

ATTACHMENT 2

UNRESOLVED PROBLEMS WITH REGARD TO THE
EFFECTS OF THE PROPOSED MODIFICATION
WORK ITSELF ON PLANT SAFETY

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

PORTLAND GENERAL ELECTRIC COMPANY,
ET AL.

(Trojan Nuclear Plant)

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Docket No. 50-344
(Control Building)

AFFIDAVIT OF KENNETH S. HERRING ON
EFFECTS OF MODIFICATION WORK ON PLANT SAFETY

STATE OF MARYLAND)
COUNTY OF MONTGOMERY ; SS

I, Kenneth S. Herring, being duly sworn, depose and state:

1. I am a senior structural engineer, Engineering Branch, Division of Operating Reactors, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.
2. I have prepared the statement of professional qualifications attached hereto, and, if called upon, would testify as set forth therein.
3. I have prime responsibility for that portion of the NRC Staff's review of the proposed modifications to the Trojan Control Building which deals with the structural adequacy of those proposed modifications to bring the facility into substantial compliance with the license.
4. I am also primarily responsible for the Staff's evaluation of the structural-related effects of the proposed modification work itself on plant safety. Within this area of my review responsibility, the following are unresolved problems which remain as of December 7, 1979:
 - (a) Adequacy of Plates 1 to 6 to Withstand Dropping of Plate 8. The steel plates to be added to the west wall of the Control Building are to be installed sequentially starting with the lowest plate (plate 1) and proceeding to the highest plate (plate 8). The most massive plate is plate 8 and, if it were dropped, it could cause plate 1-6 to separate from the wall and fall to grade level, thereby possibly damaging safety-related conduits and pipes which are buried below grade, if plates 1-6 are not capable of withstanding the impact of plate 8. Also, the dropping of plate 8

could cause structural damage to plates 1-6 and to other structures. The Staff, therefore, requested the Licensee to provide its analysis which demonstrates that plates 1-6 can sustain the impact of a drop of plate 8 without detrimental effects on plates 1-6, the structure, equipment, components, piping or cable trays. This information was requested in Staff question 6 of September 14, 1979.

Status of Resolution. The information requested of the Licensee has not been received by the Staff as of December 7, 1979.

- (b) Seismic Qualification of Steel Plates to be Used as Concrete Forms. The plates to be installed on the west wall of the Control Building may be used as forms for concrete pours. If the plates are used as forms and are not fully seismically qualified during the period between the time they are put in place and the time when they are permanently installed, an earthquake occurring during this period could result in damage to the structure or safety-related conduits and pipes below grade and cables passing between the Control and Turbine Buildings. An analysis demonstrating the seismic qualification of these plates prior to permanent installation was requested in Staff question 8 of September 14, 1979.

Status of Resolution. No response to the Staff question has been received from the Licensee as of December 7, 1979.

- (c) Handling of Plates. The Licensee's analysis of the effects of plate handling on existing structures used certain assumptions with regard to impact loads which appear not to be justified. Accordingly, in Staff question 5 of September 20, 1979, the Licensee was requested to provide the details of its analysis of the effects of plate handling on existing structures with justification for all assumptions, loads, load combinations and acceptance criteria relied upon.

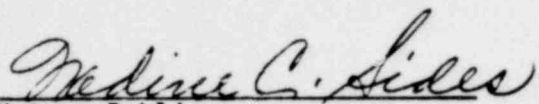
Status of Resolution. No response to this question has been received as of December 7, 1979.

- (d) Damage to Reinforcing Steel from Drilling. Under the proposed modification work, it will be necessary to drill numerous holes in existing walls. Such drilling, if not adequately controlled, could cause damage to reinforcing steel in the walls. Accordingly, the Staff requested, in question 1 of October 2, 1979, the detailed basis for the Licensee's conclusion that reinforcing steel would not be damaged significantly from drilling operations.

Status of Resolution. No response to the Staff question has been received as of December 7, 1979.


Kenneth S. Herring

Subscribed and sworn to before me
this 7th day of December, 1979.


Notary Public

My Commission expires: *July 1, 1982*

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PROFESSIONAL QUALIFICATIONS
OF
KENNETH S. HERRING

EXPERIENCE:

- Jan. 1977 to Present U.S. Nuclear Regulatory Commission
Engineering Branch, Division of Operating Reactors
Office of Nuclear Reactor Regulation
Washington, D.C. 20555
Applied Mechanics Engineer (1/77 to 1/79)
Structural Dynamicist (1/79 to 10/79)
Senior Structural Engineer (10/79 to Present)
Responsible for the review, the analysis, and the evaluation of structural and mechanical aspects related to safety issues for reactor facilities licensed for power operation, and test reactor facilities, including the formulation of regulations and safety criteria. An emphasis is placed on seismic, impact and other dynamic loading considerations, in addition to static loading considerations; and linear and nonlinear, concrete and steel behavior.
Responsible for coordinating various outside technical assistance programs and internal tasks related to structural and mechanical applications to nuclear power plants.
- Aug. 1974 to Dec. 1976 Stone and Webster Engineering Corporation
3 Executive Campus
Cherry Hill, New Jersey
Structural Engineer in the Structural Mechanics Group
Responsible for conducting static and dynamic, including seismic, finite element analysis and design of structures in nuclear power generation facilities.
Responsible for maintaining the Structural Mechanics computer facilities at CHOC.
Fortran IV programming experience.
- Aug. 1973 to Aug. 1974 University of Illinois, Department of Civil Engineering
Urbana, Illinois 61801
Research Assistant
Responsible for conducting an investigation into the material properties of fiber reinforced concrete using quick-setting cements for the Department of Transportation, Federal Railroad Administration. A report on the outcome of the study was published.

EDUCATION:

State University of New York at Stony Brook - Bachelor of Engineering -
May 1973

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University of Illinois at Urbana-Champaign - Master of Science in Civil
Engineering (Structures) - August 1974

ENGINEER-IN-TRAINING: New Jersey .

TECHNICAL SOCIETIES:

American Society of Civil Engineers - Associate Member - April 1974 to
Present.

ASME BOILER AND PRESSURE VESSEL CODE COMMITTEES:

Section XI - Subgroup on Containment - Member - January 1979 to Present.

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