

October 13, 2000

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 FOURTH SUPPLEMENTAL RESPONSE TO ORANGE COUNTY'S
FIRST SET OF ENVIRONMENTAL DISCOVERY REQUESTS
DIRECTED TO NRC STAFF

The Nuclear Regulatory Commission staff (Staff) hereby files its fourth supplemental response to Orange County's¹ First Set of Environmental Discovery Requests Directed to NRC Staff, filed August 21, 2000. In filing this Third Supplemental Response, the Staff does not waive any general or specific objections, rights or privileges, previously asserted in responding to BCOC's discovery requests.²

The Staff hereby supplements its responses to BCOC's discovery requests as follows.

¹ Hereinafter "BCOC."

² See "NRC Staff's Response to Orange County's First Set of Environmental Discovery Requests Directed to NRC Staff," September 6, 2000; "NRC Staff's First Supplemental Response to Orange County's First Set of Environmental Discovery Requests Directed to NRC Staff," September 20, 2000; "NRC Staff's Second Supplemental Response to Orange County's First Set of Environmental Discovery Requests Directed to NRC Staff," September 27, 2000; "NRC Staff's Third Supplemental Response to Orange County's First Set of Environmental Discovery Requests Directed to NRC Staff," September 27, 2000.

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 additional persons supplied information for responding to BCOC's First

Environmental Discovery Requests:

George Hubbard
Section Chief
Balance of Plant and Containment Systems Section
Division of Systems Safety and Analysis
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
Washington, D.C. 20555

Joseph Staudenmeier
Reactor Engineer
Reactor Systems Branch
Division of System Safety and Analysis
Office of Nuclear Reactor Regulation
Nuclear Regulatory Commission
Washington, D.C. 20555

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

III. SPECIFIC DISCOVERY

SPECIFIC DOCUMENT REQUESTS

REQUEST NO. 1. All documents in your possession, custody or control that evaluate or otherwise discuss the probability of a degraded core reactor accident with containment failure or bypass at a nuclear power plant, including the Harris nuclear power plant.

STAFF RESPONSE:

The Staff objects to this request as being imprecise, overly broad and burdensome. To search for such documents in response to this request would require the expenditure of many hours of staff time and the identification of hundreds of documents. The Staff objects to this request as it would require the staff to engage in an excessive amount of research and compilation of data, much of which is publicly available to BCOC. The Staff further objects to the extent that the request seeks predecisional or privileged material or draft agency documents exempt from disclosure pursuant to 10 C.F.R. § 2.790. Without waiving those objections, the Staff identifies the following additional documents as responsive to this document request.

-NUREG-1524 "A Reassessment of the Potential for an Alpha-Mode Containment Failure and a Review of the Current Understanding of Broader Fuel-Coolant Interactions"

-NUREG/CR-6338 "Resolution of the Direct Containment Heating Issue for All Plants with Large Dry Containments or Subatmospheric Containments"

-NUREG-1560 "Risk Assessment of Severe Accident-Induced Steam Generator Tube Rupture"

-NUREG/CR-6189 "A Simplified Model of Aerosol Removal by Natural Processes in Reactor Containments"

-NUREG/CR-5966 "A Simplified Model of Aerosol Removal by Containment Sprays"

-NUREG/CR-6144 "Evaluation of Potential Severe Accidents During Low Power and Shutdown Operations at Surry, Unit 1"

-NUREG/CR-6143 "Evaluation of Potential Severe Accidents During Low Power and Shutdown Operations at Grand Gulf, Unit 1"

-NUREG/BR-0150, Vol. 1, Rev. 4 "Response Technical Manual"

-Westinghouse Owners Group Severe Accident Management Guidance, WOG Program MUHP-2310 (Accession# 9510040330)

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

REQUEST NO. 2. All documents in your possession, custody or control that evaluate or otherwise discuss the onsite or offsite consequences of a degraded core reactor accident with containment failure or bypass at a nuclear power plant, including the Harris nuclear power plant.

STAFF RESPONSE:

The Staff objects to this discovery request as being beyond the scope of the contention admitted to this proceeding and not designed to lead to discoverable information. Contention EC-6, as admitted to this proceeding relates solely to the probability of the occurrence of the seven step accident sequence specified on page 13 of the Licensing Board's Memorandum and Order of August 7, 2000. Therefore, any discovery regarding onsite consequences, to the extent that they do not affect the probabilities, or offsite consequences of the sequence or any of the seven steps is irrelevant and not calculated to lead to admissible evidence. The Staff further objects to this request as being imprecise, overly broad and burdensome. To search for such documents in response to this request would require the expenditure of many hours of staff time and the identification of hundreds of documents. The Staff objects to this request as it would require the staff to engage in an excessive amount of research and compilation of data, much of which is publicly available to BCOC. The Staff further objects to the extent that the request seeks predecisional or privileged material or draft agency documents exempt from disclosure pursuant to 10 C.F.R. § 2.790. Without waiving those objections, the Staff identifies the following additional documents as responsive to this document request, as limited above.

-NUREG-1437 "Generic Environmental Impact Statement for License Renewal of Nuclear Plants"

-NUREG/CR-6295 "Reassessment of Selected Factors Affecting Siting of Nuclear Power Plants"

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

REQUEST NO. 3. All documents in your possession, custody or control that evaluate or otherwise discuss the probability of an accident involving exothermic reaction of fuel cladding in spent fuel pool(s), including the Harris nuclear power plant.

STAFF RESPONSE:

The Staff objects to this request as being imprecise, overly broad and burdensome. To search for such documents in response to this request would require the expenditure of many hours of staff time and the identification of hundreds of documents. The Staff objects to this request as it would require the staff to engage in an excessive amount of research and compilation of data, much of which is publicly available to BCOC. The Staff further objects to the extent that the request seeks predecisional or privileged material or draft agency documents exempt from disclosure pursuant to 10 C.F.R. § 2.790. Without waiving those objections, the Staff identifies the following as responsive to this document request.

-Benjamin, et. al., "Spent Fuel Heatup Following Loss of Water During Storage", NUREG/CR-0649, March 1979.

-D.A. Powers, L.N. Kmetyk, and R.C. Schmidt, "A Review of the Technical Issues of Air Ingression During Severe Reactor Accidents," NUREG/CR-6218, SAND94-0731, Sandia National Laboratories, 1994

-Nourbakhsh, et. al., "Analysis of Spent Fuel Heatup Following Loss of Water in a Spent Fuel Pool", NUREG/CR-6441.

-Smith, C. W., "Calculated Fuel Perforation Temperatures, Commercial Power Reactor Fuels", NEDO-10093, September 1969.

-Sailor, et. al., "Severe Accidents in Spent Fuel Pools in Support of Generic Issue 82", NUREG/CR-4982.

-H. M. Chung and S. Basu, "Spent Fuel Cladding Behavior Following Loss-of-Water Accident During Pool Storage," July 2000

-Pisano, et. al., "The Potential for Propagation of a Self-Sustaining Zirconium Oxidation Following Loss of Water in a Spent Fuel Pool", NRC draft report, January 1984.

- "A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants," NUREG/CR-6451, dated August 1997.
- "Predictions of Spent Fuel Heatup After a Complete Loss of Spent Fuel Pool Coolant", NUREG-1726, June 2000
- Hermann, et.al., "Technical Support for a Proposed Decay Heat Guide Using SAS2H/ORIGEN-S Data", NUREG/CR-5625, September 1994.
- "Compendium of ECCS Research for Realistic LOCA Analysis", NUREG-1230, December 1988.
- I. Sheppard et al., "Oxidation Phenomena in Severe Accidents - Final Report," INV-OPSA(99)-P0008, European Commission Joint Research Center, 2000.
- Ocken, H., "An Improved Evaluation Model for Zircaloy Oxidation," Nuclear Technology, Vol. 47 (1980).

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

REQUEST NO. 5. All documents in your possession, custody or control that contain any information responsive to the question posed in paragraph 1 on page 17 of the Licensing Board's Memorandum and Order of August 7, 2000.

STAFF RESPONSE:

The Staff objects to the extent that the request seeks predecisional or privileged material or draft agency documents exempt from disclosure pursuant to 10 C.F.R. § 2.790. Without waiving this objection, the Staff states that no documents specifically responsive to the Licensing Board's question are available at this time. Other documents generally responsive to this request include:

- Documents provided by Applicant CP&L in response to BCOC and Staff document requests.
- Documents previously identified in these and other Staff responses to BCOC document requests
- Fettel, W, et al, "Long Term Storage of Spent Fuel from Light-Water Reactors," EUR 11866, 1989, ISBN 92-825-9097-6
- Eickelpasch, N, and Hock, R., "Fission Product Release After Reactor Shutdown," in Experiences from Operating and Fuelling Nuclear Power Plants, IAEA STI/PUB/351, 1974
- Lutz, R, and Chubb, W, "Iodine Spiking-Cause and Effect," Trans. Am. Nucl. Soc., v28 p649

-Neeb,K, and Schuster,E., "Iodine Spiking in PWRs: Origin and General Behavior," J. Trans. Am. Nucl. Soc., v28 p650,

-Eickelpasch,R., and Hock,R., "Iodine Release Mechanism and its Verification in Plant Operation," J. Trans. Am. Nucl. Soc., v28 p652

-Chubb,W., et al, "The Iodine Spiking Phenomenon in Pressurized Water Reactor Coolants," J. Trans. Am. Nucl. Soc., v24, p517, 1977

-EPA, "Manual of Protective Action Guides and Protective Actions for Nuclear Incidents," EPA 400-R-92-001, 1991

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

REQUEST NO. 6. All documents in your possession, custody or control that contain any information responsive to the question posed in paragraph 2 on page 17 of the Licensing Board's Memorandum and Order of August 7, 2000.

STAFF RESPONSE:

The Staff objects to the extent that the request seeks predecisional or privileged material or draft agency documents exempt from disclosure pursuant to 10 C.F.R. § 2.790. Without waiving this objection, the Staff states that no documents specifically responsive to the Licensing Board's question are available at this time. Other documents generally responsive to this request include:

-Documents provided by Applicant CP&L in response to BCOC and Staff document requests.

-Documents previously identified in Staff responses to BCOC document requests

Issue - 173A, "Spent Fuel Storage Pool for Operating Facilities," (Accession No. ML003723289).

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

REQUEST NO. 8. All documents (including experts' opinions, work papers, affidavits, and other materials used to render such opinion) supporting or otherwise relating to testimony or evidence that you intend to use in your Subpart K presentation and/or the hearing on Contention EC-6.

STAFF RESPONSE:

The Staff objects to this document request as seeking predecisional, trial preparation or privileged material or material exempted from disclosure by 10 C.F.R. §§ 2.744 and 2.790. Without waiving this objection, the Staff states that, in addition to documents previously identified, the following documents may relate to or be utilized in support of the Staff's Subpart K submittal:

-NUREG-1524 "A Reassessment of the Potential for an Alpha-Mode Containment Failure and a Review of the Current Understanding of Broader Fuel-Coolant Interactions"

-NUREG/CR-6338 "Resolution of the Direct Containment Heating Issue for All Plants with Large Dry Containments or Subatmospheric Containments"

-NUREG-1560 "Risk Assessment of Severe Accident-Induced Steam Generator Tube Rupture"

-NUREG/CR-6189 "A Simplified Model of Aerosol Removal by Natural Processes in Reactor Containments"

-NUREG/CR-5966 "A Simplified Model of Aerosol Removal by Containment Sprays"

-NUREG/BR-0150, Vol. 1, Rev. 4 "Response Technical Manual"

-Westinghouse Owners Group Severe Accident Management Guidance, WOG Program MUHP-2310 (Accession# 9510040330)

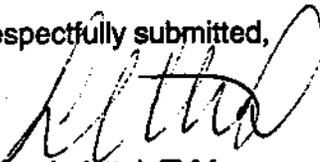
-NUREG/CR-6295 "Reassessment of Selected Factors Affecting Siting of Nuclear Power Plants"

-BMI-2104 "Radionuclide Release Under Specific LWR Accident Conditions"

-NUREG/CR-4624 "Radionuclide Release Calculations for Selected Severe Accident Scenarios"

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

Respectfully submitted,



Susan L. Uttal /RA/
Counsel for NRC Staff

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

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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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 FOURTH SUPPLEMENTAL RESPONSE TO ORANGE COUNTY'S FIRST SET OF ENVIRONMENTAL DISCOVERY REQUESTS DIRECTED TO NRC 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 October, 2000:

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