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MEMORANDUM FOR: Carlyle Michelson, Director
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SUBJECT: WATER IN THE FUEL OIL TANK AT SURRY POWER STATION UNIT NO. 2

The purpose of this memorandum is to provide additional information to supplement the "quick look" evaluation performed by N. Trehan (memorandum from N. Trehan to C. Michelson, "Water in the Fuel Oil Tank at Surry Power Station Unit No. 2," April 6, 1982).

Background

In LER 81-033/03L-0 dated May 28, 1981, Surry reported that water from the fire suppression system was inadvertently added to the above ground diesel oil storage tank. Since this tank supplies diesel fuel to the underground, day and wall tanks for all diesel generators at the Surry site, the water represented a potential common mode failure for all the diesels.

Surry employs a fire suppression system, in addition to a weir, to protect against a fire in the above ground storage tank. The fire suppression system employs a foam suppressant which is mixed with water. The water flows from a fire hydrant through a manual valve in a 2½-inch pipe through a foam induction nozzle to a sparger inside the fuel tank. The operation of the system requires the manual connection of the foam cannister to the nozzle and opening the manual valve and fire hydrant.

This system was specified for the Surry plant by VEPCO as an additional fire protection measure which was not required by the NRC. It was identified in the fire protection plan pursuant to 10 CFR 50.48. This system design is not employed at VEPCO's North Anna plant or any other operating plants based on a sample survey.

The addition of water to the tank occurred when a hose was connected to the fire hydrant to test the reactor shield tank prior to its installation. Evidently the manual valve was open which provided a flow path to the diesel

fuel storage tank after the hydrant was opened. After the water had been added to the storage tank, the tank was isolated and fuel oil was drained until the sample showed negligible amounts of water. However, the sample was not taken from the lowest elevation of the tank which subsequently resulted in water accumulating in the underground and wall tanks.

Evaluation

The licensee has implemented a number of corrective measures to prevent recurrence of a similar event and ensure the quality of the diesel fuel stored in the above ground tank. These include:

1. Administrative controls to restrict use of fire hydrant to only fire protection.

2. Monthly surveillance procedure to test the diesel fuel oil above ground, underground, and day tanks for water. Additional surveillance testing is required if the fire hydrant has been opened.

3. The manual valve in the water supply piping is locked closed and tagged.

4. A drain line downstream of the foam induction nozzle is locked-open to indicate water leakage into the fire suppression system from the hydrant. A daily surveillance requirement on the drainline has been added to the operator's log to detect leakage. Corrective action has been specified when leakage is detected.

5. The surveillance procedure for the monthly test identifies the sample location by valve number corresponding to the lowest elevation in the tank.

Findings

The event was primarily the result of inadequate administrative controls on the fire suppression system. Corrective measures have been implemented by the licensee to minimize recurrence. Since the fire suppression system must be manually actuated, it does not appear that an inadvertent actuation is credible without personnel error. This event has been identified as part of a generic concern addressing inadvertent actuations of fire protection systems which will be the subject of a Power Reactor Events report. Since the fire suppression system design is believed unique to Surry, there does not appear to be any additional generic implications. No further AEOD action is anticipated.

/s/

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