

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-460 /82-07

Docket No. 50-460

License No. CPPR-134

Safeguards Group _____

Licensee: Washington Public Power Supply System

P. O. Box 968

Richland, Washington 99352

Facility Name: Washington Nuclear Project No. 1

Inspection at: WNP-1 Site, Benton County, Washington

Inspection conducted: April 5-9, 1982

Inspectors: R. T. Dodds
P. P. Narbut, Reactor Inspector

4/30/82
Date Signed

Date Signed

Date Signed

Approved by: R. T. Dodds
R. T. Dodds, Chief, Reactor Project Section 2
Reactor Construction Projects Branch

4/30/82
Date Signed

Date Signed

Summary:

Inspection during the period of April 5-9, 1982.

Areas Inspected: Routine unannounced inspection by a regional based inspector of licensee activities including licensee action on previous inspection findings, a 10 CFR 50.55e report on flooding in the GSB and a review of University Nuclear Systems Inc. welding procedures. The inspection involved 38 inspector hours onsite and 24 inspector hours in office by one NRC inspector.

Results: Two items of noncompliance were identified concerning failure to write a nonconformance report (paragraph 2b) and welding procedure specifications not in accordance with the structural welding code (paragraph 4c).

RV Form 219 (2)

DETAILS

1. Persons Contacted

a. Washington Public Power Supply System

- *R. W. Root, Acting Program Director
- *R. B. Glasscock, QA Director
- *C. R. Edwards, Project QA Manager
- *F. C. Hood, Assistant Program Director Construction
- *N. S. Porter, System Engineering Manager
- *M. E. Rodin, Senior QA Engineer
- *M. J. Farrell, QA Specialist

b. Bechtel Power Corporation (Bechtel)

- *E. W. Edwards, Project Manager
- *D. R. Johnson, Manager of Quality
- *T. Fallon, Project CQCE
- *J. Ruud, QA Engineer
- *J. B. Gatewood, Project QA Engineer
- C. Kasch, QA Engineer
- G. A. Hierzer, Field Construction Manager
- T. Psomas, Lead QC Engineer, Maintenance
- K. Christensen, QC Engineer, Maintenance
- A. Lobrovich, Lead QC, Electrical
- G. Milbourne, Contract 218 Coordinator

c. United Engineers and Constructors (UE&C)

- * G. Faust, FSQA
- J. M. Feil, Supervisor QA Engineer
- F. Valentyeni, Supervisory Structural Engineer, Philadelphia Office

d. University Nuclear Systems Inc. (UNSI)

- *S. Cohen, Project Manager
- *R. Canipe, Corporate QA Manager
- *B. Sachs, Project QA/QC Manager

e. J. A. Jones Construction Company (JAJ)

- *P. R. Cortez, Project Manager
- *R. Wilson, Project QA Manager

f. State of Washington (EFSEC)

*G. Hansen, Division Chief

*Attended exit interview of April 9, 1982 which was attended also by the NRC Senior Resident Inspector.

2. Licensee Action on Previously Identified Items

- a. (Closed) (460/81-07-04) Unresolved Item: Temporary attachment tack welds were not being inspected.

Quality Control Request for Information, QCRFI, No. 4-277 of 6/16/81 identified a problem that inspection personnel were not being called by craft to inspect temporary attachment welds.

At that time UNSI General Welding Standard QCP/CP No. 22.0 Revision 5 dated 3/25/81 Paragraph 5.13.1.1 required the inspector to be notified of all temporary attachment welds and required the inspector to document the location, weld procedure specification (WPS), and the welder ID on an inspection record.

As part of the response to the QCRFI, memorandum No. 15646 of 9-22-81 stated that QCP/CP 22.0 had been revised, changing requirements on tack welds. The change to QCP/CP 22.0 Revision 6 dated 7/8/81 was approved for use on 9-14-81 and eliminated the requirement to inspect each temporary weld.

Paragraph 6.4 of QCP/CP No. 22 in both revisions however required QC to perform random surveillances of in process welding operations including the welding process parameters. The surveillance items include the procedure used, the welder identification preheat and interpass temperatures and other parameters.

The AWS D.1.1 structural welding code does not require 100% inspection of welding process parameters but does require the welding inspector to make certain that welder performance meets applicable requirements "at suitable intervals". The surveillance inspections required by QCP/CP 22.0 therefore meet the requirements of the code for inspection at suitable intervals. There was an interpretation in the field at the time Revision 6 was issued that the elimination of the requirement to inspect all tack welds meant that no tack welds were to be inspected.

QCP/CP 22.0 Revision 7 dated 11/2/81 approved for use on 12/7/81 and returned to UNSI for implementation on 12/18/81 added a specific requirement to paragraph 5.13.1.1 to perform surveillance inspections of temporary attachment welds.

The corrective actions regarding craft personnel not calling for inspection when it was required by the procedure, were addressed in a UNSI Quality Finding Report (QFR) 81-1&4-9 dated 7/10/81, which stated craft foremen were retrained.

The corrective actions regarding uninspected hardware are discussed in paragraph 2b. below.

This item is considered closed.

- b. (Open) (460/513/81-09/01) Unresolved Item: Tackwelds for fitup of permanent items are not inspected.

Background

This item was originally identified by QA/QC personnel statements as the problem that none of the tack welds in Unit 4 had been QC inspected and that the lack of tack weld inspection was also an ongoing problem in Unit 1.

Since another contractor had been identified as having no inspection requirements for temporary attachments (Enforcement Item 460/80-01/01) this unresolved item was previously expanded in report 81-09 in October 1981 to include licensee action to assure that other contractors do not have similar deficiencies. At the exit interview the inspector discussed the lack of action in looking at other contractors for a similar problem.

Licensee personnel had not completed their action on this item, but the inspector considered the item sufficiently important to warrant followup during this inspection.

In the October 1981 inspection (81-09) the licensee had committed to write nonconformance reports to document the problems for resolution.

This inspection

The inspector reviewed Quality Finding Report (QFR) 81-1&4-9 dated 7/10/81. The QFR lists six items in Unit 4 and four items in Unit 1 which were installed with no craft documentation and no inprocess or final QC inspection. The items include items tack welded and items welded out complete. The QFR states that over 100 undocumented welds can be seen from the floor on elevation 399 of Unit 4 and that a random sampling indicates that perhaps 30% of the welds in Unit 1 are undocumented.

The corrective action section of the QFR completed and signed on 10/9/81 states no action can be taken at Unit 4 since the unit has been closed. The corrective action does not address Unit 1 actions.

The inspector examined nonconformance report No. 4-CNCR-216-80 dated 11/11/81 which was written in response to licensee's October commitment to document the problems of lack of documentation and lack of inspection for Quality Class I welds. A similar nonconformance report for Unit 1 had not been written. The licensee QA manager stated this was not done because a proven hardware problem had not yet been identified in Unit 1.

The Unit 4 CNCR identifies 159 items which do not have any craft or inspection documentation of work performed.

From discussions with licensee, construction management and contractor personnel the inspector understands the following:

- 1) Essentially none of the welding in Unit 4 was inspected. There are many more items in Unit 4 which were never inspected in process or final. These items may have some craft documentation. The Unit 4 CNCR addresses only the 159 items which have neither craft nor inspection documentation and does not address the vast majority of work which was not inspected in process or final.
- 2) The contractor's indication in QFR 81-1&4-9 that 30% of the welds in Unit 1 do not have craft or inspection documentation has not been resolved. Since the QFR has been closed out without mention of any Unit 1 actions and since no CNCR has been written regarding the Unit 1 problems, it is not clear that proper justifications, evaluations, or corrective actions have been identified and approved by the proper levels of management.

Contract specification 9779-216 Revision 10 Modification 4 Paragraph A2.2.1.1 defines a nonconformance as "A deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate. Examples of nonconformances include: ...incorrect or inadequate documentation, or deviation from prescribed... inspection...procedures."

Paragraph A2.3.1.1.a. states in part: "Nonconformances detected by a site contractor during his site...construction activities shall be documented on forms supplied by UE&C (Figure 1)." Figure 1 is the CNCR form.

The failure of the site contractor to document on a CNCR the lack of craft or QC documentation for 30% of the HVAC welds in Unit 1, which renders the quality of the items indeterminate, is contrary to the specification requirements and is considered an item of noncompliance (Enforcement Item 50-460/82-07-01).

- c. (Closed) (460/81-07-09) Followup Item: Containment penetration to piping flued head weld will not be tested to 125% of design pressure.

This item dealt with the welding of the containment penetration to piping flued head welds. The welding is performed to ASME Section III Division 1. The inspector had noted that Division 1 requires a pneumatic test to 125% of the design pressure when a hydrostatic test isn't possible. The containment pressure test is 115% of the design pressure and therefore this test would not meet the 125% requirement.

The inspector examined the UE&C position on this matter defined in UE&C letter UEWP 81-5722 of October 19, 1981 from the UE&C Project Manager to the WPPSS Assistant Program Director, Engineering.

The letter states the governing test pressure for the containment system is 1.15 times the Design Pressure defined in ASME III Division II Paragraph CC-6211. It further states "The piping flued heads and associated shop and field welds are designed to ASME III Division I Section NC which requires the 125% pneumatic test. It further states that testing the flued heads to the lower pressure can be justified by Division I Section NC-6322b of the code which states: When pneumatically testing a system, the test pressure shall not exceed the maximum test pressure of any component in the system."

This item is considered closed based on the designers position and rationale.

- d. (Closed) (460/81-07-01) Followup Item: Unusual rust accumulation on nozzles for safety related tanks.

The inspector examined nonconformance report 1-CNCR-243-12 dated September 3, 1981 and WPPSS memorandum EM RAM-81-49 dated September 22, 1981 dealing with the rust on the stainless steel nozzles.

The memorandum, by the WPPSS metallurgist, states the corrosion was due to friable deposits related to abrasive cutting. The nonconformance report indicates that the nozzles were cleaned, drenched with water, left over a weekend and no rust reappeared, indicating the condition was a surface condition only.

This item is considered closed based on the licensee's action.

3. Status of UNSI Actions

The inspector interviewed WPPSS QA, Bechtel Field Construction Manager and Project Contractor QC Engineer, and the UNSI Project Manager and Corporate QA Manager to determine what corrective actions were planned or underway.

The following actions were identified:

- a) UNSI procedures are being revised through April 1982.
- b) A Quality Circles Program is to be initiated similar to the program established at J. A. Jones.
- c) UNSI is considering hiring an additional trainer.
- d) UNSI has added a Field QC Superintendent.
- e) Bechtel has increased UNSI surveillance.
- f) UNSI has had a training session to the unrevised procedure requirements for superintendents, general foreman, foremen, and quality control.
- g) UNSI is training to the revised procedures as they are issued.
- h) UNSI has added a Deputy Field Superintendent.
- i) UNSI has established a startup team to walk-through revised procedures to establish workability prior to implementation.

The inspector also interviewed WPPSS and Bechtel QA personnel to determine the status of their analysis of the 76 control room Inprocess Inspection Records (IPI's) which were being analyzed in February 1982. The licensee representatives stated the WPPSS analysis had not been completed at the time of this inspection.

4. Licensee Action on 50.55(e) Construction Deficiency Reports

a. (Open) Potential 50.55(e) Construction Deficiency Report of January 11, 1982 - Flooding of the Unit 1 General Services Building

This item dealt with the inadvertant flooding of the 395 foot elevation of the Unit 1 general services building on January 9, 1981. The licensee issued a final report, letter G01-82-0048 of February 11, 1982. The inspector examined the flooded areas and the corrective action stated in the licensee's letter.

The inspector verified that all the mechanical and electrical equipment affected by the flooding was listed on 17 nonconformance reports written by Bechtel personnel who performed a walkdown after the flooding except as discussed below. The water level marks were visible on the structure walls and the inspector was unable to find any equipment which was not listed on the NCR's.

The inspector verified that the corrective actions being taken appeared to be technically appropriate. Submerged motors are being sent to the manufacturer for refurbishment. Motors exposed to a moist environment only were being redried and megger checked. Mechanical equipment such as pumps were being disassembled per manufacturers technical manual requirements.

The inspector was unable to verify that safety related conduit was inspected by walkdown. The Bechtel personnel who wrote the NCR used a list provided by the Bechtel contract coordinator. The Bechtel contract coordinator had not done a walkdown. The contract coordinator stated he understood Foley, Wismer and Becker (the electrical contractor) had done a walkdown.

At the exit interview the licensee personnel committed to verify that a walkdown of the wetted conduit was performed. The inspector did not identify any additional conduit which wasn't identified on the NCR during his examination of the flooded area.

Additionally, at the exit interview the inspector requested that the licensee submit a revised letter to the NRC to include as appropriate:

- 1) that conduit was considered
- 2) that 2 electrical panels were affected
- 3) that the containment spray pump motor was submerged and is being sent to the vendor for refurbishment
- 4) that drying and meggering was done to electrical motors which were not submerged but only subjected to a moist environment and that operational checks will be done in the normal course of preoperational testing.

Licensee management concurred to the request. This item remains open.

5. UNSI Weld Procedure Specifications

During a previous inspection the inspector had obtained copies of UNSI's Weld Procedure Specifications (WPS's) applicable to Quality Class I welding. These were reviewed in the NRC office during the week of March 15-19, 1981. The inspector notified the licensee on March 18, 1981 by telephone that the WPS's did not appear to meet the AWS D.1.1 structural welding code and were a potential item of noncompliance.

Prior to the time of this inspection, in response to the potential item of noncompliance, the licensee initiated a study of the UNSI WPS's and concluded the UNSI WPS did not meet the structural welding code in several areas.

The inspector reviewed his findings with licensee personnel and interviewed the UE&C engineer responsible for approving the UNSI WPS's. The engineer stated that the majority of the WPS's had been reviewed by his predecessors but of those he reviewed, his review was limited to the changes only and not the entire WPS.

UE&C procedure FGCP-17 Rev. 5 dated July 24, 1981 "Coordinating the Approval of ASME Section III Division 2 Contract Construction Procedures" was identified as the currently applicable procedure for UE&C review and approval of contractor procedures.

The licensee personnel pointed out that when UE&C's responsibilities for construction management had been revised to encompass only ASME III Division 2 responsibilities, FGCP-17 had been inadvertently revised to specifically require review of ASME III Div. 2 contractor procedures only. The licensee personnel stated that all contractor procedures were and are being reviewed to the requirements of FGCP-17 and that it would be re-revised to reestablish that practiced requirement.

FGCP-17 paragraph 3.5 states in part that the cognizant Contract Supervisor/ Contract Engineer, Field Superintendent QA and the Manager Construction Services have the responsibility for the review comment and approval sign off of the contractor's construction procedures in accordance with FGCP-17.

UE&C procedure FQS 5-2 Rev. 5 dated August 3, 1981 "Control of Contractor and Vendor Quality Affecting Procedures" Paragraph II.C.1 states in part that field QA will review and approve those procedures which address technical requirements in the area of welding. Paragraph III.B.3 states in part that the QAE shall review procedures to ensure inclusion of the appropriate quality requirements using the procedures checklist attachment #1 to the procedure. Attachment #1 Section IX paragraph 11 states in part: "Are...welding procedures qualified to applicable codes and standards...?"

UNSI Procedure OCP/CP No. 22.0 Revision 7 dated 11/2/81, "General Welding Standards" Paragraph 2.0 states in part the purpose of this procedure is to assure compliance with the requirements of...referenced codes and standards. Paragraph 4.2.2 lists the structural welding code AWS. D.1.1-77 as a referenced standard.

The following examples demonstrate areas where the UNSI WPS do not meet the AWS D.1.1-77 requirements:

a) Allowable base metals for prequalified weld procedures

The code, paragraph 1.2 identifies allowable base metals to be used with the code. It provides that other steels may be used provided the weld procedures are specially qualified (as opposed to being considered prequalified). The following examples of prequalified weld procedure specifications have the indicated material included on the WPS and the material is not an allowable prequalified material.

- 1) WPS 100 Rev. 3 dated 12/31/80 lists ASTM A 283 GrC, and AISI 1012-1028
- 2) WPS 101 Rev. 0 dated 1/16/81 lists ASTM A 283 GrC and AISI 1025-1028
- 3) WPS 125 Rev. 4 dated 2/5/82 lists ASTM A 283 GrC
- 4) WPS 126 Rev. 2 dated 7/15/81 lists ASTM A 283 GrC

b) Weld Joint configurations for prequalified weld procedures

The code, paragraph 2.6 identifies joint detail configurations which can be designated as prequalified. It also provides that other joint details may be used provided that the WPS is specially qualified. The following example of a prequalified WPS has the indicated joint details which are not allowable prequalified joint details.

- 1) WPS 100 Rev. 3 dated 12/31/80

Joint B-Pla-root opening 0-1/8 vs 0-1/16
Joint B-Pla-weld reinforcement not specified vs 1/32-1/8
Joint BL1b-root opening 0-1/16 vs 1/2 T-1/2 T+1/16
Joint BU41-root opening 0-3/32 vs 1/4 - 5/16
Joint B-U2a-groove angle 60°-70° vs 45°-55°

c) Flare Groove Welds

The code, paragraph 2.6 does not indicate that flare groove weld joint configurations are prequalified.

The following examples of prequalified WPS's have flare groove weld joint configurations included as prequalified joint configurations:

- 1) WPS-100 Rev. 3 dated 12/31/80
- 2) WPS-101 Rev. 0 dated 1/16/81
- 3) WPS-125 Rev. 4 dated 2/5/82
- 4) WPS-126 Rev. 2 dated 7/15/81

The failure to ensure the UNSI weld procedure specifications meet the structural welding code requirements is considered an item of noncompliance (Enforcement Item 50-460/82-07/02).

The inspector stated during the exit interview that the WPPSS engineering review of UNSI WPS's had identified additional areas where the UNSI WPS's did not meet code and standard commitments.

6. Exit Interview

The persons indicated in paragraph 1 met with the inspector on the date indicated in paragraph 1. The scope of the inspection and the findings as discussed in this report were discussed.