Washington Public Power Supply System
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June 17, 1985
G02-85-318

Docket No. 50-397

D.F. Kirsch, Acting Director
Division of Reactor Safety and Projects
U.S. Nuclear Regulatory Commission, Region V
1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Dear Mr. Kirsch:

Subject: NUCLEAR PLANT NO. 2
NONCONFORMANCE OF SAFE SHUTDOWN EQUIPMENT TO APPENDIX R REQUIREMENTS

Reference: a) Letter, D.F. Kirsch to G.C. Sorensen, "Nonconformance of Safe Shutdown Equipment to Appendix R Requirements," dated June 7, 1985

The purpose of this letter is to respond to the request made in the reference letter for additional information regarding the postulated loss of certain equipment required for safe shutdown during an Appendix R Control Room fire.

As you are aware, the Supply System is in the process of reviewing Appendix R evaluations for WNP-2 and anticipates completing this review in September 1985. All reportable deficiencies identified during this evaluation are being reported as supplements to Licensing Event Report (LER) 84-031.

LER 84-031-01, 02, and 03 identified several instances where equipment necessary to assure safe plant shutdown following a Control Room fire had not been isolated from the effects of that fire as required by the rules for this evaluation. Modifications necessary to correct these instances will be completed before WNP-2 restart following the current outage. As reported to your Resident Inspector, Mr. A.D. Toth, during our continuing evaluation we recently discovered similar deficiencies where safe shutdown equipment could be affected by a Control Room fire. These deficiencies and the planned long-term corrective actions are described in Attachment A.

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IE-01

As described in Attachment A, the recently identified discrepancies are postulated to occur as a result of improbable events where, during a Main Control Room fire, certain circuit conductors are shorted either to ground or to specific power sources. This results in postulated inadvertant loss of equipment necessary for safe plant shutdown. Each of the circuits described, however, is designed such that any effects (fuse failure or inadvertant breaker trip/close) resulting from the fire can be overcome by operator actions locally, i.e., leads may be lifted, failed fuses replaced, and breakers closed or tripped as required to regain control of lost equipment.

Circuit modifications to correct the discrepancies described in Attachment A will occur after WNP-2 restart from the current outage. Since WNP-2 will resume operation without the permanent corrective actions implemented, Control Room evacuation procedures will be modified, prior to the startup from our current outage, to reflect interim compensatory measures which specify isolation of the fire effects as described above. These actions will remain in effect until plant modifications to eliminate the discrepancies are complete. It should be noted that the Main Control Room is equipped with smoke and heat detectors, an automatic Halon sub-floor suppression system, a manual hose station, and wet pipe sprinklers in enclosed office spaces allowing early warning and suppression should a fire start. Additionally, since the Main Control Room is continually manned, a 24 hour firewatch is effectively in place.

The design modification packages necessary to correct the Appendix R discrepancies (to be reported in LER 84-031-04) will be issued for plant implementation by the third quarter of 1985. Implementation schedule will be available by September 1, 1985 with implementation sometime before plant restart following the first refueling outage presently scheduled for the second quarter 1986.

In accordance with License Condition No. 12, WNP-2 now is in the process of completing design of the Plant's alternate remote shutdown capability. This design will be implemented prior to resuming operation subsequent to our first refueling outage. Although not directly applicable to the resolution of deficiencies identified by our Appendix R review, when installed, this capability will further reduce the already small probability that such discoveries would affect Plant operations.

If you have any questions concerning the above please do not hesitate to call.

Very truly yours,

R B Glasscock

for G.C. Sorensen, Manager
Regulatory Programs

GWB:bap

cc: JO Bradfute - NRC
WS Chin - BPA (399)
JB Martin - NRC RV
E. Revell - BPA (399)
NS Reynolds - BLCP&R
WR Butler - NRC
AD Toth - NRC Site (901A)

1. Deficiency:

Emergency diesel generator (Division 2) breaker lockout relays could become energized due to a hot short (electrical short circuit to a specific source) resulting from a Control Room fire. This would cause a spurious trip of generator output breaker 8-DG2 and thus isolate the diesel generator from the 4160 volt bus SM-8 with subsequent loss of power to safe shutdown equipment.

Proposed Resolution:

The control room portion of the lockout relay circuits which consists of a white indicating light will be isolated by a transfer switch located in the Division 2 switchgear room which is near the Remote Shutdown Room. Operation of this transfer switch will be specified in the Main Control Room evacuation procedure.

2. Deficiency:

Fuses located on the secondary side of the Division 2 4160 volt bus SM-8 potential transformers could open due to a circuit short-to-ground resulting from a Control Room fire. This would deenergize Division 2 bus SM-8 undervoltage relays which in turn initiates trip signals to the feeder breakers supplying power to the Division 2 Residual Heat Removal (RHR) and Standby Service Water pumps.

Proposed Resolution:

The fuses will be isolated from a main control room short to ground by a transfer switch located in the Division 2 switchgear room which is near the Remote Shutdown Room. Operation of this transfer switch will be specified in the Main Control Room evacuation procedure.

3. Deficiency:

Eleven overcurrent relays associated with safe shutdown equipment could be energized by a hot short during a Control Room fire. The operation of these relays initiates a trip signal for circuit breakers resulting in the loss of buses SL-81, SL-83, and the Division 2 RHR and Standby Service Water pumps.

Proposed Resolution:

The over current relays will be isolated from a Main Control Room hot short by the manual operation of "shorting" type terminal blocks located in the Division 2 switchgear room. Operation of these shorting type terminal blocks will be specified in the Main Control Room evacuation procedure.

4. Deficiency:

As a consequence of a Control Room fire, the trip coils for two circuit breakers could become energized by a hot short. Additionally, breaker control circuit fuses could open by a short-to-ground before transfer switches are operated which will isolate effects. Without an alternate emergency power supply for the lost trip and control circuits and without a local control switch in the breaker close circuits, feeder breakers for buses SL-81 and SL-83 cannot be electrically closed locally. A spurious trip of these breakers before operation of transfer switches would isolate much of the power to safe shutdown equipment.

Proposed Resolution:

The close and trip circuits of the circuit breakers will be connected to an emergency power supply via transfer switch contacts. Additionally, a local breaker control switch will be added to the close circuit via transfer switch contacts for breaker closure control. All the additional switches will be added to the Division 2 switchgear near the Remote Shutdown Room. Operation of these switches will be specified in the Main Control Room evacuation procedure.

5. Deficiency:

Hot shorts resulting from a fire in the Control Room could energize a relay and trip the Division 2 diesel generator output breaker, DG2/8, resulting in loss of power to safe shutdown equipment. Additionally, a spurious closure of breaker B/8, while the 4160 volt bus SM-8 is supplying power to safe shutdown equipment and is being powered from the diesel generator, would result in the backup transformer being paralled to the bus. This could result in loss of the bus. Either situation would cause a loss of power to safe shutdown equipment.

Proposed Resolution:

In order to isolate the spurious energization of the relay due to a Control Room fire, the accident signal contact will be isolated by relocating a contact in the upstream circuit and ensuring that the relays will not be subject to spurious signal operation. This will be accomplished by isolating the closing circuits of the bus incoming breakers from a spurious close signal originating in the Control Room. Isolation of these circuits will be made by a transfer switch located in the Division 2 switchgear which is near the Remote Shutdown Room. Operation of this transfer switch will be specified in the Main Control Room evacuation procedure.

6. Deficiency:

The 24V DC instrument power supply, which powers the Standby Service Water pump discharge pressure indication, is not isolated from the control room circuit. During a Control Room fire, the fuse for this circuit may open due to a short-to-ground and disable the Remote Shutdown circuit.

Proposed Resolution:

The Control Room circuits that are not isolated from a Control Room fire will be routed through a transfer switch located in the Remote Shutdown Room. Operation of this transfer switch will be specified in the Main Control Room evacuation procedure.

7. Deficiency:

In the Control Room, the physical separation between the control switches for two series high-to-low pressure system interface valves (RHR-V-53A and RHR-V-123A) is not sufficient to preclude hot shorts from opening both valves simultaneously and failing the low pressure safe shutdown system during a Control Room fire.

Proposed Resolution:

One of the two series valve control circuits will be routed to a transfer switch located in the Remote Shutdown Room allowing isolation. Operation of this transfer switch will be specified in the Main Control Room evacuation procedure.