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THRU: Voss A. Moore, Chief, Electrical Systems Branch, DRS

INDIAN POINT UNIT NO. 3, INSTRUMENTATION AND POWER MEETING:
DOCKET NO. 50-286

On March 9, 1971 we met with representatives of Consolidated Edison, at their request, to discuss potential problem areas in the Indian Point Unit No. 3 instrumentation and emergency power systems. Most of these problem areas were identified during the recent review of Unit No. 2.

In attendance were:

Westinghouse
R. Cooney
H. F. Clark, Jr.
R. A. Wiesemann
J. L. Grover
H. N. Skow
W. E. Kosten
T. R. Puryear
P. J. Walker
A. W. Hauge

Con Ed
P. Szabados
R. Remshaw
W. Mezzabarba
J. Grob
J. A. Prestere
R. A. Saya

DRL
C. Hale
O. Parr
R. Lee

UE&C
D. H. Rhoads
W. P. Robinson

DRS
D. Sullivan



Memo

One serious problem area was identified and is discussed in (1) below.

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The following topics were discussed:

1. Separation of Redundant Cables in the Cable Tunnels

   Cables are brought back from the penetration areas via two cable tunnels for a distance of some 160 feet. At Unit No. 2 there is only one tunnel, and its occupancy by redundant cables was identified as a problem area.

   As stated, Unit No. 3 has two tunnels. Incredibly, they have run redundant cables from the ESF initiating circuitry in both tunnels. Thus, they are twice as vulnerable to the adverse effects of tunnel fires as is Unit No. 2.

   Obviously, each tunnel should carry the cables for only one initiating train.

   We identified this matter as a serious problem area.

2. Separation of Redundant Wiring in the Control Room

   Wiring is being brought into the control room through conduits in the floor which are respectively assigned to carry only one of the various logic trains. Within the cabinets, the redundant wiring is kept separate in both the vertical and horizontal directions.

   It appears that their design approach is sound; however, we will reserve final judgment until we have seen the installation during the forthcoming site visit.

3. Separation Criteria for Cable Trays

   The applicant's criteria for the separation of cable trays are:
   (a) 3 feet vertical (minimum) and one foot horizontal (minimum), or
   (b) suitable barriers where this is not possible.

   An exception to these criteria permits certain redundant circuits inside containment to be run in the same tray separated by a barrier within the tray. Such a design would be acceptable for a 2/4 logic array, but could cause us problems if the logic is 2/3. They did not know if any 2/3 systems were involved.

We expressed our concern and will continue to pursue this matter with the applicant.

4. Cable Tray Identification

All protection system cable trays will be identified down to the channel level by a color-coding scheme.

5. Separation of Wiring at the Sequencing Switches

The controls for manually transferring from the injection to the recirculation mode have been simplified such that the transfer can now be accomplished by operating only eight switches. Each switch necessarily connects to redundant wiring.

To achieve separation of wiring at the switches, each switch is completely enclosed and of modular construction with each module (wafer) connected to one of the redundant channels. Redundant wire bundles leaving each switch are run separately and connect to separate output plugs at the switch assembly. From the plugs, the wires are carried via the separate, internal routing paths within the panels and then out, as appropriate, via the floor conduits discussed previously.

The switch design appears to be satisfactory.

6. Control Room Ventilation

The control room ventilation and associated air conditioning system were described by the applicant. When questioned, the applicant could not tell us the bases for the design. This matter should be clarified prior to our review of the schematic diagrams in order for us to judge the adequacy of their proposed design.

7. Turbine Overspeed Protection

The design is the same as the (approved) one at H. B. Robinson (Unit No. 2). We anticipate no problem areas.

8. Relocation of Undervoltage Relays

As originally proposed at Unit No. 2, the undervoltage at the 480 volt emergency busses was respectively inferred from undervoltage at the upstream 6900 volt busses. Since it is conceivable that a voltage loss could occur downstream of the 6900 volt busses (i.e. a voltage loss at the 480 volt level only, the applicant was asked to incorporate direct undervoltage monitoring of the 480 volt busses.

This new design feature appears to be satisfactory and will also be incorporated on Unit No. 3.

9. Offsite Power Source Modification

The applicant proposes to add a second offsite power source for the 6900 volt busses; specifically, a feeder from the Buchanan substation transformed down to 6900 volts from 13 kV. Upon loss of the preferred offsite source, an automatic system would try to restore power by connecting the emergency 6900 kV busses (5 and 6) to the alternate source. Failing this, power would be furnished by the diesels.

We asked how, after a momentary voltage loss at the 6900 volt level, they could expect the alternate source to energize the 480 volt busses since the feeder breakers to these busses would have already opened in response to the voltage loss. They apparently hadn't thought of this and, after a few minutes of consideration stated that time delays would be incorporated in the feeder breaker control circuits. We then cautioned them to consider the potential failure modes in the timers since the diesels cannot function if these breakers remain closed.

We will look at this in detail during the schematic diagram review.

10. Tornado Protection

The buildings housing the diesel generators and the control room are tornado-proof. There are no apparent problem areas.

11. Diesel Generator Physical Separation

Within the diesel generator building, the three machines and their auxiliaries are physically separated by full-height concrete walls. There are no apparent problem areas.

12. Fire Protection in the Cable Tunnels

Fire is sensed by ionization (smoke) detectors and rate-of-rise (temperature) detectors. In response to signals from these detectors an automatic water spray system will be actuated and the ventilation fans will be turned off.

There are no apparent problem areas.

13. Circulating Water Pumps

The applicant advised us that the circulating water pumps are now two-speed devices. The purpose is to protect the fish during the

winter months by running the pumps at a slower speed to compensate for the slower reaction times (self-preservation reaction) of the fish.

This matter is of no concern to us.

14. Passive Failure of Motor Operated Valves

The applicant stated that he would not like to be complelled to disable electrically those motor-operated valves in the ESF systems which are "normally open". While such action would prevent inadvertent closing of the valves via the valves' control circuits it would also deprive the operator of the option to close the valves should it somehow become necessary.

We believe that this matter is within the domain of DRL to resolve.

15. Inservice Testing of ESF Initiating Circuits

The on-line testability characteristics of the ESF initiating circuitry are identical to those of the H. B. Robinson Unit No. 2 plant. Specifically, the circuits can be tested (on-line) down to, and including, operation of the master relays. The slave relays can be "tested" only to the extent that coil continuity is verified.

We anticipate no problem areas.

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Electrical Systems Branch
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