

Washington Public Power Supply System

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Docket No. 50-397

April 18, 1983
G02-83-353

Mr. J. B. Martin
U.S. Nuclear Regulatory Commission
Region V
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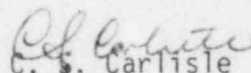
Subject: NUCLEAR PROJECT NO. 2
10CFR50.55(e) REPORTABLE CONDITIONS #37, #49, #54, #60,
#64, and #82; DEFICIENCIES IN ELECTRICAL SEPARATION

- References:
- a. Letter G12-82-101, D.M. Sternberg to R.G. Matlock, dated August 17, 1982, same subject.
 - b. Letter G02-82-803, R.G. Matlock to R.H. Engelken, dated September 23, 1982, same subject.
 - c. Letter G02-83-80, R.G. Matlock to R.H. Engelken, dated January 28, 1983, same subject.

Reference b informed you that WNP-2 had reopened the above subject 10CFR50.55(e)'s as requested in reference a. Attachments I, II, IV, and VI provide the Project's final reports on 10CFR50.55(e)'s #37, #54, #60, and #82. Attachments III and V provide the Project's interim reports on 10CFR50.55(e)'s #49 and #64.

We will continue to provide your office with quarterly updates on items #49 and #64 until all deficiencies are resolved. The next report will be submitted on or before July 18, 1983.

If you have any questions regarding the above subjects, please contact R. T. Johnson, WNP-2 Project QA Manager, at (509) 377-2501, extension 2712.


C. S. Carlisle
Program Director, WNP-2

LCF/kd

Attachments: (ō) As stated

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ATTACHMENT I

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93

CLASS 1E CABLES IN SEISMIC CATEGORY II SUPPORTED RACEWAYS
10CFR50.55(e) CONDITION #37

FINAL REPORT

Description of Deficiency

Main steam line radiation monitoring cables, 4PRM-1, 2, 6PRM-1, 2, and 7PRM, 2, which are Class 1E, were routed through the Turbine Generator Building (the Turbine Generator Building is a modified non-Seismic Category I structure analyzed to withstand a safe shutdown earthquake - SSE) without proper consideration for seismic support for safety-related raceways (NCR-218-04210).

Safety Implication

The main steam line radiation monitors initiate protective action for both main steam line isolation and reactor scram, thus mitigating the consequences of a fuel failure. It has been determined that, assuming no line break or small steam line break within the Turbine Generator Building, no other means of assuring reactor scram and main steam isolation exists in the event of fuel failure should the radiation signals be lost due to a seismic event by failure of non-Seismic Category I supports. This item is considered reportable under 10CFR50.55(e).

Corrective Action

Engineering direction was given under PED 218-E-0077 to upgrade the installation to Seismic Category I.

Additional Information

During upgrade of supports it was found that the conduits were located below Seismic Category II equipment (RFI-218-4138). Engineering direction was given to reroute the conduits (PED 218-E-2216) to preclude failure due to non-Seismic Category I equipment.

Status of Corrective Action

PED 218-E-0077 - Field Work in Process
PED 218-E-2216 - Field Work in Process

ATTACHMENT II

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
DOCKET NO. 50-397
LICENSE NO. CPPR-93
OPERATION OF STANDBY GAS TREATMENT SYSTEM DAMPER
10CFR50.55(e) CONDITION #49

INTERIM REPORT

Description of Deficiency

The Standby Gas Treatment System (SGTS) contains redundant trains consisting of two 100% capacity fans per loop for a total of four 100% capacity fans. To maintain a 1/4" water gauge negative pressure within the Reactor Building in the event of a LOCA, only one fan is required.

As shown on the attached flow diagram, there exists electrically operated dampers to control the mode of operation of each train (e.g., isolation, recirculation or exhaust). Also depicted on the attached diagram is the source of power for each motor operated damper and fan.

It may be postulated that due to the system design which provides power from two redundant electrical divisions to dampers in each fan train, both Standby Gas Treatment System loops from a single event may be made non-functional.

Safety Implication

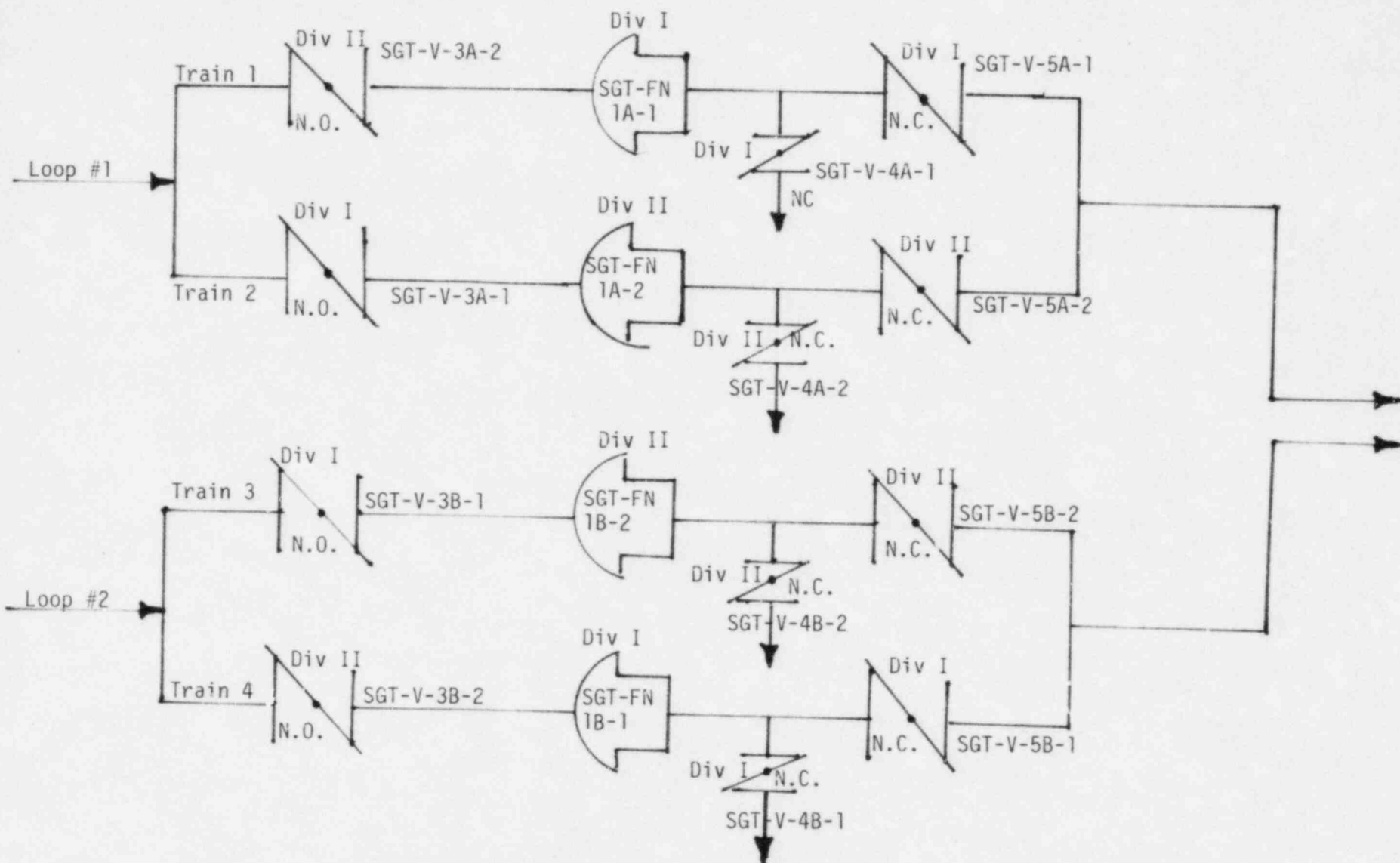
Since all the damper control circuits in a given division are currently routed in a common enclosure and in common cable trays a fault generated fire could damage adjacent cables and cause spurious signals to be sent to the dampers, causing all the dampers powered from a single division to close and thus cause both SGTS trains to become inoperative (see attached sketch).

Corrective Action

The Architect Engineer, Burns and Roe, Inc., will provide a Project Engineering Directive (PED) by April 30, 1983 to re-route the circuits for dampers SGT-V-3A-2 and SGT-V-3B-1 such that a single event, similar to that described above, could not disable the SGTS. This will entail a review of the circuits for the two dampers and re-route of portions located in the same raceways and enclosures with other damper circuits with the disabling capability discussed above.

We will continue to provide your office with interim reports. The next report will be submitted by July 18, 1983.

FLOW DIAGRAM



ATTACHMENT III

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93

SEPARATION VIOLATIONS WITHIN PGCC
10CFR50.55(e) CONDITION #54

FINAL REPORT

Description of Deficiency

The lack of Division 3 ducts within the BOP portions of the PGCC has resulted in safety-related Division 3 High Pressure Core Spray (HPCS) cables (CB-A2-1-21, CB-DA-17, CJB-TCG1-2.2A, CJB-TCG1-2.2, and JB-TCC2-4.2) being routed with Division 1 and Division 2 safety-related cables. These Division 3 cables were routed in a separate flexible conduit within Division 1 and 2 duct sections.

Safety Implication

It was concluded that a fire in Divisions 1 or 2 floor sections could subsequently lead to failures in Division 3. Accordingly, the BOP portion of the PGCC routing could have adversely affected the safety of the plant, and the design does not conform to the criteria stated in the Safety Analysis Reports.

Therefore, this condition is considered to be reportable under 10CFR21 and 10CFR50.55(e).

Corrective Action

A separate miniduct system was designed within the BOP portion of the PGCC for routing of Division 3 cables (PED 218-E-3677). Division 3 cables will now be installed in flexible conduit within the miniducts. However, control room human factors changes have removed four of the specific cables (CB-A2-1-21, CB-DA-17, CJB-TCG1-2.2A, and CJB-TCG1-2.2) from the BOP PGCC ducts (FDDR-KK1-795 and PED 218-E-4874). The remaining cable (JB-TCC2-4.2) has been dispositioned by PED 218-E-A431.

Status of Corrective Action

PED 218-E-3677 - Construction Action Completed
FDDR-KK1-795 - Field Work in Progress
PED 218-E-4874 - Field Work in Progress
PED 218-E-A431 - Field Work in Progress

ATTACHMENT IV
WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93

INCORRECT IDENTIFICATION OF SAFETY-RELATED CABLES
10CFR50.55(e) CONDITION #60

FINAL REPORT

Description of Deficiency

Seventy-nine (79) Class 1E analog instrumentation cables used for safety-related functions and post-accident monitoring, are mislabeled as non-Class 1E. This mislabeling caused Class 1E cables to be routed without required Class 1E documentation for route, pull, etc. In addition, these cables may not be routed in Class 1E raceways along their entire length.

Safety Implication

The evaluation of the deficiency (BRWP-79-412) revealed that the cables were routed in Class 1E raceways only. Therefore, the problem constitutes the lack of proper cable designation and installation documentation.

Since the cabling was routed and bulk pulled with Class 1E cables in Class 1E raceways only, there exists no safety hazard and the deviation was considered to be not reportable under 10CFR50.55(e).

Corrective Action

NCR 2808-5657 was written and has been closed by IR-218-13462. Prior to revised engineering direction, 6 of 79 cables were installed. Two of the 6 cables were spared. Four were bulk-pulled with Class 1E cables so Class 1E documentation exists for them (218-E-1963) and were re-identified as Class 1E. Also, the remaining 73 cables were re-identified as Class 1E and subsequently pulled as Class 1E.

The following PED's re-identified the cables: 218-E-1650, 218-E-1685, 218-E-1720, 218-E-2278, 218-E-2362.

Additional Information

Cables AIR 21-9010 and Air 22-9010 were not re-tagged by PED 218-E-1650. The conductors for SW-PT-32A and B were spared in these cables and new cables were added for the pressure transmitters. PED 218-E-2362 was issued to re-tag cables AIR 21-9010 and AIR 22-9010 per further engineering changes not related to NCR 2808-5657.

Status of Corrective Action

PED 218-E-1650 - Voided by PED 218-E-2278
PED 218-E-1685 - Construction Action Completed
PED 218-E-1720 - Construction Action Completed
PED 218-E-1963 - Construction Action Completed
PED 218-E-2278 - Construction Action Completed
PED 218-E-2362 - Field Work in Progress

ATTACHMENT V

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93

PLANT ELECTRICAL SEPARATION
10CFR50.55(e) CONDITION #64

INTERIM REPORT

Description of Deficiency

As of August 1979, the Main Control Room had been reviewed and approximately 150 instances were discovered involving violations in the application of WNP-2 Electrical Separation Criteria to safety-related cables and panel wiring. In general, the deficiencies involved incorrect labeling, routing, or termination of cabling within PGCC or Control Room panels.

Safety Implication

The deficiencies found could have resulted, under single failure conditions, in the simultaneous loss of redundant safety-related equipment with possible subsequent loss of safety function.

The condition was therefore concluded to be a reportable deficiency under 10CFR 50.55(e).

Corrective Action

In 1979, a task force reviewed the Main Control Room and plant areas for other violations of WNP-2 Separation Task Force to judge plant separation as designed and as installed. These same criteria were submitted in FSAR Amendment 23, Section 8.3. Instances of deficiencies identified as criteria violations are being evaluated and corrected via Project Engineering Directives (PED's).

An additional task force was established in September, 1982 to review the overall separation criteria and construction installation to that criteria. A formal report from this task force will be available in May 15, 1983.

Status of Corrective Action

1979 Task Force Separation Study PED's

- 218-E-2111 - Voided by PED 218-E-3060
- 218-E-1725 - Construction Action Completed
- 218-E-2155 - Field Work in Progress
- 218-E-0051 - Field Work in Progress
- 218-E-2362 - Field Work in Progress - Revised by PED 218-E-2582 & 2685
- 218-E-2209 - Construction Action Completed
- 218-E-0044 - Field Work in Progress
- 218-E-2090 - Field Work in Progress - Revised by PED 218-E-1952
- 218-E-2198 - Construction Action Completed
- 235-E-0062 - Field Work in Progress
- 218-E-2213 - Voided by PED 218-E-2403
- 218-E-2222 - Field Work in Progress

218-E-4869 - Construction Action Completed
218-E-3053 - Construction Action Completed
218-E-3479 - Construction Action Completed
218-E-3153 - Completed
218-E-2858 - Field Work in Progress
218-E-3532 - Completed
218-E-3530 - Field Work Not Started
218-E-3046 - Construction Action Completed
218-E-3750 - Construction Action Completed

Task 3670 Separation PED's (Compliance to Section 8.3 FSAR Amendment 23)

218-E-4247 - Completed
218-E-4490 - Construction Action Completed
218-E-4537 - Construction Action Completed
218-E-4599 - Field Work in Progress
218-E-4633 - Construction Action Completed
218-E-4656 - Construction Action Completed
218-E-4702 - Completed
218-E-4780 - Construction Action Completed
218-E-4789 - Completed
218-E-4824 - Completed
218-E-4836 - Field Work Not Started
218-E-4837 - Completed
218-E-4840 - Field Work Not Started
218-E-4841 - Field Work Not Started
218-E-4855 - Field Work in Progress
218-E-4888 - Completed
218-E-4902 - Completed
218-E-4951 - No Construction Work Required
218-E-A083 - Completed
218-E-A141 - Completed
218-E-A222 - Voided by PED 218-E-A558
218-E-A405 - Field Work in Progress
218-E-A527 - Field Work in Progress
218-E-A274 - Field Work in Progress
218-E-A304 - Completed
218-E-A570 - Field Work Not Started
218-E-A725 - Completed

- 218-E-2237 - Field Work in Progress - Revised by PED 218-E-2644
- 218-E-2252 - Field Work in Progress
- 218-E-2129 - Construction Action Completed
- 218-E-0153 - Construction Action Completed
- 218-E-2257 - Field Work in Progress - Revised by PED 218-E-1954
- 218-E-2248 - Field Work in Progress - Revised by PED-218-E-2959, 4765,
and 5155
- 218-E-2278 - Construction Action Completed
- 218-E-2309 - Voided by PED-218-E-2973
- 218-E-2439 - Field Work in Progress
- 218-E-2413 - Completed
- 218-E-2385 - Construction Action Completed
- 235-E-0055 - Construction Action Completed
- 218-E-1816 - Construction Action Completed
- 218-E-2199 - Construction Action Completed
- 218-E-2395 - Completed
- 218-E-1953 - Construction Action Completed
- 218-E-1951 - Construction Action Completed
- 218-E-2020 - Field Work in Progress
- 218-E-2011 - Construction Action Completed
- 218-E-2031 - Construction Action Completed
- 218-E-2038 - Completed
- 218-E-2036 - Field Work Not Started
- 218-E-1983 - Field Work Not Started
- 218-E-2040 - Construction Action Completed
- 218-E-1715 - Construction Action Completed
- 218-E-1954 - Construction Action Completed
- 218-E-1961 - Construction Action Completed
- 218-E-2110 - Construction Action Completed
- 218-E-2343 - Voided by PED 218-E-3154
- 218-E-2669 - Construction Action Completed
- 218-E-2390 - Voided by PED 218-E-4536
- 218-E-1648 - Completed
- 218-E-1650 - Voided by PED 218-E-2278
- 218-E-1685 - Construction Action Completed
- 218-E-1720 - Construction Action Completed
- 218-E-1649 - Construction Action Completed
- 218-E-1716 - Field Work in Progress
- 218-E-1758 - Construction Action Completed
- 218-E-1795 - Construction Action Completed
- 218-E-1759 - Completed
- 235-E-0057 - Construction Action Completed
- 235-E-0500 - Construction Action Completed
- 218-E-1653 - Construction Action Completed
- 218-E-1904 - Field Work Not Started - Revised by PED 218-E-2383 & 3757
- 218-E-1778 - Field Work in Progress
- 218-E-1714 - Field Work in Progress - Revised by PED 218-E-2358
- 218-E-1713 - Field Work in Progress
- 235-E-0063 - Construction Action Completed
- 218-E-1690 - Construction Action Completed
- 218-E-2967 - Field Work in Progress
- 218-E-3085 - Completed
- 218-E-4829 - Construction Action Completed

ATTACHMENT VI

WASHINGTON PUBLIC POWER SUPPLY SYSTEM
NUCLEAR PROJECT NO. 2
DOCKET NO. 50-397
LICENSE NO. CPPR-93

LACK OF INSTALLATION DOCUMENTATION FOR
CLASS 1E CABLES IN THE MAIN CONTROL ROOM RACEWAYS
10CFR50.55(e) CONDITION #82

FINAL REPORT

Description of Deficiency

The documentation verifying the installation of safety related cables in the Power Generation Control Complex (PGCC) floor ducts (main control room under floor raceways) was incomplete rendering the PGCC cable routing summaries invalid. It was determined, relative to the installing contractor's work, that: 1) there were no definitive inspection criteria; 2) changes to the QA records were not traceable in some cases; and 3) routing sheets used to install the cables did not match the QA record documentation for approximately 14% of the cables.

Safety Implication

Valid documentation is required to provide an accurate assessment of compliance to the electrical separation criteria which assures that the redundant safety systems are not made functionally inoperative by a single event. Related investigations (10CFR50.55(e) #64) have shown that safety-related cables were in fact routed improperly such that faults in one safety division could have adversely affected the redundant division.

The condition was therefore evaluated to be a reportable deficiency under 10CFR 50.55(e).

Corrective Action

A Quality Assurance surveillance review was conducted. This review generated Corrective Action Request (CAR) 1437 which identified a significant lack of PGCC Quality Class I cable installation documentation. Based on these findings, an action plan was developed to generate uniform Quality Class I PGCC documentation which would alleviate documentation deficiencies in the area of Class 1E cable terminations and routing in the PGCC ducts. To avoid a reoccurrence of this problem, a control room Stop Work Order Number 7 was issued on May 23, 1980, until such time that PQA could enforce approved PGCC installation procedures (PED 218-E-2967). This step was essential to avoid any documentation problems for future PGCC installation, specifically for FDI, FDDR, PED and Startup Work Requests. Fischbach/Lord instituted work procedure CP/QAP-428 to provide Quality Class I instructions for installation and documentation in the Main Control Room. As part of the corrective action plan, PED 218-E-3064 was issued to address the documentation deficiencies in the existing installation. Fischbach/Lord implemented this directive and forwarded the as-built cable routings via RFI 218-6163 and 218-6251. The Supply System then initiated another 100% walkdown of cables installed in PGCC in September 1982. The results of this walkdown were issued to Burns and Roe (Ref. WPBR-F-82-237, WPBR-F-82-238) which showed further discrepancies in cable routing in the PGCC. Burns and Roe issued engineering direction (PED 218-E-A405) to correct the routing errors for the BOP PGCC. General Electric issued FDDR-KK1-935, Rev. 0 and 1, to correct the errors within the NSSS portion of the PGCC.

Status of Corrective Action

10CFR50.55(e) Condition #82 was issued to provide notification of the QA program breakdown of Contract 002, General Electric and Contract 218, Fischbach/Lord. This QA program breakdown resulted in the deficiencies identified in 10CFR50.55(e) #64. All PGCC hardware deficiencies will be corrected under 10CFR50.55(e) #64.

The QA program breakdown occurred due to General Electric and Fischbach/Lord each thinking the other organization was to implement the QA/QC program requirements necessary to effect PGCC installation.

The Supply System has implemented the following actions to provide corrective action in regard to the QA program breakdown between Contract 002 and Contract 218.

- Corrective Action Request (CAR) 1437 was issued to Contract 218 documenting the QA program breakdown. All remedial action has been completed and CAR 1437 is closed.
- Corrective Action Request (CAR) 1439 was issued to Contract 002 documenting their QA program breakdown. All remedial action has been completed and CAR 1439 is closed.
- Stop Work Order #7 was issued to stop work in the Control Room until a corrective action plan (CAR's 1437 and 1439) could be developed and implemented. Stop Work Order #7 has been lifted.
- Reinspections were performed on PGCC routing and cable identification to provide cable routing of the PGCC. PED-218-E-A405 and FDDR-KK1-935 have been issued to correct deficiencies identified during the reinspection.
- Contract 218 is no longer performing installation and inspection activities related to PGCC.
- Contract 002 is no longer directing PGCC installation, but they are still providing engineering direction for the NSSS portion of PGCC. Burns and Roe is providing engineering direction for the BOP portion of PGCC.
- Supply System Test and Startup is performing all installation and modification work to the PGCC using Bechtel Power Corporation crafts and procedures.
- The Bechtel procedures used for PGCC installation and modification work incorporate necessary inspection and installation criteria to ensure proper installation of PGCC.

Based on the above status of corrective action, the Project feels that all remedial corrective action and action to prevent reoccurrence of the QA program breakdown have been taken. All Engineering directives (PED's and FDDR's) will be tracked via 10CFR50.55(e) #64, which will provide corrective action for the deficient hardware installation of PGCC.