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W3F1-97-0148
A4.05
PR

July 3, 1997

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

Subject: Waterford 3 SES
Docket No. 50-382
License No. NPF-38
Reporting of Special Report

Gentlemen:

Attached is Special Report (SR) 96-003-01 for Waterford Steam Electric Station Unit 3. This report is being submitted as a follow-up to SR 96-003-00 which was submitted on December 10, 1996, due to Channels 1A and 1B of the Valve and Loose Parts Monitoring System being inoperable for greater than 30 days. The purpose of this Special Report is to provide details as to the cause of the failure of Channels 1A and 1B.

Very truly yours,

T.R. Leonard
General Manager
Plant Operations

TRL/WDM/tjs
Attachment

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SPECIAL REPORT
SR-96-003-01

REPORTABLE OCCURRENCE

Technical Requirements Manual (TRM) Limiting Condition for Operation (LCO) 3.3.3.9, Loose-Part Detection Instrumentation, Action a states, "With one or more loose-part detection system channels inoperable for more than 30 days, prepare and submit a Special Report to the Commission pursuant to Specification 6.9.2 within the next 10 days outlining the cause of the malfunction and the plans for restoring the channel(s) to OPERABLE status." Special Report (SR) 96-003-00 was submitted on December 10, 1996, due to channel 1 (A and B) being inoperable greater than 30 days.

INITIAL CONDITIONS

At the time the initial event occurred, Waterford was operating in Operations Mode 1 at approximately 100% power. There was no major equipment out of service specific to this event and no Technical Specification (TS) LCO's were in effect specific to this event.

EVENT DESCRIPTION

In SR-96-003-00, Waterford 3 reported that the cause of a Valve and Loose Parts Monitoring System (VLPMS) inoperable condition was an apparent failure of the sensors on Channels 1A and 1B. The sensors are located on the lower portion of the reactor vessel where they are subjected to high radiation, temperature, and humidity levels. Possible problems with the sensors and cables had been discovered in 1995 during Refueling Outage number 7 (RF07) but Waterford 3 was unable to acquire replacement parts prior to the end of the outage. The sensors were satisfactorily tested and declared operable prior to the end of RF07.

During Waterford 3's present refueling outage, RF08, which began on April 11, 1997, the VLPMS sensors and cables were inspected for damage. As suspected, damage to the cables for sensors 1A and 1B was discovered. The sensor cable for channel 7B was also found damaged.

CAUSAL FACTORS

The apparent cause of the sensor failures is the harsh environment to which the sensors and cables were subjected. The cables for channels 1A, 1B, and 7B were found saturated with oil. One cable was damaged due to a severe bend and the high heat conditions.

CORRECTIVE MEASURES

- The sensors (accelerometers) were replaced for channels 1A, 1B, and 7B.

- New cables were prepared by adding a layer of fiberglass tape to the existing fiberglass insulation. High temperature heat shrink tubing was also applied on top of the fiberglass tape. High temperature epoxy was used to help secure the magnetic mounting assemblies which will minimize movement. Minimizing sensor movement will prevent the accumulation of debris between the sensor and reactor vessel which distorts the sensor response.

SAFETY SIGNIFICANCE

The VLPMS is provided to monitor the Reactor Coolant System (RCS) for loose parts in the reactor internals. The system consists of sixteen high-temperature sensor assemblies (eight in Train A and eight in Train B), independent preamplifiers with shielded enclosures, system mounting and wiring hardware, and one signal processing

and monitoring cabinet. Each detector module will monitor either channel A or B sensors via a toggle switch in the cabinet. Contact outputs which open on alarm for loose parts detected are provided as interface to the main plant annunciator.

With the channel 1 sensors inoperable, seven loose part detector channels and four core internals channels were available to detect loose parts in the RCS. Regulatory Guide 1.133, Loose-Part Detection Program for the Primary System of Light-Water-Cooled Reactors, states that if all channels of one or more collection regions are inoperable for more than 30 days, the reactor need not be shutdown, but a special report should be prepared and submitted to the Commission within the next 10 days outlining the cause of the malfunction and the plans for restoring the channel(s) to an operable status. In NRC letter ILN 95-0095 dated April 20, 1995, concerning issuance of Amendment 104 to the Waterford 3 TS, the commission stated that they believe this type of reporting requirement is adequately covered by other regulations under 10CFR50.72 and 10CFR50.73. The staff concluded that the loose-part monitoring system requirements are not required to obviate the possibility of an abnormal situation or event giving rise to an immediate threat to the public health and safety.

The repair work performed during RF08 to the damaged cables returned all sixteen sensor assemblies to service. The sensors were successfully tested in accordance with Instrumentation and Control procedure MI-005-430, "Calibration of Valve and Loose Parts Monitor."

This condition did not compromise the health and safety of the public.

SIMILAR EVENTS

None