U. S NUCLEAR REGULATORY COMMISSION

REGION V

Report 50-344/90-37

License NPF-1

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

Facility: Trojan Plant

Inspection location: Rainier, Oregon

Inspection duration: November 13-16, 1990

Inspected by: _____ 11-30-90
L. L. Coblentz, Radiation Specialist — Date Signed

Approved by: _____ 11/30-90
G. P. Yuhas, Chief — Date Signed
Reactor Radiological Protection Branch

Summary:

Areas Inspected: Routine, unannounced inspection of followup items, followup of items of non-compliance, Licensee Event Reports, radioactive waste systems, and radiological environmental monitoring. Inspection procedures 92700, 92701, 92702, and 84750 were used.

Results: The licensee's program for storage of radioactive waste had improved since the previous inspection (Section 5). The licensee's program for radiological environmental monitoring exhibited a weakness in monitoring vendor laboratory performance (Section 5).

DETAILS

1. Persons Contacted

Licensee

S. Bauer, Branch Manager, Nuclear Regulations
B. Clark, Plant System Engineer
J. Cross, Vice President, Nuclear
N. Dyer, Supervisor, Health Physics
G. Huey, Supervisor, Radiation Protection
G. Hicks, General Manager, Plant Support
M. Hoffman, Manager, Nuclear Safety and Regulation
J. Lentsch, Manager, Personnel Protection
J. Mody, Branch Manager, Plant Systems Engineering
J. Reinhart, Assistant to Operations Manager
G. Rich, Branch Manager, Radiation Protection
W. Robinson, Plant General Manager
C. Seaman, General Manager, Nuclear Quality Assurance
M. Singh, Manager, Plant Modifications
W. Williams, Regulatory Compliance
G. Zimmerman, Branch Manager, Radiological Safety

USNRC

R. Barr, Senior Resident Inspector
J. Melfi, Resident Inspector

The individuals listed above attended the exit meeting on November 16, 1990. The inspectors met and held discussions with additional members of the licensee's staff during the inspection.

2. Onsite Followup of Licensee Event Reports (LERs) (92700)

Item 50-344/90-20-L1 (Closed): This report concerned a revision to LER 90-20, which had discussed the discovery of PRM-1A, the Containment atmosphere particulate radioactivity monitor, in an out-of-service condition. Filter paper had torn in PRM-1A, and no corresponding low paper alarm had been received, due to a broken microswitch. Among the corrective actions given in LER 90-20 had been the intention to install a mechanical stop to protect the low paper alarm microswitch. Revision 1 to LER 90-20 stated that this intention had been abandoned as impracticable.

Discussions with the system engineer indicated that physical clearances adjacent to the microswitch had proven to be too limiting to reasonably install a protective mechanical stop. Instead, a caution statement had been added to Chemistry Procedure 56, "PERM Cartridge and Filter Changeout and Efficiency Checks," to use care when changing paper so as not to break the microswitch. In addition, an instrumentation group

(I&C) routine had been established to change the filter paper and functionally test the alarm on a biweekly basis.

This topic is also discussed in Section 4, below, and in Inspection Reports 50-344/90-25 and 50-344/90-19.

Item 50-344/90-32-LO (Closed): This report concerned a determination that surveillances on the high range effluent iodine samplers were not being performed in accordance with Technical Specifications (TSs). TS 4.3.3.11 requires the Containment, Auxiliary Building, and Condenser Air Ejector high range effluent iodine samplers to be demonstrated operable at least once per 12 hours. The licensee's implementing procedure had required shiftly verification that the associated process and effluent monitors (PRMs 1, 2, and 6) were operable, and that they were available to be shifted to the accident mode; however, the procedure did not include verification of accident sampler flow, as required by the TS.

The licensee's corrective action had changed the procedure for shiftly routines to require verification of accident sampler flow, in accordance with the TS; this action, however, renders the associated PRMs inoperable for normal operations, which results in entering Action Statements for the associated TS once per shift. To alleviate this problem, and to avoid unnecessary component wear, the licensee had submitted a TS amendment application to replace the channel check with a monthly functional test.

Item 50-344/90-40-LO (Closed): This report concerned two Containment Ventilation Isolation (CVI) signals generated by PRM-1B, the Containment iodine monitor. The monitor setpoint is determined in relation to background count rate. The licensee's analysis of the filter cartridge, a Containment grab sample, and the data recorder indicated that intermittent detector failure had caused the CVI signals. On both occasions, the detector setpoint had been established based on abnormally low background readings (when the detector was non-functional). When the detector subsequently began to function normally, the increase in background count rate had caused the alarm/trip signal. To verify that failure was rooted in the PRM-1B detector, the licensee exchanged it with an identical detector in PRM-2B, and the problem was duplicated in PRM-2B. A new detector was then installed in PRM-2B.

The licensee determined that the failure could have been detected earlier if operators had been more sensitive to observing trends in background count rate. The inspector noted that the licensee's procedure for shiftly routines had been changed, requiring operators to log the count rate on a data sheet. Plans were also in process to modify the procedures for adjusting process and effluent monitor setpoints. This modification will require operators to review eight hours of background count rate prior to adjusting the setpoint.

Finally, the licensee was establishing an interdepartmental team, headed by the system engineer, to address the recent increase in problems with process and effluent monitors. This initiative was intended to improve management-technician interaction in problem solving (for additional discussion of this topic, see Inspection Report 50-344/90-31).

Item 50-344/90-42-LO (Closed): This report concerned performing plant mode changes while in an Action Statement for PRM-1, the Containment Process and Effluent Monitor. This event had been generated by conflicting TSs, which required differing alarm/trip setpoints depending on whether PRM-1 was operating in the Reactor Coolant System (RCS) leak detection mode or in the Containment Ventilation Isolation monitoring mode. As corrective action, the licensee modified Plant Operating Test (POT) 26-2, "Process and Effluent Monitoring System," to use the more conservative setpoints for the RCS leak detection mode, thereby allowing plant mode changes during normal operation. Operating Instruction (OI) 10-3, "Containment HVAC," was also revised to declare PRM-1 inoperable for RCS leak detection while conducting a Containment pressure reduction. In addition, the licensee had submitted a TS amendment application to resolve the TS inconsistencies.

3. Followup (92701)

Information Notice 50-344/IN-90-50 (Closed): This notice involved minimization of methane gas in plant systems and in radwaste shipping containers. The referenced notice had been distributed to cognizant personnel for evaluation.

4. Followup on Corrective Actions for Violations and Deviations (92702)

Items 50-344/90-19-01 (Closed), 50-344/90-19-02 (Closed), and 50-344/90-19-03 (Closed): These violations involved the discovery, on January 30, 1990, that PRM-1A, the Containment atmosphere particulate radioactivity monitor, was in an out-of-service condition. One violation was issued to the licensee for operating outside the Limiting Conditions of Operation established by TSs 3.3.3.11, 3.3.2, and 3.4.6.1. The second violation was issued for failure to have procedures in place to ensure PRM-1A operability, as required by TS 6.8.1. The third violation was issued for failure to submit an LER within 30 days after discovery of the condition, as required by 10 CFR 50.73.a.

The inspector verified that the low paper alarm and the paper tear alarm, both of which were inoperable at the time of the event, had been repaired. Appropriate procedures had been revised, and new routines established to ensure component operability (see Section 2, Item 50-344/90-20-L1, above). LER 90-20 had been submitted on June 22, 1990; in addition, a training session for Nuclear Regulation Branch personnel had been held to discuss late reporting of the event and to provide guidance on use of NUREG-1022, "Licensee Event Report System."

The inspector noted, finally, that an associated problem involving incorrect filter paper speed on PRM-1A and PRM-2A had been corrected. The software control for both units, which incorrectly adjusted paper speed to 2.5 inches per hour, had been disabled. Paper speed was being controlled locally by setting the manual switch to the correct speed of 1 inch per hour.

This topic was also discussed in Inspection Reports 50-344/90-25 and 50-344/90-19.

5. Radioactive Waste Systems and Radiological Environmental Monitoring (84750)

Radwaste Storage

The inspector examined radwaste storage areas in the Fuel Handling Building, the Auxiliary Building, outdoor storage areas, and the Wright-Schuchert-Harbor (WSH) Warehouse. The inspector noted that significant improvements in the orderliness and cleanliness of storage areas had occurred since the previous inspection. In particular, the licensee had improved the area for storage of reusable contaminated items in the Radwaste Annex truck bay. In addition, a large portion of the WSH Warehouse had been redesignated for radwaste storage, and a licensee representative informed the inspector that funds had been allocated to enclose the outdoor radioactive material storage area.

Radiological Environmental Monitoring

The inspector examined this program area by review of appropriate records, discussions with cognizant personnel, and observation of work in progress. The following items were noted:

1. The licensee's recently completed 1990 Land Use Census, performed in accordance with TS 4.12.2, had identified no changes in the locations of the nearest milk animal, nearest resident, or nearest garden in any of the 16 sectors. During subsequent collection of milk samples, however, one dairy had stated that it was going out of business. The licensee was taking steps to select another sampling location.

2. The licensee's sampling records and schedules indicated that sample collection had been conducted at the locations and frequencies prescribed by TS Table 3.12-1. Laboratory analysis was being performed by an Albuquerque, New Mexico vendor.

3. The inspector reviewed milk sampling data for the period of January 1, 1990, to the time of the inspection. The inspector noticed that the elapsed time between collection of milk samples and analysis for Iodine-131 concentration had in several cases exceeded two weeks. TS 4.12.1 states, in part: "The radiological environmental monitoring samples . . . shall be analyzed pursuant to the requirements of Tables 3.12-1 and 4.12-1." TS Table 4.12-1 lists 1 picocurie/liter as the maximum value for the Lower Limit of Detection (LLD) of Iodine-131 in milk. The licensee conservatively uses an LLD of 0.5 picocuries/liter. Noting that the half-life of Iodine-131 is approximately eight days, the inspector asked the Supervisor, Health Physics, what maximum length of time between sample and analysis was commensurate with achieving the desired LLD. The Supervisor, Health Physics, provided the inspector with calculations by the vendor which indicated that samples should be counted within nine days of collection.

   Using the method specified in Footnote "a" to TS Table 4.12-1,

the inspector determined four instances in which the combined factors of counting efficiency, sample size, decay time, and fractional radiochemical yield had not permitted the vendor to achieve the desired LLD of 0.5 picocuries/liter for Iodine-131 analysis of milk samples. For Sample 4091, collected on May 29, 1990, and counted on June 15 1990, the combination of an abnormally low yield factor and excessive decay time had not permitted the vendor to achieve the TS required LLD of 1.0 picocuries/liter.

The inspector noted, further, that the vendor provides a sample data cover sheet listing sample results in picocuries/liter. For samples in which activity is indistinguishable from background, results are listed as "less than 0.5 picocuries/liter," indicating that the sample was less than LLD. For Sample 4091, the cover sheet listed sample results as "less than 1.4 picocuries/liter," providing clear indication that the LLD had been in excess of TS requirements. The inspector noted that the licensee's review of vendor data had not questioned this sample result, nor had the licensee questioned other instances of excessive delay time between sample collection and analysis.

The inspector reviewed Inspection Report 50-344/83-23, which had addressed a similar problem. During the period of January 1982 through June 1983, environmental samples had not been consistently analyzed for gross beta, gross alpha, and Iodine-131 within eight days, as the Environmental Technical Specifications (ETS) then required. In the licensee's "Reply to the Notice of Violation," dated September 30, 1983, the reasons for the violation had been stated as 1) failure of the vendor to perform analyses as directed, and 2) insufficiency of licensee review in identifying the vendor's deficiency. Corrective action had included instructing the vendor to perform specified analyses within eight days as required by ETS. The vendor had committed to revise appropriate procedures to ensure that analyses would be performed within the specified time frame. The inspector concluded that licensee oversight of the vendor had not been sufficient to ensure that these corrective actions remained in place, or that other means would be provided to ensure that the required LLD would be achieved by the vendor's methods of analysis.

In assessing the significance of this apparent deficiency, the inspector noted that the LLD achieved for Sample 4091 was significantly impacted by the abnormally low yield factor; however, even with a normal yield factor, Sample 4091 would not have achieved the desired LLD of 0.5 picocuries/liter. In addition, the inspector noted that the other three samples which failed to achieve the desired LLD each had normal yield factors. The inspector concluded that delays in counting environmental samples could lead to future violations. The licensee's actions to ensure that environmental samples are collected and analyzed in a manner ensuring consistent achievement of the required LLD will be reviewed in a future inspection (50-344/90-37-01).

4. The inspector observed weekly collection of surface drinking water samples at the St. Helens and Rainier locations. At the upstream (St. Helens) location, the sample compositor had collected only 1500 milliliters. In accordance with Nuclear Safety and Regulation Instruction (NSRI) 200-32Q, "Waterborne Pathway Composite Surface-Drinking Water Sampling," the REMP technician added water by a grab sampling technique to increase the sample to the required 8000 milliliters. The inspector noted that, due to compositor location and recent river level, the compositor had not collected a full 8000 milliliters for any week since July 27, 1990. Discussion with REMP personnel indicated that the compositor location was being changed to alleviate this problem.

5. The inspector reviewed the most recent PGE audit of the Albuquerque, New Mexico vendor laboratory, performed October 17-19, 1989. No deficiencies were identified as a result of the audit. The inspector noted that the most recent audits of the vendor and of the PGE REMP program had included auditors knowledgeable in radiochemistry.

Meteorological Monitoring Program

The inspector examined this program area by reviewing procedures and records, interviewing cognizant personnel, and touring the meteorology stations. Data loggers, chart recorders, and all observable detectors appeared to be functioning normally. Records available at the local meteorology stations indicated that functional observation checks of the towers and data transmuters had been performed weekly. Calibrations had been performed semiannually, as required by TS Table 4.3-5.

The inspector reviewed two special reports, dated March 8, 1990, and May 15, 1990. In accordance with TS 3.3.3.4.b, these reports documented instances in which a meteorological monitoring channel had been inoperable for more than seven days. The inspector verified that no gaseous effluent releases had been performed with less than one of each type of the required meteorological monitoring channels operable.

In addition, the inspector reviewed the last semiannual calibration of wind direction, wind speed, and differential temperature instruments, performed in August 1990. Data sheets indicated that out-of-tolerance readings had been found on eight of the ten instruments. The inspector asked the licensee whether this percentage of out-of-tolerances was common for their meteorological instrumentation, and whether an assessment had been performed of the impact of these out-of-tolerances on the meteorological data used during gaseous effluent releases. One I&C supervisor stated that an out-of-calibration investigation should have been performed on each instrument in question; discussions with the system engineer indicated, however, that such investigations are only performed on meteorological instrumentation components located in the Control Room.

At the exit interview, the licensee acknowledged the inspector's concern regarding the high number of out-of-tolerance readings. The licensee stated that consideration would be given to increasing the frequency of

meteorological instrumentation calibrations. This item will be further examined in a future inspection (50-344/90-37-02).

Post-Accident Sampling System

The inspector reviewed the licensee's procedures for sampling and analysis of reactor coolant and Containment atmosphere under accident conditions. The inspector also observed operation of the system during performance of the quarterly surveillance. Persons performing and coordinating the sample were knowledgeable, and appeared to be familiar with system operation.

6. Facility Tours

The inspector toured portions of the Auxiliary Building, the Turbine Building, the Technical Support Center, the Fuel Handling Building, the Control Room, and the WSH Warehouse. Dose rate surveys were conducted using ion chamber survey instrument Model RO-2, Serial Number NRC 015843, due for calibration January 5, 1991. Comments regarding radwaste storage are given in Section 5, above. The following additional items were noted:

Contamination areas and Radiation areas were clearly designated. Posted radiation levels were consistent with dose rate surveys performed by the inspector.

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

During a tour of the chemical laboratories, the inspector noticed that the pH 4 buffer solution was expired in both the hot lab and the cold lab. The inspector brought this observation to the attention of the on-shift chemist, who stated that the situation would be corrected immediately.

During a tour of the Control Room, one operator was observed not wearing a thermoluminescent dosimeter (TLD). The shift supervisor stated that this practice was customary for certain operators, who kept their TLDs with a dosimetry packet at the access control point, and wore TLDs only on entry into a Radiologically Controlled Area. The inspector brought this item to the attention of the Radiation Protection Branch Manager (RPM), noting that the same comment had been made in Inspection Report 50-344/90-31, and that the RPM had stated that the practice of allowing Control Room operators to not wear TLDs while on-shift was being discontinued. The RPM acknowledged the inspector's observations, and stated that this deficiency would be corrected.

During a backshift tour of the Auxiliary Building, the inspector observed a High Radiation Area door ajar at the 61' access to the pipe chase. The inspector brought this observation to the attention of the radiation protection technician (RPT). The RPT

stated that, although the door did not allow access to radiation areas of 1.0 rem/hour or greater, the door was required by licensee procedure to be locked. The RPT promptly locked the door. At the exit interview, the RPM stated that the cause of the door being unlocked was under investigation.

7. Exit Interview (30703)

The inspector met with licensee management at the conclusion of the inspection on November 16, 1990. The scope and findings of the inspection were summarized. The inspector emphasized that thorough oversight of the radiological environmental monitoring vendor should have detected the excessive delays in sample time (see Section 5, above). The licensee acknowledged the inspector's concern, and stated that action would be taken to determine the cause and extent of the problem, and to prevent recurrence.