



Portland General Electric Company

November 6, 1989

David W. Cockfield Vice President, Nuclear

Trojan Nuclear Plant
Docket 50-344
License NPF-1

Director, Office of Enforcement
U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington DC 20555

Dear Sir:

Reply to a Notice of violation

Your letter of October 5, 1989 transmitted a Notice of Violation (NOV) and Proposed Imposition of Civil Penalty based upon Nuclear Regulatory Commission Inspection Report No. 50-344/89-19. The NOV dealt with the events surrounding the identification of debris in the Containment recirculation sump and the subsequent discovery that the fine mesh screen was missing from the top of the sump and was damaged and contained excessive gaps on the sides of the sump.

Portland General Electric Company (PGE) has evaluated this event thoroughly and has implemented substantial corrective actions to resolve the weaknesses identified. These corrective actions are further delineated in the attached reply to the NOV. Also enclosed is a check which provides full payment for the civil penalty of \$280,000.

Sincerely,

Attachments

c: Mr. John B. Martin
Regional Administrator, Region V
U.S. Nuclear Regulatory Commission

Mr. David Stewart-Smith
State of Oregon
Department of Energy

Mr. R. C. Barr
NRC Resident Inspector
Trojan Nuclear Plant

JE/14
1/1
w/check \$280,000
#429366

Subscribed and sworn to before me this 6th day of November 1989.

Notary Public of Oregon

My Commission Expires: _____

9/5/92

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REPLY TO A NOTICE OF VIOLATION

Violation I -Nonoperable Emergency Core Cooling System (ECCS)
Subsystem - Containment Recirculation Phase

- A. Trojan Technical Specification 3.5.2 states in part that "Two independent Emergency Core Cooling System (ECCS) subsystems shall be OPERABLE with each subsystem comprised of: . . . e. an OPERABLE flow path capable of taking suction from the refueling water storage tank on a safety injection signal and transferring suction to the Containment recirculation sump during the recirculation phase of operation".

Section 1.6 of the Technical Specifications, in defining the terms OPERABLE and OPERABILITY, provides in part: "a system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety-related function(s). Implicit in this definition shall be the assumption that all necessary . . . auxiliary equipment that are required for the system, subsystem, train, component or device to perform its safety-related function(s) are also capable of performing their rated support function(s)."

Contrary to the above, the two ECCS subsystems have been inoperable since the 1988 Refueling Outage and possibly since 1975 (initial startup) because of missing and damaged Containment recirculation sump components, including the recirculation sump top screen, large and fine mesh screens penetrated by piping, and the southernmost fine mesh screen. With these deficiencies, the required flow path from the Containment recirculation sump during the recirculation phase was not assured.

- B. Technical Specification 4.5.2.c requires in part that a visual inspection be performed of all accessible areas in the Containment prior to establishing Containment integrity to verify that no loose debris (rags, trash, clothing, etc.) is present in the Containment which could be transported to the Containment recirculation sump and cause restrictions of the pump suction during a Loss-of-Coolant Accident (LOCA) condition.

Contrary to the above, on July 11, 1989, during the establishment of Containment integrity prior to reactor startup, the licensee failed to adequately inspect all accessible areas of the Containment, including the Containment recirculation sump area, to assure that loose debris was not present which could be transported to the Containment recirculation sump and cause restriction of the pump suction. The inspections performed under the guidance of

Administrative Order (AO) 3-11, "Containment Access, Integrity, Evacuation, and Inspection," developed in part to meet the requirements of Technical Specification 4.5.2.c, were inadequate in that debris that had the potential to be transported into ECCS pump suction inlets located in the Containment recirculation sump and restricting the pump suction were left in the immediate vicinity of the sump.

- C. Technical Specification 4.5.2.d.2 requires in part that at least once per 18 months the licensee perform a visual inspection of the Containment recirculation sump and verify that the subsystem suction inlets are not restricted by debris and that the sump components (trash racks, screens, etc.) show no evidence of structural distress or corrosion.

10 CFR 50.9 requires, in part, that records be complete and accurate.

Contrary to the above, on July 11, 1989, the licensee failed to perform the scheduled 18-month visual inspection of the Containment recirculation sump. The applicable section of AO 3-11, "Containment Access, Integrity, Evacuation and Inspection," that documents the accomplishment of Technical Specification 4.5.2.d.2, was erroneously checked off as completed when, in fact, the inspection was not performed. Consequently, the licensee failed to identify damaged sump screens.

Violation II - Inadequate Corrective Actions

10 CFR Part 50, Appendix B, Criterion XVI, requires in part that measures be established to assure that conditions adverse to quality, such as failures, deficiencies, deviations, defective material and equipment, and nonconformances, are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action taken to preclude repetition.

- A. Contrary to the above, the licensee failed to take adequate corrective action to preclude repetition of a significant condition adverse to quality relating to the control of loose debris inside Containment that could be transported to the sump and damage safety-related pumps. Specifically, the licensee discovered loose debris in the Containment recirculation sump area on July 8, 1989. However, the licensee's corrective actions were not adequate to ensure that any remaining debris was found and removed prior to reactor startup on July 14, 1989. Additional debris was subsequently found on July 14, 1989, along with damaged sump screens while the licensee's inspections were ongoing. This significant condition adverse to quality is a repeat of a similar event documented in Quality Assurance (QA) Surveillance Report P182 dated July 8, 1988, where tools were found in the sump.

- B. Contrary to the above, as of July 14, 1989, the licensee failed to adequately implement corrective action for a significant condition adverse to quality involving operating, maintaining, and testing systems in accordance with design basis documents. Specifically, in letters dated May 22, 1986 and November 14, 1986, responding to two Notices of Violation and Proposed Impositions of Civil Penalties (EA 86-54 and EA 86-113), the licensee stated that a design basis documentation program would be implemented to assure that the design bases were well understood and documented. Additionally, system walkdowns were to be performed by system engineers to assure that safety systems are operated, maintained, and tested in accordance with the design bases. However, the licensee failed to provide adequate guidance or develop a formal program to assure that these corrective actions would be adequately implemented at the system engineer level. Consequently, the containment spray system walkdown performed in 1987 during reactor operation failed to identify that the sump baffle did not have the mesh screen installed on the top portion, as specified in applicable design documents.

These violations are, collectively, a Severity Level II Problem (Supplement 1).

Cumulative Civil Penalty - \$280,000 (assessed equally among Violations I.A, B, C, II.A and B).

PORTLAND GENERAL ELECTRIC COMPANY'S RESPONSE

Admission of Alleged Violations

Portland General Electric Company admits the violations. A check for \$280,000 is attached in payment of the assessed Civil Penalty.

The cause of this event was primarily due to ineffective management and supervisory involvement in maintenance, surveillance, engineering, and quality activities related to the Containment recirculation sump. One of the recurring weakness of Trojan supervisory and management personnel has been the inability to recognize the significance of problems and take action commensurate with that significance. Once problems have been identified as significant, management has demonstrated the ability to effectively resolve the problems.

For the past two years, senior management in the Nuclear Division has espoused basic performance standards and expectations by which the Nuclear Division must operate. These expectations include:

1. Demonstration of personal accountability.
2. Timely and thorough response to problems.
3. Procedure compliance.
4. Management oversight of daily activities.
5. Attention to detail.
6. Quality teamwork.
7. Establishment of an environment for success.
8. Always strive for higher standards of performance.

For the past two years these performance standards and expectations have not been fully realized. There were two basic reasons for this: (1) the expectations have not been effectively implemented throughout the organization and, (2) the management chain has not consistently demonstrated accountability for meeting performance standards and expectations.

As a result of a continuing inability to meet management expectations, the Manager, Operations and Maintenance and the Branch Manager, Plant Systems Engineering were relieved of their duties. A supervising engineer from the Mechanical Engineering Branch of Nuclear Plant Engineering was selected to fill the Plant Systems Engineering Branch

Manager position. The position of Manager, Operations and Maintenance, is being split into two positions; Manager, Operations and Manager, Maintenance, to increase management oversight in these areas. A contract manager has been retained for the Maintenance Manager position. A candidate to fill this position permanently has been identified and employment of this individual is being pursued. An Institute of Nuclear Power Operations employee has been selected to temporarily fill the Manager, Operations position. A nationwide search is underway to fill this position permanently.

In addition to these changes, the Maintenance Branch Manager will be relieved of his duties in order for him to participate in management improvement programs including gaining additional industry experience (potentially through a short-term assignment with the Institute of Nuclear Power Operations) followed by completion of his college degree requirements. Following this training, he will be evaluated for reassignment to a management position in the Nuclear Division. The Manager of Technical Services and the Branch Manager of Operations have been assigned to complete performance upgrade programs.

PGE has also made changes in the executive-level management responsible for the oversight of nuclear operations. The position of President, Generating Division and President, Energy Services Division have been combined and Ms. E. Kay Stepp has been named President of PGE. Ms. Stepp has an excellent leadership background and an unwavering commitment to excellence. Ms. Stepp has been with PGE since 1978 and was previously the President of PGE's Energy Services Division. She has previously served as the Vice President of Marketing and Customer Relations, Vice President of Management Resources, and Vice President of Human Resources.

A Senior Vice President has been placed in charge of the Generating Division of PGE. Mr. Walter Higgins has been named to fill this position. Mr. Higgins has been with PGE since 1977 and has been serving as the Vice President of Power Distribution since mid-1987. He has previously served as the President of a PGE subsidiary, the General Manager of Information Systems, the General Manager of Construction and Maintenance, and the Manager of Engineering and Maintenance. Prior to joining PGE, Mr. Higgins was employed by the Nuclear Regulatory Commission.

Prior to the Containment sump event, PGE made other significant management changes to improve overall performance. In November 1988, as a result of declining performance in Nuclear Security, the Manager, Nuclear Security, was replaced. Since that time, improved performance in this area has been observed. Some problems caused by previous management are still being uncovered but are effectively being corrected.

Due to a failure to see that management's expectations were being effectively implemented, the Plant General Manager was replaced in

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February 1989. The General Manager, Technical Functions was selected to fill the Plant General Manager position.

In concert with the move of the General Manager, Technical Functions to the Plant General Manager position, the Manager, Nuclear Safety and Regulation was promoted to the position of General Manager, Technical Functions. The position of Manager, Nuclear Safety and Regulation, was filled from the outside by a manager with previous licensing experience at two other utilities with operating nuclear power plants.

In the interest of enabling the Plant General Manager to focus his attention more on the day-to-day operations and maintenance of the plant, a new position, General Manager, Plant Support, was created to shift the responsibility for such areas as Planning and Scheduling, Material Control and Administrative Services from the Plant General Manager. Training will also be shifted to the General Manager, Plant Support, upon completion of a change to the Trojan Technical Specifications. The General Manager, Plant Support position has been filled from the outside by a senior officer from the Navy Nuclear Power Program.

PGE is in the process of implementing the Nuclear Division Improvement Plan. This plan was submitted to the NRC on September 29, 1989. The plan describes those actions which have been taken and those to be taken to improve overall performance and to achieve excellence in the operation of Trojan.

Response to Violation I

1. Reasons For The Violation

a. Violation I.A - Inoperability of Two ECCS Subsystems Due to Missing/Damaged Components

The reason for the missing screen on the top of the Containment recirculation sump appears to be an original construction error or an error in the control of preoperational testing of the ECCS subsystems. A search of early construction and testing records provided no indication that the screen had ever been installed. Metal grating was installed on top of the sump. The presence of a small section of the fine-mesh screen attached to this grating implies that the need for the screen was recognized. It is presumed that the installation of the remainder of the screen was postponed until completion of vortex testing of the recirculation sump and then was overlooked or the screen may have been removed to perform the vortex testing and was not reinstalled due to inadequate test controls.

The reason the missing screen on top of the sump was not recognized earlier than July 1989, as well as the cause of the damage and openings in the screen on the sides of the sump, is an inadequate implementation of the design basis for this ECCS subsystem. Though the screen was not properly installed and contained gaps and tears, surveillance requirements were in place to verify the original design bases were maintained. These verification activities failed to identify the screen inadequacies because the design bases were not fully understood by those responsible for the surveillance.

b. Violation I.B - Inadequate Containment Inspections Resulting in Debris in the Containment Recirculation Sump

The reason for the inadequate Containment inspections and debris remaining in the Containment recirculation sump prior to entering Mode 4 on July 14, 1989 was an inadequate implementation of the design bases for the Containment recirculation sump. The personnel performing the inspections did not recognize the severity of the problem that could result in the event of a design bases accident from allowing debris to remain inside Containment and more particularly inside the Containment recirculation sump. A contributing cause was that the procedure for performing the Containment closeout inspection lacked the specificity needed to ensure an adequate inspection was done, in lieu of any other training, to characterize the importance and significance of the inspection.

A contributing reason for the presence of debris in the Containment recirculation sump was inadequate adherence to post-work cleanliness requirements.

c. Violation I.C - Failure to Perform Surveillance of the Containment Recirculation Sump

The reason for this violation was personnel error. The inspection team leader responsible for performing this surveillance did not ensure all areas of Containment were specifically assigned to one of the team members. This error was compounded when one of the team members inadvertently signed off for the Containment recirculation sump inspection by mistake.

2. Corrective Steps That Have Been Taken and The Results Achieved

a. Violation I.A - Inoperability of Two ECCS Subsystems Due to Missing/Damaged Components

The fine mesh screen has been installed on the top of the Containment recirculation sump, repairs have been made to the damaged screen and openings around pipe penetrations in the screen have been covered such that no opening greater than 3/16-inch exists. Following the repairs, inspections were performed by various disciplines to verify the design basis of the sump had been restored. These actions were completed prior to the Plant entering Mode 4 on July 23, 1989.

In order to make the necessary repairs to return the sump to the condition necessary to satisfy the design bases, the design bases were reviewed by the responsible personnel. Prior to the closeout inspection of the Containment recirculation sump following repairs to the screen, Administrative Order 3-11, "Containment Access, Integrity, Evacuation, and Inspections", was revised to incorporate additional specificity regarding what was to be examined to ensure the design bases of the sump were verified. These activities resulted in a more thorough understanding of the design bases of the sump and ensured, following the repairs and inspections, that the sump met operability requirements. The Containment recirculation sump has been restored to meet the design bases.

During an outage in September 1989, the screens were examined to determine if thermal growth of the pipes had caused any gaps to open greater than the 3/16-inch allowed. Eleven openings were identified ranging in size from just over 3/16-inch to 1/2-inch. These gaps were closed prior to returning to power operations.

An action plan was issued to track Containment sump-related actions as well as actions on broader concerns stemming from this event.

- b. Violation I.B - Inadequate Containment Inspections Resulting in Debris in the Containment Recirculation Sump

Containment cleanup, including the Containment recirculation sump, was completed and verified by inspection prior to entering Mode 4 on July 23, 1989. In order to achieve the necessary level of cleanliness, AO 3-11 was revised to include more specific inspection criteria. The added level of detail in the procedure and the pre-job briefings provided the inspectors with the required level of understanding of the design bases and the level of effort necessary to verify those bases were met.

The inspection requirements in AO 3-11 used to verify Containment recirculation sump operability have been moved to a more appropriate Periodic Engineering Test (PET) procedure. PET 5-6, "Containment and Recirculation Sump Surveillance", was issued on September 22, 1989.

A "lock wire" has been installed on the Containment recirculation sump door to ensure entry into the sump is controlled.

- c. Violation I.C - Failure to Perform Surveillance of the Containment Recirculation Sump

The personnel responsible for failing to perform the initial Containment recirculation sump inspection have received appropriate disciplinary action.

The inspections performed prior to entry into Mode 4 on July 23, 1989 were adequately performed. Appropriate inspection assignments were made prior to the inspection and the results were properly documented.

A separate checklist has been developed for inspections of the Containment recirculation sump. This checklist is to be completed by the assigned inspector and requires an independent verification by a second inspector. This checklist is contained in PET 5-6.

3. Corrective Steps That Will Be Taken To Avoid Further Violations

- a. Violation I.A - Inoperability of Two ECCS Subsystems Due to Missing/Damaged Components

A revision to the Design Basis Document (DBD) for the Containment Spray System has been prepared to include additional design information for the containment recirculation sump. This revision is currently being routed for review and approval. The revision will be issued by December 31, 1989.

A review will be conducted of other safety-related systems to determine where screens are used. To the extent practical during power operations, the installation identified will be verified to meet the design bases for the applicable systems. For those which cannot be verified at power, the verification inspections will be included in the DBD walk downs described in the response to Violation II.B. The initial system reviews will be completed by December 31, 1989.

b. Violation I.B - Inadequate Containment Inspection Resulting in Debris in the Containment Recirculation Sump

A review of other AOs is being completed to identify if other Technical Specification surveillance requirements are being performed under this tier of procedures. AOs are not typically used for the performance of surveillances as they are not meant to be detailed technical procedures. Any Technical Specification surveillance requirements identified which do not belong in this tier of procedures will be moved to a more appropriate tier of the Plant Operating Manual procedures. This action will be completed by December 31, 1989.

As part of the ongoing procedure upgrade program, the level of detail in procedures is being evaluated. This program is approximately 35 percent complete.

As described in response to Violation II.B, the DBD Program criteria are being revised and system walk downs will be reperformed for all systems for which DBDs have been prepared. This process will include an evaluation of surveillance procedures to ensure the appropriate level of detail is included to ensure design bases are verified. This review will be completed by December 31, 1989.

General Employee Training and Retraining curriculum will be revised by January 31, 1990 to include emphasis on the importance of thorough and complete inspections and post-work cleanliness requirements.

A program will be implemented to provide tool control measures for work in the Containment recirculation sump. This program will be implemented prior to the next time work is necessary in the Containment recirculation sump, but no later than the beginning of the 1990 refueling outage.

The "lock wire" on the Containment recirculation sump door will be replaced with a lock during the 1990 refueling outage.

c. Violation I.C - Failure to Perform Surveillance of the
Containment Recirculation Sump

The Vice President, Nuclear has held meetings with Trojan employees to stress management's expectations and performance standards. In these meetings, procedure compliance and attention to detail were specifically emphasized. Management is continuing this emphasis on procedure compliance and attention to detail in day-to-day activities.

The inclusion of a separate checklist in PET 5-6 for the Containment recirculation sump inspection and requiring independent verification will ensure proper completion of this inspection in the future.

4. Date When Full Compliance Will Be Achieved

Full Compliance has been achieved for the Containment recirculation sump debris and screen deficiencies. The actions described above will be completed as scheduled to ensure a violation of this nature does not reoccur and to assure similar deficiencies do not exist elsewhere.

Response to Violation II

1. Reason For The Violation

- a. Violation II.A - Inadequate Corrective Actions for Quality Assurance Surveillance

The reason for this violation is an inadequate understanding and implementation of the sump design bases. Management failed to ensure a thorough response to the 1988 quality assurance finding because they failed to recognize the significance of debris being found in the Containment recirculation sump.

- b. Violation II.B - Inadequate Corrective Actions In Implementing the Design Basis Document Program

The reason for failing to properly implement the DED system walkdowns as intended was lack of management accountability. Specific guidance for the implementation of the system walkdowns was not prepared and adequate management oversight of the walkdowns was not provided.

2. Corrective Steps That Have Been Taken and Results Achieved:

- a. Violation II.A - Inadequate Corrective Actions for Quality Assurance Surveillance

Through the course of evaluating and implementing corrective actions for this event, management has gained a more thorough understanding of the design bases of the Containment recirculation sump. This understanding has enabled management to oversee the implementation of corrective actions to restore the sump to its design bases configuration.

This violation indicates PGE took inadequate corrective action for deficiencies identified during a Quality Assurance Surveillance. Since that surveillance was performed, several changes have occurred in the Nuclear Quality Assurance Department which have resulted in that organization becoming more tenacious and intrusive. In April, 1989, a number of staffing changes were made in the Nuclear Quality Assurance Department (NQAD) to deal with ongoing performance deficiencies. An individual with experience in licensing and compliance was appointed to the position of Branch Manager, Quality Operations, and also acted as the NQAD manager. An experienced Trojan manager with a quality assurance background was appointed to the position of Quality Support Services Branch Manager. In addition, an infusion of experienced technical personnel was made to the NQAD staff through the addition of a Nuclear Engineer, a Mechanical

Engineer, an Electrical Engineer, a Radiation Protection Engineer and an Instrumentation and Control (I&C) technician.

Two additional management changes in NQAD have been made to improve and strengthen the Quality Assurance program. First, the position of Manager, Quality Assurance, has been upgraded to General Manager, Quality Assurance, to put this position on equal level with the other senior managers in the Nuclear Division. Second, a senior manager, with a proven track record in nuclear quality assurance program development and management, was hired from the outside by PGE for the General Manager, Quality Assurance, position.

- b. Violation II.B - Inadequate Corrective Actions In Implementing the Design Basis Document Program

The Branch Manager, Systems Engineering has been relieved of his duties in the Nuclear Division. A supervising engineer from Nuclear Plant Engineering has filled this position.

The Manager, Technical Services had overall responsibility for adequate completion of the system walkdowns. Since this important commitment was not correctly implemented he has been assigned to complete a performance upgrade program.

A plan of action has been prepared to complete a review of the DBD program.

3. Corrective Steps That Will Be Taken to Avoid Further Violations

- a. Violation II.A - Inadequate Corrective Actions for Quality Assurance Surveillance

PGE will continue to proceed with implementation of the Nuclear Division Improvement Plan as specified in our September 29, 1989 letter. One of the objectives of this program is to ensure management quickly recognizes problems and takes timely and thorough corrective actions.

NQAD audit, surveillance and trend reports are being reevaluated for their effectiveness. Nuclear Division Management input will be sought to ensure that data is presented in a concise, effective and useable format for management. This action will be completed by November 15, 1989.

Vacancies within NQAD in technical disciplines are being filled with degreed personnel whenever possible.

- b. Violation II.B - Inadequate Corrective Actions In Implementing the Design Basis Document Program

A revision to the DBD for the Containment Spray System has been prepared to include additional design information for the containment recirculation sump. This revision is currently being routed for review and approval. The revision will be issued by December 31, 1989.

Additional documentation and guidance are being prepared for the DBD Program. A DBD content and level of detail document will be issued to provide guidance for the review and revision of the previously issued DBDs. A second document will be prepared to define the expectations for system walkdowns, and describe increased management involvement in the program. The scope of the walkdowns will be to confirm the system design bases by a physical walkdown of the system, review of Periodic Operating Test, Periodic Engineering Test, and Periodic Instrument and Control Test procedures and test data, as well as, a review of operating procedures for the system. The physical walkdown will not be a verification of the detailed system design, (such as pipe support design, whip restraint design, electrical terminations, etc.) but will insure those components and features described in the DBD are present in accordance with the design. Mechanical system walkdowns will include the physical walkdown of all piping and mechanical components. Electrical system walkdowns will include locating panels and circuit breakers, but will exclude verifying the actual wiring terminations. The major objective of the walkdowns is to ensure that key components and features exist as assumed by the design bases. Both of the new documents will be issued by December 15, 1989.

All existing DBDs will be reviewed against the new content criteria document and revised as necessary. The system walkdowns will be performed during or following the revisions to the DBDs. The system walkdowns will be performed by a team including the systems engineer, a design engineer and a quality assurance representative. The walkdown teams will receive training prior to the walkdowns and will be provided a checklist for the walkdown to ensure consistency. The walkdown results will be documented. Management will monitor performance of the walkdowns, will address deficiencies identified in the walkdowns and will determine the need for further corrective actions, if any, to address broader concerns. DBDs for Emergency Core Cooling Systems and other systems within the Containment Building will receive top priority for revision. The DBD upgrades and system walkdowns will be completed by December 31, 1990.

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4. Date When Full Compliance Will be Achieved

Full compliance with the Containment recirculation sump design bases has been achieved. Actions are ongoing as described above to correct management performance and to implement improvements to the DFD Program to ensure design bases are complied with for other safety-related systems.

JDG/hst
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