U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report 50-344/90-31

License NPF-1

Licensee: Portland General Electric Company
121 SW Salmon Street
Portland, Oregon 92704

Facility: Trojan Plant

Inspection location: Rainier, Oregon

Inspection duration: October 1-5, 1990

Inspected by: _____ 10/24/90
L. L. Lobyentz, Radiation Specialist Date Signed

_____ 10/29/90
G. P. Yuhas, Chief Date Signed
Reactor Radiological Protection Branch

Approved by: _____ 10/29/90
G. P. Yuhas, Chief Date Signed
Reactor Radiological Protection Branch

Summary:

Areas Inspected: Routine, unannounced inspection of followup items, transportation activities, and radiological waste systems. Inspection procedures 92701, 92700, 86721, and 84750 were used.

Results: The licensee's programs for managing radioactive waste systems exhibited weaknesses in storage of solid waste, maintaining equipment operable, and ensuring that the Final Safety Analysis Report is properly updated (Section 5). One violation was identified in the area of transportation (Section 4). A continuing program strength was the low quantity of liquid effluent released, as documented in the Semi-Annual Effluent Report for the first two quarters of 1990 (Section 5).

DETAILS

1. Persons Contacted

Licensee

S. Bauer, Manager, Nuclear Safety and Regulation, Acting
J. Benjamin, Audits Supervisor, Quality Operation
E. Bowers, Training Specialist, Radiation Protection
B. Clark, Plant System Engineer
J. Cross, Vice President Nuclear
N. Dyer, Supervisor, Health Physics
G. Huey, Supervisor, Radiation Protection
G. Gettman, Supervisor, Quality Inspection
J. Lentsch, Manager, Personnel Protection
D. Leslie, Auditor, Quality Assurance
D. Nordstrom, Branch Manager, Quality Operation
L. Nolan, Unit Supervisor, Radwaste
D. Nusbickez, Supervisor, Procurement Quality
G. Rich, Branch Manager, Radiation Protection
W. Robinson, Plant General Manager
C. Seaman, General Manager, Quality Assurance
R. Thomas, Supervisor, Plant Systems Engineering
T. Walt, General Manager, Technical Functions
J. Westvold, Supervisor, Vendor Qualifications
J. Whelan, Manager, Maintenance
L. Wildfong, Investigative Engineer
W. Williams, Regulatory Compliance
J. Willison, Manager, Radiological Safety, Acting

USNRC

J. Melfi, Resident Inspector

The individuals listed above attended the exit meeting on October 5, 1990. The inspectors met and held discussions with additional members of the licensee's staff during the inspection.

2. Followup (92701)

Information Notices 50-344/IN-90-44 (Closed) and 50-344/IN-90-48 (Closed): These notices involved dose-rate instruments underresponding to true radiation fields and the hot particle enforcement policy. The referenced notices had been distributed to cognizant personnel for evaluation.

Item 50-344/89-30-07 (Open): This item concerned the status of the licensee's Radwaste Action Plan. The licensee's October 1, 1990, update to the plan indicated that changes to the Process Control Program (PCP) had been completed, and that a new revision to Radiation Protection Manual Procedure (RPMP) 5, "Sampling Program to Determine Isotopic Concentrations and Scaling Factors for Classification of Low level Solid Radwaste," had been issued. Establishment of a cross-referenced filing

system, implementation of the Waste Trak computer program, and revisions to additional RPMP procedures had been deferred to November 1990. The scope and impact of procedure revisions and changes to the PCP will be examined during a subsequent inspection.

The licensee had contracted with an offsite vendor to sort, decontaminate, and compact low-level dry radwaste and monitor clean waste from controlled areas. This activity is discussed in further detail in Section 4, below.

3 Onsite Followup of Licensee Event Reports (92700)

Item 50-344/90-35-LO (Closed): This report concerned a containment ventilation isolation (CVI) that occurred on August 22, 1990, during a previous inspection (see Inspection Report 50-344/90-25). The CVI had been initiated when PRM-1D, the Containment High Level Noble Gas Radiation Monitor, exceeded its setpoint. Interviews with instrumentation (I&C) technicians during subsequent troubleshooting of PRM-1 indicated that PRM-1D had functioned as designed, and that normal background variation had caused the CVI. The resulting Licensee Event Report (LER) stated that the procedure for containment pressure reduction had been revised to establish a standard method for determining PRM-1 background readings. The inspectors had no further questions in this matter.

This item is also discussed in Section 5, below.

4. Transportation Activities (86721)

The inspectors examined circumstances surrounding shipments of low-level dry radwaste to an offsite vendor for segregation and disposal.

Background and Chronology of Events

In April 1990, PGE modified an existing contract with a Richland, Washington vendor. The original contract had permitted PGE to ship dry waste in drums for supercompaction and disposal by the vendor; the amended contract provided PGE with the additional vendor services of sorting and decontamination. At the time of the contract amendment, however, the vendor did not have a facility for sorting and decontamination at Richland, nor did the terms of the vendor's State of Washington (SOW) license allow segregation of waste. Based on the stated intentions of the vendor to build the segregation facility, PGE made five shipments, from April 23 to May 30, 1990, each consisting of two 20-foot C-vans containing bags of dry radwaste. The vendor's SOW license did not authorize receipt of waste in this form.

Licensee Evaluation and Corrective Action

In July 1990, PGE notified NRC of concerns regarding the vendor's methods and facilities, and initiated a PGE assessment of the situation. An August 2, 1990, PGE visit to the Richland site confirmed the incompleteness of the vendor's segregation facility. The vendor had not begun processing the five PGE shipments of bagged radwaste; however, the

PGE visit raised additional concerns about the vendor's radiation protection practices, quality assurance program, and inventory of total onsite radioactive material. Pending resolution of these concerns, PGE secured all their radwaste on the vendor's premises, and discontinued further shipments to the vendor.

Subsequent self-assessments by PGE's Quality Assurance (QA) Group focused on the failure by purchasing personnel to ensure that the vendor appeared on PGE's Approved Suppliers List. Proposed corrective actions included retraining of purchasing and quality operations personnel, revising the PGE/vendor contract, ensuring vendor compliance with QA program requirements, and initiating periodic PGE audits of the vendor's methods and facilities. The inspectors noted that PGE's self-assessment had not identified any violations of NRC requirements.

NRC Evaluation

10 CFR 30.41, "Transfer of byproduct material," states in part:

> (c) Before transferring byproduct material to a specific licensee of . . . an Agreement State . . . the licensee transferring the material shall verify that the transferee's license authorizes the receipt of the type, form, and quantity of byproduct material to be transferred.

The inspectors noted that RPMP-1, "Radioactive Material Receipt and Shipment," Attachment 1, "Checklist of Radioactive Material Shipment Requirements," includes the following step:

> 1. Verify that the consignee is licensed to receive the type and quantity of radioactive material to be shipped . . .

Records of each of the five shipments to the Richland, Washington vendor included a copy of this checklist. In each case, Step 1 had been appropriately initialed, and the transferee's authorizing document had been listed as SOW License WN-I0306-1.

The inspectors reviewed SOW License WN-I0306-1. The license had not been amended to allow sorting and decontamination of radwaste, nor did the license authorize receipt of dry radwaste in bags. The inspectors voiced this concern to the PGE employee who had initialed Step 1 of the checklist. The PGE employee agreed, and stated that the question of authorization had been raised with the vendor by telephone prior to the first shipment. The vendor had stated that receipt of the shipment was permitted under paragraph 9.A-D (3) of the license, which authorized ". . . possession and supercompaction of contaminated items incidental to facility operation." The inspectors noted that paragraph 9.A-D (3) did not authorize receipt of radwaste in any form.

The inspectors noted, further, that PGE had not attempted to confirm the vendor's claim to authorization by contacting the SOW, as provided in 10 CFR 30.41 (d) (5). An August 9, 1990, correspondence from the SOW to the vendor confirmed that receipt of the five PGE shipments of bagged

radwaste had not been authorized under paragraph 9.A-D (3) of SOW License WN-I0306-1.

The inspectors concluded that PGE's failure to properly verify vendor authorization to receive the five radwaste shipments completed between April 23 and May 30, 1990, appeared to be a violation of 10 CFR 30.41 (c) (50-344/90-31-01). In addition, PGE's assessment of performance in this area did not appear to be sufficiently thorough or self-critical, in that failure to verify vendor authorization prior to shipment was neither identified as a root cause of the problem nor considered to be an item requiring corrective action.

Finally, the inspectors were informed that a former PGE employee had contacted the SOW to verify authorization of the Richland, Washington vendor to receive bagged radwaste under SOW license WN-I0306-1. The inspectors contacted the former employee, who stated that, although he had discussed vendor authorization concerns with the vendor and with other members of the PGE radwaste group, he had never contacted the SOW on this topic. The individual stated that he had left the utility in part due to his perception of pressure by management to reduce PGE's annual amount of solid radwaste shipped for burial in order to meet an internal goal. Other individuals also stated, although less vigorously, that the radwaste group had been under management pressure to develop methods of reducing radwaste shipped for burial. The inspectors interviewed the Radiation Protection Branch Manager (RPM) and the Personnel Protection Manager (PPM). Both individuals acknowledged that an internal goal had been established to reduce the 1990 amount of PGE's solid waste shipped for burial to 5500 cubic feet (the 1989 volume buried was 10,321 cubic feet). Both individuals also acknowledged that amending the Richland, Washington vendor contract to allow segregation had been a part of efforts to reach the internal goal; neither the RPM nor the PPM, however, had been informed of the radwaste group's concerns involving vendor authorization to receive the material. The inspectors recognized the value of setting goals to reduce radwaste output. Based on the above statements, however, the inspectors concluded that a root cause of the shipment problems may have been related to the failure of the workers to bring their concerns to the attention of management, and that the perception of management pressure to reduce waste output may have contributed to this failure.

5. Radioactive Waste Systems (84750)

Changes

During walkdowns of the liquid and solid radwaste systems, the inspectors observed numerous discrepancies between actual system configurations and the corresponding descriptions in the licensee's Final Safety Analysis Report (FSAR). Several examples follow:

* The Steam Generator Blowdown System Ion Exchanger Outlet Monitor (PRM-17) had been installed in 1988 as a Plant Design Change; however, no description of PRM-17 was given in Section 11.5, "Process and Effluent Monitoring System," nor was PRM-17

listed in relevant tables with other process radiation monitors.

* Component Cooling Water lines to the liquid radwaste evaporator had been capped, and the evaporator had not been usable for several years. Section 9.2.2 of the FSAR accurately reflected the capped lines, and one drawing showed the evaporator as "ABANDONED"; however, Section 11.2, "Liquid Waste Management Systems," gave a full description of the evaporator without mentioning its unusable status.

* Inaccuracies regarding function, configuration, and current use were also found in descriptions of the licensee's Tiger-Lock system, the power-driven air pallet, the chemical waste drain tank, the filter-handling vehicle, and the clean waste filter.

10 CFR 50.71 (e) (4) states that revisions to the FSAR ". . . shall reflect all changes up to a maximum of 6 months prior to the date of filing." The inspectors noted that, as a minimum, Amendments 10 through 13 (July 1989 through April 1990) had been issued without meeting this requirement in reflecting the current status of various radwaste systems.

The inspectors reviewed recent QA audits of radwaste activities, and noted that several failures to properly update the FSAR had been the topic of audit findings. Specifically, QA Audit CKS-111-89, performed in October 1989, identified portions of Section 11.4 of the FSAR, "Solid Waste Management System," which did not reflect system modifications made in 1976, 1977, 1987, and 1988. Although a Non-Conforming Activity Report (NCAR) had been written to document this finding, and Amendments 12 and 13 to the FSAR (January and April 1990, respectively) had been subsequently issued, no further revision had been made to Section 11.4 at the time of the inspection.

Discussions with cognizant personnel in the Radwaste, Chemistry, and Nuclear Safety and Regulation (NSRD) Departments indicated that substantial revisions to major portions of Section 11 of the FSAR were in progress. In addition, the inspectors reviewed a memorandum generated by a July 25, 1990, Plant Review Board meeting, identifying the failure to maintain the FSAR current in accordance with 10 CFR 50.71 (e). Prior to the exit meeting on October 5, 1990, the NSRD Branch Manager informed the inspectors that a properly updated revision to Section 11 of the FSAR would be included in Amendment 14, scheduled for issue October 31, 1990.

System Maintenance

During radwaste system walkdowns, the inspectors observed that a Treated Waste Monitor Tank (TWMT) pump and a Clean Waste Receiver Tank (CWRT) pump were out of service. Review of the associated Maintenance Requests indicated that the CWRT pump had been out of service since September 1989, and the TWMT pump since July 1989. Replacement parts, in both instances, were scheduled to arrive in October 1990.

The inspectors also observed that carbon steel strainers were installed in the suctions to various clean waste system pumps, although the FSAR

stated that system piping and major components would be made of stainless steel. Discussions with the system engineer revealed that the strainers had been in place since startup. The system engineer directed the inspectors to a May 1987 Non-Conformance Report, NCR 87-064, which had determined that replacement stainless steel strainers should be procured and installed. The Nuclear Plant Engineering (NPE) representative responsible for the NCR stated that a Job Approval Request had been issued in 1988; and that a Plant Configuration Change authorizing the work had been issued in June 1989. Replacement strainers had arrived in August 1990; however, the vendor had supplied the wrong article, and the purchasing Department currently was investigating the mistake. The NPE representative stated that replacing the strainers had taken abnormally long, but that the job had not been assigned a high priority.

The inspectors asked the NPE representative whether consideration had been given toward maintaining carbon steel strainers in the system, and merely updating the FSAR. The NPE representative replied that although that option had been briefly considered, changing the wording of the FSAR required much more effort than obtaining replacement strainers, and he had dismissed the idea on that basis.

Processing and Storage

The inspectors toured portions of the Auxiliary Building, the Turbine Building, the Control Room, the Fuel Handling Building, and outdoor storage areas. Particular attention was given to areas designated for radwaste processing and storage. Dose rate surveys were conducted using ion chamber survey instrument Model RO-2, serial number NRC 022906, due for calibration January 10, 1991. The following items were noted:

Radioactive material storage areas, contamination areas, and radiation areas were clearly designated. Posted radiation levels were consistent with dose rate surveys performed by the inspectors.

Portal monitors, frisking equipment, and radiation monitoring instruments were consistently used. Monitoring instrumentation was in current calibration and periodically performance checked.

The inspectors observed that the long-sleeved protective gloves installed on the radwaste filter change-out boxes were beginning to deteriorate. This item was brought to the attention of the Radiation Protection Supervisor, and the gloves were promptly replaced.

On the 77-foot level of the Auxiliary Building, the mimic board on the liquid radwaste control panel (C-151) did not reflect current system configuration. Steam Generator blowdown was shown in line to the chemical waste drain tank, and the liquid radwaste evaporator appeared to be available for use, although neither of these conditions were accurate.

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Radwaste storage areas in the Fuel Handling Building and Auxiliary Building were crowded. In particular, the truck bay in the Radwaste Annex afforded little working space for vehicle loading. On one

side of the loading zone, a dewatering facility designated as a contamination area was cramped and disorderly; on the opposite side, items remaining from previous outages had been piled in disarray across a large contamination area.

In the outdoor radioactive material storage area, standing water was observed on several drums and shields. In addition, several shields were rusting on exterior surfaces.

During a tour of the Control Room, two operators were observed not wearing thermoluminescent dosimeters (TLDs). The inspectors brought this item to the attention of the RPM, who stated that some operators kept their TLDs with a dosimetry packet at the access control point, and wore TLDs only on entry into a Radiologically Controlled Area. The RPM also stated that operators were not required by procedure to wear TLDs while in the Control Room.

At the exit interview, the licensee acknowledged the inspectors' concerns regarding the adequacy of radwaste processing and storage areas. The licensee stated that consideration would be given to enclosing the outdoor radioactive material storage facility to prevent unnecessary exposure to weather. In addition, the RPM stated that, based on further review, the practice of allowing Control Room operators to not wear TLDs while on-shift was being discontinued.

Effluents

The inspectors reviewed liquid effluent discharge permits for treated waste monitor tank discharges and steam generator discharges. Selected effluent monitor setpoint calculations were verified using the Offsite Dose Calculation Manual (ODCM). No discrepancies were noted.

The inspector performed an in-office review of the January-June 1990 Semi-Annual Radioactive Effluent and Waste Disposal Report, submitted in accordance with Technical Specifications (TSs) 6.9.1.4 and 6.9.1.5. Radioactive releases and resulting doses were within the limits of TS 3/4.11, and liquid and gaseous releases continued to be low compared with other facilities. Assessment of doses to offsite members of the public appeared to be performed in accordance with the methods specified in the ODCM. No changes to the ODCM or the Process Control Program were documented. Six radioactive waste shipments were documented, including dewatered resin, sludges, and dry compressible waste.

Instrumentation

The inspectors reviewed channel checks and channel calibrations required by TS 3.3.3.10 for the liquid radwaste discharge monitoring system (PRM-9), steam generator radiation monitoring system (PRM-10), and [illegible]-17. Data appeared to be complete, and testing had been performed at the periodicities required by TS Table 4.3-8.

The inspectors reviewed circumstances surrounding a containment ventilation isolation (CVI) that had occurred on September 29, 1990, two days prior to the beginning of the inspection. The CVI had been caused

by a spike in count-rate on the Containment Iodine Radiation Monitor, PRM-1B. Technicians investigating the problem had determined that the CVI had been spurious (i.e., not due to high radiation), due to an apparent problem with the detector. The monitor setpoint, which is based on background counts, had been established at a time when the monitor was reading abnormally low. The apparent spike which caused the CVI had actually occurred when the detector unexplainably resumed a normal count-rate. After successful performance of a functional test, PRM-1B had been returned to service.

The problem had recurred on September 30, 1990, causing a CVI during a containment pressure reduction. Review of associated strip charts indicated that the earlier pattern of detector malfunction had been repeated. The PRM-1B detector was exchanged with an identical detector from PRM-2B, the Auxiliary Building Iodine Radiation Monitor. A subsequent failure on PRM-2B indicated that the failure had correctly been isolated to the detector.

The inspectors discussed the recent increase in CVIs and associated instrument failures (see Inspection Reports 50-344/89-30, 50-344/90-19, and 50-344/90-25) with several members of the instrument maintenance (I&C) technical staff. The inspectors noted that thorough familiarity with instrument specifications and manufacturer's troubleshooting techniques was apparent at the technician level. One technician outlined an on-file listing of radiation monitor components with high potential for future failure due to excessive age or wear, inadequate capacity, poor design, or past unreliability. The technician stated that this listing had not yet been communicated to management because of lack of time and priority assigned to the PRMs. In subsequent interviews with management and with the radwaste system engineer, the inspectors noted that no agenda was in place for upgrading performance of the PRMs. Most of the individuals interviewed were not aware of the existence of problem component listings or trending data, nor of the substantial volume of technician knowledge available for offsetting future monitor failures. At the exit interview, the inspectors emphasized the value of identifying problem components in maintaining equipment operability, and the importance of management-technician interaction in effective problem solving. The licensee acknowledged the inspectors' concerns.

Conclusion

The licensee's program for management of radioactive waste exhibited weaknesses in storage of solid waste, maintaining equipment operable, and ensuring that the FSAR is properly updated. A continuing program strength was the low volume of liquid waste released, as reflected during the first two quarters of 1990. No violations or deviations were identified.

6. Exit Meeting (30703)

The inspectors met with licensee management on October 5, 1990, to discuss the scope and findings of the inspection. The licensee acknowledged the inspectors' observations regarding the shipments of dry radioactive waste to a Richland, Washington vendor. The licensee stated

that, as one corrective action, the RPMP-1 checklist (referenced in Section 4, above) was being revised. The revision was intended to clarify requirements for verification of the transferee's authorization to receive the type, form, and quantity of material being transferred.