

May 4, 1988

PRELIMINARY NOTIFICATION OF EVENT OR UNUSUAL OCCURRENCE -- PNO-IV-88-36

This preliminary notification constitutes EARLY notice of events of POSSIBLE safety or public interest significance. The information is as initially received without verification or evaluation, and is basically all that is known by the Region IV staff on this date.

FACILITY: Houston Lighting & Power Co.
South Texas Project Unit #1
DN: 50-498

Licensee Emergency Classification:
 Notification of Unusual Event
 Alert
 Site Area Emergency
 General Emergency
 Not Applicable

SUBJECT: SOUTH TEXAS PROJECT UNIT #1 MAINTENANCE OUTAGE

Houston Lighting and Power (HL&P) has begun a two to three week maintenance outage of South Texas Project (STP) Unit 1. STP Unit 1 has completed startup testing on the 30% power testing plateau. The outage will include testing and maintenance in the following areas.

Eddy Current Testing of Thimble Tubes

HL&P made a commitment to the NRC to conduct eddy current tests on instrument thimble tubes after 12 weeks of operation. Current testing is intended to fulfill this commitment. Thimble tube wear has been experienced previously on other nuclear reactors and the STP design includes a new flow limiter designed to limit wear. These thimble tubes allow neutron detectors to be inserted into the reactor core to provide a detailed map of core power. Flow induced vibrations are believed to cause thimble tube wear which could lead to leakage of reactor coolant into the containment sump. The purpose of the eddy current tests is to determine if significant wear is occurring at STP. Significant thimble tube wear has been recently identified in two reactors in Belgium which have flow limiters leading to a decision to remove the flow limiters from those reactors. These flow limiters are essentially the same design as those installed at STP.

Aluminum Bronze Corrosion

The licensee also plans to replace corroded aluminum bronze fittings and valves in the Essential Cooling Water (ECW) system.

In April, 1988, the plant operations found that several 1-inch and 2-inch welded sockets on valves and fittings in the ECW system (an aluminum-bronze piping system) had indications of small weeping leaks (ranging from no visible leakage to a worst case maximum of 8-10 ML per day). The leaks are randomly distributed in all three trains. The leaks were evidenced by discoloration (evaporative buildup), on the surface of the joints. The licensee established a problem investigation engineering team and has issued an investigation action plan.

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HL&P has reported preliminary results of Bechtel Metallurgical Laboratory analysis on two 1-inch sockets. Microsections of the aluminum bronze material revealed what is described as selective corrosion involving dealuminization of one phase of the bi-phase alloy used in castings for small bore socket joints. Selective corrosion has not been observed on the single phase aluminum bronze pipe. The bi-phase alloys were not expected to corrode in this manner; however, improper heat treatment of these fittings could lead to the observed corrosion. The bi-phase alloy normally consists of an alpha and beta phase. If the metal is not cooled quickly during heat treatment, then a gamma-2 phase alloy forms which is susceptible to corrosion.

Recent results indicate the average deterioration of wall thickness ranges from 15 percent to 88 percent. Evidence of through wall leaks were observed on 64 sockets. The corrosion has only been observed on 2-inch and 1-inch fittings. Larger pipe is not joined with socket welds. The licensee is identifying all applications of the suspect two-phase alloy in the system for evaluation.

Details of HL&P's repair program will be presented to the NRC prior to reactor startup.

Steam Generator Power Operated Relief Valve Repairs

HL&P recently learned that the PORVs had been assembled with incorrect components. The seals used in the actuators and the hydraulic pumps that operate the PORVs were made of material that is incompatible with the hydraulic oil used in that application. Replacement of these seals with the proper seals is in progress.

The licensee plans to issue a press release.

The state of Texas will be informed.

Region IV has informed EDO/NRR/PA.

This information has been confirmed with a licensee representative.

CONTACT: G. L. Constable (FTS 728-8151)

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