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September 25, 1979

Director
Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

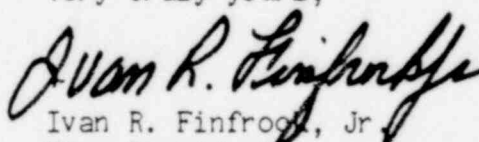
Dear Sir:

Subject: Oyster Creek Nuclear Generating Station
Docket No. 50-219
Grid Undervoltage Protection

By letter dated August 11, 1979, it was requested that JCP&L propose design modifications and changes in the Technical Specifications based on the guidance contained in the NRC staff positions enclosed in your letter of June 3, 1977.

We have reviewed the staff positions and developed a design modification to install the second level undervoltage protection system in order to mitigate the consequences of a sustained degraded grid voltage condition. Enclosure 1 presents a comparison of our modification proposal and the staff positions. The proposed second level undervoltage protection system is currently scheduled for installation during the upcoming refueling outage in January, 1980. Technical Specification changes for this system are currently being developed and will be submitted after the required review pursuant to Section 6 of our Technical Specifications.

Very truly yours,


Ivan R. Finfrock, Jr.
Vice President

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ENCLOSURE 1

DESIGN COMPARISON TO NRC POSITIONS

NRC POSITIONS

1. Second level of Under-or-Over Voltage Protection with a Time Delay.
 - a) The selection of voltage and time set points shall be determined from an analysis of the voltage requirements of the safety-related loads at all onsite system distribution levels.
 - b) The voltage protection shall include coincidence logic to preclude spurious trips of the offsite power source.
 - c) The time delay selected shall be based on the following conditions:
 - 1) The allowable time delay, including margin shall not exceed the maximum time delay that is assumed in the FSAR accident analysis.
 - 2) The time delay shall minimize the effect of short duration disturbances from reducing the availability of the offsite power source(s); and
 - 3) The allowable time duration of a degraded voltage condition shall not result in failure of safety systems or components.

JCP&L PROPOSED ACTIONS

1. Second level of Under-or-Over Voltage Protection with a Time Delay.
 - a) An analysis of the voltage requirements of the safety related loads at all onsite distribution levels was performed by Burns and Roe, Inc. As a result of this analysis, JCP&L will implement a voltage set point of 3666 volts with a time delay of 10 seconds.
 - b) JCP&L will implement a 2 out of 3 coincidence logic for tripping.
 - c) The time delay selected is based on the following conditions:
 - 1) The time delay selected, including margin does not exceed the maximum time delay that is assumed in the FSAR accident analysis.
 - 2) and 3) The time delay was selected such that short duration disturbances do not reduce the availability of the offsite power source, and such that subjecting the system to a degraded voltage condition for this allowable time duration does not result in the failure of safety systems or components.

The basis for selecting 10 seconds for the time delay is due to the following:

 - a) The largest motor start duration is 7 second
 - b) During degraded voltage conditions, the control power fuses in vital motor control centers will maintain their integrity for at least 18 seconds.

NRC POSITIONS

- d) The voltage monitor shall automatically initiate the disconnection of offsite power sources whenever the voltage set point and time delay limits have been exceeded.
 - e) The voltage monitors shall be designed to satisfy the requirements of IEEE-Std. 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations.
 - f) The Technical Specifications shall include limiting conditions for operation, surveillance requirements, trip set points with minimum and maximum limits, and allowable values for the second-level protection monitors.
2. Interaction of Onsite Power Sources with Load Shed Feature.
- a) We require that the current system designs automatically prevent load shedding of the emergency buses once the onsite sources are supplying power to all sequenced loads on the emergency buses. The design shall also include the capability of the load shedding feature to be automatically reinstated if the onsite source supply breakers are tripped. The automatic bypass and reinstatement feature shall be verified during the periodic testing identified in Position 3.

JCP&L PROPOSED ACTIONS

- d) The voltage monitors will automatically initiate the disconnection of the offsite power sources whenever the voltage set point and time delay limits have been exceeded.
 - e) The system design satisfies the requirements of IEEE-Std. 279-1971, "Criteria for Protection Systems for Nuclear Power Generating Stations.
 - f) Technical Specifications are being prepared to address the NRC position and will be submitted after the required reviews, as per the Technical Specifications, Section 6, are completed.
2. Interaction of Onsite Power Sources with Load Shed Feature.
- a) The second level of voltage protection will be blocked automatically when the emergency buses are being fed from the onsite source. The new voltage protection system will be reinstated automatically when the onsite source supply breakers are tripped.

NRC POSITIONS

3. Onsite Power Source Testing.

We require that the Technical Specifications include a test requirement to demonstrate the full functional operability and independence of the onsite power sources at least once per 18 months during shutdown. The Technical Specifications shall include a requirement for tests: 1) simulating loss of offsite power in conjunction with a safety injection actuation signal; and 2) simulating interruption and subsequent reconnection of onsite power sources to their respective buses. Proper operation shall be determined by:

- a) Verifying that on loss of offsite power the emergency buses have been de-energized and that the loads have been shed from the emergency buses in accordance with design requirements.
- b) Verifying that on loss of offsite power the diesel generators start from ambient condition on the autostart signal, the emergency buses are energized with permanently connected loads, the autoconnected emergency loads are energized through the load sequencer, and the system operates for five minutes while the generators are loaded with the emergency loads.
- c) Verifying that on interruption of the onsite sources the loads are shed from the emergency buses in accordance with design requirements and that subsequent loading of the onsite sources is through the load sequencer.

JCP&L PROPOSED ACTIONS

3. Onsite Power Source Testing

Testing procedures are being prepared and will be implemented upon approval and installation of the new voltage protection system. The testing requirements will be incorporated into the Technical Specifications which will be submitted at a later time.

4. Voltage Regulators

JCP&L plans to install voltage regulators on the primary side of both Start-up Transformers during its next refueling outage (scheduled for January 1980). These new voltage regulators will enable the distribution system to boost the incoming voltage to the Oyster Creek plant by up to a maximum of 10%. This will result in more acceptable voltage values for the onsite distribution network during degraded grid voltage conditions.