U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 50-344/85-33

Docket No. 50-344

License No. NPF-1

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

Facility Name: Trojan

Inspection at: Rainier, Oregon

Inspection conducted: December 2-13, 1985

Inspectors:

Talbert Young Jr. for — 1-14-86
W. G. Albert, Team Leader — Date Signed

Kenneth D. Ivey Jr. — 1-14-86
K. D. Ivey, Reactor Inspector — Date Signed

Peter H. Phelan — 1/14/86
P. Phelan, Reactor Inspector — Date Signed

A. D. Johnson — 1/14/86
A. D. Johnson, Enforcement Officer — Date Signed

Talbert Young Jr. for — 1-14-86
J. Eckhardt, Senior Resident Inspector — Date Signed

Talbert Young Jr. for — 1-14-86
G. Fiorelli, Resident Inspector — Date Signed

Talbert Young Jr. for — 1-14-86
P. Stewart, Resident Inspector — Date Signed

G. W. Johnston — 1/14/86
G. Johnston, License Examiner — Date Signed

M. Cillis for — 1/14/86
H North, Radiation Specialist — Date Signed

M. Cillis for — 1/14/86
J. Moore, Radiation Specialist — Date Signed

Approved By: Talbert Young Jr. 1-14-86
T. Young, Jr., Chief, Engineering Section Date Signed

Summary:

Inspection on December 2-13, 1985 (Report No. 50-344/85-33)

Areas Inspected: Annual announced team inspection of the Trojan Nuclear Plant, focused on the management controls (procedures, policies, administrative orders, etc.) and the involvement of management in the implementation of these controls as they are applied to the operation and maintenance of Trojan.

The following activities of the licensee were examined:

1) Operator Recovery Actions
2) Motor-Operated Valve Programs
3) Technical Specification Surveillance and Testing
4) Maintenance Programs
5) Control of Plant Procedures
6) Plant Modifications
7) Offsite Safety Committee Activities
8) Health Physics Programs

To the maximum extent feasible, the effectiveness of these activities were assessed as they apply to the following plant physical systems:

1) Auxiliary Feedwater System (AFS)
2) 125 Volt D.C. Power System (125 VDC)
3) Emergency Diesel Generator System (EDG)

These systems were selected on the basis of probabilistic risk assessment.

The inspection involved 867 hours by ten Region V NRC inspectors, one NRR inspector, and two NRC consultants. Inspection procedures 30702, 30703, 35743, 35750, 37702, 40701, 41400, 41701, 42451, 42700, 56700, 61725, 62702, 71710, 72701, 83722.1, 83722, 83723.1, 83723, 84723.1, 84723, 84724.1, and 84724 were applicable to this effort.

Results:

In the areas inspected, two violations of NRC requirements were identified.

1) Absence of independent quality control over maintenance activity.

2) Failure to properly identify installed instrumentation.

DETAILS

1. Persons Contacted

*W. J. Lindblad, President, PGE
*B. D. Withers, Vice-President, Nuclear, PGE
*J. K. Aldersebas, Manager, Plant Modifications
D. L. Bennett, Control and Electrical Maintenance Supervisor
T. F. Berquam, Electrical Maintenance Supervisor
A. S. Cohlmeyer, Engineering Supervisor
*L. W. Erickson, Manager, Nuclear Safety Branch
*R. W. Griebe, Member at Large, Trojan Nuclear Operations Board
*S. E. Hoag, Manager, Trojan Programs
J. G. Kegg, Electrical Modification Supervisor
*D. R. Keuter, Manager, Technical Services
*F. H. Lamoureaux, Manager, Electrical Maintenance and Construction, PGE
*J. W. Lentsch, Manager, Nuclear Safety and Regulation Department (NSRD)
T. O. Meek, Radiation Protection Supervisor
S. B. Nichols, Training Supervisor
*C. A. Olmstead, Manager, Quality Assurance
*W. S. Orser, Plant Manager
*J. D. Reid, Manager, Plant Services
R. A. Reinart, Instrument and Control Maintenance Supervisor
G. L. Rich, Chemistry Supervisor
R. W. Ritschard, Branch Manager, Nuclear Security
*R. P. Schmitt, Manager, Operations and Maintenance
M. H. Schwartz, Primary/Electrical Plant Unit Supervisor
M. R. Snook, Quality Assurance Supervisor
*R. L. Steele, Manager, Nuclear Plant Engineering
G. J. Stein, Mechanical Maintenance Supervisor
R. E. Susee, Operations Supervisor
D. W. Swan, Maintenance Supervisor
T. D. Walt, Manager, Radiological Services Branch, NSRD
T. L. Warnick, Engineering Modification Supervisor
*C. P. Yundt, General Manager, Technical Functions
*G. A. Zimmerman, Manager, Nuclear Regulation Branch, NSRD

In addition to the individuals identified above, the inspectors met and held discussions with various engineering, quality assurance, maintenance, and operations personnel and other members of the licensee's staff.

*Denotes those individuals attending the final exit meeting on December 13, 1985.

Mr. H. Mooney of the Oregon Department of Energy also attended the final exit meeting.

2. Operator Recovery Actions

The area of Operator Recovery Actions was examined to determine the depth of knowledge and understanding of the operators for the procedures associated with 'Loss of Secondary Coolant' and 'Loss of All AC Power'. These were selected based on the history of problems associated with the

Auxiliary Feedwater System and the Emergency Diesel Generators. Also of concern, were actions taken by the operators to initiate Reactor Coolant System (RCS) 'bleed and feed' following 'Loss of Secondary Coolant'.

Other actions were also examined to determine the operators depth of understanding and knowledge of Operator Recovery Actions. To accomplish this a sample of 12 persons were interviewed by two inspectors. Procedure walkthroughs, control panel explanations, and system walkdowns were used as the means to discern the operators depth of understanding the knowledge of the procedures. The following areas were the focus of the interviews:

a. When RCS 'bleed and feed' should be initiated.

b. For the 'Loss of All AC Power', the heat exchanger for the diesel driven Auxiliary Feedwater pump needs to be aligned to the fire water system, how is this accomplished?

c. How is the Service Water System aligned as a source of supply for the Auxiliary Feedwater pumps in the event the condensate storage tank becomes unavailable? What is the significance of the suction pressure trips on the pumps?

d. How is the motor driven Auxiliary Feedwater pump placed in service? And how is it aligned to a safety-related bus in the event of a loss of both safety-related Auxiliary Feedwater pumps?

e. The condensate pumps can be used as an alternate source of feedwater. What conditions would make this possible and what actions are required to make them available?

f. For the case of a 'Loss of All AC Power' the seals for the Reactor Coolant Pumps will experience a loss of seal cooling from Seal Injection and Component Cooling Water. They can degrade and cause a significant leak in the RCS with the potential for uncovering the core. What is the SRO's knowledge of this potential failure and the mitigating actions recommended by the NSSS vendor?

The particular procedures involved in the areas the inspectors reviewed with the operators were the following:

- Emergency Contingency Action ECA 0.0 'Loss of All AC Power'
- Functional Recovery Procedure FR H.1 'Loss of Secondary Coolant'
- Off Normal Instruction ONI-55 'Operation of Electric AFP Supplied by EDG'
- Off Normal Instruction ONI-61 'Actions to Restore Emergency Diesel Generator'

The inspectors found that the overall knowledge of the operators was extensive in the areas of the procedures in question. Their response to the actions called for in the procedures should be prompt, correct and

thorough. The depth of understanding of plant systems in the areas examined was found to be extensive. This was further confirmed by an examination of training records for requalification of the operators. The inspectors observed that a wide range of instruction has been provided to the operators by the NSSS vendor, and that the recovery procedures were used by the operators during their annual simulator training.

Three concerns were identified during the course of the inspection in the area of Operator Recovery Actions. The concerns are associated with procedural problems, and were identified during walk-throughs with the operators. These concerns are:

a. When a local start of the Diesel Generators is required by ECA 0.0 'Loss of All AC Power', step 5, the procedure does not clearly indicate that the operator who is dispatched to perform the local start will be instructed to ensure the Diesel Generators are running at rated speed and voltage, and that the output breaker is to be closed locally. During a walkthrough of the procedure this became apparent when the Auxiliary Operator was dispatched by the Shift Supervisor to start the Diesel Generator locally but was not instructed by the supervisor to load the Diesel Generator as part of his simulated activity.

b. The inspectors identified a typographical error in a caution statement in procedure FR-H.1 'Loss of Secondary Coolant'. One of the criteria for initiating RCS 'bleed and feed' is the RCS pressure being at the lift setpoint of the power operated relief valves which is 2335 psig. The pressure in the procedure was listed as 2235 psig. This could cause confusion, and potentially lead the operators to initiate prematurely RCS 'bleed and feed', possibly leading to circumstances beyond the control of the operators. The inspectors conceded that the pressure cited would likely have been called into question by the operators. However, this does indicate, along with item 1 above, that the procedures need comprehensive review in light of the seriousness of emergency procedures.

c. Procedure ECA 0.0 'Loss of All AC Power' has an action to align Fire Water for cooling to the Diesel Auxiliary Feedwater pump. It is not apparent that the necessary actions can be accomplished within a reasonable period of time, and would likely be too late to provide cooling water to the Diesel Auxiliary Feedwater pump before power to the lube oil pump for the Turbine Driven Auxiliary Feedwater pump becomes unavailable. This area deserves attention by the licensee, and should be evaluated. This item will remain open for future inspection activity (50-344/85-33-01).

No violations or deviations were identified.

3. Motor Operated Valves

The purpose of this inspection was to verify that the reliability of those components at the interface between the Auxiliary Feedwater System (AFS) and its alternate water supply, the Service Water System (SWS), is such that they do not significantly contribute to the failure potential of the AFS after drainage or rupture of the Condensate Storage Tank (CST)

with emphasis on the motor-operated valves (MOVs) at the interface and the programs for MOVs in general. There are four valves at this interface, two MOVs, MO 3045A and B and two normally locked open, manual valves, FW 113 and FW 114.

Through procedure and records reviews, a system walkdown, and discussions with licensee personnel, the inspector verified that:

a. Procedures which are easily understood and readily identifiable are in place to control the switch over to the SWS. The SWS provides the backup water supply in the event that the CST decreases to 9% level (procedures OI-8-2 and EI-2).

b. The normally locked open valves, FW 113 and FW 114, are controlled in accordance with procedure AO-3-13, "Control of Locked Valves". These valves are used to isolate the SWS during maintenance and testing of the MOVs, MO 3045A and B. These valves were found to be locked open during the system walkdown.

c. The P&IDs reflected the actual as-built design of the system.

d. Surveillance and test procedures are in place to ensure correct alignment of the systems and testing of the MOVs at the interface (procedure POT-5-2).

e. There were no outstanding maintenance actions or indication of chronic problems identifiable from maintenance history files.

The inspector examined the licensee's programs for conducting preventive maintenance and in service testing for motor-operated valves (MOVs) using the MOVs from this interface as well as the MOVs in the Auxiliary Feedwater System (AFS) as a sample. Preventive maintenance is performed in accordance with procedure MP-12-5, "Valve Motor Operators". All MOVs are required to be inspected every three refueling outages. In service testing, per ASME Section XI, is conducted in accordance with Trojan document PGE-1022, "Inservice Testing Program for Pumps and Valves". MOVs in the AFS are tested on a three month cycle.

The inspector reviewed maintenance and test records, performance data documentation, and vendor information for the MOVs in the sample. The licensee maintains a tabulation of baseline data specific to each MOV using a data sheet from procedure MP-12-5. This data sheet is referenced for each maintenance and includes the following information:

- Torque switch settings for open and close directions
- Motor size, type, and amps
- Breaker size and trip setting
- Valve type and size

No violations or deviations were identified.

4. Surveillance Program Examination

A. Auxiliary Feedwater System

Procedures for surveillances required by Technical Specification (TS) for the auxiliary feedwater system were examined. The inspector verified that procedures exist for each part of TS 4.7.1.1.1, 4.7.1.2.2 and 4.7.1.2.3; that selected procedures contained acceptance criteria where necessary; are performed at the appropriate frequency; and were revised to incorporate changes as a result of system modifications. Procedures examined included the following Periodic Operating Tests (POT), Maintenance Procedures (MP) and Operating Instructions (OI).

- OI-8-2 Auxiliary Feedwater
- POT-5-1 Auxiliary Feedwater System (AFS) Pump and Valve Inservice Test
- POT-5-2 AFS Valve Lineups and Inservice Testing
- POT-5-3 AFS Performance and Valve Inservice Test
- MP-7-4 Auxiliary Feedwater Pump (Turbine-Driven)
- MP-7-5 Auxiliary Feedwater Pump (Diesel-Driven)

In addition to the above procedures, the inspector examined the vendor's technical manuals for the AFS diesel and the diesel's starting battery. This examination was to verify that surveillance test parameters were in accordance with manufacturer's recommendations.

Based upon the review of the above procedures and review of selected records of completed surveillances performed in 1983-1985, the inspector noted the following items.

Procedure MP-7-5, which provides for TS required surveillances for the diesel driven AFW pump that are performed by the maintenance department, requires the recording of the diesel's battery charging current to the nearest milliamp on a monthly basis per step III.A.1.d. The inspector determined, since the licensee is using this charging current as a measure for evaluating adequate battery capacity, that it would be appropriate to include an acceptance criteria on the data sheet for the maximum allowable floating/charging current. The licensee indicated that the data sheet would be revised to include an acceptance criteria for the floating/charging current. This item is not being held open.

The inspector, also noted that the licensee was not taking specific gravity measurements for the diesel's battery. The licensee's representative stated that the battery capacity was being tracked by measuring individual cell voltages and the battery's normal float/charging current. The licensee also stated that these

measurements were being taken in lieu of the specific gravity measurements based on the vendor's recommendation. The inspector requested to review the correspondence from the vendor stating that specific gravity measurements were not routinely required. The licensee was unable to provide the vendor's correspondence at the time of the inspection. The evaluation of the need for routine specific gravity readings is an open item pending review of the vendor's correspondence. (50-344/85-33-02).

The inspector during the review of completed surveillance records, identified a deficiency in the review process on the monthly surveillance data record form POT-5-1DC performed on September 25, 1985. The noted deficiency was recorded in Step 7.3.5 for the AFW Pump Diesel's Standby Engine Water temperature. The documented reading by the operator was 150°F (normal 100 - 120°F) and no corrective action was initiated by the operator or by any of the three management reviewers. The inspector noted that the same deficiency was also identified during the monthly surveillance performed on October 25, 1985, and appropriate corrective action was then initiated. The inspector determined by examination of the records of the surveillances performed during 1985 that the engines standby jacket water heaters had maintained a high water temperature on January 16, 1985 (134°F) and on July 3, 1985 (144°F). On both of these instances corrective actions were initiated to correct the deficiency.

The inspector interviewed several system engineers concerning the reoccurring deficiency with the engine's water jacket heater control system for the diesel. As a result of these interviews with the system engineers and their supervisors, the inspector determined that the station engineers are not currently reviewing current maintenance activities or the previous maintenance history on the systems for which they are assigned responsibility. The licensee indicated that the system engineering staff was currently being expanded from 14 to 21 engineers and hiring efforts were in progress. The licensee stated that this action would reduce the number of systems each engineer is assigned and that the trending of each system's performance, including maintenance activities, could thus be improved.

The inspector also noted that the AFW diesel fuel oil pressure data for 1984-1985 indicated a pressure of 8-12 PSIG, however, the normal operating pressure on the data record POT-5-3DA stated that the normal pressure should be 22 PSIG. The inspector reviewed the diesel technical manual and noted that no normal fuel pressure was stated in the manual and that fuel pressure was not a parameter which was required to be trended for evaluating diesel engine performance. The licensee's representative indicated that the data sheet POT-5-3DA would be revised to reflect the normal fuel pressure operating band.

The inspector also made the observation based on the review of approximately 200 auxiliary feedwater system records examined, that there was no involvement by the quality control or quality assurance

(either as an organization or as a function) in any of the documented surveillance or maintenance activities.

The AFW diesel battery appeared to be well maintained and housekeeping in both AFW pump rooms was good. The inspector noted that while the electrolyte level in the battery cells was adequate and maintained in accordance with the battery cell technical manual, the guidance given in MP-7-5 in Step A.1.a and on the data sheet conflicted with and was less conservative than that guidance given in the technical manual. The licensee committed to revising the guidance and acceptance criteria for maintaining cell electrolyte level to that acceptance criteria described in the technical manual.

The inspector observed that in several instances in 1985 that the plant test engineer had failed to review all inservice testing parameters within the 96 hour requirement of Procedure POT-7-1. The licensee had previously identified this deficiency and eliminated the 96 hour requirement. The inspector noted that the licensee's procedures still require the review of TS Surveillance data by the shift supervisor to meet the 96 (24) hour review criteria of TS 4.0.5 and ASME requirements for pump and valve performance. By way of explanation the licensee stated that the current data review by the shift supervisor meets NRC requirements and that the 96 hour review requirement by the plant test engineer was deleted because this review function is performed by the shift supervisor.

B. Station Batteries Surveillance

The inspector reviewed procedures which implemented TS required surveillances for the 125-volt safety related batteries. The inspector verified that procedures exist for each part of TS 4.8.2.3.2; and that procedure MP-1-14, the maintenance procedure for the 125-volt batteries, contained the required acceptance criteria where necessary and as noted in the battery technical manual. The inspector examined battery maintenance and surveillance records for the 1983-1985 period for completeness and proper performance.

Based on the review of the above procedures and documents and physical inspection of the batteries, the inspector noted the following items.

- The batteries (D11 and D12) appeared to be well maintained and housekeeping in the 125-volt D.C. distribution center and battery rooms was excellent.

- Two cells had been removed from each of the initial 60 cell batteries (D11 and D12) and both batteries had satisfactorily completed the 18 month battery service test and 60 month performance discharge service test during the 1985 refueling outage.

- No battery cell failures have occurred in the 12 year life of the D11 and D12 batteries through December, 1985.

- The four battery cells removed from the two batteries are being maintained in one of the battery rooms on a float charge, however, they are not included in the technical specification surveillance program (i.e., no maintenance history). The licensee indicated that they would be used as spares if other cells failed, and that the 18 month and 60 month TS surveillance tests would be performed on the batteries following a possible cell replacement.

- The licensee is not committed to and does not comply with Regulatory Guide 1.129 (Rev. 1) and IEEE 450-1975. The licensee is committed to IEEE 279-1971, IEEE 308-1971 and Regulatory Guide 1.6 and the maintenance and testing programs examined appeared to be adequate to detect a degradation in battery capacity.

The inspector found that the quarterly data sheet for battery cell readings does not correct the cell value for specific gravity on changes in electrolyte level. The licensee indicated that their current practice is to add water to the cells only after the 18 month battery discharge tests, and therefore, no correction for specific gravity is required when taking the quarterly readings. The inspector found that this practice of adding water after performing the discharge test (Step 3.L page 7) and prior to performing the equalizing charge (Step 3.N page 7 of MP-1-14) is not documented in the procedure. The licensee stated that MP-1-14 would be revised to document this practice of water additions during the performance of the 18 month surveillance. This is an open item pending revision of MP-1-14 to account for water addition during the 18 month surveillance. (50-344/85-33-03).

The inspector identified that the quarterly surveillance for the battery D11 performed on July 10, 1985, was not documented as being reviewed for TS compliance until August 19, 1985. The inspector determined that the licensee had performed a surveillance on May 29, 1985, and therefore, was still within the 92 day surveillance interval, even though there was a 40 day delay in documenting the review of the recorded data for technical specification compliance. The inspector found that although the electrical foreman was tasked with reviewing the recorded data with the TS acceptance criteria, that there was no signature block on the quarterly data record form for the electrical foreman. Historically, the foreman had been initialling the "approved by signature line" with no date being recorded when he initialed the form. The licensee stated that the quarterly battery cell data form for MP-1-14 would be revised to add a signature block for the electrical foreman, which would then identify the date of completion of the procedure.

The inspector reviewed all revisions to the surveillance procedures performed from 1984-1985 and noted that a revision to MP-1-14 was initiated as a result of QA Surveillance Report PAM-SR-020-84. The inspector observed that this was the only evidence of any QA/QC function involvement in any technical specification required surveillance and inservice testing of plant equipment.

The inspector also found that in the approximately 500 documents examined, that no QC hold or inspection points were observed in any surveillance performed, including the 18 month and 60 month surveillances which implement the detailed recommended vendor preventive maintenance inspections for safety related components. The total absence of the quality control function involvement in the surveillance and preventive maintenance programs of safety related equipment was discussed with the licensee. The evaluation of the licensee's quality control function as required by 10 CFR 50 Appendix B are also included in paragraph 5 of this report.

C. Diesel Generator Surveillance Program

Procedures to implement TS required surveillances for the monthly operability test of the diesel generators were examined. The inspector examined all the completed surveillance records of POT-12-1 "Manual Start and Loading of Emergency Diesel Generators" for both diesel generators for 1985. The inspector noted that the review done by the engineering supervisor is very sporadic and indicates that there is no station engineer trending the performance of the emergency diesel generators. This observation made by the inspector is based on the fact that the "A" diesel generator monthly tests (POT-12-1) performed in 1985 on July 5, August 30, September 13, were not reviewed until November 18, 1985. However, the monthly tests, performed on August 2, September 27, October 25 and November 6, were all reviewed within 30 days of completion by the engineering supervisor.

This observation indicates that no trending is currently being done by a system engineer on the diesel generators. The licensee, as noted previously, was increasing the station system engineering staff to increase the level of engineering tracking and evaluation of plant systems.

No deviations or violations were specifically identified in this area although the absence of QC involvement, paragraph B above, supports the violation discussed in 5.A below.

5. Maintenance

The maintenance program at Trojan was examined for conformance with regulatory requirements, technical specifications, and licensee commitments. The inspectors interviewed approximately 30 PGE staff members, reviewed 35 PGE procedures and examined approximately 500 maintenance requests and periodic test data sheets.

The inspection concentrated on three aspects of the maintenance program; corrective maintenance, preventative maintenance, and the QC interface with maintenance.

A. Quality Control (QC)

During the examination of the 500 maintenance requests and accompanying instructions, the inspectors observed that the requests and instructions prepared by on-site maintenance supervisors neither

requested a review by quality assurance (QA) personnel nor otherwise provided for independent quality control (QC) inspections except as specifically required by codes or for Ray-Chem electrical splices. For example, (a) MR No 85-4389 involved replacement of four time delay relays in the control circuitry for the diesel driven auxiliary feedwater pump. The request specified verification of "tightness of connections and dress of wiring". The record showed that another electrician verified the installation. The request was signed as completed on 9/10/85; and (b) MR 84-0564 involved an upgrade of the west emergency diesel generator, consisting of the installation of a new turbo charger, idler gear and brackets. The request under "installation checks" specified performance of periodic operating test (POT) 12-1. The detail instruction prescribed verifying recording of clearances, and torque valves. The records show that the same individual who performed the work also performed the verifications. The work was signed as completed on August 2, 1984.

10 CFR 50, Appendix B, Criterion X reads, in part, "A program for inspection of activities affecting quality shall be established and executed by or for the organization performing the activity to verify conformance with the documented instructions, procedures, and drawings for accomplishing the activity. Such inspection shall be performed by individuals other than those who performed the activity being inspected..."

The following sections of Revision 10 of Chapter 10 of the licensee's quality assurance program are quoted in part in order to illustrate the definitive requirements:

"10.2 GENERAL

Inspections are performed, both onsite and offsite, in accordance with written, approved inspection plans and inspection procedures, to verify that quality-related items and processes conform to predetermined quality requirements.

Inspection programs are implemented through procedures which provide... the method of verification, and documentation of the results.... Where necessary, they provide for establishing mandatory hold points for witness by inspection.... Inspection procedures contain as a minimum the following:

a. Identification of characteristics to be inspected, including mandatory hold points;

b. Acceptance and rejection criteria;

c. Identification of the type of inspection to be performed; ie, electrical, mechanical, or NDE;

d. ...Reference to an inspection procedure or a description of the method for performing the inspection;

e. A sign-off by signature or a controlled stamp showing evidence of satisfactory completion and verification of the inspection. This is accomplished by a qualified Inspector in accordance with ANSI N45.2.6 or SNT-TC-1A-1968, as appropriate;

f. ...The results of the operation, if applicable.

10.3 INSPECTION PROGRAM ONSITE

Approved plant procedures establish the inspection program to be used which verifies conformance of quality-related items and activities.

10.3.1 Plant Inspector Requirements

Plant staff personnel ...performing inspections... are qualified in accordance with ANSI N45.2.6 or SNT-TC-1A-1968, as appropriate. The inspector is independent from the individual performing the activity being inspected...."

In addition, the licensee's Trojan Nuclear Plant Quality Assurance Procedure (QAP) 10-1, Revision 7 reads, in part,

"DEFINITIONS

QC Inspection: QC Inspection is defined as those examinations, observations or measurements for the purpose of determining the conformance of material, equipment, parts, and processes to predetermined quality requirements. These inspections are performed by certified inspection personnel who are independent of the personnel performing the activity being inspected.

Independent: An individual who is not involved in performing the activity, is not the First-Line Supervisor of the activity and does not report to the First-Line Supervisor of the activity.

First-Line Supervisor: The individual who supervises the activity, but is not personally involved with hands-on performance of the activity."

II. PROCEDURE

B. Control of QC Inspection Points

1. Engineers preparing modification installation instructions and personnel preparing Plant Operating Manual procedures and Maintenance Request work instructions shall evaluate the work to be performed and determine if a QC Inspection should be required...

2. If a plant supervisor desires to have a member of his staff (who is qualified to perform inspections in accordance with QAP-10-2) perform the inspection, that supervisor shall:

   a. Be aware of and concur with the requirements of the QCP applicable to the inspection to be performed.

   b. Notify the QAS (preferably prior to the inspection)...

   c. Ensure that the individual assigned to perform the QC inspection meets the independence requirements of this QAP....

E. Requirements for QC Inspection Personnel

1. Personnel approving QC inspection procedures, performing QC inspections, reporting or evaluating QC inspection results shall be qualified in accordance with QAP-10-2. When QC inspections are implemented by teams or groups of individuals, the one responsible must participate and must be qualified in accordance with QAP-10-2.

2. The inspecting individual shall be independent from the individual(s) performing the activity being inspected.

3. A QC Inspector may use another individual with expertise in the area under inspection, other than the individual(s) that performed the activity, to assist him in performance of the inspection."

Trojan plant administrative order AO-3-9 provides instructions for initiating maintenance requests and requires all maintenance to be administered in accordance with the Order. When the Trojan maintenance organization authorized the work, the assigned work group supervisor is responsible for, amongst other things, determining the need for QA/QC review of work instructions and for providing for appropriate installation checks to ensure verification of proper equipment function upon return to service.

Discussions with maintenance supervision established:

a. Personnel were familiar with the above discussed licensee procedures.

b. Except for specific code and otherwise established QC inspection requirements, the maintenance supervisors viewed QA/QC involvement to be strictly at the discretion of the maintenance supervisor preparing and authorizing the work to be performed by any given maintenance request.

c. Maintenance Supervisor believed that their policy of holding the craftsman responsible for quality work and also holding the individuals immediate supervisor responsible for inspecting and ensuring high quality work was effective and additional QC was unnecessary especially since everything was subsequently tested.

B. Preventative Maintenance

The inspector examined the PGE procedures related to the Trojan preventative maintenance (PM) program and verified through interviews that the licensee conducted the PM program in accordance with those procedures. The PM program at Trojan has clearly defined assignments of responsibilities, a master schedule for PM activities, a requirement for documenting all PM actions and a method for changing the PM schedule or type of equipment that must be maintained. However, the inspector identified one apparent weakness in the Trojan PM program. The PM program implementation was failing to systematically perform failure mode analyses of Trojan operational performance data. This was judged a weakness because this type of information could prove useful to set PM intervals or to vary surveillance testing periods.

C. Corrective Maintenance

In the area of corrective maintenance the inspector reviewed the Administrative Controls to verify that the licensee's program was fully implementing the requirements associated with safety-related maintenance activities as specified in the Technical Specifications; Quality Assurance requirements; ANSI 18.7, Administrative controls for Nuclear Plants, Reg. Guide 1.33 and ANSI 45.2, Quality Assurance requirements for Nuclear Power Plants.

(a) Procedure Review

The following procedures were reviewed to verify that adequate controlling procedures for emergency and routine corrective maintenance existed in the areas of concern (EDG's, AFW, and 125 VDC).

- AO-3-9, Maintenance Requests, June 26, 1985 Rev. 21.
- MP-3-8, Mechanical and Electrical Preventive Maintenance Program, June 30, 1981, Rev. 2
- MP-12-7, Emergency Diesel Generator Plant, Dec. 28, 1984, Rev. 14

- MP-1-15, Station 130 - Volt Battery Charger Maintenance, June 4, 1984, Rev. 4
- MP-7-4, Auxiliary Feedwater Pump (Turbine Driven), Dec. 5, 1983, Rev. 7
- MP-7-5, Auxiliary Feedwater Pump (Diesel Driven) July 23, 1985, Rev. 13
- MP-1-14, 125-Volt Batteries, Nov. 19, 1984 Rev. 13

These procedures appeared to be satisfactory.

(b) Record Review

The inspector reviewed all maintenance request (MR's) forms, in the areas of concern, for the period 1983 to present. The MR's were reviewed for the following:

- Administrative approval of the MR
- Identification of the personnel performing the work
- Description of the corrective action
- Identification of replacement parts
- Type of Post-Maintenance Test (PMT) performed
- Identification of the personnel performing the PMT
- Identification of the test/measuring equipment

There was a marked improvement in the preparation and documentation of the MR's generated in 1985. However, there was one aspect of the licensee's program that constituted a concern. The maintenance request form, Trojan Form EM-8, has a block designated for the documentation of Post-Maintenance Testing, including the type of PMT, the results, when it was done and by whom. The degree to which the block is utilized is inconsistent. With regard to safety-related equipment, the block should contain either specific PMT instructions or state that no PMT is needed. Examples were found where the block was not properly addressed, thus, creating ambiguity for the workmen and other plant personnel. However, none of the examples was considered sufficiently clear-cut to constitute an item of noncompliance.

(c) Program Review

The inspector reviewed procedures and verified that criteria and responsibilities were defined for the following areas:

- Equipment Qualification
- Cleanliness and Housekeeping
- Equipment Classification
- Spare Parts
- Special Processes

The inspector identified one area of concern. The process by which equipment gets classified as either safety or non-safety related is not clearly defined. Subsequently it was learned

that the licensee's Quality Control Department also identified this problem and has developed a procedure, currently in review and tentatively titled, "Determination of Quality Related Systems". This procedure will direct the individual to the Q-list. The Q-list has a systematic listing of all quality-related equipment in the plant.

One violation of NRC requirements was identified in the maintenance area due to the absence of adequate and independent verification of proper maintenance work. (50-344/85-33-04)

6. Procedural Controls and Temporary Modifications

A. Procedural Controls

The goal of this examination area was to determine whether or not procedures were being revised to reflect plant modifications. The approach taken by the inspector was to select recent modifications; review the scope of the modification; review the operations, maintenance, and surveillance procedures that may be affected by the modification; and determine if appropriate changes had in fact been made to those procedures.

For this examination, the inspector selected the following plant modifications (four concerning the auxiliary feedwater system and two concerning the emergency diesel generators):

- ABT-77-162 (DCP-1), AFW pump diesel driver K-107B crankcase pressure manometer.
- RDC-80-003, Changed motor operated steam root valves to air operated valves for AFW pump Terry Turbine.
- RDC-82-063 (DCP-1), Added control room annunciator for trip and throttle valves and motor operator for the turbine driven AFW pump.
- RDC-83-053, Added control room annunciator for emergency diesel generator not ready for automatic start.
- RDC-84-097 (DCP-1), Installed circuit decoupling devices for the control of the B train emergency diesel generator.
- RDC-84-104, AFW valve motor operator and circuitry replacement.

The inspector then reviewed the applicable operations maintenance, and surveillance procedures that might have been affected because of each of the above plant modifications. In all cases, the appropriate changes were determined to have been made to the procedures. However, the following minor anomalies were identified during the procedure review:

° Operating Instruction OI-8-2, Rev. 20,

AFW System

Deviation OPS-654, dated October 28, 1985, changed the acceptable level for the condensate storage tank (CST) from > 60% to > 70%; however, the deviation failed to make this same change to the initial conditions section I.B of the procedure where the CST level was specified as > 60%.

° Periodic Operating Test POT-5-2, Rev. 10,

AFW System Valve Lineups and ISI Testing

Deviation PE-85-74, dated October 1, 1985, changed the required diesel AFWPP-B day tank level from > 70% to > 79%. The deviation made the change to data sheet POT-5-2-DA step 7.1.2 (tank level verification); however, the deviation failed to change step 7.1.2 in the body of the procedure where the day tank level was specified as > 70%.

° Periodic Operating Test POT-5-1, Rev. 22,

AFW System Pump and Valve Inservice Test

The change in the AFW diesel day tank level discussed above for procedure POT-5-2 should have also been made to procedure POT-5-1. Step 7.3.16 in the procedure body and also in data sheet POT-5-1-DC step 7.1.16 specify the day tank level as > 70% vs the required > 79%.

The inspector discussed these anomalies with licensed operators and concluded that the operators were aware of the changes to both CST level and AFW diesel day tank level; that is, the operators were aware of the correct levels in spite of the procedure omissions noted above. Therefore, the inspector considers that these omissions are not a major issue, however, the finding indicates that more thorough procedure reviews are necessary to ensure that required changes are included in all pertinent sections of a procedure and in all other related procedures. These matters were discussed with the licensee who will examine the items further for possible procedure changes. No specific follow-up appears warranted.

B. Temporary Modifications

The object of this examination area was to assess the adequacy of the licensee's program for controlling lifted electrical leads and jumpers. The approach taken by the inspector was to examine the implementation of this program to ascertain compliance with the applicable administrative procedure. The applicable procedure at Trojan is Administrative Order AO-6-2, Rev. 15, Temporary Modifications, dated August 23, 1985. The inspector reviewed this procedure, which has recently been extensively revised and considers it a satisfactory procedure. The purpose of the procedure is to ensure that temporarily modifications are properly evaluated, identified, recorded in appropriate logs, controlled, and

periodically reviewed. It includes temporary alterations such as lifted leads, electrical jumpers, disabled annunciators, blank flanges, mechanical jumpers, disabled relief valves, temporary shielding, temporary setpoint changes, and other similar alterations.

The inspector's examination of the implementation of this program included review of the temporarily modifications log and a field check of selected temporary modifications. The following items summarize the examination:

(1) AO-6-2, Rev. 15, paragraph VI.A requires that "...Operations personnel shall monthly audit the TM log..." and paragraph VI.A.3 requires that..."This audit shall be documented by a signature and date on the next line of the TM index." These monthly audits which were required by Revision 15 (dated August 23, 1985) of the procedure should have been evident by signatures in the TM index for the months of September, October, and November 1985. No such signatures were evident in the index. The inspector subsequently determined that this item had also been identified by the Manager, Technical Services during an audit dated November 19, 1985.

(2) Several recent temporary modifications (issued since August 28, 1985) do not show evidence of receiving the Engineering Supervisor review or PRB review. AO-6-2 requires the Engineering Supervisor to review all TMs within 3 days of installation and the PRB review all TMs (which have had the evaluation section completed) within two weeks of installation. Again, the inspector subsequently determined that this item had also been identified by the licensee's November 19 audit.

(3) Revision 14 to AO-6-2 which was in effect from June 21, 1984 until August 23, 1985 contained the following requirement for supervisory review of the TM program:

"II.D. Review

1. The Operations Supervisor shall review the Temporary Modification Log semi-annually for temporary modifications that have not been restored within six (6) months of their initiation. For those temporary modifications existing over six (6) months that have not had an RDC initiated to make it permanent, the Operations Supervisor shall review the applicable modification form and evaluation and formally notify the responsible supervisor that it is still in effect. The Operations Supervisor shall document his review by initiating the Control Room copy of the TMF.

2. The responsible supervisor, upon being notified of a temporary modification existing for over six (6) months shall:

   a. Have the temporary modification restored if possible, or

   b. Initiate a Request for Design Change (RDC) making the temporary modification permanent, or

   c. Document his approval of continuing the temporary modification by initialing the Control Room copy of the TMF.

3. The Engineering Supervisor or designee shall do the following:

   a. When an RDC to make a temporary modification permanent has been initiated and approved for evaluation, he will ensure the RDC number is entered on the Control Room copy of the TMF.

   b. Conduct a semi-annual review of the Temporary Modification Log for modifications that have been installed for more than six months. For those that have had an RDC initiated, he will ensure the RDC has not been cancelled. For those not having an RDC, he will either satisfy himself that an RDC is not required and document his review by initialing the Control Room copy of the TMF or initiate an RDC and enter the RDC number on the TMF.

   c. When the applicable RDC has been completed, he will notify the responsible supervisor. The responsible supervisor will have the temporary modification closed out."

These semi-annual audits should have been documented in the TM log as evidenced by initials in the Control Room copy of each TM which was not covered by a Request for Design Change (RDC). The inspector determined that seven 1984 TMs were of the category that should have been initialed every six months by the three supervisors. The inspector noted that only one of the supervisors was performing the semi-annual review as evidenced by only one of the supervisors initialing the required TMs.

(4) AO-6-2, Revision 15, paragraph IV.D requires that..."All temporary modifications controlled per this procedure shall be tagged with a blue Temporary Modification Tag." The inspector

examined 14 TMs in the field (ten installed during 1985 and four installed during 1984). Five of these field examined temporary modifications did not have a blue temporary modification tag attached as required; these were:

a) TM-85-63 - disconnected run hour meter VC-206A (CS-9A) from the containment hydrogen ventilation fan.

b) TM-85-64 - disconnected run hour meter VC-206B (CS-9B) from the containment hydrogen ventilation fan.

c) TM-85-76 - installed mechanical jumper from acid storage tank to acid pump P-127A&B.

d) TM-85-83 - installed fire protection system to lunch room in turbine building.

Each of these TMs were installed after issuance of Revision 15 to the procedure. Since the items of concern did not directly apply to safety related equipment, the findings in this area were not considered a violation of NRC requirements. However, the NRC will further examine corrective actions to assure that safety related systems are not affected (50-344/85-33-05).

7. Plant Modifications:

An inspection was conducted of the licensee's program for controlling modifications to plant configurations. The inspection included a review of program procedures which describe the controls used in the execution of the program. The procedures reviewed included:

NDP 200-1	Design Change Control
NPEP 200-14	Detailed Construction Package Preparation and Control
NPEP 200-6	Preparation of Engineering Drawings
NPEP 200-15	Processing of "As Built" Packages
PMP-1	Plant Modification Procedure

The inspector found that formal procedures governing plant modifications exist and that critical elements such as organization reviews and approvals, safety evaluations, test requirements, document revisions, design inputs, FSAR updates, work package preparation and package close out reviews were included as required actions in the program.

The inspection included eleven design change package reviews related to modifications of the Auxiliary Feedwater Systems. Design changes are prepared by the offsite Nuclear Plant Engineering organization which is comprised of approximately 160 people. The design change packages are then reviewed by the on-site technical organization for consistency with the preliminary design, for meeting the purpose of the modification, for safety evaluations and also for the identification of post installation testing requirements.

The modification installations are controlled and implemented through the use of maintenance requests. Work packages are developed which include installation instructions, QC hold points and testing requirements. These work packages are developed and the work coordinated by an organizational unit entitled Plant Modifications, a group which is separate from the plant maintenance organization.

The eleven modifications were inspected for conformance to program requirements in the following areas: design and engineering documentation; work plan; material ordering, receipt inspection, and issuance; construction implementation and as-built documentation. The following observations were made as a result of this inspection.

- There was no evidence that independent verifications of electrical work involving cable routing and installation or circuit modifications had been performed, even though an internal QC procedure does reference tasks such as terminations and cable routing as activities which warrant QC inspection.

- Several examples of abnormal equipment configurations involving missing electrical junction box fasteners, leaking diesel governor pipe plug and use of the electrical tie wraps to support cables and a jacket cooling water hose were noted in the diesel driven auxiliary feedwater room.

A. Instrumentation and Control Modifications

1) Modification Packages Reviewed

*77-139 "Motor Driven Auxiliary Feedwater Pump Installation"

*79-063 "Installation of Auxiliary Feedwater Pump Low Suction Pressure Trip Devices"

*83-025 "Turbine Driven Auxiliary Feedwater Pump Trip and Throttle Valve Made Operable from the Control Room"

*84-105 "Auxiliary Feedwater Pump Discharge Flow Instrumentation Replacement"

2) Inspection Findings

In general, the documentation and hardware examined were found to be in conformance with requirements. However, in conjunction with the installation of the flow indicating switches in the AFW discharge lines (84-105), two deficiencies were noted:

a) Bolts attaching switch at location FIS-3004-D1 to its mounting plate were found to be loose. Although no specific torque requirements were contained in the installation instructions, these bolts were not even

"finger-tight" and the lock washers were not engaged. In addition, no requirement for QC inspection of mounting configuration was contained in the detailed installation instructions other than the inspection of the support welds.

b) The instrument identification numbers, as shown on metal tags attached to the instruments, for flow indicating switches FIS-3004-A1, FIS-3004-A2, FIS-3004-B1, FIS-3004-B2, FIS-3004-C1, FIS-3004-C2, FIS-3004-D1, and FIS-3004-D2 are not in accordance with the tag numbers shown on piping and instrumentation drawing (P&ID) M-213, SH.2, Rev. 6, which depicts the required installation locations of these devices. Conversations with licensee personnel revealed that equipment other than instrumentation (i.e., valves, pumps, etc.) have their identification tags affixed by plant operators, and identification tagging for these types of equipment was found to be correct. However, instruments are tagged by instrument shop technicians, and several instruments throughout the facility were observed with no permanent identification tags, only stick-on type calibration tags, which in several instances had either fallen off or had become illegible. It was further discovered that the above flow indicating switches had been drawn from the warehouse in bulk and installed randomly by the instrument technicians, without noticing the factory installed metal identification tags. It is determined that, although these switches are functionally identical, this transposition of identification numbers could cause confusion in locating a particular instrument, leading to the possibility of operator errors in the future. The above conditions and activities are not in compliance with 10 CFR 50, Appendix B, criterion V and licensee commitments as stated in standard IEEE-308-1971 and section 7.1 of the Trojan updated safety analysis report, which require readily identifiable and unambiguous component identification tagging. Therefore, this item is considered a violation of NRC requirements (50-344/85-33-06).

B. Electrical Modifications

1) Modifications Reviewed

- 80-086 Increased battery capacity for the diesel auxiliary feed water pump.
- 84-104 Steam generator flow control valve modifications.
- 80-003 AC independence of the turbine driven auxiliary feed water pump steam inlet valves.

2) Five Areas of Inspection

a) Design Engineering

The inspector reviewed design documents to see if design engineering considered how these documents affect the FSAR and Technical Specifications. The appropriate considerations had been addressed. Additionally, those plant maintenance, operations, and off normal condition procedures which were affected had been flagged for changes.

b) Field Engineering

The inspector reviewed the work plan generated by field engineering to confirm that it reflected the requirements of the design engineering documents. The requirements were incorporated in the work plans; however, in all three modifications, the inspector noted that electrical engineering does not have generic conduit and box support installation details for tradesmen to use as installation guides. Design and field engineering stated that the electricians install these items using the bill of material for hardware guidance. The electricians with field engineering decide if an installation requires an "abnormal" support and contact design engineering for evaluation on a case by case basis. If installation details were provided engineering would have better control of the installation. In discussions with the licensee, he agreed to examine this issue further. However, the matter is not being held as an open item.

Prior to construction QC hold points are assigned to the work activities as required. However, electrical QC procedure QCP 13 only addresses anchor installation, welding, cable identification, and 'Ray-Chem' sleeving. All other electrical activities were not being inspected. This matter is representative of the general NRC concern about QC inspection.

c) Material Ordering, Receipt Inspection, and Issuing

In selected purchase orders reviewed for the three modifications, the inspector observed (in the warehouse files) the engineering evaluation of the required material, a certificate of compliance for receipt materials, properly completed receipt inspection reports, and issuing slips properly filled out for material traceability. The inspector also audited a system for retrieval of spare parts, this aspect was also acceptable. There was not a level of storage indicated on any of the purchase orders reviewed. The warehouseman stated he makes the storage location decision.

d) Construction Implementation

The inspector examined the installations of panels, racks, conduit, boxes, conduit supports, tubing, instruments, and valves. Overall these installations were generally acceptable. In addition, the welders involved were qualified to the process identified by engineering and the filler metal requisition slips were filled out properly to provide filler metal traceability. However, three specific minor problems were identified:

(1) Torque wrenches for four activities of the modifications reviewed were used for bolt, bus bar, or anchor torquing. The inspector wanted to confirm that they were calibrated in accordance with Maintenance Procedure MP-3-1, that states; "Torque wrenches that are calibrated for periods of two days or less will be calibrated for specific settings prior to each job. Calibration will be documented on "Torque Wrench Calibration Check" form MP-3-1-5." In only one case the wrench used was calibrated and documented per the procedure. In two cases the wrenches were not documented on the Torque Wrench Calibration Check form. As a result of a records search in the tool issue room, the wrenches were found to be in calibration before and after the work performance date. In the fourth case the wrench numbers used to torque bolts and anchors on a battery rack were not documented on the installation drawing. As a result of this a records search was conducted in the tool issue room and two wrenches (T7910 and T6405) used for the modification, 80-086, were located on the Torque Wrench Calibration Check form indicating that they were calibrated for the engineered torque values.

(2) In connection with modification 80-086, (Increased battery capacity for the auxiliary feed water diesel), the inspector observed three conduits 'over-spanned' in violation of Portland General Electric Installation Standards E-1 section 1.5.1.13. After the inspector brought this matter to design engineering's attention, NCR 85-108 was generated.

(3) Also in conjunction with modification 80-086 a missing anchor bolt for box BTB 706 was noted. This was brought to the attention of design engineering. They were unable to produce the installation drawing, therefore, NCR 85-106 was generated for evaluation of this condition.

The last construction observation was that calibrated electrical crimping tools are not tracked or their usage documented while out for one year periods.

The above items were all discussed with licensee personnel and will be evaluated further. No specific follow-up by the NRC is mandated.

e) As-Builts

The as-built documentation by field engineering was sampled. It was found that design changes were properly incorporated into the drawings by design engineering.

3) Observations/problems by Modification

a) 80-086 Increased Battery Capacity for the Diesel Auxiliary Feed Water Pump

- Design engineering did not provide level of storage on PO-N-26750 for SAB-NIFE batteries, rack, battery charger, and spare parts.

- Reworked conduits BB7035, NB7069, and NI7053 routed over the battery rack are unsupported from box BTB706 to the wall penetration, (for approximately seven feet) which is in violation of Portland General Electric Installation Standard E1 section 1.5.1.13. Conduit must be supported every ten feet and within three feet of the box.

- Torque wrenches (T7910 and T6405) were not documented for usage on Portland General Electric installation drawing C5026 which makes calibrated tool traceability difficult.

- Generic seismic conduit or box support details were not provided in Work Plan PM-053 which resulted in a questionable installation of box BTB706.

b) 84-104 Steam Generator Flow Control Valve Modification

- Design engineering did not provide a level of storage on PO-N29361 (Electro-Switches), PO-29175 (Motor actuators), PO-N29359 (Motor starters), or PO-29375 (Agastat timers).

- Torque wrench (TWO-4-008) used to secure panels C318A and B was not calibrated prior to the job in accordance with Maintenance Procedure MP 3-1.

c) 80-003 AC Independence of the Turbine Driven Auxiliary Feed Water Pump Steam Inlet Valves

- Design engineering did not provide a level of storage on PO-N1-7899 (Air Accumulators), or PO-N1-7258 (Motor operators).

- Torque wrenches (T4975 and 6457), used to secure air accumulators T166A-D and pipe supports, were not calibrated prior to the job in accordance with Maintenance Procedure MP 3-1.

The above items (Section B) were discussed with licensee personnel and will be evaluated further by the licensee. However, no specific follow-up by the NRC is mandated.

8. Offsite Review Committee

The purpose of this inspection was to verify that the offsite safety review committee or its equivalent had been established and was functioning in conformance with Technical Specification requirements and commitments in the FSAR.

The Trojan Nuclear Operations Board (TNOB) is the offsite review group required by Technical Specification 6.5.2. Nuclear Division Procedure (NDP) No. 500-1 establishes the TNOB and specifies the responsibility of the Board and the minimum qualifications of the members and staff appointed to serve on the Board. The methods by which the TNOB performs its duties are outlined in the Trojan Nuclear Operations Board Procedures.

The inspector attended the quarterly board meeting held on December 10, 1985, and noted that a quorum was established and maintained, the members were duly appointed to the board, and the members appeared to be knowledgeable of the topics discussed. The inspector also reviewed the minutes of TNOB meetings for the previous quarters in 1985 and concluded that the TNOB was meeting its responsibilities.

No violations or deviations were identified.

9. Radiation Protection, Plant Chemistry and Radwaste; Organization and Management Controls

The licensee's organization and staffing in these areas has remained substantially unchanged since the last inspection in this area (50-344/85-01). An Assistant Radiation Protection Supervisor had been selected and satisfactorily filled the position for an extended period including a refueling outage. No degradation in the responsibility or authority of the supervisory staff to properly manage activities in these areas was identified. Management support of and interest in these areas was evidenced by:

- Approval of the 1986 budget authorizing an additional radiological engineering position, chemistry laboratory supervisor and additional radiation protection and chemistry technicians.

- The corporate office staff (Nuclear Safety and Regulation Department, NSRD) had been conducting frequent inplant inspections/tours in support of the onsite staff.

The Radiation Protection and Chemistry Supervisors were well supported by upper management. The General Manager supports the radiation protection program in contacts with other departments and demonstrated an interest in radiation protection matters by increased contact with the Radiation Protection Supervisor in regard to plant conditions and activities.

The licensee's Quality Assurance (QA) organization conducted an audit of Radiation Protection at the Trojan Nuclear Plant, June 10-14, 1985, GAI-147T-85M. The audit report was examined. The auditors were assisted by a technical advisor from NSRD's Radiological Safety Branch.

The audit addressed:

- Corrective actions on previous audit items;
- Implementation of selected standard Technical Specification (TS) surveillance requirements;
- Implementation of Radiation Protection Manual Procedures;
- Compliance with PGE-8005 Radiation Protection Program; and
- Compliance with selected regulatory commitments.

A number of minor items were addressed and resolved.

PGE QA Audit of Chemistry Activities at the Trojan Nuclear Plant, February 11-15, 1985, GAI-42T-85M was examined. The audit addressed operating licensee and TS requirements and implementation of PGE's Nuclear Quality Assurance Program. All items were found to be acceptable.

No violations or deviations were identified.

10. Radiation Protection, Plant Chemistry, Radwaste and Transportation; Training and Qualification

The licensee had added a radiation protection training specialist to the staff in addition to the chemistry and radiation protection specialist already on the staff. Management was vigorously supporting efforts to obtain INPO certification of the General Employee Training (GET) and accreditation of the technician training programs. A contractor was onsite performing job task analysis, preparing lesson plans and assembling the training program to this end. Training content was based on input from radiation protection and chemistry technicians, supervisors and training department specialists.

In general new employees, supervisors and I&C personnel receive only GET initially. New operators receive additional training in radiation protection and the use of survey instruments.

Two added training programs were provided:

- The two day Plant Services Training (PST) is designed to provide a very basic overview of the plant and plant operations for clerical and warehouse personnel;

- The two day PET program is similar to PST but is designed for professionals and includes some theory, radwaste and systems information.

Training records for eight chemistry, radiation protection and chemistry and radiation protection technicians were examined. The retraining program included procedures, first aid, hospital (emergency plan participant) tours, PASS and academically oriented training. In the last category, training in water pretreatment, ion chromatography, radiochemistry, radiation biology and basic electricity had been provided. A review of examinations used in the radiation biology training established that the subject matter was presented at the college level.

The training staff estimated that approximately 15 new employees were employed at Trojan annually. Initial training was limited to GET for all categories of workers. The GET program includes two hours of generic and four hours of site specific radiation protection training. Annual retraining includes radiation protection, biological effects, risk and ALARA.

The report of an audit conducted by PGE Quality Assurance Audit of Training Activities at Trojan, February 1985, GAI-51T-85M was examined. The audit addressed chemistry and radiation protection training and GET. No discrepancies were identified.

No violations or deviations were identified.

11. Liquids and Liquid Wastes

Audits

No audits in this area were identified since the last inspection in this area. (50-344/85-09)

Changes

No changes in equipment or procedures were identified since the last inspection in this area. (50-344/85-09)

Procedures reviewed included:

- Administrative Order AO-11-3 Radioactive Waste Control; and

- Chemistry Manual Procedure CMP-7 Liquid Radwaste Discharge Permit Preparation Procedure.

Effluents

The licensee's Semiannual Radioactive Effluent and Waste Disposal Report for the period January 1 - June 30, 1985 was reviewed. The timely report addressed effluents and waste disposal, offsite dose calculations and meteorological data. No errors or anomolous data were identified. (85-06-Y0 closed) Radioactive Liquid Waste Discharge Permits from 01-85 on January 4, 1985 through 117-85 on November 20, 1985 were examined. No discrepancies were identified. No problems were identified in connection with the use of the liquid waste processing system. During the inspection the sampling, sample analysis and the preparation of liquid waste discharge permit number 121-85 was observed. The technician preparing the permit had available, used and was familiar with a current revision of Chemistry Manual Procedure CMP-7 (previously identified).

Instrumentation

The effluent monitor setpoints were established based on procedures contained in the Offsite Dose Calculation Manual (ODCM) and procedure CMP-7. Actual monitor readings were recorded as well as the expected monitor reading projected from laboratory analysis. Effluent monitoring instrument calibration records for PRM-9 Liquid Radwaste Discharge Monitor and PRM-10 Steam Generator Blowdown Monitor were examined.

Reactor Coolant and Secondary Water

Reactor coolant chemistry records for the period January 14 - October 15, 1985 were examined and compared with the limits specified in TS Table 3.4-1. No discrepancies were identified. The secondary water chemistry program described in TS section 6.8.4.c Secondary Water Chemistry was not examined. This area will be reviewed during a subsequent inspection. (50-344/85-33-07)

No violations or deviations were identified.

12. Gaseous Waste System

Audits

No audits in this area were identified since the last inspection in this area (50-344/85-09).

Changes

A second chiller had been installed in the air ejector line to remove water vapor and prevent water logging of PERM-6 Condenser Air Ejector Monitoring System. The system performance under high flow rates had not been evaluated at the time of the inspection. Procedures relating to gaseous waste were reviewed. CMP-9, Gaseous Environmental Release Points Sample Analysis, Gaseous, Iodine, Particulate, Tritium Rev. 6, 3/14/85, CMP-40, Post-Accident Sampling and Analysis of Reactor Coolant and Containment Atmosphere, Rev. 6, 4/25/85, and CMP-42, Sampling of Containment Atmosphere Using the Post-Accident Sampling System, Rev. 7, 10/23/85, had been revised since the previous inspection (50-344/85-09).

No concerns were identified.

Effluents

The licensee's Semiannual Effluent and Waste Disposal Report for the period January 1 - June 30, 1985 was reviewed and is referenced in the report section addressing liquid effluents. Gaseous waste discharge permits G-01-85, January 4, 1985 to G-45-85 were examined. Five unplanned releases had been documented by the licensee: G-06-85, 0.98 curies of noble gas, resulted from opening the drain trap bypass; G-14-85, 9.75 curies of noble gas, resulted from a loose swaglock fitting on the Waste Gas Surge Tank; G-15-85, 0.51 curies of noble gas, resulted from loss of the loop seal from the boric acid batching tank; G-35-85, 5.77 curies of noble gas, resulted from a stuck open solenoid valve; and G-45-85, 1.77 curies of noble gas, resulted from the removal of gauges from a waste gas compressor. The licensee documentation noted that all releases had been monitored by PERM-2. The licensee had evaluated all releases with respect to TS limits. No limits were exceeded. The inspectors observed the sampling, analysis and preparation of a waste gas release permit. The technician had available a current revision of, used and was knowledgeable in the contents of CMP-8, Waste Gas Decay Tank Tank Discharge Permit Procedure. Following preparation of the release permit the licensee decided not to release the tank since the remaining short lived activity was to high.

Instrumentation

Effluent monitor setpoints were established based on procedures contained in the ODCM and specific chemistry manual procedures. Calibration records for monitors PRM-4, Gaseous Radwaste Monitoring System, PRM-1 Containment Monitoring System, and PRM-16 Main Steam Line Monitors were examined. Release permits identified expected and alarm setpoint readings and actual monitor readings observed during releases.

Air Cleaning Systems

The records of testing of the Control Room Emergency Ventilation System TS 3/4.7.6 were examined. The tests were performed in a timely manner and met the requirements specified in the TS.

No violations or deviations were identified.

13. Allegation 85-A-051 Followup

On August 8, 1985, an Oregon State Public Utilities Commission (PUC) representative was inspecting railroad tracks and a proposed tracking change in the Trojan protected area. During the inspection he observed water which he believed had flowed out of the plant under a closed door way. It was determined that the standing water was not contaminated and had not come from inside the plant. During the visit the inspector stepped in the water. Subsequently the inspector observed a sign posted on a nearby wall which showed the Radiation Caution Symbol. On leaving the protected area the inspector repeatedly experienced alarms on the portal monitor. The security guard after resetting the monitor

repeatedly, and inquiring concerning the plant areas visited, told the inspector that he had not visited any contaminated areas and released him without notifying the radiation protection staff. The PUC inspector later became concerned and contacted the NRC on August 16, 1985. The NRC Region V office contacted the licensee and advised them of the PUC inspectors concerns.

The licensee's Radiation Protection Supervisor visited the PUC inspectors residence and performed surveys of the PUC inspectors clothing and shoes worn on August 8, 1985. No evidence of contamination was identified. The licensee documented the results of the survey in a memorandum dated August 22, 1985, Meek to Keuter.

In discussions with the PUC inspector the Radiation Protection Supervisor established the plant protected area locations toured by the inspector. The licensee determined that the water which appeared to have come from within the plant was in fact standing water in the railroad track area between the fuel handling building and the turbine building train bays. The sign showing the Radiation Caution Symbol had been posted in this area to alert personnel to the fact that a new walkway to the controlled access area was under construction and was a controlled access area entry point.

Discussions with security personnel established that the PUC inspector was wearing a white shirt when he toured the site. The licensee explained that some problems had been experienced with the portal monitor count initiation photo cell in combination with light colored clothing and afternoon sun light. The photo cell detects the entry of a person into the monitor. If sufficiently bright light reaches the photo cell before completion of the counting cycle, as would occur if a person stepped out of the monitor, an alarm sounds. The effect had occurred previously with sunlight and white or light colored clothing. The portal monitor is designed so that actual radiation caused alarms cause the illumination of the specific detector location at which the radiation was detected. This effect was not observed in the case of the PUC inspector.

A memorandum dated August 28, 1985, Ritschard to Security Watch Supervisors directed that the security staff was to be reinformed that the radiation protection staff was to be called in the event of portal monitor alarms.

No violations or deviations were identified.

This matter is considered closed.

14. Follow-up on IE Information Notices

Receipt, review for applicability and initiation or completion of appropriate action with respect to IE Information Notices 85-52 and 85-60 was verified. IE Information Notice 85-81 had not been received by the licensee. A copy was supplied by the inspector.

No violations or deviations were identified.

15. Generic Letter Followup

It was determined that the licensee had made no decision with respect to Generic Letter No. 85-08, 10 CFR 20.408 Termination Reports - Format (GL-85-08, Open)

No violations or deviations were identified.

16. Facility Tours-Radiation Protection

The protected area, portions of the turbine building, auxiliary and fuel handling building, chemistry laboratories and the control room were toured. Surveys, verifying licensee postings were performed using an ion chamber survey instrument, NRC-015843, due for calibration January 15, 1986. The new respirator cleaning and testing facility is substantially complete. Remodeling of the access control area is well advanced.

No violations or deviations were identified.

17. Exit Interview

On December 13, 1985, an exit interview was conducted with the licensee representatives identified in paragraph 1. The inspectors summarized the scope of the inspection and findings as described in this report.