

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE COMMISSION

In the Matter of	)	
	)	Docket Nos. 50-443 OL
PUBLIC SERVICE COMPANY OF	)	50-444 OL
NEW HAMPSHIRE, <u>et al.</u>	)	Off-site Emergency Planning
	)	
(Seabrook Station, Units 1 and 2)	)	

AFFIDAVIT JAMES E. KNIGHT

I, James E. Knight, being duly sworn deposes and says:

1. I am Chief of the Electrical Components Section in the Electrical Systems Branch in the Office of Nuclear Reactor Regulation.

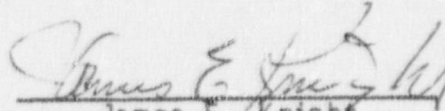
2. I have a Bachelor of Science in Electrical Engineering and I am a registered professional Engineer. Before being employed by the Nuclear Regulatory Commission I had wide experience working on nuclear power plants and dealing with their production and consumption of electric energy. A copy of my resume is attached to this affidavit.

3. The Seabrook Nuclear Station will produce 1150 megawatts electric when operating at full power.

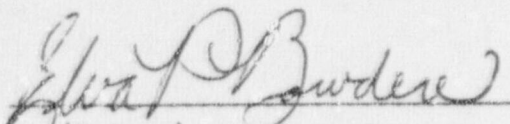
4. Generally, a large nuclear power plant of in excess of 1000 megawatts electric uses about 50 megawatts of power in operating the plant. This is known on the housekeeping or hotel load.


5. From this it can be seen that when a plant, such as Seabrook, which has a full power capacity of 1150 megawatts, is operating at any power level above 5 percent of full power it will be producing more power than it consumes.

6. Typically, a power plant is synchronized with the electrical power grid providing power to consumers at about 6-8% of full power.

  
James E. Knight

Sworn to and subscribed before me  
this 6th day of September 1989

  
(Notary)

 Commission Expires July 1, 1990

## PROFESSIONAL QUALIFICATIONS

James E. Knight

Division of Systems Technology

U.S. Nuclear Regulatory Commission

### PRESENT POSITION

I am the Section Chief of the Electrical Components Section of the Electrical Systems Branch, Division of Engineering and Systems Technology, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. As such I supervise the work of five electrical engineers in the review and evaluation of electrical power systems for all Commercial Nuclear Power reactors. This includes plants in the licensing stage in which the entire design is being reviewed and review of problems or design changes which occur on operating reactors. Additional related work includes review of standards, regulatory guides, topical reports, and resolution of generic issues. For areas within my purview I provide technical and regulatory advice and consultation to other NRC branches, management, applicants and licensees.

### EDUCATIONAL BACKGROUND

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

1. Nuclear engineering course covering Boiling and Pressurized Water Reactors - sponsored by Detroit Edison (6 months) 1974;
2. Fire Protection for Nuclear Power Plants - NRC sponsored (2 weeks) 1977;
3. Boiling Water Reactor Simulator School - NRC sponsored (2 weeks) 1978;
4. Pressurized Water Reactor Simulator School - NRC sponsored (2 weeks) 1979;
5. Government Management Seminar II (Kepner-Tregoe Problem Analysis-Division Analysis - Potential Problem Analyses) (1 week) 1980;
6. Air Force electronics school, 12 months;
7. Air Force instructor training school, 3 months;
8. The Rationale Manager (Kepner-Tregoe Course) (one week) 1973;



9. Seminar for New Managers, 2 weeks, 1983;
10. Supervising Human Resources, 1 week, 1984;
11. EEO Training for Managers and Supervisors, 2 days, 1984;
12. Conflict Resolution, 2 days 1982;
13. Managing Management Time, 2 days, 1982;
14. Critical Elements & Performance Standards, 2 days, 1982;

#### LICENSES

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, Identification Number 018457.

#### ADDITIONAL WORK EXPERIENCE

From November 1985 to April 1987 I was the Section Leader of Section B of the Electrical, Instrumentation and Control Systems Branch, Division of PWR Licensing-A, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. As such I supervised the work of seven electrical engineers in the review and evaluation of electrical power and instrumentation and control systems for all the Westinghouse reactors. This includes plants in the licensing stage in which the entire design is being reviewed and review of problems or design changes which occur on operating reactors. Additional related work includes review of standards, regulatory guides, topical reports, and resolution of generic issues. For areas within my purview I provided technical and regulatory advice and consultation to other NRC branches, management, applicants and licensees.

From November 1981 thru November 1985 I was the Section Leader of the Electrical Section of the Power Systems Branch, Division of Systems Integration, NRC. In that capacity I supervised the work of six electrical engineers in the review and evaluation of electrical power supply systems as described in Safety Analysis Reports, Topical Reports and other information submitted for the licensing of nuclear power plants or in support of license amendment applications. Additional areas include resolution of related technical issues during licensing and on operating reactors as well as review of standards, regulatory guides and generic issues. I provided expert technical assistance and authoritative advice to applicants, licensees, other NRC branches and management relating to the safety-related electrical power systems aspects of nuclear power plants.

From January 1975 to January 1976 I was employed by the Nuclear Regulatory Commission as a Reactor Engineer (Instrumentation) in the Electrical and Instrumentation and Control Systems Branch, Division of Technical Review; from January 1976 to September 2, 1979 as an Engineering Systems Analyst and Senior Engineering Systems Analyst in the Division of Operating Reactors, from September 2,

1979 to March 9, 1980 as Senior Electrical Engineer in the Systematic Evaluation Program Branch, from March 9, 1980 to May, 1981 as Principal Electrical Engineer in the Operating Experience Evaluation Branch, Division of Safety Technology, from May 1981 to November 1981 as Principal Reactor Engineer in the Instrumentation and Control Systems Branch, Division of Systems Integration.

In the above capacities with the Nuclear Regulatory Commission, I have been responsible for numerous safety reviews on boiling and pressurized water reactors including activities as a lead reviewer for systems and electrical, instrumentation and control areas in the fire protection reviews of fifteen operating reactors subsequent to the Browns Ferry fire. I have also acted as an expert witness and provided written and verbal testimony for the hearings on the Trojan control building problem and on the Allens Creek Scram Discharge Volume Contention.

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 1967 to 1973 I was employed as a senior electrical engineer for Atomic Power Development Associates Incorporated (APDA) responsible for electrical power, and instrumentation and control designs and modifications to the Enrico Fermi I power plant, the development of electrical testing procedures, analysis of test results for the Fermi I emergency power systems, and the development of specialized tools and instrumentation for liquid metal cooled reactors. In addition, I was deeply involved in Liquid Metal Fast Breeder Reactor program for development of instrumentation of liquid metals. I acted as an (APDA) consultant to the Detroit Edison Company for electrical systems on the Fermi II BWR. I was principal instrumentation and control contributor to a joint APDA, Detroit Edison and Central Research Institute of Electric Power Industry of Japan "Conceptual Design Study of a 350 MWe Demonstration Fast Breeder Reactor." I was a principal investigator in acoustic leak detection studies for nuclear steam supply systems which resulted in the following publications:

1. Feasibility Studies for An Acoustic Leak Detection System for Nuclear Steam Supply Systems; J. E. Knight, C. C. Scott
2. The Development and Design of Acoustic Leak Detection Systems for Millstone-1 and Fermi-2; A. E. Klickman, J. E. Knight
3. Background Noise for Acoustic Emission in a Boiling Water and Pressurized Water Nuclear Power Reactor; S. P. Ying, J. E. Knight, C. C. Scott

From 1960 to 1967, I was employed by Atomic Power Development Associates Incorporated as an instrumentation and controls technician at the Fermi-I Plant and later as a test facility supervisor responsible for design, installation, maintenance and calibration of electrical, and instrumentation and control equipment for special process loops and test rigs related to the Fermi I fast breeder reactor and the Government's fast breeder program.



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NUCLEAR REGULATORY COMMISSION

DOCKETED  
USNRC

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BEFORE THE COMMISSION

In the Matter of )

PUBLIC SERVICE COMPANY OF  
NEW HAMPSHIRE, et al. )

(Seabrook Station, Units 1 and 2) )

DOCKET NO. 50-443 OL  
50-444 OL  
Off-site Emergency Planning

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S OPPOSITION TO WAIVER OF FINANCIAL QUALIFICATIONS REGULATION APPLICABLE TO FULL POWER OPERATION OF SEABROOK" in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class or, as indicated by an asterisk, by deposit in the Nuclear Regulatory Commission's internal mail system, or as indicated by double asterisks, by express mail this 7th day of September 1989:

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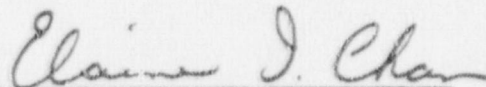
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