

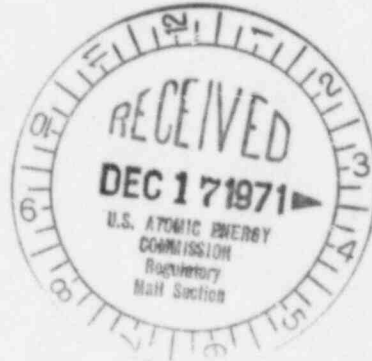
# Jersey Central Power & Light Company



MADISON AVENUE AT PUNCH BOWL ROAD • MORRISTOWN, N. J. 07960 • 535-6111

December 14, 1971

Dr. Peter A. Morris, Director  
Division of Reactor Licensing  
United States Atomic Energy Commission  
Washington, D. C. 20545



Dear Dr. Morris:

Subject: Oyster Creek Station  
Docket No. 50-219  
Failure of Isolation Condenser DC Motor  
Operated Condensate Return Valve, V-14-35

Following a reactor manual scram on November 16, 1971 as a result of a loss of the service and instrument air system and subsequent reactor isolation due to low main steam line pressure, Isolation Condenser NEO1B was manually initiated from the Control Room by opening the condensate return valve, V-14-35, thus removing decay heat from the reactor and initiating a plant cooldown. After the main steam isolation valves had been reopened and a normal cooldown path to the main condensers was established, the condensate return valve was returned to its normally closed position.

However, it later became obvious that a water leg was not being established and maintained in the condensate return line upstream of V-14-35, as was expected. Instead, water-hammer in the isolation condenser began to occur possibly as a result of the condensate leg flashing as reactor pressure was decreased. The two steam line valves and the remaining condensate return valve were shut to establish the water leg and eliminate the water-hammer.

On the following day the normal valve lineup for the condenser was reestablished but during a subsequent motor-operated valve surveillance test, V-14-35 failed to open. Several attempts were made to open the valve and on each occasion a DC System ground indication was observed. The isolation condenser was made inoperable at 10:00 p.m. on November 17, 1971.

Investigation into the failure revealed that the DC motor windings were burned apparently due to the presence of oil in the motor housing. The motor was immediately sent off the site to be rewound since no spare motor was on hand. The other DC valve motors on both isolation condenser systems were megged and found satisfactory. The end bells on

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JK-1/10  
RM-1/11  
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the three remaining DC motors were removed in an effort to determine if the oil seepage problem was common. Oil was found in two other housings which were drained and wiped out. Motor start and run currents on each of the DC valves were taken and found satisfactory. The AC valves in the drywell were inspected for any signs of oil leakage into the motor housings and were found to be satisfactory. The rebuilt motor was returned to the site and reinstalled; then, following an operability check on November 20, 1971, the condenser was returned to service.

The two isolation condensers are provided to remove decay heat from the reactor in the event that feedwater addition capability is lost and heat removal systems, which require AC power for operation, are not available. Each of the condensers is designed to remove decay heat based upon 1930 Mwt operation for times greater than five minutes after a scram. At the time of this failure, thermal power was less than the design figure by at least a factor of 100, thus the inability of this condenser to be initiated, either automatically or manually, would have presented no significant problem. Had the valve been in the open position, i.e. condenser in service and a steam line or condensate line rupture occurred, V-14-35 would not have operated but the other isolation valves in the system would have closed isolating the condenser.

To prevent further recurrence of motor failure on these valves, action has been taken to inspect the motor housing seals for signs of wear which might permit any accumulated oil from the grease lubricant used in the limit torque gear drive to seep into the housing along the shaft. During the inspection, any motors which are found to be contaminated with oil will be disassembled and thoroughly cleaned.

Specifications as to the type of lubricant being used on the gear drive will be checked with the manufacturer in an effort to eliminate the accumulation of the oil. In addition, each of the sealed motor housings are being drilled and tapped and outfitted with clear plastic hose nipples with end plugs. Any accumulation of oil and/or liquid can then be detected visually and early corrective action can be taken.

New housing seals are on order; and if oil is detected in the housings, they will be installed. In addition, a spare motor will be ordered to be used as an immediate replacement if required upon the failure of any of the DC motors.

During the foregoing incident, the reactor was maintained in a critical condition in the startup mode for approximately 17 hours after the condenser was made inoperable. This can be construed as a violation of Technical Specification 3.8.C which only provides for an out of service allowance of an isolation condenser when in the run mode, thus assuring system availability, including redundancy, prior to a startup to full power. At this time, however, a startup for power operation was

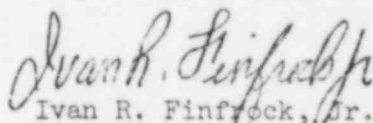
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not in progress or possible since maintenance work was in progress on the main steam isolation valves. At this time, the reactor was being maintained in a hot pressurized condition to permit scram testing of eight selected control rods at greater than 800 psig as required by the Technical Specifications. Immediately following the scram testing, all control rods were fully inserted, the reactor mode switch was placed in shutdown, and a plant cooldown was conducted.

We believe it is proper to require that both isolation condensers be operable prior to proceeding into a startup for power operation. However, we believe that some additional latitude in this specification is justified, particularly to permit the conduct of surveillance testing; and we will submit a proposed revision as soon as an appropriate basis is developed and reviewed and approved by our review bodies.

Twenty-five copies of this report are enclosed.

Very truly yours,



Ivan R. Finfrock, Jr.  
Manager, Nuclear Generating Stations

IRF/pk

cc: Mr. J. P. O'Reilly, Director  
Division of Compliance, Region I