



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION I  
475 ALLENDALE ROAD  
KING OF PRUSSIA, PENNSYLVANIA 19406

ATTACHMENT 2

March 8, 1988

MEMORANDUM FOR: K. Highfill, Station Director  
FROM: C. Warren, Senior Resident Inspector - Pilgrim  
SUBJECT: NRC FOLLOWUP TO AIT INSPECTION 50-293/87-53

An NRC Augmented Inspection Team was dispatched to Pilgrim to evaluate a loss of offsite power event occurring on November 12, 1987. The results of this inspection are documented in inspection report 50-293/87-53. In order to coordinate and track NRC inspection followup we have collected pertinent report text, and grouped the findings into five appropriate areas. Description of the findings and corresponding open item numbers are attached. Item A.1 and E.2 have been designated as restart items.

Thank you for your time and attention to these matters.

Sincerely,

Clay C. Warren

Attachment  
cc:  
R. Blough  
J. Wiggins  
S. Collins  
W. Kane  
J. Durr

## ATTACHMENT

### A. Management Issues and Commitments (Unresolved Item 87-53-01):

1. During the inspection the licensee identified several actions they are considering taking to improve the stations ability to respond to future similar events. These actions included completing the installation of the third emergency diesel, installation of a backup instrument air compressor and installation of additional instruments to analyze switchyard transients. All of the foregoing equipment changes will be completed before reactor restart.

Reference: Report cover letter, Section 6.3. A written response describing the details of these actions was requested.

2. Overall management of the recovery effort was somewhat fragmented and unclear. Coordination and communication between groups would be substantially enhanced by well defined management guidelines for this type of event (i.e. one in which the formal emergency response organization is not mobilized).

Reference: Report Section 2.3, 5.3 and 5.4. A written response was requested.

3. Develop and implement procedural guidelines for administratively staffing the TSC to support the operating organization in situations where Emergency Plan activation is not appropriate.

Reference: Report section 5.3, 5.4 and 5.8.

### B. Operations (Unresolved Item 87-53-02):

1. The operators were not aware of the alarm indicating the reduced voltage on the 345 kV offsite power source prior to the loss of offsite power. They were also unaware of the alarm indicating the blown fuses in the analog trip system power supply. The failure to utilize these alarms should be reviewed and appropriate corrective actions developed.

Reference: Report sections 2.3, 4.1.1.2, 4.1.1.6, and 4.1.2.4. A written response was requested.

2. The plant configuration before the event and the equipment that was out of service for maintenance created operational situations that could have been more serious under other circumstances with substantial decay heat. Describe what considerations will be made in the future to assure that essential and non-essential equipment removed from service for outage maintenance do not create undue operational inflexibilities.

Reference: Report sections 2.3, 5.4 and 5.8. A written response was requested.

3. Re-evaluate emergency action levels regarding loss of onsite and offsite power for situations where fuel is loaded in the reactor vessel and RCS temperature is less than 212 degrees F.

Reference: Report sections 5.2 and 5.8.

4. Certain procedures governing degraded plant conditions (e.g., loss of power and loss of instrument air) may not be sufficient to clearly guide recovery actions from events of this nature. Also procedures for restoring offsite power should be reviewed against past operating experience, especially events caused by severe weather, and revised to reflect lessons learned and anticipated problems which may need resolution to optimize power recovery time.

Reference: Report section 4.3.3, 4.3.5, 5.8, 6.3 and 6.4.

5. Strengthen communications practices to assure clear understanding and directed actions.

Reference: Report section 5.4 and 5.8.

6. In reviewing procedure 2.4.25, Loss of Shutdown Cooling it was noted that the immediate operator actions provided no specific guidance on action required to restore shutdown cooling. Similarly, the subsequent operator actions did not specify any mitigating actions to be taken for conditions other than full buses A5 and A6 and FCIS logics available.

During the event, when the "B" Diesel Generator was out of service and panel Y-4 was without power, the licensee initiated a temporary modification scheme to provide power to the control circuit of the RHR suction outboard valve 47. Contingency procedures for the single failure of either onsite emergency power system train (i.e., loss of either Y-3 or Y-4) should be considered.

Reference: Report section 4.1.2.4 and 6.4.

#### C. Maintenance (Unresolved Item 87-53-03):

1. The inoperability of the "B" emergency diesel generator (EDG) during the event resulted from inadequate or incomplete maintenance procedures. The binding of the prelubrication pump and the leaking fuel injectors could have been prevented from interfering with the recovery operations if adequate procedures for repair and post maintenance testing were employed. Maintenance requests contain very brief descriptions of actual material conditions found (as-found) and few specific details of work performed, parts replaced and post work testing. More attention to detail in preparation, execution and disposition of safety-related maintenance requests should be evaluated.

Reference: Report section 2.3, 4.2.2.2 and 4.2.3. A written response was requested.

2. BECo should continue actions to reduce ingress of ground water to the process building and the consequential radiological burden.

Reference: Report sections 5.7 and 5.8.

3. The practice of having the main generator bus quick disconnect links installed during an outage should be reviewed relative to the recent event.

Reference: Report section 5.8.

4. Procedure 3.M.3-9 should be revised to reflect operational consideration for backfeeding with offnormal electrical system lineups.

Reference: Report sections 4.1.1.3.2 and 4.1.1.6.

5. On April 26, 1987 the "B" EDG lube oil temperature switch low (LOTSL) was replaced after failure (MR 87-61-33). The switch that failed was actually a lube oil temperature switch high (LOTSH) which had been installed in place of the LOTSL under MR 87-61-15 during some previous maintenance activity. It was not evident at the time of the inspection what controls were applied to MR 87-61-15 in substituting a LOTSH for a LOTSL. The evaluation of acceptability of this replacement is an issue to be followed up in future NRC inspections.

Reference: Report section 4.2.2.2.

6. The post repair testing of the current transformer did not consider the effect of the high voltage overstressing of the circuit components. The circuit should be properly tested to assure no latent faults are present.

Reference: Report sections 4.2.2.1 and 4.2.3.

D. Surveillance (Unresolved Item 87-53-04):

1. Develop procedures that describe and control testing activities on switch yard equipment and transformers.

Reference: Report sections 4.1.1.3.3 and 4.1.1.6.

2. Some emergency diesel generator instrumentation, although being read and recorded, was not being evaluated and trended for consistency. An assessment should be made of the surveillance readings being taken and a determination made regarding the readings that are necessary and useful. Further, responsibility for evaluating these readings should be assigned, e.g., output current on each phase is neither monitored, recorded nor trended. In addition, a review should be conducted to ascertain if all appropriate instrumentation is being monitored and recorded during the conduct of the EDG surveillance testing for determination of operability of the equipment.

Reference: Report sections 4.2.2.1 and 4.2.3.

E. Continuing Technical Evaluations (87-53-05):

1. The operation of the startup transformer differential lockout relay was apparently the result of a transient for which the protection was not designed. The transformer did not experience an internal fault and the operation of the lockout delayed the re-energization of the station from offsite power sources. The actual cause of the differential lockout needs to be conclusively established.

Reference: Report sections 2.3 and 4.1.1.6. A written response was requested.

2. The blown fuses in the analog trip system were the apparent result of a common cause. The cause of this condition should be identified and corrected or determined to be acceptable before the reactor is restarted.

Reference: Report sections 2.3 and 4.1.2.4. A written response was requested.

3. Additional investigation such as strainer and filter inspection would be appropriate to ensure that the foreign material that damaged the EDG prelube pump was not externally generated (i.e., from some other failed component). The licensee agreed to open both the lube oil strainers and the filter on "B" EDG at the next opportunity.

Reference: Report section 4.2.2.2.

4. The licensee's actions taken in response to IE Notice 87-28 will be reviewed separately as part of ongoing NRC inspection activities.

Reference: Report section 4.3.3 and 4.3.5.

5. The licensee's F&M No. 87-641 review, including determination of a requirement for root cause analysis and corrective action plan, was not yet complete at the end of the AIT inspection. The licensee's further actions regarding F&M No. 87-641 will be reviewed during a subsequent NRC inspection.

Reference: Report section 4.3.3.