transmission system protective relaying.

The turbine trip/reactor trip that resulted from the loss of secondary power in Unit 3 on July 28, 2003, was an event of moderate risk significance. At the request of the NRC senior reactor analyst, the licensee evaluated the risk associated with this event and estimated the conditional core damage probability (CCDP) as $1.5E-5$. As such, in accordance with Management Directive 8.3, either a special inspection or an augmented inspection is warranted.

We reviewed the characteristics for considering the formation of an incident investigation team (IIT) or an augmented inspection team (AIT) found in Management Directive 8.3. Our initial review concluded that this event did not meet the criteria for consideration of an IIT or AIT response. Office of Nuclear Reactor Regulation management has agreed that an AIT is not warranted. We have determined that a special inspection in accordance with Inspection Procedure 93812 is appropriate.

B. Scope

Specifically, the team is expected to perform data gathering and fact-finding in order to address the following:

1. Develop a sequence of events related to the plant response to the July 28, 2003, grid disturbance.
2. Evaluate operator response to the trip. Specifically, evaluate human factor and procedural issues related to the measures necessary to restore power and return equipment to service, including the procedure to isolate control bleedoff when nuclear cooling water is lost to the reactor coolant pump seal packages. Confirm the adequacy of available staff and procedures.
3. Obtain the dominant cutsets from the Senior Reactor Analyst and evaluate the response and availability of risk significant mitigation equipment, including:
 - a. The availability of the auxiliary feedwater system
 - b. The adequacy of the protective relay schemes associated with the nonclass switchgear that deenergized during the trip
4. Evaluate the response of affected equipment. Develop a list of equipment that did not respond as designed, including:
 - a. The seal package for Unit 3 Reactor Coolant Pump 2A
 - b. The turbine trip annunciation on Unit 1
5. Evaluate the protective relay schemes related to the offsite power supplies to confirm compliance with General Design Criteria 17. Also review the adequacy of the protective relaying as it relates to preferentially tripping Unit 3, then Unit 2, then Unit 1 in response to grid disturbances.
6. Review the licensee's posttrip review and root cause evaluation determination for independence, completeness, and accuracy, including the risk analysis of the event.
7. For identified failures and degradations, review the extent of the condition, potential generic implications, and the corrective actions proposed by the licensee.

8. Review precursor events, if any, to assess the acceptability of the licensee's previous corrective actions.
9. If any new information is identified that would affect the risk analysis, provide it to the Senior Reactor Analyst.

C. Team Members

Nancy Salgado, Senior Resident Inspector (Team Leader)
Greg Warnick, Resident Inspector
Joseph Taylor, Reactor Inspector

D. Guidance

Inspection Procedure 93812, "Special Inspection," provides additional guidance to be used by the inspection team.

This memorandum designates you as the Special Inspection Team leader. Your duties will be as described in Inspection Procedure 93812. The team composition will consist of yourself; Gregory Warnick, Resident Inspector, Project Branch D, Division of Reactor Projects; and Joseph Taylor, Reactor Inspector, Engineering and Maintenance Branch, Division of Reactor Safety. During performance of the Special Inspection, the designated team members are separated from normal duties and report directly to you. You will continue to report to the Chief, Project Branch D and your normal duties will be performed by Jim Melfi, Resident Inspector, Project Branch D, Division of Reactor Projects.

The team is to emphasize fact-finding in its review of the circumstances surrounding the event. It is not the responsibility of the team to examine the regulatory process. Safety concerns identified that are not directly related to the event should be reported to the Region IV office for appropriate action.

The Team will report to the site, conduct an entrance meeting, and begin inspection on or before September 15, 2003. Related information that was gathered by the resident inspectors during initial followup of the grid disturbance and consequent Unit 3 trip will also be included in this inspection report as appropriate. Tentatively, the inspection should be completed by the close of business on September 19, 2003. A formal exit meeting will be scheduled following completion of the on-site inspection. A report documenting the results of the inspection will be issued within 30 days following the exit meeting. While the team is active, you will provide periodic status briefings to Region IV management.

This Charter may be modified should the team develop significant new information that warrants review. Should you have any questions concerning this Charter, contact me at (817) 860-8248.

Nancy L. Salgado

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ADAMS: ☒ Yes ☐ No Initials: _ljs_
☒ Publicly Available ☐ Non-Publicly Available ☐ Sensitive ☒ Non-Sensitive

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