UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER & LIGHT COMPANY	)	
AND NORTH CAROLINA EASTERN	)	Docket No. 50-400 OL
MUNICIPAL POWER AGENCY	)	
	)	
(Shearon Harris Nuclear Power Plant)	)	
	)	

AFFIDAVIT OF DAYNE H. BROWN ON CONTENTION EPX-2

COUNTY OF WAKE	)	
	)	ss:
STATE OF NORTH CAROLINA	)	

DAYNE H. BROWN, being duly sworn, deposes and says:

1. I am Chief of the Radiation Protection Section of the Division of Facility Services, Department of Human Resources of the State of North Carolina. A current statement of my experience and capabilities is attached to this affidavit. My current business address is P. O. Box 12200, Raleigh, North Carolina 27605. I make this affidavit in response to Contention EPX-2, and I have knowledge of the matters stated herein and believe them to be true and correct.

2. Radiation Protection Section (RPS) staff and I were active participants in the full-scale exercise conducted for the Shearon Harris Nuclear Power Plant on May 17 and 18, 1985. On both days, RPS had teams of radiation monitoring personnel in the plume exposure Emergency Planning Zone (EPZ) collecting radiological data. These field teams would transmit, via radio, the data back to the RPS mobile radiological laboratory for

processing. For purposes of the exercise, RPS radio communications used two low band VHF channels (47.50 and 47.58 MHz).

3. The exercise scenario called for the RPS radiological monitoring teams to be placed at various locations throughout the EPZ. As RPS has found to be the case during its normal operations and previous communications testing, occasionally the radio transmission of a field team must be relayed to the mobile laboratory or other intended receiver. During the exercise, and as anticipated, field survey teams while performing their tasks, came upon some locations in the EPZ that were not as conducive to radio communications as others. Communication capability varies with the power of the equipment being utilized, the terrain, atmospheric conditions, and other factors, and the relay procedure is commonly used whenever these factors decrease the effectiveness of radio communications. The large number of often unpredictable factors that can decrease the effectiveness of radio communications make the occasional use of a relaying procedure a necessity for an agency relying on radios to carry out its duties.

4. During the exercise for the Shearon Harris plant, one of RPS's field teams found it necessary to relay communications at various times. Most likely, the combination of terrain and the power output of the team's radio equipment occasionally necessitated the relaying of its simulated data to the mobile laboratory through the RPS transmitter at the Harris Emergency Operating Facility (EOF).

5. Contention EPX-2 asserts that the relay procedure potentially introduces errors in transmission of monitoring data. I do not believe the potential for inaccurate data transmission during a relay is significantly greater than through the use of direct communications. During the relay procedure, a field team would, for example, transmit its data to the relaying station operators at the RPS transmitter at the EOF, who in turn would repeat the data back to the field team to assure that it had been received accurately. The originating unit, e.g., the field team, then agrees that the data have

been correctly received, or makes the necessary corrections. The repetition of data back to the originating unit is standard procedure for RPS radio communications, for it is the most effective method to check the accuracy of the transmission. The relaying station then transmits the data on to the intended receiving party, in this case the mobile laboratory, using the same procedure, including the repetition of the data.

6. Contention EPX-2 also raises the concern that the relay procedure delays the transmission of data. I believe it is important to realize that RPS uses its relaying procedure to overcome this concern. Because the factors that influence the range of radio transmissions are variable and often unpredictable, RPS must have an alternate method to transmit data other than directly from transmitter to receiver. Without the use of the relay procedure, significant time could be lost in attempting to adjust or adapt to radio transmission conditions to allow direct transmitter to receiver communication. In addition, based upon the RPS experience during the Harris exercise, it should be noted that the mobile laboratory could consistently monitor the survey teams' survey data as the relay station repeated the data back to the survey team for confirmation. This early preview of the data by the mobile lab does serve to minimize the time required for information flow. Of course, direct communications are preferable whenever possible; however, when it is needed, the relay procedure does not significantly delay the transmission of data from that which would be experienced normally. At most, the delay would only be momentary -- the time it takes to repeat the transmission to the receiving party. It is clearly faster than relocating a field unit or other transmitter, or making some other adjustment, during the emergency solely to attempt to maintain direct radio contact.

7. It is important to emphasize that throughout the exercise, all of the RPS field units could communicate with either the EOF or the mobile laboratory, and at no time during this exercise was contact with any field unit lost.

8. We have considered the suggestion of the state evaluator that the mobile radiation laboratory be positioned at an elevated area outside the EPZ. In response to this suggestion, we have changed the location of the mobile laboratory to a more elevated area than the location used during the exercise. This should reduce the need to relay messages. However, the use of a relay procedure does not detract from RPS' communications capability.

9. In conclusion, one RPS field team did occasionally utilize a relay procedure during the exercise to communicate data to the mobile laboratory. This relay procedure is a normal operating procedure for RPS communications, and is used whenever conditions require. I do not believe that there is a potential for this procedure to cause significant delays in the transmission of data or to introduce additional inaccuracies. The relay procedure has been and will continue to be a necessary tool to support our operations and communications.

Dayne H. Brown

DAYNE H. BROWN

Sworn to and subscribed before
me this 10 day January, 1986.

Patricia P. Mapoles A

Notary Public

My commission expires: October 24, 1989

CURRICULUM VITAE
for
Dayne H. Brown

Born August 18, 1940 in Shelby, North Carolina

Graduated from Needham B. Broughton High School, Raleigh, North Carolina June 1958

Graduated with honors from North Carolina State University with Bachelor of Science degree in Physics, June 1962

Awarded US Public Health Service Radiological Health and Safety Fellowship to attend North Carolina State University. Graduated from North Carolina State University, January 1964, Master of Science degree in Physics

Employed as a health physicist by the National Aeronautics and Space Administration Lewis Research Center, Cleveland, Ohio from January 1964 to February 1966

Employed as an instructor in the Radiological Health Training Program of US Public Health Services, Cincinnati, Ohio from February 1966 to June 1967

June 1967 to present: Employed as Chief of the Radiation Protection Section, Division of Facility Services, North Carolina Department of Human Resources

1976 to present: Ex officio member of the North Carolina Radiation Protection Commission

Member of:

NC Chapter of the Health Physics Society
National Health Physics Society
American Public Health Association
Conference of Radiation Control Program Directors