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FLORIDA POWER & LIGHT COMPANY

August 18, 1975

Mr. Benard C. Rusche, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Rusche:

UNUSUAL EVENT NOS. 250-75-2 AND 251-75-2
TURKEY POINT UNIT NOS. 3 AND 4
MALFUNCTION OF SPENT FUEL PIT COOLING PUMPS

A. DESCRIPTION OF EVENTS

During the past four months, the Unit 3 Spent Fuel Pit (SFP) Cooling Pump has malfunctioned twice and the Unit 4 SFP Cooling Pump has malfunctioned three times. The pumps are Ingersoll-Rand Type LP pumps which have a discharge flow rate of 2300 gpm and a discharge head of 125 feet at the design speed of 1780 rpm. A brief description of each event follows:

1. On April 12, 1975, the radial bearings seized on the Unit 4 pump. The pump was dismantled and found to have overheated radial bearings, an overheated and extensively damaged mechanical seal, and a sheared pump shaft. The pump was repaired and tested satisfactorily.

2. On April 29, the thrust bearings seized on the Unit 4 pump. The pump was dismantled and found to have overheated thrust bearings and a galled thrust bearing housing. The bearing and housing were replaced and the pump tested satisfactorily.

3. On May 17, the Unit 4 pump radial bearings seized again. The pump shaft was also broken at the threaded end. The pump was repaired and tested satisfactorily.

4. On July 3, the Unit 3 pump malfunctioned. The pump wad dismantled and the shaft was found to be broken at the keyway. The pump was repaired and tested satisfactorily.

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5. On July 27, the thrust bearings seized on the Unit 3 pump. The pump was dismantled and found to have overheated thrust bearings. The bearings were replaced and the pump tested satisfactorily.

B. APPARENT CAUSE AND ANALYSIS OF EVENT

The exact cause of the SFP Cooling Pump shaft and bearing failures has not been determined. However, it is suspected that they may have resulted from excessive internal stress created by pump cavitation.

The SFP cooling system is shown in FSAR figure 9.3-3. Valve number 820, located at the SFP heat exchanger outlet, is called the "system discharge line control valve". Operating personnel have verified that pump operation is very noisy, indicating cavitation, whenever this valve is more than 50% open. Therefore, we have conducted an evaluation of system performance to determine the optimum position of the system discharge line control valve. Evaluation results indicate that we can avoid cavitation and still provide cooling system flow to meet the current SFP heat transfer demand by administratively limiting the valve position to about 25% of fully open.

C. CORRECTIVE ACTION

For each event, the immediate corrective action was to implement Off-Normal Operating Procedure 3508.1, entitled "SFP COOLING SYSTEM, Failure of SFP Cooling Pump". This procedure provides instructions for cooling the spent fuel pool when the normal SFP Cooling Pump is inoperable.

Operators have been instructed to maintain the system discharge line control valve 25% open. Such action should preclude cavitation and reduce the probability of further SFP Cooling Pump failure.

In addition, we are proceeding with the engineering work necessary to procure and install a redundant cooling pump in each SFP cooling system.

Very truly yours,

A. D. Schmidt
Vice President
Power Resources

MAS/cpc
cc: Mr. Norman C. Moseley
Jack R. Newman, Esquire