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

REGION V

Report No. 50-397/81-21

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

Licensee: Washington Public 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: October 1981

Inspectors: R T Dodds
A. D. Toth, Senior Resident Inspector — 12/11/81 Date Signed

Date Signed

Date Signed

Approved By: R T Dodds
R. T. Dodds, Chief
Reactor Construction Projects Section 2 — 12/11/81 Date Signed

Summary:

Inspection during October 1981; (Report No. 50-397/81-21)

Areas Inspected: Routine, unannounced inspection of licensee and contractor activities to re-evaluate and improve detailed work methods.

The inspection involved 55 inspector-hours on-site by the resident inspector.

Results: One item of noncompliance was identified relative to implementing procedures for removal of arc strikes on piping. (Paragraph 6)

## DETAILS

1. Persons Contacted:

Washington Public Power Supply System

*G. Baker, Lead Quality Assurance Engineer
*W. Bibb, WNP-2 Project Manager
R. Johnson, Project Quality Assurance Manager
*R. Grant, Construction Management Supervisor
B. Holmberg, Deputy Project Manager, Engineering
W. Keltner, Acting Deputy Project Manager, Construction
*R. Knawa, Quality Verification Program Manager
*R. Matlock, Program Director
*C. Wright, Quality Assurance Engineering Manager

Burns and Roe Engineers (B&R)

R. DeLong, Welding Engineer
D. Hetzel, Lead Welding Engineer
A. Luksic, Licensing Engineer, Site
H. Tuthill, Quality Assurance Manager

Bechtel Power Corporation (BPC)

*D. Cosgrove, Quality Assurance Engineer
*C. Headrick, Project Quality Control Engineer
*M. Jacobson, Project Quality Assurance Engineer
D. Johnson, Manager of Quality
P. Lindstrom, Project Field Engineer
R. Gaines, Reverification Group Engineer
H. Reed, Field Welding Engineer Supervisor
R. Scott, WBG Documentation Review Manager

Wright-Schuchart-Harbor/Boecon Corp./General Energy Resources, Inc. (WBG)

C. Luebertte, Documentation Review Supervisor

Hartford Steam And Boiler Insurance Company

W. Kane, Authorized Nuclear Inspector (WBG)
M. Coates, Authorized Nuclear Inspector (Bechtel)

Other General Contacts and Notes

In addition to the persons listed above, other personnel were also interviewed in the course of the inspector's examination of specific activities described in this report. This included engineering, management, quality control, and clerical personnel involved in office activities, and various craft and supervision who were present in the work areas during the inspector's plant tours.

*Denotes personnel present at the monthly management meeting.

2. Project Personnel

During this period one key personnel change was made. Also, at the time of this report preparation, other significant changes of organization were announced as being effective November 9, 1981. These changes are as follows:

The WPPSS Quality Assurance Records Manager, R. Spence, terminated employment. Mr. W. Williard has been acting manager.

The position of WPPSS Project Manager has been abolished. The Project Manager W. C. Bibb has assumed the position of Deputy Program Director.

The positions of WPPSS Operations Manager and Startup Manager have been realigned to report to the new Deputy Program Director.

The position of WPPSS Operations Quality Assurance Manager has been realigned to report to the off-site corporate office.

The Bechtel Construction Manager E. Felton has left the site. The position has been assumed by Mr. S. Pohtos.

3. General

The resident inspector was on-site October 1-2, 5-9, 13-16, 19, 23, and 26-30. During this period, the inspector performed routine examination of the site activities, including plant tours, follow-up record reviews, and interview of personnel relative to status of engineering and construction efforts.

An NRC licensing caseload forecast panel representative and the NRR project manager visited the site October 19-21 to review construction progress and schedules.

4. Plant Tours

The inspector toured the safety related areas of the physical plant at various times between October 1-30, and performed follow-up record reviews as indicated. No items of noncompliance were identified relative to this general inspection activity.

The inspector also attended several on-site construction/quality management meetings relative to the reverification program, overall project status (including problem areas and work schedules), Bechtel transition activity, and WBG document reviews. Attendance at

these sessions assists the inspector in inspection planning and compilation of overall assessments of the Quality Assurance program implementation.

5. Reverification Program

WPPSS has now incorporated the reverification program into the system completion activities. The reverification elements have been incorporated into various project flow charts relating to systems provisional acceptance, systems turnover, and systems completion.

During the Task Force II Restart activities in 1981, various discrepancies had been identified relative to procedures and quality programs of the contractors on-site. Some of the results of those reviews have been retrieved by WPPSS and furnished to Bechtel for incorporation into the reverification activity sample selections and inspection criteria. Letters WPBEC-C500-F-81-0935 through 0939, and 0944 were issued in mid-October, with this information. Some of the data identifies other corrective action plans which will involve reinspections of particular groups of hardware, such that reverification activities in such areas may be reduced and or focused.

During 1980-1981 the WPPSS and Burns & Roe Quality Assurance organization was engaged in review of submitted documentation for closed-out contracts, included WPPSS purchase of permanent plant equipment. The results of that review effort have been integrated into the reverification effort. The WPPSS Quality Assurance Records Manager has assumed another employment off-site, but before he left, he summarized the results of the review efforts which had been on-going by his staff. He identified for each contract whether, in his opinion, the review results indicated sufficient quality problems to justify a hardware reinspection effort for the material provided under the contract. This determination, along with a pending review of nonconformance reports, surveillance reports, NRC findings, and equipment startup experience data, will be used as a basis for the WPPSS decision on whether or not to perform hardware reinspections. Each decision to not perform such inspections will be subjected to review by the WPPSS reverification program manager and the QA manager. This activity is not described in a new RVP procedure. The approach appears consistent with the commitments made by the licensee in the WPPSS response to the NRC's 10 CFR 50.54(f) inquiry.

No item of noncompliance or deviations were identified.

6. Bechtel Inspection & Removal of Welding Arc-Strikes From Piping

The inspector reviewed procedures and instructions for final walk-down inspection of non-pressure and pressure boundary components, relative to identification and removal of arc-strikes. He examined records and inspected typical areas where such inspections and removal had been performed, and he interviewed involved personnel. The inspector emphasized the pressure-boundary aspects, and considered these matters relative to the ASME Code specific requirements, and the general QA Program requirements of Section 17 of the PSAR/FSAR.

Personnel interviewed included one Bechtel QC inspector, the QC inspector's supervisor, the QC manager, the Bechtel field welding engineering supervisor, and the Burns & Roe welding engineer and supervisor who issued the instructions.

Implementing instructions examined included Burns & Roe supecification Sections 15B and 17A (applicable parts), specification change number PED-215-W-A804, and Bechtel Quality Control Instruction QCI-P.1.10.

Records examined included the Bechtel series P.1.10 inspection records for the following piping isometrics:

| COMPLETED RECORDS | IN-PROCESS RECORDS |
|---|---|
| *SW(7)312-1 | SW(9)305-6 |
| *SW(17)300-1.3 | SW(29)298-7.8 |
| *SW(25)1529-2, 3, 3.1, & 4.1 | SW(17)300-4.9 |
| *SW(27)308-1.2 | |
| *SW(29)298-1.3 & 4.6 | |
| SW(36)4483-1 | |
| SW(57)1047-3 | |
| SW(68)1002-2 | |
| *SW(80)091-6.13-1 | |
| SW(80)2707-1 | |
| *SW(100)013-1.8 | |
| SW(100)4481-1 & 2 | |

*Examples where arc strikes had existed can be found on piping shown on these isometric drawings.

The interviewed QC inspector was AWS certified as per the PED requirements and had attended a training session at which arc strike samples were discussed. He demonstrated familiarity with the inspection requirements, including applicable parts of the specification and procedures. He demonstrated that encroachment on piping minimum required wall thickness is considered during

the grinding inspections. However, he stated that liquid penetrant examination of ground-out arc strikes was not planned and absence of such NDE would not be a constraint for his final acceptance of the walk-down inspection. He stated that his management had instructed that liquid penetrant examination should not be performed at this time, but may be considered at a later date.

The Bechtel QC inspector did not show awareness of the ASME differing nondestructive testing requirements for different materials and Code classes. However, the specification change (PED) made reference to examining defects "in accordance with the applicable code and specification to verify that the defect had been eliminated"; it did not define whether this referred to technique, acceptance criteria, and/or differences between AWS and ASME requirements for pressure/non-pressure boundary components. The QC instructions (P.1.10) did not include nor reference the appropriate inspection criteria.

The Bechtel field welding engineer supervisor stated that he was short-handed, and did not assign a qualified Field Welding Engineer to accompany the QC inspector in the examination of arc strikes, even though this is required by the PED. The supervisor stated that a QC Field Welding Engineer was performing this function; (the QC Manager later advised that there is no such position in the Bechtel project QC organization.) The QC inspector admitted that he had not had the company of any welding engineers during his inspection activities.

The Project Field Quality Control Engineer stated that his inspectors had been instructed to grind the observed arc strike, then examine it, and if a defect exists, to grind it out and blend it. He stated that a defect could not be identified until such initial cleanup/grinding had been effected. The NRC inspector stated that this creates inappropriate acceptance criteria for the QC inspectors, since initial grinding could remove the defect before the evaluation occurs. (The PED identifies surface-melt, weld-metal-transfer, and inclusions-of-any-nature as unacceptable.)

The NRC inspector noted that the PED requires evaluation of each arc strike, and it gives acceptance criteria. It then calls for removal of the defects by grinding and blending, and then liquid penetrant examination in accordance with the applicable code and specification. It requires that a qualified inspector and field engineer both evaluate the arc strike. It appears that Bechtel management personnel elected to not follow the details of the

specification. This failure to accomplish the work in accordance with applicable specifications appears to be a violation of NRC regulations. (397/81-21-01)

7. Bechtel On-site Pipe Whip Restraint Repair Work

The inspector observed second-shift work in-progress on pipe whip restraints which were being repaired in the on-site shops. He examined applicable instructions/procedures/drawings, interviewed personnel, and examined records associated with items numbered PWS-3-2, 5-1, 5-2, 27-8, 30-6, 36-17, 52-2, 52-14, 52-16, 53-1, 53-10, 53-11, and 53-14. He observed welding or weld fit-up on PWR-5-2 and some other restraints in various stages of repair.

Personnel interviewed included the superintendents, quality control inspectors and their supervisor, field welding engineers, the welders, and the welding material issue station attendant.

Implementing instructions examined included the following:

Specification Sections 5E/17D: PED-215-CS-A367 and A545, and PED-90-CS-8
Procedure SWP/P-P-5 (Revision 0)
Welding Procedure Specification PI (GR III-A(CVN) Structural (Revision 0)
Welding Procedure Qualification Record Number 781 and 782
General Welding Standard GWS-Structural (Revision 3)
Quality Control Instruction 14631/R01.00

The inspector considered preheat and interpass temperature controls, post weld heat treatment specification, weld joint configuration, welder qualification, weld material control, base materials identification, and welder performance relative to prepartion, cleanliness of joint and slag removal between passes. The inspector particularly considered the Bechtel quality control inspector and welding engineer monitoring activities relative to these matters. The welding engineers did not appear to be particularly well versed in the applicable AWS code, and they stated that their experience was principally with fossil fuel plants. However, the available procedures and instructions for the work at hand appeared to be sufficient for their quidance, and they did have available more experienced supervisory or peer personnel on the day shift. Applicable procedures and codes were available in the work area.

The inspector determined from records review and personnel interviews that QC supervision had terminated one inspector, due to the inspector having signed inspection records asserting that the welder was qualified, when in fact the inspector had not verified the information.

Sufficient personnel and resources appear to be applied to assure that the limited work scope will be properly performed. No items of noncompliance were identified.

8. Skewed Weld Joints

While responding to a WPPSS photographer request to participate in NRC inspection typical activities, the inspector identified questionable pipe support material at elevation 522 feet. The material was apparently angle iron with ends prepared for welding in a typical hanger-strut configuration. The ends were cut to an angle greater than 135-degrees, in a weld joint configuration contrary to that allowed by the AWS D1.1 Code. The material was marked G-544/545/546 Item #5 Heat Number 232205; this was later identified as property of GE-I&SE, designated ASME Section III NF(2). The inspector also noticed square tubing at the Bechtel pipe-fabrication shop, with a similar configuration.

The inspector noted that WBG had modified its procedures in response to a Burns & Roe PED (specification change) on this subject, during the restart review activities in 1981. However, the current existance of the joint preparations noticed by the inspector introduces additional questions as to past site-wide practices and the assurance that adequate weld throat has been achieved in the past and will be achieved in the future where required. This matter is unresolved. (397/81-21-02)

9. Bechtel ASME QA Program Implementation

The inspector interviewed the Hartford Insurance Company Authorized Nuclear Inspector (ANI), who is contracted by Bechtel to monitor implementation of the ASME quality assurance program. The inspector examined some of the routine records of the ANI; included in these was a September 22, 1981 "SIS Record For Monitoring Q.A./Q.C. Programs". This document identified several areas where Bechtel was not properly implementing its quality assurance program at the site during September. Inadequate training of crafts, availability of work procedures, departures from work procedures, and insufficient material identification/segregation were identified.

The inspector interviewed the responsible Project Field Engineer, and examined the Bechtel written response to the ANI's findings. These appeared to commit to adequate corrective action, and the ANI was committed to continued review of this area. Bechtel stopped work for 2-days to effect implementation of these actions.

The ANI stated that Bechtel had requested him not to document his concerns on the "SIS Record..." in the future, but rather deal with Bechtel management in meetings or other less formal means. The ANI has agreed to this approach.

The ANI is directly involved in daily monitoring of ASME activities, he has many specific hold points past which work may not progress until he inspects the progress, and he reviews each record of piping installation for acceptance. Results of his activities provide data relevant to the licensee's Criterion II (10 CFR 50 Appendix B) evaluation of the ASME aspects of the QA program.

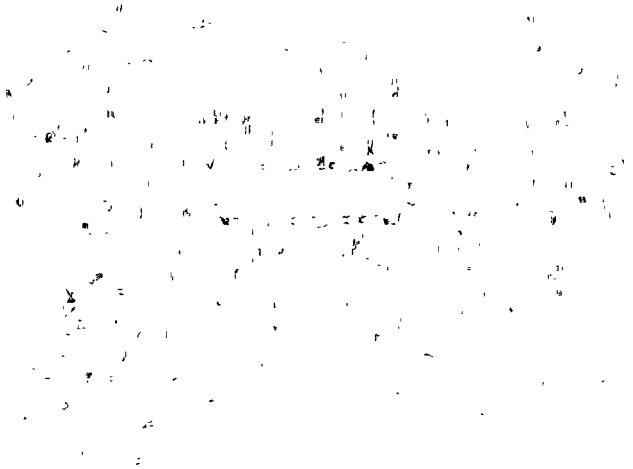
This matter will be further reviewed relative to the licensee's and the construction manager's methods of consideration of the findings of the project ANI's. (397/81-21-03)

10. WBG Records Destruction

During the week of October 5, the inspector observed records disposiition activities in trailer #55. This activity involved disposition of various non-quality-related/non-permanent records. The activity was under the direction of the WBG assistant project manager. Shredding machines were in use, and the inspector examined typical documents being processed. Some of the records appeared to have some limited potential for aiding in resolution of Quality Assurance Record omissions. The WPPSS QA manager later stated that he had arranged for a procedure to be prepared, defining controls of this activity, including approvals required for the disposition of each document. No items of noncompliance were identified relative to this activity.

11. Concrete Void Repair Procedure Qualification

The inspector observed the preparation of the lead/hydrogenous material mixture and the pumping into a prototype fixture of the sacrificial shield wall concrete void areas. The test was carefully controlled, and included witnesses of each organization involved in the repair activity. The NS-1 material had the consistancy of a heavy paint, and flowed freely into various crevices. Careful attention was given to venting, in a manner typical of that planned for each void in the shield wall. The protype test fixture included sloped concrete, such that vent channels were installed toward the rear of the fixture to demonstrate venting effectiveness. The inspector had no question on the effectiveness of the process in obtaining complete filling of voids. No items of noncompliance were identified.



12. Licensee Action On Previous Inspection Findings

The WPPSS Program Director has assigned senior management personnel to assist the Bechtel quality assurance engineer to evaluate past WPPSS commitments made in response to NRC inspection findings. The effort is focused on identifying continuing commitments, i.e. those that involve changes to work methods or management practices. The intent was to incorporate these into a separate specification to Bechtel, but the current plan involves revising existing contract specifications to incorporate the requirements. Also included in this effort is the re-evaluation of special requirements checklists, which were used as the basis for May 1981 NRC closeout of several inspection findings. The program flowchart identifies closeout of several inspection findings. The program flowchart identifies that any revised commitments to NRC will be documented by letter to NRC.

During the current report period, the inspector reviewed data which supported the following conclusions relative to licensee action on previous inspection findings:

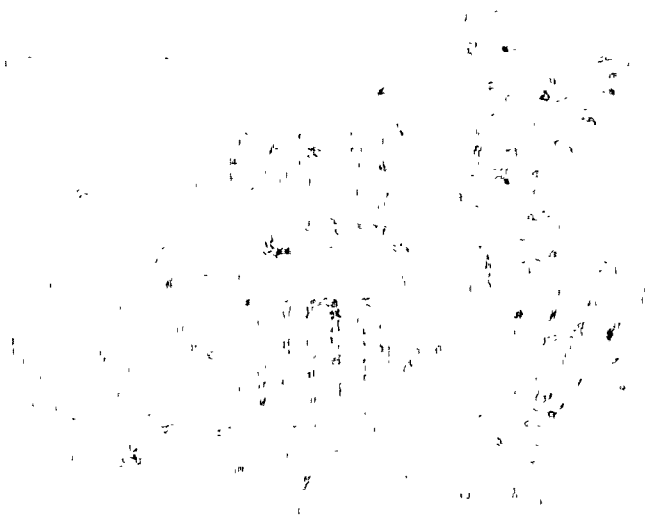
(Closed) Unresolved Item (397/80-19-06)

The loop-B main steam isolation valve was installed in loop-A. This valve contained special modifications of its limit switch to avoid interference with structural steel when properly installed. The licensee apparently determined that an approved engineering evaluation had not been conducted for this item, and on February 19, 1981 issued a nonconformance report NCR-7566 to document/control this condition. On July 7, 1981 the vendor (General Electric) issued a Field Deviation Disposition request (KK1-196) which prescribed a design change of the location of the limit switch junction box support. This was used as the basis for disposition of the NCR. The existing system turnover procedures, including the master deficiency list system and the nonconformance closure procedures, assure that the work will be performed by Bechtel prior to systems completion.

(Closed) Unresolved Item (397/80-10-02)

Pipe support load capacity data sheets were not available for some catalog component standard supports.

Since the identification of this item by NRC, the licensee has submitted a report 10 CFR 50.55(e) to the NRC numbered 161. For tracking purposes, this item is resolved, and will be inspected in the future as followup of the licensee's formal report of corrective actions.



(Closed) Followup Item (397/81-03-06)

PDM containment vessel weld pad fitup. The fitup practices involved force fit of the plates to the wall curvature, and it was not clear that this practice was acceptable to the designer.

The Burns and Roe engineer has evaluated the practice and calculated resultant stresses involved, finding these acceptable. This item is closed.

(Closed) Followup Item (397/81-18-01)

Disposition of WBG quality control inspector's surveillance reports. After layoff of QC inspectors, a file cabinet was found to contain a folder with surveillance reports marked as not dispositioned.

The WBG quality assurance group has initiated a review of the records, under the purview of Bechtel. The content of each of the file cabinets and the status of the records therein is being ascertained as relate to other WBG records review activities in-progress. This matter is under control and is closed.

(Closed) Followup Item (397/81-18-08)

Pipe whip support nonconformance data did not appear to have been forwarded to the Bechtel individual responsible for correcting the deficiencies.

The licensee rehired a previous employee who had compiled the relevent data and had him document where each of the identified discrepancies described to NRC had been incorporated into nonconformance reports (NRC). Steps were then taken to assure that each of the NCR's was available to Bechtel. The licensee adequately demonstrated that each nonconforming condition had been conveyed to Bechtel, especially previous missing information on materials. Also, the old NCR's have been entered into a more formal control system to assure that a pipe whip restraint is not released for installation prior to addressing the condition of the NCR. This matter is closed.

(Closed) Unresolved Item (397/81-18-03)

Improper installation of spring-nuts in unistrut type channel. The cam shaped nuts were installed without full rotation to seat the nuts on the edges of the channel. This was observed on battery racks installed by the WPPSS test and startup group, and those installed by the electrical contractor.

The test and startup group had corrected the observed conditions and corrected the installation procedures at the time this matter was identified. The electrical contractor has now revised procedures CP-430 and CP-QAP-402 to incorporate inspection requirements which will be used for all new work and during the ongoing reinspection of raceway supports. The contractor also had inspectors survey existing installations, and confirmed that square-nuts had generally been used, unlike those which the vendor had provided for the battery racks. The reverification program supervisor stated that this item will be included in the reverification inspection activities for other contractors' work. The inspector did not ascertain the nature of the tracking system for such items, but noted that this matter is similar to the restart review data provided to Bechtel (paragraph 5, above), and any other items identified as deserving incorporation into the reverification program. The tracking system will be considered during future routine inspections of the reverification program activities. This matter is resolved.

13. Unresolved Items

Unresolved items are matters of which more information is required to ascertain whether they are acceptable items, items of noncompliance, or deviations. Unresolved items identified during this inspection are discussed in paragraphs 8 and 9, above.

14. Management Meetings

The inspector met with the WPPSS Program Director and Project Manager on October 30, to discuss his inspection findings and summarize his activities during this report period. Attendees at this meeting are identified by an * in paragraph 1 of this report.

# APPENDIX A

## NOTICE OF VIOLATION

Washington Public Power Supply System
P. O. Box 968
Richland, Washington 99352

Docket No. 50-397
Construction Permit
No. CPPR-93

As a result of the inspection conducted during October 1981, and in accordance with the Interim Enforcement Policy, 45, FR 66754 (October 7, 1980), the following violation was identified:

10 CFR 50, Appendix B, Criterion V, states, in part, that: "Activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these..."

Section D.2.5.5 of the PSAR for the Washington Nuclear Project Unit #2 describes that measures would be established to comply with the above requirement.

Burns and Roe Engineering instruction to Bechtel, in specification change document PED-215-W-A804 required that piping walkdown inspection for arc strikes shall include participation by an AWS certified QC inspector and a Field Welding Engineer. It also required that upon inspection and evaluation by these individuals, any unacceptable defects shall be removed by grinding and the ground area be subject to liquid penetrant examination in accordance with applicable codes and standards. The applicable ASME Code Section III Part 2500 includes varying requirements for liquid penetrant testing, depending upon the class (1, 2, or 3) and the product form (plate, casting, welded pipe, seamless pipe).

Contrary to the above requirements, on October 29, 1981 the following circumstances persisted:

1. Bechtel Quality Control Inspection Records (series P-1.10 walkdown inspections) for the period of August 1981 to October 1981 included no requirements for liquid penetrant testing, and showed that liquid penetrant testing had not been performed for arc strike inspection, evaluation, and removal for System 58.0 (Service Water System). Neither the quality control inspector nor the supervisor could identify the ASME requirements for liquid penetrant testing, when they were first interviewed by the inspector.

2. A qualified field welding engineer did not accompany the Bechtel QC inspector during arc strike evaluations. Quality records for the period August 1981 to October 1981 included no decision to grind and accept arc strikes. Examples where arc strikes had existed can be found on piping shown by isometric drawing numbers SW(7)312-1, SW(17)300-1.3, SW(27)308-1.2, SW(29)298-1.3 and 4,6, SW(80)091-6.13-1, and SW(100)013-1.8.

This is a Severity 5 violation (Supplement II).

Pursuant to the provisions of 10 CFR 2.201, Washington Public Power Supply System is hereby required to submit to this office within thirty days of the date of this Notice, a written statement or explanation in reply, including: (1) the corrective steps which have been taken and the results achieved; (2) corrective steps which will be taken to avoid further items of noncompliance; and (3) the date when full compliance will be achieved.

Under the authority of Section 182 of the Atomic Energy Act of 1954, as amended, this response shall be submitted under oath or affirmation. Consideration may be given to extending your response time for good cause shown.

A. D. Toth
Senior Resident Inspector