

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-460/82-10

Docket No. 50-460 License No. CPPR-134 Safeguards Group \_\_\_\_\_

Licensee: Washington Public Supply System

P. O. Box 968

Richland, Washington 99352

Facility Name: Washington Nuclear Project No. 1 (WNP-1)

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

Inspection conducted: June 7-18, 1982

Inspectors: *J.O. Shi* *fox* *7-15-82*  
A. D. Toth, Senior Resident Inspector Date Signed

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Date Signed

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Date Signed

Approved By: *J.O. Shi* *fox* *7-15-82*  
R. T. Dodds, Chief Date Signed  
Reactor Construction Projects Section 2

Summary:

Unit #1 Inspection June 7-18, 1982 (Report No. 50-460/82-10)

Areas Inspected: Routine, unannounced inspection of reactor coolant loop piping weld heat treatment, the mechanical contractor's documentation review and correction activities, and review of the status of previously identified NRC inspection findings. The inspection involved 29 inspection hours on-site by the senior resident inspector.

Results: No items of noncompliance were identified.

DETAILS

1. Persons Contacted:

Washington Public Power Supply System

- \*C. Edwards, Project Quality Assurance Manager
- \*C. Organ, Assistant Program Director, Engineering
- \*J. Steidl, Senior Quality Assurance Engineer

United Engineers and Constructors

- \*W. Anderson, Field Project Engineer, Electrical
- \*G. Faust, Field Surveillance Quality Assurance Supervisor
- M. Lasota, Field Project Engineer (Piping Supports)

Bechtel Power Corporation (BPC)

- \*W. Horn, Field Construction Manager
- \*D. Johnson, Manager of Quality
- \*C. Kasch, Project Construction Quality Control Engineer
- \*J. Laspa, Project Manager
- \*J. Ruud, Project Quality Assurance Engineer

J. A. Jones Construction Company

- T. Daines, Welding Engineer
- D. King, Supervisor, Piping Review
- R. Harrington, Supervisor, Hanger Review
- D. Higginbotham, Senior Quality Assurance Supervisor
- J. Jacka, Supervisor, Equipment Review
- R. McFall, Quality Assurance Engineer
- E. Mendez, Personnel Manager
- J. Sivulka, Supervisor, Equipment & Structural Steel Review
- R. Tanner, Engineering Manager
- J. Taylor, Supervisor, Piping & Hanger Review
- W. Whitaker, Supervisor, Completion Status
- R. Wilson, Quality Assurance Manager

Foley Wismer & Becker Company

- C. Needham, Engineering Manager
- R. Wetle, Quality Assurance Manager

Other General Contacts and Notes

In addition to the persons identified above, the inspector interviewed many other construction, engineering, and quality

control personnel from the site contractor organizations. This included individual, detailed discussions with seven document-review clerical and engineering personnel of the mechanical contractor's engineering organization.

\*Denotes personnel present at the exit management meeting.

2. General

The resident inspector was on-site June 7-11 and 14-18. During this period, the inspector performed routine examinations of activities, including plant tours, record reviews, and interview of personnel. He interviewed several engineering and inspection individuals regarding any quality concerns which they may have and the applicability of NRC regulations to their work. On June 18 the inspector closed the resident office at WNP-1, due to the reduced site activities arising from the WPPSS April 29 decision to delay construction of the facility.

3. Significant Project Events Noted

On April 29 the WPPSS Board of Directors approved an extension of the schedule for completion of the project, with an associated slow-down of construction activities. Direction was issued to the site contractors to ramp down activities at the WNP-1 site. On June 18 the licensee reported that only 198 craft were now employed at the site. Current reported plans include a construction delay until June 1983, with a slow ramp-up of construction craft personnel until third quarter of 1984, when a more positive delay schedule will be established. In the meanwhile, documentation reviews and work status reviews have been in-progress by the contractors and Bechtel, in addition to engineering activities supporting NRC docket activities.

4. Reactor Coolant Loop Piping Weld Heat Treatment

The inspector examined work and records and interviewed personnel regarding heat treatment activities for the reactor coolant loop piping welds. He considered requirements of the PSAR, the applicable ASME Code, and governing project specifications and the quality assurance program. This included (a) weld joint preheating activities and (b) cumulative stress-relief records.

- (a) Weld Joint Preheating: During the November 1979 through May 1980 period the inspector had personally observed the equipment set-up for welding preheat of the NSSS piping;

he had also observed the heating of some of the weld joints, and had noted the data entry in the spaces provided on the weld record sheets. During the current report period, the inspector examined the preheat recorder charts (003, 004 and 009), welding records sheet (NSSS-FW-95), and associated quality verification inspector inspection reports (May 8, 1981 through July 22, 1981) for the 38-inch diameter P1/P3 - material weld at the reactor pressure vessel discharge to steam generator SG-1A.

The inspection report #762 showed that the preheat power had been lost for one hour on June 13, 1981. However, relevant preheat recorder charts in the contractor's files clearly support that the temperature had not dropped below the minimum required 250F.

The inspector particularly assessed compliance with the Engineer's special instruction (FCN-211-1-80-132); this calls for maintaining preheat on P3 materials until stress relief has been completed, or alternatively to hold the weld at an elevated temperature for a four hour period prior to removing the preheat.

- b) Stress Relief: During the November 1981 through May 1982 period the inspector had personally observed the equipment set-up for weld stress relief of NSSS piping; he had also observed the heating of some of the weld joints, preparation of records, and handling of equipment, as discussed in NRC inspection reports 50-460/81-09, 81-11, 82-02, and 82-05. During the current report period the inspector examined the stress relief records for the NSSS 32-inch diameter field weld FW-5 at steam generator 1A, and the 38-inch diameter field weld FW-9 at the reactor vessel. Both of these are P1/P3 material welds. The review included the actual temperature recorder charts 1-2-016, 1-2-018, and 1-2-015; the hand recorded (half-hour intervals) data for the 24-thermocouples on each weld; process control sheets; procedure HT-002; and the general contents of the final work package. Evidence of data review by the quality assurance, engineering, ASME Inspector, and Bechtel was considered. The inspector also interviewed the contractor's welding engineer who had participated in the actual control of the process. Heat-up and cooldown rates, time at temperature, and temperature uniformity were particularly considered during this review.

The initial attempt at stress relief of weld FW-9 was unsuccessful due to the inability to bring the temperature spread of the 24 thermocouples within the specified uniformity range. The records show that the weld was brought to room temperature to modify the heating or insulation arrangement, and then the operation successfully accomplished. The records show that the weld joint was not held at high temperatures

for undue lengths of time while attempting to adjust uniformity. For FW-5 and FW-9 the stress relief came within 1/2-hour of the target 2-1/2 hours at 1100F +/-25F.

Findings: No items of noncompliance were identified.

5. Licensee Actions On Previous NRC Enforcement Matters

With the recent licensee decision to delay construction of the plant, both the licensee and the construction manager (Bechtel) had re-assigned key quality assurance department personnel from the project, including individuals who had been working toward resolution of items previously identified by NRC inspectors. The NRC resident inspector has also been re-assigned as of June 21. In view of the above, the inspector has assessed the current status of unresolved enforcement matters involving the mechanical contractor (J. A. Jones Construction Company) and certain other matters with which the inspector was familiar.

a. (Open) Noncompliance (460/79-13-02)

Failure of the mechanical contractor to control stainless steel welding heat input.

The welding weave-width had exceeded the maximum specified. The NRC inspectors later found that the contractor and engineer had implemented corrective actions somewhat different than those described in the original WPPSS written response to the notice of violation. Then the WPPSS management had committed to revise that reply to identify the actual corrective actions, as described in NRC inspection reports 80-16, 81-06, and 82-06. The latest committed date was June 1, 1982.

As of June 17 the revision had not yet been submitted. This matter continues to be unresolved pending receipt, evaluation, acknowledgement and verification of the WPPSS revised corrective action document.

b. (Open) Noncompliance (460/80-01-01)

Failure of the mechanical contractor to control temporary attachments to structural steel.

The contractor appears to have made procedure revisions to control future temporary attachments, as discussed in NRC Inspection Report 50-460/82-08 paragraph 5.g (reference item 460/79-14-01). However, the licensee files do not yet identify specific actions to assess various attachments which may have been made prior to the NRC finding.

The inspector interviewed the contractor's technical engineering and system walkdown supervisors and examined the new status-walkdown procedure EDI-017, to ascertain if it includes consideration of temporary attachments to structural steel. It does not.

The identification, evaluation and disposition of previous temporary attachments remains unresolved.

c. (Open) Noncompliance (460/80-06-02)

Failure of the mechanical contractor to properly control rework of completed and inspected pipe supports.

An NRC inspector examined the implementation of the licensee's response to the notice of violation (report 50-460/81-06) and found evidence that the corrective action had not been fully effective.

The contractor has initiated actions to determine status of work completed to date, in connection with the recent project delay, and to support the work package review activity in response to corrective action report CAR-21. The walkdown procedure EDI-017, and implementation of system walkdown activities in accordance with this procedure (now or in the future), would encompass matters such as changes to completed work. This walkdown activity has not progressed very far yet, and has been the subject of evaluation for deferral in connection with continued project ramp-down. For future work, proper controls will depend upon proper implementation of the procedures in effect at that time. Currently, no craft activity is in progress.

This matter continues to be unresolved pending review of further progress in the walkdown activities and evaluation of future work.

d. (Open) Noncompliance (460/80-07-01)

Failure of the electrical contractor to assure proper size of fillet welds on cable tray supports.

As discussed in NRC inspection reports 50-460/81-04 and 82-02, the contractor instituted a 100 percent re-inspection program, to measure the fillet size of about 35,000 welds. The inspector interviewed the electrical contractor's quality control inspectors, examined records of their qualifications, reviewed

records of the reinspections and repairs, and observed inspections in-progress and evidence of weld joint paint removal, grinding, and repair throughout the plant. The contractor's repair activity has been completed and the records accumulated for filing within work packages for individual supports.

The matter of undersize welds is resolved.

An associated question previously arose in connection with this activity, involving other potential defects in the cable tray support welds. This was identified and discussed in NRC Inspection Report 50-460/82-01. Its current status is documented elsewhere in this report, paragraph 6.b, item 82-01-06.

e. (Open) Noncompliance (460/80-11-02)

Failure of the piping material supplier to assure proper size of fillet welds on stop-blocks (lugs) on piping.

The WPPSS initial reply (November 6, 1980) and revised reply (January 27, 1981) to the notice of violation described specific and general actions taken. The specific field change notice (FCN-211-1-81-150) requires removal of the lugs from the specifically identified deficient pipe spool DHR-412030-2. The inspector verified that this control document is contained in the open work package for the pipe spool, and constitutes a punchlist type item to be accomplished before closure and acceptance of the work package. The J. A. Jones technical engineer currently reviewing the status of the work stated that the work was partially complete at the time of work shutdown. The provision for replacement of the lugs is contained in hanger package DHR-3-SG-2A. This resolves concern over the specific item.

The WPPSS reply described general actions which included random sample of fifty-four pipe spools in the laydown area, and review of thirty drawings. The WPPSS quality assurance backup files contain no identification of which spools and drawings were examined, how the numbers examined relate to the total numbers, nor how these relate to the number of spools which had already been installed in the facility prior to NRC identification of the problem.

This matter continues to be unresolved pending review of data demonstrating that previously installed piping spools (with pipe-stop lugs) do not contain inadequate fillet welds on the lugs.

f. (Open) Noncompliance (460/80-15-01)

Failure of the mechanical contractor to install nuclear service water heat exchanger anchor bolt washers shown on installation drawings.

The WPPSS reply to this item identified nonconformance control documents 1-CNCR-257-1432 and 1433 and FCN-257-1-80-1448. The J. A. Jones work package for the NSW heat exchangers shows that the FCN-257-1-80-1448 had been closed November 20, 1981. It also includes FCN-257-1-80-1194 which was closed November 29, 1981 (involving purchase and warehousing of the required washers), Material Withdrawal Slip #11290 for installation of the washers, a related process control sheet for the installation, and dispositioned and completed/verified nonconformance reports CNCR-257-3265 and 3266 which related to out-of-calibration torque wrenches used for the rework. The specific equipment question is resolved.

The WPPSS reply to this item stated that "Further nonconforming conditions will be documented after a complete review of WPPSS Quality Class I equipment installations is performed." The WPPSS quality assurance files contain no evidence that such a "complete review" had been performed, nor as any contractor control document identified for assure that such a review will be performed. The WPPSS files also indicate that the WPPSS action on this NRC item is "pending completion of FCN-257-1-80-1448" (which the inspector found to have been closed by the contractor in November 1981).

This matter remains unresolved pending review of evidence of implementation of the licensee commitments.

g. (Open) Noncompliance (460/80-15-03)

Failure of the mechanical contractor to establish appropriate acceptance criteria for inspection of welding of weldolet fittings to piping.

The WPPSS reply identified nonconformance report 1-CNCR-211-239 as the controlling document for correction of the NRC identified discrepancy. Completion of corrective action is documented by March 30, 1981 closure of that nonconformance report, as shown in the J.A. Jones status log.

The WPPSS reply also stated that all affected J. A. Jones procedures would be revised, including JAJ-NDE-004 and 008, JAJ-WI-16.1, and others. Only NDE-008 appears to have been revised (revision 7) to include relevant criteria.

The WPPSS reply also stated that "Further nonconforming conditions will be documented upon J. A. Jones review of installed welded fittings of this nature." The WPPSS quality assurance files do not identify any such review (re-inspection). The J. A. Jones quality verification supervisor stated that he could recall no such review/re-inspection having been performed. Interview of personnel and review of procedures (EDI-017 and EDI-008) show that the current J. A. Jones document review and system walkdown activities do not include this item as a review/re-inspection parameter.

This matter remains unresolved pending review of evidence of implementation of the licensee commitments.

h. (Open) Noncompliance (460/81-09-05)

Failure of the mechanical contractor to provide inspection criteria for welds on skewed-joint configurations. This also involved failure of the Engineer (UE&C) to adequately address this matter for other site contractors and for off-site fabricated (purchased) pipe supports. Following identification by NRC inspectors, WPPSS filed an interim report to NRC under 10 CFR 50.55(e), and has been submitting quarterly updates to the initial report. The status of this item has been discussed in NRC inspection reports 50-460/81-15 and 82-02.

The responsible pipe support engineer stated that direction to the mechanical contractor was in preparation regarding inspection of pipe supports provided by off-site vendors and installed in the period November 1981 and May 1982.

This matter continues to be unresolved pending the WPPSS completion of definition of corrective action scope and issuance of appropriate implementation control documents.

6. Licensee Actions On Previous NRC Inspection Findings

The inspector reviewed the current status of certain matters previously questioned by NRC inspectors:

a. (Closed) Unresolved Item (460/81-10-06)

The site audit programs had apparently identified discrepancies in the purchase order and work package control programs;

corrective action programs were established under corrective action reports CAR-20 and CAR-21. The corrective action programs appeared to be proceeding without fully developed instructions and procedures for the various reviewers.

The following detailed instructions have now been developed, and include checklists for controlling reviews and system walkdown activities.

JAJ-WI-017 Work Package Preparation and Control (revised #2c)  
EDI-008 Technical Review of Work Packages  
EDI-009 Class I Takeoffs and Stating  
EDI-016 Document Discrepancy Correction Request  
EDI-017 (System Walkdowns)  
QDI-001 Vendor Documentation Review

The inspector noted that at the time of preparation of the various review instructions the engineering manager, the system walkdown manager, and several of the superintendents of the mechanical contractor were recent ex-employees at the WNP-2 site, who had significant responsibilities for the document review program development and execution there. This appeared to provide for some transfusion of the lessons learned to the WNP-1 project.

The inspector interviewed field engineers, clerks, supervisors, and superintendents involved in the application of the above procedures. He reviewed the personnel files of the piping, hanger and equipment reviewers, selected what appeared to be the lesser qualified of the personnel, and then monitored the in-process detailed application of the review checklists by those personnel. No significant discrepancies were identified in the application of the review checklists.

The reviewers had available to them computer terminals with latest drawing revisions and modifying documents (e.g. nonconformance reports, facility change notices and project change proposals), material acceptability lists (heat logs), and welder qualification data. The material heat log data base was being entered and controlled by the purchase order review personnel of the quality assurance department, working to CAR-20. The review personnel also had available to them indices of procedure revision effectivity dates and compilations of initials, signatures, and qualification dates for quality verification inspectors. Other data compilations were also available to the technical review personnel, or under development to expedite the review process for each work package. Where data bases have not been fully developed and certified yet, the review personnel appeared to have access to the document control files as necessary. The review personnel appeared to be familiar with the limitations of the available data bases.

The inspector identified no discrepancies in the contractor's corrective action program definition and implementation at this time. This matter is resolved.

b. (Open) Follow-up Item (460/82-01-06)

There is some data which indicates that cable tray support fillet welds may contain uncorrected unacceptable defects, other than the undersize previously identified by an NRC inspector (reference item 460/80-07-01, paragraph 5.d of this report.)

In connection with the re-inspection associated with NRC item 460/80-07-01, one of the contractor's inspectors had contacted the WPPSS Hotline to express concern over instructions which he had received to perform the re-inspections through existing paint on the welds. WPPSS investigation resulted in general agreement that the paint was thin enough to permit accurate measurements of weld size, and where in doubt, the inspectors were authorized to call for removal of the paint at their discretion. However, in connection with the Hotline call, mention was made of other types of apparent defects, such as porosity and undercut. (A memo from the inspector to his supervisor dated December 28, 1981 stated that on support number 1T2-3404-213 there were 124 welds, with 8 being undersize but 17 were "found with unacceptable undercut/porosity"). By February 22, 1982 letter (with copy to the electrical contractor) the WPPSS Program Director had advised the employee that a random sample would be conducted to ascertain if there were unacceptable problems of that nature. Neither the Hotline nor the quality assurance files contained evidence that the random sample had been inspected and evaluated. There was no evidence that the individual was "kept advised of the status", as committed in the WPPSS letter to him. (The individual is no longer employed at the site).

The new quality assurance manager of the electrical contractor, and the contractor's lead inspectors for the re-inspection activity, stated that they knew of no separate re-inspection program conducted relative to matters other than size. However, in response to inquiry, two of the several inspectors involved in the re-inspection activity offered a June 3, 1982 memo to their supervisor, expressing their impression that "Out of 655 supports inspected...approximately 10 percent of the support's

welds had paint on them", and "Out of approximately 35,000 welds inspected, the incidence of weld undercut, porosity was, to the best of my knowledge, less than 1 percent". However, although the program for weld size re-inspection (item 460/80-07-01) used detailed checklists which included attributes such as size, porosity and undercut, the inspectors appeared to have in most cases marked all checklist items (other than size) as "N/A" (not applicable). In view of this, it is not clear what weight may be given to the impressions of the two inspectors.

This matter continues to be unresolved pending the WPPSS disposition of the question of the other defects.

7. Management Meeting

The inspector met with a representative of the Program Director, the Quality Assurance Manager, and other licensee and construction management representatives to discuss the status of inspection findings and other inspector activities relating to this project. Persons contacted who attended this meeting are so noted (\*) in paragraph 1 of this report.