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

REGION V

Report No. 50-397/80-19

Docket No. 50-397/80-19 License No. CPPR-93 Safeguards Group

Licensee: Washington Public Power Supply System

P. O. Box 968

Richland, Washington 99352

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

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

Inspection conducted: November 4-7, 1980

Inspectors: D. P. Haist, Reactor Inspector — 1/26/81 Date Signed

W. J. Wagner, Reactor Inspector — 1/26/81 Date Signed

A. J. D'Angelo, Reactor Inspector — 1/26/81 Date Signed

Approved By: R. T. Dodds, Chief, Projects Section
Reactor Construction and Engineering Support Branch — 1/27/81 Date Signed

Summary:

Inspection during the period of November 4-7, 1980

(Report No. 50-397/80-19)

Areas Inspected: Routine, unannounced inspection by regional based inspectors of construction activities including licensee action on open enforcement items; preparations for repair of deficiencies in the sacrificial shield wall; continuation of investigation of allegations concerning record irregularities by the prime mechanical contractor; and investigation of allegations of irregularities in the construction manager's administration of the quality assurance program. The inspection involved 75 inspector-hours onsite by three NRC inspectors.

Results:

No items of noncompliance or deviations were identified.

DETAILS

1. Persons Contacted

a. Washington Public Power Supply System (WPPSS)

*W. C. Bibb, Project Manager
*J. D. Martin, Plant Manager
*G. K. Afflerback, Deputy Project Manager, Startup
*G. I. Wells, Deputy Project Manager, Construction
*R. M. Tanner, Quality Control Director, Contract 215
*A. M. Sastry, Deputy Project Manager
*B. A. Holmberg, Change Manager
*R. T. Johnson, Project Quality Assurance Manager
*D. C. Timmins, Engineering Director, Contract 215
R. M. Foley, Deputy Project Manager, Engineering

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

*G. T. Harper, Site Engineering Manager
*R. D. Carmichael, Quality Assurance Engineer
R. Powe, Lead Quality Assurance Engineer-Audits
*M. J. Parise, Special Projects Manager
R. C. Root, Site Manager
R. Spence, Lead Quality Assurance Engineer-Documentation

c. WSH/Boecon/Geri (WBG)

S. Weihing, Field Welding Engineer

*Denotes those present at management meeting or November 7, 1980. Additionally, the USNRC Senior Resident Inspector, Mr. A. D. Toth was present at this meeting.

2. Licensee Action on Previously Identified Enforcement Items

a. (Closed) Noncompliance (50-397/79-10/04) Failure to Follow Post Weld Heat Treatment (PWHT) Procedures. A review of PWHT recorder charts (records were somewhat illegible) for welds 1A and 6 had revealed that the heating and cooling rates exceeded procedure and ASME Section III limitations. The inspector reviewed documentation which indicates that RFW-419-4 weld no. 6 was completed on November 7, 1977; repair weld No. 6RI was completed on November 28, 1977; post weld heat treatment was completed on October 27, 1978. The PWHT recorder chart was reviewed for conformance with procedure and ASME Section III requirements and found acceptable. RFW-419-5.7 weld No. 1A will be re-post weld heat treated. This requirement is documented on Inspection Report No. 215-1R-3404. The inspector had no further questions on the post weld heat treatment of these welds.

b. (Open) Noncompliance (50-397/79-10/01) Failure to Properly Qualify Heat Treatment Procedure. The thermal transient analysis performed by the licensee to qualify the post weld heat treatment procedure assumed non conservative adiabatic conditions on the inside of the piping.

The licensee performed finite element two dimensional thermal analyses assuming 6.7 KW and 12 KW heater blankets and natural convection and forced air flow of 44 ft/sec. The results of these calculations indicate that the code required minimum soak temperature would be maintained at the root of the weld as shown in the tabulation of results below:

Assumptions	Weld Crown Temp. (^{o}F) Maximum	Minimum	Weld Root Temp (^{o}F) Maximum	Minimum	Max. Temp (^{o}F) Under Heater
6.7 KW Heater (Case 1) No air flow	1204	1198	1192	1186	1295
12.0 KW Heater (Case 2) No air flow	1209	1198	1198	1186	1354
6.7 KW Heater (Case 3) Air flow approx. 44 ft/sec.	1203	1197	1168	1161	1329

These results indicates that if a 12.0 KW heater (Case 2) were used with no air flow, the maximum temperature under the heater would exceed the lower critical temperature (approximately 1330^{o}F) of the material and the ASME code allowable maximum temperature of 1250^{o}F. Air flow through the pipe would further increase this maximum temperature. The effect of these temperatures on the material under the heater blanket will remain open pending licensee evaluation.

c. (Closed) Noncompliance (50-397/80-04/04): No Formal Procedures Were Generated to Control Heat Straightening of the Sacrificial Shield Wall.

The licensee identified this item in their report "Engineering Evaluation of the WNP-2 Sacrificial Shield Wall" of August 1, 1980, as concern No. 15. For brevity, this report will be referred to as the SSW Report. The report presents evidence that the heat straightening was performed within compliance with the intent of the governing code (AWS D.1.). The conclusion is that the combination of force and temperature applied during the heat straightening operation was such as not to degrade the material properties. Therefore the process did not affect the quality of the SSW to any significant extent. The inspector has no further questions on this item.

d. (Closed) Noncompliance (50-397/80-04/06; Procedures for Weld Sequence and Distortion Control Were Not Submitted to the Engineer.

This is identified as Concern No. 17, Item 2 in the SSW Report. Licensee evaluation of the as-built dimensions of the SSW with respect to circularity and vertical plumb were found acceptable. This evaluation was performed at the 541'-5" elevation. The reports also states that the lack of cracks due to residual stresses which could result from an inproper weld sequence provides confidence that a problem with high reaction stresses does not exit. The inspector has no further questions.

3. Licensee Action on Previous Inspection Findings

a. (Closed) Unresolved Item (50-397/80-04/03: No Formal Procedures for Cold Bending of Curved Plates in the Sacrificial Shield Wall.

This is identified in the SSW Report as concern No. 6.

The major concerns in cold bending the steel plates are the possibilities of degradation of mechanical properties and/or brittle fracture occuring during the bending operation if the metal temperature is too low. In addressing these concerns, the SSW Report states that for the low strains used in the SSW the effect on strength and ductility is not significant. Also, at these strain levels, there is no significant probability of creating cracks by cold bending.

The effect of cold bending on the nil-ductility transition temperature (NDT) of the A36 SSW plates is being determined by the licensee. Although the final test report was not available during this inspection the licensee stated that the resultant shift in NDT of the as-bent plate versus the as-received plate is within acceptable limits. These test results will be presented in an addendum to the SSW Report. The inspector has no further questions on this item.

b. (Open) Followup Item (50-397/80-10/04) - Prompt Reporting of Potential 50.55(e) Construction Deficiencies An NRC inspector had identified a potential 50.55(e) construction deficiency regarding motor control center mounting base welds. This specific deficiency was determined not to be reportable as described in IE Inspection Report No. 50-397/80-14. The issue of prompt reporting, however remained open.

The inspection verified that direction has been received from the licensee's corporate quality assurance department regarding the reporting of potential 50.55(e) construction deficiencies. This direction is to be implemented by a project procedure which is now under development. This procedure will be examined during a subsequent inspection.

4. Allegation of Record Falsification

a. Review of Quality Records

An allegation had been made that WBG pipe and hanger Quality Records were falsified (IE Inspection Report No. 50-397/80-08). An additional 32 pipe Quality Records of the 1979 photocopied records were compared with the original. In each case, records where information had been added or changed had been initialed and dated as required by the contractor's procedure No. WP153, "Changes to Quality Related Records/Documentation". The inspector will examine a larger sample during subsequent inspection. (50-397/80-19/01).

5. Allegations of Improper Quality Assurance Practices by the Construction Management Organization.

a. Statement of Allegations

On October 9, 1980 the inspector met with an individual and received nine (9) specific allegations concerning the quality assurance practices of the construction management organization, Burns and Roe, Inc. during the time period of 1975 through 1977. The specific allegations as understood by the NRC are as follows:

(1) Audit findings were removed by the quality assurance manager.

An audit was conducted by the quality assurance organization which resulted in sixteen (16) audit findings. Later, some of the findings were removed by the quality assurance manager. It was not known whether or not the findings removed were ever resolved.

(2) Nonconformance reports and corrective action requests were voided by the quality assurance manager.

Documented deficiencies were voided by the qualilty assurance manager without explanation. It was not known whether or not the deficiencies were ever resolved.

(3) A corrective action request was improperly closed

A corrective action request was issued against a contractor but the stated deficiency was never acknowledged by the contractor. The corrective action request was later accepted by the construction manager's quality assurance organization.

(4) Work may not have been stopped as required by quality assurance procedures.

A corrective action request against a contractor was elevated from category 'C' to category 'D' which requires that work be stopped until the corrective action request is resolved. The alleger does not believe that work was ever stopped.

(5) The Burns and Roe quality assurance material control group was performing receipt inspection for site contractors without written procedures.

At the time that pre-purchased equipment was being received, the contractors, who were responsible for receiving inspection, did not have the appropriate drawings or purchase order requirements to enable them to perform receiving inspections. Equipment was checked for overage, shortage, and damage, and conditionally released. Eventually, the B&R quality assurance group started performing receiving inspection without a procedure and documenting them on an inspection report. B&R later performed receiving inspections to a contractor's procedure No. 206

(6) The main steam stop valves were installed in the wrong location.

There were problems with equipment identification and as a result, the main steam stop valves were installed in the wrong place. This was later identified and corrected.

(7) A contractor's nondestructive examination procedure was inadequate.

Procedure No. QCP-6 for visual weld examination did not require a record of the depth or location of excavation for weld repairs.

(8) Audits by WPPSS did not emphasize corrective action by Contractors.

Audits by the licensee focused on the construction manager's surveillance program when deficiencies were identified instead of focusing on the contractor's performance.

(9) Separation of electrical cables from instrument tubing on redundant systems is not being considered.

Additionally, the individual provided general allegations of deficiencies in the areas of the adequacy of the owner's quality assurance program, and the construction manager's quality assurance program. These additional allegations will be investigated during a subsequent inspection. (50-397/80-19/02)

An investigation of the specific allegations was initiated by reviewing the quality assurance procedure requirements applicable at the time of the alleged deficiencies; reviewing records of the alleged deficiencies; and interviewing individuals associated with the records and activities. A total of five individuals were interviewed during this initial investigation. Many of the individuals who would have been involved in the areas of alleged deficiencies are no longer employed at the site.

b. Investigation Findings

(1) Audit findings were removed by the quality assurance manager

Finding: The allegation was partially substantiated.

The original audit package for audit No. 76-13, conducted on the 215 contractor during the time period of December 14-17, 1976 contains an apparent discrepancy between the initial audit findings and the final audit findings. The internal review of audit findings for presentation to the contractor indicated a total of 16 findings on December 22, 1976 as did the post audit meeting minutes on January 6, 1977. The audit summary report, issued on February 3, 1977 states a total of 15 audit findings. The audit checklist identified 16 audit findings. Each of the first fifteen of these findings was transferred to an audit finding report. Finding No. 16, that the contractor had no materials handling superintendent, was not transferred to an audit finding report for concurrence and resolution by the contractor.

Quality assurance procedure No. 2808-Q-4.7, Revision 4, "Site Contractor Audits", paragraph 6.6, requires the quality assurance engineer to note any finding not in compliance with applicable procedures, codes, etc. on an audit finding report form. Paragraph 6.7 requires the quality assurance engineer to formalize his finding upon completion of the audit. The failure to formalize audit finding No. 16 appears to be substantiated. The involvement of the quality assurance manager has not been substantiated at this time. The inspectors will attempt to contact the quality assurance engineer involved during the continuation of this investigation. This item is considered unresolved (50-397/80-19/03).

(2) Nonconformance reports and corrective action requests were voided by the quality assurance manager.

Finding: The allegation was partially substantiated.

Inspection Report No. 1480 dated December 9, 1976 was issued to document overnight storage of quality class 1 main steam isolation valves in less than the specified level 'B' storage conditions. Nonconformance report No. 2062 was issued in conjunction with this inspection finding on December 10, 1976. On December 16, 1976 this nonconformance report was voided upon the direction of the quality assurance manager. However, attached to the voided nonconformance report was an explanatory note which stated that the valves were adequately covered to meet the Level 'C' storage requirements of the General Electric specifications. The note also directed that the Inspection Report No. 1480 be reopened as Revision 1. The inspector was unable to locate Inspection Report No. 1480, Revision 1, to verify that this apparent deficiency had been properly resolved. The licensee is attempting to locate this document. This item is unresolved.

Corrective action report No. 1218 dated December 9, 1976 addresses removal of the same quality class valves from the WPPSS warehouse without obtaining owner release for installation. This corrective action request was voided on December 15, 1976 without explanation and contains the quality assurance manager's initials. Inspection Report No. R-1479 which is referenced on the nonconformance report was not in the licensee's document vault but a copy was located and found to be voided at the direction of the quality assurance manger.

Quality Assurance Procedure No. 2808-Q-1.13, Revision 7, "Corrective Action Request" provides no direction on the voiding of corrective action requests, nor does procedure No. 2808-Q-1.25, Revision 3, for control of nonconformances. It does not appear that a policy exists concerning the voiding of quality assurance documents. The licensee is examining the circumstances of this corrective action request to determine if documentation to support resolution of this deficiency exists. The investigation of voided quality documents will continue and is considered unresolved. (50-397/80-19/04)

(3) A corrective action request was improperly closed.

Finding: The allegation was not substantiated.

A Corrective Action Request No. 1016 was issued to the 215 contractor on April 3, 1975 for placing a hold tag on the RHR pump casing pallet instead of on the piece of equipment itself. The contractor did not acknowedge the deficiency and provided justification for his position, i.e. that the pump weighs 14,050 pounds and is bolted to the pallet, and that the quality assurance manual allows the hold tag to be placed on the item or container. Burns and Roe considered the contractor's response unacceptable and issued Corrective Action Request No. 1016A, dated May 2, 1975, reiterating the Burns and Roe interpretation of the quality assurance manual. The contractor did not acknowledge the deficiency stating that all contractural requirements would be met. This response was considered satisfactory by Burns and Roe on July 2, 1975.

Quality assurance procedure No. 2808-Q-1.13, Revision 7, paragraph 6.8(2) allows a corrective action request returned with corrective action identified that is acceptable to quality assurance to be dispositioned "satisfactory".

An individual with knowledge of this corrective action request stated that there was a difference of opinion between Burns and Roe and the contractor which resulted from ambiguous procedures. The conscious decision to accept the contractor's position was based upon the ambiguity of the procedure and the nature of the deficiency. The "hold" tag is a multiple copy form so that additional copies were available to document the status of the component. The inspector had no furthur questions on the resolution of this issue.

(4) Work may not have been stopped as required by quality assurance procedures.

Finding: The allegation was not substantiated.

Corrective Action Request No. 1032-Category "B" was issued to the 215 contractor on July 22, 1975 to request correction of a deficiency in transmitted documentation. The contractor acknowledged the deficiency and agreed to change his quality assurance manual on September 5, 1975 but maintained that the documentation evidenced traceability of the applicable material. Corrective Action Request No. 1032A was elevated to category 'C' and issued on September 5, 1975 due to the fact that a contractor reply/action had not been received by the stated due date of August 8, 1975. The contractor replied to this elevated corrective action request on October 27, 1975 by essentially restating his response to Corrective Action Request No. 1032. Burns and Roe considered this response unacceptable and responded with letter No. BRBC-215-F-75-2746 dated November 4, 1975, which elevated the corrective action request to category 'D' and called attention to Contract Specfification No. 2808-215, Section 52A, paragraph 3.16, provisions that "Failure to take appropriate action to a Corrective Action Request in the time alloted shall require the work to be stopped in the area the Corrective Action Request applies." This letter also transmitted the Burns & Roe comments on the contractors reply to Corrective Action Request No. 1032A and requested a response by November 17, 1975 without specifically stopping work. The contractor responded in letter No. BCBR-215-75-2033 dated November 26, 1975, restating their position and requesting a meeting to resolve the differences in opinion. The inspector was unable to find any minutes of the requested meeting or any subsequent correspondance relating to resoltuion of this difference in opinion.

Quality Assurance Procedure No. 2808-Q-1.13, Revision 7, paragraph nos. 6.11 and 6.12 specify form letters to a contractor's Office of the President when response to a category 'D' letter is unsatisfactory or when response to a form memo is unsatisfactory. This procedure does not specify an automatic stop work order nor does it address work stoppage and, as such, conflicts with the aforementioned contract specification.

The inspector located a letter No. BRBC-215-F-77-2305 dated August 2, 1977 from Burns and Roe to the contractor which returned Corrective Action Request Nos. 1032 and 1032A accepting the contractor's response and corrective actions and acknowledging that "the technical complexity of the deficiency noted on CAR #1032, the confusion which arose over the interpretation of the requirement and the time needed to revise your Quality Assurance Program to provide the additional controls, were contributing factors in your failure to comply."

The unresolved issues that remain are: (1) the discrepancy between the contract specification and Burns and Roe Quality Assurance Procedures No. 2808-Q-1:13 regarding the cessation of work when corrective action requests are not resolved; (2) the resolution of the difference of opinion between Burns and Roe and the contractor on Corrective Action Request Nos. 1032 and 1032A; and (3) the action taken or the reasons for inaction during the time period between the contractor's request for a meeting on November 26, 1975 and Burns and Roe acceptance of the contractor's response to Corrective Action Request Nos. 1032 and 1032A on August 2, 1977. (50-397/80-19/05).

(5) The Burns and Roe quality assurance material control group was performing receipt inspection for the contractors without written procedures

Finding: The allegation was not substantiated during this initial investigation.

Interviews with individuals on this allegation were inconclusive. Investigation of this allegation will be continued. (50-397/80-19/02).

(6) The main steam stop valves were installed in the wrong location.

Finding: The allegation was substantiated.

Inspection Report No. 215-M-77-1031 dated March 17, 1977 documents the installation of main steam isolation valve No. 106 in loop 'A' instead of in loop 'B' as required. A hold tag was initiated and placed on the valve while engineering evaluation was in process. The actual disposition was to accept the condition. A nonconformace report was not initiated to document this condition and evidence of an engineering evaluation with concurrence by the vendor, General Electric was not apparent. These issues remain unresolved. (50-397/80-19/06).

Specific allegation Nos. 7, 8, and 9 were not substantiated by interviews with individuals. The investigation of these allegations will continue. (50-397/80-19/02).

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 paragraph 5.

7. Management Interview

The inspectors met with the licensee representatives denoted in paragraph 1 at the conclusion of the inspection. The items inspected and the observations and findings of the inspectors were discussed. The licensee acknowledged the investigation findings and will attempt to produce documentation to resolve some of the issues.