

Washington Public Power Supply System

P.O. Box 968 3000 George Washington Way Richland, Washington 99352 (509) 372-5000
Docket No. 50-397

December 2, 1982
G02-82-958

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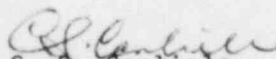
Mr. D. M. Sternberg
Chief, Reactor Projects
Branch No. 1
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1450 Maria Lane, Suite 210
Walnut Creek, California 94596

Subject: NUCLEAR PROJECT NO. 2
NRC INSPECTION 82-21 - NOTICE OF VIOLATION

Reference: Letter J. L. Crews to R. G. Matlock, dated October 27,
1982.

Washington Public Power Supply System hereby replies to the Notice of Violation and the Notice of Deviation transmitted as Appendix A and Appendix B, respectively, via the referenced letter. Our reply pursuant to the provisions of Section 2.201 of the NRC's "Rules of Practice" Part 2 Title 10 Code of Federal Regulations, consists of this letter and Attachments 1, 2, and 3. Attachment 1 contains our response to the Notice of Violation. Attachment 2 contains our response to the Notice of Deviation. Attachment 3 contains additional information pertinent to resolving the general issue of electrical separation which goes beyond the specifics identified in Attachments 1 and 2.

If you have any questions or desire further information, please contact Doug Timmins at (509) 377-2501, extension 2942.


C. S. Carlisle

Deputy Program Director, WNP-2

RTJ/kd

cc: W.S. Chin, BPA - Site
A. Forrest, Burns and Roe - HAP0
N.D. Lewis, NRC
J. Plunkett, NUS Corp.
R.E. Snaith, Burns and Roe - NY
A. Toth, NRC Resident Inspector (917Q)
Document Control Desk, NRC
WNP-2 Files (917B)

STATE OF WASHINGTON)
)
COUNTY OF BENTON)

CHARLES S. CARLISLE, Being first duly sworn, deposes and says: That he is acting for the WNP-2 Program Director of the WASHINGTON PUBLIC POWER SUPPLY SYSTEM, the permit holder herein; that he is authorized to submit the foregoing on behalf of said permit holder; that he has read the foregoing and attachments listed therein and knows the contents thereof; and believes the same to be true to the best of his knowledge.

DATED: December 2, 1982

C. S. Carlisle
C. S. CARLISLE

On this day personally appeared before me C. S. Carlisle to me known to be the individual who executed the foregoing instrument and acknowledged that he signed the same as his free act and deed for the uses and purposes therein mentioned.

GIVEN under my hand and seal this 2 day of December, 1982.

Jan Weber
Notary Public in and for the State of
Washington
Residing at Kennewick

ATTACHMENT 1

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

RESPONSE TO INSPECTION REPORT 82-21
NOTICE OF VIOLATION

The following are Supply System responses to the violations identified in Appendix A of the reference letter. For purposes of clarity, each violation is repeated followed by our response.

- A. 10 CFR 50, Appendix B, Criterion V, as addressed in paragraph 17.1.1.2 of the FSAR (Quality Assurance Program) states in part: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings ... (which)... include appropriate quantitative or qualitative acceptance criteria for determining that important activities have been satisfactorily accomplished." FSAR, Amendment 23, stated in Section 8.3.1.4.3.7 "Where control devices of redundant systems are mounted in the same panel, physical separation (six inches), barriers, or isolation devices are provided."

Contrary to the above requirement, approved construction specifications used to install safety related Class 1E electrical cables since January 1979, have not specified acceptance criteria for separation of redundant Class 1E cables. For example, as a result of the absence of acceptance criteria in specifications for installation, on September 2, 1982 the Emergency Reactor Shutdown Panel H22-P100 contained cables 1P7AF-0004-C-Div-1, 1M7A-0094-C-Div-1, and other Class 1E Division 1 cables which were not provided six inch physical separation, barriers, or isolation devices from cables 2M8BA-0284-C-Div-2, 2COU2-0101-C-Div-2 and other redundant Division 2 Class 1E cables. "Connection Wiring Diagram Local Instrument Rack" (DWG E538, Rev. 8, sheet 40), and other construction guidance provided to and implemented by the installation contractor did not specify separation requirements of redundant safety related Class 1E circuits within this panel.

This is a Severity Level IV violation.

Supply System Response

The need for the required 6" separation for the subject cables was previously identified by Burns and Roe in the course of their electrical separation task activities and was provided via Project Engineering Directive (PED) 218-E-2439 in December 1979. This PED, among others, was unique to specific cables, and as such, the 6" requirement had not been generically incorporated into the contract specification.

Subsequently, Burns and Roe issued PED 218-E-4837 in May 1982, which provided the 6" separation requirement for all intruder (redundant Class 1E and prime) cables within equipment. This PED was incorporated into the contract specification in July 1982. Considering the above, Burns and Roe was knowledgeable of the requirement and had issued appropriate direction to the contractor.

It should be understood that Burns and Roe, in the performance of their electrical separation task activities, identifies the cables and equipment affected by this requirement and issues the necessary, specific direction to the Contractor via PED, not through drawings or by relying on the generic, contract specification requirement.

Corrective Action Taken

The installing Contractor is performing a review of ninety-six (96) electrical separation PEDs issued to date by Burns and Roe to identify other cables and equipment affected by the 6" separation requirements. Documentation is being reviewed to verify the 6" separation criteria was adhered to. Where compliance status is in question, a field inspection will be conducted to verify the physical configuration. The acceptable configuration will be documented or the cables and/or equipment shall be modified accordingly.

Action To Preclude Recurrence

The installing Contractor will retrain the personnel involved with issuing routing and termination instructions to ensure the 6" separation requirement is understood and properly executed based on PED direction.

Date of Full Compliance

The review of electrical separation PEDs by the installing Contractor has been completed. A report documenting the results of the PED review and the verification of field compliance is being compiled by the installing Contractor and is scheduled to be issued the week of December 6, 1982.

Contractor training is scheduled to be complete by December 3, 1982.

- B. 10 CFR 50, Appendix B, Criterion III, as addressed in FSAR section 17.1.1.3 Design Control (Burns and Roe) states in part: "Measures shall be established to assure that applicable regulatory requirements...are correctly translated into specifications, drawings, procedures, and instructions." Criterion VI, "Document Control," states in part: "Measures shall be established to control the issuance of documents, such as instructions, procedures, and drawings, including changes thereto, which prescribe all activities affecting quality. These measures shall assure that documents, including changes, are reviewed for adequacy and approved for release by authorized personnel and are distributed to and used at the location where the prescribed activity is performed."

The Burns and Roe "Quality Assurance Plan for Washington Public Power Supply System, Nuclear Project 2" (Second Edition, Rev. 0) states in Chapter III Sections 3.1 and 4.1:

"A project criteria document is prepared for the WNP-2 Project. This document, prepared by a criteria development team, identifies applicable regulatory requirements, design bases, codes, and standards to be translated into drawings, specifications, procedures, and instructions during the design process."

"The detailed design effort proceeds in accordance with the approved project criteria document and the applicable initial system description."

Contrary to the above, on September 1, 1982, the Design Engineer reviewing Design Drawings to insure implementation of electrical separation criteria in Design Documents and Engineering Directives, was working to criteria defined in an out-of-date and uncontrolled copy of FSAR Chapter 8.3 (Amendment 23) rather than the project criteria document. The uncontrolled copy differed in the description of separation criteria from that submitted to the NRC as FSAR, Chapter 8.3 (Amendment 23).

Additionally, the Burns and Roe Engineering Criteria Document, required by the Quality Assurance Plan, was found to be in conflict with FSAR Chapter 8.3 (Amendment 23) in that 'fire stops' were defined as 'isolation devices' in Section D, Paragraph 3.6.1.14 of the criteria document, although this was not reflected in FSAR (Amendment 23) Section 8.3.1.4.1.12 "Isolation Device".

The Project Criteria Document, Section D, also included on page D-24z a Table IV titled "Divisional Compatability." The NRC took exception to this table in a letter from R.L. Tedesco to R.L. Ferguson, dated May 4, 1981 which instructed the licensee to "revise both Table IV...and your tray/cable marking codes to be consistent with your final cable separation criteria." Contrary to the commitments made by the Washington Public Power Supply System in their response letter of June 18, 1981 (G02-81-146) from G.D. Bouchey to R.L. Tedesco, Table IV denoted no separation requirements between any Class 1E system and any Non-Class 1E System.

This is a Severity Level IV violation.

Supply System Response

As described in the Notice of Violation, the Burns and Roe Engineering Criteria Document was not updated to the electrical separation criteria being used by the electrical design engineers. The critria in use was the Burns and Roe proposed Amendment 23 to FSAR Section 8.3. On September 22, 1982, Burns and Roe revised the Engineering Criteria Document to reflect FSAR Amendment 23 (Project Criteria Advance Change WNP-2-Elec-3).

Interviews conducted by the Supply System Electrical Separation Task Force with Burns and Roe electrical engineers and designers, in conjunction with a review of training records and issued PEDS, confirmed that the proposed Amendment 23 document was, in fact, the criteria being used.

In addition, Burns and Roe, based on their own investigation, came to the same conclusion and documented a similar statement to the Supply System (BRWP-RO-82-284).

An independent review was performed of the proposed Burns and Roe Amendment 23 document against the approved FSAR Amendment 23, Section 8.3. The review was performed by the Electrical Separation Task Force. The conclusions of the review, recognizing that there are some text differences, were that no substantive technical differences exist and the text changes were made for editorial clarification. Relative to the fire stop specifics, also identified by the Task Force, Burns and Roe had not been using fire stops as an electrical isolation device, but only as a device taken credit for in analyses which minimizes fire propagation.

Based on the findings of the Electrical Separation Task Force, briefly described above, it is our conclusion that the appropriate separation criteria (FSAR Amendment 23, Section 8.3) was being implemented by Burns and Roe. Similarly, the criteria of Supply System letter G02-81-146 was being implemented, not Table IV, page D-24z, of the previously outdated Engineering Criteria Document.

Corrective Actions Taken

The Burns and Roe Engineering Criteria Document was revised. The importance of updating the Engineering Criteria Document in a timely manner has been reemphasized to the Burns and Roe personnel responsible for design control.

The Supply System conducted an audit of Burns and Roe's use of the Engineering Criteria Document for all disciplines in September 1982. Two findings were documented (QFR 2 of 6 and 3 of 6) which identified generic problems with the use and updating of the criteria. The corrective actions for these findings will assure and verify Burns and Roe's appropriate use of the Engineering Criteria Document.

Action To Preclude Recurrence

Burns and Roe has retrained the design engineers in the use of the Engineering Criteria Document. Records of these training sessions are available.

Date of Full Compliance

The Engineering Criteria Document was revised September 22, 1982. Training sessions were completed November 22, 1982.

ATTACHMENT 2

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

RESPONSE TO INSPECTION REPORT 82-21
NOTICE OF DEVIATION

The following are Supply System responses to the violations identified in Appendix B of the reference letter. For purposes of clarity, each deviation is repeated followed by our response.

- A. Washington Public Power Supply System letter of June 18, 1981 (G02-81-146), from G.D. Bouchev to R.L. Tedesco concerning cable separation criteria at WNP-2, states that associated circuits shall be uniquely identified as such or as Class 1E, from Class 1E equipment up to and including an isolation device.

Contrary to the above, on August 31, 1982, it was determined that the Non-Class 1E power cables AM7A-9130, AM7A-9131, and AM7A-9132 and transformer TR-7A-C and other circuits which were associated with Class 1E Division 1 circuits by both lack of electrical isolation and lack of physical separation were not identified as associated circuits or as Class 1E circuits. Moreover, the Washington Nuclear Project No. 2 cable identification scheme, although providing identification for "Prime" cables (cables which at some point lack electrical isolation from Class 1E sources) or "9000 series - dual compatibility" cables (cables which at some point lack physical separation from Class 1E sources), does not uniquely identify that portion of these circuits that is associated with Class 1E division. As a result, associated circuits which require separation and insulation in accordance with the requirements for Class 1E systems, cannot be identified so that control of activities affecting these circuits is maintained in accordance with 10CFR50 Appendix B requirements.

This is a deviation.

Supply System Response

Within certain plant areas, due to raceway availability, it is necessary to route Non-Class 1E cables with Class 1E cables in Class 1E raceways. FSAR Amendment 23 provides analysis by category for Non-Class 1E cables that receive power from Class 1E sources (prime) and/or that are physically routed with Class 1E cables in Class 1E raceways (Associated by Proximity). The section of a Non-Class 1E cable which routes directly with Class 1E cables is termed "Associated by Proximity" and is uniquely identified by "Note 5" in the WNP-2 computerized cable schedule. In the field unique identification is provided for these cables in a Class 1E raceway by the "A" or "B" cable number prefix; Class 1E cable numbers are prefixed by 1 through 7. In addition, prime cables and cable sections defined as "Associated by Proximity" are identified by color-coded markers per FSAR Tables 8.3-25 and 8.3-26. Thus, cables "Associated by Proximity" are uniquely identified in Class 1E raceways. These cable sections are specified to be installed to the same installation parameters as Class 1E cables, but may not have Class 1E documentation to verify the installation.

As allowed by Item A.3 of Attachment I to the June 18, 1981 letter (G02-81-146), analysis has been provided to show that Class 1E cables are not degraded below an acceptable level when cables "Associated by Proximity" have continuing sections in Non-Class 1E raceways, equipment, or enclosures. The continuing cable/wire sections (termed Non-Class 1E) are treated as Non-Class 1E (non-associated) and as such require no further adherence to Class 1E separation or identification within these raceways, equipment, or enclosures. However, Non-Class 1E open trays with power circuits are separated from all Class 1E raceways with the same physical separation requirements as that required between redundant Class 1E raceways.

Note that circuits defined as prime are not treated strictly as Non-Class 1E circuits and do require application of unique identification and separation criteria as specified in the FSAR Section 8.3.1.4.

In addition, the "9000" series cable identification is not used to solely denote a cable "Associated by Proximity". The color-coded markers and A/B cable number prefix in Class 1E raceways are the correct identification means.

Corrective Steps Taken

In order to provide improved clarification of the electrical separation criteria, an Electrical Separation Practices document has been written and is to be issued shortly.

Results Achieved - Clarification via new document.

Corrective Action Complete - December, 1982.

- B. Washington Public Power Supply System letter of June 18, 1981, (G02-81-146), from G.D. Bouchey to R.L. Tedesco concerning cable separation criteria at WNP-2 states that associated circuits shall remain with, or be physically separated the same as, those Class 1E circuits with which they are associated, from Class 1E equipment up to and including an isolation device. The accepted industry standard, Regulatory Guide 1.75, Revision 0, dated February 1974, states that Non-Class 1E circuits should be separated from associated circuits and Class 1E circuits by the minimum separation requirements for redundant Class 1E circuits. If non-Class 1E circuits do not comply with these requirements the Non-Class 1E circuits should be treated as associated circuits.

Contrary to the above, on August 31, 1982 it was determined that associated power circuits AM7A-9130 and AM7A-9131 were directly connected to Non-Class 1E transformer TR-7A-C and other Non-Class 1E electrical circuits. Physical separation and electrical isolation of these associated circuits was not provided the same as those Class 1E with which they were associated.

This is a deviation.

Supply System Response

Regulatory Guide 1.75, Revision 0, does not apply to WNP-2; however, the intent of that guide is addressed by an alternate means as described in FSAR Section 8.3.1.4. Specifically, as discussed in our response to Notice of Deviation, Item A, that section of a Non-Class 1E cable routed in a Class 1E raceway is termed "Associated by Proximity". It remains with and is physically separated the same as the Class 1E cables with which it is routed. Based on analysis, the continuing section of that Non-Class 1E cable external to the Class 1E raceway is termed and treated as Non-Class 1E. This situation applies to cables AM7A-9130 and AM7A-9131.

Corrective Steps Taken

Refer to previous response.

Results Achieved

Refer to previous response.

Corrective Action Complete

Refer to previous response.

- C. FSAR Amendment 23, Figure 8.3-29a defines 3 feet as the minimum horizontal separation requirement between any two redundant divisions in open tray, or where just one raceway is enclosed.

Contrary to the above, it was determined on September 1, 1982 that the required 3 feet horizontal separation was not provided for redundant safety Division 1, Division 2, and Division 3, and redundant BOP Division A and Division B cables routed in non-watertight, interlocked armor on the floor of the southwest corner of the control room. (These conduits were not identified by other than divisional markers.)

This is a deviation.

Supply System Response

FSAR Figure 8.3-29a applies to raceways in "General Plant Areas", not to underfloor raceways in the Main Control Room periphery outside the PGCC. The FSAR requires an update to include the specific separation requirements for this area. However, separation criteria has been applied to this area by PED 218-E-4840 issued in May 1982. The FSAR will be revised to include words similar to the following:

Periphery of PGCC

A modular floor raceway system is not provided in this area. Cables in this area shall be routed in grounded flexible conduit with 3 feet horizontal separation maintained between redundant Class 1E conduits. Where this distance cannot be maintained, one of the redundant conduits shall be rigid. The redundant conduits shall not touch. An approved fire rated material may be used to prevent the two conduits from touching.

These conduits are identified by metal tags which identify the cable number and division. Since these tags are not color coded, an additional color-coded marker shall be attached near the metal tag to identify the conduit divisional assignment.

Corrective Steps Taken

PED 218-E-4840 was issued in May 1982. FSAR Section 8.3.1.4 is to be revised to include the separation requirements for the periphery of the PGCC within the Main Control Room. In addition, the draft Electrical Separation Practices document does address this item and will reflect the proper criteria upon issue.

Results Achieved

Clarification of electrical separation criteria in the periphery of the PGCC.

Corrective Action Complete

The subject FSAR revision and the Electrical Separation Practices document will be issued in December 1982.

- D. FSAR Amendment 23, Table 8.3-25 "Division markers for equipment, raceways, and cables external to PGCC" states that Non-Class 1E BOP Division B shall be identified with gold marker background colors and black character colors.

Contrary to the above, it was determined on September 1, 1982 that in the cable spreading room, tray section 7252, labeled S-Div-B in accordance with Table 8.3-25 above, there were numerous cables identified with blue markers at approximately 5 foot intervals similar to PGCC Class 1E Division 2. FSAR Table 8.3-25 does not provide for such markers external to the PGCC. There appeared to be no divisional markers for these cables in accordance with FSAR requirements throughout the approximately 75 to 100 feet of routing within the cable spreading room.

This is a deviation.

Supply System Response

As a part of the PGCC design, there has been a need to interconnect the Main Control Room Balance of Plant (BOP) front benchboards with the vertical boards located at the back of the room. However, the PGCC ducts provided do not allow such routing to be practicable. As an alternate, a network of dedicated raceways has been provided in the cable spreading room to route the interconnecting cables. The design of this raceway network and listing of the interconnecting cables which are routed in these raceways is documented on Burns and Roe drawing E766, sheets 8, 9 and 10.

Even though these raceways are physically located in the cable spreading room, they have been considered an extension to the PGCC floor ducts and are treated as an exception to the standard criteria. Hence, contractor direction per ECN No. 77, Revision 1, 1978, required that these cables be identified in these raceways in accordance with the PGCC cable marking requirements even though they physically reside in the cable spreading room.

Since these cables and raceways will be exclusively used for the PGCC interconnecting cables and are not part of the General Plant raceway/cable scheme, it is desirable that they retain identification tags per PGCC cable tag requirements. A statement of this exception will be included in a FSAR revision stipulating the cable and raceway identification requirements for these specific cables. In addition, the Electrical Separation Practices document will address this exception.

Corrective Steps Taken

ECN No. 77, Revision 1, was issued in February 1978 via letter WNP-2-FL-218-F-78-56. The FSAR and Electrical Separation Practices document will address this exception.

Results Achieved

Clarification of electrical separation criteria with respect to the subject exception.

Corrective Action Complete

The subject FSAR revision and the Electrical Separation Practices document will be issued in December 1982.

- E. FSAR Amendment 23, Table 8.3-25 "Division markers for equipment, raceways, and cables external to PGCC" states that Class 1E Division 1 equipment shall be identified with labels of yellow background color and black characters; Class 1E Division 2 equipment shall be identified with labels of orange background color and black characters, and Class 1E Division 3 equipment shall be identified with labels of red background color and black characters.

The Burns and Roe WNP-2 Project Criteria Document states in paragraph 3.6.1.25 that "equipment associated with the RPS, NSSS, and ESS shall be identified so that two facts are physically apparent to the operating and maintenance personnel: First, that the equipment is part of the nuclear safeguards system; and second, the grouping (or division) of enforced segregation with which the equipment is associated."

Contrary to the above, on September 2, 1982 it was determined that HPCS instrument panel H22-P04 (ESS Division 3) was labeled with yellow background and black characters the identification scheme for redundant division 1; that RHR instrument panel H22-P021 (ESS Division 2) was labeled with yellow background and black characters the identification scheme for redundant division 1, that (main steam isolation valve-leak control system) MSIU-LCS instrument panel IR-74 (Division 2), and MSIU-LCS instrument rack IR-73 (Division 1) were labeled with black background and white characters a method not appearing in the FSAR identification scheme for either BOP or PGCC equipment.

This is a deviation.

Supply System Response

FSAR Amendment 23, Table 8.3-25 describes the application of divisional markers for equipment, raceways, and cables external to PGCC. In the context of divisional identification for the purposes of electrical separation, equipment is defined as enclosures and open face racks containing electrical components. The components, e.g., valves, instruments, relays, etc., are not individually identified with divisional markers. The enclosures and racks are identified with divisional markers. For racks with more than one division, the divisional markers are placed on a termination box.

The divisional markers are additional tags which delineate the divisional association of the equipment. For example, HPCS related equipment are tagged with a "DIV 3" marker in addition to the equipment identification number. The divisional marker follows the color scheme in FSAR Table 8.3-25. Note that individual components (mounted on or in equipment) have component identification tags located next to them which are not electrical separation divisional markers. The component identification tags are not intended or required to follow the separation color scheme in the FSAR.

In an effort to provide the contractor with clear instructions involving the application of divisional markers and equipment identification tags, Burns and Roe issued Project Engineering Directive PED 218-E-3153 in April 1981.

The 218 Specification Section 16A Paragraphs 4.6.2, 4.6.3, and Section 50A Paragraph 3.5.4 address the tagging requirements which are consistent with the above discussion.

Nuclear safeguard systems and their components are identified by the individual component identification tags. The grouping (division) association is provided by the divisional markers.

The specific examples identified in the NRC Deviation E address the component identification tags, not the divisional markers.

Corrective Steps Taken

The FSAR and the Electrical Separation Practices document will clarify the above discussion.

Results Achieved

Clarification of divisional identification requirements.

Corrective Action Complete

The subject FSAR revision and the Electrical Separation Practices document will be issued in December 1982.

ATTACHMENT 3

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

RESPONSE TO INSPECTION REPORT 82-21

Several of the items discussed in Attachments 1 and 2 are specific in nature and part of the general electrical separation issue being discussed by the Supply System and the NRC, both Region V and Licensing. As all are aware, the Supply System established an Electrical Separation Task Force in September 1982 to revisit the criteria and its implementation in a manner to address the NRC concerns and resolve the general issue. This review, and associated findings and corrective action, is ongoing and scheduled for completion in January 1983. The responses provided in Attachments 1 and 2 do address the specifics, and in some cases where appropriate, the item in a generic manner. However, those responses cannot address the electrical separation issue in its entirety due to the ongoing Task Force activities, e.g., implementation of the labeling criteria.

It is our intent to have ongoing dialogue with the NRC (Region V) on the findings of the Electrical Separation Task Force and on corrective action as found necessary. As the Task Force review activities approach completion, a means to document the closure of the general issue shall be agreed upon.