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EBNETER, S, D, Region 2 (Post 820201)

SUBJECT: Special rept: on 930610, SJAE SPING-4 monitor RAD-3-6417
out of svc for more than seven days due to failed detector.
Temporary moisture separator being installed, in area of
lower ambient temp which is expected to reduce moisture.

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JUN 24 1993

L-93-162
10 CFR §50.36

Stewart D. Ebnetter
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta St., N.W., Suite 2900
Atlanta, GA 30323

Mr. Stewart D. Ebnetter:

Re: Turkey Point Unit 3
Docket No. 50-250
Special Report - Steam Jet Air Ejector Radiation Monitor
(SPING) Out of Service Greater Than Seven Days

In accordance with Technical Specifications 3.3.3.3 and its associated action statement, the attached Special Report is submitted. The special report addresses the Steam Jet Air Ejector Radiation Monitor RAD-3-6417 being out of service for greater than seven days.

Should there be any questions on this information please contact us.

Very truly yours,

T.F. Plunkett by [Signature]
T. F. Plunkett
Vice President
Turkey Point Nuclear

TFP/CLM/cm

Attachment

cc: USNRC, Document Control Desk, Washington D.C.
Ross C. Butcher, Senior Resident Inspector, USNRC, Turkey
Point Plant

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SPECIAL REPORT

STEAM JET AIR EJECTOR (SJAE) RADIATION MONITOR OUT OF SERVICE

PURPOSE:

Technical Specification 3.3.3.3, Table 3.3-5, Instrument 19c, Condenser Air Ejectors, refers to Action Statement 34, which requires the submission of a Special Report to the NRC if the SJAE High Range Noble Gas Effluent Monitor is inoperable for greater than seven days. The Technical Specification requires the report to describe the actions taken, the cause of the inoperability, and the plans and schedule for restoring the system to operable status.

Background:

Florida Power and Light's (FPL) Turkey Point Nuclear Units 3 and 4 are equipped with steam jet air ejectors to remove condensable gases from the main condensers. The air ejector takes suction from the main condenser and discharges the removed gases directly to atmosphere. The condenser air ejector discharge is monitored for radioactivity, which would indicate leakage from the reactor coolant system into the secondary system (steam generator tube leakage). The originally installed monitor (tag number R-15) provides an annunciated alarm in the control room. To comply with NUREG 0737, FPL installed an additional monitor specifically to monitor the air ejector exhaust for particulates, iodine and noble gases (RAD-*-6417). These Eberline model SPING-4 monitors were installed in 1984.

The air ejector exhaust is a mixture of air, water, and corrosive (ammonia-based) byproducts of the volatile secondary chemistry control program. The SPING-4 monitor is sensitive to liquid water in the sample stream. Liquid water will damage the detectors, especially the particulate and iodine detectors, which use paper and charcoal filter elements to accumulate the nuclides of interest.

FPL has encountered difficulties with liquid water in the detectors. Refrigerant chillers were installed to cool the exhaust stream and remove the liquid condensate. While this corrective action stopped the water intrusion problem, the chillers rapidly deteriorated in the corrosive exhaust stream. As a result, they are no longer used. Self-regulating heat tracing was installed on the sample line, to evaporate any liquid water and reduce sample humidity so that condensation would not occur in the detector chambers. A gel-cell battery was substituted for the lead-acid

battery inside the electronics enclosure of the monitor, and the enclosure was then sealed. These additional modifications were aimed at eliminating corrosion of the electronics cards and card cage.

A root cause analysis led to three recommendations: (1) replace the self-regulating heat tracing on the sample line outside the monitor with thermostatically controlled heat tracing; (2) insulate the sample line inside the monitor enclosure, and insulate the sample line moisture separator (part of the original installation, but situated in an area with too high an ambient temperature); and (3) mount a thermostatically controlled strip heater on the detector block (approximately 1000 pounds of lead shielding around the detectors). These recommendations were developed based on information obtained while the plant was at a lower ambient temperature.

EVENT:

At 1425 on June 10, 1993, the Unit 3 SJAE SPING-4 monitor RAD-3-6417, was declared inoperable due to a failed detector. Concurrent with attempts to repair the monitor, personnel evaluating permanent solutions to this situation were brought together to determine why the problem had arisen again on Unit 3, why the problem had not manifested on Unit 4, and what temporary modification could be effected to restore the operability of the Unit 3 monitor. The team determined that water intrusion into the detector chamber was the cause of the failed detector, recommended heating the detector block, and developed a temporary procedure to do so (TP-993). The temporary procedure provided instructions to monitor the effectiveness of the modification to aid in determining whether the scope of PC/M 93-086 was appropriate.

CAUSE AND ACTIONS TAKEN:

Attempts to repair the monitor, evaluation of the problem, the determination of the best temporary modification, and the development of the temporary procedure took longer than seven days. Therefore, RAD-3-6417 was inoperable during that period. As required by Technical Specifications, Chemistry personnel implemented the alternative sampling method (grab samples) within 72 hours of the failure, and continue to sample the stream. No unsatisfactory results have been identified.

SCHEDULE FOR RESTORATION:

The temporary modification described above was not successful in eliminating the moisture intrusion into the detector chamber. A temporary moisture separator is being installed, in an area of lower ambient temperature, which is expected to reduce the moisture intrusion sufficiently to restore the monitor to operable status.

The condition of the radiation monitor will be watched closely and evaluated to ensure the effectiveness of the temporary moisture separator. If it performs satisfactorily, a Plant Change/Modification package is expected to be issued by July 16, 1993, for permanent modifications.