Jersey Central Power & Light Company

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November 22, 1972

Mr. A. Giambusso
Deputy Director for Reactor Projects
Directorate of Licensing
United States Atomic Energy Commission
Washington, D. C. 20545

Dear Mr. Giambusso:

Subject: Oyster Creek Station
Docket No. 50-219
Isolation Condenser System

The purpose of this letter is to advise you of failures associated with the isolation condensers at the Oyster Creek Station.

On November 11, 1972, a plant cooldown, following a reactor scram, was in progress with the main steam isolation valves closed. In order to control reactor pressure the "B" isolation condenser was initiated and then automatically isolated. The "A" isolation condenser was then initiated and used intermittently to control reactor temperature and pressure. The events which were of concern are as follows:

1. The "B" isolation condenser isolated upon actuation and the "A" did not.

2. When the "B" isolation condenser was returned to normal after the isolation, all valves operated properly except the AC condensate return valve (V-14-37) which did not open.

Investigation of the isolation condenser operation disclosed that the "B" condensate line break sensors read upscale as it should; however, the "A" condensate line break sensors read downscale. In addition, the "A" steam line break sensors read upscale as it should, but the "B" steam line break sensors read downscale. Physical tracing of all isolation condenser break sensing lines resulted in determining that in the case of the "A" condensate line break sensor and the "B" steam line break sensor, the low pressure line had been connected to the high pressure side of the dp cell and vice versa. Both these sets of sensing lines leave the drywell through the same penetration and have been connected improperly since construction of the plant.

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Upon entry into the drywell, investigation of the "B" isolation condenser AC condensate return valve limitorque operator disclosed the fact that the opening limit switch setting was such that the limit switch opened slightly before the opening torque switch closed thereby interrupting the motor power open circuit.

After consideration of the above observations by the Plant Operations Review Committee, the following action was taken:

1. The "A" condensate ΔP and "B" steam ΔP lines were repiped, at the sensors, to correct the reversal error. A calibration check and a surveillance test was then conducted on each sensor.

2. The "A" and "B" isolation condenser AC condensate return valve open limit switches were set to insure that they did not open before the torque switch closed. New torque switch settings were made as per the manufacturer's recommendations. A check was made of other safeguard system valves that are required to open to be operable. A total of three limit switch settings were re-adjusted to ensure valve opening. Subsequent actuation of each valve proved them to be operating properly.

3. A function test was made on each isolation condenser with the reactor at rated pressure and water level in the normal operating range. Recorder traces were taken of the differential pressure sensed by each line break ΔP sensor during condenser actuation. The time delay relays (originally set for five-second time delays) were reset based on this test to 30 and 35 seconds for the "A" and "B" condensers respectively. Since the closure time for the condensate return valves is less than 20 seconds, the 60-second valve closure time stated in the Technical Specifications is satisfied.

Following all the above adjustments each isolation condenser was again actuated with the reactor at rated pressure to ensure their proper operation.

The safety implications of the conditions existing prior to taking the above corrective action are as follows:

1. The failure of the AC condensate return valve for the "B" isolation condenser to reopen following an isolation is an operation problem in that the valve is not required to open to perform its intended safety function. The valve, when in service, is in the normally open position and closes upon receipt of a condenser isolation signal. The valve is not required to operate when the condenser is used as a heat sink. Had a true isolation signal been received, the valve would have closed as it did in this case, and would have remained closed. Therefore, the valve in the closed position was safe with regard to its isolation function.

2. The requirement for at least one of the isolation condensers to act as a means for heat removal is detailed in Amendment No. 67 to the FDSAR. As a result of the functional test of each unit, the conclusion was reached that the "B" condenser would not have been able to fulfill that function due to the duration of the transient flow spike as sensed by the condensate leg dp sensors. On the other hand, the "A" isolation condenser would not isolate due to the flow transient spike as sensed by the corresponding sensors for that loop since those sensors were piped up in reverse. From testing, it appeared that the transient steam leg dp signal is minimal. The short duration time delay notwithstanding, the "A" condenser would have been available to perform the function as specified in Amendment No. 67. The safety significance posed by the time delay feature being of too short a duration is that the isolation condenser system did not have its designed isolation signal redundancy. With regard to the instrument sensing lines being reversed, the "as built" configuration provided redundancy of sensors in terms of condensate sensors backing up the steam sensors and vice versa. This was not available for either condenser since the "A" condenser had only the steam line break dp sensors operable and the "B" condenser had only the condensate line break sensors operable. However, redundant steam or condensate sensors were available on the "A" and "B" condensers respectively so that failure of only one sensor would not have prevented the unit from isolating had the flow, as sensed by the operable instrumentation exceeded its

trip point. Further discussion as to the design setpoints for the rupture sensors and the significance of the isolation function is contained in Amendment No. 60 to the FDSAR.

We are enclosing forty copies of this report.

Very truly yours,

Donald A. Ross

Donald A. Ross
Manager, Nuclear Generating Stations

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Enclosures

cc: Mr. J. P. O'Reilly, Director
Directorate of Regulatory Operations, Region 1