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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

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BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

CAROLINA POWER AND LIGHT COMPANY AND  
NORTH CAROLINA EASTERN MUNICIPAL  
POWER AGENCY

(Shearon Harris Nuclear Power Plant,  
Units 1 and 2)

}  
} Docket Nos. 50-400 OL  
} 50-401 OL  
}

AFFIDAVIT OF RAYMOND G. RAMIREZ IN SUPPORT OF  
NRC STAFF RESPONSE TO APPLICANTS' MOTION FOR  
SUMMARY DISPOSITION OF WELLS EDDLEMAN'S CONTENTION 132C(II)

Raymond G. Ramirez, being duly sworn, hereby deposes and states:

1. I am a Senior Human Factors Engineer in the Human Factors Engineering Branch, Office of Nuclear Reactor Regulation, U.S. Nuclear Regulatory Commission. I have personal knowledge of the matters set forth herein, and believe them to be true and correct to the best of my knowledge, information and belief.

2. Since April 1980, I have been assigned to the Human Factors Engineering Branch, Division of Human Factors Safety, Office of Nuclear Reactor Regulation. I began devoting full time to human factors engineering in November 1979. Initially, I was responsible for helping to implement the recommendations of Section 7, Appendix A to NUREG-0585, "TMI-2 Lessons Learned Task Force Final Report." These included assisting in: developing human factors control room design review guidelines for use by licensees to conduct year long reviews of their control rooms and surveying selected control rooms to provide a data base for

DESIGNATED ORIGINAL

Certified By Mal DSO

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the guidelines. Since February 1980, I have been working closely with human factors expert consultants as the NRC's team leader, in conducting onsite control room design reviews and in evaluating the results thereof. I have participated in the review and evaluation of 14 control rooms.

I graduated from Ohio University in 1958 with a Bachelor of Science Degree in Electrical Engineering, and in 1971 I graduated from the University of Baltimore with a Juris Doctors Degree in Law.

From 1958 to 1960 I performed as a design engineer at the Radio Corporation of America's "Missile and Surface Radar Division", which among other things involved the instrumentation and control of large radar systems.

From 1960 to 1963 I performed as a design engineer with the Martin-Marietta Corporation which included design responsibility in several missile systems and their control and instrumentation.

From 1963 to 1972 I performed as a senior engineer, project engineer and supervisor with the Bendix Corporation involving various military and non-military systems.

From 1972 to 1979 I was employed by the AEC/NRC as a safeguards engineer. Responsibilities included developing Regulatory Guides, NUREG Reports and the writing of regulations.

3. I give this affidavit in response to Applicants' Motion for Summary Disposition of Wells Eddleman's Contention 132C(II) dated May 9, 1984 [Applicants' Motion]. Contention 132C(II) states as follows:

With respect to layout [of the Control Room, Applicants'] proposal arranges control and display cabinets such that they block or impede view of some others (see Fig. 2, p. 12, where view of/from panels 8, 9, 10 & 11 is obscured by #'s 12, 13, 14

and 15 from #'s 6,7, and 1, 2, 3, 4 and 5. #6 and 7 are hidden from operators by 1 and 2 (as well as 3, 4 and 5) #'s 16 and 17, the incore instrumentation and nuclear instrumentation system are almost totally behind the 2 blocks 1 through 5 and 6-7 with respect to the radiation monitor equipment panels 12 through 15, the 8-11 block (startup and generator) and the 1-5 block's sections 1 through 4 and possibly 5. Operator inability to see, read accurately, or integrate the information on these panels can imperil public safety in an accident.

4. I have reviewed the Applicants' Motion; Applicants' Statement of Material Facts As To Which There Is No Genuine Issue To Be Heard On Wells Eddleman Contention 132C(II) dated May 9, 1984; Affidavit Of Robert W. Prunty Jr., In Support Of Applicants' Motion For Summary Disposition Of Eddleman Contention 132C(II), dated January 8, 1983. I have also reviewed drawings of the design of the control room. Subsequent to reviewing the preceding documents, on May 18, 1984, I visited the Shearon Harris control room and physically reviewed each allegation contained in Contention 132C(II) in light of the actual design and physical configuration and placement of instrumentation in that control room.

5. The Applicants acknowledge the truth of allegations made in Contention 132C(II) regarding the obscuring of certain panels from an operator standing at three postulated positions in the control room primarily away from the main control board (MCB). The Applicants further state that the three designated positions are not "normal positions" or "typical positions" where the control room operator (CRO) would be positioned or remain. In addition the Applicants state "should an operator find himself in such a position, there would be one or more other operators in the control room who would be able to monitor the equipment as necessary." The Applicants also state that "while SHNPP is operating, there will be

at all times a minimum of two licensed operators - a reactor operator and a senior operator - in the control room."

6. The Applicants states that the final configuration of the control room was determined as a result of conducting a human factors detailed control room design review (DCRDR) that the location of the panels in question does not raise a safety issue since panel #7 has no displays, panel #17 has duplicate displays on the MCB, and panels #6 and #16 require little to no monitoring. During my site visit I found that panels #8, 9, 10 and 11 are located as nearly as possible to the generator control panel on the main control board (MCB) with which these panels are associated and can be observed from that position.

7. I have reviewed the documents requesting and supporting the Applicants' motion and conducted a site visit to the Shearon Harris control room to physically and technically evaluate the substance of Contention 132C(II) and the Applicants' information, analyses and assessments of the safety impact created by the arrangement of the control room. As a result of my site visit and based on my conduct of a panel by panel physical evaluation for each of the panels obscured from the three positions identified in Contention 132C(II) and an evaluation of the technical arguments in support of the Applicants' motion, I find (a) that the allegations made by Contention 132C(II) with regard to obscuring the view of certain panels to be true and (b) that the technical arguments given in support of the Applicants' motion to also be true, i.e., that the location of these panels is unlikely to impact the public health and safety.

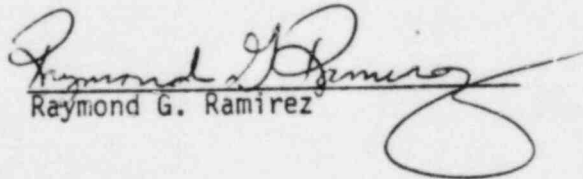
8. Based upon my professional experience, it is my opinion that the control panels alleged by Mr. Eddleman to be obscured when operators



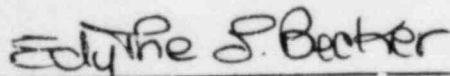
are in certain positions are not important for safety purposes during emergency operations. During my site visit of May 18, 1983, I discussed this with Robert W. Prunty, Jr. and verified with him that the Shearon Harris emergency operating procedures will not require the control room operators to consult or monitor any of the panels referred to in Contention 132C(II) during an emergency operating sequence. Based on this and my review of information presented on these panels, I find that it is unlikely that safe operation of the plant would be adversely affected.

CONCLUSION

9. Based upon my review of appropriate documents and a site visit, I conclude that the Applicants' assessment contained in its Motion For Summary Disposition is correct and that although the allegations in Contention 132C(II) with regard to obscuring the view of certain panels is true, the allegation that "Operator inability to see, read accurately, or integrate the information on these panels can imperil public safety in an accident" is not valid. I find that there is no merit to the substance of Wells Eddleman's Contention 132C(II).

  
Raymond G. Ramirez

Subscribed and sworn to before  
me this 30<sup>th</sup> day of May, 1984

  
Notary Public

My Commission expires: 7/1/86



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Docket Nos. 50-400-OL  
50-401-OL

CERTIFICATE OF SERVICE

I hereby certify that signed and notarized copies of "AFFIDAVIT OF RAYMONT G. RAMIREZ IN SUPPORT OF NRC STAFF RESPONSE TO APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF WELLS EDDLEMAN'S CONTENTION 132C(II)" 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, through deposit in the Nuclear Regulatory Commission's internal mail system, this 31st of May, 1984:

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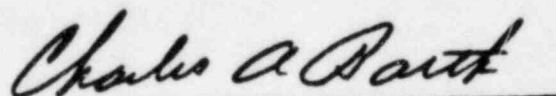
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