

U.S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-397/82-12

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

Licensee: Washington Public Power Supply System

P. O. Box 968

Richland, Washington 99352

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

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

Inspection conducted: May 1982

Inspectors: J.O. Elin for 6-30-82
R. A. Feil, Senior Resident Inspector Date Signed

J.O. Elin for 6-30-82
A. L. Toth, Senior Resident Inspector Date Signed

J.O. Elin 6-30-82
J. O. Elin, Reactor Inspector Date Signed

Approved By: T. Dodds for 7/1/82
R. T. Dodds, Chief Date Signed
Reactor Construction Projects Section 2

Summary:

Inspection during May 1982 (Report No. 50-397/82-12)

Areas Inspected: Non-routine, unannounced inspection of licensee and contractor activities and investigation of allegations. The inspection involved 188 inspector hours on-site by 2 NRC resident inspectors and 1 region based inspector.

Results: No items of noncompliance or deviations were identified.

8207150299 820701
PDR ADOCK 05000397
Q PDR

DETAILS

1. Persons Contacted

Washington Public Power Supply System (WPPSS)

- *C. S. Carlsle, Deputy Program Manager
- H. A. Crisp, Project Construction Manager
- *L. C. Floyd, Quality Assurance Engineer
- *R. T. Johnson, Project Quality Assurance Manager
- W. G. Keltner, Assistant Project Construction Manager
- *R. M. Nelson, Licensing Project Manager

Bechtel Power Corporation (BPC)

- D. Brons, Quality Control Inspector
- L. Burch, Quality Control Field Supervisor
- G. Chapman, Quality Control Inspector
- R. Coomes, Superintendent, Lay down Area
- *R. E. Davis, Quality Assurance Engineer
- *J. B. Gatewood, Project Quality Assurance Manager
- *C. D. Headrick, Project Construction Quality Control Manager
- E. Horn, Superintendent, Fabrication Shop
- D. R. Johnson, Manager of Quality
- F. Pender, Tool Calibration
- B. Raymond, Quality Control Receiving Supervisor
- J. Shaffer, Quality Control Inspector
- P. Steeb, Assistant Construction Quality Control Manager

Burns and Roe Incorporated (BRI)

- *A. T. Luksie, Project Licensing Manager
- L. Noble, Civil Engineer
- J. Mahoney, Hanger Engineer
- *R. P. Sabol, Quality Assurance Engineer

*Denotes those present at monthly management meeting.

The inspectors also conferred with other licensee and contractor personnel during the course of the inspection period. The resident inspector attended several management meetings during the inspection period.

2. Investigation of Allegations

The inspector was informed of nine (9) allegations. The allegations were investigated by resident inspectors and a Region V inspector. None of the allegations were substantiated although two unresolved issues were identified related to the allegations. To

be considered substantiated; a finding must be (1) true, (2) in violation of regulatory requirements, and (3) must not have been previously identified as being properly handled by the licensees' quality program.

- a. Allegation: Some Nonconformance Reports (NCRs) are not processed.

"A NCR identifying an overheating condition on a pipe whip restraint was submitted by a quality control inspector to his supervisor. Initially the Assistant Project Construction Quality Control Engineer (Ass't. PCQCE) was going to validate the NCR. Subsequently the Ass't. PCQCE decided not to validate the NCR."

Finding: This allegation was not substantiated. Although program changes will be made to prevent misunderstanding NCR dispositions

- (1) Procedure Requirements:

The BPC WNP-2 Construction Quality Control Manual stated in paragraph 3.1.1, Section IV; "A nonconformance is defined as a deficiency in characteristic, documentation or procedure which renders the quality of an item unacceptable or indeterminate with respect to the program criteria. Examples of nonconformances include physical defects, test failures, incorrect or inadequate documentation, and deviations from prescribed processing, inspection or test procedures."

- (2) Preparation of NCR's:

"Nonconforming items may be identified and reported to Construction Quality Control by anyone in the Bechtel organization. However, the validation of formal nonconformance reports (NCR's) shall be the responsibility of the Project Construction Quality Control Engineer."

"NCR's shall be prepared in accordance with detailed instruction, and a standard form for recording the required information."

"The NCR shall be accurately and concisely written after consultation with the interested parties to ensure that the discrepancy is correctly described, the appropriate program criteria are referenced, and that sufficient data is provided to facilitate a proper and complete disposition for resolving the nonconformance."

(3) Validation of NCR's:

Prior to validation of the NCR, the originator shall review it for conformance with the requirements of The Bechtel Procedure described above.

"The NCR shall be validated by the Project Construction Quality Control Engineer after consultation with the Project Field Engineer for clarity of technical data described in the report."

BPC Procedure SWP/P-G-7, Field Engineering Processing of Bechtel - Generated Nonconformance Reports, Rev. 1 dated July 27, 1981 states in part; "Nonconforming items may be identified and reported to Construction Quality Control by anyone in the Bechtel organization. Validation of formal nonconformance reports (NCR's) is the responsibility of the PCQCE."

The inspector conferred with BPC and licensee personnel about the specific NCR cited in the allegation. The NCR was not processed because (1) the temperature recorded in the chart was in error because of a broken thermocouple and (2) the temperature was taken with a pyrometer which indicated the temperature was 248° F. This temperature is within the temperature boundary requirements of 225° - 350° as prescribed by PED 215 - W B030, and was done in accordance with Quality Control Instruction (QCI) 14631/W-100.

To preclude further allegations and misunderstandings on NCR processing and to insure that all safety issues are identified, BPC has issued Administrative Instruction No. 15; Control of NCR's. The instruction prescribes the methodology for submitting a NCR by anyone with BPC. All NCR's initiated will be assigned a number by the QC vault. All NCR's will be dispositioned. They may or may not be validated. Voiding a NCR can only be done with the concurrence of the Project Construction Quality Control Engineer. All NCR's are now statused on a periodic basis.

- b. Allegation: Inspections were not performed on Fire Protection Systems as required by Bechtel WNP-2 Construction Quality Control Manual (CQCM) paragraph 3.2.1.

Finding: The Allegation was not substantiated, although related unresolved issues were identified.

The Bechtel Construction Quality Control Manual paragraph 3.2.1 states in part; "The requirements, procedures and instructions

for construction quality control contained in this manual shall be applied to Quality Class I, Quality Class II - Seismic I, Quality Class G - Seismic I, and other safety related items subject to the quality assurance provisions of 10 CFR 50, Appendix B (hereinafter referred to as Q-Items) and ASME Code, Section III items, Fire Protection Systems and Radwaste Systems. The program applies during the construction phase from time of receipt inspection and/or custody transfer until formal release for turnover to the Supply System. These requirements, procedures and instructions shall similarly be applied to Q-Items and ASME Code, Section III items, Fire Protection Systems and Radwaste Systems which are formally returned by the Supply System to Bechtel for rework or repair."

The inspector determined that definitive boundaries for inspection had not been established. Bechtel Quality Control Personnel contacted Bechtel Engineering for an interpretation regarding specific boundaries within the Fire Protection System that should be considered safety related. Bechtel engineering, after contacting the licensee and the A/E (Burns and Roe) determined that the safety related boundary for fire protections systems was the wall of the buildings. Once outside the building and underground the WPPSS fire protection engineer takes over the monitoring of construction activities. The technical support building is a WPPSS inspection responsibility. Bechtel concluded that the quality inspection program should be implemented in safety related areas only with regards to the Fire Protection System. This determination conflicts with the Bechtel Construction Quality Control Manual. Pending clarification and resolution of the directions described in the Bechtel Construction Quality Control Manual and those given by Bechtel engineering this item is unresolved. (50-397/82-12-01)

- c. Allegation: Some pipe hangers have not been preheated as required by Project Engineering Directive (PED)

Findings: This allegation was not substantiated.

Nonconformance reports (NCR's) have been written which document the process of thermal cutting of some pipe hangers without preheat. Those NCR's which were validated were dispositioned as "Perform MT; if acceptable use Accept as is. Those NCR's which were not validated were reviewed and determined to acceptable without further NDE.

- d. Allegation: Inspections by Quality Control personnel were done using Information Drawings and non-controlled FSK drawings.

Finding: The allegation was not substantiated due to previous licensee identification of issue.

Bechtel Construction Work Plan/Procedure GWP/P-8 states in part, "Information only drawings may be used for production purposes (Preparation of Quality Control Inspection Reports Systems, Weld Map Identification, Requisition Materials, etc.) provided the user assures that the documents utilized agree with the "Controlled" stamped documents and/or DCL located at the Bechtel Control Stations."

Bechtel Quality Assurance conducted an audit of Bechtel Construction Quality Control to determine conformance to requirements for preparing, processing, revising and controlling field inspection records. One of deficiencies noted was that inspections were performed using unauthorized documents (FSK's) for acceptance criteria. Bechtel Project Construction Quality Control Engineer subsequently issued instructions that all installation inspections were to be performed using controlled drawings. Pending resolution of the audit finding concerning the previous use of un-controlled drawings this item is unresolved (50-397/82-12-02)

- e. Allegation: Uncalibrated oxygen analyzer used during the welding process.

Finding: The allegation was not substantiated.

There are no specific requirements for oxygen analyzer to be calibration on the job site. Vendors of oxygen analyzers recommend that any calibration required be done by the vendor. The oxygen analyzers are adjusted prior to each use (field check) to read 21 percent oxygen, the normal oxygen content in air. No other adjustments or calibrations are required.

- f. Allegation: Quality Control inspections performed prior to scoping for those inspections.

Finding: The allegation was not substantiated.

Inspections on structural steel were conducted in part in accordance with Project Quality Control Instruction (QCI)

No. 14631/W-1.00, Quality Control Instructions for Welding, Heat Treatment and Nondestructive Examination. The instruction provided inspection activities for welding, heat treating and nondestructive testing of Quality Class 1 items and/or ASME III items. Bechtel has determined that Project Quality Control Instruction (QCI) No. 14631/C-2.10, Installation, Fabrication and Rework of Miscellaneous Metal and Structural Steel should be used on non ASME items. During the change over from one procedure to the other some inspections were started to Procedure W-1.00. They will be completed in accordance with Procedure C-2.10. Since the inspection packages contain forms from each procedure it appears that the inspections were not scoped prior to the conduct of the inspection. However form C-2.11 covers many welds of a structure such as a pipe slip restraints, therefore, the form is not completed until the inspections are performed on the entire structure. Instructions have been issued to the inspection personnel on the proper use of each form and the methodology for completing the inspection packages for the components being inspected to QCI C-2.10.

- g. Allegation: When the reactor pressure vessel (RPV) was set in place in 1977 it settled on a list from 1-7/16-inches to a maximum of 2-1/16-inches.

Finding: The allegation was not substantiated.

The inspector reported in Report No. 50-387/82-07 that the greatest tilt of the RPV was 0.0048-inches at 45°. The licensee had previously performed a thorough investigation into the settling of the RPV. The investigation report states in part, "The RPV was set on the night of March 31, 1977. Prior to the RPV being positioned, the bearing flange (or Base Plate), upon which it rests was measured for profile and elevation. Page two of General Electric Drawing M. R. - I-A.1.6 illustrates that the bearing plate surface lies within a band of .046-inches above to .046-inches below its design elevation of 519-feet - 6 3/4-inches. Letter GEIBC-215-76-206, dated October 26, 1976, forwarded the RPV Base Plate data and described a design tilt for the bearing plate which shows it to be within .000 to .005-inches of design when considering the design tilt.

The RPV centerline was measured for perpendicularity on April 4, 1977, four days after the RPV was placed on the bearing plate. General Electric Drawing M.R.-I-A.4.5 shows that at the length of the RPV (about 80-feet), the RPV centerline is only .2503-inches from true vertical. A quarter inch arc subtended at a distance of 80-feet is more than an order of magnitude less than the alleged RPV settling.

At the inspectors request the present position of the RPV flange was measured on May 26, 1982. This survey showed the flange to be horizontal within about 5/32-inches. These measurements were made on the forging surface rather than the machined surface of the flange, therefore, the variations of 5/32-inch is to be expected, and the survey demonstrates that the vessel has not "settled".

- h. Allegation: Uncalibrated torque wrenches were used by Bechtel on quality class 1 systems and not recalibrated prior to being placed back in service

The allegor stated that a bench check that he performed on April 7, 1982, determined that at least two torque wrenches previously used on Quality Class 1 systems were out of calibration. These wrenches and others of undetermined use were not returned to the calibration shop but were designated for "Class II use only" without a record check to determine effected Quality Class 1 work. A list of 23 wrenches effected was provided.

Finding: This allegation was not substantiated.

The inspector reviewed the qualification records of the 23 wrenches listed. These wrenches had been obtained by Bechtel from the 215 contractor (WBG). Initial calibration of these wrenches was performed at the WPPSS calibration facility at WNP-1 between November 1981 and March 1982. These wrenches were not used for Bechtel work prior to this initial calibration. Each wrench was scheduled for recalibration every six months starting with the date of initial Bechtel calibration.

In early April 1982, a check of wrench calibration on a bench torque tester showed questionable results for the 23 wrenches detailed in the allegation. These wrenches were removed from service and sent to the WPPSS calibration lab at Unit 1 for recalibration. This process takes about 4 weeks to complete due to transportation and scheduling problems.

Between April 15 and April 22, 1982, 13 of of these wrenches were reported as "out-of-calibration" as received at the calibration lab. One wrench was still at the calibration lab on the date of this inspection (May 19, 1982) The remaining wrenches had been reported as "in-calibration" as received by the calibration lab after April 15, 1982.

The Bechtel equipment calibration supervisor had sent memos to the Bechtel Assistant Quality Control Manager on April 30, 1982, stating that the 13 wrenches had been found out of calibration and requesting a record search to determine if these wrenches had been used on Quality Class 1 equipment. At the time of this inspection the Quality Control Organization was in the process of determining the Quality Class 1 work affected. NCR 763 was written on May 10, 1982, detailing the rework required due to the lack of calibration of 3 of the 13 wrenches. Other NCR's were to be generated once the specific work affected was determined.

The inspector found that the Bechtel actions had been systematic and in accordance with procedures. The issue was being adequately controlled to assure proper resolution.

i. Allegation: Lockwashers were re-used on Concrete Expansion Anchors Under the 100 percent Retorque Program

The allegor stated that lockwashers which had been installed by WBG under the nuts on concrete expansion anchors were reused by Bechtel even though Burns and Roe Engineers required replacement with new lockwashers when the nuts are loosened for the 100 percent retorque program.

Finding: This allegation was not substantiated.

The inspector reviewed the requirements for lockwashers with Burns and Roe, the design engineer. Burns and Roe stated that no written directive on the reuse of lockwashers had been issued. Burns and Roe also stated that all expansion anchors were torqued to 150 percent of the design load. Burns and Roe stated that test performed on anchors with and without lockwashers at 120 percent preload showed no advantage due to the use of lockwashers. Lockwashers were included in the design as a "good engineering practice". Burns and Roe engineers felt that it would be a good practice not to retorque a lockwasher more than twice, but because of the test experience, did not deem it necessary to establish this as a design requirement.

The Bechtel quality control manager stated that the reuse of lockwashers had been addressed several weeks prior to this inspection. Quality control inspection had requested guidance in the use of lockwashers for the 100 percent retorque of WBG hanger program. Bechtel engineering had

determined that the design specifications did not impose any special requirements in this area. As the anchors were not high strength bolts, reuse of the lockwashers would be acceptable.

Bechtel procedure SWP/P-C-4 "100 percent Retroque Program" required that for Hilti expansion anchors without a lockwasher, an internal tooth lockwasher be installed.

Bechtel requirements appear to be within the design specifications and are technically acceptable.

3. Piping and Supports Material Control

The inspector toured the material storage areas at the on-site fabrication shop and the general laydown area, interviewed quality control and construction supervision personnel, and examined records associated with specific material items. The inspectors' findings are noted:

- a. Piping support material stored near the fabrication shop contained painted heat numbers which did not in several cases correspond with the numbers stamped into the steel. Specific examples are:

<u>MATERIAL</u>	<u>STAMPED</u>	<u>PAINTED</u>
9x25-4 channel	#170W706	#170W06
6x15-3 channel	#B94851	#B9481
6x15-3 channel	#B94851	#B94854
3.5x7-65 T-Section	#123C90	#123C190

It appeared that the more easily identified painted number could result in errors on material control or associated documentation. The responsible GE personnel arranged for full examination/verification and remarking of the GE material. This was done under surveillance of a Bechtel quality control inspector as documented on inspection records 215-240-5-19-82 and 215-240-5-21-82. The GE receiving inspection reports RIR-35240, 35237 and 35238 (all dated September 24, 1979) showed that the stamped identification numbers were valid with regard to corresponding to acceptable material test reports. The GE/Bechtel corrective action appeared to be adequate.

- b. Piping and support materials within the fabrication shop area appeared to be clearly marked, however there were various materials marked and separated in a separate

holding area. The shop inspection and craft personnel stated that this material had been released to the fabrication shop from the general receiving laydown area, but that material identification discrepancies had subsequently been detected at the fabrication shop. The quality control inspector demonstrated cognizance of this matter through copies of material control records (#10346, 10372 and 10384). These showed that the discrepancies had been identified at the shop and the receiving-laydown personnel notified. Some of the items clearly involved transposition differences between the log books and the material markings:

HT - 2M1415 versus HT - ZM1415 (erroneous letter Z)
HT - 5570555 versus HT - 5570555 - 6 (suffix superfluous)
HT - 29694 (shown 1-inch Sch 80; actual 3/4-inch Sch 160)

To date, most of the specific items have been resolved by returning the material to the laydown yard. Discrepancies which could not be resolved by the receiving-laydown personnel would be addressed through the nonconformance report system. The fabrication shop personnel stated that they have had about 20 instances where the received material included discrepancies involving the heat number log books. As a result, the shop had instituted an interim quality control receiving inspections and hold-area for incoming material from the receiving/laydown yard.

The Bechtel responsible quality control supervisor was cognizant of the interim action, which appears to be functioning adequately.

- c. Pipe support materials in the receiving and laydown area were clearly marked, stored in posted areas, and segregated by type and ASME class. Materials in a hold status, (where so labelled) were clearly segregated from acceptable material.

A 5/8-inch steel plate was in a hold-area, due to questions raised by the fabrication shop personnel, in connection with heat number 3251 appearing on the material control record 10372. The plate was marked with a heat number (3251) and purchase order number (38274) which do not include 5/8-inch plate within their scope. The material receiving report (MRR-2115 dated February 10, 1982) shows only 1/2-inch plate as having been received under the purchase order.

Although this matter is under review within the Bechtel quality assurance function, it is identified here as a follow-up item for NRC review. (50-397/82-12-03)

4. Primary Containment

The inspector was asked by the NRR Project Manager to ascertain if an out of round condition existed on the primary containment. The inspector transmitted to the project manager a document titled "As-Build Drawing and Survey Index" for contract 213, Containment Vessel. This document will be reviewed by NRR to ascertain if there are any safety problems with any purported out of round condition of the containment vessel.

5. Management Meeting

The inspector met with licensee management as identified in paragraph 1, on May 27, 1982, to discuss the inspection findings as detailed in this report.