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50-388 Susquehanna Steam Electric Station, Unit 2, Pennsylva 05000388
AUTH.NAME AUTHOR AFFILIATION
KEISER,H.W. Pennsylvania Power & Light Co.
RECIP.NAME RECIPIENT AFFILIATION
KANE,W.F. Region 1, Ofc of the Director

SUBJECT: Responds to NRC 880930 ltr re violations noted in Insp Repts 50-387/88-15 & 50-388/88-18.

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OCT 31 1988

Mr. William F. Kane, Director
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U.S. Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

SUSQUEHANNA STEAM ELECTRIC STATION
RESPONSE TO ENFORCEMENT ACTION 88-226 Docket Nos. 50-387
PLA-3105 FILE R41-1C, R41-2 and 50-388

Dear Mr. Kane:

This letter provides Pennsylvania Power & Light Company's response to Enforcement Action 88-226, dated September 30, 1988, which forwarded the Notice Of Violation for NRC Inspection Reports Nos. 50-387/88-15 and 50-388/88-18.

The notice required submittal of a written reply within thirty (30) days of the date of the letter. We trust that the commission will find the attached response acceptable.

Very truly yours,

H. W. Keiser

Attachment

cc: NRC Document Control Desk (original)
NRC Region I
Mr. F. I. Young, NRC Sr. Resident Inspector
Mr. M. C. Thadani, NRC Project Manager

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RESPONSE TO NOTICE OF VIOLATION

VIOLATION (387/88-15-01; 388/88-18-01)

Technical Specification 3.3.2 for both Susquehanna Units 1 and 2, Isolation Actuation Instrumentation, requires that the channels specified in Table 3.3.2-1 be operable and their trip setpoints be consistent with the values in Table 3.3.2-2. For the Main Steam Line Tunnel Delta-T instruments, Technical Specifications require a minimum of two channels in each of two trip systems be operable or the unit be placed in at least the Startup mode with the associated isolation valves closed within 6 hours or in at least Hot Shutdown within 12 hours and in Cold Shutdown within the next 24 hours.

Contrary to the above, between July 17, 1982 and August 4, 1988, while Unit 1 was at various times in modes 1, 2, or 3 and between March 23, 1984 and August 4, 1988, while Unit 2 was at various times in modes 1, 2, or 3, all four Main Steam Tunnel Delta-T modules for each unit were inoperable in that the modules were miswired on both units.

RESPONSE

(1) Reason for the Violation:

PP&L admits that between July 17, 1982 and July 27, 1988 while Unit 1 was at various times in modes 1, 2 or 3 and between March 23, 1984 and July 27, 1988 while Unit 2 was at various times in modes 1, 2 or 3; all four Main Steam Tunnel Delta-T modules for each unit were inoperable in that the sensors were mislocated on both units.

The temperature sensors for the Main Steam Line Tunnel Delta-T instruments were in reversed locations such that the "cold" or "low" sensor would have seen the hotter temperature during a steam line break in the tunnel area. Therefore the delta-T indication would have been negative and would not have caused the Tech Spec required trip. This mislocation occurred during initial installation. It occurred with all four Main Steam Line Tunnel Delta-T instruments on both Unit 1 and Unit 2. We believe the designer initially mislocated the sensors when the sensors were added to the ventilation drawings probably due to confusion over nomenclature on the GE design documents.

Our investigation indicates the sensor mislocation was not discovered in the startup program primarily because 1) testing was accomplished using a simulated process variable because of the impracticality of inducing an actual steam leak, 2) no normal expected values were provided for Main Steam Line Tunnel Delta-T to indicate non-leak readings were suspect; and 3) steam leak detection was treated as a subsystem without a dedicated system expert involved in the startup testing.

Our investigation indicates the sensor mislocation was delayed in being discovered during operation primarily because 1) surveillance testing is done using simulated process variables because of the impracticality of inducing an actual steam leak 2) no normal expected values were provided to cause the normal readings to be held suspect 3) no single leak detection system expert existed to recognize the problem.

The fact that this violation existed and was not discovered is tempered by the fact that the safety significance of the violation is small. During the period of violation Main Steam Tunnel High temperature isolation instrumentation was in place and operable to isolate the main steam system in the event of a small line break. This was discussed in detail at the September 9 Enforcement Conference and confirmed by the NRC in the Notice of Violation on September 30.

(2) Corrective Actions Which Have Been Taken And The Results Achieved:

a. On July 27, 1988, the Main Steam Line Tunnel Delta-T instrumentation was rewired on both Unit 1 and Unit 2 such that the "cold" and "hot" sensors were connected to the proper terminals of the instrumentation. The wiring was changed rather than relocating the sensors in order to expedite the return to operability of the instrumentation.

b. A Nuclear Department task team was established to investigate the issue and make recommendations to Senior Management. Initial actions of the team included identification of the root cause and the development of immediate corrective actions.

c. The other steam leak detection temperature sensors were inspected to verify proper positioning and normal indication. Additional mislocated sensors were found and these non-conforming conditions were documented and dispositioned.

d. Engineering responsibility for Steam Leak Detection has been assigned to the Nuclear Plant Engineering I&C-NSSS subgroup.

(3) Corrective Steps Which Will Be Taken To Avoid Further Violations:

a) The Nuclear Department task team established to investigate this issue will complete its investigation and make recommendations to Senior Management.

b) A design basis analysis will be completed to assure steam leak detection set points are correct. This analysis will be complete by the end of the first quarter of 1989 and revised setpoints will be available one month later.

c) A design review will be completed by November 30, 1988 to assess the location of leak detection temperature sensors in ducts.

d) Additional design information will be provided with regard to installation instructions for temperature sensors in rooms and ducts.

e) An evaluation will be performed to determine if delta-T instrumentation is needed as a safety feature. This issue will be pursued on a generic basis with the BWR Owners Group.

f) Information from Operator and I&C questionnaires relative to this event will be analyzed by December, 1988.

g) An analysis of plant subsystems versus causal factors identified in this event will be completed by November, 1988.

h) The Main Steam Line Tunnel Delta-T temperature sensors on Unit 2 will be relocated to be consistent with Unit 1 prior to the end of Unit 2 third refueling and inspection outage (presently expected to occur November 11, 1989).

i) The site engineering responsibilities for steam leak detection will be clearly assigned by January, 1989.

j) Normal values will be assigned for all steam leak detection system temperature based trip channels by the first quarter of 1989.

k) Recording actual readings during channel checks will be reevaluated by the end of the first quarter of 1989.

Results from the above investigations will be evaluated by upper management and appropriate actions will be implemented.

(4) Date When Full Compliance Will Be Achieved:

Based on (2)a above PP&L is in full compliance.