

APPENDIX

U.S. NUCLEAR REGULATORY COMMISSION
REGION IV

Inspection Report: 50-344/94-03

License: NPF-1

Licensee: Portland General Electric Company
123 S.W. Salmon Street
Portland, Oregon 97204

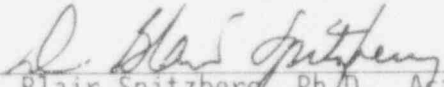
Facility Name: Trojan Nuclear Plant

Inspection At: Trojan Site, Columbia County, Oregon

Inspection Conducted: May 23-26, 1994

Inspector: H. Dean Chaney, Senior Radiation Specialist

Approved:


D. Blair Spitzberg, Ph.D., Acting Chief,
Fuel Cycle/Decommissioning Branch

6-16-94
Date

Inspection Summary

Areas Inspected: Routine, announced inspection of the licensee's staff training, spent fuel pool surveillance, radiation protection program, environmental monitoring program reports, initial response to NRC Bulletin 94-01, and implementation of the revised 10 CFR Part 20. NRC Inspection Procedures 83750, 61726, 84750, 41500, 92701, and TI 2515/123 were utilized.

Results:

- The licensee has maintained an adequate level of radiological control over facility activities; however, radiological surveys can use some additional attention to details (Section 2).
- The licensee's certified fuel handler training program satisfies the NRC's training rule (Section 5).
- Unresolved Item 50-344/9401-01 was closed. Information reviewed to resolve this item resulted in the identification of a noncited violation (Section 6).

Attachments:

- Attachment 1 - Persons Contacted and Exit Meeting

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- Attachment 2 - Documents Reviewed

DETAILS

1 PLANT STATUS

The Trojan Nuclear Plant remains in a shutdown condition awaiting decommissioning. Spent fuel is safely stored in the spent fuel pool and all support systems are being adequately maintained and monitored. The licensee is awaiting issuance of their Permanently Defueled Technical Specifications and preparing their Decommissioning Plan required by 10 CFR 50.82 for submittal to the NRC.

Under their resource recovery program, the licensee had removed the two installed reactor coolant system centrifugal charging pumps and had prepared them for shipment to another NRC Region IV licensee.

2 OCCUPATIONAL RADIATION EXPOSURE (83750)

The licensee's radiation protection program was inspected to determine compliance with the requirements of 10 CFR Part 20, and those contained in the current Trojan Technical Specifications (Amendment 193); and agreement with the radiation protection program and ALARA commitments contained in Sections 5.6 and 5.7 of the Trojan Nuclear Plant Defueled Safety Analysis Report.

2.1 Audits and Appraisals

The inspector reviewed the content of several audits and surveillances to determine compliance with the requirements of Appendix B to 10 CFR Part 50 and Specification 6.5.2.8.

Ten Quality Assurance Department audits/surveillances that involved radiation protection, staff training, maintenance/operations activities, and Quality Assurance activities were reviewed during this inspection (Attachment 2). The licensee's audits exhibited a high level of effort and were conducted in accordance with the licensee's NRC-approved Quality Assurance Program. Findings noted were minor in nature, and corrective actions were accomplished in a timely and effective manner in all cases.

2.2 Control of Radioactive Materials and Contamination, Surveys, and Monitoring

The inspector reviewed 13 radiation work permits, and the job-related surveys and monitoring associated with the removal of two reactor coolant system centrifugal charging pumps, to determine licensee compliance with internal radiological control procedures and the requirements of 10 CFR Part 20.1501; and the guidance contained in NRC Regulatory Guide 8.8. All radiation work permits provided adequate radiological controls and sufficient supplemental instructions for accomplishing assigned tasks in a safe manner.

During the review of several prework, work activity, and post-work radiological surveys associated with the centrifugal charging pumps (CCP) removal, the following discrepancies were noted:

NOTE: All surveys discussed below had previously been reviewed by the Chemistry & Radiation Protection Supervisor

- Surveys did not include information as to the meaning of several informational markings/diagrams on the survey forms. The Chemistry and Radiation Protection Supervisor indicated that some markings (outline of an area or component) were denoting radiologically controlled area barriers. The inspector noted that indication of the type of radiological posting present at the time of the survey was not provided on some of the surveys.
- External gamma exposure rate readings on the forms were not defined as to the units used (e.g., rem/hr, mR/hr, etc.). The Radiation Protection Supervisor stated that unless otherwise noted, all readings are assumed to be in milliRoentgen per hour (mR/hr) per Procedure RP 102, "Survey Techniques." The inspector noted to the Radiation Protection Supervisor, that it is a common industry practice to include on the survey form a description (legend) of the notations used or a statement on the survey form stating, "That unless otherwise indicated, all radiation readings are in units of mR/hr."
- Various undefined terms (e.g., NDB, SOP, LAS, A/S) were used on the survey forms making interpretation difficult. One survey form used the outdated "maximum permissible concentration - MPC" term, even though it was corrected on another CCP survey to the acceptable "DAC - Derived Air Concentration" term.
- The Maintenance Request No. 2560 identified the centrifugal charging pumps individually as P-205A and P-205B; however, the nine or more radiological surveys taken during the removal did not use the unique designator for the pumps. Even though some surveys (e.g. loose contamination and direct radiation readings) were taken on the pumps and associated piping, the surveys only referenced the room from where the pumps were removed.
- Due to the poor handwriting used in designating survey location numbers and radiation exposure values, the data could be easily misinterpreted. The "remarks sections" were frequently overcrowded with information, making the data hard to decipher.

Even though the survey data being presented was difficult to interpret, the surveys did meet the requirements of 10 CFR 20.1501(a). The inspector expressed concern that the radiological survey program may deteriorate further if action was not taken to improve attention to detail in documenting radiological survey results. The licensee acknowledged the inspector's observations and indicated that a review of the radiological survey documentation practices would be initiated. The inspector's concern will be considered an Inspection Follow-up Item (50-344/9403-01) pending completion of the licensee's programmatic review of their radiological survey data documentation practices.

2.5 Facility Tours

Tours of the licensee's facilities were conducted during the inspection period. Independent radiation measurements were made with an Eberline Model RO-2 beta-gamma dose rate measurement instrument, Serial No. 008985, due for calibration July 6, 1994.

Personnel in radiologically controlled areas were noted to be equipped with proper dosimetry, including electronic alarming dosimeters. No abnormal radiation measurements were identified. Radiological posting was satisfactory. All areas toured were found to be clean.

2.6 Temporary Instruction 2515/123 - Implementation of the revised 10 CFR Part 20

The licensee has satisfactorily implemented the revised Part 20. This inspection report and NRC Inspection Reports 50-344/93-17 and 50-344/94-01 complete the documentation of the licensee's implementation.

2.7 Conclusion

The licensee has maintained an adequate radiological protection program that ensures the health and safety of employees and the public.

3 **SURVEILLANCE OBSERVATIONS (61726)**

The inspector reviewed the licensee's spent fuel pool surveillances, and the chemistry surveillances required by Specification 3.9.11 and the Offsite Dose Calculation Manual. The licensee's conduct of the spent fuel pool water chemistry program was examined. The licensee has maintained a sampling and analysis program for the spent fuel pool consisting of:

- Boron concentration (Limit: >2,000 ppm)
- Gross gamma and beta radioactivity
- Tritium
- pH (limit: 4.0 - 4.7)
- Conductivity (limit: 1 - 40 μ S/cm)
- Various other chemical parameters (Chlorides, Fluorides, suspended solids, etc.)

The licensee's operations staff has conducted frequent surveillances of operating equipment associated with ensuring spent fuel pool cleanup and maintaining spent fuel pool temperature below 140 degrees Fahrenheit. The licensee has maintained water level in the spent fuel pool to greater than 23 feet above the top of the fuel storage racks.

3.1 Conclusion

The inspector concluded that the licensee's performance in this area was satisfactory, and the surveillance and test program appeared to be capable of accomplishing the safety objectives in the Specifications and Offsite Dose Calculation Manual.

4 RADIOACTIVE WASTE TREATMENT AND EFFLUENT AND ENVIRONMENTAL MONITORING (84750)

The licensee's program was reviewed to determine compliance with the requirements of Specification 6.8.4.f, and the Offsite Dose Calculation Manual (Amendment 10); and agreement with the commitments in Section 5.0 of the Defueled Safety Analysis Report. The inspector reviewed radioactive effluent, radiological environmental, and the ecological reports for the year 1993 (Attachment 2). All reports conformed with the applicable sampling and analysis requirements of the Offsite Dose Calculation Manual. No anomalies in the data reviewed were noted.

4.1 Conclusion

With the exception of the noncited violation referenced in Section 6.2, the licensee's performances in this area is satisfactory and in compliance with applicable regulations.

5 TRAINING AND QUALIFICATION EFFECTIVENESS (41500)

The licensee's training programs for general employees, radiological workers, chemistry/radiation protection technicians and certified fuel handlers were examined to determine compliance with the requirements of 10 CFR 19.12, 50.120; and Specifications 6.3 and 6.4.

The licensee's general employee training program satisfies the requirements of 10 CFR 19.12 and incorporates the guidance contained in NRC Regulatory Guide 8.27. The inspector determined that both the certified fuel handler and the radiation protection technician training and retraining programs have retained the systems approach to training basis. The inspector examined training program procedures, lesson plans, lesson handouts, tests, remedial training, attendance rosters, and the annual certified fuel handler training program self assessment of effectiveness. See Attachment 2 for a listing of the documents reviewed. The inspector also observed a certified fuel handler crew's training using the reactor simulator for evaluation of response to a loss of AC power problem.

5.1 Conclusion

The licensee has maintained an acceptable level of training for plant staff as required by NRC regulations.

6 FOLLOWUP (92701)

6.1 (Closed) Unresolved Item 50-344/94-01-01: Failure to Maintain Adequate Lower Limits of Detection for Radiological Environmental Sample Analyses by Contract Laboratory

This item was previously discussed in NRC Inspection Report 50-344/94-01, and involved the licensee's discovery that their contract laboratory had been counting samples for an insufficient amount of time to allow for quantitative identification of certain radioisotopes at the level of detectability required by the Offsite Dose Calculation Manual. (See NRC Report 50-344/94-01 for a detailed description of the finding).

The licensee's investigation identified the following:

- The problem had been on-going for the last 6 years.
- Less than adequate oversight of the offsite laboratory contract for these activities was in place.

The licensee had evaluated the effect that this problem would have had on previous Radiological Environmental Monitoring Program analyses and determined that previous effluent releases, if deposited in the environs around Trojan Nuclear Plant, would not have exceeded the lower limits of detection of the Radiological Environmental Monitoring Program for the isotopes of concern. The licensee provided a detailed and satisfactory discussion in the Section 3.1 of the 1993 Annual Report on Trojan Nuclear Plant's "Operational Environmental Radiological Surveillance Program" concerning this item. The licensee took the following corrective actions to resolve the problem and prevent a future recurrence.

- The contract between the licensee and the contractor was revised to reflect the lower levels of detection requirements of the Offsite Dose Calculation Manual.
- The licensee will indicate the type of analysis required and the lower limits of detection for each nuclide listed in the Offsite Dose Calculation Manual on the data sheet sent to the contractor with any Radiological Environmental Monitoring Program samples.
- The monthly reports sent to the licensee by the contractor will list the Offsite Dose Calculation Manual's lower limits of detection for each of the analyses. If no activity is detected in the sample, then the report will indicate the sample was below the lower limits of detection.

The inspector determined that the contractor's analyses did not meet the lower limits of detection specified in the Offsite Dose Calculation Manual for two relatively short half-life nuclides. This did not however, result in any offsite doses or depositions that were distinguishable from background levels. The licensee's releases were maintained significantly below the values specified in Appendix I to 10 CFR Part 50.

The licensee's failure to control their contractor's analytical lower limits of detection for certain Radiological Environmental Monitoring Program samples is considered a violation of Specification 6.8.4.f and the Offsite Dose Calculation Manual's Specifications 3.3.1 and 4.3.1. This violation is not being cited because the licensee's efforts in identifying and correcting the violation meet the criteria specified in Section VII.B.2 of Appendix C to 10 CFR Part 2.

6.2 (Open) NRC Bulletin 94-01: Potential Fuel Pool Draindown Caused By Inadequate Maintenance Practices At Dresden Unit 1

The licensee has performed a preliminary assessment of NRC Bulletin 94-01 and has provided its response to the NRC (Letter, PGE S. Quennoz to NRC, Subject: Response to Nuclear Regulatory Commission (NRC) Bulletin 94-01, dated 5/23/94) with a schedule for completion of the four required actions. The licensee has committed to complete all actions by June 30, 1994.

During the licensee's preliminary review, it was discovered that two fill pipes, one in the fuel transfer canal and one in the fuel cask loading cavity (currently flooded), did not have siphon breakers. These pipes are part of the spent fuel pool cooling and purification system and are equipped with normally shut block valves (SF-049 and SF-050). The licensee could not find any information as to the last time the isolation valves had been used. Currently the fuel transfer canal is isolated from the spent fuel pool and in a drained down condition. On May 17-18, 1994, the licensee installed 1-inch siphon break holes in the top portion of the horizontal run of the pipes as they entered their respective pools. The inspector observed the newly installed siphon breakers during facility tours.

This item will remain open pending NRC review of the licensee's response to the NRC Bulletin 94-01.

ATTACHMENT 1

1 PERSONS CONTACTED

1.1 Licensee Personnel

- *S. Quennoz, General Manager, Trojan Plant
- *D. Nordstrom, General Manager, Nuclear Oversight
- *T. Walt, General Manager, Technical Functions
- *H. Chernoff, Manager, Licensing
- *T. Meek, Manager, Personnel Protection/RP
- *J. Mihelich, Manager, Engineering
- *S. Schneider, Manager, Operations
- *J. Vingerud, Manager, Maintenance
- *G. Huey, Manager, Radiation Protection (RP) Technical Support
 - E. Lazier, Operations Shift Manager/Training Coordinator
 - A. Bowman, Supervisor, Chemistry and RP (C/RP) Technicians
- *C. Brown, Training Specialist
- *M. Featherston, Licensing Engineer
 - L. Larson, Radiological Engineer
 - L. Rocha, RP Engineer
 - M. Stein, Radiation Protection Engineer

The personnel listed above attended the exit meeting. In addition to the personnel listed above, the inspector contacted other personnel during this inspection period.

2 EXIT MEETING

An exit meeting was conducted on May 26, 1994. During this meeting, the inspector reviewed the scope and findings of the report. The licensee did not identify as proprietary any information provided to, or reviewed by, the inspector.

ATTACHMENT 2

DOCUMENTS REVIEWED

- Trojan Plant Directive 20-1, "Radiation Protection Program Policies," Revision 0, dated 1/4/93
- TPP 10-1320, "Conduct of Personnel Protection," Revision 0, dated 3/30/93
- TPP 11-110, "Plant Organization and Responsibility," Revision 2, dated 5/24/94
- TPP 11-210, "Nuclear Plant Engineering & Decommissioning Organization and Responsibility," Revision 0, dated 5/24/94
- TPP 13-27, "Operations Department Responsibilities," Revision 0, dated 8/18/93
- TPP 13-28, "Shift Complement," Revision 0, dated 8/18/93
- TPP 13-29, "Control Room Operations and Shift Records," Revision 1, dated 3/30/94
- TPP 14-11, "ALARA Review," Revision 2, dated 11/30/93
- TPP 14-12, "Radiation Work Permits," Revision 1, dated 11/30/93
- TPP 20-1, "Rules for Working in Radiologically Controlled Areas," Revision 2, dated 12/30/93
- TPP 20-2, "Radiation Protection Program," Revision 4, dated 12/30/93
- TPP 20-3, "Conduct of Radiation Protection," Revision 0, dated 1/4/93
- TPP 22-1, "Trojan Training Program," Revision 2, dated 2/2/94
- TPP 26-1, "Conduct of Chemistry," Revision 2, dated 4/15/93
- TPP 30-1, "Nuclear Division Defueled Requirements and Defueled Systems List," Revision 3, dated 2/17/94
- Trojan Nuclear Plant Offsite Dose Calculation Manual, Amendment 10 (December 1993)
- Trojan Nuclear Plant Annual Radioactive Effluent Release Report for the period January 1, 1993 through June 30, 1993, dated August 26, 1993
- Audit - Trojan Plant Staff Training and Qualification, Serial No. AP-703, dated 7/8/93
- Audit - Operations Department and Certified Fuel Handler Training Programs, Serial No. AP-711, dated 3/3/94
- Audit - Chemistry, Radiation Protection, and Special Nuclear Material, Serial No. AP-713, dated 4/19/94

Audit - Trojan Corrective Action Program, Serial No. AP-712, dated 3/29/94

Surveillance - Permanently Defueled Technical Specification Readiness, Serial No. 94-004-SURV, dated 1/27/94

Surveillance - Decommissioning Plan, Serial No. 94-005-SURV, dated 2/24/94

Surveillance - Trojan Waste Discharge Permit Semi-monthly Sampling, Serial No. 94-006-SURV, dated 2/16/94

Surveillance - Diesel Engine Fire Pump Preventative Maintenance, Serial No. 94-014-SURV, dated 5/18/94

Surveillance - "C" Service Water Pump Removal, Serial No. 94-012-SURV, dated 5/9/94

Surveillance - Chemical Control Program, Serial No. 94-013-SURV, dated 5/12/94

Study Guide, "Spent Fuel Pool Cooling System," DRAFT, dated 5/23/94

Operations Guideline (OG) 22-1, "Oral Examination Guideline," Revision 0, dated 1/11/94

Certified Fuel Handler Continuing Training Topics for 1994, 1995, and 1996, FH-X-02-QC, Revision 1, dated 1/20/94

Memorandum to File 13-1-31 (SAS-007-94), Subj: Methodology and Justification for the Reduction of the Licensed Operator Training Program Scope to the Certified Fuel Handler Training Program, dated 2/3/94

Memorandum from S. Schneider to S. Quennoz, Subj: Certified Fuel Handler Training Program Annual Evaluation of Effectiveness, dated 2/8/94

Employee Remedial Training Program (Certified Fuel Handler, dated 12/22/93)

Study Guide for Methodology and Background for Spent Fuel Pool Cooling System, dated 5/23/94

Radiation Protection Procedure (RP) 102, "Survey Techniques," Revision 29, dated 9/9/93

RP-114, "Radiological Protection Routine Schedule," Revision 59, dated 10/07/93

RP-122, "Radiation Protection Professional Staff Training," Revision 3, dated 7/1/92

RP-126, "Contract Radiation Protection Technician Evaluation and Training Procedure," Revision 11, dated 4/14/93

RP-152, "Radiation Protection Personnel Training Requirements for RadWaste," Revision 0, dated 3/11/92

RP-148, "Radiation Protection Surveillance Inspection Program," Revision 1, dated 10/4/93

Training Lesson Plan RP-G01-LP, "Contract Senior Technicians," Revision 5, dated 4/27/94

Training Lesson Plan RP-C01-OJT, "Contract Junior Radiation Protection Technician," Revision 1, dated 3/27/91

Chemistry Manual Procedure (CMP) 12, "Boron - Titration Method," Revision 3, dated 9/22/89

CMP-25, "Beta and Beta-Gamma Analysis," Revision 7, dated 9/12/89

PGE Letter to NRC, Subj: Response to Nuclear Regulatory Commission (NRC) Bulletin 94-01, dated 5/23/94

Defueled Plant Modification Request Turnover Record 94-012, Installation of Siphon Breakers in the Spent Fuel Pool Piping, dated 5/18/94

Surveillance Report 94-015-SURV, "Installation of the Spent Fuel Pooling Cooling System Siphon Breakers," dated 5/19/94