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September 2, 1982

Mr. Darrell G. Eisenhut, Director
Division of Licensing
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555

Subject: Limerick Generating Station, Units 1 & 2
NUREG-0619 "BWR Feedwater Nozzle and
Control Rod Drive Return Line Nozzle Cracking"
Docket Nos. 50-352 and 50-353

Dear Mr. Eisenhut:

The following is a description of Philadelphia Electric Company's implementation of NUREG-0619 for Limerick Generating Station:

Part I - Feedwater Nozzles

1. Nozzle Design - The Limerick feedwater nozzles are unclad. These nozzles will be fitted with spargers of the GE triple sleeve design for initial operation.

2. System Modification.

   A. Feedwater system low flow controller.

   A low-flow control valve is provided on one of the three reactor feed pumps. The control valve is installed in parallel with the discharge valve and is provided with controls to more effectively control reactor level during startup, shutdown, and hot standby operations. The low flow controller is designed to meet the intent of the design criteria contained in NEDE-21821-A, section 3.4.4.3. However the controller does not strictly adhere to these characteristics and as indicated in NRC Generic Letter 81-11 an analysis will be performed to demonstrate that the crack growth rates are within acceptable limits.

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B. Routing of the reactor water cleanup system (RWCU). The RWCU return line is routed to both of the feedwater lines.

3. Opeating Procedures.

A. To the extent practical, reactor water cleanup flow will be directed to all feedwater nozzles during low flow conditions prior to turbine loading.

B. The Limerick heat cycle consists of three trains of six feedwater heaters having drains which cascade to the next lower pressure heater. Sufficient extraction steam pressure must be available to establish proper drain flow during unit startup. Normally, sufficient pressure does not exist until the turbine has been loaded to 10%. Therefore, it is our intent to place the feedwater heaters in service as soon as practical with the top heaters (sixth) valved into service at about 10% turbine load and the remaining heaters valved into service at about 20% turbine load.

C. A low-flow feedwater flow control system is provided on one of the three reactor feed pumps for each reactor unit as noted in 2A above. This system will facilitate control of reactor water level during unit startups such that pump on-off operations will be eliminated and feedwater temperature fluctuations will be minimized.

D. It is the intent of Philadelphia Electric Company to operate the Limerick units to minimize the amount of time during which highly subcooled feedwater is supplied to the reactor vessel.

4. Inspection.

The inside surface of each feedwater nozzle will have a liquid penetrant examination prior to the installation of the spargers. A baseline ultrasonic examination will be performed on each feedwater nozzle after installation of the spargers.

We will institute an inspection program as described in Table 2 of the NUREG for "Triple-sleeve spargers with two piston-ring seals, clad removed".

5. Leak Testing.

We currently have no plans to install an on-line leak detection system, however, we will apprise the Commission should we decide to install such a system.

Part II - Control Rod Drive Return Line (CRDRL)

1. The return line and the reactor pressure vessel nozzle have been eliminated from the design of the Limerick control rod drive system. Return flow to the vessel will be provided through the control rod drive cooling seals. It is not our intention to test the adequacy of the two pump return flow to the RPV. The use of the control rod drive system as an emergency makeup system was never a design requirement. The purpose of the control rod drive system is to maintain pressure in the CRD accumulators, drive the control rods and cool the drive mechanisms. Confirmatory tests will be performed to assure that these functions will be available. The system piping is capable of providing coolant to the RPV, in addition to meeting the system functional requirements, and tests of a comparable CRD system at our Peach Bottom 2 and 3 Units have shown that flows to the RPV by the CRD system can be increased by operator action to meet the makeup requirement.

2. The following is in response to items 8.1 (4) (a'), (b'), and (c'):

   A. Equalizing valves are included between the cooling water header and the normal drive movement exhaust header.

   B. The normal drive movement exhaust water header is a stainless steel line and, as such, flush ports are not required.

   C. The flow stabilizer loop is stainless steel and it is routed directly into the cooling water header.

3. Procedures for achieving maximum CRD flow to the reactor vessel will be developed as a part of our plant operating procedures.

System and component changes are reflected in the FSAR. We consider that the above information constitutes a complete response to NUREG-0619.

Sincerely,

John S. Kemper

cc: See attached service list

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