

June 1, 2001

MEMORANDUM TO: Wayne D. Lanning, Director
Division of Reactor Safety

FROM: Michele G. Evans, Chief /RA/
Projects Branch 1
Division of Reactor Projects

THRU: Richard V. Crlenjak, Deputy Director /RA/
Division of Reactor Projects

SUBJECT: SPECIAL INSPECTION TEAM AT CALVERT CLIFFS

The Division of Reactor Projects requests that the Division of Reactor Safety conduct a special inspection, in accordance with Management Directive 8.3, to review the recent failure of the Calvert Cliffs Unit 1 No. 11 turbine-driven auxiliary feed water pump (AFWP). A special inspection is warranted based upon the potential generic implications of the pump failure mechanism and the risk significance of this specific AFWP failure. Initial response to this event was provided by the resident staff. We anticipate the licensee to have completed their formal root cause investigation of this event by middle to late June 2000. We expect that the timing of your staff's onsite review will be coordinated with the licensee through the resident office and site licensing manager (Pat Furio, 410-495-4374). We also understand that the Region I Senior Reactor Analyst (SRA) has already received some preliminary risk assessment information from the licensee's staff.

Background

The No. 11 turbine-driven AFWP was secured during surveillance testing on May 17, following identification of elevated temperatures on the turbine outboard bearing. The licensee's maintenance staff identified the cause of the temperature increase to be bearing casing sealant (Permatex) particles in the lubricating oil obstructing oil flow. A preliminary root cause determination concluded that the sealant was misapplied, causing the excess to enter the bearing lube oil sump. Licensee extent of condition review identified that the Nos. 12, 21, and 22 turbine-driven AFWPs were similarly vulnerable to sealant entrainment, but due to the limited time in service and actual run time on the turbines, the sealant had not embrittled and flaked-off into the lube oil sumps. All turbine-driven AFWPs were removed from service and the bearing upper casings removed, excess sealant removed, lube oil sumps cleaned and refilled, and new sealant properly applied with the assistance of a vendor representative.

Preliminary Risk Assessment

The risk significance of the No. 11 turbine-driven AFWP being inoperable, combined with the licensee established exposure time (98 days since the last quarterly surveillance run) results in preliminary conditional core damage probabilities of 5E-6 for internal events and 7E-5 for internal and external events combined.

Inspection Objectives

The inspection should be conducted using the guidance of Inspection Procedure 93812. Initial event follow-up and inspection of the licensee's preliminary root cause and corrective actions were conducted by the Senior Resident Inspector (Dave Beaulieu) using Inspection Procedure 71153, "Event Follow-up." The principle objectives of the special inspection are: to evaluate the licensee's detailed root cause assessment and corresponding corrective actions, (including extent of condition, potential common mode failure(s), past operability of affected pumps, and maintenance practices); evaluate the risk significance of the event and related inspection findings; and, identify any potentially generic technical or performance issues for NRC staff follow-up.

Early review by the licensee's staff of the potential impact on the Unit 1 Performance Indicators has identified that the Mitigating Systems Cornerstone - Heat Removal System Unavailability (Auxiliary Feed Water) performance indicator may exceed the White threshold (>2%) for the current quarter. We suggest that the inspectors conducting the special inspection also consult Inspection Procedures 95001 and 95002 for guidance.

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