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June 26, 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-97-002-00 for Waterford Steam Electric Station Unit 3. This report provides details of a radiation monitoring instrument having been inoperable for greater than 30 days. This condition is being reported pursuant to Technical Specification Limiting Condition for Operation 3.3.3.1.

Very truly yours,

T.R. Leonard
General Manager
Plant Operations

TRL/JWC/tjs
Attachment



cc: E.W. Merschoff (NRC Region IV), C.P. Patel (NRC-NRR),
A.L. Garibaldi, J.T. Wheelock - INPO Records Center,
J. Smith, N.S. Reynolds, NRC Resident Inspectors Office,
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SPECIAL REPORT (SR) 97-002-00

**RADIATION MONITORING INSTRUMENT
INOPERABLE GREATER THAN 30 DAYS**

Reportable Occurrence

Technical Specification (TS) Limiting Condition for Operation (LCO) 3.3.3.1 "RADIATION MONITORING INSTRUMENTATION" requires that with one or more radiation monitoring channels inoperable, take the ACTION shown in Table 3.3-6. The ACTION for Component Cooling Water (CCW) monitors A and B allows for continued operation for up to 30 days provided grab samples are taken once per 8 hours and these samples are analyzed for gross activity within 24 hours. The TS further states that if the monitor is not restored to OPERABLE status within 30 days after the failure, continue sampling and prepare and submit a Special Report pursuant to TS 6.9.2 within 14 days. This Special Report is being submitted due to CCW monitor 'B' being inoperable for greater than 30 days as of June 12, 1997.

Initial Conditions

At the time of the discovery, Waterford 3 was in Mode 6, Cold Shutdown, conducting Refueling Outage 8 activities. Technical Specification LCO 3.3.3.1 was entered May 13, 1997 due to CCW monitor 'B' having been isolated and declared inoperable.

Event Description

On May 13, 1997, Waterford 3 Engineering personnel identified a design discrepancy for the 'B' CCW train radiation monitor. The location of the tap for the cooling water to the sample heat exchanger is such that cooling water would be isolated by certain accident actuation signals. Furthermore, a pathway for cross-connection would exist after different actuation signals.

Waterford 3 design provides for two redundant trains of CCW for removing essential and non-essential heat loads from the plant. The two trains are separated by a header with two isolation valves, CC-200A and CC-200B. Each train has a radiation monitor designed to detect leakage during normal operation, anticipated operational occurrences, and certain accident conditions from those components that are cooled by CCW and contain radioactivity. During these conditions the two isolation valves are open, allowing cross flow between the trains. A surge tank with a compartment for each train is provided for level fluctuations and for pump head.

Upon a Safety Injection Actuation Signal (SIAS) in response to a loss of reactor coolant (LOCA) or main steam line break (MSLB) accident, the CC-200B valve closes to isolate the two trains while allowing continued cooling of some non-essential heat loads. Upon a Containment Spray Actuation Signal (CSAS) in conjunction with an SIAS, both CC-200A and CC-200B valves close to isolate the two trains and to shed all non-essential heat loads.

The limit for the monitors' sample temperature is 130 degrees F. The tap for the cooling water for the 'A' monitor sample heat exchanger is located outside CC-200A valve and is therefore neither isolated nor cross-connected with the 'B' train when either or both header isolation valves are closed. However, the tap for the 'B' monitor cooling water is between the two header isolation valves. This location provides the path for cross-connection from the 'A' train to the 'B' train when CC-200B closes with an SIAS only. It is also isolated from flow when both CC-200A and CC-200B close with a CSAS in conjunction with an SIAS.

When this limitation was discovered, Waterford 3 Operations personnel conservatively declared the 'B' monitor inoperable and isolated it to prevent any cross-connection potential. As required by TS 3.3.3.1, Table 3.3-6, ACTION 28, Chemistry personnel began taking grab samples of CCW once per 8 hours and analyzing them for gross activity within 24 hours.

Causal Factors

This design flaw has existed since the plant was built. It cannot be determined with certainty if there was a reason for this apparent oversight because of the lapse of time and personnel involved.

Corrective Measures

To restore CCW radiation monitor 'B' to operable status, design change DC-3537 has been approved to reroute the cooling water line from its current connection point between the CC-200A and CC-200B header valves to the 'B' train side of the CC-200B valve (similar to the current train 'A' configuration). Continuation of modification work related to DC-3537 after June 12, 1997 has resulted in radiation monitor 'B' remaining inoperable beyond 30 days, resulting in the requirement for this Special Report in accordance with TS 3.3.3.1, Table 3.3-6, ACTION 28.

Required grab samples from the CCW will continue to be taken by Chemistry personnel while testing and visual examination is completed in accordance with flow requirements. After completion of required testing, CCW radiation monitor 'B' will be returned to operable status.

Safety Significance

The CCW radiation monitors provide no safety function under accident conditions. The Waterford 3 Safety Analysis Report and the TS list them as process monitors. Their monitoring function is not taken credit for in post-LOCA/MSLB safety analyses nor do they directly control the release of radioactive material. Their isolation under these conditions is not significant.

The concern with cross-connection is the loss of cooling water from the 'A' train through the CC-200A header valve and the 'B' monitor sample cooling line to the 'B' train. A low water level in the CCW surge tank is indicative of a leak in the system and interlocks isolate the two CCW trains and line up the pumps for the healthy train. Therefore a cross-connection would result in isolation, which, as described above, is not significant under accident conditions.

While the monitors provide no safety function, their continued reliable operation under all conditions is desirable. Therefore the modification described above was implemented for this purpose.

Similar Events

A review of Waterford 3 Licensee Event Reports submitted since 1995 identified no similar instances where a design discrepancy could cause a cross-connection between trains and/or an isolation of a component.