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SUBJECT: Discusses preventive maint task restart requirement re
 failure to complete emergency lighting maint.

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EXECUTIVE VICE PRESIDENT
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102-01911-TRB/JJN
November 29, 1990

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
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- Reference: 1) Letter from W. F. Conway, Executive Vice President Nuclear, Arizona Public Service, to J. B. Martin, Regional Administrator, U. S. Nuclear Regulatory Commission, NRC, dated June 23, 1989.
- 2) Telephone conversation between J. N. Bailey, Vice President Nuclear Safety and Licensing, Arizona Public Service, and R. P. Zimmerman, Director, Division of Reactor Safety and Projects, Region V, U. S. Nuclear Regulatory Commission on August 16, 1990.

Dear Sir:

Subject: Palo Verde Nuclear Generating Station Unit 2,
Unit 2 Preventive Maintenance (PM) Task Restart Requirement
File: 90-053-419

This letter is submitted to provide the results of APS's investigation into the cause of not completing an emergency lighting PM prior to the submittal of Reference (1). This discrepancy was identified by APS on August 15, 1990 and discussed with the NRC in Reference (2).

The results of the investigation are discussed in the Attachment to this letter. Should you have any questions regarding this matter please contact me.

Very truly yours,

James M. Levine for WRC

TRB/JJN/dmn

Attachment

cc: J. B. Martin
D. H. Coe
A. H. Gutterman
A. C. Gehr

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ATTACHMENT

EVENT SUMMARY

On May 4, 1988 the annual preventive maintenance (PM) task on safe shutdown emergency lighting fixtures and battery bank for 2EQBN002 was commenced. Included in the PM task was an eight hour discharge test and 24 hour recharge of the battery bank. Approximately three and one half hours into the battery discharge test, an Electrician noticed intermittent illumination of the lights powered by the battery bank. The electrician observed that a relay was intermittently dropping out on a short circuit detector (SCD) board.

At the direction of the Electrical Foremen, the discharge test was suspended, the batteries were placed back on normal battery charger and a work request written to correct the problem. The recommended action described on the work request was to "Repair the SCD board and restart the PM". On May 8, 1988, a corrective maintenance work order (CMWO) package was developed to replace the defective SCD Board. The retest on the CMWO called for a functional test of the SCD Board but did not include steps to reperform the applicable portion of the PM task (perform eight hour discharge) which had identified the failed board. On May 12, 1988 the Unit Electrical Maintenance group replaced the defective SCD Board as directed in the CMWO package.

During the seven months following the suspension of the annual PM task and the rework of the SCD board, the monthly inspections required by the PM Program were satisfactorily performed with no exceptions noted. However, on January 6, 1989 during the monthly inspection of the safe shutdown emergency lighting, Electricians identified that battery 4B had failed the 30 minute open circuit voltage check portion of the monthly PM task. A work request was written with a recommended action to "Replace battery". On January 31, 1989, a CMWO package was developed to replace the battery cell found low during the performance of the monthly PM task. The retest was identified on the CMWO package cover sheet and the monthly PM task facsimile attached in the CMWO package. On February 15, 1989 the battery replacement and retest were completed.

On approximately March 2, 1989 the original annual PM task on safe shutdown emergency light fixtures and battery bank for 2EQBN002 (the same task that was suspended 10 months earlier) was re-evaluated for action. An Electrical Foreman reviewed the status of the PM work order (PMWO) for performance of the annual maintenance on Emergency Lighting 2EQBN002 and determined that the PM task was suspended during the performance of the eight hour discharge test. The foreman believed that a discharge test had been performed as part of the CMWO for the battery replacement during the previous month. The Electrical Foreman "NA'd" the steps in the PMWO which required the eight hour battery discharge and recharge test and directed the Electricians to perform the remainder of the PM task.

The electricians completed the remainder of the PM task and the PMWO was subsequently signed off as complete. Although the "acceptance criteria met" on the PMWO was checked "NO", the step was annotated with the CMWO# which replaced the batteries in February as the dispositioning document. On March 18, 1989 the PMWO was reviewed for closure. The review did not identify that the dispositioning document lacked steps for the performance of the eight hour discharge test. Based on this information in the PMWO, on March 23, 1989 the Station Management Information System (SIMS) database was updated to indicate that the annual PM task on the Safe Shutdown Emergency Lighting 2EQBN002 had been completed on March 2, 1989.

On July 6, 1989 the annual¹ PM Task of the safe shutdown emergency lighting 2EQBN002 was successfully completed.

CAUSE OF THE EVENT

The principle cause of the event was the planner's failure to incorporate the remaining steps from the annual PM task within the CMWO for reworking the SCD board (as specified in the work request) or in some other appropriate work document.

Contributing to the cause event was incorrect completion and approval of the PMWO. Both the electrical foreman and technical reviewer did not adequately review the CMWO for the battery replacement and assumed that the retest for the CMWO included the eight-hour discharge test. The electrical foreman marked the steps "N/A" (not applicable) in the PMWO for the eight hour discharge test and the technical reviewer signed off and approved the PMWO.

CORRECTIVE ACTIONS

The work planner was counseled regarding the necessity to properly disposition all problems or actions identified in the work request or by the originator. The foreman who marked the steps "N/A" for the eight hour discharge test was counseled on the importance of properly verifying appropriateness or applicability of referenced documents. The Technical Reviewer was no longer employed with APS when this event was discovered; therefore, no further individual corrective action was required.

This event and lessons learned were discussed at the unit, central, and nuclear construction, and standards interface meeting with the maintenance and work control managers. All maintenance and work control personnel will be briefed on this event and the lessons learned. This briefing is expected to be completed by December 31, 1990.

¹The annual PM task is now performed semiannually.

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12

Although not specific to the cause of this event, the following are actions that have been or will be taken. APS has focused significant management attention to the scheduling and completion of PM tasks. Detailed reports are being generated to ensure PMs are initiated and completed in a timely manner. The administrative controls for the PM program have been revised to require the Maintenance Manager's written acknowledgement of PMs exceeding the grace period and a report sent to the Plant Manager. Additionally, if a PM is to be waived, the Plant Manager's approval would be required.

APS procedures allow the PMWO to be closed based upon other documented actions (e.g., CMWO, Engineering Evaluations, etc.). However, APS will revise the administrative controls to specifically require the review of dispositioning documents to verify that the intent of the PM is satisfied. This revision is expected to be completed by January 31, 1991

2512