

April 5, 2000

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

NRC STAFF REPLY TO ORANGE COUNTY'S RESPONSE TO  
THE BOARD'S REQUEST FOR ADDITIONAL INFORMATION

I. INTRODUCTION

Pursuant to the Atomic Safety and Licensing Board's (Board) Memorandum and Order (Requesting Additional Information), of March 21, 2000, the Nuclear Regulatory Commission staff (Staff) hereby submits its reply to Orange County's Response to Board's Information Request (March 29, 2000) (BCOC's Response). As discussed below, BCOC's Response does not raise any new issues which render the Draft Final Technical Study of Spent Fuel Accident Risk at Decommissioning Plants (Study) directly relevant to the issues before the Board. BCOC has not demonstrated that the Study is relevant; nor has it demonstrated that the Study provides support or basis for its contentions.

II. DISCUSSION

As discussed in the Staff's response to the Board's request for additional information, the Study is not directly relevant to the issues before the Board. Both BCOC and CP&L assert that the Study does not deal with issues currently pending before this Board. BCOC

specifically states that the Study is of "limited relevance" to its environmental contentions because the Study focuses on spent fuel pool (SFP) accidents at decommissioning plants. BCOC's Response at 1-2. CP&L states that the Study is not relevant because it does not address the scenario that is the basis for BCOC's contentions. Applicant's Response to Board's Request Regarding Relevance of Staff's Draft Final Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Plants (CP&L's Response) at 2. The Staff submits that the Study is not directly relevant to the issues before the Board because it does not, in fact, address the accident scenario postulated by BCOC. As discussed in NRC Staff Response to the Atomic Safety and Licensing Board's Request for Additional Information (March 29, 2000) (Staff's Response), the only area of the Study that deals with issues before this Board relates to the Study's finding that the probability of a SFP pool accident caused by pool water draindown at decommissioning plants is low.<sup>1</sup> Study at 16. The conclusion that the uncovering of fuel is of low likelihood should be valid for operating plants, as well as decommissioning plants.

Although BCOC states that the Study has limited relevance, it also asserts that the Study supports its position in the matter before the Board; however, it fails to provide credible support for this assertion in its Response. Because the Study is not relevant to this case, many of the issues raised by BCOC in its response are similarly irrelevant. There is nothing in BCOC's Response that credibly refutes the Staff's conclusion that the possibility

---

<sup>1</sup> The Study's calculation regarding the likelihood of the fuel being uncovered was based on the water level being lowered to the top of the fuel and is, therefore, conservative as to the time available for operator recovery as the draindown proceeds. Study at 10.

of a zirconium fire<sup>2</sup> is remote. None of BCOC's arguments demonstrate that the Study supports its contention that a "runaway" exothermic reaction" pursuant to its scenario is not remote and speculative. Many of the points raised, as discussed below, do not relate to the issue of frequency of occurrence. Nowhere in any of BCOC's submittals has BCOC established that there is more than a remote chance of the postulated accident occurring. Again, as in its other submittals, BCOC's Response makes several statements and conclusions that are not supported by scientific studies, empirical data or other analysis. Essentially Dr. Thompson's unsupported conclusion is the only basis provided by BCOC in support of the assertion that the "loss of water from the spent fuel pools by evaporation is virtually inevitable" when there is a degraded-core reactor accident followed by a period where the fuel handling building is inaccessible.<sup>3</sup> BCOC Response at 3. BCOC states that the postulated accident scenario cannot be ruled out as remote and speculative, yet it cites no facts which support its position regarding the frequency of the event.

---

<sup>2</sup> Although the Study speaks in terms of "zirconium fires," BCOC's contentions refer to "exothermic reaction." In this brief, the Staff adopts the terminology of the Study.

<sup>3</sup> For example, there is no information presented regarding the estimated probability of a degraded core accident leading to inaccessibility to the fuel handling building, or the estimated probability of inaccessibility leading to evaporation, or the probability that partial or total uncovering of the fuel would lead to a zirconium fire. BCOC's Response at 3, 6 n. 2. Such events are said, without support, to be "virtually inevitable" or having a "high probability." *Id.* BCOC again states, with no support, that high radiation fields precluding entry into the fuel handling building would immediately follow a degraded core accident with containment by-pass or failure. *Id.* at 6 n.2. *Contra* NRC Staff Response to Intervenor's Request for Admission of Late-Filed Environmental Contentions (March 3, 2000) at 17-18.

BCOC raises the issue of the magnitude of the consequences of a zirconium fire in SFPs. The Study indicates that the consequences may be severe, but the event has to occur before the consequences will be relevant, and nothing in BCOC's submittals demonstrates that the event will occur with enough frequency to be considered in this case. There is little disagreement that the release of radioactivity from SFPs could have serious consequences, but that becomes less of a consideration when the likelihood of the occurrence is low. BCOC has failed to demonstrate, notwithstanding its assertion to the contrary, that "there is a high probability that partial or total exposure of the fuel assemblies will lead to a runaway exothermic reaction (fire) in the pool." BCOC's Response at 3.

Also contrary to BCOC's assertion, full uncovering of the fuel would not always be preceded by partial drain down. Both the Study, in regard to SFPs at decommissioning plants, and NUREG-1353, regarding operating plants, concluded that SFP accident risk is dominated by large seismic events, causing major structural failures of the SFP. *See e.g.* Study at 16. Such events would result in very rapid loss of pool water. So, even if a partial draindown event is credible, it would be of very low frequency. BCOC has not shown that it is not a remote and speculative event.

BCOC attacks the Study, discussing its alleged inadequacies. Again, none of the cited issues relate to the probability of the event occurring.<sup>4</sup> And none of the points raised

---

<sup>4</sup> To the extent that BCOC or its expert believes that the Study is inadequate, they should submit their assertions as comments on the Study, as the comment period is still open.

are relevant or material to this proceeding.<sup>5</sup> Moreover, the alleged "information gaps" are not relevant to the instant case since they do not relate to the frequency or probability of occurrence of BCOC's postulated scenario. See BCOC's Response at 7-8.<sup>6</sup> Since these alleged gaps are not relevant or material to the issues before the Board, no evidentiary hearing is required.

Finally, BCOC again raises the alternative of dry cask storage. That alternative was not analyzed in the Study and, therefore, its assertion in BCOC's Response is gratuitous and irrelevant to the Board's request for additional information.<sup>7</sup>

#### CONCLUSION

The findings and conclusions of the Study are limited to SFP accident risks at decommissioning plants and are not material to the issues before the Board. The technical

---

<sup>5</sup> As in its prior submittals, many of the points raised by BCOC are incorrect, incomplete or misleading. For example, BCOC asserts that older fuel is more susceptible to ignition in a state of partial drainage. BCOC's Response at 4. The Response fails to note that the reaction would also be suppressed for the same reasons asserted. Similarly, BCOC fails to note that a breach in the fuel handling building would impede progression of the postulated accident due to the increased cooling. *Id.* BCOC also asserts that partial drainage will lead to a steam-zirconium reaction rather than an air-zirconium reaction (BCOC's Response at 4), without noting that the steam-zirconium reaction rate is lower than the air-zirconium reaction rate. See Study at A1-7. Further on, BCOC asserts, *with no support*, that correcting the analytical deficiencies in NUREG/CR-0649 would make the theory that partial draindown would be more conducive to a runaway exothermic reaction more prominent. *Id.* at 5. But, since the assumptions are conservative, correction of the analytical deficiencies would make the situation less severe. See *e.g.* Thompson Report at page D-5.

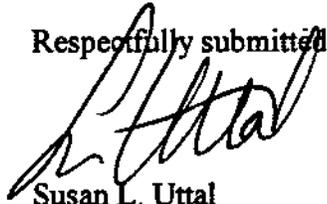
<sup>6</sup> BCOC cites the SHARP code deficiencies as an example of the information gaps, failing to note that the Staff was aware of those deficiencies and, therefore, rejected the SHARP code results on that basis. BCOC Response at 7; Study at A1-4.

<sup>7</sup> The Commission has determined that both methods of spent fuel storage are safe and the regulations permit use of either method.

findings which may have some relevancy to the instant matter do not provide support or basis for BCOC's late-filed contentions. Nothing in BCOC's Response alters the Study's conclusion that the risk of SFP accidents at decommissioning plants is of low likelihood. Nothing in any of BCOC's submittals credibly demonstrates that the risk of a SFP accident in the Harris SFPs is anything but remote. Nothing in the Study provides a basis for BCOC's environmental contentions.

The Staff submits that the Study is not directly relevant and does not support BCOC's contentions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "S. Uttal", is written over the typed name.

Susan L. Uttal  
Counsel for NRC staff

Dated at Rockville, Maryland  
this 5th day of April 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-LA  
) ASLBP No. 99-762-02-LA  
(Shearon Harris Nuclear Power Plant) )  
)

CERTIFICATE OF SERVICE

I hereby certify that an electronic copy of "NRC Staff Reply to Responses to Board's Request for Further Information", in the above captioned matter, has, this 5<sup>th</sup> day of April, 2000, been transmitted to the Office of the Secretary (SECY) for entry into the NRC's ADAMS system, for subsequent distribution to the internal recipients listed below. I also certify that signed paper copies have been served on the following through 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 5<sup>TH</sup> day of April, 2000:

G. Paul Bollwerk, III, Chairman\*  
Administrative Judge  
Atomic Safety and Licensing Board  
Mail Stop: T 3F-23  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Frederick J. Shon\*  
Administrative Judge  
Atomic Safety and Licensing Board  
Mail Stop: T-3F-23  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Dr. Peter Lam\*  
Administrative Judge  
Atomic Safety and Licensing Board  
Mail Stop: T 3F-23  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Office of the Secretary  
ATTN: Rulemaking and Adjudications  
Staff  
Mail Stop: O 16-C-1  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Office of the Commission Appellate  
Adjudication  
Mail Stop: O 16-C-1  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Diane Curran, Esq.\*\*  
Harmon, Curran, Spielberg  
& Eisenberg, L.L. P.  
1726 M. Street, N.W., Suite 600  
Washington, DC 20025

Steven Carr\*\*  
Legal Department  
Carolina Power and Light Co.  
411 Fayetteville Street Mall  
P.O. Box 1551 - CPB 13A2  
Raleigh, North Carolina 27602

James M. Cutchin, Jr.  
Mail Stop: T 3F-23  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

John H. O'Neill, Jr.\*\*  
William R. Hollaway\*\*  
Counsel for Licensee  
Shaw Pittman Potts & Trowbridge  
2300 "N" Street, N.W.  
Washington, DC 20037-1128

Atomic Safety and Licensing Board Panel  
U.S. Nuclear Regulatory Commission  
T-3F23  
Washington, DC 20555



---

Susan L. Uttal  
Counsel for NRC Staff