LOUISIANA POWER & LIGHT / WATERFORD 3 SES • P.O. BOX B • KILLONA, LA 70066-0751

MIDDLE SOUTH UTILITIES SYSTEM

Ref: Regulatory Guide 1.133

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October 16, 1989

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

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

Attached is Special Report Number SR-89-002-00 for Waterford Steam Electric Station Unit 3. This Special Report is submitted per Regulatory Guide 1.133.

Very truly yours,

J.R. McGaha
Plant Manager - Nuclear

JRM/KTW:rk
Attachment

cc: Messrs. R.D. Martin
J.T. Wheelock - INPO Records Center
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IE22
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SPECIAL REPORT

SR-89-002-00

IN-CORE INSTRUMENTATION PRESSURE CAP DISCOVERED IN #1 STEAM GENERATOR

INTRODUCTION

At 0400 hours on September 30, 1989, Waterford Steam Electric Station Unit 3 was in cold shutdown when a video scan of the Steam Generator (SG) #1 tubesheet indicated the presence of a foreign object lodged in the tube opening at row 2, line 172. The foreign object was removed and positively identified as a movable in-core instrumentation (ICI) calibration tube pressure cap.

The ICI cap entered the Reactor Coolant System (RCS) during refueling activities in April, 1988. The missing pressure cap was identified by Westinghouse refueling personnel, but attempts to recover the cap were unsuccessful. Discussion with the refueling supervisor revealed that at the time, Westinghouse personnel felt confident that the cap had been flushed out of the reactor control element assembly upper guide structure (UGS) and into the deep end of the refueling canal. ICI removal and disposal operations were being conducted in the deep end of the refueling canal, making a visual verification impractical.

Because of the size of the cap (1.125 inches by 0.75 inches, 1.54 ounces) the Vibration and Loose Parts Monitoring System (VLPMS) did not detect the presence of the dust cap in the RCS.

The refueling team has examined their records and have determined that no other items were unaccounted for during the last refueling period. They have also been instructed to notify the Waterford 3 Refueling Director of any future occurrences relating to loose parts in the RCS. The presence of the pressure cap had no measurable effect on SG heat transfer capability. Because the cap caused no damage to the SG tubesheet and did not affect core thermal performance, this event did not threaten the health and safety of the general public or plant personnel.

NARRATIVE

At 0400 hours on September 30, 1989, Waterford Steam Electric Station Unit 3 was in cold shutdown when a video scan of the Steam Generator (SG) #1 tubesheet indicated the presence of a foreign object lodged in the tube opening at row 2, line 172. The foreign object was removed and positively identified as a movable in-core instrumentation (ICI) calibration tube pressure cap. This report is submitted pursuant to Regulatory Guide 1.133.

The ICI pressure cap entered the Reactor Coolant System (RCS) during refueling activities in April, 1988. Refueling logs indicate that on April 20, 1988, technicians attempted to recover two ICI pressure caps from the reactor vessel flange. One cap was recovered, but the other cap slid onto the control element assembly (CEA) upper guide structure (UGS). On May 9, 1988, technicians again attempted to retrieve the cap but it fell down onto the ICI lower plenum plate. Later that night the cap could not be located, leading personnel to the conclusion that the cap had been flushed out of the UGS and into the refueling canal. This conclusion was communicated to the Waterford 3 refueling director. Refueling activities concluded without further pursuit of the pressure cap. The plant has operated since May 1988 with no indication of a loose part in the RCS.

The Waterford 3 Vibration and Loose Part Monitoring System (VLPMS) conforms to the sensitivity requirements imposed by Regulatory Guide 1.133, Revision 1 (detection of metallic loose parts weighing as little as 0.25 lb with a kinetic energy of 0.5 ft-lb, within 3 ft of a sensor). Because the pressure cap is cylindrically shaped, measuring 1.125 inches in length and 0.75 inches outer diameter with a mass of approximately 1.54 ounces, it is reasonable to expect that the VLPMS would not have detected its presence in the RCS. Additionally, the physical dimensions of the cap are such that complete entry into a SG tube was prohibited as the inner diameter of a SG tube is a nominal 0.69 inches. At the time of discovery, the cap was wedged (less than finger tight) at the inlet to the hot leg side of the SG tube mentioned above.

The pressure cap was recovered in its entirety. The internal spring loading assembly was intact; therefore, there is no reason to believe that any cap internals or wear products were carried to the reactor fuel area. An inspection of the tubesheet area did not indicate any material defects. The presence of the cap partially inhibited flow into the SG tube, but even complete blockage of the tube would not significantly diminish the heat transfer characteristics of the SG. Refueling records have been examined and a determination made that no other items entered the RCS.

The root cause of this event is inadequate corrective action. Refueling personnel did not place sufficient emphasis on recovery efforts, which resulted in a presumption (the cap was flushed into the refueling canal) becoming the final assessment of the problem. Recovery efforts were not adequately planned and implemented, resulting in cursory attempts to extract the pressure cap from the system. Contributing to this was a lack of specific tracking of components, such as ICI pressure caps or dust caps, located within the refueling cavity or UGS area.

This event has been discussed with refueling personnel currently on-site for refuel three. Refueling personnel will immediately notify the Waterford 3 refueling director of any situation which may have resulted in the introduction of a loose part in the RCS or any other interrelated system, and a formal recovery plan will be instituted. In addition to the foreign material exclusion program ultilized to control entry of material into the refueling area, refueling procedures have been changed to specifically log and track ICI pressure caps and ICI dust caps.

Because core thermal performance was not affected and the presence of the pressure cap caused no identifiable material damage to the SG tubesheet or associated tube, this event did not threaten the health and safety of the general public or plant personnel.

PLANT CONTACT

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