UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER AND LIGHT COMPANY AND	)	
NOPTH CAROLINA EASTERN MUNICIPAL	)	Docket Nos. 50-400 OL
POWER AGENCY	)	50-401 OL
	)	
(Shearon Harris Nuclear Power Plant,	)	
Units 1 and 2)	)	

AFFIDAVIT OF JOHN C. LEHR IN SUPPORT OF NRC STAFF RESPONSE TO APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF EDDLEMAN CONTENTION 83/84B

I John C. Lehr, being first duly sworn, do depose and state:

1. I am Senior Environmental Engineer in the Environmental and Hydrologic 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. A statement of my professional qualifications and experience is attached.

2. I give this affidavit in response to Applicants' Motion for Summary Disposition of Eddleman Contention 83/84B dated February 7, 1984. [hereinafter Applicants' Motion]. Contention 83/84B states as follows:

> Surveys by the Haw River Assembly and others have demonstrated that substantial amounts of organic chemicals including dyes and phenol-based chemicals that become more carcinogenic after reactions with chlorine (and with chlorine, ammonia and hydrazine) are discharged into waters feeding the Cape Fear. The data compiled by UNC-CH (see, e.g. letter of May 11, 1982, Prof. Charles M. Weiss to Christina Meshaw of Corps of Engineers, Wilmington NC) do not adequately test for levels of most of these chemicals, nor does the State of NC (see printout of Haw River monitoring stations, 5-26-82, data) test for most of them. Thus, neither CP&L nor anyone else has established the actual levels of numerous organic carcinogens in

Cape Fear water, nor considered the interaction of these carcinogens and other chemicals with the SHNPP discharges (e.g. cholrine, hydrazine, ammonia and other chemicals listed in E.R. section 5.3) in forming carcinogens in drinking water, and in putting carcinogens into food chains which culminate in edible fish, mussels, seafood, (e.g. oysters, clams, shrimp) etc. taken by individuals or commerical fishing from the Cape Fear or the ocean where the Cape Fear empties (i.e. fisheries off Cape Fear, around the mouth of the river, and other places Cape Fear water disperses to). The health effects of these carcinogens, including those formed by interaction with SHNPP discharge and those made mor hazardous by interaction with same, transferred to humans who swim, wash, drink Cape Fear water, or who eat food and seafood wherein such carcinogens are concentrated biologically, has not been considered in the ER (and EIS and DEIS). Such consideration is necessary to protect the health and safety of the public.

3. I have read APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF EDDLEMAN CONTENTION 83/84B dated February 7, 1984; APPLICANTS' STATEMENT OF MATERIAL FACTS AS TO WHICH THERE IS NO GENUINE ISSUE TO BE HEARD ON WELLS EDDLEMAN'S CONTENTION 83/84B dated February 7, 1984; AFFIDAVIT OF JAMES A. FAVA AND HANS PLUGGE IN SUPPORT OF SUMMARY DISPOSITION OF EDDLEMAN CONTENTION 83/84B (Chemical Discharge) dated February 4, 1984 and AFFIDAVIT OF WILLIAM T. HOGARTH IN SUPPORT OF SUMMARY DISPOSITION OF EDDLEMAN CONTENTION 83/84B dated February 6, 1984.

4. The purpose of this affidavit is to comment on the analysis and its structure, as contained in the Applicants' Motion, in the Fava/ Plugge Affidavit and in the Hogarth Affidavit.

5. The Applicants' analysis and assessment of impact of the station chlorination system discharges accounts for the change in the interaction between the Cape Fear River, and the station cooling system and lake. That is, as a result of the cancellation of Shearon Harris Nuclear Power Plant Unit 2, (SHNPP) there will be no withdrawal of Cape Fear River water for makeup to the cooling lake.

6. The studies to estimate the amounts and concentrations of chlorination by-products to be produced in the SHNPP cooling water discharge and the assessment of the impacts that these discharges may have for human health, incorporate current reasearch results, available data and conservative assumptions as follows:

- The Applicants used the results of an up-to-date and comprehensive laboratory and field study, sponsored by the U.S. Nuclear Regulatory Commission (NRC) as a basis for a determination of the chlorination by-products discharged by operating nuclear power plants. Fava/Plugge Affidavit at ¶¶ 3,4. This multi-year research program entitled "Biocide By-Products in the Aquatic Environments" was under the direction of Dr. Roger Bean of Pacific Northwest Laboratory. The program results, which show that less than one percent of the chlorine biocide added to power plant cooling waters is converted to organohalogen compounds, is described in the NRC report "Organohalogen Products from Chlorination of Cooling Water at Nuclear Power Stations," NUREG/CR-3408, October 1983.

- The assessment used available cancer research data bases for a determination of the carcinogenicity of the chlorination by products being examined. These data bases include: RTECS, the Registry of Toxic Effects of Chemical Substances, produced by the National Institute of Occupational Safety and Health; PHS-149, the Survey of Compounds Tested for Carcinogenic

Activity, produced by the U.S. Department of Health, Education and Welfare (U.S. Department of Health and Human Services; Cancerline, a database on cancer information, sponsored by the International Cancer Research Data Bank Program of the National Cancer Institute; NCI Bioassay, reviews of carcinogenicity tests by the National Cancer Institute; and IARC Review, assessments of the carcinogenic risks of various chemicals to humans, sponsored by the International Agency for Research on Cancer. Fava/Plugge Affidavit at ¶ 3.

The assessment used the results of an NRC sponsored research study and data of the U.S. Environmental Protection Agency (EPA) for determination of the bioaccumulation potential of the chemical compounds being assessed in aquatic organisms; the NRC sponsored biological research program showed bioaccumulation factors in four species of freshwater fish of less than one order of magnitude over the concentration in the water and the rapid depuration of chloroform following removal from chloroform exposure. EPA criteria for the protection of human health were used in comparisons with the predicted discharge levels of these chemical compounds. Both the direct water consumption pathway and the aquatic organism consumption pathway were considered. The Applicants' analyses found that the predicted concentrations of haloorganics in the station cooling reservoir as a result of station operation to be less than one percent of the U.S. EPA water quality criteria for the protection of human health, based on the state water use classification of the reservoir. This analysis also found the incremental contribution of total haloforms from station discharge into the Cape Fear River to be less than

one hundreth of one percent of the U.S. EPA water quality criteria for surface water used either for drinking water or for fish consumption only. Fava/Plugge Affidavit at ¶¶ 6,7.

- The Applicants obtained data on levels of trihalomethanes in finished drinking waters in North Carolina and compared them to the predicted discharge levels of these chemicals in the Shearon Harris cooling water discharge and in the Harris Plant's contribution to the Cape Fear River concentration downstream of the confluence with Buck Horn Creek. Their comparison indicates that the station's estimated contribution of haloforms to the Cape Fear River is much less than one hundreth of one percent of the concentration normally encountered in finished North Carolina municipal drinking waters. Fava/Plugge Affidavit at ¶ 8.

- The analyses used conservative assumptions with regard to the carcinogenicity of the chemical compounds considered, the incremental cancer risk estimates of EPA, the chlorinated organic compound formation rate in the Harris cooling system, and the transport of these chemical compounds from the plant discharge to Buck Horn Creek and subsequently to the Cape Fear River. Fava/Plugge Affidavit at ¶ 7.

- The modeling of the Harris cooling system/lake transport system used conservative assumptions regarding plant chlorination practices and plant system and lake hydrodynamics. Hogarth Affidavit, Exhibit A at A-11 and A-15.

7. In conclusion, I have examined the information, analyses and assessments of the impacts that the estimated discharge of chlorination by-products from the Shearon Harris Nuclear Power Plant may have on the health of consumers of the waters used by the plant and consumers of aquatic organisms in these waters, as presented by the Applicants in their Motion dated February 7, 1984, with attached affidavits. After consideration of the scope of Applicants' analyses, the information used, and the bases of the assessments made, I conclude that the Applicants' assessment is consistent with the Staff's conclusion in the Final Environmental Statement that the Shearon Harris plant discharge concentrations will not result in an exceedance of the EPA water quality criteria. EPA has determined that these criteria "reasonably protect human health and aquatic life." Water Quality Criteria Documents, Availability, 45 Fed. Reg. 79318-79379 (Nov. 28, 1980).

John C. Lehr

Sworn to and Subscribed before me, this 5th day of September, 1984

Notary Public

My Commission Expires:

7/1/86

PROFESSIONAL QUALIFICATIONS

JOHN C. LEHR

U.S. Nuclear Regulatory Commission

I am currently employed as Senior Environmental Engineer in the Office of Nuclear Reactor Regulation, Division of Engineering, in the Environmental Engineering Branch. I have the responsibility for the independent review and analysis of the proposed site, alternative sites, site selection methodology, station construction, and design and operation of those features of nuclear power plants as they may affect natural water resources, existing water quality and use, water quality and usage goals as established by the responsible agency and other impacts on the aquatic environment. In this capacity, I have prepared the abiotic aquatic impact sections for NRC environmental impact statements (EIS) on numerous construction permit and operating license applications. For operating license applications, I have provided the technical specifications in the area of water quality and chemical discharge limitations and monitoring requirements. I have provided the technical expertise in the NRC overview function of contractor prepared EIS's in the area of abiotic aquatic impact assessments, including the need for mitigative actions and establishment of coordination with state and regional EPA offices. In the above capacities, I have been responsible for the water quality related aspects of NRC licensing actions for over 70 applications. I have also been responsible for the water quality related sections of several NRC NEPA alternate site investigations of proposed nuclear power plants, including the Seabrook Units 1 and 2 plant. I have provided written testimony and served as an expert witness at NRC licensing hearings on a variety of subjects dealing with aquatic impacts relative to power plant siting, construction and operation.

I have acted as a consultant to other NRC branches and provide analyses of water quality problems through technical assistance requests, particularly to the Division of Operating Reactors on matters pertaining to assessment of chemical effluent impacts and changes in abiotic effluent limitations and water chemistry monitoring programs for operating plants.

I have served as the coordinator and principal investigator in an in-house study to determine actual releases of residual chlorine from operating nuclear power plants. In addition, I am the Division technical representative on several inter-office NRC Research Review Groups. As such, I am responsible for defining and coordinating research needs in the area of abiotic aquatic environmental concerns and for providing the technical guidance for on-going research programs in this area. Examples of research activities governed by these review groups are asbestos in cooling tower waters, residual chlorine and chlorination by-products in power plant discharges in fresh and marine waters and investigation of the occurrence of pathogenic organisms in power plant cooling waters.

I have been designated as the in-house technical originator responsible for development of Environmental Standard Review Plans addressing staff NEPA reviews of site water quality, plant water uses, plant chemical and sanitary wastes, water quality related impacts of plant operation, abiotic aquatic monitoring and chemical treatment system alternatives. In a related activity, I have participated as a member of the Standard Environmental Technical Specifications Task Group responsible for the abiotic aquatic monitoring sections of the McGuire Units 1 and 2 and the Three Mile Island Unit 2 ETS.

I have participated in technical conferences with and coordinated water quality related activities with the U.S. Environmental Protection Agency, the U.S. Army Corps of Engineers, and other Federal, State and local agencies regarding implementation of the National Environmental Policy Act, the Federal Water Pollution Control Act and its amendments, the Toxic Substances Act, the Safe Drinking Water Act and the memoranda of understanding between the NRC and EPA and COE.

I have also developed expertise and been designated as the responsible technical specialist in the areas of sound level prediction techniques for power plants and their transmission lines and techniques for estimation of community response to environmental sound levels, as influenced by power plant construction and operation. I have been responsible for sections of NRC environmental impact statements addressing these areas for several proposed and operating nuclear power plants. I have also provided written testimony and served as an expert witness at NRC licensing hearings for noise impacts related to nuclear power plant construction and operation.

I have a Bachelor of Science degree in Mechanical Engineering from Drexel Institute of Technology (1969) and a Master of Science degree in Environmental Engineering from Drexel University (1972) specializing in water associated problems in the environment. My academic background includes studies in water chemistry, domestic and industrial waste treatment, and water resources management.

From 1969 to 1972, I was employed as a mechanical engineer at the U.S. Army Frankford Arsenal, Philadelphia, Pennsylvania. I was assigned as Project Manager of materials handling, and pollution control efforts for the Small Caliber Ammunition Modernization Program. I participated in the development of solid and liquid waste management and noise control programs for metal parts manufacturing facilities.

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CAROLINA POWER AND LIGHT COMPANY AND	)	Docket Nos. 50-400-OL
NORTH CAROLINA EASTERN MUNICIPAL	)	50-401-OL
POWER AGENCY	)	
	)	
(Shearon Harris Nuclear Power Plant	)	
Units 1 and 2)	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF RESPONSE IN SUPPORT OF WELLS EDDLEMAN'S MOTION FOR ADMISSION OF CONTENTION 58 (2d) REGARDING FINANCIAL QUALIFICATIONS" and "NRC STAFF RESPONSE IN SUPPORT OF APPLICANTS' MOTION FOR SUMMARY DISPOSITION OF EDDLEMAN CONTENTION 83/84B" 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 5th day of March, 1984.

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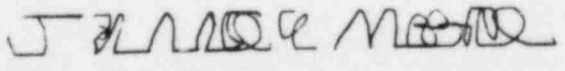

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