

U. S. NUCLEAR REGULATORY COMMISSION
OFFICE OF INSPECTION AND ENFORCEMENT

REGION V

Report No. 50-397/80-07

Docket No. 50-397 License No. CPPR-93 Safeguards Group _____

Licensee: Washington Public Power Supply System

P. O. Box 968

Richland, Washington

Facility Name: Washington Nuclear Project No. 2 (WNP-2)

Inspection at: WNP-2 Site, Benton County, Washington

Inspection conducted: May 27-30, 1980

Inspectors: *John O. Elin*
J. O. Elin, Reactor Inspector

7-3-80
Date Signed

Date Signed

Approved by: *R. T. Dodds*
for R. T. Dodds, Chief, Engineering Support Section

7/3/80
Date Signed

Summary:

Inspection on May 27-30, (Report No. 50-397/80-07)

Areas Inspected: Routine, unannounced inspection by a regional based inspector of construction activities including: a review of licensee's actions in response to IE Circular 78-08 of May 31, 1978, "Environmental Qualification of Safety-Related Electrical Equipment at Nuclear Plants", a review of D.C. electrical power distribution, and a site tour.

The inspection involved 22 inspector-hours onsite by one NRC inspector.

Results: Of the areas inspected, no items of noncompliance or deviations were identified, one unresolved item was identified concerning separation criteria for Class IE, Non-Class IE, and associated circuits. Additionally, a previously identified open item concerning equipment qualification remains open.

DETAILS

1. Persons Contacted

a. Washington Public Power Supply System (WPPSS)

W. C. Bibb, Project Manager
*R. Foley, Deputy Project Manager
*R. Johnson, Project QA Manager
*B. Holmberg, Change Control Manager
*B. Tanner, Deputy Construction Manager (Acting)
J. Rhoads, Senior Electrical Engineer
D. Hickman, Qualification Engineer
B. Fricke, Qualification Engineer

b. Burns and Roe, Inc. (B&R)

*R. C. Root, Deputy Project Manager
*H. R. Tuthill, Assistant QA Manager
*M. L. Bursztein, Assistant Resident Project Engineer
*R. O. Carmichael, Sr. QA Surveillance Engineer
*M. A. Lacey, Resident Project Engineer
J. Johnson, QA Surveillance Engineer
J. Propson, Project Engineer
J. Civay, Project Engineer

*Denotes those present at exit interview on May 30, 1980. Also present at the exit interview was Mr. A. Hanson of Energy Facilities Siting Evaluation Council, State of Washington.

2. Construction Status

On May 30, 1980, the licensee considered the construction of the WNP-2 project to be 81 percent complete.

3. Licensee Action on Previous Inspection Findings (Open) Followup Item (50-397/79-04/16): Actions Taken in Response to IE Circular 78-08 of May 31, 1978, "Environmental Qualification of Safety-Related Electrical Equipment at Nuclear Plants

During a previous inspection in March 1979, the licensee stated that a review of environmental and seismic qualification of all Class IE equipment including splices, terminal blocks, termination cabinets and connectors would be completed in late fall 1979. This report describes the inspector's understanding of the current status of that project.

The licensee has assigned approximately five or six engineers to review the seismic and environmental qualification documentation for safety-related equipment at the five Washington Public Power



Supply System nuclear power plants now under construction. This review will consist of compiling a list of Class IE equipment for each plant from the equipment procurement contracts and detailing manufacturer/model number, plant location, safety function, and specific documents supporting seismic and environmental qualification. For each equipment item listed, the supporting documentation will be reviewed and compared to postulated worst-case seismic and environmental parameters. A summary will be prepared for each equipment item detailing qualification of that item.

It is currently scheduled to complete this review for WNP-2 by December 1980. The licensee plans to submit new responses to FSAR series 31 questions this summer detailing a completion of the seismic and environmental qualification review by the end of 1980 rather than second quarter 1979, as previously stated (see FSAR question replies 31.006, 31.056, and 31.057). The licensee also intends to submit changes to FSAR Chapters 3.10 and 3.11 (seismic and environmental qualification) in February 1981, reflecting results of the current evaluation.

The inspector assessed this project as less than 10 percent complete for Unit 2 at the time of the inspection. A "Master List" of WNP-2 Class IE components had been generated from purchase documents, but the detailed review of each component's qualification was still in beginning stages.

The inspector noted that electrical cables were not included on the Class IE equipment list for WNP-2; however, these items will be added to the list according to the licensee. Other items specifically mentioned in IE Circular 78-08, such as splices, terminal blocks, and connectors, were not included by the licensee in the scope of the environmental review.

During an inspection of the WNP-2 D.C. power distribution system, the inspector compared the "WNP-2 Class IE Equipment List" provided by the Environmental Review Group (dated May 9, 1980) to the installed equipment to insure complete listing of components and correct equipment identification. Twenty items were inspected. Three items had differing model numbers from the listing. Five items (fuse cabinets associated with the Class IE battery banks) were identified as system components not listed. As stated previously electrical cables, terminal blocks, and connectors were not listed. It was noted that the licensee has not completed his review of this system at the time of the inspection.

The inspector discussed the requirements and the intent of IE Circular 78-08 and IE Bulletins 79-01 and 79-01B with the licensee during the exit interview on May 30, 1980. Specifically, the inspector noted that the terminal blocks and connectors needed to be added to the list to comply with the Bulletin. This item will be reviewed on future inspections.



4. Review of Electrical Components (D.C. Distribution)

The inspector reviewed the installation of components associated with the D.C. power distribution systems to insure conformance with FSAR (Chapter 8.3.2) and industry standards for Class IE equipment. The inspector identified two areas where conformance to FSAR requirements is not clear. These areas are (1) use of isolation devices to separate Class IE power sources from Non-Class IE loads, and (2) designation of Non-Class IE circuits supplied from Class IE power as "associated circuits" and compliance with the separation criteria of IEEE 384 and Reg. Guide 1.75.

a. Use of Isolation Devices

The inspector noted that each 125 volt D.C. distribution panel and the 250 volt D.C. distribution panel (Class IE equipment) has Non-Class IE loads connected to it by circuit breakers that trip on fault current only (not tripped by accident signals per Reg. Guide 1.75). The FSAR (paragraph 8.3.2.2.1.1) states that the connection of Non-Class IE loads to the Class IE power supplies is permitted if they are connected by Class IE protective devices. The licensee stated that at WNP-2, these protective devices would by design not meet the requirements of Regulatory Guide 1.75 and IEEE 384 for "Isolation Devices". However, compliance with industry standards and regulatory guides for separation criteria of electrical circuits will be accomplished in accordance with the revised WNP-2 criteria recently submitted in response to NRR question 31.100 (see Inspection Report 50-397/80-06).

In addition to the above, the licensee stated that a revision to the FSAR chapter on D.C. power distribution is also being written which will clearly state system requirements for separation and isolation. This item will be examined further pending the completion of NRR review of these submittals.

b. Associated Circuits

The inspector noted that the FSAR (paragraph 8.3.2.2.1.1) states that "Wiring to the Non-Class IE loads from the Class IE power supplies are designated as associated circuits..." The FSAR in Section 8.3.1.3, physical identification of safety related (Class IE) equipment, states "Cable marking for associated circuits consists of a black inscription (cable number) on a composite background of horizontal bands of the background colors of both divisions. For example, a background consisting of yellow and silver bands indicates that a non-Class IE Division A cable (silver color band) is run in Division 1 (yellow color band) Class IE cable tray or conduit, somewhere along its routing. Orange and gold bands indicate Non-Class IE

Division B (gold) cable in Division 2 (orange) Class IE tray or conduit".

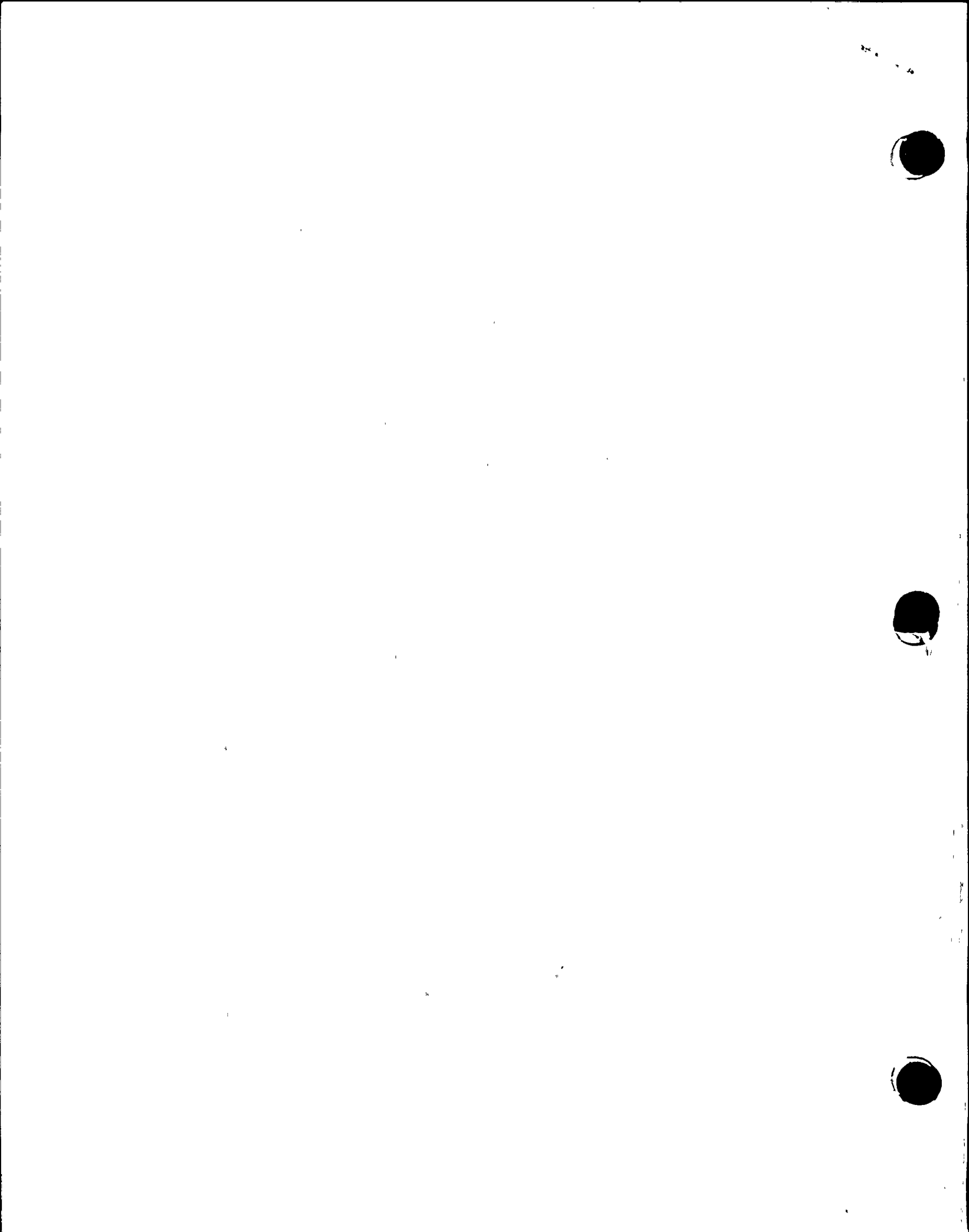
Contrary to these FSAR requirements, the inspector observed that cable routed from Class IE 125 volt and 250 volt DC distribution panels to Non-Class IE loads, was labeled with either a gold or silver background only and marked as Division A or B (Non-Class IE). The licensee stated that the separation criteria had been recently changed. This change is addressed to the NRC in a response to NRR Question 31.100 (discussed in paragraph 4(a) above, and in Inspection Report 50-397/80-06).

This new separation criteria will distinguish two types of associated circuits; (1) circuits which are associated due to common tray routing with Class IE circuits but are electrically separated from Class IE devices, and (2) circuits which are attached electrically to Class IE power supplies without "isolation devices" as defined by Reg. Guide 1.75.

The first type (Non-Class IE, Division A or B) will remain marked by composite background colors but will be allowed to run in either division A or Division B trays (no separation). The inspector noted that these criteria did not appear to fully comply with the requirements of IEEE 384. The intermixing of associated circuits routed in cable tray of different safety divisions is not precluded by the proposed separation criteria.

The second type (Division A' or B') will be marked with the gold or silver backgrounds of Non-Class IE divisions with a black checkerboard pattern to designate attachment to a Class IE source. These circuits will be required to meet the same separation requirements as Class IE circuits. However, it was not clear that these circuits would be required to meet the installation and quality control criteria for Class IE circuits. As most of these circuits in the D.C. distribution system are now installed as Non-Class IE (Division A or B), it appeared that the existing installations would simply be relabeled to indicate electrical connection to Class IE power sources without isolation.

These concerns about the use of isolation devices and handling of associated circuits were discussed with the licensee at the exit interview. These items are considered to be unresolved items and will be examined further pending the completion of NRR review and evaluation of the FSAR Amendment 9 submittal. (50-397/80-07/01)



5. Review of Quality Records (D.C. Distribution)

A review of installation records for D.C. distribution panels and motor control centers was performed. The inspector noted Nonconformance Report (NCR) 218-05627 (May 25, 1979) which detailed possible problems with seismic mounting of 25 Class IE motor control centers.

Fischbach/Lord Quality Assurance does not have documented evidence that welding inspections were performed on quality Class 1 motor control center bases. Concrete has been placed and the motor control centers mounted; therefore, base welds are no longer accessible for inspection. An inspection was performed on welds accessible (less than 10 percent) by Fischbach/Lord and documented by letter on April 22, 1980. This letter states that 60 welds of 72 examined on the 25 motor control centers were found unacceptable due to porosity, undersize, or undercut problems.

The licensee was requested on June 2, 1980 to make a 10 CFR 50.55(e) submittal detailing this problem (telephone, J. Elin to R. R. Foley, Deputy Project Manager WNP-2).

6. Unresolved Items

Unresolved items are matters about which more information is required in order to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items identified during the inspection are discussed in Paragraphs 4.a. and 4.b. above.

7. Management Interview

The inspector met with licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection of May 30, 1980, to discuss the scope and findings of the inspection as detailed in this report.

