

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

REGION V

Report No. 50-508/78-09
50-509/78-09

Docket No. 50-508 License No. CPPR-154 Safeguards Group _____
50-509 CPPR-155

Licensee: Washington Public Power Supply System
P. O. Box 468
Richland, Washington 99352

Facility Name: WNP-3 and WNP-5

Inspection at: WNP-3 and WNP-5 Site (Satsop)

Inspection Conducted: December 6-21, 1978

Inspectors: D. F. Kirsch 1-12-79
D. F. Kirsch, Reactor Inspector Date Signed
T. W. Bishop 1/12/79
T. W. Bishop, Reactor Inspector Date Signed
T. W. Hutson 1-12-79
T. W. Hutson, Reactor Inspector Date Signed

Other
Accompanying
Personnel: R. C. Haynes 1/15/79
R. C. Haynes, Chief, Project Section Date Signed

Approved By: R. C. Haynes 1/15/79
R. C. Haynes, Chief, Project Section, Reactor Date Signed
Construction and Engineering Support Branch

Summary:

Inspection during period of December 6-21, 1978 (Report Nos. 50-508/78-09 and 50-509/78-09)

Areas Inspected: Special, unannounced inspection by regional based inspectors and one supervisor of licensee actions to correct Pittsburgh Testing Laboratory documentation and personnel certification discrepancies; Immediate Action Letter compliance actions; structural concrete procedure review, work observation and record review; and QA audits and surveillances. The inspection involved 116 hours by four NRC inspectors.

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Summary (Con't.): (Report Nos. 50-508/78-09 and 50-509/78-09)

Results: Of the four areas inspected, no items of noncompliance or deviations were identified in three areas, one item of noncompliance (failure to submit contractor data sheets to AE) and one unresolved item (failure to specify responsibility and review criteria necessary for contractor data packages) were identified in one area (Paragraph 5).

DETAILS

1. Persons Contacted

Washington Public Power Supply System (WPPSS)

- *W. J. Talbott, Project Division Manager
- *C. E. Love, Deputy Project Division Manager
- *O. E. Trapp, Project Engineering Manager
- *J. C. Lockhart, Project QA Manager
- *D. H. Walker, Principal QA Engineer
- **L. E. Nilsen, QA Engineer
- **J. M. Walker, Lead QA Engineer

Ebasco Services, Inc. (Ebasco)

- **P. J. Hannaway, Manager of Projects
- *D. L. Ouamme, Manager of Construction
- **A. M. Cutrona, Senior Project Quality Engineer
- G. P. Zerst, QC Engineer
- **J. P. Sluka, Manager of Engineering
- **C. B. Tatum, Senior Resident Engineer
- **J. R. Sowers, Senior Project Quality Engineer
- **L. F. Adams, QA Engineer
- W. K. Flint, Construction Engineer
- M. Shannon, Construction Engineer
- T. Bordeaux, Civil Construction Engineer
- T. E. Cottrell, Resident Engineer - Field
- F. E. Shack, QC Engineer

Pittsburgh Testing Laboratory (PTL)

- M. R. Tallent, Site Manager
- D. A. Perry, Assistant Corporation QA Manager
- L. Young, Assistant Site Manager
- W. K. Barbour, Level II Technician
- S. McKay, Corporate QA Manager

Guy G. Atkinson (GFA)

- D. G. Summers, QC Supervisor

State of Washington

- *G. Hanson, Engineer (EFSEC)

- *Denotes attendance at Exit Interviews of December 8 and 21, 1978.
- **Denotes attendance at Exit Interview of December 21, 1978, only.

2. General

A special inspection of the WNP 3/5 facility was conducted to determine and assess the adequacy of WPPSS corrective actions as a result of the discrepant conditions observed at the onsite Pittsburgh Testing Laboratory.

Pursuant to this purpose, the inspectors examined the safety related implications of the PTL discrepancies and the licensee's action in response to an Immediate Action Letter issued by the NRC (Region V) on November 27, 1978.

3. Immediate Action Letter Compliance

It was determined that all Level I PTL personnel performing concrete inspection activities were recertified. Discussions with WPPSS and Ebasco personnel and review of surveillance documentation verified that the recertification was performed under the surveillance of an Ebasco Level III inspector and did include an oral examination by that Level III inspector. The licensee had also required that PTL Level II inspectors be recertified by the same process. Examination of PTL personnel qualification documentation verified that the recertification program was being properly documented. In addition, Level III personnel indicated that the ability of the PTL technician to perform a particular test was verified by observation of test performance for about 50% of the PTL technicians recertified.

Examination of test equipment calibration documentation verified that all test equipment, except that previously calibrated by an offsite organization, had been recalibrated and the results of the calibration appeared to be properly documented.

Discussions with licensee personnel and examination of applicable records revealed that the licensee had implemented adequate measures to ensure that only certified personnel and calibrated test equipment were used on all concrete placement testing activities for those placements made subsequent to the initial identification of the problem.

The PTL site manager, under whose auspices the discrepant conditions occurred, was relieved of all onsite duties on November 17, 1978. A letter from licensee management to PTL

management on November 22, 1978, specifically required that the PTL individual concerned would not work on any WNP 3/5 activities in an on or offsite capacity. PTL subsequently notified WNP 3/5 management that the individual concerned was no longer attached to the PTL Seattle District office. PTL had assigned a new manager, with prior nuclear experience, to the site.

4. Licensee Investigation and Corrective Actions

The licensee conducted an investigation of the allegations made regarding PTL onsite activities (personnel certification and test report falsification) during the period of November 16-28, 1978, and issued a final report on November 30, 1978. The inspectors reviewed the report, with its recommended corrective actions, and concluded that the WPPSS investigation adequately addressed and assessed the PTL discrepant situations. The inspectors based their assessment on examination of PTL documentation and interviews with PTL and licensee personnel.

The Division Manager on December 5, 1978, assigned the corrective action responsibilities listed below:

- a. Requalification of PTL site technicians under Owner/Engineer surveillance and recalibration of PTL test equipment used onsite. The NRC inspectors verified that this had been completed (see Paragraph 3).
- b. Review of PTL test records and full completion of concrete and soils test records.
- c. Ebasco Engineering evaluation of the effects/consequences of:
 - (1) Any test equipment found out-of-calibration.
 - (2) Any PTL test records found incomplete or improper.
 - (3) Any tests performed on Class I concrete or design mix verifications by uncertified technicians or uncalibrated test equipment.
- d. Review/revision of PTL certification and training programs.
- e. Development of a preventive maintenance/equipment repair program.

- f. Increased frequency of PTL Corporate QA audits.
- g. PTL submittal of all test records to the project within one week of record generation.

The results of the above evaluations and corrective action implementations will be examined during a subsequent inspection. (50-508/78-09-01)

5. Structural Concrete

a. Review of Quality Assurance Implementing Procedures

The following quality assurance implementing documents were examined for compliance with applicable PSAR, specification and ASTM requirements.

- (1) Specification 3240-216: "Technical Specification for Formed Concrete Construction"
- (2) GFA QCP-9: "Concrete Preplacement Inspection"
- (3) GFA QCP-11: "Concrete Placement and Finish of Uniformed Surfaces"
- (4) GFA Field Instruction No. FI-1: "Concrete Cold Joints, General Instruction"
- (5) Ebasco Procedure ASP III-4.12: "Concrete Management and Control"
- (6) Ebasco Procedure IP-11: "Engineer Construction Surveillance and Verification of Civil Test Laboratory Contractor Surveillance"
- (7) Specification 3240-204: "Inspection and Testing Services"
- (8) Ebasco Procedure QAI-6: "Control of Nonconformances"
- (9) Ebasco Procedure ASP III-6.4: "Processing of Nonconformances, Discrepancy Reports and Audit Findings"

The licensee had previously identified that Procedure ASP III-4.12 (Concrete Management and Control) did not properly implement the requirements of ASTM C-172 (Sampling Fresh Concrete) in that

samples were allowed to be taken from the first part of a load being discharged and two slumps in sequence were to be taken from the same sample in the event that the first dump failed. Since ASTM C-172 requires starting of tests within 5 minutes of completing the sampling activity, the inspector questioned the ability to perform three sequential slumps from the same sample within 5 minutes. The inspector noted that ASTM C-94 (Ready Mixed Concrete) allows one check test in the event that slump or air content fall outside of specified limits. The licensee stated that the procedure would be revised to properly reflect ASTM requirements. The revised procedure will be examined during a future NRC inspection. In addition, the inspector noted that Engineering Department procedure ASP III-6.4 had not been approved by WPPSS or Ebasco personnel. The procedure had been written for draft on September 9, 1978. The licensee committed to issuance and implementation of this procedure by January 15, 1979. (50-508/78-09-02)

Discussions with licensee personnel indicated that Ebasco has no procedure which addresses the review responsibility and criteria necessary for approval of contractor submitted document packages. In addition, apparently no procedure exists which requires traceability of Ebasco nonconformance reports to discrepancies identified by testing laboratory reports. Licensee personnel stated that such a procedure would be written and implemented. This is an unresolved item. (50-508/78-09-03)

Ebasco Procedure IP-11 (Engineer Construction Surveillance and Verification of Civil Test Laboratory Contractor Surveillances) requires, in Paragraph 6.7, that, "All inspection and test records generated by the Civil Test Laboratory Contractor shall be reviewed by the contractor and submitted to Ebasco Services, Inc., on a routine basis as required by Contract 3240-204.

Specification 3240-204, Rev. 1 (Inspection and Testing Services), requires, in Paragraph 8.4 of Section 2A, that certified copies of test reports covering all shop tests performed by the contractor be submitted after contract award. Contrary to the above, data sheets for PTL performed tests of "Time of Setting of Concrete Mixtures by Penetration Resistance" (ASTM C-403) had not been submitted to Ebasco for review since May, 1978. This is an item of noncompliance. (50-508/78-09-04)

b. Observation of Work

The activities associated with concrete placement BMS-009-335 in the Unit 3 basemat were observed by the inspector. These activities included preplacement cleanup, reinforcing steel placement, review of the Concrete Placement Card, placing of concrete, consolidation, and testing of fresh concrete. During the placing of concrete, the inspector noted that concrete was being flowed greater than the five feet allowed by procedure and concrete was being placed over free water approximately one-half to three-quarters inch in depth. The Ebasco QC engineer at the placement stopped the above activities until corrective action was taken by removing the free water and instructing the foreman on the five foot limit for flowing fresh concrete. The flowing of fresh concrete using vibrators also resulted in an unsystematic method of consolidating the concrete. The vibrators were being inserted and withdrawn properly after the correct amount of time, but there was no systematic approach to the consolidation other than melting down the pile of concrete and vibrating areas that were in the vicinity of the pile. In several instances certain areas appeared to have been left unconsolidated. The GFA QC inspector instructed the vibrator operators which resulted in noticeably improved consolidation.

The testing of fresh concrete was observed on several occasions. The tests for slump, air content by the pressure method, temperature, unit weight, and the making of cylinders were performed by qualified personnel using calibrated equipment. All pertinent test data was being recorded by the testing technicians. No items of noncompliance or deviations were noted.

c. Review of Quality Records

The concrete testing records for placements BMS-008-335 (started November 17, 1978) and BMS-006-335 (started November 27, 1978) were reviewed to verify certain findings of the WPPSS investigation of Pittsburgh Testing Laboratory activities. The testing records of both placements had been partially or totally recopied. The practice of recopying made it extremely difficult in some instances for the inspectors to determine which sheets were originals and which were recopies. As a result of the transcribing, information contained on the originals was not transcribed to the recopy. In addition, data or remarks recorded on the truck trip tickets were not entered on the test sheets. Test acceptance criteria for slump, air and temperature were not entered on pages 1-5, 10 and 12 for placement BMS-006-335. Also, pages 7, 8, 9, 10, 11 and 12 were not signed by the technicians performing the tests. These findings were generally identified by the WPPSS investigation.

The calibration records for equipment used in placement BMS-008-335 were examined. The records for unit weight bucket serial number 9990 used in the placement could not be found (Unit Weight is not an acceptance test). The records for thermometer 419, also used in placement BMS-008-335 on November 17, 1978, indicated that the thermometer was lost on October 10, 1978. Further inquiry revealed that another thermometer had been mistakenly assigned the same number. This error was identified on December 4, 1978, during recalibration. The thermometer was then assigned number 419R. This new number had not been recorded on the test records for the placement. The inspector determined that the conditions noted would have no adverse affect on plant safety.

The qualification records for the technicians who conducted the tests and the Level II that reviewed placement BMS-008-335 were examined. The qualification records of the Level II indicated that he was not qualified for air content by the pressure method or making and curing concrete specimens in the field.

On November 22, 1978, as a result of the WPPSS Investigation, the complete recertification of personnel and recalibration of test equipment prior to further use in placements was started by PTL. A review of the personnel certifications and equipment calibrations for personnel and equipment used in placement BMS-006-335 verified that the recertification and recalibration had been accomplished prior to further use.

In general, it appears that the findings of the WPPSS investigations with regard to concrete testing records has been verified. Due to the numerous errors and deficiencies in the testing records, PTL committed to review all concrete testing records to date and document any deficient items on NCRs, as appropriate.

During the continuation of the inspection on December 18-21, 1978, the inspector reviewed the Field Test and Inspection Reports for the first two placements, BMS-007-335 and BMS-015-335, to determine completeness of review. These two placements had been reviewed by PTL and were ready for transmittal to Ebasco engineering. In several cases, the truck ticket data did not agree with the Field Testing Inspection Report (FTIR). Ticket 0542 slump was 4 ½ inches and the FTIR stated 4 ¼ inches (specifications allow 1-5 inch slump). Ticket 0648 unit weight was 152.61 while the Field Testing Inspection Report listed 151.09. All of the above data was within specification limits. The calibration of unit weight buckets SE 120 and SE 121 appeared questionable. Both of the buckets were calibrated on September 19, 1978. The calibration sheets dated September 19, 1978, did not indicate that a micrometer or dial indicator was used although measurements of the bucket dimensions

were taken. For SE 120 on September 19, the wall thickness varied between .30 and .32 inches, whereas, on November 22, 1978, the wall thickness was recorded as being between .375 and .428. Approximately the same differences existed between the calibrations of SE 121 on September 19, 1978, and November 30, 1978. The calibration of unit weight buckets will be reviewed during future inspections. The licensee stated that the discrepancy would be resolved.

The certifications of technicians used during placements BMS-007-335 on September 20, 1978, and BMS-015-335 on October 13, 1978, in Unit 3 were reviewed. One Level II used on BMS-007-335 was not qualified for sampling fresh concrete and one Level I used on placement BMS-015-335 was not qualified to make cylinders. The lack of certification of testing technicians had been previously identified and an item of noncompliance issued in IE Inspection Report No. 78-508/78-08. The results of the testing (slump, air, temperature, cylinder strength) performed by the above unqualified personnel were comparable to the results obtained by qualified technicians. Compressive strengths of cylinders were well in excess of design requirements. The inspectors had no further questions.

The following quality related records were sampled and examined for compliance with ASTM, PSAR, specification and procedural requirements:

- (1) PTL test records of Initial and Final Set of Concrete performed, as required by ASTM C-403, during period of June through August of 1978.
- (2) PTL test records of Sieve or Screen Analysis of Fine and Coarse Aggregate performed, as required by ASTM C-136, during period of August and November, 1978.
- (3) Ebasco letter of October 19, 1978, approving the mix design of (4) below.
- (4) Master mix test results for mix designs 5000.75N and R and 50001.5 N and R
- (5) Site concrete mixing water chemical analysis test results.
- (6) Air entraining admixture qualification test report.
- (7) Certified Material Test Report for cement.
- (8) Aggregate test reports of scratch hardness, petrographic analysis and potential reactivity.

It was noted that the PTL forms for recording of Initial and Final Set of Concrete data did not contain blanks for all of the information required by ASTM C-403; a number of test records were not marked for acceptability or unacceptability and a number of tests had been performed by uncertified personnel. Some test reports for aggregate testing (ASTM C-136) indicated that the test had been performed or approved by uncertified personnel and one of these tests (performed August 5, 1978) identified that 88% of a sample of 3/4 inch aggregate passed a 3/4" sieve (ASTM C-136 specifies an acceptability range of 90-100%). The performance of tests by uncertified personnel was identified during a previous NRC inspection (IE Investigation Report No. 50-508/78-08). The licensee agreed to resolve the additional deficiencies noted and this resolution will be examined during a future inspection. (50-508/78-09-05)

6. Quality Assurance Program Approval and Audits of PTL

The inspector reviewed the Supplier Quality Program Evaluation of PTL conducted by Ebasco on April 15, 1977. The evaluation disclosed several items requiring corrective action prior to approval. The above items had been properly resolved by Ebasco.

Audits 3/5-EQA-204-1 through 3/5-EQA-204-9 covering the time period from May 27, 1977 to August 24, 1978, were reviewed by the inspectors. Audits 3/5-EQA-204-1, 5, 6 and 8 were surveillances of user's tests on rebar and not audits. Only one audit, 3/5-EQA-204-4, titled "PTL Field Lab QA Program and Facility Audit," appeared comprehensive and covered criteria such as instructions and procedures in depth. The other audits were superficial in nature and did not cover specific criteria of the QA Manual. Discussions with Ebasco personnel indicated that the audit program is being revised to require audits of specific QA criteria. This item will be reviewed during future inspections. (50-508/78-09-06)

Audit 3/5-EQA-204-3 contained a comment on Trial Mix temperature differences between Specification 204, Page 2A-9, Specification 411, Paragraph 13.01, and Specification 415, Table 1. This comment was never resolved by any followup or specification change. Ebasco personnel stated that the specification would be revised to correct the temperature differences. No items of noncompliance or deviations were noted.

7. Surveillance of PTL

The surveillances of PTL from October 14, 1978, through December 9, 1978, were reviewed. The reports included surveillance of testing, personnel

qualifications, monitoring of written exams and records of oral exams given by Ebasco Level III personnel. No items of noncompliance or deviations were noted.

8. Licensee Audits

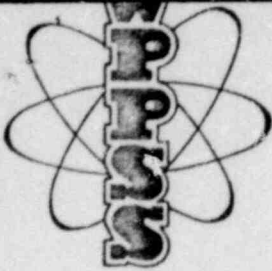
The licensee performed an in-depth audit (Audit No. 3/5-216-15) of GFA activities on December 12-14, 1978, which identified 38 findings requiring corrective action. On December 15, 1978, a letter was issued to GFA management identifying five items requiring immediate corrective action. WPPSS is following up those items on a continuing basis. In addition, on December 18, 1978, WPPSS project management sent a letter to GFA corporate management identifying corrective actions needed to fully implement the QA program and demanding immediate corrective action. The resolution of WPPSS identified discrepancies will be examined during a future inspection. (50-508/78-09-07)

9. 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 disclosed during the inspection are discussed in Paragraph 5.a.

10. Exit Interview

The inspectors met with the licensee representatives (denoted in Paragraph 1) at the conclusion of the inspection on December 8 and 21, 1978, and summarized the scope and findings of the inspection. The inspectors discussed their concerns regarding the review of completed data packages submitted by contractors onsite and the licensee indicated that a procedure would be written to specify the responsibility and criteria necessary for review of contractor submitted data packages.



Washington Public Power Supply System
A JOINT OPERATING AGENCY

P. O. BOX 1223

ELMA, WASHINGTON 98541

PHONE (206) 249-5001

February 21, 1979
603-79-255



Nuclear Regulatory Commission
Region V
1990 North California Boulevard
Walnut Creek, California 94596

Attention: G. S. Spencer, Chief
Reactor Construction and Engineering Support Branch

Subject: WPPSS NUCLEAR PROJECTS 3 AND 5
NRC INSPECTION OF WNP-3 AND WNP-5
DOCKET NUMBERS 50-508 AND 50-509

Reference: Letter, G. S. Spencer to N. O. Strand,
same subject, dated January 16, 1979.

Dear Mr. Spencer:

The referenced letter transmitted the results of the inspection conducted by regional based inspectors during December 6-21, 1978 and which identified an item not in full compliance with NRC requirements.

Our response to the "Notice of Violation" is contained in the attachment to this letter. For your convenience we have restated the notice.

Should you have any questions or desire further information, please feel free to contact me directly.

Very truly yours,

D. L. RENBERGER
Assistant Director, Technology

Attachments

cc: NRC-Office of Inspection and Enforcement
D. Smithpeter - BPA

NOTICE OF VIOLATION

Based on the results of an NRC inspection conducted during the period of December 6-21, 1978, it appears that one of your activities was not conducted in full compliance with NRC requirements as indicated below. This item is a deficiency.

10CFR50, Appendix B, Criterion V, states, in part, that "Activities affecting quality...shall be accomplished in accordance with...instructions, procedures, or drawings."

Section 17.1.5 of the Quality Assurance Program documented in the PSAR states, in part, that, "The WPPSS QA Program Manual delineates the methods by which WPPSS complies with the criteria of 10CFR50, Appendix B."

The WPPSS QA Program Manual procedure QAP-2, Paragraph 3.1, states that, "...the AE/CM's responsibilities...include developing and implementing its Quality Assurance Program, and the policies, procedures and/or instructions for implementation, based on the requirements delineated in the NCR's 10CFR50, Appendix B..." and the "Activities shall be accomplished in accordance with these policies, procedures and/or instructions."

EBASCO Procedure IP-11, Engineer Construction Surveillance and Verification of Civil Test Laboratory Contractor Surveillances, states in Paragraph 6.7 that, "All inspection and test records generated by the Civil Test Laboratory Contractor shall be...submitted to EBASCO Services, Inc. on a routine basis as required by Contract 3240-204."

Contract 3240-204, in Paragraph 8.4 of Section 2A, states that, "Certified copies of all test reports covering all shop tests performed by the contractor be submitted after contract award."

Contrary to the above, as of December 21, 1978, data sheets for tests performed by PTL since May, 1978, of "Time of Setting of Concrete Mixtures by Penetration Resistance" (ASTM C-403) had not been submitted to EBASCO.

RESOLUTION:

The data sheets for tests performed for "Time of Setting of Concrete Mixtures by Penetration Resistance" (ASTM C-403) were received by Ebasco on January 16, 1979. These reports have now been reviewed by Ebasco.

ACTION TO PRECLUDE RECURRENCE:

PTL Procedure QC DC 1 is being revised to specify timely transmittal of reports. PTL has committed to submit all on-site test reports within one (1) week of test completion.

DATE OF FULL COMPLIANCE:

PTL Procedure QC DC 1 is scheduled for approval by February 23, 1979. Implementation of the one week submittal requirement for test reports was established as of December 18, 1978.



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION V

SUITE 202, WALNUT CREEK PLAZA
1990 N. CALIFORNIA BOULEVARD
WALNUT CREEK, CALIFORNIA 94596

Docket Nos. 50-508
50-509

FEB 28 1979

Washington Public Power Supply System
P. O. Box 468
Richland, Washington 99352

Attention: Mr. N. O. Strand
Managing Director

Gentlemen:

Thank you for your letter dated February 21, 1979 informing us of the steps you have taken to correct the item which we brought to your attention in our letter dated January 15, 1979. Your corrective actions will be verified during a future inspection.

Your cooperation with us is appreciated.

Sincerely,

R. H. Engelken
Director