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SUBJECT: Special rept re plant vent stack exhaust high range noble gas effluent monitor inoperability.

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JUNE 20 1989

L-89-166

U. S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D. C. 20555

Gentlemen:

Re: Turkey Point Unit 4
Docket No. 50-251
Special Report - Plant Vent Stack
Exhaust High Range Noble Gas Monitor Inoperable

In accordance with Technical Specification 6.9.3, the attached Special Report is provided for your information.

Should there by any questions on this information, please contact us.

Very truly yours,

C. O. Woody
Acting Senior Vice President - Nuclear

COW/JRH/cm

Attachment

cc: Stewart D. Ebneter, Regional Administrator, Region II, USNRC
Senior Resident Inspector, USNRC, Turkey Point Plant

IE22
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SPECIAL REPORT
PLANT VENT STACK EXHAUST HIGH RANGE NOBLE GAS
MONITOR INOPERABLE

PURPOSE:

Technical Specification (TS) 3.5, Table 3.5-5, item 13.a. requires Florida Power & Light (FPL) to submit a special report to the commission pursuant to TS 6.9.3 within 30 days, if the Plant Vent Stack exhaust high range noble gas effluent monitor (SPING-4, Channel 9, RAD-6304) is inoperable for greater than seven days.

EVENT and ACTION TAKEN:

NUREG 0737 Table II.F.1-1 requires that the high range noble gas effluent monitors be capable of detecting and measuring concentrations of noble gas fission products following an accident. It also requires that the instrument shall perform the intended function in the environment to which they will be exposed during accidents.

FPL installed RAD-6304 to satisfy the requirements of NUREG 0737 for monitoring the Plant Vent Stack exhaust, and modified the TS to reflect the additional instrument. FPL letter L-85-176A, dated May 10, 1985, included RAD-6304 in the list of Regulatory Guide (RG) 1.97 instruments as a Type E, Category 2 instrument; however, no environmental qualification was required because the instrument was located in a "mild" environment. This list was later incorporated into the Turkey Point Updated Final Safety Analysis Report.

On April 29, 1986, the NRC issued IE INFORMATION NOTICE NO. 86-30: "DESIGN LIMITATIONS OF GASEOUS EFFLUENT MONITORING SYSTEMS." This notice alerted licensees to design limitations associated with the SPING-4 monitor. One of the design limitations mentioned was the vulnerability of the monitor to radiation damage from a total integrated dose of 1000 rads or greater. Therefore, a concern was expressed about the use of SPING-4 monitors as accident monitors to satisfy NUREG 0737 requirements, due to the possibility of their failure in the event of an accident.

On May 27, 1986, a engineering evaluation was initiated to evaluate the adequacy of the SPING-4 monitors installed at Turkey Point to determine their adequacy for NUREG 0737 requirements, and to correct any deficiencies identified. On August 10, 1987, engineering concluded that of the four SPING-4 monitors installed at Turkey Point, only the Plant Vent Stack Monitor (RAD-6304) was located in an area where it was susceptible to radiation damage in the event of a maximum hypothetical accident on Unit-4. The evaluation conservatively estimated the total dose to the radiation

vulnerable components for the full 30 day duration of the accident, although there are no regulatory requirements specifying the length of time the monitor must function. Due to the proximity of the Unit-4 Residual Heat Removal (RHR) piping, the monitor would not be expected to operate for the full 30 days. This evaluation also recommended the purchase of a special accident monitor, the Eberline AXM-1, to resolve this issue.

Subsequent detailed analysis revealed that the AXM-1 was not a suitable solution to this problem, and on May 12, 1988, engineering recommended conducting additional analysis, and moving the existing SPING-4 monitor to the roof of the auxiliary building.

In early 1989, engineering noted that RAD-6304 was in the Technical Specifications, and that an evaluation should be completed concerning the operability of RAD-6304. TS 1.4 states, in part, that a component shall be OPERABLE when it is capable of performing its specified function(s). RAD 6304 would probably not have been capable of performing its post accident monitoring function during several periods of various durations, between August 10, 1987, and September 20, 1988 (The start of the current refueling outage), due to the buildup of short-lived fission products while the plant was operated for extended periods at power. The short lived fission products are the major contributor to the postulated shine affecting RAD-6304. Therefore, the monitor should have been considered inoperable. At least five of these intervals exceeded the seven days allowed before a special report is required. No special reports were submitted at that time because the monitor was not recognized to be inoperable.

CAUSE OF THE INOPERABILITY:

The monitor was determined to be inoperable based on its inability to perform its intended function in the event of a maximum hypothetical accident on Unit-4. This was based on its inability to survive for the full 30 days due to the total integrated dose to the monitor exceeding 1000 rads. This dose was primarily due to radiation shine from the Unit-4 RHR piping (located near the monitor), during the recirculation phase of the accident mitigation.

SCHEDULE FOR RETURN OF EQUIPMENT:

On March 30, 1989, an engineering evaluation concluded that with Turkey Point Unit-4 shutdown since September 20, 1988, RAD-6304 is operable as long as Unit-4 remains shutdown, due to the decay of short-lived fission products, and the resultant reduction in shine to the monitor in the event of an accident.

Temporary Shielding has been installed. This will reduce the dose to the SPING-4 monitor sufficiently to allow it to perform its intended function.