UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of) UNION ELECTRIC COMPANY) (Callaway Plant, Unit 1))

B110130502 B1100 PDR ADDCK 05000 Docket Nos. 50-483 OL

AFFIDEVIT OF EUGENE J. GALLAGHER IN SUPPORT OF NRL 5° FF MOTION FOR SUMMARY DISPOSITION ON THE ISSUE OF JOINT INTERVENORS'S CONTENTION I-D

I, Eugene J. Gallagher, being duly sworn, depose and state:

1. I am a civil engineer with the U.S. Nuclear Regulatory Commission. Since February 1981, I have been assigned to the Reactor Engineering Branch, Division of Resident and Regional Reactor Inspection, Office of Inspection and Enforcement. Prior to February 1981, I was a reactor inspector assigned to the Region III, Reactor Construction and Engineering Support Branch, Office of Inspection and Enforcement. I was assigned to the Callaway Plant (among others) during the period of December 1977 through September 1980. A statement of my professional qualifications is appended hereto as Attachment No. 1.

2. As a civil engineer inspector for the Region III office of Inspection and Enforcement I conducted five inspections with respect to the Callaway Plant, Unit 1, in order to: (1) ascertain whether adequate quality assurance plans, instructions and procedures had been established for the construction of concrete structures; (2) provide an independent evaluation of the performance, work in progress and completed work to ascertain whether activities relative to concrete construction were accomplished in accordance with NRC requirements, and (3) review the quality related records to ascertain whether these records reflected work accomplished consistent with NRC requirements and license commitments. The results of these inspections are contained in the following NRC inspection reports:

50-483/77-11, (Attachment No. ?) 50-483/78-01, (Attachment No. 3) 50-483/78-03,	conducted December 13, 1977 through January 8, 1978.
	conducted January 10, 1978 through February 8, 1978.
	conducted March 29, April 18-19, 1978.
50-483/80-14,	conducted April 10, 1980 through August 14, 1980.
50-483/80-16,	conducted June 10-12, 1980.

3. The purpose of this affidavit is to address Joint Intervenors' Contention I-D as identified in the Special Prehearing Conference Order, dated April 21, 1981.

4. During an NRC investigation, allegations were made by an ironworker that the concrete cover requirements of reinforcing steel had been violated. The NRC inspector observed local areas where the concrete cover was less then the minimum and other areas where the maximum permitted cover had been exceeded. A technical disagreement between the NRC Staff and Union Electric & Bechtel Power Corp. arose over an interpretation of the design and code requirements. Prior to placement of any further concrete on the fourth lift of the Reactor Building a meeting was held to resolve the issue. The meeting was conducted on January 23, 1978, the results are documented in Attacsment 3, Enclosure 1.

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- 2 -

5. Subsequent to the meeting, Union Electric submitted on February 13, 1978 (attachment 4) its view which maintained that the minimum concrete cover of two inches could be reduced as a function of placement tolerances.

6. Attachments 5 and 6 provide the NRC evaluation and position which established that the concrete cover requirement of a minimum of two inches must be met by the sixth lift of the Reactor Building and that the maximum concrete cover should be in accordance with license commitments as stated in BC-TOP-5A. Union Electric accepted the NRC posicion and took the necessary action to be in compliance by the prescribed sixth lift.

7. Attachment 7 requested the NRC to permit a deviation from the maximum concrete cover for two areas in proximity of the electrical penetration banks. Attachment 8 provides the NRC review which permitted the exception.

8. Attachment 9 provides FSAR § 3.8.1.6.2.3 which describes the requirements for placing reinforcing steel. Placement tolerances were held to minus 0, plus 1½ inches on exterior walls so as to comply with the NRC position of a minimum two inch cover. In addition, Union Electric documented that the maximum concrete cover was locally exceeded (as described earlier) around electrical penetrations.

9. Attachment 10 provides the ASME working group code interpretation on concrete cover requirements which the NRC utilized in its evaluation of the requirements.

- 3 -

10. The purpose of a minimum cover is to provide an adequate bond with the reinforcing bar and sufficient protection against exposure. At no point is the minimum cover in the reactor building below one and onethird inches (1/3 of two inches). This degree of cover is sufficient to provide adequate bond and protection against exposure.

11. The purpose of a maximum cover is to assure that there is not too much unreinforced concrete. Such concrete is susceptible to tensionrelated cracks. The cover maximum was exceeded in the reactor building (both above and below the sixth lift) only in a small area situated around an electrical penetration bank. Furthermore, the containment building is prestressed, which minimizes the possibility of cracking and serves to ensure that any cracking that does occur would be localized.

12. It is the NRC Staff's view that the local areas where the minimum concrete cover was reduced below design and code requirements and the areas where the maximum cover was exceeded will not adversely effect the structural integrity of the Reactor Building over the life of the plant.

Eugene J. Sallagher

Subscribed and sworn to before me this 7th day of October, 1981.

Sinde M. Eyler Notary Public My commission expires: July 1, 1982

- 4 -

LIST OF ATTACHMENTS

- 5 -

5

1. Professional Qualification of Eugene J. Gallagher

2. NRC Inspection Report 77-11

3. NRC Inspection Report 78-01, including Enclosure 1, Minutes of January 23, 1978 meeting

4. February 13, 1978: Letter from SNUPPS to E. Case, Concrete Cover Requirements for Reinforcing Steel in Reactor Containment

5. March 6, 1978: NRC Memorandum, I. Sihweil to O. Parr

6. March 13, 1978: NRC Letter O. Parr to SNUPPS Reinforcing Steel Cover Tolerances in Containment Structure for SNUPPS Plants

7. July 12, 1978: NRC Memorandum, O. Parr to R. Mattson, Design Criteria for SNUPPS Plants Containment Structure (Includes two enclosures Letter dated 5/3/78 from N. Petnick to B. Grier and memo dated 7/3/78 from H. Thornburg to D. B. Vassallo

8. July 28, 1978: NRC Memorandum I. Sihweil to O. Parr

9. FSAR excerpt (Section 3.8.1.6.2.3) Tolerances for Placing Reinforcing Steel

 ASME working group code interpretation on concrete cover requirements ATTACHMENT 1

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EUGENE J. GALLAGHER

OFFICE OF INSPECTION AND ENFORCEMENT U.S. NUCLEAR REGULATORY COMMISSION

PROFESSIONAL QUALIFICATIONS

I am a Civil Engineer in the Division of Resident and Regional Reactor Inspection, Reactor Engineering Branch, Office of Inspection and Enforcement.

I received a Bachelor of Engineering Degree in Civil Engineering from Villanova University in 1973 and a Master of Science Degree in Civil/Structural Engineering from Polytechnical Institute of New York in 1974. I am a registered Professional Engineer in the States of Illinois (#37828), Florida (#29114) and Louisiana (#16376). I am a member of the American Society of Civil Engineers, American Concrete Institute and Tau Beta Pi National Engineering Honor Society.

In my present work at the NRC. I provide technical assistance in the area of civil engineering to Regional offices and resident inspectors with particular emphasis on the design and construction of reinforced and prestressed concrete structures, foundations, structural steel buildings and in structural testing and surveillance. In addition, I provide technical input for the development and interpretation of industry codes, standards and regulatory requirements relating to inspection activities.

From 1978 to 1981 I was a member of the NRC Region 3 inspection staff responsible for the inspections of civil engineering aspects of plants under construction and in operation. This included the Inspection of laboratory and field testing of concrete, steel and soils materials, earth embankments and dams, material sources, piping systems and reinforced and prestressed concrete structures. In addition, a review of management controls and quality assurance programs were performed at plants under construction. I participated in approximately 90 inspections of reactor facilities.

Prior to joining the NRC Staff I was employed by E3ASCO Services, Inc. in New York City from 1973 to 1978. I performed designs of reinforced concrete and steel structures, design of hydraulic and water supply systems and preparation of specifications for construction. From 1976 to 1978, I was the civil resident engineer at the Waterford 3 Nuclear Plant site responsible for providing technical assistance to construction.

During 1972 and 1973 I was employed by Valley Forge Laboratory in Devon, PA performing inspection and testing on concrete, steel and soil materials.

ADDITIONAL NRC TRAINING

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Fundamentals of Inspection, NRC, February 1973 (40 hours) BWR Fundamentals Course, MRC, March 1973 (40 hours) Concrete Technology and Codes, Portland Cemant Assoc., May 1978 (80

hours) Quality Assurance Course, NRC, August 1978 (40 hours)

Nondestructive Examination and Codes, Rockwell Int'1., August 1978 (120 hours)

PWR Fundamentals Course, NRC, November 1973 (40 hours) Welding Metallurgy, Ohio State University, September 1980 (80 hours) ATTACHMENT 2

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