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Radford J. Converse
Resident Manager

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JAFF-92-0294

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

SUBJECT: DOCKET NO. 50-333
LICENSEE EVENT REPORT: 91-030-01
UNDOCUMENTED ASSEMBLY IN PRIMARY CONTAINMENT
HIGH RADIATION MONITOR

Dear Sir:

This report is submitted in accordance with 10 CFR
50.73(a)(2)(vii).

Questions concerning this report may be addressed to Mr. Mark
Abramski at (315) 349-6596.

Very truly yours,

A handwritten signature in cursive script, appearing to read 'Radford J. Converse', written over a horizontal line.

RADFORD J. CONVERSE

RJC:MA:llm

Enclosure

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

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LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED OMB NO. 3150-0104

EXPIRES 6/31/85

FACILITY NAME (1) JAMES A. FITZPATRICK NUCLEAR POWER PLANT	DOCKET NUMBER (2) 0 5 0 0 0 3 3 3 9 1	LER NUMBER (6)			PAGE (3)		
		YEAR	SEQUENTIAL NUMBER	REVISION NUMBER			
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TEXT (If more space is required, use additional NRC Form 366A's) (17)

UPDATE REPORT - PREVIOUS REPORT DATE, JANUARY 2, 1992

DESCRIPTION

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During the week of 12/9/91, the plant was in the cold shutdown condition. An evaluation was being performed to determine the reason for high electromagnetic interference (EMI) susceptibility in the primary containment high radiation containment monitors (HRCMs) [IL]. This evaluation was performed by plant engineering and technical staff with the assistance of a contractor technical specialist. The scope of this evaluation was to address both the HRCM application and installation.

During the conduct of this evaluation, an assembly was found in the HRCM signal input path that was not documented in plant drawings or technical manuals. Plant design, purchasing, installation and maintenance records were reviewed in an attempt to determine the origin and function of this assembly. No records have been identified to date that establish the intended application or date of procurement of the assembly. Initial installation records do indicate that EMI induced spurious actuations were a suspected problem during pre-operational testing, therefore, it is believed that these assemblies may have been installed at that time.

The original vendor (General Atomics) no longer supports the HRCM equipment, so the current vendor (Sorrento) was contacted in an attempt to determine the function of this assembly and its potential effect on the EMI susceptibility of the HRCM. The vendor indicated that a low pass filter had been used on occasion as a diagnostic aid to demonstrate the presence of EMI induced electrical noise. The vendor also indicated that this low pass filter is not intended to remain as part of a permanent installation as it may introduce a non-conservative error in radiation signal levels when the signal cable is exposed to high temperature conditions such as those that may exist during a LOCA. The reason for this is that the signal cable to shield resistance is reduced when the signal cable to shield dielectric temperature increases. The presence of the filter assembly in the signal path creates a voltage dividing circuit that decreases the detected signal level to the monitor due to the lowered signal cable to shield resistance.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

U.S. NUCLEAR REGULATORY COMMISSION

APPROVED ONE NO. 3150-0104

EXPIRES: 8/31/85

FACILITY NAME (1) JAMES A. FITZPATRICK NUCLEAR POWER PLANT	DOCKET NUMBER (2) 0 5 0 0 0 3 3 3	LER NUMBER (6)			PAGE (3)		
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CAUSE

Because these assemblies are not identified or referenced on controlled plant documentation, the root cause of this event is inadequate program implementation of 10CFR50, Appendix B requirements. Based on a review of available plant documentation, the most likely contributor to this was inadequate equipment status control and inadequate work control processes. At the time that these assemblies are believed to have been installed, the mechanism for tracking temporary equipment installation (jumpers) was inconsistently applied. The initial troubleshooting efforts were performed by contractor personnel who were likely not familiar with administrative controls applied to the use of jumpers and who, in the course of troubleshooting, apparently corrected the primary cause of intermittent actuations at that time and may have simply forgotten to remove the assemblies.

ANALYSIS

This event is reportable under the provisions of 10 CFR50.73(a) (2)(vii). This event is reportable because the presence of this assembly may render the HRCMs inoperable due to the introduction of non-conservative errors in the detected radiation level signals at the input to the HRCMs. This could lead to delays in isolating containment vent and purge isolation valves. This could also result in conflicting estimates of core damage between the method that uses the HRCMs to provide an estimate of core damage and the Post Accident Sampling system [1P] sample results.

A conservative calculation was performed to determine the effect of this assembly on the Primary Containment High Radiation Monitor during a Design Basis LOCA. This scenario induces the maximum error because the peak primary containment (NH) drywell temperature will result in an increase in signal leakage current due to a decrease in cable insulation resistance (IR effect). The lowered cable insulation resistance and the high radiation monitor input impedance (due to the undocumented assembly) create a voltage divider network which results in errors in detected radiation levels.

LICENSEE EVENT REPORT (LER) TEXT CONTINUATION

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The detailed analysis concluded that the effect of the undocumented assembly cannot be determined for actual radiation levels less than $1.0E4$ R/hr by conventional analysis techniques. The analysis determined the maximum non conservative error introduced to be 3.5% for actual radiation levels greater than $1.0E4$ R/hr. A qualitative analysis of the undocumented assembly determined that the assembly would have a significant adverse effect on EMI susceptibility because the assembly was poorly shielded and the assemblies design was such that it would rectify (and the detector would amplify) any EMI induced noise. This conclusion was verified by using a hand held radio to demonstrate the EMI susceptibility of the circuit with and without the assembly in place.

CORRECTIVE ACTION

Test results obtained following discovery of the undocumented filter assemblies have verified that the filter assemblies are not required for the proper operation of the HRCMs, therefore, the specific corrective actions to be implemented are as follows:

1. The signal cables will be shortened and rerouted to mitigate the undesired adverse effects of EMI prior to startup following the 1992 Refuel Outage. Scheduled due date: May 15, 1992.
2. The filter assemblies will be removed and the system restored to its design baseline configuration prior to startup from the 1992 Refuel Outage. Scheduled due date: May 15, 1992.

ADDITIONAL INFORMATION

LERs 91-001, 91-018, 91-022, 91-029 and 92-014 document Engineered Safety Feature actuations [JE] which were the result of the effects of EMI on the HRCMs.