



UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON, D.C. 20545

March 9, 1970

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V.A.M.
THRU: V. A. Moore, Chief, Electrical Systems Branch, DRS

MINUTES OF MEETING WITH WESTINGHOUSE TO DISCUSS ELECTRICAL EQUIPMENT PROBLEMS APPLICABLE TO THE ROBINSON, POINT BEACH AND INDIAN POINT #2 PLANTS; FEBRUARY 27, 1970

During the reviews of recent applications for which Westinghouse is the nuclear steam supplier, we noted several items which are of continuing concern. The items which were discussed at the February meeting are:

1. Plant operation with less than four reactor coolant pumps in service (four loop plant) or less than three reactor coolant pumps in service (three loop plant).
 2. Ability of electrical equipment to perform their design functions during and following a seismic disturbance.
 3. Environmental testing of electrical equipment.
 4. Testability of engineered safety feature initiation and actuation circuitry.
 5. Inability of safety injection block switch to meet the single failure criterion.
 6. Scram bypass breaker interlock.
 7. Scram breaker test circuitry.
 8. Manual scram of bypass breakers.
 9. Loop stop valve interlock.
1. Plant operation with less than four reactor coolant pumps in service (four loop plant) or less than three reactor coolant pumps in service (three loop plant).

During the review of the Indian Point #2 and Robinson plants, we noted that Westinghouse considers operation with less than all pumps as an abnormal operating mode requiring the readjustment of certain protection set points. Westinghouse discussed

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the written procedure to be followed should it become necessary to remove a loop from service. These procedures require manual adjustment to more restrictive protection set points. We expressed concern as to the inability of the manual adjusting of set points to meet IEEE 279. Westinghouse stated that should we conclude that the adjustments must be made automatically as required by Section 4.5 of IEEE 279, they would study all anticipated transients to show that the DNBR will not go below 1.30 even though the adjustments are improperly made.

2. Ability of electrical equipment to perform their design functions during and following a seismic disturbance.

Westinghouse has recently submitted a topical report, WCAP-7397-L, "Seismic Testing of Electrical and Control Equipment." We questioned Westinghouse as to whether they planned to test all other equipment which must remain operable (e.g., switchgear, motor control centers and fan coolers). Westinghouse stated that they would review this problem as to what additional testing might be in order.

3. Environmental testing of electrical equipment.

During the review of the Robinson, Point Beach and Indian Point #2 plants, we noted that the information concerning environmental testing of electrical equipment was inadequate for each application. We further noted that if we took the information from all three applications, a complete story was obtainable. We requested Westinghouse to assist us in obtaining the proper information possibly in the form of a topical report or by having the information submitted complete with each application.

4. Testability of engineered safety feature initiation and actuation circuitry.

Westinghouse has not been responsive to the concern of the regulatory staff and the ACRS with regard to the testability of the engineered safety feature initiation and actuation circuits. We interpret IEEE 279 to require for the engineered safety features the same high degree of on-line testability required for the reactor trip system. The present Westinghouse position for plants at the POL stage is that they are preparing a detailed test procedure for testing the final actuation devices and will submit the procedure for our review. They have provided no information concerning construction permit applications.

5. Inability of the safety injection block switch to meet the single failure criterion.

The safety injection block switch allows the system to be cooled down without actuating the safety injection system. The circuit meets the requirements of IEEE 279 in all respects except that a failure of the block switch could defeat portions of the safety injection system. Westinghouse has agreed to modify the circuit slightly for the three plants under review by the addition of a light which would monitor the switch operation. They have agreed for future plants to review the circuit in greater detail in order to determine what changes should be made.

6. Scram bypass breaker interlock.

We expressed concern during the Ginna review as to the possibility of operating the two scram bypass breakers improperly. We are of the opinion that Ginna eliminated one of the two breakers.

Westinghouse has stated that for the three plants under review they will provide an interlock which will prevent closure of both breakers simultaneously. We consider this solution acceptable. We expressed concern to Westinghouse, however, that bypass breaker position indication is not provided in the control room. Westinghouse agreed to consider providing this indication.

7. Scram breaker test circuitry.

Indian Point #2 has provided individual switches at the scram breaker test panels for tripping and resetting the two main scram breakers during test. The Point Beach and Robinson plants do not have these switches. The tripping for these two plants is accomplished by use of the reactor trip relays. The resetting is accomplished by use of the main reactor trip reset switch. This switch, however, provides a contact in the rod control system which resets the demand rod position indication and the rod control logic to zero. Westinghouse has agreed to review this problem.

8. Absence of manual scram to bypass breakers.

During the Point Beach and Robinson reviews, we noted that the manual scram circuitry did not provide a signal to trip the bypass breakers. Should the bypass breakers be racked in during testing, it should be possible to trip the breakers with the manual scram switch if required. Indian Point 2 presently has

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this manual trip capability. Westinghouse agreed to make the necessary changes for the other two plants.

9. Loop stop valve interlock (This problem applies to Zion, Beaver Valley and VEPCO and not to the three subject plants).

Westinghouse has provided a loop stop valve interlock for those plants with loop stop valves to protect against the cold slug accident. A preliminary review of the interlock concept has disclosed that while the circuitry appears to meet IEEE, there is at least one set of initial conditions for which a single failure will invalidate the circuit. This condition is as follows:

- a. Pump off
- b. Cold leg valve open
- c. Hot leg valve closed.

A single failure will allow the hot leg valve to be opened (spurious indication of cold leg valve closure). With both valves open, the pump can be started, injecting the cold slug. Westinghouse stated that the safety injection system would be initiated under these circumstances, thus scrambling the reactor. We noted that no analysis has been received.

ESB-3
DRS:ESB:ODP

Enclosure:
Attendees

cc w/encl:
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Attendees

Ola D. Parr
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PWR Projects Branch #3
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March 9, 1970

MEETING WITH WESTINGHOUSE

FEBRUARY 27, 1970

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FEB 20 1970

R. S. Boyd, Assistant Director for Reactor Projects
Division of Reactor Licensing (2)

QUALITY CONTROL INSPECTION OF THE CONSOLIDATED EDISON COMPANY
(INDIAN POINT 2 REACTOR) - DOCKET NO. 50-247

The enclosed report of a quality control inspection of the Indian Point 2 facility is forwarded for information and for possible action. This inspection supplements our normal inspection activities and relates to a special review of four safety oriented reactor systems.

The results of the audit, with the exception of the electrical area, were favorable even though a number of deficiencies were identified in mechanical systems. The licensee plans to resolve a majority of these deficiencies with DRL by making appropriate changes to the FSAR.

With respect to the electrical area, significant concerns were identified. These include inadequate control of the electrical installation and several items that relate to design adequacy. The questions relating to design adequacy are the possible action items. As you know, a DRL staff member assisted Compliance in this inspection effort. It is our understanding that action on the design problems has already been initiated by DRL. We plan no further action with the licensee concerning the design problems; however, if you desire further information, please let me know at your earliest convenience.

The licensee has initiated action to correct the electrical installation and mechanical deficiencies that were detected. As a minimum, additional effort will be required by the licensee to verify that proper separations have been effected for engineered safeguards systems circuits.

A Compliance meeting was held with senior management personnel of the Consolidated Edison Company on February 10, 1970. The results of this meeting will be discussed in a separate inspection report.

J. P. O'Reilly, Chief
Reactor Inspection and
Enforcement Branch
Division of Compliance

*50-247
Inspection*

Enclosure:
CO Rpt No. 247/69-12 - *attached*

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