U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No.	50-344/92-30
Docket No.	50-344
License No.	NPF-1
Licensee:	Portland General Electric Company 121 S. W. Salmon Street Portland, Oregon 97204
Facility Name:	Trojan Nuclear Plant
Inspection At:	Rainier, Oregon
Inspection Conducted:	September 15 through October 26, 1992
Inspectors:	R. C. Barr, Senior Resident Inspector J. F. Melfi, Resident Inspector
Approved By:	P. H. Johnson, Chief Reactor Projects Section 1

11/25/92
Date Signed

Summary:

Inspection on September 15 - October 26, 1992 (Inspection Report No. 50-344/92-30)

Areas Inspected: Routine inspection of operational safety verification, maintenance, surveillance, and followup of previously identified items. Inspection procedures 61720, 61726, 62703, 71707, 92700, 92701 and 93702 were used as guidance during the conduct of the inspection.

Results:

SIMS Items:

None

General Conclusions and Specific Findings:

Maintenance procedures continue to warrant attention in the level of detail of work instructions to assure the task is performed correctly the first time (Paragraphs 4 and 9). The licensee is in the process of revising Trojan planning procedures to change requirements for the level of detail of work instructions.

The licensee continues to encounter late and missed surveillance tests due to procedure and administrative program weaknesses (Paragraph 9).

Improved tracking of corrective actions appears warranted when the licensee commits to developing an action plan to address program weaknesses (Paragraph 9, LERs 92-08 and LER 92-23).

Significant Safety Matters:

None

Summary of Violations and Deviations:

One no-response deviation (Paragraph 5) and one cited no-response required violation (Paragraph 6) were identified. One non-cited violation (Paragraph 9) was also noted.

Open Items Summary:

Three unresolved items (Paragraph 8) and nine LERs (Paragraph 9) were closed.

DETAILS

1. Persons Contacted

a. Portland General Electric

J. E. Cross, Vice President and Chief Nuclear Officer
*W. R. Robinson, Vice President, Nuclear
*R. D. Machon, Plant General Manager
*G. D. Hicks, General Manager, Plant Support
*C. K. Seaman, General Manager, Nuclear Plant Engineering
*D. L. Nordstrom, General Manager, Nuclear Oversight
*T. D. Walt, General Manager, Technical Functions
C. P. Yundt, Project Manager, Special Projects
A. R. Ankrum, Manager, Nuclear Training
R. D. Brandt, Acting Manager, Surveillance Procedures
L. K. Houghtby, Manager, Nuclear Security
H. K. Chernoff, Manager, Licensing
M. B. Lackey, Manager, Planning and Control
S. B. Nichols, Outage Manager
*W. O. Nicholson, Manager, Operations
*J. W. Patterson, Manager, Maintenance
*J. C. Perry, Manager, Design Engineering
S. M. Quennoz, Manager, Technical Services
M. Singh, Manager, Plant Modifications
R. E. Susee, Manager, Quality Assurance
*W. J. Williams, Manager, Nuclear Compliance
G. P. Enterline, Branch Manager, Operations
M. G. Cooksey, Maintenance Supervisor
J. W. Allison, Supervisor, Plant Modifications
A. C. Bielat, Manager, Independent Safety Review Group
C. M. Dieterle, Supervisor, Individual Plant Examination
*J. M. Pedro, Compliance Specialist
R. N. Sherman, Compliance Specialist
D. Sparks, Acting Supervisor, Fire Protection
J. A. Benjamin, Manager, Quality Control
M. R. Gandert, Supervisor, Nuclear Plant Engineering
B. R. Wallis, Independent Safety Review Group

b. Oregon Department of Energy

A. Bless, Resident Safety Manager

The inspectors also interviewed and talked with other licensee employees during the course of the inspection. These included shift supervisors, reactor and auxiliary operators, maintenance personnel, plant technicians and engineers, and quality assurance personnel.

*Denotes those attending the exit interview.

2. Plant Status

At the beginning of this inspection period, the Trojan facility was at 30% power recovering from a reactor trip. On September 15, 1992, at 2:55 a.m., operators stabilized reactor power at 50%. Trojan remained at 50% power due to the failure of the B condensate pump motor. After condensate pump motor repair, operators began increasing power at 12:00 p.m. on October 3, 1992. Trojan reached 100% power at 2:57 p.m. on October 4, 1992. Full power operation continued throughout the remainder of the inspection period.

3. Operational Safety Verification (71707)

During this inspection period, the inspectors observed and examined plant activities to verify the operational safety of the licensee's facility. Observations and examinations of those activities were conducted on a daily, weekly or biweekly basis.

Daily the inspectors observed control room activities to verify the licensee's adherence to limiting conditions for operation as prescribed in the facility Technical Specifications. Logs, instrumentation, recorder traces, and other operational records were examined to obtain information on plant conditions, trends, and compliance with regulations. On occasions when a shift turnover was in progress, the turnover of information on plant status was observed to determine that pertinent information was relayed to oncoming shift personnel.

Each week the inspectors toured accessible areas of the facility to observe the following items:

a. General plant and equipment conditions
b. Maintenance requests and repairs
c. Fire hazards and fire fighting equipment
d. Ignition sources and flammable material control
e. Conduct of activities in accordance with the licensee's administrative controls and approved procedures
f. Interiors of electrical and control panels
g. Implementation of the licensee's physical security plan
h. Radiation protection controls
i. Plant housekeeping and cleanliness
j. Radioactive waste systems
k. Proper storage of compressed gas bottles

Weekly, the inspectors examined the licensee's equipment clearance controls with respect to removal of equipment from service to determine that the licensee had complied with technical specification limiting conditions for operation. Active clearances were spot-checked to ensure that their issuance was consistent with plant status and maintenance evolutions. Logs of jumpers, bypasses, caution and test tags were examined by the inspectors.

Each week the inspectors conversed with operators in the control room, and with other plant personnel. The discussions centered on pertinent

topics relating to general plant conditions, procedures, security, training and other topics related to in-progress work activities.

The inspectors examined selected Corrective Action Requests (CARs) within the licensee's Corrective Action Program (CAP) to confirm that deficiencies were identified and tracked. The inspectors found that identified nonconformances were being tracked through completion of the corrective action.

Routine inspections of the licensee's physical security program were performed in the areas of access control, organization and staffing, and detection and assessment systems. The inspectors observed the access control measures used at the entrance to the protected area, verified the integrity of portions of the protected area barrier and vital area barriers, and observed in several instances the implementation of compensatory measures upon breach of vital area barriers. Portions of the isolation zone were verified to be free of obstructions. Functioning of central and secondary alarm stations (including the use of CCTV monitors) was observed. On a sampling basis, the inspectors verified that the required minimum number of armed guards and individuals authorized to direct security activities were on site.

The inspectors conducted routine inspections of selected activities of the licensee's radiological protection program. A sampling of radiation work permits (RWPs) was reviewed for completeness and adequacy of information. During the course of inspection activities and periodic tours of plant areas, the inspectors verified proper use of personnel monitoring equipment, observed individuals leaving the radiation controlled area and signing out on appropriate RWP's, and observed the posting of radiation areas and contaminated areas. Posted radiation levels at locations within the fuel and auxiliary buildings were verified using both NRC and licensee portable survey meters. The involvement of health physics supervisors and engineers and their awareness of significant plant activities was assessed through conversations and review of RWP sign-in records.

The inspectors verified the operability of selected engineered safety features. This was done by direct visual verification of the correct position of valves, availability of power, cooling water supply, system integrity and general condition of equipment, as applicable.

No violations or deviations were identified.

4. Maintenance (62703)

The inspector observed maintenance associated with MR 92-06158 that troubleshot the false annunciation of the "A EDG Auto Start Blocked." The inspector observed that licensee technicians followed the guidance of Administrative Procedure (AP) 3-3, "Troubleshooting," and that they used calibrated instruments.

The technicians found that reflash module RMA2 malfunctioned because its internal power supply had failed. The technicians concluded that component aging and excessive heat caused the failure, and replaced the

module. After replacing the module, the annunciation was still active. The technicians then compared the internal circuitry of the old and new modules, and found that the wiring of two of the new module's eight internal contacts was different from the old module. As a result, the technicians configured the wiring in the new module to the configuration of the failed module. Following this repair, RMA2 functioned properly.

The inspector had the following observations associated with this maintenance:

- MR 92-06158 referred to an incorrect drawing (E-1588D instead of E-1588E). Reference to the incorrect drawing resulted from the planners using an MR, which repaired a similar but different module, as a guide.

- MR 92-06158 did not refer to the vendor manual or vendor drawings even though the technicians who conducted the troubleshooting had to use these documents to perform the maintenance.

- MR 92-06158 work instructions did not have a requirement to verify the RMA2 wiring configuration prior to replacing the module. During the replacement of a similar module in January 1992, licensee technicians also had to change wiring configuration of a replacement module.

- The technicians referred to an incorrect drawing in documenting their findings in MR 92-06158. The technicians documented on the "work performed" sheet that drawing E-1588D inputs 7 and 8 were normally closed and that inputs 1 through 6 were normally open. The technicians should have referred to vendor drawing D-1021-940 instead of E-1588D.

From these observations the inspector concluded that the planning for this work was inadequate because the work instruction detail was insufficient to perform the maintenance correctly, and the MR contained inadequate reference to drawings. The technicians could also improve their attention to detail in conducting and documenting maintenance.

Following observation of the troubleshooting, the inspector reviewed maintenance history to determine if there had been similar failures of like components. He found that reflash unit RMB1 had failed on January 7, 1992. Licensee technicians documented in MR 92-00103 that the power supply of RMB1 had failed. In speaking with the system engineer the inspector learned that on October 6, 1992, the system engineer had initiated corrective action request (CAR) 92-0488 to investigate for a potential common mode failure.

The CAR evaluation concluded that failure of the two power supplies resulted from excessive heating. The engineer found that in 1984 the vendor had modified the power supply to include heat sinks. The failed power supplies, which had been installed during original construction, had not been modified. The licensee committed to place heat sinks on the

two installed reflash modules that do not have heat sinks by June 1993. This appeared acceptable because a malfunction of the module would not affect the operation of safety equipment.

No violations or deviations were identified.

5. Surveillance (61720, 61726)

a. 45-Foot Airlock Local Leak Rate Test (LLRT)

Technical Specification (TS) surveillance 4.6.3.1.b requires Type B testing of the containment air lock every six months. Licensee technicians perform this testing using Periodic Engineering Test (PET) 5-2, "Containment Local Leak Rate Testing." The inspector observed portions of a LLRT for the 45-foot containment airlock and reviewed the test's data sheets.

The inspector observed that the technicians used calibrated equipment and followed procedures. The test was conducted within the required periodicity. The measured leakage was within specification.

In reviewing the requirements for the test, the inspector found that Final Safety Analysis Report (FSAR) section 6.2.6.2 states that containment air locks are to be tested every six months using the pressure decay method. PET 5-2 uses the infinite supply method, not the pressure decay method. The licensee's use of the infinite supply method vice the pressure decay method is an apparent deviation from the FSAR (50-344/92-30-01). The inspector verified that no safety issue existed by confirming that the infinite supply test was an acceptable alternative to the pressure decay test.

The inspector found that PGE had changed the containment airlock LLRT test method in 1988. License Document Change Request (LDCR) 88-06 implemented this change. This LDCR was not complete since it still stated that the air lock would be tested by the pressure decay method. The licensee wrote CAR 92-0508 to document this discrepancy. At the conclusion of this inspection, the licensee was drafting an LDCR to reflect the current test method.

Previously, due to a high number of FSAR discrepancies, the licensee had begun a program to validate the FSAR. The licensee completed their review of FSAR 6.2.6.2 on August 3, 1992. The licensee's review did not identify this deviation. Currently, the licensee is evaluating why the FSAR reviewer missed this deviation.

b. Pressurizer Level Channel Functional Test

Technical Specification 4.3.1.1 requires that a channel functional test (CFT) of the pressurizer level instrumentation be performed every quarter when reactor power is greater than 10%. Technicians perform the CFT for level transmitter (LT) 459 using Periodic Instrumentation and Control Test (PICT) 4-1, "Pressurizer Level, Protection Set I."

The inspector observed that the technicians used calibrated equipment and followed procedures. The test was conducted within the required periodicity. The test verified that all the alarm and trip functions actuated within required tolerances.

One deviation was identified.

6. Control Room Ventilation System Chlorine Detectors (92701)

To protect control operators from toxic gas, Technical Specification (TS) 3.3.3.6 requires two independent chlorine detection systems capable of isolating the control room ventilation system.

a. Chlorine Detector Procurement and Dedication

Due to reliability concerns with the chlorine detectors installed during original construction, PGE replaced the control room ventilation system chlorine detectors in March 1990. The licensee purchased six chlorine detectors from Sensidyne with purchase order (PO) NQ-54997. Because Sensidyne was not an approved supplier, i.e., did not have a quality program, the detectors had to be dedicated for safety-related use. PGE initiated PO NQ-55228 with WYLE Laboratory (WYLE) to dedicate the detectors. After dedicating the detectors, WYLE shipped five detector assemblies to PGE. WYLE retained one detector assembly for future Trojan chlorine detector dedications.

Following the chlorine detectors' installation at Trojan, the Sensidyne detectors failed frequently. To determine the cause of these failures, the licensee returned one of the detectors, which was under warranty, to Sensidyne for examination and repair. PGE drafted I&C Material Services/Request (MSPR) 90-116 to begin the return process. The MSPR was not clearly worded. It was not clear whether the detectors were supposed to be returned to Trojan prior to being sent to WYLE or sent directly to WYLE. From this MSPR licensee procurement personnel initiated Local PO NQ-11033 to return the detectors to Sensidyne; however, the purchasing personnel failed to clarify the requirement to send the detector to WYLE. Therefore, Sensidyne returned the repaired detector to PGE.

Upon receiving the repaired detector, the licensee's receipt inspectors recognized that the detector had not been rededicated as MSPR I&C 90-116 had requested. The receipt inspectors documented this deficiency in Nonconformity Notice (NCN) QO 90-502. To disposition the NCN, the licensee sent the detector to the training department to use as a training aid. The licensee did not initiate a Nonconformance Report (NCR) to determine why the PO was not correctly written to forward the refurbished chlorine detector to WYLE. This is an apparent violation of Nuclear Department Procedure 600-1, "Control of Nonconforming Materials, Parts and Components." Subsequent NRC inspection found the procedures in 1990 that addressed warranty repair were weak. The licensee had also recognized the weaknesses and corrected the procedures. The inspector reviewed the revised procedures and considered the licensee's corrective actions

adequate to prevent recurrence; therefore, a written response from the licensee is not considered necessary. Based on licensee corrective actions, this violation is closed (50-344/92-30-02).

b. Chlorine Detector Traceability

A chlorine detector consists of a transmitter assembly and a controller module. The transmitter assembly includes a chlorine sensor that detects chlorine, a temperature control assembly (TCA) that maintains temperature of the electrolyte, a printed circuit board (PCB) that transmits an electrical signal from the detector, and an enclosure to protect these components. The controller module includes the following subcomponents: a readout and alarms subsystem.

During a walkdown, the inspector observed that the installed chlorine detector did not have a serial number on it. To verify the detector's qualification, the inspector and the licensee verified the location of the other four detectors that the licensee received, and by deduction concluded the installed detector serial number. The installed detector appeared to match the deduced serial number. The licensee placed a serial number on the detector.

Because the licensee experienced reliability problems with various subcomponents of the Sensidyne chlorine detectors, the inspector evaluated the licensee's implementation of their spare parts cannibalization program. Trojan Plant Procedure (TPP) 16-11, "Control of Cannibalized Spare Parts," establishes requirements for cannibalization. The inspector's review of maintenance history found that all five chlorine detectors had been installed since March 1990. His initial review indicated that a non-qualified bench spare sensor had been installed. His further review found that the licensee had also recognized the deficiencies and initiated Corrective Action Request (CAR) 91-0955 to document noncompliance with TPP 16-11. The CAR concluded that I&C technicians were not following TPP 16-11 requirements. The licensee identified CAR corrective actions to address the noncompliance. The inspector reviewed the corrective actions and concluded that the actions were appropriate.

Because technicians had been replacing chlorine detector sensors while keeping the same control module, the inspector researched whether this practice invalidated the dedication of the detectors. Vendor Manual 6478-NQ54997-1 states that each chlorine sensor electrode has characteristics that are different from other sensors, and that each chlorine detector system must be calibrated prior to use. This implies that the sensor could be changed as long as the entire system meets its design specifications (i.e. response time, detector sensitivity). Spot checks of the licensee's calibration of the installed detector indicated that it was properly calibrated. Therefore, the inspector concluded that the licensee's practice of replacing sensors and maintaining the same control module was acceptable because the chlorine detector was calibrated after the replacement.

One violation was identified.

7. Event Followup (62703, 92701, 93702)

a. Verification of Instrumentation Indication

During inspection associated with the licensee's Industry Operating Experience Review Program (NRC Inspection Report 50-344/92-24), the inspector assessed PGE's evaluation of Information Notice (IN) 91-75, "Static Head Corrections Mistakenly Not Included In Pressure Transmitter Calibration Procedures." Because the licensee only recently had initiated actions to assess IN 91-75, even though the IN was issued on November 25, 1991, the inspector evaluated the static head corrections for the level instruments of the Emergency Diesel Generator (EDG) day tank and Sodium Hydroxide tank. The inspector examined the tank drawings, setpoint drawings, vendor transmitter drawings, calculations and tank as-built configuration.

The inspector found that the static head correction for the Sodium Hydroxide tank was accurate, but that the static head correction for the EDG day tank was in error by about 2% (nonconservative). During followup evaluation of this inspection finding, licensee engineers found a discrepancy between the as-installed configuration and the vendor drawing for level transmitter (LT) 4904. The vendor drawing indicated that the displacer was connected with a nine inch long rod attached to the base of the transmitter; however, the actual installation had the rod connected to a pivot in the transmitter and not the base. This meant that the indicated level was lower than the actual level by approximately 4%. Therefore, the error was not nonconservative as the inspector had originally concluded from his review of the drawings, but conservative by 4%.

Based on these findings, the licensee committed to survey the transmitter elevations and revise calculation 87-04, "Diesel Fuel Oil (DFO) Day Tank Level." The licensee also initiated drawing as-built discrepancy notices for the affected drawings. The licensee committed to verify the static head corrections for other safety-related level transmitters.

During review of completed surveillances, the inspector also found that the instrument calibration data sheet for EDG day tank level switch LIS 4905A had an incorrect calibration data point (one of five calibration points). The calibration point should have been 5.95 inches of water; however, the calibration sheet had the calibration point as 5.395 inches of water. This error was not significant enough to invalidate the instrument's calibration.

The inspector reviewed the previous two surveillances for this instrument. He found that in 1989 the technicians recognized the error, but did not take action to revise the data sheet. In 1991 the technicians that calibrated the instrument recognized the error and on April 4, 1991, submitted a change transmittal request to revise the data sheet. The inspector found that the licensee had not yet revised the data sheet. Additionally, through discussions the inspector had with licensee supervisors, he learned that a

substantial backlog of such changes existed and that there appeared to be no administrative control to assure the data sheet changes would be made prior to the next use of the procedure. The licensee committed to implement an appropriate administrative control by December 1, 1992.

b. Post Accident Monitoring - South Containment Sump Level Indication

The Trojan containment building has three sumps. The containment recirculation reservoir is a large sump that serves as the suction for emergency cooling pumps during the recirculation phase following a design basis loss of coolant accident. The remaining two sumps, referred to as North (N) and South (S) containment sumps, are small (120 gallons) reservoirs that collect directed leakage from components in containment. The N and S containment sumps have a number of level indicating systems. Two level transmitters (LTs) 4208A1 and 4208A2, which are safety-related and qualified for harsh environments, provide continuous narrow and wide range level indication. Technical Specification (TS) 3.3.3.9 requires one of these two transmitters to be OPERABLE following an accident. Level switch (LS) 4179, which is not safety-related or qualified for harsh environments, provides indication for six discrete levels in the south sump and is not required to be functional by TSs.

At 1:55 pm, October 13, 1992, Trojan operators declared the wide range level indicator, LI-4208A2 (the readout for LT-4208A2), out of service. At 9:20 pm, the operators verified the remaining instruments functioned correctly by performing surveillance test, Periodic Operating Test (POT) 24-1-DH, "Containment Sump Monitoring." At 10:09 am, October 16, 1992, technicians attempted to calibrate the narrow range of LT-4208A1. At 2:38 pm, October 16, 1992, following the calibration, Trojan operators declared the instrument operable. At 4:51 pm, after a detailed review of the calibration, Trojan operators declared LT-4208A1 inoperable because the transmitter output was not the expected value. Per TS 3.3.3.9.a.1, the licensee established an alternate method of monitoring south containment sump level. Operability Determination Notice (ODN) 92-0513 described the alternate surveillance. The ODN used LS-4179, which is not safety-related or qualified for harsh environment, as the means of determining sump level.

The inspector discussed the failure of LT-4208A1 and LT-4208A2 with licensee management, reviewed the ODN and briefly reviewed the maintenance history for the N and S containment sumps. The inspector had the following inspection-related comments:

- The FSAR description of the design basis of the N and S containment sump level indications should be revised to clearly state the basis of the level system's accident function. The licensee acknowledged this observation.

- Prior to proposing a component's use for alternate surveillance, the licensee should verify the component's operability.

The licensee proposed using LS-4179 for alternate surveillance, but had not verified the level switch was in calibration. Subsequent to issuing the ODN, the licensee confirmed the level switch calibration was acceptable. The licensee acknowledged this observation.

- The licensee's component trending program was not effective in identifying frequent failures of the Barton sump level transmitters. When the inspector reviewed the equipment history for these transmitters, he found numerous previous failures. The licensee's engineering organization was evaluating the cause of the instrument failures at the end of the evaluation period. Licensee management was assessing the failure of the trending program to adequately trend the failures of the N and S containment sump transmitters.

No violations or deviations were identified.

8. Inspection of Unresolved Items and Followup Items (92701)

Unresolved Item 92-01-01, (Closed), "Unsecured Equipment Around PERM-1"

This item identified that Trojan Plant Procedure (TPP) 13-5, "Control of In-Plant Unsecured Equipment/Material," permitted unsecured equipment around PERM-1, a quality-related component. To correct this deficiency, the licensee revised TPP 13-5 to require that equipment around PERM-1 be secured.

In NRC inspection report 50-344/92-10, the inspector documented other instances where scaffolding impacted operating safety or quality-related equipment. These included a scaffold that contacted a hydrogen analyzer cabinet and a scaffold that was near a 12.47 kV insulated power distribution line. The above examples appeared to result from engineering's insufficient attention to detail during the construction of the scaffold and ineffective post-construction walkdown of the scaffold.

In response, Trojan management corrected the identified deficiencies, evaluated other scaffolds, discussed construction scaffolding standards with the affected personnel, and revised Plant Modifications Procedure (PMP) 9, "Seismic II/I Scaffolding." Subsequent tours by the inspector identified no other instances where scaffolding construction represented an equipment operability concern.

This item is closed based on licensee actions.

Unresolved Item 92-10-01, (Closed), "Pressurizer Level Instrument Behavior"

The inspector opened this item to investigate the cause and significance of pressurizer level indication changing when the controlling channel was changed. The three pressurizer level transmitters, LT-459, LT-460, and LT-461, indicated differently (62%, 57%, 56%) at constant 100% power when LT-459 was the controlling channel. During a test, licensed operators

changed the controlling channel to a different channel, then returned the controlling channel to LT-459. When the test concluded, the three level indications were within two percent of each other. After several days, the channels returned to the previous values of 62%, 57%, and 56%, respectively.

The inspector discussed the instruments' response with PGE managers, engineers and craftsmen. PGE's investigation concluded the most probable cause for this anomaly was loss of fluid from the reference leg of the controlling level transmitter (LT-459). During the 1992 outage, the licensee found and repaired a leak on the LT-459 reference bellows. This level discrepancy has not recurred since startup from the 1992 outage.

Based on licensee corrective action, this item is closed.

Unresolved Item 92-10-02, (Closed), "Acoustic Monitor Flow Correlation"

The pressurizer relief line acoustic monitors are accelerometers located on each pressurizer safety valve tailpipe. When steam discharges from a pressurizer relief valve, the force vibrates the tailpipe, moving the accelerometer, which generates an electric signal.

FSAR section 7.6.1.6 states that the alarm setpoint of the pressurizer relief line acoustic monitors is 9%. Technical Specification Surveillance 4.3.3.9 assesses the acoustic monitor alarm function by requiring a channel functional check each refueling cycle; however, the licensee does not calibrate the monitors because they believe there is no effective way to perform the calibration. During control room tours, the inspector noticed a tag on the control board that indicated the acoustic monitors alarmed at 25%. Licensee technicians verified that the annunciator comes in at nine percent flow and removed the incorrect tag.

The licensee is continuing to research the possibility of calibrating the acoustic monitors. To date their research indicates that accurate results are only possible if the configuration, safety valve and monitor, had been tested during original construction. Calibration of the monitors using empirical equations based upon safety valve lifts is being researched. The licensee will determine if the settings of the acoustic monitors are correct, will revise the FSAR to reflect plant configuration and will revise the surveillance procedure, if appropriate.

This item is closed based on the licensee's commitment to complete these actions.

No violations or deviations were identified.

9. Followup of Licensee Event Reports [LERs] (92700)

The inspectors closed the following LERs based on in-office review. This review determined that the licensee had adequately described the event, determined the root cause, and implemented or identified appropriate corrective actions.

LER 92-20, Revision 0 (Closed), "Reactor Trip Caused by the Failure of the Controller on Main Feedwater Pump B Due to Electronic Component Failures." Initial inspector followup of this event was documented in NRC inspection report 50-344/92-21.

LER 92-24, Revision 0 (Closed), "Procedural Inadequacy Caused Control Room Ventilation System Inoperability From Centrifugal Charging Pump Seal Leakage Exceeding Operational Limit."

The following LERs were closed based on followup inspection:

LER 91-32, Revision 1 and 2 (Closed), "Inadequate Procedural Controls Result in Safety Valve Ring Settings Not in Accordance with Vendor Specifications." Revision 1 fulfilled the commitment to provide a supplemental LER that described the safety significance of having incorrectly adjusted control rings on 30 Trojan pressure safety valves (PSVs). The licensee concluded the control ring misadjustments had no safety consequences. The inspector reviewed the licensee's evaluation for selected relief valves and concurred with the licensee's conclusion. Revision 2 of this LER described an error reported in Revision 0. On August 6, 1992, during PGE verification of commitments that had been made to the NRC, a licensee engineer identified that the ring setting for pressure safety valve (PSV) 7704A, an emergency diesel generator air start accumulator relief valve, had not been verified. Upon disassembly of the valve, technicians found the ring setting at 72 notches instead of 39 notches. The error in ring setting would have resulted in less blowdown and a greater number of lifts. Craftsmen readjusted the control rings of PSV-7704A to the correct setting. The licensee concluded that the incorrect setting of PSV-7704A was conservative and did not adversely affect system operation or safety.

The inspector reviewed records of the adjustments made to Trojan PSVs and discussed the causes of incorrect reporting with the Trojan Compliance Manager. The inspector concluded the incorrect reporting was unintentional, an isolated instance, and that the commitment verification program was effective.

This item is closed based on licensee corrective actions.

LER 91-37, Revision 2 (Closed), "Failure to Comprehensively Test Manual Engineered Safety Features Actuation Functions, Process Radiation Monitor and Permissive and Block Functions Due to Deficiencies in Surveillance Test Program." Revision 2 of this LER provided supplemental information regarding surveillance testing which was not being performed for Engineered Safety Features Actuation System (ESFAS) and Reactor Trip System interlock functions. Specifically, the manual block switches and permissive status lights of the total interlock function were not being tested for various safety-related plant instruments. This is an apparent violation of TS 4.3.1.2 and 4.3.2.2. The licensee discovered this deficiency as part of the Surveillance Improvement Program efforts. The licensee determined the root cause of this event was the lack of a detailed understanding of Technical Specification Surveillance requirements and past weak management expectation for compliance. The licensee revised procedures to include the required testing. The licensee

concluded that failure to test the interlock functions was not safety significant because, when tested, the interlocks functioned properly.

The inspector evaluated the revised procedure, Periodic Operating Test (POT) 25-2.15, "Safeguards Test Panel Actuating Test-Test of Manual Initiation Switches for Containment Isolation, Containment Spray and Safety Injection," dated January 14, 1992; Surveillance Procedure (SPI) A-53-001, "Functional Test of Block Switches and Permissive Status Lamps-Train A," dated January 28, 1992; and SPI-B-53-001, "Functional Test of Block Switches and Permissive Status Lamps-Train B," dated January 28, 1992, to verify adequacy. The inspector found that the revised procedures' detail was adequate. The inspector also reviewed the surveillance test data. The data verified the components functioned as designed. This item is closed based on licensee corrective actions.

LER 91-39, Revision 1 (Closed), "Spurious Chlorine Detector Alarm Causes Automatic Control Ventilation Isolation." The licensee submitted Revision 1 of this LER to describe the findings of troubleshooting of the failure of the B chlorine detector. Technicians found the chlorine detector transmitter output was erratic. The technicians replaced the chlorine detector's transmitter, temperature controller, and controller circuit board. The chlorine detector functioned properly after replacing these components.

As a corrective action, the licensee returned the controller circuit board to the vendor for evaluation. The vendor found the transmitter circuit board functioned properly. The vendor stated that the licensee had not been adjusting instrument gain as recommended in the vendor manual, which probably caused the detector to respond as the licensee observed. The licensee changed the calibration procedure, Periodic Instrument and Control Test (PICT) 25-2, "Functional Test and Calibration of Chlorine Detection Systems," to comply with vendor manual recommendations. The instrument has functioned properly since adjusting the gain.

The licensee concluded that this event had no adverse impact on the health and safety of the public, and had minimal safety significance.

The inspector verified the licensee's corrective actions and reviewed the last two calibration data sheets. This item is closed based on licensee corrective actions.

LER 92-03, Revision 0 (Closed), "Failure to Place an Inoperable Containment Pressure Channel in Bypass." This LER reported the licensee's failure to place the inoperable channel in bypass while performing a surveillance, Periodic Instrument and Control Test (PICT) 9-5, "Containment Pressure Transmitter." Licensee technicians implemented a temporary modification (TM) to permit bypassing of the containment pressure transmitter. The licensee plans to permanently install the modification during the 1993 Refueling Outage. The licensee revised Off-Normal Instruction (ONI) 2-6, "Instrument Failure," to include bypassing a failed containment pressure channel. The licensee also deleted PICT 9-5, and implemented Maintenance Procedure (MP) 2-5.21, "Calibration of Containment Pressure Rosemont Model N53," which is planned to be performed only during refueling outages. The licensee determined the

root cause of this event was the lack of detailed understanding of TSs and past weak management expectations for compliance. The licensee concluded that this event had no adverse impact on public health and safety and had minimal safety significance.

The inspector reviewed the revised MP 2-5.21 and found that neither the procedure nor the scheduling of the procedure had administrative controls to ensure that the procedure would be performed only in Mode 5 or 6. Additionally, the procedure did not require channel bypassing. These discrepancies indicated a need for further strengthening of the licensee's procedure review process. The licensee committed to revise the procedure to clarify the requirement to bypass the inoperable containment pressure channel. This item is closed based on corrective actions taken or committed to by the licensee.

LER 92-08, Revision 0 (Closed), "Inadequate Procedure, Valve Failures and Unawareness of Potential Problems Associated with Steam Generator Thermal Stratification Led to High Steam Line Differential Pressure and a Safety Injection." The licensee submitted this LER to describe an event that resulted in a safety injection while in Mode 3 performing surveillance testing. The licensee concluded that the event resulted from an inadequate test procedure, failure of main steam isolation valve (MSIV) bypass valves to open, and operating crew knowledge weaknesses about steam generator thermal stratification. The licensee implemented eight corrective actions to correct these deficiencies. Among the corrective actions, the licensee committed to develop an action plan for procedural upgrades to the administrative controls related to air operated valves (AOVs). The licensee concluded that this event had no adverse impact on the health and safety of the public and had minimal safety significance.

The inspectors performed initial followup of this event as reported in NRC Inspection Report 50-344/92-07. In this inspection period the inspectors verified all licensee corrective actions for this event and reviewed the operating history of AOVs and motor operated valves (MOVs). The inspector shared the following two observations with licensee management concerning this event and the proposed corrective actions:

- Periodic Operating Test (POT) 5-3, "Auxiliary Feedwater System Performance and Valve Inservice Test," initially required that steam generator blowdown (SGBD) be operable to conduct this test. The operators deviated from the procedure when they recognized that the steam generator was not available; however, there was not sufficient oversight or review by management to verify the acceptability of the approach that was used. Had equipment history been reviewed for the MSIV bypass valves, the licensee would have found significant history of the valves failing to operate due to a dry stem and tight packing. The licensee would also have recognized the opening and closing limitations for the valve.

- Even though an action plan to address AOVs had been initiated, the inspector found essentially no actions had been implemented. This suggests a weakness in how the licensee develops and tracks corrective actions.

Based on these comments the licensee agreed to establish improved expectations over deviations from plant procedures and assess the delay in implementing the AOV action plan.

LER 92-22, Revision 0 and 1 (Closed), "Personnel Error in the Development of a Surveillance Procedure Following a 1985 Design Change Led to Inadequate Performance of a Surveillance." This LER described the licensee's failure to perform a surveillance test to verify Component Cooling Water (CCW) surge tank low level signal functions. The licensee determined that the cause of this event was personnel error in the development of surveillance procedures following a 1985 design change. As corrective actions the licensee verified proper functioning of the CCW surge tank low level switches and committed to revise the appropriate surveillance procedures. The licensee concluded that failure to test these switches was not safety significant because, when tested, the switches functioned properly.

The inspector verified the testing results and concurred that the switches functioned properly. This item is closed based on completed licensee corrective actions.

LER 92-23, Revision 0 (Closed), "Incorrectly Reporting That the Undervoltage Surveillance of the 4.16 kV Busses Were Complete Led to the Failure to Perform the Surveillance Within the Required Interval." This LER described a violation of Technical Specification (TS) Surveillance requirement 4.8.3.1 in that the undervoltage protection surveillances of the 4.16 kV A.C. busses were not performed within the required time interval. The licensee determined that the root cause of this event was cognitive personnel error in that the I&C supervisor incorrectly reported the surveillance activity as complete. Licensee corrective actions included performing the surveillance, revising Planning and Control Procedure (PAC) 14-2-8, "Surveillance Tracking," to verify the activity is complete prior to exceeding the TS late date, and counseling the I&C supervisor. The licensee concluded that failure to test the 4.16 kV A.C. bus undervoltage protection feature was not safety significant because the undervoltage protection functioned properly when tested.

The inspector verified the licensee's corrective actions. The inspector found that prior to the surveillance becoming overdue, personnel in the surveillance planning group questioned the supervisor on at least two separate occasions as to whether the surveillance had ben completed. Because the supervisor was convinced that the surveillances had been performed, he did not review records to confirm that the test was actually done. The surveillance planning group personnel did not press the supervisor to provide the surveillance test data. The inspectors noted that the supervisor had been counseled on previous occasions for similar issues. In researching the licensee's corrective action, the inspector found that the licensee did not document the counseling of the supervisor as required by PGE Corporate Procedures. The licensee subsequently documented the counseling. The inspector found the corrective action to prevent additional missed surveillances -- i.e., requiring that completed test data be verified by the surveillance scheduling group -- to be appropriate.

This violation of TS 4.8.3.1 was not cited because the licensee satisfied the criteria specified in Section VII.B of the Enforcement Policy (NCV 50-344/92-30-03). This item is closed based on licensee corrective actions.

One non-cited violations was noted.

10. Discussion of Trojan Phase-Out With Region V Management

On September 21, 1992, at 1:00 p.m., the licensee's General Manager for Technical Functions met with the Director and other members of the Division of Reactor Safety and Projects in the Region V office. The purpose of the meeting was to discuss the licensee's decision to discontinue operations of Trojan in 1996. The following persons attended:

Portland General Electric Company

T. Walt, General Manager, Technical Functions

NRC Region V

K. Perkins, Director, Division of Reactor Safety and Projects
S. Richards, Deputy Director, Division of Reactor Safety and Projects
L. Miller, Chief, Reactor Safety Branch
P. Johnson, Chief, Projects Section 1
K. Johnston, Project Inspector, Projects Section 1

A copy of the briefing materials provided by the licensee is included as an enclosure to this report. During the meeting, Mr. Walt addressed the following topics (refer to enclosed materials):

- The decision making process which led the licensee to proceed with a plant phase-out in 1996.
- The employee retention and incentive program.
- The template used to evaluate the appropriateness of implementing previously defined commitments and modifications. Mr. Walt indicated that the final decision on most commitments was pending and that proposed changes in commitments would be submitted to the NRC for review.
- The status of decommissioning funds.

Mr. Richards encouraged Mr. Walt to consider the lessons learned during the shutdown of Ranch Seco. Mr. Walt stated that he intended to visit both Ranch Seco and San Onofre Unit 1 to discuss shut down preparation issues. The discussion concluded at 3:00 p.m.

11. Unresolved Items

An unresolved item is a matter about which more information is required to ascertain whether it is an acceptable item, a deviation, or a violation. Three unresolved items from previous inspection reports were discussed in Paragraph 8.

12. Exit Interview (30703)

The inspectors met with the licensee representatives denoted in paragraph 1 on November 12, 1992, and with licensee management throughout the inspection period. In these meetings the inspectors summarized the scope and findings of the inspection activities.

The licensee did not identify as proprietary any of the information discussed with or reviewed by the inspectors during this inspection.

Attachment: Materials provided by the licensee during the November 21, 1992 meeting (Paragraph 10).

LEAST COST PLAN KEY FINDINGS

- Immediate closure is not prudent
  - ✓ Approximately $400M
  - ✓ Customer needs
  - ✓ Voltage stability
- Continued operation could be prudent
- Phaseout is prudent
  - ✓ Least cost under most anticipated futures

LEAST COST PLAN MODEL ASSUMPTIONS

- Capacity factor 0-88% with expected value 60 prior to new generators, 64 afterwards
- Fixed O&M starting at $130M escalating 0% pre- and 3% post-generator replacement
- Capital additions $25M unloaded
  - ✓ Escalating 1.5% per year
  - ✓ Steam generator replacement $175M

LEAST COST PLAN RESULTS

- **Net Present Value**

  ✓ Probabilistic model = -$340M

  ✓ Phaseout scenario adopted = -$110M

  - ▸ moderate load growth
  - ▸ moderate gas prices
  - ▸ 0 emission externalities
  - ▸ low nuclear externalities
  - ▸ $25M capital escalating at 1.5%
  - ▸ $130 O&M escalating at
    0% pre-generator, 3% post-generator
  - ▸ capacity factor 65%

MAJOR LINE OF REASONING

- Continuing public concern - regulation will increase
- Unexpected events elsewhere beyond our control - drive up costs
- Plant aging is unknown - another steam generator?
- Future risk from single shaft - customer/ shareholder
- Uncertainty affects ability to raise capital
- Gas-fired units, relatively unregulated, well-known technology
- High-load growth does not seem likely
- Pressure on C02 tax viewed lessening
- Customers believe nuclear externality risk is high

In order to provide assurance of continued adequate staffing for safe operation of Trojan, the organization has been reviewed and positions categorized for the retention program as shown below.

It should be noted that these are general classifications within the categories and we expect most individuals in a specific classification will fall into the same category as their peers. There will be exceptions, both upward and downward, to positions within specific classifications.

CATEGORY 1	CATEGORY 2	CATEGORY 3
Severance, Operational Bonus 0-12%	30% Front End Loaded, Operational Bonus 0-12%, Choice of Bonus or Severance	40% Front End Loaded Operational Bonus 0-12%, Choice of Bonus or Severance
Secretaries	Selected Managers/ Supervisors	Key Managers
Clerical	Engineers	Licensed Operators
Utility Workers	Technical Degreed Personnel	SRO Certified Instructors
Rad Utility Workers	Selected Specialists/ Coordinators	Accredited Non-Licensed Operators
Specialists	RP Technicians	Accredited Maintenance Personnel
Technicians	Chemistry Technicians	Limited Special Case Personnel
Coordinators	Technical Instructors	
Non-Accredited Craft		
Analysts		
TARGET <300	TARGET <400	TARGET <200

ACTIVITY EVALUATION TEMPLATE

NOTE:
This template is to be used as a the basis for documenting the decision process for continuing or cancelling an activity. Each Section of the listed categories for consideration must be addressed.

ACTIVITY: _____
(Provide PMR Number or Program Title)

NUCLEAR AND PERSONNEL SAFETY *[contact NPE/ Personnel Protection for assistance]*:

This section will include a discussion of how implementation or cancellation of the activity would affect: 1) conformance with existing regulations (state and federal); 2) ability of the plant and the operators to cope with design basis accidents and events (e. g., LOCA, Steam Line Break, Fuel handling Accident); 3) ability of the plant and the operators to cope with other events of regulatory concern (e. g., Station Blackout, Reduced Inventory Operation, Anticipated Transient without Scram); 4) safety system unavailability; 5) conformance with the principles of maintaining personnel radiation exposures As Low As Reasonably Achievable (ALARA); and 6) conformance with OSHA requirements and applicable standards necessary to provide an acceptable level of personnel safety.

PUBLIC AND REGULATORY CONFIDENCE *[contact Compliance/Licensing for assistance]*:

This section will include a discussion of how implementation or cancellation of the activity would affect: 1) commitments made to any regulatory body (i. e., NRC, ODOE, ANI, INPO, FEMA, DOE, State and County Agencies); 2) corrective action resulting from events, violations, regulatory open items or Trojan corrective action documents (e. g., CAR, NCAR).

RELIABLE GENERATION *[contact Operations /Maintenance for assistance]*:

This section will include a discussion of how implementation or cancellation of the activity would affect operation of the Trojan Nuclear Generating Plant with respect to: 1) plant availability; 2) plant capacity factor; 3) outage management; 4) plant thermal performance; 5) corrective/preventive maintenance; 6) fuel reliability.

COMPETITIVENESS *[contact Cost Control for assistance]*:

This section will include a discussion of how implementation or cancellation of the activity would affect: 1) cost effective operation with respect to the budget plan; 2) work force productivity; 3) expenditures and payback period.

REFERENCES:

List all CTLs, corrective action documents (e. g., CAR, NCAR), Job Numbers and any other document or tracking system number as appropriate. Provide brief statement describing CTL, CAR, NCAR, NCR etc. (Copies of documents may be attached in lieu of the brief statement).

APPROVALS:

Prepared By: _____

Cognizant Manager: _____

Leadership Team Approval: _____