

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-397/82-27

Jocket No. 50-397 License No. CPPR-93

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: November 1-30, 1982

Inspectors: *A. D. Toth* 1-3-83
A. D. Toth, Senior Resident Inspector
Construction Date Signed

R. A. Feil 1-3-83
R. A. Feil, Senior Resident Inspector
Operations Date Signed

Approved by: *R. T. Dodds* 1/3/83
R. T. Dodds, Chief
Reactor Projects Section 1 Date Signed

Summary: Inspection November 1-30, 1982 (Report No. 50-397/82-27)

Areas Inspected: Routine, unannounced inspection of reverification program activities, reactor coolant pressure boundary piping, safety-related pipe supports and restraints, sacrificial shield wall repair, project verification independent audit function, preoperational testing preparations, and review of licensee action on previously identified inspection findings. The inspection involved 132 inspection hours on-site by two resident inspectors.

Results: Two items of noncompliance were identified relative to: pipe weld alignment (Para. 3), and pipe strut/snubber end-bracket welding (Para. 6.c).

DETAILS

1. Persons Contacted:

Washington Public Power Supply System

G. Baker, Quality Assurance Engineer Lead
*C. Carlisle, Deputy Program Director
*H. Crisp, Construction Manager
*L. Floyd, Senior Quality Assurance Engineer
*J. Garvin, Manager of Construction Quality Assurance
J. Honekamp, Special Assistant to Managing Director
*R. Knawa, Quality Verification Program Manager
*P. Powell, Licensing Engineer
*M. Rodin, Quality Assurance Engineering Supervisor
*D. Timmins, Technical Specialist
P. Tompkinsj, Nondestructive Testing Technician
W. Willier, Acting Project Quality Assurance Manager

Burns and Roe Engineers (B&R)

N. Carter, Welding Group Supervisor
*A. Cygelman, Manager of Site Engineering
*W. Gonthier, Site Quality Assurance Engineer
S. Jones, Engineer

Bechtel Power Corporation (BPC)

H. Boarder, Quality Assurance Engineer
*T. Bostrom, Engineering Manager
*D. Cosgrove, Quality Assurance Engineer
B. Davis, Reverification Program Inspection Supervisor
*J. Gatewood, Project Quality Assurance Engineer
C. Headrick, Project Quality Control Engineer
*D. Johnson, Manager of Quality
M. Leach, Reverification Program Lead Engineer
*T. Mangelsdorf, Project Manager
*J. Newgen, Site Construction Manager
R. Walters, Systems Completion Documentation Manager

Advanced Technology Incorporated (ATI)

K. Deveroux, Field Engineer
R. Nearing, Field Engineer

Technical Audit Associates (TAA)

F. Jewett, Jr., President (Team Assignment Manager)
R. Laney, Vice President (Chairman of WNP-2 Review Panel)
C. Miller, UE&C WNP-1 Project Manager (Consultant to Review Panel)
L. Roddis, Jr. Consulting Engineer (Member of Review Panel)
H. Sheets, Director (Member of Review Panel)

Hartford Insurance Company

E. Zarate, Authorized Nuclear Inspector

Bonneville Power Administration (BPA)

P. Grady, Representative
*W. Chin, Representative

*Denotes personnel present at the exit management meeting.

In addition to the personnel noted above, the inspectors interviewed various other construction, engineering, and quality control personnel from the site contractor organizations.

2. General

One or more resident inspectors were on-site November 1-5, 8-10, 15-19, and 29-30. Mr. Toth inspected work in-progress on the weekend shift (Saturday) November 6.

Mr. Feil attended TAA audit sessions on November 19-20, regarding opening sessions and status of the site quality reverification program. Mr. Toth attended the November 20 session relating to reviews of selected quality problems which have arisen since resumption of construction in 1981.

The resident inspectors and regional office management (B. Faulkenberry, D. Sternberg, and R. Dodds) met with the licensee management on November 3 to discuss the results of the systematic appraisal of licensee performance. This will be summarized in separate reports and documentation.

3. Reverification Program

In response to the June 17, 1980 NRC inquiry under 10 CFR 50.54.(f), the Supply System, Bechtel, and site contractors have been engaged in a reverification program which includes review of records and re-inspections of hardware installed prior to July 1980.

- a. The standby liquid control system reverification report (System 10.0 Report) identified that, "One item required an evaluation to be made by Burns and Roe. Weld #6 on large bore isometric SLC-045-13.15 was misaligned on two sides on the outside diameter by 7/64". The Burns and Roe engineer accepted the weld per an evaluation of a radiograph in the document control vault.

The NRC resident inspector discussed this matter with the NRC Region I level III NDE Supervisor, and subsequently examined the radiograph with the responsible Burns and Roe mechanical engineering

supervisor and welding engineer (prior level III); the validity of the basis for disposition of the questionable fit-up was questioned. Information available from the radiograph was not sufficient to conclude that the inside diameter of the piping met the requirements of ASME Section III NB-4232 nor NB-4233 (the former requires 1/32 inch maximum offset for a 0.120-0.180 inch wall pipe, whereas the latter allows an exception "...maximum misalignment at any one point around the joint shall not exceed 3/32 inch"). Density measurements of the film suggested that the piping outside diameter misalignment measurements were indicative of internal misalignment conditions.

Some ultrasonic thickness measurement data was included in the original reverification inspection record (QCIR-RV-215-SLC-045-13.15-1). It supports a film interpretation that the internal surface of one spool had been originally reduced from 0.180 inch, to match the 0.120 inch wall thickness of the second spool. However, it included no data correlating the UT readings with the two measured misalignment points or the radiographs. It provided no basis to conclude compliance with the ASME internal alignment requirements.

Following notification of this issue, on November 22, 1982, a Burns and Roe field engineer and a Supply System technician conducted further tests of the weld joint in question. Surface profile and ultrasonic thickness measurements were made, which confirmed that the internal misalignment of 7/64-inch exists at one point, and 1/8-inch at a second point. The inspector witnessed this examination.

Failure to meet any part of the ASME Code is prohibited in ASME Section III Part NA-3370(b). Failure to comply with the ASME Code appears to be an item of noncompliance (Noncompliance Item 397/82-27-01).

The above item was the only discrepancy discussed in the System 10.0 Report. It was classified as: "accepted by the AE and was an isolated case. In accordance with the Reverification Logic #1 described in the Bechtel Systems Completion Report, a trend analysis for the system is unnecessary. Further inspection of System 10.0 is not required." A total of six welds had been included in the sample size.

The "isolated case" for this system is somewhat supported by the fact that the configuration involved only the 4-inch suction line from the standby liquid control storage tank to the suction of the injection pumps. Less than 20 feet of pipe appeared to be involved. At the discharge of the pump, the ASME Code class changes and weld joint configuration is totally different, involving socket welds on 2-inch diameter piping.

However, the two point misalignment of 7/64 inch is of magnitude equal to the wall thickness (.120-.180) of the four-inch diameter thin-wall stainless steel piping. There appears to be little basis to conclude that original work and quality control inspection acceptance were not deficient. Neither the reverification program documentation, nor licensee representative statements support a conclusion that similar 4-inch stainless steel piping in other systems does not suffer similar defects.

The inspector questioned the implications of the Burns and Roe engineer's improper disposition of the nonconforming condition. The engineer's supervisor provided convincing evidence that in June 1982 he had started to give special attention to disposition decisions and documentation thoroughness of the engineer. However, this action had not prevented Burns and Roe from issuing the final disposition action on the QCIR, nor Bechtel from issuing the System 10.0 final report on August 2, 1982. There was no documented evidence to suggest that either Burns and Roe or Bechtel management had identified the System 10.0 disposition action as inappropriate. Supply System Construction/Engineering correspondence dated November 2, 1982, indicates that 33 similar documents (QCIR's) had been returned to Burns and Roe for "reevaluation of the technical adequacy of specifically identified problem areas." The specific System 10.0 matter, mentioned above, was not included in that list. Bechtel quality assurance management stated that the list included items which had been identified by a review of 160 items which had previously been dispositioned by the engineer in question above. The Bechtel Project Quality Assurance Engineer stated his belief that Burns and Roe had been aware of the System 10.0 item, without need to identify it in the November 2 list of 33. There was no documentation to support this hypothesis.

The licensee actions relating to the trend conclusions of the System 10.0 report will be reviewed in conjunction with the response to the noncompliance item, above.

b. Sentry Automatic Sprinkler System (Sentry) Contract 217.

A reverification report was issued and approved by BPC on August 27, 1982. The scope of the reverification effort included all quality Class I (QCI) and quality class II - seismic Category I (QC II-SC I) items installed and final inspected prior to July 1980. This included hangers for: (1) the sprinkler system in the Diesel General 1A room of the Diesel Generator Building; (2) the Diesel Generator IB Day Tank Room; (3) the Diesel Generator 1A Day Tank Diesel Storage; (4) the Deluge System in the Diesel Generator Building; (5) the HPCS Diesel Generator Day Tank and Pump Room; and (6) the fire extinguisher brackets in the Diesel Generator Building, Reactor Building, Radwaste Building and the Service Water Building and welds at the 606 level of the Reactor Building.

Sentry performed the reverification on the mechanical portion of the 217 Contract. This included 775 QC I and QC II-SC I piping hangers and 19 SC I fire extinguisher brackets.

Lord Electric Company (Lord), subcontractor to Sentry performed the reverification on the electrical portion of the contract. This included 115 QC II SC I Reactor Building Unistrut and sensor bracket welds.

The report indicates that Sentry had initiated reinspection of some electrical and pipe support welds prior to implementation of the reverification program. Some deficiencies in weld records were identified. This resulted in a 100 percent review of the weld records by Lord and a 100 percent inspection of the welds by Sentry.

The remaining reverification consisted of a 100 percent hardware inspection of 43 diesel generator pipe supports and a 10 percent documentation review as required by Quality Verification Instruction, QVI-01. Discrepancies found were either corrected or accepted "as is" by the Engineer.

A 100 percent hardware and documentation review was performed on the fire extinguisher brackets. A trend was observed on eight brackets which had incorrect Hilti Drop In set depth. Other deficiencies were either reworked or accepted by the Engineer.

A 100 percent hardware and document review was performed on the electrical support welds. Nonconformances (NCRs) resulting from the inspections were dispositioned "accept as is."

A 12 percent hardware and document review was performed on 3,263 electrical conduit hangers. Ten NCRs were written on identified deficiencies. Eight were accepted "as is" by the Engineer and the remaining two were reworked.

The report concludes that the work performed by Sentry and Lord has been reverified in accordance with the reverification program. Some minor errors were identified and corrected or accepted by the Engineer.

The inspector examined the report and was unable to trace some of the documentation in the report. In addition, discrepancies were identified in the inspection record criteria and the systems identification and incomplete summary findings (NCR not identified). The questions raised by the inspector were discussed with the licensee. The licensee has agreed to resolve the issues and correct the report accordingly.

4. Plant Verification Program Activities

The inspectors attended reverification program and quality assurance program related sessions of the Technical Audit Associates audit at the WNP-2 site and WPPSS corporate offices. Having previously requested, received, and reviewed various project documents, the audit team had presented a series of questions to the Supply System, and addressed these during the audit. The auditors were obviously free to inquire into matters of interest to them, and the Supply System appeared very responsive to their questions.

A Supply System letter to NRC (GO-82-944 dated November 24, 1982) transmits requested information regarding the TAA audit activities. The letter includes descriptions of the TAA organization and contractual provisions. It describes resume's of the Plant Verification Program Plan Evaluation Team and descriptions of provisions to guard against conflicts of interest and assure organizational independence.

The individual employed part time by TAA, in a consultant capacity as On-Site Nuclear Design Review Engineer, is also currently employed by the architect-engineer at the WNP-1 site as Deputy Project Manager. The inspector questioned the organizational independence aspects of this arrangement, in the context of the descriptions provided to NRC, above. The inspector was assured that the individual serves only in a technical consulting role, and that the TAA conflict of interest and independence provisions are keyed to the actual Review Panel Members and not necessarily the consultants. The Supply System coordinator stated that the individual was selected due to his particular qualifications for the task of nuclear design review. The inspector identified no obvious conflict of interest; however, he advised that he would clarify the noted organizational ties for consideration with NRC management review of the November 24 submittal.

No items of noncompliance were noted.

5. Reactor Coolant Pressure Boundary Piping Work

The inspector observed general work in progress in the containment building drywell. Piping installation is essentially complete, and the inspection was limited to ascertaining the preservation of the installations.

- a. Hydrotest was in progress on residual heat removal system line 1SRHR(1) B. A. hold tag was present on hanger RHR-976N, and temporary supports were present on portions of the piping outside the drywell. The evaluation of hangers on hold status was done by a Burns and Roe hanger engineer in preparation for the hydrotest; where temporary hangers were required these were defined by the engineer via "Temporary Project Engineering Directives." The inspector observed

a file drawer full of such T-PED's, and examined two (i.e., PED-215-T-8016 and 8150). Instructions for use of the T-PED's was provided by letter BRWP-F-82-2387. Although not a formal procedure, the instructions appeared to provide assurance of Engineer involvement in the selection of temporary supports. There was evidence that a hanger engineer had evaluated the adequacy of hanger RHR-976N.

- b. Piping in the drywell was wrapped with rubberized material, which provides protection from arc strikes and debris. Components, such as dynamic supports (snubbers) were also wrapped.
- c. At elevation 560 the inspector observed thorough wrapping of piping components in an enclosed area where sand-blasting (for subsequent painting) had been underway.
- d. The inspector observed various riggings of material and components and noted no cases where they were improperly supported from permanent large-bore or small-bore piping.
- e. As installed small diameter piping (shown in detail-B of isometric drawing RCIC-663-1.2) appeared to be inadequately supported for general seismic considerations. Backup documentation showed that a need for pipe support had initially been identified and scheduled for subsequent construction.

No items of noncompliance were identified relative to the above items.

6. Safety-Related Pipe Support and Restraint Systems

The inspector observed the condition of several mechanical snubber assemblies in the drywell. Except where the installation was obviously in-process, the snubbers were each wrapped and taped to reduce access to dust and grinding or sand-blasting particulate. Two specific snubbers examined included those on supports RCIC-126 (PSA-1) and MSRV-2A-1 (PSA-10). There was no evidence of deterioration or corrosion, nor bending or damage to rods or connecting joints. Bolts, nuts, and fasteners appeared secure, with exceptions noted below.

- a. The inspector interviewed two quality control inspectors relative to snubber inspection. They noted that they were just getting mobilized to perform snubber installation inspections, under the Bechtel reorganized program. They had inspection records which showed that the inspection scope had been defined and control documents established, but not yet implemented. The inspectors were aware of the applicable quality control instruction and the construction work procedure, and they appeared aggressive in their pursuit of applicable inspection criteria.

At their work stations the inspectors had engineering directions regarding acceptable component standard supports, provided via PED-215-H-B006. However, this document was not complete, as evidenced by omission of sway-strut details. In responding to the NRC inspector inquires regarding acceptance criteria for sway struts and snubbers, the inspection supervisors identified that they had available additional vendor data, which they had obtained from informal sources. One such document was an NPS pipe support catalog.

The responsible Bechtel quality control manager and engineering manager stated that such catalogs may be used for general field identification of materials which had been properly receipt inspected and accepted. The inspector identified no specific parameter in question at this time. The quality control manager, with concurrence of the Manager of Quality, stated that these materials would be complied, evaluated for approval, and formally issued to the field as necessary under the pending revision of Quality Control Instruction 2.10 within a week.

The field use of this material will be examined during a future inspection (Unresolved Item 397/82-27-02).

- b. The inspector observed that pipe support SW-29 had been inspected and accepted by Bechtel quality control inspectors on September 21, 1982 (Inspection Record QCIR-SW-(2)-251-30-33-1). It contains four PSA snubbers; the end-bracket connections of one had no washers; the second had one washer; a third has two washers. Also, pipe support SW-179 was declared complete by Bechtel field engineering, but had not been final inspected by quality control (same QCIR record as SW-179, above). Its self-aligning bearing had slipped over 60 percent out of the strut paddle hole.

The Bechtel quality control inspectors and supervisors could not identify whether or not washers were required for the end bracket connecting pins. The NRC inspector met with the Bechtel manager of quality, project quality assurance engineer, project quality control engineer, quality inspection manager, and two inspection supervisors to "walk through" the applicable hanger/snubber quality control instruction (QCI-2.10). It was found that this instruction does not address washer installation verification nor does it prescribe verification of setting of cotter pins. It does not invoke manufacturers data sheets, which show two washers required; neither do the Burns and Roe snubber installation detail sheets.

The Engineer has had the general question of end-connection adequacy under review since the Supply System requested action (April 28, 1981 WPBR-F-81-70) relative to NRC Circular 81-05. The Burns and Roe engineers determined that partial disengagement of self-aligning bearings of snubbers and sway struts can lead to temporary or permanent overstressed condition of piping (May 5, 1982 letter to WPPSS, BRWP-F-82-882), even for configurations installed in accordance

permanent overstressed condition of piping (May 5, 1982 letter to WPPSS, BRWP-F-82-882), even for configurations installed in accordance with manufacturers details. Burns and Roe also had performed field verifications which showed that some WNP-2 installations do not comply with such manufacturers' directions. Presence of washers detailed in manufacturers' data sheets, and possibly additional spacer/pinning measures, were indicated to be important parameters to prevent the problem. Letters were sent to five suppliers on June 15, 1982 (e.g., BRMISC-F-82-0026 to Power Piping Company), describing this concern and requesting recommendations and suggestions.

The Supply System notified Bechtel of this matter on May 19, 1982. Bechtel performed walkdown inspections and by August 30, 1982 speedletter (to G. Shaffer) identified that "All installed snubbers and struts with minor exceptions have same problems: (1) Washers are not installed; (2) Clamps need adjustment; (3) Spacers are not installed; (4) Locking devices are not installed; and (5) Some cotter pins are missing. No bearings are displaced from their design position in units".

Bechtel has issued a procedure change notice (PCN-SWP-P-P-12-1 dated November 3, 1982), which prescribes inspections for washer clearances, and bearing configuration. This calls for the activities to be performed during later set-and-balance of the piping systems. The Engineer has now issued direction via PED-215-H-6397 (dated December 1, 1982) requiring actions for past and future work. The Engineer's direction is more demanding than the Bechtel procedure; it requires clearance checks to a more stringent criteria (1/3 paddle thickness) than the Bechtel procedure change (1/2 paddle thickness), and it requires striking and manipulation of installed items to detect visually engaged but loose bearings. Bechtel engineering and quality assurance managers stated that they anticipated taking issue with the Burns and Roe direction.

The matter of total disengagement was subject of NRC Circular 81-05; the Burns and Roe follow-up of that matter has led to the current determinations regarding partial disengagement and potential overstressed condition of piping. This matter has been under review by the engineer since prior to June 1982, but the licensee could produce no evidence that the matter had been evaluated relative to reportability requirements of 10 CFR 50.55(e). The Bechtel engineering representative produced letters and test result documents showing that this general matter had been reported and subsequently determined not reportable on other projects. This was presented as the Bechtel basis for not initiating such reports on the WNP-2 project. The Supply System has since advised the NRC regional office that this is a potentially reportable matter.

At the conclusion of the inspection, it was clear that this matter involved a breakdown of communication between the Supply System, Burns and Roe, and Bechtel. Also, agreement had not yet been reached between Bechtel and Burns and Roe, regarding: (1) the specific acceptance criteria to be used regarding clearances, (2) the organization and procedures to be used for verification of fitup clearances and hardware. This matter is unresolved pending inspection of the resolution of these matters (Unresolved Item 397/82-27-03).

- c. The snubber (and strut) end-brackets are flat bottomed, and fit up to curved attachment plates on some piping sections. This combination results in lack of contact and a gap where the curve breaks away from the flat surface. Geometric considerations indicate that this gap may be greater than 3/16 inch, for a 2.72 inch wide bracket on an 8 inch diameter pipe with 0.5 inch thick weld pad. The attachments are made by welding at these points. The effective throat of a fillet weld will be reduced by the gap.

The fillet weld at the pipe-pad for support MSRV-4A-1 measured 1/4-inch, such that the gap effect would result in less than 1/8-inch weld leg on the bracket. At request of the inspector, a Bechtel quality control inspection supervisor confirmed this (by measuring the distance from the toe of the weld to the end of the end-bracket). Subsequently, Bechtel issued a nonconformance report (NCR-250 dated November 19, 1982) stating that the weld was undersized by 1/16-inch full length both sides. The inspector requested that the measurement be reverified.

The hanger detail drawing for MSRV-4A-1 specifies a flare-bevel weld reinforced by a 5/16 inch fillet weld. The flare bevel was not applicable to the weld joint configuration used in the field, which resulted from using end-brackets with square-machine edges. The 5/16-inch fillet weld size was not achieved, nor did the field forces invoke their wide-gap procedures, which call for increasing the size of the weld leg to compensate for loss of weld throat.

The quality control inspection record for MSRV-4A-1 shows that this installation was accepted by quality control on November 9, 1982 (QCIR-MS(18)-550-1.2-2 step 3.2). Failure to provide appropriate acceptance criteria for this weld configuration, and/or comply with existing wide-gap procedures, appears to be an item of noncompliance, (Noncompliance Item 397/82-27-04).

7. Repair of Sacrificial Shield Wall

The inspector observed start of welding to repair a base-metal excavation at azimuth 20-degrees in the sacrificial shield wall. The governing nonconformance report (NCR-250-20074) describes that the instrumentation contractor attempted to place a pipe support at the incorrect location, had identified a linear indication on the sacrificial shield wall, chased the indication (grinding) until breakthrough occurred and 80-cubic inches

of material had been removed. The Supply System became aware of the weak process control which permitted this, and issued direction that the repairs involve continuous monitoring by both Bechtel and Burns and Roe welding engineers. The Engineer issued instructions and weld sequence to increase control of the repair.

For this repair, the inspector observed preheating and weld sequence instructions were available and implemented, the required engineers and a quality control inspector were present. The quality control inspector demonstrated that he had thoroughly prepared for the repair activity, demonstrating his prerequisites, and had considered and satisfied himself of questions of generic detects.

The quality control inspector monitored preheat and interpass temperatures, and electrical parameters, during welding, with visual examination and peening after each layer of weld material. The repair was performed under rigorous controls.

No items of noncompliance nor deviations were identified.

8. ASME Design Specifications and Owner Certificate

The inspector interviewed the cognizant Supply System engineer and examined records relating to selected requirements of ASME Section III Part NA-3200, "Owner's Responsibility."

The Supply System has obtained an Owner's Certification of Authorization (Number OWN-102), as prescribed in ASME III Part NA-3230. However, the Supply System had not provided, nor caused to be provided, a document specifically designated as "Design Specification" for each component or appurtenance, as prescribed by Paragraph NA-3250. However, basic design requirements were defined in contract specification documents for each contractor. Final documentation activities for ASME systems are oriented toward certifying compliance with the "Design Specification." Since the WNP-2 plant systems are nearing completion, the need for the discreetly identifiable "Design Specifications" has become apparent. A Supply System engineer has been working with Burns and Roe to compile existing contract specifications and associated data into the design specification format prescribed by the ASME Code.

The inspector noted completion of the "Design Specifications" developed for the instrument lines (JCI Contract 220), as issued via PED-220-I-0935 (September 20, 1982), and those developed for the control rod drive system (GE contract 240) via letter BRBEC-C0500-F-82-4036 (dated November 4, 1982). The format and content appeared to be oriented toward that prescribed by ASME Part NA-3252 and NA-3254.

No items of noncompliance were identified.

9. Plant Tours

The inspectors toured the safety-related areas of the physical plant at various times in November, and performed follow-up record reviews as indicated. They attended construction, operations, and quality management meetings relative to current work activities and quality assurance program planning and problem resolution. During the tours, the following items were noted:

- a. Field engineers from a subcontractor (ATI) to the principal electrical contractor were performing detailed as-built measurements of loadings on cable tray supports. This is part of a design verification effort to check the combined loadings on such supports.
- b. The Bechtel quality control gang-boxes have been instituted at twenty-one locations in the reactor plant complex. Construction craft/supervision boxes have been implemented in nearby areas. A drawing reference station has been moved to the 501-elevation turbine generator area for quality control, field engineering, and construction reference. Quality Control inspector gang boxes have been equipped with principal references necessary for conduct of inspection criteria reviews. Six stations have been set throughout the facility, with full specification and procedure references. Welding procedures have been made available to welders and other personnel at the welding material issuance stations.

No items of noncompliance or deviations were identified.

10. Licensee Actions On NRC Circulars

(Circular 81-05): This circular advised of potential compromise of safety function of pipe support members which used self-aligning bearings. Where oversized end-brackets are involved, spherical bearings may slide out of the end-paddles of the strut ends.

The inspector observed end-brackets at WNP-2, where the bearings had slipped along the hinge-pin, but not to the extent of total disengagement. The licensee has initiated actions relative to this Circular, but has not defined and implemented corrective actions for work in progress or completed work. (Reference paragraph 6.b of this report. Circular closed. (To be carried as Unresolved Item 397/82-27-03.)

11. Licensee Actions On Previous NRC Findings

The inspectors reviewed the licensee actions relative to the following items:

a. (Closed) Follow-up Item (397/79-18-02) - Preservice Inspection Identified Linear Indications

The preservice inspection program included liquid penetrant examination of certain pipe welds revealed unacceptable linear indications. The licensee incorporated this matter into the nonconformance control system via NCR-5674 and PED-215-M-1361. These documents prescribe a sampling and analysis program.

The sample program was redefined in January 1980, via PED-215-M-2115, to determine the extent of the problem. In April 1981, the Engineer concluded that none of the excavations for defect removal exceeded 5 percent of the nominal wall thickness, and were not indicative of defective piping material. However, all identified discrepancies (31 cases) were identified for repair (Bechtel NCR-516).

The preservice inspection activities were continued under a contractor (LMT) and Bechtel (under direction of contract 215-15B), including further liquid penetrant examinations. Other items have been identified by the preservice inspection activities, including improper grinding of weld contours and excessive grinding that encroached on minimum pipe-wall thickness. All such weld-finish matters have been documented on nonconformance reports (e.g., 2808-07182, 08830, and 7182). The inspector examined a set of in-process work sheet matrices for control of the repairs (hundreds), and had interviewed the superintendent responsible for effecting the repairs during a prior report period. The repairs were essential complete.

This matter is closed.

b. (Closed) Unresolved Item (397/81-03-04) - Weld Record Discrepancies

Discrepancies in weld records were identified in NRC Inspection Report 50-397/80-08. Follow-up inspections were documented in Inspector Reports 50-397/80-19, 81-03, and 81-10. The issue focused in the 80-19 report was identified as resolved in report 81-10. The related matter of report 81-03 involved observations that weld material withdrawal slips did not correspond to the heat number, welder, and dates shown on the formal weld record. The licensee committed to review weld record packages and resolve discrepancies.

As discussed in previous inspection reports, the procurement and installation documentation of the mechanical contractor has been subjected to intensive review under Bechtel direction during October 1981 through September 1982. Part of this effort involved gathering together all weld material withdrawal slips, organizing these by date, and microfilming them. These files were then used to assist in resolution of questions regarding use of weld material. Procedure SC/D-33 (item 4.1) prescribes this review.

The inspector interviewed the responsible System Completion Documentation Manager (R. Walters), and the ASME Authorized Nuclear Inspector (E. Zarate) who were involved with that effort, relative to the general review and the disposition of the NRC identified discrepancy for weld DE-062-1.19 Weld #6. It was determined that the withdrawal slips in the work package most likely represented actual issuance of material to the welder, but as is often the case, the welder did not use the material. Other material withdrawal slips for the day of the weld (October 4-5, 1978) were found in the microfilm file, and did correspond with the heat numbers, welder, and dates shown on the formal weld record. The personnel interviewed, and disposition records previously reviewed by the inspector, indicate that many such apparent discrepancies had been identified and in many cases had been resolved using the microfilm data base (in some cases the traceability could not be so established and the pipe joints were reworked).

This matter is closed.

c. (Closed) Unresolved Item (397/81-18-10) - Administrative Requirements for Pipe whip Restraints

The Bechtel summary control procedure and work controls were silent on certain administrative requirements for on-site repair of pipe whip restraints. They did not include instructions for obtaining engineering approval of heat treatments nor sequence of actions necessary to clear various nonconformance reports. The inspector identified this matter for follow-up to assure that required repairs were accomplished in all cases.

The architect-engineer has issued a specification change, PED-CS-A947, to clarify heat-treatment review requirements. This change requires Engineer review only for the cases where weld repairs resulted in distortion beyond the design tolerances. Otherwise, normal heat treatment is specified by the Bechtel welding engineer in accordance with an SWP series procedure.

The Bechtel quality assurance department staff confirmed that each nonconformance report associated with the originally identified defects has now been resolved (Contract-90 associated). Any new nonconforming conditions arising in connection with the pipe whip supports will be handled through the routine nonconformance control system.

This matter is closed.

d. (Closed) Unresolved Item 397/81-25-01 Deficiencies in Procurement Documentation Review and Transmittal

The inspector had verified that identified deficiencies had been resolved prior to the departure of WBG from the site. These deficiencies included: (1) Procedures not covering all activities of work; (2) Process not being followed in the assembly of documentation review packages; (3) Questionable control of documents in the review package; and (4) Documents reviewed were not necessarily those documents which were transmitted from WBG to Bechtel as part of the turnover of the document package. The corrective action taken by WBG and Bechtel included: (1) Guideline No. 40, "Definition and Use of Certified Records," was initiated to clarify the review process for altered and/or illegible records. It also covers certification of records being turned over to Bechtel; (2) Guideline No. 44, "Certifying Materials Using Code Case N-242-1," was initiated for alternative rules for acceptance of materials which may not have been supplied in complete conformance with rules of NCA 3800; (3) WP-788, "Procurement Document Review," was revised to reflect the activities of review and transmittal process; (4) Guideline No. 23, "Engineering Purchase Order Vault," was revised to better define the control and transmittal process for completed packages; (5) Guideline No. 24, Revision 3, "Maintenance of the Procurement Documentation Review Team Files," contains the requirement to add a Table of Contents and split the package into deliverable and nondeliverable sections; and (6) wire cages were built to control access into the file areas. Personnel access list were published for authorized entry to file areas.

These actions resolved the inspector's questions.

This item is closed.

e. (Closed) Unresolved Item (397/82-07-01) - "Pup" Installation Records

The inspector reviewed records relating to the installation of the penetration nozzle adapter ring (pups) in the main steam line containment penetrations. The licensee issued a NRC which required verifying dimensions of the pup pieces and updating the as-built drawings to reflect the as-built condition. Dimensions of the penetrations were taken by the licensee. One dimension was from the adapter ring to the outer flange and the other dimension was made from the face of the annular bio-shield flange to the blued head on the main steam pipe. No unusual or unexpected data resulted from the dimensional measurements. The data from the dimensional measurements was used to establish a tolerance measurement for the adapter rings and drawing FDC-01-24 was revised via Burns and Roe PED 213-CS-0015 to reflect these tolerances.

The inspector reviewed records which indicated that the adapter rings were cut from the original, the interior end main steam penetration sleeves and bear the same piece mark as that sleeve. The inspector reviewed the Field Receiving Report for the original penetration sleeves which had the instructions for cutting the sleeves No. 122P1 and 122P2 into four pieces, 12" long and prepare the edges for welding. the installation of the adapter rings on the exterior end of the penetration sleeves was documented on a Fabrication Checklist (weld record). The NDE records showed that radiography had been performed and was signed by the Authorized Nuclear Inspector. The records show that the deficiencies in documentation regarding the as built condition of the main steam adapter rings have been rectified. This item is closed.

f. (Closed) Unresolved Item 397/82-12-02 - Use of Uncontrolled Drawings

An allegation regarding use of information drawings on noncontrolled field sketch drawings (FSK had been made. The allegation was not substantiated since the licensee had previously identified the problem during an audit. The results of the audit finding indicate that QC inspection records which documented inspection activities performed using field sketch FSK drawings were reviewed by BPC audit personnel. The documentation was revised to reflect the design drawing number vis-a-vis the FSK number. The audit revealed that inspection records generated after the deficiency was identified were properly scoped. Since this effort has not been completed, this item is closed.

g. (Closed) Violation (397/82-14-01) - Unqualified Pipe Bending Procedures and Tools Used for Bending Pipe

Between June 1, 1982 and June 6, 1982, six (6) beads were made in stainless steel pipe in each of four (4) loops of hydraulic supply to RRC-V-60B using an unapproved and unqualified pipe bender in accordance with an unapproved and unqualified pipe bending procedure.

The deficiency was documented by PBC on Quality Action Request 82-13 by the BPC QA Manager. The recommended corrective action included:

- (1) Conduct training sessions for all field engineers and superintendent describing which processes are considered "special processes" requiring A/E approval.
- (2) Issue an administrative memo to all field engineers and superintendent on the importance of adherence to the Quality Program and procedure requirements. The memo to clearly state that willful disregard of quality program requirements will result in disciplinary action.

- (3) Review case history with all responsible persons who were involved with the processing of bend procedures and implementation in the field. Develop a set of lessons learned. Apply to future in process construction activities.

The inspector verified that all items identified have been addressed by BPC.

- (1) Training sessions on ANI hold points and procedures were conducted on June 1, 11, and 18 and July 28-29, 1982.
- (2) Interoffice memorandums were issued on June 28, 1982, from the QC Manager and June 29, 1982, from the Field Construction Manager. The memorandums were issued to all field engineers and superintendent stressing adherence to quality standards and procedures.
- (3) The case history was discussed with attendees representing field engineering, welding engineering, construction management, contract coordination, construction supervision, quality control, quality assurance, and the Authorized Nuclear Inspector on June 29, 1982. The information was distributed to all personnel involved in the activities and meetings were held on August 2 and 10 to summarize conclusions, recommendations, and action completed.

The inspector verified that PBC Procedure GWP/P-1, "Construction Procedure Preparation and Publication," dated June 18, 1982, was issued and addresses approval authority required for procedures prior to implementation of the procedure.

The inspector verified that the NCR No. 881 addressing the nonconforming condition has been dispositioned "Use as is" by field engineering.

This item is considered resolved.

h. (Closed) Violation (397/82-14-02) - Failure to Promptly Document Nonconforming Pipe Bending.

A nonconforming condition identified on June 6, 1982, was not documented on a nonconformance report (NCR) until June 11, 1982. The NCR was issued on June 11, 1982, as well as the Quality Action Request addressed in paragraph g of this section of the report.

NCRs are now prenumbered and logged to provide accountability prior to validation. Also, BPC Administrative Instruction No. 15, dated July 19, 1982, Subject: Control of NCR's, was issued. It includes requirements for prenumbering and logging NCRs and a weekly NCR aging report. The instruction also contains the requirement for applying a hold tag at the time the NCR number is assigned.

The inspector verified the logging of NCRs as required by the Administrative Instruction. A list of unvalidated NCRs is submitted to the quality control manager on a weekly basis. The weekly listing dated November 8, 1982, contained 27 NCRs. Management was aware and appears to be controlling the NCR process.

This item is considered resolved.

12. 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 this inspection are discussed in paragraphs 6.a and 6.b.

13. Management Meetings

The construction resident inspector met with the WPPSS site quality assurance manager approximately weekly, to discuss status of inspection findings and project status information. On December 3, the resident inspectors met with senior project management to summarize the inspection results for the month of November. Personnel in attendance at that meeting are so designated (*) in paragraph 1 of this report.