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

REGION V

Report No. 50-508/81-19, 50-509/81-19

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

Licensee: Washington Public Power Supply System

P. O. Box 1223

Elma, Washington 98541

Facility Name: WNP-3 and WNP-5

Inspection at: WNP-3/5 Site, Elma, Washington

Inspection conducted: November 1-30, 1981

Inspectors: W. G. Albert, Sr. Resident Inspector — 1/8/82 Date Signed

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Approved by: R. T. Dodds, Chief, Reactor Projects Section 2 — 1/8/82 Date Signed

_____ — _____ Date Signed

Summary: Inspection during the period of November 1-30, 1981 (Report Nos. 50-508/81-19 and 50-509/81-19)

Areas Inspected: Routine unannounced inspection by resident inspector of construction activities including observations off-shift and on a weekend. Principal areas inspected included: (1) open items related to erection of structual steel; (2) Licensee reported events including replacement of sliding base plate for south steam generator of WNP-3; (3) integrity of concrete repairs in WNP-3 Reactor Auxiliary Building (RAB); (4) concrete placements including preplacement and curing activities; (5) weld filler metal controls; and (6) lay-up activities for WNP-5. The inspection involved 94 man hours on site by one NRC inspector.

Results: Of the six principal areas inspected, one item of non-compliance was identified in the area of weld filler metal control.

RV Form 219 (2)

DETAILS

1. Persons Contacted

The inspector interviewed various engineering, management, inspection and construction personnel of the organizations listed below. Key personnel, including those who attended the exit interview are specifically identified below:

a. Washington Public Power Supply System

*R. S. Leddick, Program Director, WNP-3/5
*J. A. Puzauskas, Quality Assurance Engineering Supervisor
*O. E. Trapp, Project Quality Assurance Manager
N. F. Blaise, Senior Project Quality Engineer
D. R. Coody, Project Quality Engineer
R. E. Jurbala, Project Quality Engineer
D. A. Kerlee, Quality Assurance Audits Supervisor
N. C. Kaufman, Project Start Up Manager
*E. L. Stephens, Senior Project Quality Engineer
C. H. Tweksbury, Quality Assurance Surveillance Supervisor
J. A. Vanni, Senior Project Quality Engineer
J. M. Walker, Senior Quality Assurance Engineer

b. Ebasco Services, Inc. (Ebasco)

L. F. Adams, Senior Project Quality Engineer
L. A. Bast, Project Quality Engineer
*A. M. Curtona, Deputy Project Quality Assurance Manager
G. E. Ellis, Civil Design Engineer (ESSE)
M. R. Harris, Quality Assurance Engineer
J. W. Hassett, Project Quality Engineer
R. G. Peck, Quality Assurance Engineer
T. F. Tully, Lead Project Quality Engineer, Audits
D. E. Patterson, Lead Quality Engineer, Records

c. Morrison-Knudsen, Inc. (MK) (263 Contractor)

R. Davis, Project Qaulity Manager
G. Hill, Quality Control Manager
S. Schuerman, Quality Assurance Manager

d. Morrison-Knudsen/ESI/Lord-Joint Venture (MK/ESI/LORD)

M. Cepkauskas, Project Welding Engineer
M. Grayson, Manager Quality and Tech. Support (Corporate Office)
W. Holcombe, Project Quality Assurance Manager
C. Johnson, Deputy Project Quality Director
E. Johnson, Senior Materials Engineer
R. Lawrence, Project Director
L. Murray, Wilding Superintendent
C. Rapp, Construction Manager
J. Sowers, Project Quality Director

*Designates those attending exit interview held on November 30, 1981.

2. Site Tours

Daily tours of some portion of the construction site were conducted by the resident inspector. In addition to the active construction zones of Unit 3, the tours during this report period included the following:

a. Main site warehouses
b. Storage of equipment in Unit 5 Reactor Auxillary Building.
c. General site tour on a weekend (Sunday, November 22, 1981)
d. Early unannounced arrival on graveyard shift (November 17, 1981)

No items of non-compliance were identified during these general tours.

3. Project Status

Construction on Unit 3 was approximately 42 percent complete at the end of this report period. Construction activity on Unit 5 has completely stopped and only routine patrol or weather proofing activities were observed during NRC tours of the Unit 5 Reactor Auxillary Building.

An extended general power outage as a result of storm damage occurred during the weekend of November 14 and 15, 1981. Damage was negligible. The replacement of the steam generator sliding base plates (paragraph 4.b. below) was the only significant activity under way at the time. This was unaffected by the high winds since the weight of the steam generator was partially supported by cribbing. A second power outage of approximately 3 hours duration occurred on November 20, 1981.

4. Licensee Action on 10 CFR 50.55(e) Construction Deficiencies

a. Concrete Consolidation in Shear Wall of Reactor Auxillary Building (Unit 3)

On July 31, 1981, the licensee agreed to provide the USNRC with a report in accordance with 10 CFR 50.55(e) on a problem with concrete consolidation in the inner shear wall on the north side of Unit 3 Reactor Auxillary Building (RAB). This placement was identified as ABW-19-21, 428.50. The placement extended from the 417.5 ft. level up to approximately the 430 ft. level and reached from the steam tunnel to the northwest HVAC chase, a distance of approximately 70 ft. The wall varied in thickness from 3.5 to 4.0 ft. and had numerous penetrations. The extent of the voids resulting from the lack of consolidation is described in the licensee's reports of August 7, September 20 and November 11, 1981, and NRC report

no. 50-508/81-13 for the inspection conducted on July 27-31, 1981. The Licensee's final report dated November 11, 1981 was received and reviewed during this report period. As a result of this review certain questions were forwarded from the NRC regional office to the licensee with regard to the engineering evaluation, the disposition and the corrective action. Repairs to the wall and a subsequent non-conforming condition resulting from inadequate grouting of two embed plates, were examined by the NRC inspector.

In addition to the licensee's evaluation of the wall, during the period of November 10-20, 1981, the NRC retained Parameters Inc. to conduct an independent evaluation of the structual integrity of the wall. Parameters in turn utilized the services of Construction Engineering Consultants (CEC) to perform sonic testing of the wall. CEC's final report had not been received by the end of the report period.

The item will remain open pending receipt of CEC's final report and answers to requests for additional information.

b. Steam Generator Sliding Base Plate Deficiency (Unit 3)

On October 19, 1981, the Licensee reported that a potential deficiency existed with regard to the sliding base plates under the South Steam Generator installed in Unit 3. The deficiency was that documentation concerning the required surface finish of the plates was contradictory. It was necessary to raise the steam generator and replace these plates since the Nuclear Steam Supply System (NSSS) Supplier (Combustion Engineering) would not concur in a disposition of this deficiency which accepted the highest of the contradictory surface finish readings. The NSSS Supplier believed that such a finish would impose unacceptable restraint on steam generator movement during thermal expansion of the primary system.

The resident inspector examined the disposition of this item by review of procedures, observation of work and observation of initial readings on the plates after they were removed. The following MK/ESI/LORD procedures were examined:

1. FOI-1024 Revision 0 "Verification of Lifting and Resetting of Steam Generator."

2. FCP-1071 Revision 0 "Lifting and Resetting of Steam Generator No 2."

The following procedure of Lampson Inc. (rigging contractor) was examined:

1. LUR-WP-29 Revision 1 "South Steam Generator and Sliding Base Lift."

All questions of the inspector were satisfactorily answered.

No deviations from the above listed procedures were identified during the lifting and resetting operations.

Initial readings on the removed base plates indicated that they did exceed the established tolerence for surface finish of 125 rms.

The operation of lifting and resetting the steam generator with the sliding base plate attached was examined in accordance with the NRC procedure for preplanning of complex construction activity. This item will remain open until the final report of the Licensee has been received and the corrective action to prevent recurrence of similar situations has been reviewed.

c. Morrison-Knudsen Structural Steel Bolting Problem (Units 3 and 5)

In January 1981 the NRC was notified by the Licensee of a potential 10 CFR 50.55(e) condition regarding the erection of structural steel and the associated QC documentation. The Licensee has submitted that portion of his final report covering the reinspection effort on Unit 5. The remaining portion of the report is to be submitted in January 1982.

The partial report was examined in conjunction with the open item resolutions discussed in paragraph 5. However, this item will remain open pending receipt of evaluation of a final report addressing Unit 3. There are no open questions as a result of this examination.

5. Licensee Action on Previous Unresolved Items or Items of Non Compliance

a. (Closed) Unresolved Item (50-508/80-06-01) M-K Addition of Unauthorized Welds

The resident inspector had expressed an unresolved concern because beam clips had been welded rather than bolted to a column contrary to the applicable drawing. Since the weld in question had not received final inspection, the matter was considered unresolved. Subsequently, the inspector noted several other conditions which were identified as items of non-compliance. These were listed as separate items without closing this item because of the extensive nature of the problem. As a consequence, structural steel inspection was addressed and resulted in procedure changes, craft training, inspector training, and a reinspection program. NRC inspection report no. 50-508/80-13, paragraph 2a, addresses procedural changes. During this inspection, the inspector examined craft retraining, Quality Control inspector retraining, and the reinspection program. In addition, various checks were made of ongoing inspection activity.

Craft and inspector retraining was conducted as part of the response to Corrective Action request No. 33 issued on January 23, 1981, two days after the M-K Co. issued a stop work order for all bolting, welding and erection of structural steel. This retraining included "...all construction, Quality Control engineering and supervisory personnel involved with structural steel erection...". Training records were examined as follows:

1981 Date	No. of Attendees	Subject
Jan. 15	5	MK Procedures
Jan. 21	22	MK Procedures
Mar. 26	7	Supply System Training Film
Apr. 7	14	Turn-of-Nut-Method
Apr. 14	4	Turn-of-Nut-Method
Apr. 14	4	Turn-of-Nut-Method
Apr. 14	5	Turn-of-Nut-Method
Apr. 22	9	Specs and MK Procedures
Apr. 30	12	Structural Welding
Apr. 30	6	Codes and QA Records
May 12	8	Turn-of-Nut-Method
May 18	7	Bolt Loading

The inspector found that the personnel covered and the material covered was generally satisfactory. However, a specific determination of job responsibilities and qualifications against the training received or required was not made.

The reinspection program for both Units 3 and 5 was examined. This program also originated with Corrective Action Request No. 33 (CAR-33) resulting from the stop work order of January 21, 1981. CAR-33 stated that "...all accessible structural steel physical bolted and welded connections in both units are to be examined by zones to verify conformance..." The reinspection program also required records verification. During this report period, the inspector examined the records system for the zone representing the floor beams at the 362 ft. level in the northwest section of the Unit 3 Reactor Auxillary Building between the inner and outer shear walls (Ebasco NW7 G-3403). Records of reinspection were readily retrievable utilizing the Ebasco drawing as an index. The records selected for this zone (about a dozen items) were of satisfactory quality. The inspector questioned the fact that the connection between beam 294 F and the outer shear wall embed plate was not recorded on the index drawing and did not have a corresponding record. It was subsequently determined that the situation had been covered by NCR 2587 and NCR 2686 which had been written because excessive slope of the beam necessitated welding rather than bolting as specified. Another index sheet, specifically for welded connections, listed the item. The inspector found that the records system for reinspection of bolted joints was satisfactory. The records and their retrievability for the original inspection of the same joints were not examined.

Reinspection in the field was verified by observations made during tours of the facility. Reinspection was specifically checked against records by a random sample of joints at the 362 ft. level in Unit 3. Joints 274C to 405A, 274C to 245C, 267G to 243C, 272D to 267G and 272D to 266C were first examined in the field and then compared to records with cross checks between beam markings and drawing location, number of bolts versus drawing, and notes with field QC marks (where available). No discrepancies were identified.

The inspector also examined the basic criteria and management of the reinspection program. It was found that the program for Unit 3 dropped the requirement for a 20 percent check of reinspected joints using a torque wrench. This was done on March 19, 1981 by M-K communication No. 10C-81-292. The basis for eliminating the requirement was that the percentage of discrepancies found by the torque wrench check during its initial use in Unit 3 was negligible (e.g. less than 1 percent). In Unit 5, where more extensive problems had been found with the initial inspections, all accessible bolts were checked with a torque wrench and there was no mitigation of the requirement. No further items of concern were identified. This item is closed.

b. (Closed) Item of Non-Compliance (50-508/509/80-06-02) MK Failure to Establish Measures for the Identification of Inspected Items

An item of non-compliance was issued in 1980 because the structural steel contractor (M-K) had not established a control system which insures each joint has received an appropriate inspection.

See unresolved item a above which discusses the examination of the reinspection system. During tours of the plant several structural steel joints were examined for proper assembly. No discrepancies were identified in washers, evidence of tightening or type of bolts (A-325). All accessible joints (about 30) on floor beams for the 417.5 ft. level of the RAB in the northwest quadrant were examined during an off shift tour. No discrepancies were noted in these joints which represented activity under the current quality control program (not reinspection).

The inspector concluded that the reinspection program for the disposition of the item of non-compliance had been satisfactorily completed. The inspector also concluded that the corrective action to insure adequate control over current structural steel assembly had been satisfactorily implemented. This item is closed.

c. (Closed) Item of Non-Compliance (50-508/80-06/03)
MK Failure to Accomplish Welding in Accordance with Requirements

In this item of non-compliance the licensee was cited for failure of the contractor's inspection system to detect undercut which had been masked by grinding. Following this, the resident inspector further examined structural welds and noted an instance of oversize welding.

This item has been examined previously but not closed out since the non-conformance report covering the oversize welding had not been examined.

Examination of the non-conformance report no. 5292 disclosed the weld to have been dispositioned "accept-as-is". The reasons for this disposition was found to be stated in a Quality Finding Report (QFR) issued on January 20, 1981. The QFR noted that the questionable beam clip had been reworked without a controlling NCR. Therefore, NCR No. 5292 was prepared on Feburary 18, 1981 to provide a record of the discrepancy and provide for control of reinspection. A reinspection report dated March 18, 1981 was examined. The inspector's questions were satisfactorily resolved and the item is considered closed.

d. (Open) Item of Non-compliance (50-508/509/80-13-01)
M-K Failure to Assure that Bolted Assemblies Meet Specification Requirements

In the initial finding, the NRC cited an instance of loose bolts in a structural beam which had been inspected and accepted. In response the Licensee stated that the questionable joint had been loosened to facilitate installation of other structural steel. Corrective action included procedure changes (IPCN-095 to CP-05) and training classes (October 23, 1980 and November 1, 1980). In report 50-508/81-02 the inspector verified correction of the joint but noted a discrepancy between the date of full compliance stated in the response and the actual compliance date for training and procedure changes.

Further, a question arose regarding the possibility that the initial unbolting of the structural steel joint may have been a deliberate act done for the purpose of embarassing the cognizant Quality Control inspector. (See NRC report 50-508/81-04.) From observations of the current structural steel inspection program and the reinspection program, disposition and corrective action appear satisfactory. However, pending completion of NRC reporting on it's investigation (separate from inspection reports) and the licensee's investigation of the deliberate malpractice issue, the item will remain open. The malpractice matter will be discussed in the licensee's final 50.55(e) report on the reinspection of structural steel for Unit 3.

e. (Closed) Item of Non-compliance (50-508/81-02/01)
M-K Failure to take Effective Corrective Action

In January 1981, the NRC resident inspector conducted a follow-up examination of bolting practices for structural steel. During this follow-up inspection, there was evidence of continuing problems with structural steel inspection records. In a sample of twelve joints, one inspection report could not be located. The NRC resident inspector considered this to be a second item of non-compliance for essentially the same problem.

Other instances of inadequate inspection records were noted. Based on these observations, the contractor issued a stop work order on January 21, 1981 for all structural steel assembly operations as previously discussed in 5.a above. This was followed by M-K corrective action request No. 33 and a directive from the Supply System that specifed the corrective action and reinspection program to be conducted. As described for Open Item 80-06/01, the reinspection program has been examined and corrective actions verified. The item is closed.

f. (Closed) Item of Non-Compliance (50-508/509/81-02/04)
M-K Inadequate Structural Steel Bolting Inspections

In January 1981, the NRC resident inspector found instances in which inspection records did not reflect non-conforming conditions in the field. This resulted in the actions described in items 5.a and above. These corrective actions have been verified as described above. The item is closed.

g. (Closed) Item of Non-Compliance (50-508/509/81-02/05)
M-K Inadequate Structural Steel Quality Records

In January 1981, the NRC resident inspector found instances in which the inspection records did not conform to actual configurations in the field. For instance, joints were noted which had a different number of bolts from the inspection record. This item is considered closed based upon the verification of the corrective action taken as described in items 5.a and 5.e above.

6. High Strength Anchor Bolting for Structural Steel Embed Plates

An Examination was made of "R P Plate" high strength stud bolts utilized by M-K for anchors of embed plates in the Unit 3 Reactor Auxillary Building (RAB), including certification reports of physical and chemical properties of the bolts in actual use. Initially, the audit sample was selected by randomly choosing two sizes of bolts in the field (1½" x 2'6" and 2" x 3'0"; drawing piece marks RPAB 2 and 3 respectively). Records of M-K transmittals to the plant QA records vault for seven heat numbers (actually designated "Heat Codes" by Lone Star Bolt Co.) covering these sizes and others, were obtained.

The records were recovered and examined for the necessary verification. All seven heat numbers, 1U, 3U, 4T, 6T, 9RJ, B18-6 and 7R were found to comply with the requirements of ASTM A-193-78a. Heats 4T and 9RJ represented the two sizes in the sample. In second check, four heat numbers (or codes) were selected from markings on studs in the field. Records for two of these were available in the first sample. Two additional heat codes, 7S and 6RJ, were noted and records recovered and checked for physical and chemical properties. All heat codes for bolts in the field were checked against the applicable sizes of bolts in the field and as designated on the purchase order. No discrepancies were identified.

Based on the sample selected and the examinations made by the inspector, it appeared that all bolts met ASTM A-193 as specified.

7. Welding Material Control

The controls utilized by MK/ESI/LORD for control of welding materials were examined. MK/ESI/LORD procures, stores and disperses weld filler materials utilizing procedure FWP 500N Revision 2 titled "Filler Metal Procurement and Control". This procedure is based on Ebasco Specifications 884-WA-80, 884-WB-80, and 884-WC-80 which provide requirements for welding nuclear pressure components, welding non-nuclear pressure components, and structural welding respectively. The procedures also implement the requirements of ASME Sections II and III and ANSI N45.2.2 as applicable for weld filler metal control. AWS D.1.1 is referenced for structural welding in the Ebasco specification but is not referenced in the procedure since the MK/ESI/LORD scope of work does not involve structures. An examination of the procedure was made. Although deviations between the procedure and actual practice were noted as described below, the procedure itself was found to be a satisfactory document for the purpose intended.

To examine implementation of the procedure, the inspector selected three MK/ESI/LORD purchase requisitions (Nos. 1093, 1101 and 1102). These requisitions covered the purchase of ten different items of filler materials, including inserts and coated and uncoated electrods totalling 30,260 pounds. The three requisitions resulted in four procurement actions. Each of these actions was examined for engineering controls, QA approvals and provisions in the purchase order, correspondence control use of approved suppliers, and use of code specifications. One discrepancy was noted; the procurement data package could not account for 100 lbs of requisitioned E70S-2, 1/16" material. On further checking it was found that the material had not actually been procured. The inspector observed that the omission could be indicative of inadequate quality review since the absence of quality data for the item had not been previously noted as one might expect.

Receiving inspection of the procured material was examined for the three purchase orders (one was cancelled). Reports 9007, 9044 and 9016 were examined and found to be in order. Two items totalling 9000 lbs had been placed on "hold" because the manufactures certificate of conformance did not correspond with purchase order requirements. The inspector noted that the suggested disposition of this document discrepancy may not be appropriate since it was based on the original issue of the purchase order rather than a subsequent revision which allows for procurement from a different manufacturing site. The inspector had no other comments on receiving inspection.

Warehouse controls were examined to assure that storage met the requirements of the referenced Ebasco specifications, the procedure, and ANSI N45.2.2. Materials were found to be segregated by type and discrepant material was identified. The control system over warehouse inventory was examined and found to adequately reflect the actual quantity for the one type of filler metal and heat number examined in the warehouse. This was E 7018-A1 material from purchase order No. 9016.

Disbursement from the warehouse to the two MK/ESI/LORD wire rooms presently in service was examined. It was found that form QA-034 was not being used as specified by the procedure. Section 7.3.1 of the procedure requires a three part form with distribution to:

Welding engineer

Warehouse

QA records

Actual practice was found to use a two part form with distribution to:

Field wire rooms

QA records

No copies were retained by the warehouse or welding engineer.

Control and storage of weld filler material in the wire room serving the west laydown area fabrication shop (west wire room) was examined. Discrepancies with the requirements of procedure FWP-500 were noted as follows:

a. Section 7.4.1 requires that an approved access list be posted in each field wire room. However, two lists were posted in the west room, one by function and another by name. One individual entered the room whose name did not appear on the list but whose function appeared to require access. It was

explained to the inspector that the name list was out of date. On the other hand, the wire room attendant was confused as to who was actually represented by the functional or title listing. It was noted that this wire room was also used as a tool room which increased the potential for unauthorized access.

b. Section 7.4.4 of the procedure requires that bare wire and consumable inserts be kept dry and packaged until required for use. Contrary to this, one coil of bare wire was found to be out of its package. It was also observed that a large coffee urn was in use near bare wire storage.

c. Section 7.4.6 requires that all spooled wire for the GTAW process be placed on pellets or shelves. Contrary to this, two stacks of bare wire were placed on top of sealed cans of E-7018-A1 electrodes. Further one stack contained more than one type of filler material.

d. Section 7.4.8 requires that each oven or slot in the oven be labeled with the applicable information for the material being stored. Contrary to this specific requirement, oven No. 2 did not bear any content identification. Oven No. 3 did not specifically relate the identification on the outside of the door to the slots inside the oven. There were no individual slot identification tags inside the oven.

In addition to these specific procedure violations, the inspector observed two calibration stickers on the oven temperature controls, one of which was out of date. An examination of the wire room serving the Unit 3 construction zone did not reveal any discrepancies. This wire room is not used as a tool room.

Disbursement of filler metal to welders was examined. Two deviations from procedure were identified in the west wire room during a single element sample:

a. Section 7.5.2 required that a pink copy of form QA-35 accompany each portable container. Contrary to this, welder T-16 withdrew two portable containers, one with coated wire and one with bare wire, from the west wire room. However, only the coated wire container bore a QA-35 form as required, since both types of material had been listed on one form. Examination of the practice in the other wire room showed that two forms were used in such cases.

b. Section 7.4.11 requires that all GTAW welding wire be issued in capped containers. Contrary to this, a capped container was not used for the wire issued to welder T-16 on November 30, 1981.

The deviations from procedure FWP 500N found in the practices employed at the west wire room are considered to be an item of non-compliance (50-508/81-19-01).

8. Management Meetings

Weekly meetings were conducted with QA management or Supply System Management representatives. A formal exit interview with the WNP Program Director and staff was held on November 30, 1981, to discuss the principal items in this report. Following discussion with the Supply System, a meeting was held on December 1, 1981 with the management of MK/ESI/LORD to specifically discuss problems with the control of weld filler materials.