

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

REGION V

Report No. 50-344/80-28  
License No. 50-344 Priority NPF-1 Category \_\_\_\_\_  
Licensee: Portland General Electric Company  
121 S.W. Salmon Street  
Portland, Oregon 97204

Facility Name: Trojan  
Inspection at: Rainier, Oregon  
Inspection conducted: November 3-7, 1980

Inspectors: *PPN* 11/26/80  
P. P. Narbut, Reactor Inspector Date Signed  
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Date Signed  
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Date Signed

Approved by: *R.T. Dodds* 11/28/80  
R. T. Dodds, Chief, Reactor Engineering Support Date Signed  
Section, Reactor Construction and  
Engineering Support Branch

Summary:

Inspection on November 3-7, 1980 (Report No. 50-344/80-28)

Areas Inspected: Routine unannounced inspection by regional based inspector of facility modification activities and previously identified followup items.

The inspection involved 34 inspector hours onsite by one NRC inspector.

Results: No items of noncompliance or deviations were identified.

## DETAILS

### 1. Individuals Contacted

#### a. Portland General Electric Company (PGE)

- \*D. J. Broehl, Assistant Vice President
- \*T. E. Bushnell, Generation Engineering (Civil)
- \*W. S. Orser, Manager Operations and Maintenance
- \*C. A. Olmstead, Manager Technical Services
- \*J. K. Aldersebaes, Resident Engineer General Construction
- \*J. D. Reid, QA Supervisor
- \*H. R. Sager, QA Engineering Supervisor
- \*G. Hutcherson, Construction Coordinator
- \*D. W. Swan, Maintenance Supervisor
- \*L. W. Erickson, Generation Licensing & Analysis
- \*R. P. Barkhurst, Plant Operations
- \*K. Johnson, Resident Engineer QC Coordinator
- M. Gandert, Generation Engineering, Civil

#### b. Bechtel Power Corporation

- \*M. F. Daubenheyer, Field Construction Manager
- \*L. M. Brown, QC Engineer, Construction
- \*W. N. Jony, Project QA Engineer
- P. M. Steeb, QC Engineer

\*Denotes attendance at Management Interview on November 7, 1980 which was also attended by G. W. Johnston, NRC Resident Inspector.

### 2. Licensee Action on Previous Inspection Findings

#### a. (Open) Unresolved items (50-344/80-08/03 -04, -05, -06)

These items dealt with pressurizer code safety valves. The licensee had not completed review of the items. The inspector examined the unapproved draft of the revised safety valve maintenance and test procedure which had been previously committed to be issued by the end of October, 1980. The proposed changes appeared to resolve the inspector's previously identified concerns with the exception of independent quality control verification of maintenance steps critical to satisfactory valve performance such as nozzle ring settings (for blowdown) and bellows integrity inspection. At the exit interview licensee management committed to reexamine the procedural controls on the maintenance steps critical to satisfactory valve performance. regards to item 80-08/05 which dealt with data from maintenance lift tests of code safety valves when the purpose of the lift test was not a set point check, (i.e. lifts done for operations such as attempts to eliminate or reduce seat leaks by a lift), licensee personnel had proposed

that the data from such lift tests need not be recorded. At the exit interview licensee management committed to rereview that proposal and evaluate the benefit of obtaining lift point data for such maintenance lifts.

These items remain open pending the committed procedure changes and evaluations.

b. (Closed) Followup item (50-344/80-22/01)

IE Bulletin 79-13 "Cracking in Feedwater System Piping"

The licensee submitted a supplemental response to the bulletin, PGE letter of October 17, 1980 forwarding Westinghouse WCAP-9613 "Integrity Assessment of Feedwater Line Indications - Trojan Nuclear Plant". The report concludes that the indication adjacent to the nozzle-to-reducer weld (FW 145) on Steam Generator A feedwater line is acceptable for further services. Since the licensee has a sonic leak detection system installed on the feedwater nozzles and since the indication size will be monitored during future refueling outages, this item is considered closed.

3. Control Building Wall Modifications

The status of the control building modifications at the time of inspection was that excavation work had been performed at columns N41, N46, N'41, N'46, R41, and P46 from elevation 45 to elevation 65. The footing for the new N' wall had been excavated and form work installation for the footing concrete placement was underway. Other work underway included welding of "Nelson" studs to the exposed columns, Cadwelding of reinforcing steel and grouting of reinforcing steel to the existing footing along the 41 line wall for the new R and N' walls.

The areas examined and the results are described below:

a. Cadwelding

The inspector examined Cadwelding for compliance to Regulatory Guide 1.10, ANSI N45.2.5, Bechtel Specification 6473 C 356 Rev. 1 of 5/9/80, and Bechtel Quality Control Instruction C-6.00 Rev. 1 of 11/4/80.

The inspector examined Cadweld production work sheets for Cadwelders 611, 612, 606, and 609 and verified production and sister splice tests were performed in accordance with Regulatory Guide 1.10.

The inspector examined Cadweld inspection reports for the dates of 10/23, 10/24, 10/27, 10/29, and 11/3/80 to determine if there were abnormal rejection rates, however only one Cadweld, 612-H-10, had been rejected for porosity and slag.

The inspector examined Cadweld laboratory test reports for tensile tests of the Cadwelds. The reports examined were dated 10/21/80, 10/24/80, and 10/29/80. The results of the tests showed the tensile strength requirements of the Cadwelds met the requirements of ASTM A-615 as required by Regulatory Guide 1.10.

The inspector examined the personnel qualification records for Cadwelders 612, 609, and 606 and determined the requirements of Regulatory Guide 1.10 were met. The personnel had been qualified for the horizontal position only but only horizontal production Cadwelding had been performed.

The inspector examined a total of 15 production Cadwelds on columns N41 and N'46. The Cadwelds were for #6 and #7 reinforcing steel. The inspector verified apparent centering and gap from the required file marks on the reinforcing steel. The inspector examined the Cadwelds for sleeve size, fill and porosity. The inspector interviewed two mechanics regarding the qualifications and methods of performing Cadwelds. All results appeared to meet the requirements of Regulatory Guide 1.10 and Cadweld splice manufacturer's recommendations.

The inspector observed that the location of Cadwelds had not been transferred to as-built drawings as of the date of the inspection. It was verified through discussion with Quality Control personnel that this was a planned activity prior to concrete placement.

No items of noncompliance or deviations were observed.

b. "Nelson" Stud Welding

The inspector examined "Nelson" stud welding for compliance to AWS D.1.1 of 1979, ANSI N45.2.5, Bechtel Specification 6478 - C 132 Rev. 3 of 7/21/80, Bechtel Welding Standard GWS-SW (Advance Copy) of February 29, 1980 and Bechtel Quality Control Instruction C-2.20 Rev. 0 of 6/5/80.

The inspector examined stud material certifications on Quality Control Inspection Report QCIR-R-100-968A for 240 studs. The inspector verified the material was ASTM 108, 1015 and met chemical and physical properties.

The inspector examined the stud welding machine. As of the date of the inspection, the machine had been used to provide power only to one welder at a time although it has the capability for hookup by two welders. Licensee and contractor personnel were not certain whether the machine was interlocked to preclude simultaneous welding by more than one welder at a time when two welders are hooked up, as required by AWS D.1.1, but stated that the interlock feature would be checked prior to welding with more than one operator. Machine settings were examined and determined to be in accordance with the weld procedure specification requirements.

The inspector examined stud testing for conformance to AWS D.1.1 requirements. The inspector verified the number of studs tested and angle of testing met AWS requirements.

The inspector examined stud welder qualifications. The Bechtel specifications allow personnel qualification concurrent with the initial production welding, however as of the date of the inspection the contractor has qualified operators prior to production welding on test plates.

The inspector examined installed "Nelson" studs on column R41, R46, N'41 and N46. The studs were 5/8" x 8". The inspector examined for laps and cracks in the stud material, 360° weld flash at the base of the stud, bend area (of studs bent for test purposes) for cracks or tears, surface preparation of the beams where welding was to be done, spacing and edge distance and stud length after welding. All items appeared to meet AWS D.1.1 and manufacturer's requirements.

The inspector interviewed the contractor quality control engineer performing the inspections and determined that all studs were inspected for welding flash but that inspections for stud length after welding were conducted on a surveillance basis only. This appears to be in conflict with the inspection requirements section of AWS D.1.1 which states: "If a visual inspection reveals any stud shear connector that does not show a 360° flash, ... or any stud in which the reduction in length due to welding is less than normal such a stud shall be struck with a hammer and bent to an angle of 15° from its original axis".

Since the tolerance on stud length after welding is +1/16 - 1/8, it is not evident that deviant studs can be identified by a general visual overview of a completed column. It is not clear how "any" stud with less than normal length reduction

can be identified and test bent without inspecting each stud as is done with inspection for the 360° flash requirement. At the time of the inspection, all areas of stud welding were "in process", none had been final accepted by Quality Control. At the exit interview licensee management committed to pursue this question. This item will be inspected further on a future inspection.  
(50-344/80-28/01).

c. As-built Conditions

The inspector interviewed licensee and contractor engineering and quality control personnel to determine if excavated areas were formally inspected to determine if the original construction was in conformance with the design plans used for the recent calculations of control building seismic resistance.

Excavation work is being performed by two organizational chains. Bechtel is performing excavation work and quality control of the work with PGE personnel performing an overview function. Other excavation work is being performed by Catalytic Inc. personnel under the direct engineering and quality control of PGE.

Through the interviews the inspector determined that there was no formal inspection being conducted. The inspector further determined that of the excavations performed at that time, the PGE Generation Engineers (Civil) had effectively performed inspections of the as-built conditions uncovered and had documented their findings on nonconformance reports (NCR's) and NCR evaluations. At the exit interview licensee management provided Bechtel Letter 274/297 of November 5, 1980 which stated Bechtel would initiate a formal inspection of as-built conditions. The licensee management further committed to implement formal controls on inspection of as-built conditions for excavation work performed by Catalytic.

This item will be inspected further on a future inspection.  
(Item 50-344/80-28/02)

d. Wall Voids

The inspector examined voids uncovered at tops of excavated columns. Voids have been found in approximately 50% of the top of column excavations performed. Some of the voids extend for several feet along the bottom of floor beams. The voids appear to be a result of improperly located fill and vent

points during original construction concrete placement between the block wall wythes. There is one case of missing reinforcing steel and one case of missing shear studs on the underside of a floor beam. The conditions were found as a result of the excavations for the modifications. The as-found deficient conditions are described in the following nonconformance reports:

- |     |               |    |  |
|-----|---------------|----|--|
| NCR | RE-127        | 1) | Limited void at Column N'46 along the 46 line  |
| NCR | RE-129        | 1) | Void along N line from Column N46 to north edge of door No. 24<br>NCR's Attachment 1 reports missing studs |
|     |               | 2) | Void along Line 46 between Column N46 and N'46 and N'46 and 046  |
|     |               | 3) | Void along N' line between N'46 and N'49   |
| NCR | RE-129 Rev. 1 | 1) | Missing reinforcing steel on N' line from N'46 to N'49   |
| NCR | RE-130        | 1) | Limited voids on R Line at Column R47  |
| NCR | RE-131        | 1) | voids on 49 line from N'49 continuing 5 ft. east   |

The inspector inquired as to whether a systematic exploration for additional voids had been made. Licensee personnel provided a summary NCR, NCR No. 8016, which had been generated as a result of walkdown inspections (for visually apparent deficient conditions) conducted earlier in the year. The NCR identified 38 items of incomplete masonry wall construction. Through interviews it was established that the items were identified visually and no significant excavation was performed as a result of the rework since exploration for voids was not an objective.

Discussions with responsible engineering personnel indicated that the voids identified to date had been analyzed as they were discovered and the results of those analyses showed the various walls were sufficient to resist SSE (safe shutdown earthquake) loads.

At the exit interview discussions were held regarding the possibility of other voids in structurally significant walls and the apparent need to evaluate the possible effects of similar voids in structurally significant wall connections which are not scheduled for excavation. Licensee management committed to assess the situation and take any appropriate

actions. This item will be inspected further in a future inspection.  
(Item 50-344/80-28/03)

e. Review of Nonconformance Reports, Field Change Requests and Design Change Notices

The inspector examined the nonconformance reports listed in paragraph 3.d. above and twelve Field Change Request and eleven Design Change Notices for conformance to the requirements of License Amendment #47 dated July 25, 1980 to License NPF-1.

No items of noncompliance or deviations were observed.

f. Concrete Preplacement Quality Control

The inspector examined procedures for concrete preplacement inspection to determine if appropriate quality controls were in effect. Procedures examined were:

PGE Construction Work Plan GC #503 Rev. 1 of 9/19/80  
Bechtel Quality Control Instruction QCI C1.20  
Rev. 1 of 6/27/80

Quality Control involvement appears to be appropriate. No items of noncompliance or deviations were observed.

4. Exit Interview

At the conclusion of the inspection a meeting was held with the licensee and contractor representatives denoted in paragraph 1. The scope and findings of the inspection were discussed and the licensee representatives committed to actions as detailed in the preceding paragraphs of this report.