James A. FitzPatrick Nuclear Power Plant P.O. Box 41 Lycoming, New York 13093 315 342-3840



Harry P. Salmon, Jr. Resident Manager

March 15, 1994 JAFP-94-0158

United States Nuclear Regulatory Commission Document Control Desk Mail Station P1-137 Washington, D.C. 20555

SUBJECT: DOCKET NO. 50-333 LICENSEE EVENT REPORT: LER-91-022-01:

Primary Containment Isolation System - Spurious Actuation

Dear Sir:

This updated report is submitted in accordance with 10 CFR 50.73(a)(2)(iv). The reason for providing this update is to ensure that the resolution to the spurious trips on the primary containment high range monitors reported in this and other LERs is consistent.

Questions concerning this report may be addressed to Mr. Eric Mulcahey at (315) 349-6324.

Very truly yours,

HARRY P. SALMON, JRA

HPS:EAM:tlc

Enclosure

cc: USNRC, Region I USNRC Resident Inspector INPO Records Center

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Update Report - Previous Date, November 13, 1991 EIIS Codes are in []

Description

The plant was operating at full power on October 15, 1991. At 0201, during the performance of the Off-Gas Line Isolation Logic System Functional Test (ST-10A) an up and downscale deflection of the primary containment high radiation monitor A [IL] tripped the primary containment [NH] vent and purge valves isolation logic circuitry [JE]. The valves were already closed due to normal operation line-up; therefore, no action occurred beyond the actuation of the logic circuitry. Redundant instrumentation confirmed that containment radiation levels were normal. Primary containment high range monitor A isolation was immediately reset and a work request was initiated for the Instrument and Controls Department to investigate the cause of the momentary activation.

Cause

At the time that the upscale and downscale transient occurred on the primary containment high range monitor A, a Control Room operator performing Surveillance Test (ST) ST-10A observed that the off-gas isolation valve logic circuit delay timer had completed its 15 minute interval cycle and timer appeared to be performing the reset operation.

The ST is performed by initiating isolation trips form two off-gas radiation monitors A and B. This isolation action is delayed for 15 minutes by a timing device. In order to inhibit the physical operation of the off-gas isolation valve, a lead is lifted from the isolating timer and a volt meter is inserted with connections from the timer contact terminal to the station ground. The location of the meter is normally in the rear of the cabinet. During this performance, in order to facilitate ease of observation a front sub-panel cover was removed and the meter placed in the opening. This resulted in the leads passing in the vicinity of the primary containment high range radiation monitor A physically located in the same panel.

After completion of the timing cycle, contacts are opened and the electrical presence of the voltage at the meter disappears and the timer is reset by the operation of an internal electrical solenoid being deenergized. At the time it was suspected but had not been proven that the reset operation of the timer introduced an electromagnetic pulse into the input of the primary containment high range monitor A due to proximity of the volt meter leads attachment to the timer. A test procedure was developed to explore the relationship between timer completion of the timing cycle and the activation of the monitor A.

NRC FORM 366A (5-92)

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After experiencing repeated actuation of the primary containment [NH] vent and purge isolation systems and also other ventilation systems by spurious (invalid) initiation of radiation monitors, a radiation monitoring specialist was contacted to perform a field investigation and analysis of the causes. To provide guidance and documentation of results, procedure IMP-T29A and B, 27RM 104A(B) Electrical Noise Testing was developed and implemented. This procedure was performed during the 1992 refueling outage.

The specialist started on December 9, 1991, with a preliminary inspection of the monitors environment, circuitry configuration, and interconnection relationships. The primary containment high range radiation monitor with a high number of random actuations were selected to be investigated first studying the sensitivity of the monitors to external (electrical and magnetic) noise. A possible pathway for the introduction of the noise into the input of the monitors had been identified from this preliminary investigation. In LER-91-030, it was described as a filtering network attached to the inputs of the high range radiation monitors which is believed to have been used for evaluations of Electromagnetic Interface (EMI) during monitoring installation field testing. In-depth analysis was performed to quantify the effect of the filter assembly on the monitors performance.

The filter was found to have a significant effect on EMI susceptibility. The assembly was poorly shielded and the assembly design was such that it would rectify (and the monitor would amplify) any EMI induced noise. This was verified by keying a hand-held radio to demonstrate the EMI susceptibility of the circuit with and without the filter in place.

Analysis

The activation of the primary containment vent and purge valves isolation logic is reportable under provisions of 10 CFR 50.73(a)(2)(iv) as an activation of an Engineered Safety Feature [JE]. There were no system or equipment failures. The isolation valves which received the close signal were already in the closed (isolated) radiation signal. there was no potential for adverse safety consequences generated by this event.

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