October 8, 1984



UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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| 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 ROBERT G. BLACK, JR.
ON EDDLEMAN-154

County of Wake )
) ss.
State of North Carolina )

ROBERT G. BLACK, JR., being duly sworn, deposes and says:

1. I am the Director - Emergency Preparedness for Applicant, Carolina Power & Light Company.

In my professional capacity, I have been personally involved in the development of the onsite emergency plan and procedures for the Harris plant for the past three and a half years. Further, I have attended numerous industrial symposiums, am active in related professional associations, and have participated in numerous emergency exercises at operating nuclear plants. A current statement of my professional qualifications and experience is attached hereto. My

business address is Carolina Power & Light Company, P.O. Box 1551, Raleigh, North Carolina 27602. I have personal knowledge of the matters stated herein and believe them to be true and correct. I make this affidavit in response to Eddleman Contention 154.

2. The purpose of this affidavit is to explain that Annex B of the onsite emergency plan is not a procedure for use by operators performing dose projections. Operators performing dose projection calculations use step-by-step procedures, which have been written to require no detailed operator judgment.

3. Annex B of the onsite emergency plan explains the technical basis for the dose projection calculation methods; it is not itself a procedure for use by operators performing dose projections. Annex B describes the theory behind the algorithm which provides the basis for the dose projection procedures which are used by operators assigned to perform dose projections.

4. The dose projection procedures for use by operators at the Harris plant -- like those in use at other operating nuclear plants across the nation -- are written to require no detailed operator judgment.

5. NUREG-0654 provides for the classification of emergencies into one of four classes: Unusual Event, Alert, Site Area Emergency, or General Emergency. The classification is implemented through Emergency Action Levels

("EALs"), which are sets of plant conditions and events associated with one of the four emergency classes. The Site Emergency Coordinator (or the Shift Foreman when no emergency has yet been declared) will declare the appropriate emergency class where EALs have been exceeded, or where the status of the plant otherwise warrants such a declaration.

6. By definition in NUREG-0654, the only emergency class with significant off-site radiological consequences (i.e. "Releases that can be reasonably expected to exceed EPA Protective Action Guideline exposure levels off-site for more than the immediate site area") is the General Emergency. See NUREG-0654 (Rev. 1), at p. 1-16.

7. In Revision 2 of the Emergency Plan (February 1984) Figure 4.5-1, "Protective Action Recommendations Flowchart," was added based upon the recommendations of NRC I & E Information Notice 83-28 (May 4, 1983), and was revised in Revision 3 of the onsite plan. This flow chart provides the protective actions to recommend to off-site authorities during a General Emergency based upon plant conditions as determined by EALs. No dose projection calculations are necessary to make the initial recommendations.

8. After the initial recommendations are made, dose projection calculations are performed to determine if the scope of the initial protective actions should be increased.

9. Dose projection calculations may be performed by different methods. The first and primary means is by a

program in the Emergency Response Facility Information System ("ERFIS") computer which is linked with the meteorological system and the radiation monitoring system. This program obtains the required information from memory, storage or associated systems and performs the required calculations. "Suspect", "off scale", and "bad" data is identified by the computer internally, without operator input. For example, the computer will identify a parameter as a "suspect" or "bad" parameter if several redundant outputs don't agree within a close tolerance. These "quality tags" are thus determined internally by the computer based upon comparison with a predetermined set of values or ranges. No operator judgment is necessary.

10. As a back-up, a dose projection calculation can be performed with a pocket calculator. A step-by-step "cookbook" method is outlined in a detailed procedure. See "Plant Emergency Procedures for SHNPP" (Plant Operating Manual, Volume 2, Book 5) (provided to the parties under cover letter to the NRC dated September 12, 1984), at PEP-341, "Manual Dose Calculation." Data is recorded on a calculation sheet provided as part of the procedure. Although some decisions are required by the user (as in most procedures), the procedure prompts the user and assists in making the decisions.

11. Regardless of whether the dose projection calculations are performed using the ERFIS computer or manually,

using a pocket calculator, determination of the composition of the source terms uses default values (based upon the FSAR) in the absence of a sample, and thereby eliminates the need for operator judgment. The default values for radionuclide mix are referenced in Annex B, page B-2. Source term activity levels are measured; if the computer "quality tags" the measurement as "bad", samples can be taken and/or direct measurements can be made using portable instruments. All of this is called for in the procedures.

12. All personnel who may be assigned to perform dose projections receive training in the methods used to perform those projections. This training includes working sample problems. The operators must demonstrate a satisfactory understanding of the steps of the dose projection procedures, and provide correct answers to the problems using the procedures.

13. Prior to the exercise, a number of practice drills will be conducted requiring satisfactory performance of dose projection by the operators. The dose projection performance is evaluated by controller/evaluators knowledgeable in the subject (health physics, dose projection instructor, or emergency preparedness background plus training in the dose projection and training as a controller/evaluator).

14. One practice drill for the pre-licensing exercise will be a rehearsal drill in which a complete scenario will be used including release data, dose projection data, and

complete message sheets. The rehearsal drill will be conducted like an exercise, using controller/evaluators. Dose projections performed by the shift operators will be compared against the correct answers included in the drill scenario.

15. Prior to operation above 5% power, a pre-licensing full-scale exercise will be conducted, which will once again test the shift operators' dose projection capabilities. The full-scale exercise will be observed and scored by federal evaluators.

16. Controller/evaluators for the drills and the full-scale exercise will rate the "player's" performance as excellent, satisfactory, or unsatisfactory (defined in Section 5.11 of PEP-406, "Performance of Exercises and Drills"). Any unsatisfactory rating due to poor performance of a player will result in retraining of the individual so rated.

17. In sections 13.3.2.14 and 13.3.2.15 of Supplement 1 to NUREG-1038, the "Safety Evaluation Report Related To The Operation of SHNPP Units 1 & 2" (June 1984), the NRC Staff approved the description of Applicants' drills and exercises policy and the emergency plan training program, as contained in the onsite plan.

18. In summary, Annex B of the onsite emergency plan is <u>not</u> a dose projection procedure. For General Emergencies, operators use Figure 4.5-1 of the onsite plan

to make initial protective action recommendations based upon plant conditions; dose projection calculations are not required. After the initial recommendation is made, operators use step-by-step dose projection procedures, which have been written to involve no detailed operator judgment, to project doses. All personnel who may be assigned to perform dose projection calculations receive training in the dose projection procedures, and have their knowledge tested through practice problems, drills and exercises. Thus, Eddleman Contention 154 lacks merit.

Robert G. Black, Jr.

Sworn to and subscribed before me this 8th day of October, 1984.

Notary Public

My Commission Expires: My Commission Expires 6-8-86

ROBERT G. BLACK, JR.
DIRECTOR - EMERGENCY PREPAREDNESS
CAROLINA POWER & LIGHT COMPANY

EDUCATION AND TRAINING:

B.S. Degree in Industrial Engineering
Georgia Institute of Technology (1965)

Attended various schools while in the U.S. Navy

Completed EIT

Registered Professional Engineer - February 1979

PROFESSIONAL SOCIETIES:

American Nuclear Society

Professional Engineers of North Carolina

EXPERIENCE:

June 1969 to June 1973 -
U.S. Navy Nuclear Program

September 1973 -
Senior Engineer
Environmental & Technical Services Section
Special Services Department
CP&L
Raleigh, N.C.

January 1976 to June 1976 -
Project Engineer
Licensing & Technological Services Section
Special Services Department
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June 1976 to December 1979 -
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Nuclear Licensing Unit
Licensing & Siting Section
Technical Services Department
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December 1979 to March 1981 -
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March 1981 to August 1983 -
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August 1983 to Present -
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