GPU Nuclear

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August 4, 1983

Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
Division of Licensing
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Dear Mr. Crutchfield:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
SEP Topic No. V-11A, Requirement for Isolation of High- and Low-Pressure Systems

Part 50.55a to the Title 10 of Code of Federal Regulation, as implemented by Standard Review Plan Section 7.6 and Branch Technical Position-Instrumentation Control System Branch 3, requires that interlock systems important to safety be adequately designed to ensure their availability in the event of an accident. This includes those systems with direct interface with the reactor coolant system that have design pressure ratings lower than the reactor coolant system design pressure.

During the integrated assessment of the subject SEP topic, the NRC staff concluded that the reactor water cleanup (RWCU) system at Oyster Creek Nuclear Generating Station does not satisfy the current licensing requirement. The Final Integrated Plant Safety Assessment for Systematic Evaluation Program (NUREG-0822) published in January, 1983 states: "Isolation on the suction side of the RWCU system is provided by three motor-operated valves (MOVs), an inboard valve, a pump suction valve, and a pump bypass valve. Isolation on the discharge side is provided by an MOV and two check valves. All the MOVs have position indication in the control room. None of the MOVs will open if pressure in the low-pressure portions of the system is higher than its design pressure. All of the MOVs will close on high RWCU system temperature, low flow or high RWCU system pressure. The interlocks for these valves use the same sensors and relays. Because the interlocks for the isolation valves are not independent. the staff has determined that Oyster Creek does not comply with current licensing requirements." "Consequently, it is the staff's position that the licensee should perform an analysis to demonstrate that the relief capacity of the RWCU system is sufficient to maintain the RWCU system pressure within its design limits if the valve interlocks fail, the consequences of a subsequent stuck-open relief valve are acceptable, and the

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probability of the event is less than that for events analyzed in the Final Safety Analysis Report with comparable consequences (e.g., stuck-open safety-relief valve or LOCA)."

Our evaluation of the RWCU system indicates that the system would isolate by a diversity of trip signals, each having an independent sensor and relays. In addition, each valve has its own independent interlock-relay.

Isolation on the suction side of the RWCU system is provided by an a-c motor-operated isolation valve (V-16-1) inside the drywell and d-c motor-operated isolation valves (V-16-2 and V-16-14) outside the drywell. Isolation on the discharge side is provided by an a-c motor-operated valve (V-16-61) and check valves (V-16-33, V-16-48 and V-16-51) outside the drywell. A check valve (V-16-62) is installed on the discharge line inside the drywell.

The motor-operated isolation valves will close and the cleanup pumps will stop automatically under any of the following conditions:

a. Low-low reactor water level
b. High drywell pressure
c. Low flow through the cleanup filter in service
d. High temperature reactor water from nonregenerative heat exchanger
e. High pressure from the pressure reducing station
f. High temperature cooling water from auxiliary cleanup pump
g. Liquid poison system flow to the reactor pressure vessel

An exception to the above is valve V-16-61 which closes only on low-low reactor water level or high drywell pressure.

Each of the above signals has its own independent and mutually exclusive sensor and relay (per Drawing No. GE 237E566 Sheet 4). During normal operation, all relays are energized and the required isolation valves are in open positions. Any of the isolation signals will trip relays for the isolation valves. The contacts for these relays are installed in the control circuit of the individual isolation valve. It is seen, therefore, that there are three different and independent relays controlling the three MOVs independently, each of which can isolate the system. It is also important to note that a failure of any of these relays will isolate the system.

Our further evaluation indicates that a failure of a single sensor would still result in the isolation of the RWCU system due to the diversity of the sensors and relays. The worst case scenario, which is the failure of the pressure sensing function, was postulated to result in failure of the pressure control valve and the RWCU isolation valves to close. The analysis showed that this would result in a high nonregenerative heat exchanger temperature signal which would isolate the RWCU system. Any other sensor failure would result in less severe consequences which would still isolate the system by activating other isolation signals.

It is therefore concluded that the current design of the Oyster Creek RWCU system satisfies the NRC licensing requirements and no further analysis is considered necessary.

Very truly yours,

P. B. Fiedler
Vice President and Director
Oyster Creek

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cc: Administrator
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