UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
PORTLAND GENERAL ELECTRIC COMPANY, ET AL.	)	Docket No. 50-344 (Control Building)
	)	
(Trojan Nuclear Plant)	)	

AFFIDAVIT OF JAMES E. KNIGHT

STATE OF MARYLAND)
COUNTY OF MONTGOMERY) SS

I, James E. Knight, being duly sworn, depose and state:

1. I am a Senior Electrical Engineer, Systematic Evaluation Program 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 am responsible for that portion of the NRC Staff's review of the proposed modifications to the Trojan Control Building which deals with the effects of the proposed modification work on plant safety while the work is being performed. My specific areas of responsibility include the areas of fire protection and the protection of cables and safety-related equipment during drilling and construction operations.

4. Within the areas of my review responsibility for the proposed Control Building modifications, I regard the following as unresolved problems which remain as of December 7, 1979:

   (a) Fire Protection for Wood Framing and Other Combustible Materials. During the proposed modification work, wood framing will be used for such things as forms for concrete to be poured and scaffolding. Use of such wood framing will introduce additional cumbustible material (the wood itself) into the areas of such use. Other combustible materials may also be introduced. All areas containing safety-related cables and equipment into which combustible materials may be introduced for the modification work must be identified and the fire protection measures in such areas must be described so

that a determination may be made as to the adequacy of fire protection. This information was requested in Staff question 3 of September 14, 1979 and question 4 of September 28, 1979.

Status of Resolution. The identification of all safety-related areas where wood framing or other combustible material is to be used has not been received by the Staff as of December 7, 1979. The description of the fire protection measures to be taken with regard to wood framing was provided in the Licensee's November 21, 1979 response to question 4 of September 28 which is currently being evaluated.

(b) Protection of Cables from Dropped Objects. Certain cable trays in the Cable Spreading Room could be impacted by washers or tools dropped during the installation of the plates on the west wall of the Control Building. The Licensee had stated that the cables in these trays would be protected but had not provided a description of the protective measures so that their adequacy could be determined. If the protective measures are not fully adequate, dropped tools or washers could damage safety-related cables and thereby disable safety systems. A description of the protective measures was requested in Staff question 4 of September 14, 1979.

Status of Resolution. The Licensee submitted a response on November 21, 1979 which is currently being evaluated to determine if the protective measures are adequate to preclude damage to cables.

(c) Adequacy of Cold Shutdown to Assure Plant Safety During Installation of Plate 8 on the Control Building West Wall. The Staff has requested information demonstrating that, during the handling of plate 8, the exhaust stacks for diesel generator B will not be damaged simultaneous with damage to the safety train A cables which pass between the Control and Turbine Buildings and which could be severed by a drop of plate 8. In addition, information was requested on the time available to reestablish operation of those pumps required for decay heat removal should safety train A cables passing between the Control and Turbine Buildings be severed from the drop of plate 8 simultaneous with damage to the diesel generator B exhaust stacks. Finally, information was requested which would demonstrate that damage to the cable for the diesel generator tachometer would not affect operation of the deisel generator itself. The Licensee indicated orally at an October 18, 1979 meeting with the Staff that it would provide this information in documentary form but such documentation has not been received as of December 7, 1979.

(d) Effects of Drilling Through Control Building West Wall. Safety-related conduits embedded in the west wall of the Control Building could be damaged by drilling through the west wall for installation

of the steel plates on that wall. The Licensee was requested, in Staff question 1 of October 2, 1979, to describe the method that will be used to avoid drilling into these conduits. No response has been received as of December 7, 1979.

(e) Fire Barriers and Location of Cadwelding. The Staff requested an identification of the material which will be used to temporarily plug, and serve as a fire barrier for, the holes drilled through the west wall of the Control Building. In addition, the Staff requested documented verification that cadwelding operations will not be performed in the Cable Spreading Room, the Control Room, and the Electrical Auxiliaries Room. The Licensee indicated orally at an October 18, 1979 meeting with the Staff that it would provide this information in documentary form but such documentation has not been received as of December 7, 1979.

James E. Knight

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

Notary Public

My Commission expires: July 1, 1982.

James E. Knight

Division of Operating Reactors

U. S. Nuclear Regulatory Commission

Professional Qualifications

I am a Senior Electrical Engineer in the Systematic Evaluation Program Branch, Division of Operating Reactors, Office of Nuclear Reactor Regulation, U. S. Nuclear Regulatory Commission. I am responsible for all aspects of Instrumentation, Control and Power Systems reviews associated with safety reviews of the operating power reactors assigned to the Systematic Evaluation Program Branch.

I received a Bachelor of Science degree in Electrical Engineering from Lawrence Institute of Technology in 1967. Additional graduate studies were subsequently performed at Wayne State University. Other educational background includes:

1. Air Force electronics school, one year;

2. Nuclear Engineering course covering Boiling and Pressurized Water Reactors - sponsored by Detroit Edison (6 months) 1974;

3. Fire Protection for Nuclear Power Plants - NRC sponsored (2 weeks) 1974;

4. Boiling Water Reactor Simulator school - NRC sponsored (2 weeks) 1978;

5. Pressurized Water Reactor Simulator school - NRC sponsored (2 weeks) 1979.

I am a registered professional engineer of the State of Michigan having been qualified by written examination. I have been certified since October 1, 1970. From 1960 to 1967 I was employed by Atomic Power Development Associates Incorporated as a test facility supervisor responsible for design, installation, maintenance and calibration of instrumentation, control and electrical equipment for special process loops and test rigs (involving nuclear technology) related to the Fermi I fast breeder reactor.

From 1967 to 1973 I was employed as a senior electrical engineer for Atomic Power Development Associates Incorporated responsible for electrical, instrumentation, and control designs and modifications to the Enrico Fermi I power plant, the development of electrical testing and analysis of the Fermi I emergency power systems, and the development of specialized tools and instrumentation for liquid metal cooled reactors.

From 1973 to 1975 I was employed by the Detroit Edison Company as a senior electrical engineer, acting as system engineer in the project management office of the Enrico Fermi II Boiling Water Reactor. As a system engineer I was responsible for management of the design of instrumentation and control systems for safety systems and balance-of-plant systems from concept to final design. Responsibilities included design review and approval, resolution of safety and technical problems, and the development of the safety analysis report on instrumentation and control.

From 1975 to present I have been employed by the Nuclear Regulatory Commission as a Reactor Engineer (Instrumentation); 1975-1976 in the Division of Technical Review, from 1976 to September 2, 1979 as an Engineering Systems Analyst and Senior Engineering Systems Analyst in the Division of Operating Reactors and from September 2, 1979 to present as a Senior Electrical Engineer in the Systematic Evaluation Program Branch. In these capacities, I have been responsible for numerous safety reviews on boiling and pressurized water reactors including the fire protection reviews of fifteen operating reactors.