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

REGION V

Report No. 50-508/80-15
50-509/80-15

Docket No. 50-508 & 50-509 License No. CPPR-154 & 155 Safeguards Group

Licensee: Washington Public Power Supply System

P. O. Box 968

Richland, Washington 99352

Facility Name: WNP-3 and WNP-5

Inspection at: WNP-3 and WNP-5 Site (Satsop)

Inspection conducted: November 18 - 21, 1980

Inspectors: D. P. Haist, Reactor Inspector — Date Signed 1/7/81

G. H. Hernandez, Reactor Inspector — Date Signed 1/7/81

Date Signed

Approved By: R. T. Dodds, Section Chief — Date Signed 1-8-81
Reactor Construction and Engineering Support Branch

Summary:

Inspection during the period of November 18 - 21, 1980 (Report Nos. 50-508/80-15 and 50-509/80-15).

Areas Inspected: Routine, unannounced inspection by regional-based inspectors of construction activities including licensee action on previous inspection findings; licensee action on IE Bulletins and Circulars; quality assurance program and implementing procedures of the prime civil/structural contractor inside the reactor building; and steel structures and supports by two contractors in the reactor auxiliary building.

The inspection involved 44 inspector-hours onsite by two NRC inspectors.

Results: Of the five areas inspected, two items of noncompliance were identified, one of which was repetition of a previous item of noncompliance. (Excessive offset in welds of pipe spools in storage, paragraph 4b; and failure to incorporate specification requirements into quality assurance procedures, paragraph 8).

RV Form 219 (2)

DETAILS

1. Persons Contacted

a. Washington Public Power Supply System (WPPSS)

*C. E. Love, Deputy Division Manager
*J. C. Lockhart, Quality Assurance Manager
*R. A. Davis, Senior Project Quality Engineer
*J. E. Werle, Project Engineering
*J. J. Peterson

b. Ebasco Services Inc. (Ebasco)

*A. M. Cutrona, Deputy Quality Assurance Manager
*L. A. Bast, Project Quality Engineer
*C. M. Kim, Engineering
*R. G. Peck, Project Quality Engineer
*B. D. Fowler, Site Manager
*D. Quamme, Project Management
*B. C. Bennett, Resident Engineer
R. Gross, Receiving Inspector
F. Williams, Lead Receiving Inspector

* Denotes those present at the NRC management meeting on November 21, 1980. In addition, Mr. G. Hansen, Sr. Project Engineer, State of Washington Energy Facility Site Evaluation Council, attended the meeting.

2. Construction Status

The licensee considered Unit Nos. 3 and 5 to be 23% and 8.8% complete, respectively, on October 31, 1980.

3. Site Tour

The inspectors conducted a tour of both units on November 18, 1980 to observe completed work and work in progress for obvious deviations or noncompliance with FSAR commitments and regulatory requirements. Particular attention was given to the storage of the quality class 1 charging pumps, the subject of a previous item of noncompliance (Ref. IE Inspection Report No. 50-508/80-10). All charging pump rooms were free of standing water. The charging pumps in unit no. 5 had the protective plastic covers partially removed, apparently to allow electricians access to connect motor heaters. The junction boxes on the motors were left open or partially covered with tape which could allow rodents to enter the motors. The licensee stated that corrective actions would be taken to address these concerns. The NRC resident inspector was informed of these findings and this area will continue to be monitored by the inspector to ensure that quality class 1 equipment is not stored in an adverse environment.

No items of noncompliance or deviations were identified.

4. Licensee Action on Previously Identified Enforcement Items

a. (Open) Noncompliance (50-508/80-04/02) Incomplete root penetration on pipe subassemblies.

Contrary to the requirements of the ASME B&PV Code Section III, the inspector had identified incomplete root penetration on one pipe weld in each of two pipe subassemblies supplied by Associated Pipe and Engineering (AP&E) at Clearfield, Utah. Actions planned and completed by the licensee were reported in IE Inspection Report No. 50-508/80-07.

During this inspection the inspector verified that the licensee had directed an increase in Ebasco vendor quality assurance manpower at the Utah facility effective September 29, 1980. The inspector also verified that receipt inspection personnel have been instructed on the nature of the code noncompliances and are performing 100% inspection of accessible pipe welds when received. The receiving inspector has been equipped with appropriate tools to perform these inspections. The inspector examined spool Nos. 3-3CC18-0165A-6, 3-3CC24-0305A-4, and 3-3CC12-0515B-1 which were previously rejected to verify that acceptable repairs had been made. The inspector also examined recently received spool Nos. 3-3CC20-0735B-5, 3-3CC24-0405B-15 and 3-3CC6-0745B-13. No deviations from ASME code requirements were identified on these ASME Section III, Class 3 spools. This item will remain open for further inspection due to a related apparent item of noncompliance (excessive offset) on a ASME Section III, Class 2 spool discussed below.

b. (Open) Noncompliance (50-508/80-04/03) - Excessive offset in welds of pipe spools in storage.

Contrary to the requirements of the ASME B&PV Code Section III, the inspector had identified excessive offset at weld joints in four pipe subassemblies. The inspector verified the corrective actions taken as outlined above (item 50-508/80-04/02).

In addition, the inspector examined weld joints on the following ASME Section III, Class 2 stainless steel pipe subassemblies: 3-2SI20-006-3, 3-2CH20-150-2, 3-2CS20-113.1, 3-2CH20-150.5, and 3-2CH20-317.16. The inspector identified a five (5) inch long area on the inside diameter of the pipe to elbow weld on spool no. 3-2CH20-150-2 having an offset of 3/16-inch. The maximum allowable offset for this pipe wall thickness is 3/32 inch. These pipe subassemblies are also supplied by AP&E through their Compton, California facility.

This is an apparent repeat item of noncompliance.

5. Licensee Action on IE Bulletins and Circulars

The following IE Bulletins and Circulars were reviewed by the inspector to determine the promptness and thoroughness of licensee actions to correct or avoid these known deficiencies:

A. Bulletin 80-05 - Vacuum Condition Resulting in Damage to Chemical Volume Control System Holdup Tanks

The inspector reviewed the results of a study of the radwaste system tanks and components for the described problem. The study concluded that no partial vacuum is likely to damage the tanks since the tanks are either vented to the tank cubicle or vent gas collection header or have overflow lines which are open to atmosphere. The inspector had no further questions on this bulletin.

b. Circular 79-02 - Failure of 120 Volt Vital AC Power Supplies

The licensee has analyzed the undesired Solid State Controls (SCI) Inc. inverter static switch transfer described in the Circular. The licensee has concluded that the protection transfer circuitry of the inverter to be used at WNP-3/5 has been designed to maximize, within design limits, the availability of the inverter system during transient conditions. Design features incorporated to realize this objective are (1) considerable hysterisis in the low voltage dc bus transients, using only solid state circuitry and no adjustable time relays; (2) control room alarm of inverter transfer to alternate supply upon sustained low dc voltage with automatic return to battery supply on restoration of battery voltage; (3) specified dc supply regulation under the worst case transient conditions on the 480 V ac input; and (4) static uninterruptible power supply isolation from the 480 V input bypass source by a regulating and bypass transformer in series, feeding the static switch to eliminate the transient and prevent spurious switching. The inspector had no further questions on the design of inverter circuitry. This circular will remain open pending review of the administrative controls to be employed to ensure operability of this safety system after its subcomponents have been subjected to maintenance or testing.

c. Circular 79-05 - Moisture Leakage in Stranded Wire Conductors

The licensee's review of the plant design indicates that stranded conductors will be used extensively inside the containment. Only solid conductors are used across containment penetrations. The measures under consideration to eliminate moisture incursion due to differential pressure are: (1) the use of heat shrink tubing over all butt splices, terminal connections, and plugs; and (2) the elimination of terminal boxes for safety-related instrument racks inside the containment.

This circular will remain open pending further development of measures to preclude moisture leakage in stranded wire conductors.

d. Circular 79-11 - Design/Construction Interface Problem

At the request of the licensee, Ebasco has reviewed the design procedures which involve interfaces between Ebasco and other design organizations to determine their adequacy. The content and implementation of the appropriate procedures were reviewed and Ebasco has concluded that current criteria and controls on interfacing are satisfactory. The inspector reviewed the scope of Ebasco procedures for interface control. The procedures appear to control design interface between all affected organizations including construction, vendors and Combustion Engineering, the NSSS supplier. The inspector had no further questions on this circular.

e. Circular 79-18 - Proper Installation of Target Rock Safety-Relief Valves

This circular is not applicable to pressurized water reactor facilities.

f. Circular 79-19 - Loose Locking Devices on Ingersoll-Rand Pump Impellers

Ebasco has determined that the only Combustion Engineering supplied pump of the type in question is the LPSI pump. This type WDF pump is being supplied with the improved impeller locking mechanism. This circular will remain open pending confirmation that maintenance and installation instructions provide adequate guidance to ensure that pump impellers are securely locked in place.

g. Circular 79-20 - Failure of GTE Sylvania Relay, Type PM Bulletin 7305, Catalog 5U12-11-AC with a 120V AC Coil

Ebasco has determined that tests on type PM relays by GTE indicate that the rod notching problem is limited to continuously energized relays with high load factors (14 poles), and the same tests on relays with four poles produced only slight rod wear and no tendency to hang up. The GTE type PM relays used in WNP-3/5 motor control centers are two pole relays and are operated periodically. Ebasco has concluded that the liklihood of relay hangup on two pole relays is extremely small. Ebasco is informing all safety-related equipment supply contractors to replace high load factor (greater than 4 poles) GTE Type PM 7305 relays with acceptable alternatives. The inspector had no further questions on this circular.

h. Circular 79-21 - Prevention of Unplanned Releases of Radioactivity

This circular has been forwarded by licensee project personnel to the operations group for information when preparing operating procedures. This circular will remain open pending establishment of controls to prevent unplanned releases of radioactivity.

i. Circular 79-22 - Stroke Times for Power Operated Relief Valves

The reactor coolant system at WNP-3/5 does not utilize power operated relief valves so this circular is not applicable.

j. Circular 79-23 - Motor Starters and Contactors Failed to Operate

Ebasco has investigated the potential suppliers of the subject motor starters and has concluded that Combustion Engineering is the only supplier who may be using them. Ebasco has requested Combustion Engineering to provide a listing of all equipment affected and to hold shipment of any equipment affected until replacement motor starters and contactors are provided by the vendor. The inspector had no further questions on this circular.

k. Circular 79-25 - Shock Arrestor Strut Assembly Interference

An investigation by Ebasco has disclosed that the part numbers affected are not being used at WNP-3/5. This circular is closed.

l. Circular 80-04 - Securing of Threaded Locking Devices on Safety-Related Equipment

Since installation and maintenance procedures have not been prepared for most equipment yet, this circular will remain open pending review of the administrative controls to be employed to ensure that the securing of locking devices is adequately covered in installation and maintenance procedures for all safety-related components.

m. Circular 80-05 - Emergency Diesel-Generator Lubricating Oil Addition and Onsite Supply

This circular has been forwarded to the licensee's operations department. In addition, Ebasco has contacted the diesel generator supplier, Colt Industries, which has responded by stating that the diesel generator supplied to WNP-3/5 will be equipped with an automatic lube oil replenishment system with low and high level alarms. Another place designated to add oil will be described in the instruction manual. This circular will remain open pending verification of these actions and review of the procedures or instructions for adding lubrication oil to safety related equipment, training of personnel, and provisions for an adequate inventory of lubricating oil.

n. Circular 80-09 - Problems with Plant Internal Communications Systems

The internal communications system at WNP-3/5 will be powered from the vital instrument busses. The susceptibility of plant electronic equipment to disruption from portable radio transmitters will be determined during startup however, vendor information for electronic equipment shows RF immunity. The inspector had no further questions on this circular.

o. Circular 80-10 - Failure to Maintain Environmental Qualification of Equipment

The licensee has stated that the operations maintenance work order system will include appropriate controls and training to ensure that environmental qualification of equipment is maintained. This circular will remain open pending establishment of those controls.

p. Circular 80-11 - Emergency Diesel Generator Lube Oil Cooler Failures

This circular has been forwarded to the licensee's operations department. The licensee stated that the corrosion inhibitors used will be in accordance with the recommendations of the diesel generator supplier. This circular will remain open pending verification of correct corrosion inhibitors.

q. Circular 80-12 - Valve-Shaft-to-Actuator Key May Fall Out of Place When Mounted Below Horizontal Axis.

Ebasco has reviewed all piping drawings and has identified five valves with orientations conducive to failure. These five valves are not safety related and failure would not affect plant safety or unit shutdown capability. This circular is closed.

r. Circular 80-14 - Radioactive Contamination of Plant Demineralized Water System and Resultant Internal Contamination of Personnel

The licensee has directed Ebasco to provide the demineralized water system with an antisiphon device or double isolation valves with a leakoff between them to prevent the backflow of potentially contaminated water. The licensee operations department will establish administrative controls on the demineralized water system to prevent contamination. There is no potential for cross connection between the potable and demineralized water systems. This circular will remain open pending verification of the licensees actions.

s. Circular 80-16 - Operational Deficiencies in Rosemount Model 510 DU Trip Units and Model 1152 Pressure Transmitters

The licensee has determined that no 510 DU trip units or Rosemount 1152 transmitters have been specified for use on WNP-3/5. This circular is closed.

t. Circular 80-18 - 10 CFR 50.59 Safety Evaluations for Changes to Radioactive Waste Treatment Systems

This circular has been forwarded to the licensee's operations department for consideration. This circular will remain open pending establishment of the licensee's provisions for preparation of 10 CFR 50.59 safety evaluations.

u. Circular 80-21 - Regulation of Refueling Crews

This circular has been forwarded to the licensee's operations department and will be addressed in fuel manipulation and refueling procedures. This circular will remain open pending verification of these actions.

v. Circular 80-23 - Potential Defects in Beloit Power Systems Emergency Generators

The licensee has determined that the WNP-3/5 facility will not be purchasing Beloit Power Systems generators with frame sizes 5 or 6. This circular is therefore not applicable and is closed.

6. Safety Related Structures (Structural Steel & Supports II) - Peter Kiewit Sons

a. Observation of Work and Work Activities

Three major equipment components located outside of Containment No. 3 were examined to verify whether work in progress and completed work was being accomplished in accordance with NRC requirements and SAR commitments. The components examined were:

(1) Letdown Heat Exchanger, S/N-2371
(2) Volume Control Tank, S/N-001
(3) Nitrogen Recycle Tank, S/N-N2321.20

The inspector found that while these components are not yet installed in final location, the components are being maintained in accordance with Peter Kiewit Sons in-place storage requirements.

No items of noncompliance or deviations from NRC or industry standards were found with the Volume Control and Nitrogen Recycle Tanks, however, weld defects on the attachment welds similar to those identified during the NRC inspection from August 29 to September 26, 1980 (see NRC Inspection Report No. 80-09) were found on the Letdown Heat Exchanger.

These tanks were fabricated by Richmond Engineering Company (RECO) of Richmond, Virginia and supplied by Combustion Engineering to the licensee.

Discussions with licensee personnel indicated that the Project Quality Assurance Manager had requested on November 4, 1980 (reference: Inter Office Memorandum No. QA-35-80-632) a re-inspection of all pressure vessels furnished by Combustion Engineering. An attached list to this memo included the Unit 3 Letdown Heat Exchanger as one of the pieces of equipment to be re-inspected.

Since it appeared that the licensee's program is cognizant of, and has taken steps to resolve this problem, the inspector has no further questions on this matter.

b. Review of Quality Records

The pertinent work and quality records associated with the three major equipment components listed above were reviewed to determine whether these records met established procedures and whether these records reflect work accomplishment consistent with NRC requirements and SAR commitments. The following quality records which included material, installation and inspection records were reviewed:

- Records required list
- Material receiving inspection report
- Material received report
- Document deficiency notices
- Certificate of compliance
- Mill test certification and analysis
- Weld material certification and analysis
- Radiographic reader
- Hydrostatic test reports
- As-built drawings
- Manufacturers identification plan
- Manufacturing inspection plan

No items of noncompliance or deviations were identified.

7. Steel Structures and Supports - Morrison Knudsen

Observation of Work and Work Activities

The inspector examined welding activities in the Morrison-Knudsen onsite fabrication shop for compliance with applicable codes and standards. The following aspects of the work were examined: identification of welders, documentation, welder qualification, in-process and completed welds, and control of weld filler material. Discussions with the contractor personnel disclosed that embed plates supplied by Fought and Company Incorporated of Tigard, Oregon had been received onsite with Nelson studs which did not meet the requirements of AWS D1.1. The studs not meeting code requirements fell into two basic categories (a) undersize fillet welds and (b) other weld defects including lack of fusion, undercut, cracks, and lack of 360° flash. In February 1980 a generic nonconformance report (NCR No. 11581) was written and on May 1, 1980 the recommended disposition allowed those studs with undersized fillet welds to be accepted as-is based on satisfactory results of tensile tests, in which all studs

met or exceeded the required tensile capacity. All other studs were to be repaired or returned to the vendor. Since the tensile test included all types of weld defects and not one stud had failed to meet the minimum tensile strength required by AWS, the nonconformance disposition also allowed that those plates already installed be left as-is and used for the purpose intended.

The inspector concluded that the contractor and the licensee had taken appropriate action in accordance with the quality assurance program and appeared to have properly evaluated the problem under the reportability requirements of 10 CFR 50.55(e).

8. HVAC Duct Support Connection Analysis

During the course of an inspection on October 21-24, 1980 the inspector was given a calculation titled "Connection Analysis for Beam Connections Using Single Side Angles." This calculation was prepared by the HVAC contractor, Wallace/Superior in support of an internal nonconformance report disposition. The nonconformance reporting procedures of this contractor are the subject of a previous notice of violation. (Ref. IE Inspection Report 50-508/80-12).

The inspector reviewed this "Connection Analysis" and found the following deficiencies: (1) the analysis was performed on a turbine building duct support and included no dynamic load factor to account for seismic loading on reactor auxiliary building supports; (2) the AISC load capacities were misinterpreted as the capacity per clip when in fact they represent the capacity per double clip; (3) the allowable load per clip angle was incorrectly calculated; and (4) the actual load per clip angle was never compared to the allowable load per clip angle to determine acceptability. These deficiencies render this calculation void and demonstrate a lack of understanding on the part of the person performing this analysis of the AISC Manual of Steel Construction and its application.

On October 24, 1980 Ebasco prepared calculations of the seismic duct supports in the reactor auxiliary building to check adequacy of the one-sided clip connections. Ebasco concluded that the one-sided clip angle connections are unacceptable for seismic connections. A nonconformance report has been issued to upgrade the four seismic supports in the reactor auxiliary building by adding additional clips.

Licensee representatives stated that Wallace/Superior is not allowed to perform design calculations on safety related structures and that changes to the Wallace/Superior nonconformance reporting system will prevent repetition of this situation. Since there were only four (4) quality class 1 supports installed at the time the contractor's nonconformance reporting system was revised and the licensee has taken action to correct these supports, the inspector had no further questions at this time.

9. Safety Related Structures (Structural Steel and Supports) - J. A. Jones - Contract No. 265

Review of Quality Assurance Implementing Procedures

The inspector examined the following J. A. Jones quality assurance implementing procedures to ascertain whether quality assurance plans, instructions and procedures for specific safety related activities have been established and whether these documents conform to PSAR commitments, industry standards, and design specifications:

Procedure No.	Title
POP-N-700	Project Quality Assurance Programs and Organization
POP-N-701	Quality Assurance Directives and Instructions
POP-N-702	Personnel Training, Qualification, and Certification
POP-N-703	Nonconformance Reporting
POP-N-704	Calibration and Control of Measurement and Test Equipment
POP-N-705	Subcontractor Surveillance
POP-N-706	Source Inspection
POP-N-707	Site Inspection and Test
POP-N-708	Quality Assurance Audits

The inspector identified the following omissions from the procedures reviewed:

(1) Procedure No. POP-N-703, Nonconformance Reporting, does not incorporate the provisions of the controlling specification No. 3240-265, section 2A, paragraph 14.6.4.2 which requires the contractor, for contractor-dispositioned nonconformance reports, to submit the original completed nonconformance report with applicable supporting engineering and inspection documentation to the Engineer's Quality Assurance Site Supervisor. This procedure also does not incorporate the requirements of specification paragraph 14.6.6 which requires, for NRB reviewed nonconformances, that the Engineer witness the re-inspection, determine its acceptability and sign off the nonconformance report after prior

contractor inspection and approval. These omissions have been reflected in the practices of the contractor. The supporting concrete inspection reports and final placement inspection records were not transmitted with nonconformance report Nos. 2907 and 2910 dated May 5, 1980 and May 9, 1980, respectively. These supporting documents were later transmitted through routine documentation channels.

Administrative site procedure no. ASP-QA-7-3, Rev. 2 which prescribes owner/engineer handling of nonconformance reports requires, in paragraph 3.3.31, quality assurance verification of implementation of nonconformance disposition where required. This owner/engineer procedure does not reflect the contract specification requirement that, for NRB reviewed nonconformances, the engineer witness the re-inspection, determine its acceptability, and sign off the nonconformance report. Nonconformance report nos. 2910 and 2930, dated September 16, 1980 were reviewed by the NRB (Nonconformance Review Board). There is no evidence that the engineer witnessed the reinspection as required by the controlling contract specification. The failure of contractor procedures to incorporate specification requirements is an apparent item of noncompliance (50-508, 509/80-15/01).

The failure of contractor procedures to adequately incorporate specification requirements (Ref. IE Inspection Report Item No. 50-509/79-08/02-Contract No. 213) and the requirements of administrative site procedures (Ref. IE Inspection Report Item No. 50-508/79-08/01-Contract No. 251) have been the subject of repeated inspection findings and have been discussed with the WPPSS management during presentation of the NRC Regional Evaluation of Licensee Performance at WNP-3/5 for the appraisal period of August, 1979 - August, 1980.

(2) Procedure No. POP-N-706, Source Inspection was approved for use with an unresolved comment by the Engineer concerning the characteristics to be inspected and the method of surveillance to be used. The licensee is investigating this omission to determine if the comment was withdrawn. This item is unresolved. (50-508, 509/80-15/03)

The inspector also noted that Procedure No. POP-N-707, Site Inspection and Test, allows the QV supervisor to review inspection reports for completeness and validity prior to adding the report number and logging the report into the system. This practice has been the source of numerous allegations by QC inspectors at another WPPSS facility that inspection findings were voided improperly. The policy for documenting and voiding of inspection documents will be examined during a subsequent inspection. (50-508, 509/80-15/02)

10. Management Meeting

The inspectors met with the licensee and engineer management denoted in paragraph 1 at the conclusion of the inspection on November 21, 1980. The inspectors discussed the scope and findings of the inspection. The inspector expressed concern that the lessons being learned at the WNP-2 facility with regard to allowing the QC supervisor to decide the validity of inspection findings prior to logging the inspection report into the system, have not been implemented at the WNP-3/5 facilities. The licensee acknowledged this concern.