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 MUNCIPAL	)	Docket Nos. 50-400 OL
POWER AGENCY	)	50-401 OL
(Shearon Harris Nuclear Power Plant,	)	
Units 1 & 2)	)	

APPLICANTS' RESPONSES TO RICHARD WILSON'S INTERROGATORIES ON CONTENTION IVC (SECOND SET)

Applicants Carolina Power & Light Company and North Carolina Eastern Muncipal Power Agency, pursuant to 10 C.F.R. Section 2.740b, hereby submit the following responses to "Richard Wilson Interrogatories To Applicant (Second Set)." The provision of answers to these interrogatories is not to be deemed a representation that Applicants' consider the information sought to be relevant to the issues to be heard in this proceeding.

ANSWER TO GENERAL INTERROGATORY AND RESPONSE TO REQUEST FOR PRODUCTION OF DOCUMENTS

GENERAL INTERROGATORY. For each of the answers you provide to the following interrogatories please give in footnote form each document (including all relevant page citations) you used in formulating the answers and you would use in refuting the contention during this proceeding. Please use the definition of document which you offered on page 3 of your January 31 interrogatories to me. Please produce all

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documents mentioned and permit copying and inspection by me or my agent. Please state the name, title, and employer of each person who contributes to the answers. Please identify explicitly any models or assumptions used in your answers. Please include all calculations in their entirety. Please footnote every fact in every answer.

RESPONSE: All such facts, documents, models and assumptions relied upon are indicated within each response to the specific interrogatories on Contention IVC. Ronald L. Shearin; Project Specialist - Environmental; Carolina Power & Light Company, prepared Applicants' responses to the specific interrogatories on Contention IVC. Other persons who contributed to each response are also identified within each response to the specific interrogatories on Contention IVC.

The requested documents will be made available at the Harris Energy & Environmental Center, Route 1, New Hill, North Carolina 27562. The documents will be made available during Carolina Power & Light Company business hours (or such other mutually agreeable time). Appointments to inspect the documents may be arranged by telephoning Hill Carrow at 836-6839, at least 24 hours before the requested inspection. Applicants will maintain the requested documents assembled in Carolina Power & Light Company offices, available for inspection by Mr. Wilson, for a reasonable time (i.e., through July 1, 1983), after which they will be returned to their place of origin.

Inspected documents which Mr. Wilson wishes to have copied will be reproduced by Carolina Power & Light Company on a schedule compatible with other demands for duplicating

equipment. A Carolina Power & Light Company employee will be available during the inspection in order to receive any requests for copying. Copies of such selected documents will then be furnished to Mr. Wilson upon payment of 7 cents per page, to meet Carolina Power & Light Company's cost of reproduction.

ANSWERS TO INTERROGATORIES ON CONTENTION IVC

INTERROGATORY NO. IVC-1. With respect to the L.L.D. equation given in table 4.12-1 of NUREG 0472 please answer the following questions.

(1). Why are 95% and 5% selected as the error levels?

ANSWER NO. IVC-1(1). 95% and 5% are the normally accepted standards used in sampling procedures. Any errors that may be introduced into the total dose assessment program using these confidence levels are insignificant when compared to the variance introduced by natural background and other sources of public radiation exposure.

(2). This form of the equation suggests that σ sample $= \sigma$ blank $= \sigma$. Is this reasonable to assume at this preliminary stage?

ANSWER NO. IVC-1(2). Yes. The Lower Limit of Detection is a determination of that point at which the analytical system can distinguish sample activity from background activity. At this interface σ sample $= \sigma$ blank (background).

Therefore, the magnitude of background activity is a major factor governing the system's ability to detect non-background activity. It must be remembered that, because the L.L.D. is a

given requirement, if background is high, Applicants will be required to compensate by taking larger samples, increasing efficiency or improving chemical yield in order to meet the sensitivity specified in table 4.12-1 of NUREG-0472.

(3). Since the L.L.D. is an a priori limit, how are observed concentrations estimated, i.e. by confidence intervals or determination limits?

ANSWER IVC-1(3). By confidence intervals.

CONTENTION IVC-2. With respect to the S_b form in the L.L.D. equation given in table 4.12-1 of NUREG-0472 please answer the following questions.

(1). Since S_b is an estimated quantity, what are the details of estimation procedure?

ANSWER IVC-2(1). S_b is not an "estimated quantity." S_b is measured prior to the analysis of each environmental sample. It is calculated by making a count without an active sample in the counter.

S_b is the square root of the total count divided by the time over which the background is counted.

(2). Is the theoretical variance that you refer to usually of smaller or larger magnitude than the S_b terms?

ANSWER IVC-2(2). Since an S_b calculation is made at the time of each analysis, theoretical variability plays no part in the calculation for the analysis. Performing a background count prior to each sample count neutralizes the effect of weather, seasonable or temporal variability.

(3). Is there any documentation describing how the mean and variance of S_b vary with weather, season or time of day?

ANSWER NO. IVC-2(3). No. The raw data have not been summarized in this format.

(4). Please illustrate a particular sampling pathway in detail, examining the precise method of control measurement, the systematic nature of sampling times, and the effects of inclement weather, etc. on the collection process.

ANSWER NO. IVC-2(4). See attached chart.

This chart was prepared by Don H. Edwards, Jr.; Senior Specialist - Environmental; Carolina Power & Light.

INTERROGATORY IVC-3. With respect to the cross-check validation analysis of 6.1.5.5 of the Environmental Report please answer the following questions.

(1). Select a particular example and describe the cross-check process in enough detail to identify how the "mean result of a cross-check analysis" is calculated.

ANSWER IVC-3(1). Example: Environmental Radioactivity Laboratory Intercomparison Study.

Applicants participate in the EPA Environmental Radioactivity Laboratory Intercomparison Study and plan to continue to rely predominately on this study in the future. This program is described in EPA-600/4-81-004. (February 1981).

1. A special sample (i.e. liquid for drinking water, filters for air, etc.) is received from EPA.
2. EPA supplies instructions for any special pretreatment required to split the sample into three aliquots.

3. Analyses are performed on each aliquot separately.

4. These analyses are returned to the EPA within the specified date for this study.

5. The laboratory supervisor receives the textbook answers from EPA. He compares his results at that time.

6. If he is not satisfied with the comparison, he initiates an investigation to determine the possible cause of the discrepancy.

7. EPA will provide a report showing where Applicants' laboratory stands relative to other participating laboratories.

Note: The "mean" result of the cross check analysis is calculated by EPA by averaging the three analyses provided them.

This analysis was prepared, in part, by Dr. Daniel F. Cahill; Senior Specialist - Environmental Laboratory; Carolina Power & Light Company.

(2). What is the expected delay between error discovery and correction action?

ANSWER IVC-3(2). The length of delay is totally dependent on the type of error that is determined to have occurred. The delay is minimized as much as possible.

Discrepancies occur infrequently. One possible cause of those discrepancies that do occur is defective counting standards. These counting standards are re-ordered immediately and replaced as soon as possible.

(3). Does this expected delay depend upon the size and type of error?

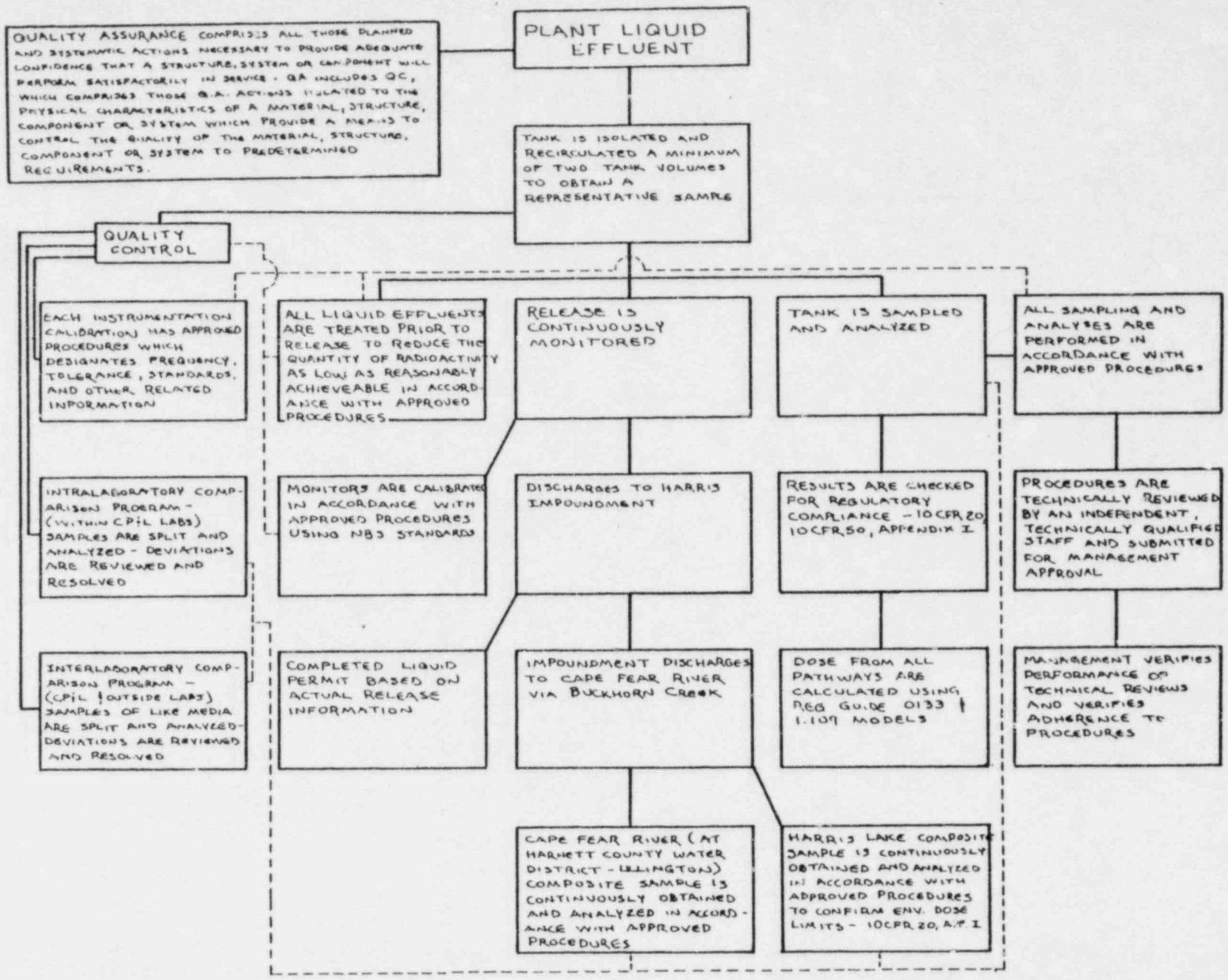
ANSWER IVC-3(3). No. The extent of delay is dependent only upon the time required to take the necessary corrective action.

John H. O'Neill, Jr.
Pamela H. Anderson
Shaw, Pittman, Potts & Trowbridge
1800 M Street, N.W.
Washington, D.C. 20036
(202) 822-1400

Richard E. Jones
Samantha Francis Flynn
Carolina Power & Light Company
P.O. Box 1551
Raleigh, North Carolina 27602
(919) 836-6517

Counsel for Applicants

Dated: June 2, 1983


QUALITY ASSURANCE COMPRISES ALL THOSE PLANNED AND SYSTEMATIC ACTIONS NECESSARY TO PROVIDE ADEQUATE CONFIDENCE THAT A STRUCTURE, SYSTEM OR COMPONENT WILL PERFORM SATISFACTORILY IN SERVICE - QA INCLUDES QC, WHICH COMPRISES THOSE Q.A. ACTIONS RELATED TO THE PHYSICAL CHARACTERISTICS OF A MATERIAL, STRUCTURE, COMPONENT OR SYSTEM WHICH PROVIDE A MEANS TO CONTROL THE QUALITY OF THE MATERIAL, STRUCTURE, COMPONENT OR SYSTEM TO PREDETERMINED REQUIREMENTS.
PLANT LIQUID EFFLUENT
TANK IS ISOLATED AND RECIRCULATED A MINIMUM OF TWO TANK VOLUMES TO OBTAIN A REPRESENTATIVE SAMPLE
QUALITY CONTROL
EACH INSTRUMENTATION CALIBRATION HAS APPROVED PROCEDURES WHICH DESIGNATES FREQUENCY, TOLERANCE, STANDARDS, AND OTHER RELATED INFORMATION
ALL LIQUID EFFLUENTS ARE TREATED PRIOR TO RELEASE TO REDUCE THE QUANTITY OF RADIOACTIVITY AS LOW AS REASONABLY ACHIEVEABLE IN ACCORDANCE WITH APPROVED PROCEDURES
RELEASE IS CONTINUOUSLY MONITORED
TANK IS SAMPLED AND ANALYZED
ALL SAMPLING AND ANALYSES ARE PERFORMED IN ACCORDANCE WITH APPROVED PROCEDURES
INTRALABORATORY COMPARISON PROGRAM - (WITHIN CP&L LABS) SAMPLES ARE SPLIT AND ANALYZED - DEVIATIONS ARE REVIEWED AND RESOLVED
MONITORS ARE CALIBRATED IN ACCORDANCE WITH APPROVED PROCEDURES USING NBS STANDARDS
DISCHARGES TO HARRIS IMPOUNDMENT
RESULTS ARE CHECKED FOR REGULATORY COMPLIANCE - 10CFR20, 10CFR50, APPENDIX I
PROCEDURES ARE TECHNICALLY REVIEWED BY AN INDEPENDENT, TECHNICALLY QUALIFIED STAFF AND SUBMITTED FOR MANAGEMENT APPROVAL
INTERLABORATORY COMPARISON PROGRAM - (CP&L / OUTSIDE LABS) SAMPLES OF LIKE MEDIA ARE SPLIT AND ANALYZED - DEVIATIONS ARE REVIEWED AND RESOLVED
COMPLETED LIQUID PERMIT BASED ON ACTUAL RELEASE INFORMATION
IMPOUNDMENT DISCHARGES TO CAPE FEAR RIVER VIA BUCKHORN CREEK
DOSE FROM ALL PATHWAYS ARE CALCULATED USING REG GUIDE 0133 & 1.109 MODELS
MANAGEMENT VERIFIES PERFORMANCE OF TECHNICAL REVIEWS AND VERIFIES ADHERENCE TO PROCEDURES
CAPE FEAR RIVER (AT HARNETT COUNTY WATER DISTRICT - LILLINGTON) COMPOSITE SAMPLE IS CONTINUOUSLY OBTAINED AND ANALYZED IN ACCORDANCE WITH APPROVED PROCEDURES
HARRIS LAKE COMPOSITE SAMPLE IS CONTINUOUSLY OBTAINED AND ANALYZED IN ACCORDANCE WITH APPROVED PROCEDURES TO CONFIRM ENV. DOSE LIMITS - 10CFR20, A/P I

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

AFFIDAVIT OF B. H. WEBSTER

County of Wake)
)
State of North Carolina)

B. H. Webster, being duly sworn, according to law, deposes and says that he is Manager - Radiological & Chemical Support Section of Carolina Power & Light Company; that the answers to Interrogatories on Contention IVC contained in "Applicants' Responses to Richard Wilson's Interrogatories on Contention IVC (Second Set)" are true and correct to the best of his information, knowledge and belief; and that the sources of his information are officers, employees, agents and contractors of Carolina Power & Light Company.

B. H. Webster

Sworn to and subscribed before me this 2nd day of June, 1983.

Betty J. Hicks
Notary Public

My Commission Expires: September 28, 1985

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Plant, Units 1 and 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "Applicants' Responses To Richard Wilson's Interrogatories On Contention IVC (Second Set)" and "Affidavit Of B. H. Webster" were served this 2nd day of June, 1983, by deposit in the U.S. mail, first class, postage prepaid, to the parties on the attached Service List.

Pamela H. Anderson

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SERVICE LIST

James L. Kelley, Esquire
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Glenn O. Bright
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dr. James H. Carpenter
Atomic Safety and Licensing Board
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Charles A. Barth, Esquire
Myron Karman, Esquire
Office of Executive Legal Director
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Docketing and Service Section
Office of the Secretary
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Mr. Daniel F. Read, President
Chapel Hill Anti-Nuclear Group Effort
P.O. Box 524
Chapel Hill, North Carolina 27514

John D. Runkle, Esquire
Conservation Council of North Carolina
307 Granville Road
Chapel Hill, North Carolina 27514

M. Travis Payne, Esquire
Edelstein and Payne
P.O. Box 12643
Raleigh, North Carolina 27605

Dr. Richard D. Wilson
729 Hunter Street
Apex, North Carolina 27502

Mr. Wells Eddleman
718-A Iredell Street
Durham, North Carolina 27705

Ms. Patricia T. Newman
Mr. Slater E. Newman
Citizens Against Nuclear Power
2309 Weymouth Court
Raleigh, North Carolina 27612

Richard E. Jones, Esquire
Vice President & Senior Counsel
Carolina Power & Light Company
P.O. Box 1551
Raleigh, North Carolina 27602

Dr. Phyllis Lotchin
108 Bridle Run
Chapel Hill, North Carolina 27514

Deborah Greenblatt, Esquire
1634 Crest Road
Raleigh, North Carolina 27606

Bradley W. Jones, Esquire
U.S. Nuclear Regulatory Commission
Region II
101 Marrietta Street
Atlanta, Georgia 30303

Ruthanne G. Miller, Esquire
Atomic Safety and Licensing Board Panel
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Karen E. Long, Esq.
Staff Attorney
Public Staff - NCUC
P.O. Box 991
Raleigh, North Carolina 27602