

RELATED CORRESPONDENCE

1004 - 10

September 24, 1999  
'99 SEP 27 P 104

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Atomic Safety and Licensing Board

In the Matter of )

CAROLINA POWER & LIGHT )  
COMPANY )  
(Shearon Harris Nuclear Power Plant) )

Docket No. 50-400-LA  
ASLBP No. 99-762-02-LA

**APPLICANT'S FIRST SUPPLEMENTAL RESPONSE TO THE  
BOARD OF COMMISSIONERS OF ORANGE COUNTY'S  
FIRST SET OF DISCOVERY REQUESTS**

Pursuant to 10 C.F.R. § 2.740(e), Applicant Carolina Power & Light Company ("CP&L") files this supplement to Applicant's responses to the August 5, 1999 "Orange County's First Set of Discovery Requests Directed to the Applicant" ("BCOC's First Discovery Requests"). This supplement provides additional responses to General Interrogatories 2 and 3 in BCOC's first Discovery Requests.

**GENERAL INTERROGATORY NO. 2.** For each admitted Orange County contention, give the name, address, profession, employer, area of professional expertise, and educational and scientific experience of each person whom CP&L expects to provide sworn affidavits and declarations in the written filing for the Subpart K proceeding described in the Board's July 29, 1999, Memorandum and Order and the general subject matter on which each person is expected to provide sworn affidavits and declarations for the written filing. For purposes of answering this interrogatory, the educational and scientific experience of expected affiants and declarants may be provided by a resume of the person attached to the response.

**APPLICANT'S RESPONSE:** The Applicant supplements its response to BCOC's First Discovery Requests by identifying the following additional persons whom

the Applicant expects to provide sworn affidavits and declarations in the written filing for the Subpart K proceeding with respect to BCOC's admitted contentions.

**Michael J. DeVoe**  
Project Engineer  
Nuclear Fuel Services  
Carolina Power & Light Co.  
P.O. Box 1551  
Raleigh, NC 27602-1551  
Area of Professional Expertise: Nuclear Science and Engineering  
Educational and Scientific Experience: A copy of Mr. DeVoe's resume is attached to this response.  
General Subject Matter: Contention 2.

**Charles H. Griffin**  
Engineer  
Corporate Nuclear Engineering  
Carolina Power & Light Co.  
411 Fayetteville St.  
P.O. Box 1551  
Raleigh, NC 27602-1551  
Area of Professional Expertise: Welding and Materials Engineering  
Educational and Scientific Experience: Mr. Griffin worked at the Harris Plant as a welding engineer from 1978 through 1985. He was responsible for welding on large bore piping during Harris Plant construction. From 1986 to June 1990, Mr. Griffin worked at the Harris Energy and Environmental Center, Metallurgy Laboratories, performing failure analyses for CP&L's fossil and nuclear plants. Since 1990, Mr. Griffin has worked in Corporate Nuclear Engineering, as a materials engineer, providing support to all three CP&L nuclear units. Mr. Griffin holds a B.S. degree from North Carolina State University.  
General Subject Matter: Contention 3.

**David L. Shockley**  
Supervisor  
Configuration Management  
Carolina Power & Light Co.  
P.O. Box 165  
New Hill, NC 27562-0165  
Area of Professional Expertise: Quality Assurance / Quality Control

Educational and Scientific Experience: A copy of Mr. Shockley's resume is attached to this response.  
General Subject Matter: Contention 3.

**GENERAL INTERROGATORY NO. 3.** For each admitted Orange County contention, identify each expert on whom CP&L intends to rely on in its written filing for the Subpart K proceeding described in the Board's July 29, 1999 Memorandum and Order, the general subject matter on which each expert is expected to provide sworn affidavits and declarations for the written filing, the qualifications of each expert whom CP&L expects to provide sworn affidavits and declarations for the written filing, a list of all publications authored by the expert within the preceding ten years, and a listing of any other cases in which the expert has testified as an expert at a trial, hearing or by deposition within the preceding four years.

**APPLICANT'S RESPONSE:** The Applicant supplements its response to BCOC's First Discovery Requests by identifying the following persons whom the Applicant expects to rely on as experts in its written filing for the Subpart K proceeding with respect to BCOC's admitted contentions.

Stanley E. Turner, Ph.D., PE  
Senior Vice President and Chief Nuclear Scientist  
Holtec International  
230 Normandy Circle East  
Palm Harbor, FL 34683

Area of Professional Expertise: Nuclear Science and Engineering.

Educational and Scientific Experience: A copy of Dr. Turner's resume is attached to this response.

General Subject Matter: Contention 2.

Publications in the last Ten Years: Dr. Turner's publications are being reviewed and a list will be provided promptly when completed.

Testifying Experience in the last Four Years: None.

Everett L. Redmond II, Ph.D.

Principal Engineer  
Holtec International  
Holtec Center

555 Lincoln Drive West  
Marlton, NJ 08053

Area of Professional Expertise: Nuclear Science and Engineering.

**Educational and Scientific Experience:** A copy of Dr. Redmond's resume is attached to this response.

**General Subject Matter:** Contention 2.

**Publications in the last Ten Years:** Dr. Redmond's publications are listed on his resume, which is attached to this response.

**Testifying Experience in the last Four Years:** None.

**Ahmad Alexander Moccari, Ph.D.**

**Senior Engineer**

**Carolina Power & Light Co.**

**Harris Energy and Environmental Center**

**3932 New Hill-Holleman Rd.**

**New Hill, NC 27652**

**Area of Professional Expertise:** Metallurgical engineering, corrosion, bacteria detection, and failure analysis, including metallurgical, mechanical and environmentally-induced failure.

**Educational and Scientific Experience:** A copy of Dr. Moccari's resume is attached to this response.

**General Subject Matter:** Contention 3.

**Publications in the last Ten Years:**

- "Development of Controlled Hydrodynamic Techniques for Corrosion Testing," with T.Y. Chin and D.D. Macdonald, Corrosion, Vol. 48, No. 3, March (1992).
- "Evaluation of Corrosion Inhibitors for Component Cooling Water Systems," with D.B. Alexander, Corrosion, Vol. 49, No. 11, November (1993).
- "Corrosion Inhibitor Evaluation for Materials Used in Closed Cooling Water Systems," Materials Performances, Vol. 38, No. 9, September (1999).

**Testifying Experience in the last Four Years:** None.

Respectfully submitted,



John H. O'Neill, Jr.

William R. Hollaway

SHAW PITTMAN

2300 N Street, N.W.

Washington, DC 20037

(202) 663-8000

Counsel for CAROLINA

POWER & LIGHT

COMPANY

**Of Counsel:**

**Steven Carr**

**Legal Department**

**CAROLINA POWER & LIGHT**

**COMPANY**

**411 Fayetteville Street Mall**

**Post Office Box 1551 - CPB 13A2**

**Raleigh, North Carolina 27602-1551**

**(919)546-4161**

**Dated: September 24, 1999**

**Michael J. DeVoe**  
(919-546-6599)

**Education:**

MS Mechanical Engineering - University of California, Berkeley - 1984  
BS Nuclear Engineering - University of Wisconsin, Madison - 1978  
Physics, Pre-Engineering - University of Wisconsin, Whitewater - 1976

**Professional Affiliations:**

Registered Professional Engineer, NC - 1991  
American Nuclear Society Member  
Tau Beta Pi Engineering Honor Society Member  
Sigma Pi Sigma Physics Honor Society Member

**Experience Prior to Joining CP&L:**

January 1979 - **Program Engineer** - General Electric Company, San Jose, California.  
September 1982 Participant in General Electric Company's Edison Engineering and Engineering Training Programs. This involved six rotating work assignments of six months duration each; one and a half years of company taught applied engineering studies; and nine months of graduate study at the University of California - Berkeley.

September 1982 - **Reload Nuclear Engineer** - General Electric Company, San Jose, California.  
June 1984 Performed a variety of reload nuclear engineering design activities in support of several operating boiling water reactor projects. Work areas included fuel cycle analysis, core design, system transient analysis, and core management.

**Experience with CP&L:**

July 1984 - **Senior Engineer - Nuclear Fuel Section, Neutronic and Incore Analysis Units.**  
July 1990 Performed methods development, core and fuel system design, core management, reload licensing, and operations support for the Brunswick Units. Served as Technical/Team Leader for Brunswick reload activities.

July 1990 - **Acting Unit Manager - Nuclear Fuel Section, Incore Analysis Unit.**  
July 1991 Promoted to Project Engineer in September 1990.

July 1991 - **Project Engineer - Nuclear Fuel Section, Incore Analysis Unit.**  
July 1992 Continued to serve as Technical/Team Leader for Brunswick reload activities.

July 1992 - **Rotating Assignment - Brunswick Site Assistance Team.**  
November 1992 Assisted in the development of revised Temporary Modification and CAP Programs.

- November 1992 - June 1996 **Project Engineer - Nuclear Fuels Management & Safety Analysis Section, BWR Fuel Engineering Unit.** Continued Technical/Team Leader role for Brunswick reload core design and operations support. Section representative for the power uprate, 24 month fuel cycle, and ITS implementation teams. Provided failed fuel detection and management guidance.
- June 1996 - October 1997 **BWR Fuel Project Engineer - Nuclear Fuels Management & Safety Analysis Section.** Served as reload ESR responsible engineer and overall coordinator. Interfaced with fuel vendor to procure nuclear fuel and related engineering services. Administered the reload contract as designated single point of contact. Interfaced with Brunswick on fuel related issues.
- October 1997 - Present **Project Engineer - Nuclear Fuels Management & Safety Analysis Section, Nuclear Fuel Services Unit.** Responsible for determining the acceptability of proposed fuel mechanical design and manufacturing changes (BWR and PWR). Participate in and serve as technical consultant for fuel fabrication surveillances. Perform Owners Reviews of the IF-300 and Pool C & D criticality evaluations - support licensing interactions with NRC. Perform Source term evaluations to support E-plan updates and extended operating cycle Chapter 15 evaluations. Monitor fuel performance and provide leaker detection and management recommendations. Participate in poolside examination of discharged failed assemblies and assist in root cause determination.

**Relevant CP&L Training/Qualification:**

BNP ESP Training (Initial and Continuing)

BWR Neutronics Engineer Training Guide

BWR Transient Analysis Engineer Training Guide

BWR Fuel Performance Engineer Training Guide

Design Verifier Training

Design Calculation Training

F.SR Training

HNP Basic Systems Course

10 CFR 50.59 Qualification (BNP, HNP, RNP)

BNP Tech Reviewer

OJT/TPE

Lead Assessor

Root Cause Investigation

Nuclear Generation Group Supervisory Development Program, Class 94-02.  
Nuclear Generation Group Professional Support Assessment Center, 6/3/96.

# David L. Shockley

---

1996 - 1999 Carolina Power & Light Co. New Hill, NC

**Supervisor - Configuration Management: Harris Nuclear Plant**

- Currently function as Supervisor - Configuration Management subunit, accountable for design document maintenance, the Equipment Data Base System (EDBS) Program and Vendor Manual Program. Currently responsible for 10 CP&L Direct Reports, 5 Temporary CP&L Direct Reports, 7 Contract personnel.
- Major Initiatives underway: Function as Project Manager for 3 Tasks within the scope of the Configuration Management Improvement Initiative (approx. \$1.5 million). The tasks consist of EDBS Enhancement (3 site initiative), Design Document ESR Reduction and the Vendor Information Control portion.
- Currently Qualified Safety Reviewer, Modification Engineer, Technical Reviewer and function as the EOC Representative to Harnett County.

1994 - 1996 Carolina Power & Light Co. New Hill, NC

**Supervisor - Engineering Services: Harris Nuclear Plant**

- Originally responsible for consolidation of the NED/Technical Support/Project Management Corrective Action Programs, Training Programs, Procedures and Administrative Support functions and their controls. Assigned HNP Team Lead assignment for the roll-out of the original ESR Program and transition plan developed and implementation. Key contributor for each of the past three HESS reorganizations, including procedural and responsibility reconciliation's. Functioned as the ESP Training Program Committee Chairman and accountable for bringing program up to required standard to survive accreditation renewal by INPO.

1990 - 1994 Carolina Power & Light Co. New Hill, NC

**Supervisor - Modification Support Services: Harris Nuclear Plant**

- Responsible for preparing modification installation packages including: Bills of Material, procurement, Clearance Requests, RVP requests, process control of required inspections, isometric drawing preparation and engineering verification inspections. Responsible for the development of writing generic installation, inspection and testing procedures for the Plant Operating Manual, currently in use today. Promoted to Project Specialist on 5/4/91.

1979 - 1990

Carolina Power & Light Co.

New Hill, NC

**Corporate Quality Assurance: Harris Nuclear Plant**

- 1987-1990 Functioned in a Quality Assurance Engineering role reviewing Modifications for compliance with program, participating in Modification Program/procedure development teams, performing select surveillance activities, functioning as Refueling Outage Coordinator for Corporate Quality Assurance during this period. Also responsible for review of plant procedures for QA requirements.
  
- 1983-1987 Developed and implemented the ASME Section III "N-5" Program and supporting procedures and databases. The objective was to ensure all ASME Section III requirements had been achieved prior to Start-up. Managed contract staff (maximum 40 personnel) to accomplish "N" Stamp of all ASME Section III systems including the "N-3" for the plant. Responsible for ANI(s) during this period. Key contributor in the development of the Release For Test (RFT) and Final System Turnover (FST) programs. The goal was to orderly transfer jurisdiction of each plant system from the Construction organization to Start-up Group with final control residing with Operations. Responsible for the development and implementation of the ASME Section XI Repair and Replacement Program during the construction and start-up phase until such time the Technical Support Unit assumed responsibility under Operations program. Qualified VT-1, 2, 3 and 4 Examiner Level II.
  
- 1979-1983 Responsibilities were performing Mechanical inspections/tests of installed components, writing QA procedures governing installation, inspection, and testing.
  
- Employment history while in Corporate Quality Assurance at the Harris Nuclear Plant:
  - 5/17/88 Promoted to QA/QC Senior Specialist
  - 5/11/85 Promoted to QA/QC Specialist
  - 3/5/83 Promoted to QA/QC Technician I
  - 9/5/81 Promoted to QA/QC Technician II
  - 3/8/80 Promoted to QA Inspector I
  - 9/4/79 Hire date as QA Inspector II

1977 - 1979

Danville Community College

Danville, VA

- Diploma in Drafting & Design

1995 - Present

North Carolina Wesleyan College

Raleigh, NC

- Working toward a B. S. - Business Administration  
Part-time Honor List



**STANLEY E. TURNER, Ph.D., P.E.**

**SENIOR VICE PRESIDENT AND CHIEF NUCLEAR SCIENTIST  
HOLTEC INTERNATIONAL**

---

**EDUCATION**

University of Texas  
Ph.D. in Nuclear Chemistry (1951)

University of South Carolina  
B.S. in Chemistry (1945)

Georgia Institute of Technology (1943-44) (1946-47)

**PROFESSIONAL EXPERIENCE**

**HOLTEC INTERNATIONAL**

Palm Harbor, Florida

1987-1997

Chief Nuclear Scientist

1997-Present

Senior Vice President and Chief Nuclear Scientist

**SOUTHERN SCIENCE OFFICE OF BLACK & VEATCH  
ENGINEERS - ARCHITECTS**

Dunedin, Florida

1977-1987

Project Manager/Senior Consultant

**NUS CORPORATION**

Dunedin, Florida

1973-1977

Senior Consultant

**SOUTHERN NUCLEAR ENGINEERING,  
INC.**

Dunedin, Florida

1964-1973

Vice President, Physics

**GENERAL NUCLEAR ENGINEERING**

Dunedin, Florida

1957-1964

Senior Reactor Physicist/Project Manager

**SOCONY-MOBIL RESEARCH**

**LABORATORY**

Dallas, Texas

1952-1957

Research Scientist

**U.S. NAVY RADIOLOGICAL DEFENSE**

**LABORATORY**

San Francisco, California

1951-1952

Physicist

**PROFESSIONAL CERTIFICATIONS**

Registered Professional Engineer (Nuclear)- Florida (1974-Present)

**PROFESSIONAL SOCIETY MEMBERSHIPS/ACTIVITIES**

Elected Fellow, American Institute of Chemists  
Member, ANS Standards Committee 8.17 on Nuclear Criticality Safety (1975-Present)  
Chairman of ANS 5.3 (Failed Fuel Consequences (1981-1995)) and 5.4 (Fission Product Release (1978-Present))  
Formerly a member of the ANS 5 Committee with oversight on ANS 5.1, Decay Heat.

**ACADEMIC HONORS**

Sigma Pi Sigma, Phi Lambda Epsilon,  
Blue Key, Sigma Xi

**CONTINUING EDUCATION COURSES OFFERED TO PRACTICING GRADUATE ENGINEERS**

1. Union Electric Company, St. Louis, Missouri: Use of CASMO and KENO Codes in criticality safety analysis.
2. Southern California Edison Company, San Clemente, California: Use of CASMO and KENO Codes in criticality safety analysis.

**DRY AND WET SPENT FUEL STORAGE TECHNOLOGY**

- Developed nuclear analysis techniques for criticality safety analyses.
- Performed criticality safety analyses for numerous wet spent fuel storage rack installations.
- Performed criticality analyses of numerous fuel designs under normal and accident conditions for the HI-STAR 100 shipping cask and HI-STORM storage cask.
- Performed detailed benchmark calculations for KENO5a and MCNP4a computer codes.
- Developed and wrote CELLDAN Computer Code to prepare input for NITAWL-KENO5a calculations.
- Supervised calculations with the QAD Point Kernel Code for gamma ray shielding.
- Performed numerous calculations of fission product inventories using ORIGEN, ORIGEN-II, and ORIGEN-S (ORIGEN-ARP) Codes.
- Participated in the development of Holtec's thermal evaluation methodologies for wet storage systems.
- Author of numerous reports on dry and wet storage facilities.
- Designed equipment for and supervised Blackness Testing at numerous power plants and performed measurements on Boraflex and Boral surveillance coupons.
- Performed R&D programs on Holite-A neutron absorber materials and on HI-COAT coatings.
- Performed wet chemical analyses of Boral samples.

**EVERETT L. REDMOND II, Ph.D.**

**PRINCIPAL ENGINEER  
HOLTEC INTERNATIONAL**

---

**EDUCATION**

Massachusetts Institute of Technology  
Ph.D. in Nuclear Engineering and a Minor in Biology (1997)

Massachusetts Institute of Technology  
M.S. in Nuclear Engineering (1990)

Massachusetts Institute of Technology  
B.S. in Nuclear Engineering (1990)

**PROFESSIONAL EXPERIENCE**

**HOLTEC INTERNATIONAL**

Marlton, New Jersey  
1995 - Present Principal Engineer

**HOLTEC INTERNATIONAL**

Palm Harbor, Florida  
August 1994 - Spring 1995 Criticality and Shielding Consultant

**LOS ALAMOS NATIONAL LABORATORY**

Los Alamos, New Mexico  
Summers 1993 and 1994 Graduate Research Assistant

**RAYTHEON**

Sudbury, Massachusetts  
Spring 1993 Shielding Consultant

**NORTHEAST UTILITIES COMPANY**

Hartford, Connecticut  
Summer 1992 Engineer

**IDAHO NATIONAL ENGINEERING LABORATORY**

Idaho Falls, Idaho  
Summers 1987, 1988, 1990 Engineer and Co-op Student  
June 1989 - January 1990

**PROFESSIONAL SOCIETY MEMBERSHIPS/ACTIVITIES**

Member American Nuclear Society (1986-Present)

**DRY AND WET SPENT FUEL STORAGE TECHNOLOGY**

- Developed Holtec's shielding analysis methods for dry cask storage licensing.
- Developed Holtec's shielding analysis methods and models for performing site boundary dose calculations for an ISFSI.
- Created all computer models of HI-STAR 100, HI-STORM 100, 100-ton and 125-ton HI-TRACs used in the shielding analysis reported in the HI-STAR SAR and HI-STAR and HI-STORM TSARs under Dockets 71-9261, 72-1008, and 72-1014
- Author of Shielding Evaluation Chapters in the HI-STAR SAR and HI-STAR and HI-STORM TSARs under Dockets 71-9261, 72-1008, and 72-1014
- Primary reviewer for Criticality Evaluation Chapters in the HI-STAR SAR and HI-STAR and HI-STORM TSARs under Dockets 71-9261, 72-1008, and 72-1014
- Performed criticality analysis for both PWR and BWR spent fuel pool reracking.
- Served as primary reviewer for numerous criticality analyses for spent fuel pool reracking.

**PUBLICATIONS**

1. E.L. Redmond II, "Methodology for Calculating Dose Rates from Storage Cask Arrays Using MCNP," *Trans. Am. Nucl. Soc.*, 77, 332, (1997)
2. E.L. Redmond II, "Multigroup Cross Section Generation Via Monte Carlo Methods," Doctoral Thesis, Massachusetts Institute of Technology (1997).
3. R. Zamenhof, E. Redmond II, G. Solares, D. Katz, K. Riley, S. Kiger, and O. Harling, "Monte-Carlo-Based Treatment Planning for Boron Neutron Capture Therapy Using Custom Designed Models Automatically Generated From CT Data," *Int. J. Radiation Oncology Biol. Phys.*, 35 383-397 (1996).
4. O.K. Harling, R.D. Rogus, E.L. Redmond II, K.A. Roberts, D.J. Moulin and C.S. Yam, "Phantoms for Neutron Capture Therapy Dosimetry," presented at Sixth International Symposium on Neutron Capture Therapy for Cancer, Kobe, Japan, October 31 - November 4, 1994.
5. J.C. Wagner, E.L. Redmond II, S.P. Palmtag, J.S. Hendricks, "MCNP: Multigroup/Adjoint Capabilities," LA-12704, Los Alamos National Laboratory (1994).
6. E.L. Redmond II, J.C. Yanch, and O.K. Harling, "Monte Carlo Simulation of the MIT Research Reactor," *Nuclear Technology*, 106, 1, April 1994.
7. E.L. Redmond II and J.M. Ryskamp, "Monte Carlo Methods, Models, and Applications for the Advanced Neutron Source," *Nuclear Technology*, 95, 272, (1991).
8. R.C. Thayer, E.L. Redmond II, and J.M. Ryskamp, "A Monte Carlo Method to Evaluate Heterogeneous Effects in Plate-Fueled Reactors," *Trans. Am. Nucl. Soc.*, 63, 445, (1991).

9. J.M. Ryskamp, E.L. Redmond II and C.D. Fletcher, "Reactivity Studies on the Advanced Neutron Source Preconceptual Reactor Design," *Proc. Topl. Mtg. Safety of Non-Commercial Reactors*, Boise, ID, October 1-4, 1990, Vol. I, p. 337 (1990).
10. E.L. Redmond II and J.M. Ryskamp, "Monte Carlo Methods, Models, and Applications for the Advanced Neutron Source," *Trans. Am. Nucl. Soc.*, 61, 377 (1990).
11. E.L. Redmond II, "Monte Carlo Methods, Models, and Applications for the Advanced Neutron Source," Masters Thesis, Massachusetts Institute of Technology (1990).
12. E.L. Redmond II and J.M. Ryskamp, "Design Studies on Split Core Models with Involute Fuel for the Advanced Neutron Source," NRRT-N-88-034, Idaho National Engineering Laboratory (1988).

## RESUME

**NAME:** Ahmad Alexander Moccari

**BUSINESS ADDRESS:** Carolina Power & Light Company  
Harris Energy and Environmental Center  
3932 New Hill-Holleman Rd.  
New Hill, NC 27562

**PHONE:** (919)362-3438

**EDUCATION:**

- Ph.D. The Ohio State University  
Columbus, Ohio, September 1974, Metallurgical  
Engineering (corrosion)
- M.S. University of Miami, Coral Gable,  
Florida, January 1970, Mechanical Engineering
- B.S. (Honours) Tehran Institute of Technology, Tehran,  
June 1964, Welding Engineering

**JOB EXPERIENCE:**

Dec. 1982  
until present

Senior Engineer, Carolina Power & Light Company,  
Harris E&E Center, New Hill, NC

Performed corrosion study, failure analysis, and material identification for Nuclear Plants, Fossil Plants, Hydro Plants, Transmission, and Legal Department. Failure analysis activities included metallurgical, mechanical, and environmentally-induced failure. Corrosion evaluation activities included control of corrosion and scale problem in water-cooled equipment, corrosion of boiler tubes, corrosion inhibitor evaluation, bacteria detection in the field and in the laboratory, field failure analysis of steam drum, corrosion evaluation of condenser tubes and steam generator tubes, and evaluation of surface modification to eliminate the sticking problem of the safety relief valve for BWR nuclear power plants.

1979-1982

Research Associate, Fontana Corrosion Center, Ohio State University, Columbus, Ohio

Conduct research on the stress-corrosion cracking and corrosion fatigue of turbine blade and disc alloys in simulated steam turbine environments at room and high temperatures. Other research carried out during this period included studies of the effect of flow rate on the corrosion behavior of 90/10 Cu-Ni alloy (condenser tube material) in NaCl solution by using A.C impedance, small-amplitude cyclic voltammetry and Tafel extrapolation methods; electrochemical screening of organic and inorganic inhibitors for the corrosion of disc alloy in concentrated sodium hydroxide solution; and corrosion fatigue crack propagation rate of Inconel 600 and Type 304 stainless steel in simulated PWR primary environments.

1974-79

Associate Professor, Shiraz University, Materials Science, and engineering Department, Shiraz, Iran

Thought undergraduate courses in corrosion, physical metallurgy, mechanical metallurgy, thermodynamics, and welding. Other responsibilities included being dean of students of the Engineering School and director of the Material Science and Engineering Department.

1970-74

Graduate Research Associate, Department of Metallurgical Engineering, Ohio State University, Columbus, Ohio

Carried out research on the corrosion fatigue of Type 304 stainless steel in NaCl + H<sub>2</sub>SO<sub>4</sub> solution at room temperature and the wear study of metallic and plastic implants in simulated body environment. Professor in charge: R. W. Staehle

1968-70

Graduate Research Assistant, Department of Mechanical Engineering, University of Miami, Coral Gable, Florida

Studied the effect of vacuum on the creep-rupture behavior of Type 310 stainless steel.  
Professor in charge: B. King

**MEMBERSHIPS:**

- 1 - The National Association of Corrosion Engineers (NACE)
- 2 - American Society of Metals (ASM International)

UNITED STATES OF AMERICA  
 NUCLEAR REGULATORY COMMISSION

'99 SEP 27 P4:05

Before the Atomic Safety and Licensing Board

C.  
 AD.

In the Matter of )

CAROLINA POWER & LIGHT )  
 COMPANY )  
 (Shearon Harris Nuclear Power Plant) )

Docket No. 50-400-LA  
 ASLBP No. 99-762-02-LA

**CERTIFICATE OF SERVICE**

I hereby certify that copies of the foregoing "Applicant's First Supplemental Response to the Board of Commissioners of Orange County's First Set of Discovery Requests," dated September 24, 1999, was served on the persons listed below by U.S. mail, first class, postage prepaid, and by electronic mail transmission, this 24th day of September, 1999.

G. Paul Bollwerk, III, Esq., Chairman  
 Administrative Judge  
 Atomic Safety and Licensing Board Panel  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555-0001  
 e-mail: gpb@nrc.gov

Frederick J. Shon  
 Administrative Judge  
 Atomic Safety and Licensing Board Panel  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555-0001  
 e-mail: fjs@nrc.gov

Dr. Peter S. Lam  
 Administrative Judge  
 Atomic Safety and Licensing Board Panel  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555-0001  
 e-mail: psl@nrc.gov

Office of the Secretary  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555-0001  
 Attention: Rulemakings and Adjudications  
 Staff  
 e-mail: hearingdocket@nrc.gov  
 (Original and two copies)




Susan L. Uttal, Esq.  
Richard G. Bachmann, Esq.  
Office of the General Counsel  
Mail Stop O-15 B18  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555  
e-mail: harris@nrc.gov

Diane Curran, Esq.  
Harmon, Curran, Spielberg &  
Eisenberg, L.L.P.  
1726 M Street, N.W., Suite 600  
Washington, D.C. 20036  
e-mail: dcurran@harmoncurran.com

\* Adjudicatory File  
Atomic Safety and Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

James M. Cutchin, V, Esq.  
Atomic Safety and Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001  
e-mail: jmc3@nrc.gov

\* by mail only

  
William R. Hollaway