September 13, 2000

RAS 2182 **DOCKETED 9/14/00**

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER & LIGHT COMPANY	)	Docket No. 50-400-OLA
	)	
(Shearon Harris Nuclear Power Plant)	)	ASLBP No. 99-762-02-LA
	)	

NRC STAFF'S RESPONSE TO APPLICANT'S DISCOVERY REQUESTS REGARDING CONTENTION EC-6 DIRECTED TO THE NUCLEAR REGULATORY COMMISSION STAFF

The Nuclear Regulatory Commission staff (Staff) hereby responds to Applicant Carolina Power & Light Company's[1] First Discovery Requests Regarding Contention EC-6 Directed to the Nuclear Regulatory Commission Staff, filed August 30, 2000.

As a preliminary matter, the Staff notes that it is not required to respond to CP&L's discovery request absent prior findings by the Atomic Safety and Licensing Board (Board) that such response should be required, pursuant to 10 C.F.R. § 2.720(h)(2)(ii)(in the case of the interrogatories)[2] and10 C.F.R. § 2.744 (d) (in the case of the request for production of documents).[3]

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[1] Hereinafter "CP&L."

[2] 10 C.F.R. § 2.720(h)(2)(ii) provides that "[u]pon a finding by the presiding officer that answers to the interrogatories are necessary to a proper decision in the proceeding and that answers to the interrogatories are not reasonably obtainable from any other source, the presiding officer may require that the staff answer the interrogatories."

[3] 10 C.F.R. § 2.744(c) provides that if the Executive Director for Operations ("EDO") objects to producing a record or document, the requesting party must make written application to the presiding officer to compel production, and the document is then to be reviewed *in camera* by the presiding officer. 10 C.F.R. § 2.744(d) provides that the presiding officer must determine that (1) the document or record is relevant, (2) its

The Staff further notes that 10 C.F.R. §§ 2.744 and 2.790, which govern the production of NRC records and documents, contemplate that most NRC documents will be available for inspection and copying in the public document room and, if they have been withheld from the public document room pursuant to § 2.790, a request to the Executive Director for Operations for the production of such a document is required by § 2.744, which must state, among other things, why the requested record or document is relevant to the proceeding.

Notwithstanding these regulations, without waiving any objections or privileges, and except as specified below, the Staff is now voluntarily providing responses to CP&L's interrogatories. The Staff will respond to CP&L's request for production of documents within thirty days, pursuant to 10 C.F.R. § 2.741. By responding to the instant discovery request, the Staff does not waive its right to require that the appropriate procedure be followed and that the required findings be made, pursuant to the Commission's regulations, before responding to any future discovery requests.

I. GENERAL OBJECTIONS

1. The Staff objects to CP&L's discovery requests to the extent that they call for disclosure of litigation strategy and other material protected under 10 C.F.R. § 2.740 or other protection provided by law, attorney work product, privileged attorney-client materials, and other privileged materials, such as draft agency documents protected by executive privilege.

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production is not exempt from disclosure under § 2.790, or if exempt, that its disclosure is necessary to a proper decision in the proceeding, and (3) the information contained in the record or document is not reasonably obtainable elsewhere, before ordering the EDO to produce the document.

2. The Staff objects to CP&L's discovery requests to the extent that they request information or documents relating to licensees and/or entities other than Carolina Power & Light Company's Shearon Harris Nuclear Power Plant. Such discovery requests call for information which is irrelevant, immaterial, and not calculated to lead to the discovery of admissible evidence, and are overbroad and unduly burdensome.

3. The Staff objects to CP&L's discovery requests to the extent that they are unreasonably cumulative, and are obtainable from another source that is more convenient, less burdensome, or less expensive.

II. GENERAL DISCOVERY REQUESTS

A. GENERAL INTERROGATORIES

GENERAL INTERROGATORY No.1.

State the name, business address, and job title of each person who supplied information for responding to these interrogatories, requests for admission, and requests for the production of documents. Specifically note for which interrogatories and requests for admissions each such person supplied information. For requests for production, note for which contention each such person supplied information.

STAFF'S RESPONSE:

The following persons supplied information for responding to CP&L's First Discovery Requests Regarding Contention EC-6:

Richard Laufer
Project Manager, Shearon Harris Nuclear Power Plant
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Christopher Gratton
Reactor Systems Engineer
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Stephen LaVie
Health Physicist
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Robert Palla
Senior Reactor Engineer
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gareth Parry
Senior Level Advisor for Probabilistic Risk Analysis
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

The Staff reserves the right to amend this answer as discovery continues.

GENERAL INTERROGATORY No. 2.

For Contention EC-6, give the name, address, profession, employer, area of professional expertise, and educational and scientific experience of each person whom the Staff expects to provide sworn affidavits and declarations in the written filing for the Subpart K proceeding described in the Board's August 7, 2000, 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.

STAFF'S RESPONSE:

The Staff has not yet made a final determination regarding who will provide sworn affidavits, but provides the following as persons who are likely to provide a sworn affidavit or declaration in this proceeding:

Christopher Gratton
Reactor Systems Engineer
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Stephen LaVie
Health Physicist
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Robert Palla
Senior Reactor Engineer
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Gareth Parry
Senior Level Advisor for Probabilistic Risk Analysis
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

A copy of the resume of each person named in this answer is annexed hereto as Attachment 1. The Staff reserves the right to amend this answer as discovery continues.

GENERAL INTERROGATORY No. 3.

For contention EC-6, identify each expert on whom the Staff intends to rely on in its written filing for the Subpart K proceeding described in the Board's August 7, 2000 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 the Staff 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.

STAFF RESPONSE:

Kindly refer to the answer to Interrogatory No. 2.

Respectfully submitted,

Susan L. Uttal ***/RA/***
Counsel for NRC Staff

Dated at Rockville, Maryland
this 13th day of September 2000

Christopher Gratton
Reactor Systems Engineer

Area of Expertise

Balance-of-plant systems, including spent fuel storage systems.

Education

M.B.A University of Maryland, 1992
B.S. Engineering, University of Maryland, 1980

Employment

U.S. Nuclear Regulatory Commission, Reactor Systems Engineer, 1992 - present.
Performs safety evaluations of reactor license application, technical specifications, and topical reports for various balance-of-plant systems, including wet spent fuel storage facilities. Evaluated the adequacy of spent fuel storage issues as part of the resolution of Generic Safety Issue 173A, "Spent Fuel Storage Pool for Operating Plants." Performed plant-specific backfit evaluations for certain spent fuel storage pool design features identified during the resolution of Generic Safety Issue 173A. Performed safety evaluations for licensing actions regarding spent fuel pool reracking and credit for soluble boron.

U.S. Nuclear Regulatory Commission, Operator Licensing Examiner, 1987-1992.
Qualified operator licensing examiner for boiling water, test and research reactors. Developed and administered comprehensive licensing examinations to candidates applying for certification. Authored written, oral, and performance-based examinations.

Norfolk Naval Shipyard, Test Engineer, 1980 - 1987.
Planned and implemented comprehensive overhaul maintenance packages for submarine nuclear power plants. Conducted post-maintenance testing on reactor plant systems. Responsible for reactor plant safety aboard submarines undergoing overhaul. Qualified as shift test engineer on Westinghouse and General Electric designed reactor plants.

[Publications

No publications of note]

Name: GARETH W. PARRY

EDUCATION

Ph.D., Theoretical Physics, Imperial College, London University, August 1972
B.Sc., Physics, Imperial College, London University, 1969

EMPLOYMENT HISTORY

U.S. Nuclear Regulatory Commission, 1996-present
NUS, 1980-1996
United Kingdom Atomic Energy Authority, 1975-1980
University of Durham, England, 1973-1975
International Centre for Theoretical Physics, Trieste, Italy, 1972-1973

USNRC - Position is that of Senior Level Advisor for Probabilistic Risk Analysis in the Division of System Safety and Analysis of the Office of Nuclear Reactor Regulation. Current responsibilities include advising the division director on the use of PRAs in the risk-informed regulation initiatives being pursued by NRC, reviewing PRA analyses performed in support of regulatory matters, and providing guidance to NRR staff in their uses of PRA techniques.

NUS - Project Manager in the Energy Risk and Reliability Department with particular interests in data analysis and parameter estimation, common cause failure analysis, external hazard analysis, human reliability analysis, and uncertainty analysis. Was a member of the project team performing a PSA for the VVER 1000, Temelin plant in the Czech Republic, with responsibility for data analysis, human reliability analysis, and external events analysis.

Participated in a number of Human Reliability Analysis (HRA) research projects, including, for EPRI, outlining an approach to developing an improved HRA methodology, and, for a utility client, defining and applying an approach to the analysis of errors of commission. Participated in the NRC-sponsored project to develop an improved HRA method, called ATHEANA, which includes a treatment of errors of commission. Was project manager for an EPRI project to provide guidelines for converting PRA results into accident sequences for training purposes. Has supported several utilities in performing Human Reliability analyses for IPEs and PRAs. Was a co-author of the SHARP1 report, which is an update of the Systematic Human Action Reliability Procedure (SHARP), and of a report presenting a cause-based decision tree approach to the estimation of cognitive error probabilities. Was an instructor at an EPRI-sponsored workshop on Human Reliability Assessment Issues and Methods, held in Charlotte in July 1990. Was NUS' project manager for the EPRI-sponsored Operator Reliability Experiments project.

Was project manager for the Individual Plant Examination for External Events (IPEEE) support being provided by NUS to Cleveland Electric and Illuminating for its Perry plant, and to Baltimore Gas and Electric for its Calvert Cliffs plant. Was the project manager

for the IPEEEs performed by NUS for the three nuclear stations operated by Carolina Power and Light, and was a participant in the IPEEE projects for Surry, North Anna, and Indian Point 2. Was Project Manager for the Limerick Generating Station Severe Accident Risk Assessment, which integrated the results of the previously performed Limerick PRA with an external hazards risk study which addressed earthquakes, flooding, fires, tornadoes, transportation accidents, and turbine missiles, and a revised consequence and uncertainty analysis. Managed two projects estimating the frequency of damage to nuclear power plants resulting from extreme winds, and participated in a project for the Federal Emergency Management Agency on a feasibility study on the development of a methodology for comprehensive hazard analysis.

Managed the probabilistic risk assessment (PRA) project for the Peach Bottom Atomic Power Station to provide a base case model for the IPE submittal. Provided continuing support to Philadelphia Electric Company in the maintenance of their PRAs for Peach Bottom and Limerick. Managed a project to revise the event trees of the Limerick PRA model to incorporate the symptom-based emergency operating procedures, and to update the PRA and install it on the NUS PC-based software, NUPRA.

Has done extensive development work on the analysis of common cause failures. Was an author of the NRC/EPRI document "Procedures for Treating Common Cause Failures in Safety and Reliability Studies," and was coordinator of, and instructor at, a subsequent EPRI sponsored workshop. On behalf of IAEA conducted a seminar on common cause failure analysis for personnel at the Korea Advanced Energy Research Institute. Is a coauthor of an IAEA procedures guide for CCF analysis, and of a report providing an example application of data analysis for CCF model parameter estimation.

Has extensive experience in technology transfer. Managed the NUS support for the Almaraz PSA (Spain). Was Assistant Project Manager and Task Advisor for parameter estimation, uncertainty analysis, and external hazards analysis for the PRA performed by the Atomic Energy Council of the Republic of China (ROCAEC), under NUS guidance and supervision, for the Kuosheng BWR 6 Mark III reactor. Was a reviewer for and advisor to the ROCAEC in their performance of a PRA on the Maanshan PWR and the Chinshan PRA. Performed the same role for KOPEC in their performance of a PRA on the Kori units.

Was responsible for database development and uncertainty analysis for all of the PRAs performed by the Gaithersburg office of NUS including the Susquehanna (BWR) level 3 PRA, the level 2 PRA of the Ringhals 2 PWR, the level 1 PRA of Caorso, and the PRAs for Peach Bottom, Almaraz, and Kuosheng.

Was a member of a review group assessing Revision 4 of the BWR owners group Emergency Operating Procedure Guidelines with respect to their value in prevention and mitigation of severe accidents, a member of the QC team for the NRC-sponsored Risk Methods Integration and Evaluation Program (RMIEP) with responsibility for the

parameter estimation and uncertainty analysis aspects, and a member of the QC team reviewing four level 1 PRAs performed as part of the NUREG-1150 Project. Has participated in reviews of several PRAs for a variety of clients. Was a member of the IAEA IPERS (International Peer Review Service) team for the Dodewaard (Netherlands) and Bohunice (Slovakia) PSAs. Was a member of a peer review group of the System Studies being performed by the Idaho National Laboratory for NRC (AEOD), and of an expert panel that reviewed the Quantitative Risk Analysis (QRA) of the Tooele Chemical Demilitarization Facility for the U.S. Army.

Was an Instructor of a course entitled "Issues in Reviewing and Evaluating a PRA," given to NRC staff as part of the NRC PRA training program. Was an instructor for EPRI and MIT workshops on IPE methods. Was an instructor for a summer course on Human Reliability Analysis, and a two day course on Common Cause Failure Analysis, both given at the University of Maryland.

Was a principal author of Chapter 12, "Uncertainty and Sensitivity Analysis," of the NRC/Industry PRA Procedures Guide, NUREG/CR-2300, and was a member of the review group for Chapters 5 and 6, "Data Base" and "Quantification," of the guide.

United Kingdom Atomic Energy Authority - Was Project Officer for Safety and Reliability Directorate-funded work on post-accident heat removal for liquid-metal fast-breeder reactors. Investigated fundamental aspects of quantitative risk assessment methodologies. Main areas of activity were in use of statistics to quantify risk assessments, and reliability theory.

Completed projects included a review for the Commission of European Communities (CEC) on the characterization and evaluation of uncertainties in quantitative risk assessment, and the development of a technique for handling the time structure of failure and repair processes.

As a member of the Plate Inspection Steering Committee (PISC) sponsored by the NEA-CEC, was involved in the evaluation and interpretation of the results of trials designed to establish the reliability of a code of ultrasonic inspection, which is based on the ASME XI procedure for the inspection of welds in heavy section steel plate. Also, was a member of the program evaluation group which drew up a second PISC program, with special responsibility for the evaluation method.

University of Durham - Lectured in applied mathematics and carried out research theoretical high energy physics.

International Centre for Theoretical Physics - Performed research in theoretical high energy physics as a Royal Society Post-doctoral Research Fellow.

MEMBERSHIP

American Nuclear Society

PUBLICATIONS

Journal Publications

“An Approach for using Risk Assessment in Risk-Informed Decisions on Plant-specific Changes to the Licensing Basis” (with M. A. Caruso, M. C. Cheok, M. A. Cunningham, G. M. Holahan, T. L. King, A. M. Ramey-Smith, M. P. Rubin, and A. C. Thadani), Reliability Engineering and System Safety, Vol. 63, (1999), pages 231-242.

“Use of Importance Measures in Risk-Informed Regulatory Applications” (with M. C. Cheok and R. R. Sherry), Reliability Engineering and System Safety, Vol. 60, (1998), pages 213-226.

“The Characterization of Uncertainty in Probabilistic Risk Assessments of Complex Systems”, Reliability Engineering and System Safety, special issue on aleatory and epistemic uncertainty, Vol. 54, (1996), pages 119-126.

“A Procedure for the Analysis of Errors of Commission During Non-Power Modes of Nuclear Power Plant Operation” (with J. Julius, E. Jorgenson, and A. Mosleh), Reliability Engineering and System Safety, Vol. 53, (1996), pages 139-154.

"A Procedure for the Analysis of Errors of Commission in a Probabilistic Safety Assessment of a Nuclear Power Plant at Full Power" (with J. Julius, E. Jorgenson, and A. Mosleh), Reliability Engineering and System Safety, Vol. 50, (1995), pages 189-201.

"Suggestions for an Improved HRA Method for Use in Probabilistic Safety Assessment", Reliability Engineering and System Safety, Vol. 49, (1995), pages 1-12.

"An Approach to the Analysis of Common Cause Failure Data for Plant-Specific Application" (with A. Mosleh and F. Zikria), Nuclear Engineering and Design, Vol. 150, p. 25, 1994.

"Common Cause Failures: A Critique and Some Suggestions," Reliability Engineering and System Safety, Vol. 34, 1991.

"On the Meaning of Probability in Probabilistic Safety Assessment," Reliability Engineering and System Safety 23 (1988), pp. 309-314.

Reports and Books

“A Technique for Human Error Analysis (ATHEANA)” (with S. Cooper, A. Ramey-Smith, J. Wreathall, D. Bley, W. Luckas, J. Taylor, and M. Barriere), NUREG/CR-6350, May 1996, US Nuclear Regulatory Commission.

"Process Description for ATHEANA: A Technique for Human Error Analysis", (lead author), Brookhaven National Laboratory Technical Report L-2415/95-2, December 30, 1995.

"Control Room Operations Research Project" (principal author), Electric Power Research Institute, EPRI TR-105380, December, 1995.

"PSA Applications Guide" (With D. True, J. Sursock, B. Putney, and K. Fleming), Electric Power Research Institute, EPRI TR-105396, August 1995.

"Chapter 9: Common Cause Failure Analysis", in *Cost-Effective Risk Assessment for Process Design*, edited by R. Deshotels and R. Zimmerman, McGraw Hill, 1995

"Model Uncertainty and Probability," in Model Uncertainty: Its Characterization and Quantification, A. Mosleh, C. Smidts, and C. Liu (editors), University of Maryland Center for Reliability Engineering Publication, 1995.

"Enhancements to Data Collection and Reporting of Single and Multiple Failure Events" (with D Whitehead, H. Paula, D. Rasmuson), NUREG/CR-5471, March 1993.

"Systematic Human Action Reliability Procedure (SHARP) Enhancement Project. SHARP 1 Methodology Report" (with D. Whitehead, A Spurgin, and G. Hannaman), EPRI-TR-101711, December 1992.

"Critique of Current Practice in the Treatment of Human Interactions in Probabilistic Safety Assessments," in Reliability and Safety Assessment of Dynamic Process Systems, T. Aldemir, N. Siu, and A. Mosleh (editors), Springer-Verlag Publishing, Berlin, 1994.

"An Approach to the Analysis of Operator Actions in Probabilistic Risk Assessment" (with A. Beare, A. Spurgin, P. Moeini, and B. Lydell), EPRI TR 100259, June, 1992.

"Guidelines for Conducting Common Cause Failure Analysis in Probabilistic Safety Assessment" (with S. Hirschberg), IAEA TEC-DOC 648, May, 1992.

"Nuclear Plant Reliability: Data Collection and Usage Guide" (with T. Morgan and C. Schwan), EPRI TR-100281, April 1992.

"Example Application of a Structured Procedure for Estimating Common Cause Failure Probabilities" (with A. Mosleh and T. Mankamo) draft IAEA document.

"A Cause Defense Approach to the Understanding and Analysis of Common Cause Failure" (with H. Paula), NUREG/CR-5460, April 1990.

"Operator Reliability Experiments Using Nuclear Power Plant Simulators" (with A. Spurgin, coauthor), EPRI NP-6937, July 1990, Vols. 1, 2, 3.

"Procedures for Treating Common Cause Failures in Safety and Reliability Studies" (with A. Mosleh, K. Fleming, H. Paula, D. Rasmuson, and D. Worledge), EPRI NP 5613/NUREG/CR-4780, Vol. 1, 1988, Vol. 2, 1989.

Conference Papers

“PSA Applications: Safety Goals and Acceptance Guidelines” (with M. A. Cunningham, G. M. Holahan, T. L. King, and J. A. Murphy) in proceedings of PSA ‘99, Washington DC, August 22-26, 1999, proceedings published by the American Nuclear Society, La Grange Park, Illinois, USA.

“Status of Risk Informed Regulatory Activities and Guidance Development at the U.S. NRC” (with G. M. Holahan, T. L. King, M. A. Cunningham, M. C. Cheok, and M. P. Rubin), presented at the International Topical Meeting on the Safety of Operating Reactors, San Francisco, October 11-14, 1998, proceedings published by the American Nuclear Society, La Grange Park, Illinois, USA.

“Uncertainty in PRA and its Implications for Use in Risk-Informed Decision-Making”, presented at PSAM IV, New York City, September 14 - 18, 1998, proceedings published by Springer.

“Standardizing Human Reliability Analysis - Issues and Suggestions”, presented at PSA ‘96, Park City, Utah, September 29 - October 3, 1996, proceedings published by the American Nuclear Society, La Grange Park, Illinois, USA.

“A Process for Application of ATHEANA - A New HRA Method” (with D. Bley, S. Cooper, J. Wreathall, W. Luckas, C. Thompson, A. Ramey-Smith, presented at PSA ‘96, Park City, Utah, September 29 - October 3, 1996, proceedings published by the American Nuclear Society, La Grange Park, Illinois, USA.

“An Improved HRA Process for Use in PRAs”, (with M. Barriere and A. Ramey-Smith), presented at Probabilistic Safety Assessment and Management (PSAM) III, June 24-28 1996, Crete, Greece, proceedings published by Springer.

“Procedure for the Analysis of Errors of Commission during Non-power Operation”, (with J. Julius, E. Jorgenson, and A. Mosleh), PSAM III, June 24-28 1996, Crete, Greece, proceedings published by Springer.

“The Need for, and Some Suggested Characteristics of, an Improved HRA Approach for Use in PSAs”, Presented at an International Workshop on Human Reliability Models, August 22-24, 1994, Stockholm, Sweden.

"A Procedure for the Analysis of Errors of Commission in a PSA," presented at PSAM II, San Diego, CA, 1994.

"The Need for, and a Proposed Structure of, a Second Generation HRA Methodology," presented at PSAM II, San Diego, CA, 1994.

“The Meaning and Use of Probability in Probabilistic Safety Assessment”, presented at PSAM II, San Diego, CA, 1994.

"Suggestions for an Improved Human Reliability Model for Use in Systems Analysis", presented at the 16th Reactor Operations International Topical Meeting, Long Island, N.Y., August 16-18, 1993.

"An Approach to the Parameterization of Judgement in the Analysis of Common Cause Failure Data" (with F. Zikria and A. Mosleh), presented at PSA '93, Clearwater Beach, Florida, January 26-29, 1993.

“Modeling of Dual Unit Interactions during a Loss of Offsite Power at Peach Bottom Atomic Power Station” (with G. Krueger), presented at PSA '93, Clearwater Beach, Florida, January 26-29, 1993.

“An Approach to the Analysis of Operating Crew Responses for Use in PSAs”, (with A. Beare and A. Singh), presented at PSA '93, Clearwater Beach, Florida, January 26-29, 1993.

"An Approach to the Analysis of Operating Crew Responses using Simulation Exercises for use in PSAs", coauthor, presented at OECD/CSNI Workshop on special issues in PSA, Cologne, Germany, May 1991.

"An Approach for Assessment of the Reliability of Cognitive Response for Nuclear Power Plant Operating Crews" (co-author) in Proceedings of "Probabilistic Safety Assessment and Management," Beverly Hills, Calif., February 1991, Elsevier.

"Data Needs for Common Cause Failure Analysis" (coauthor), Proceedings of Probabilistic Safety Assessment and Management, Beverly Hills, Calif., February 1991, Elsevier.

“HRA and the Modeling of Human Interactions”, (with B. Lydell), Proceedings of Probabilistic Safety Assessment and Management, Beverly Hills, Calif., February 1991, Elsevier.

"Common Cause Failure Analysis: Where Do We Go From Here?", presented at CSNI Workshop on Applications and Limitations of Probabilistic Safety Assessment, Santa Fe, N.Mex., September 1990.

"Use of Probabilistic Methods in Fire Hazards Analysis" (with Paul Guymer), in Fire Protection and Fire Fighting in Nuclear Installations, IAEA, Vienna, Austria, 1989.

Stephen F. LaVie

Health Physicist
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Education

Beaver Valley Power Station Plant Certification Program, 1995-1997
Georgia Institute of Technology Video Based Instruction (audit), 1992-1995
Naval Nuclear Power School, 1970-1971
State College at Fitchburg (MA), 1965-1969

Employment

U.S. Nuclear Regulatory Commission, Health Physicist, 1997-present

Performs evaluations of and judges the acceptability of the radiological consequence aspects of applications for license amendments and other licensing actions to determine conformance with regulations and acceptance criteria. Maintains and creates regulatory guidance on radiological consequence analyses. Developed a regulation and supporting regulatory guidance on the use of alternative source terms at currently licensed power reactors.

Duquesne Light Company, Senior Health Physics Specialist, 1982-1997

Performed radiological engineering activities in support of plant operations and modifications including: re-analysis of UFSAR design basis accidents, such as DBA LOCA, locked rotor accident, fuel handling accident, main steam line break in support of steam generator alternate plugging criteria, small break LOCA with delayed spray actuation; re-analysis of control room post–accident radiological habitability; equipment radiological environmental qualification; and shielding analysis of Emergency Response Facility. Developed or adapted computer codes for radiation transport and point-kernal shielding analyses including adaptation of QAD/CGGP and G3, developed multiple compartment linear transport code with progeny ingrowth for use in offsite and control room calculations, developed two region CNMT transport code. Lead engineer for site Meteorological Measurements Program and the site's emergency response offsite radiological dose assessment capability. Supported the site Emergency Preparedness Program by maintaining and developing dose projection procedures and performing technical analyses in support of these procedures.

NUS Corporation, Health Physicist, 1976-1982

Assignments included: participation in detailed program reviews at six operating nuclear power facilities; procedure development; onsite support at Three Mile Island, and emergency planning support at the Beaver Valley Power Station.

US Navy, 1969-1976

Professional

Electric Power Research Institute (EPRI) member of industry resource group (IRG) on rulemaking for Steam Generator Management Program (1996-1997)

Nuclear Energy Institute Issue Task Force (ITF) on Implementation of New Source Terms at Existing LWRs (1994 -1997), ITF on Steam Generator Performance-Based Rulemaking (1995-1997), Nuclear Management and Resources Council (NUMARC): Ad Hoc Advisory Committee (AHAC) on Shutdown Risk Emergency Action Levels (1992-1997), AHAC on Relicensing Rule Generic Environmental Impact Statement (GEIS) (1991-92), AHAC on the Proposed Changes to the EPA Protective Action Guidelines (1989) and Implementation White Paper (1992-1993), Task Force on Emergency Action Levels (1988–1997).

Member of American Nuclear Standard Working Group 3.8, Emergency Preparedness (1988-1993).Health Physics Society (1978-present)

Publications/Presentations

"Alternative Radiological Source Terms for Evaluating Design Basis Accidents at Nuclear Power Reactors," USNRC Regulatory Guide 1.183, 2000

"Introduction to the MIDAS Computer Code," presentation in Atmospheric Science and Radioactivity Releases Seminars, Harvard School of Public Health, 1995, and 1996

"Reduction of O & M Costs Using "New Source Terms"," co-authored with S. Ferguson, SWEC, at ANS Summer Conference, 1995

"Experience in Implemention of EPA-400," presentation in Advanced Workshop for Nuclear Emergency Planning, Harvard School of Public Health, 1994

"Implementation of EPA-400 Requirements at Existing Facilities," presentation before NUMARC 10 CFR 20 implementation Workshop, Baltimore and Chicago 1993, and at FEMA Region VI REP Conference 1993

Robert L. Palla
Senior Reactor Engineer

Education

M.S., Mechanical Engineering, University of Maryland, 1981
B.S., Mechanical Engineering, University of Maryland, 1975

Employment

U.S. Nuclear Regulatory Commission, 1981 - present

Performs technical evaluations of license applications and policy issues in the areas of severe accident progression and phenomena, containment performance, offsite consequences, and risk management.

Served as the lead on the following:
- development of staff guidelines for applying risk-informed decisionmaking in license amendment reviews (SECY-99-246)
- review of industry severe accident management guidelines (SAMG) and program implementation
- evaluation of severe accident mitigation alternatives for Watts Bar, Calvert Cliffs, Oconee, GE ABWR, CE System80+, and Westinghouse AP600
- review of revised Westinghouse methodology for assessing core damage
- review of Level 2 and 3 PRA and severe accident design aspects of advanced reactors (GE ABWR, CE System80+, Westinghouse AP600)
- review of EPRI Utility Requirements Document, Appendix 1A, PRA Ground Rules and Assumptions

Task force member and contributing author on:
- Risk assessment of severe accident induced steam generator tube rupture (NUREG-1570)
- Technical framework portion of revised reactor oversight process (SECY-99-007)

Member of Reactor Safety Team, USNRC Emergency Operations Center

Professional Societies

American Society of Mechanical Engineers

Publications

Use of PRA in Accident Management, ASME Winter Meeting, invited paper, 1991

Regulatory Approach to Enhanced Human Performance During Accidents, ANS Winter Meeting, invited paper, 1990

The NRC Regulatory Program for Accident Management, PSA 89, 1989

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CAROLINA POWER & LIGHT COMPANY	)	Docket No.50-400-LA
	)	ASLBP No. 99-762-02-LA
(Shearon Harris Nuclear Power Plant)	)	
	)	

CERTIFICATE OF SERVICE

I hereby certify that copies of "NRC STAFF'S RESPONSE TO APPLICANT'S DISCOVERY REQUESTS REGARDING CONTENTION EC-6 DIRECTED TO THE NUCLEAR REGULATORY COMMISSION STAFF" in the above-captioned proceeding have been served on the following through deposit in the NRC's internal mail system, or by deposit in the NRC's internal mail system, with copies by electronic mail, as indicated by an asterisk, or by deposit in U.S. Postal Service as indicated by double asterisk, with copies by electronic mail as indicated this 13TH day of September, 2000:

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