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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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ATOMIC SAFETY AND LICENSING BOARD

Before Administrative Judges:

G. Paul Bollwerk, III, Chairman
Dr. Peter S. Lam
Thomas D. Murphy

In the Matter of	Docket No. 50-400-LA
Carolina Power & Light Co.	ASLBP No. 99-762-02-LA
(Shearon Harris Nuclear Power Plant)	March 1, 2001

MEMORANDUM AND ORDER
(Denying Request for Evidentiary Hearing
and Terminating Proceeding)

Before the Licensing Board in this 10 C.F.R. Part 2, Subpart K proceeding is a challenge by intervenor Board of Commissioners of Orange County, North Carolina (BCOC) to a license amendment request by applicant Carolina Power and Light Company (CP&L) that would permit CP&L to increase the spent fuel storage capacity at its Shearon Harris Nuclear Power Plant (Shearon Harris) by placing two inactive spent fuel pools (SFPs) into service. The sole remaining contention to be resolved is an environmental contention (EC) -- EC-6, Environmental Impact Statement Required -- that we admitted in LBP-00-19, 52 NRC 85 (2000). With this issue statement, BCOC contests the NRC staff's December 1999 decision that the National Environmental Policy Act of 1969 (NEPA), 42 U.S.C. § 4321, and the Commission's implementing regulations, 10 C.F.R. Part 51, do not require the preparation of an environmental impact statement (EIS) relative to the CP&L SFP expansion request.

Pursuant to 10 C.F.R. § 2.1113, in December 2000 the Licensing Board entertained oral arguments by the parties concerning the pending question whether an evidentiary hearing is

necessary regarding contention EC-6. BCOC asserts it has established there are genuine and substantial disputes of fact or law relative to its admitted contention that warrant an evidentiary hearing. Applicant CP&L and the staff, however, maintain that BCOC has failed to identify any evidence of any disputed factual or legal matters that warrant an additional evidentiary proceeding, and that the Board should rule in their favor on the merits of the contention, thereby terminating this proceeding.

The Licensing Board finds that (1) BCOC has failed to show there is a genuine and substantial dispute of fact or law that only can be satisfactorily resolved by a further evidentiary hearing; and (2) based on the record before us, the staff has met its burden in demonstrating that the accident scenario postulated by BCOC in support of contention EC-6 is remote and speculative so as not to warrant the preparation of an EIS in connection with the CP&L SFP amendment request. Further, because all matters before the Board in connection with the requested amendment have been resolved in favor of amendment issuance without the need for further evidentiary presentations, we authorize the grant of the requested license amendment, effective immediately, and dismiss this proceeding.

I. BACKGROUND

The portion of this litigation currently before the Board has its basis in a December 23, 1998 CP&L application for a 10 C.F.R. § 50.90 facility operating license amendment to increase the spent fuel storage capacity at its Shearon Harris facility by adding rack modules to previously inactive SFPs C and D and place those pools into service. Responding to the application, in January 1999 the staff published a notice of proposed no significant hazards consideration and opportunity for a hearing regarding the CP&L application. See 64 Fed. Reg. 2237 (Jan. 13, 1999). Subsequently, in February 1999 BCOC filed a request for hearing

and petition to intervene, which it followed with a contentions supplement petition in April 1999. See [BCOC] Request for Hearing and Petition to Intervene (Feb. 12, 1999); [BCOC] Supplemental Petition to Intervene (Apr. 5, 1999). In addition to putting forth three contentions that raised technical concerns regarding the proposed SFP expansion, in issue statements labeled EC-1 through EC-5, BCOC claimed that CP&L and the staff had failed to comply with various NEPA requirements, as implemented by the agency in 10 C.F.R. Part 51. In our July 1999 ruling on the BCOC intervention petition, in addition to finding admissible two BCOC technical contentions claiming the CP&L expansion measure involved inadequate criticality prevention and quality assurance measures, the Board also noted that the staff had decided to issue an environmental assessment (EA) regarding the CP&L application and dismissed the BCOC NEPA contentions, albeit without prejudice to those matters being raised once the staff's EA was done. See LBP-99-25, 50 NRC 25, 38-39 (1999).

Thereafter, pursuant to 10 C.F.R. § 2.1109, CP&L timely invoked the hybrid hearing procedures articulated in Subpart K of Part 2 relative to the further litigation of admitted contentions in this proceeding. In accordance with those procedures, after a discovery period and receipt of the parties' 10 C.F.R. § 2.1113 written summaries detailing all the known facts, data, and arguments to support or refute the existence of a genuine and substantial factual dispute, in January 2000 the Board heard oral argument on the question whether a dispute existed such that an evidentiary hearing would be necessary for all or a part of the admitted BCOC technical contentions. Ultimately, in a May 2000 decision, the Board concluded such a dispute did not exist and that CP&L had met its burden of showing that, relative to BCOC's concerns, CP&L's proposed spent nuclear fuel storage expansion was in compliance with applicable statutory and regulatory requirements. See LBP-00-12, 51 NRC 247, 282-83, petition for review denied as premature, CLI-00-11, 51 NRC 297 (2000).

In so ruling, we noted that our determination did not terminate this proceeding because certain environmental issues remained outstanding. See id. at 282 n.14. In this regard, on December 15, 1999, the staff issued an EA with a finding of no significant impact (FONSI) for the proposed CP&L license amendment for Shearon Harris. See 64 Fed. Reg. 71,514, 71,516 (Dec. 21, 1999). In response to this staff determination that no EIS was required, on January 31, 2000, BCOC filed a request for the admission of four late-filed environmental contentions, numbered EC-1 through EC-4, the admissibility of which were contested by CP&L and the staff. In an August 7, 2000 ruling, the Board found that the first of these contentions, which we renumbered EC-6, was admissible. See LBP-00-19, 52 NRC at 93-98. This BCOC contention states:

> In the environmental assessment for CP&L's December 23, 1998, license amendment application, the NRC Staff concludes that the proposed expansion of spent fuel storage capacity at the Shearon Harris nuclear power plant will not have a significant effect on the quality of the human environment. Environmental Assessment and Finding of No Significant Impact Related to Expanding the Spent Fuel Pool Stage Capacity at the Shearon Harris Nuclear Power Plant (TAC No. MA4432) at 10 (December 15, [1999]). Therefore, the Staff has decided not to prepare an Environmental Impact Statement ("EIS") for the proposed license amendment. The Staff's decision not to prepare an EIS violates the National Environmental Policy Act ("NEPA") and NRC's implementing regulations, because the Finding of No Significant Impact ("FONSI") is erroneous and arbitrary and capricious. In fact, the proposed expansion of spent fuel pool storage capacity at Harris would create accident risks that are significantly in excess of the risks identified in the EA, and significantly in excess of accident risks previously evaluated by the NRC staff in the EIS for the Harris operating license. These accident risks would significantly affect the quality of the human environment, and therefore must be addressed in an EIS.
>
> There are two respects in which the proposed license amendment would significantly increase the risk of an accident at Harris:
>
> (1) CP&L proposes several substantial changes in the physical characteristics and mode of operation of the Harris plant.

> The effects of these changes on the accident risk posed by the Harris plant have not been accounted for in the Staff's EA. The changes would significantly increase, above present levels, the probability and consequences of potential accidents at the Harris plant.
>
> (2) During the period since the publication in 1979 of NUREG-0575, the NRC's Generic Environmental Impact Statement ("GEIS") on spent fuel storage, new information has become available regarding the risks of storing spent fuel in pools. This information shows that the proposed license amendment would significantly increase the probability and consequences of potential accidents at the Harris plant, above the levels indicated in the GEIS, the 1983 EIS for the Harris operating license, and the EA. The new information is not addressed in the EA or the 1983 EIS for the Harris operating license.
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> Accordingly, the staff must prepare an EIS that fully considers the environmental impacts of the proposed license amendment, including its effect on the probability and consequences of accidents at the Harris plant. As required by NEPA and Commission policy, the EIS should also examine the costs and benefits of the proposed action in comparison to various alternatives, including Severe Accident Mitigation Design Alternatives ("SAMDAs") and the alternative of dry storage.

See id. at 93-94 (footnote omitted).

As we noted in our decision admitting this contention, all the parties agreed that the standard mandating EIS preparation is whether the action at issue is a major federal action having a significant impact on the human environment. Furthermore, the parties agreed that the agency in an EIS is not required to address consequences of an action that are remote and speculative. See id. at 94-95. In the context of this contention, however, the parties disagreed as to what constitutes a remote and speculative event. In its argument, BCOC identified a scenario that, as summarized by CP&L with modifications by BCOC, consisted of the following seven-step chain of events:

> (1) a degraded core accident;
> (2) containment failure or bypass;
> (3) loss of all spent fuel cooling and makeup systems;
> (4) extreme radiation doses precluding personnel access;

(5) inability to restart any pool cooling or makeup systems due to extreme radiation doses;
(6) loss of most or all pool water through evaporation; and
(7) initiation of an exothermic oxidation reaction in pools C and D.

Id. at 95. Noting the Commission's guidance on admission of such a NEPA-related issue statement in Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-90-4, 31 NRC 333 (1990), and Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-90-7, 32 NRC 129 (1990), the Board admitted contention EC-6 because the materials presented by BCOC, including a 1993 individual plant evaluation (IPE) of core damage frequency (CDF) for the Shearon Harris facility, were "sufficient to establish a genuine material dispute of fact or law adequate to warrant further inquiry relative to the other aspects of the BCOC scenario and the associated probability analysis." LBP-00-19, 52 NRC at 97-98 (footnote omitted). In addition, the Board requested that the parties address the following three questions so that the Board could more accurately evaluate the materials provided by their section 2.1113 written summaries:

1. What is the submitting party's best estimate of the overall probability of the sequence set forth in the chain of seven events in the CP&L and BCOC's filings, set forth on page 95, supra? The estimates should utilize plant-specific data where available and should utilize the best available generic data where generic data are relied upon.

2. The parties should take careful note of any recent developments in the estimation of the probabilities of the individual events in the sequence at issue. In particular, have new data or models suggested any modification of the estimate of 2×10^{-6} per year set forth in the executive summary of NUREG-1353, Regulatory Analysis for the Resolution of Generic Issue 82, Beyond Design Basis Accidents in Spent Fuel Pools (1989)? Further, do any of the concerns expressed in the [Advisory Committee on Reactor Safeguard's (ACRS)] April 13, 2000 letter suggest that the probabilities of individual elements of the sequence are greater than those previously analyzed (e.g., is the chance of occurrence of sequence element seven,

an exothermic reaction, greater than was assumed in the decade-old NUREG-1353)?

3. Assuming the Board should decide that the probability involved is of sufficient moment so as not to permit the postulated accident sequence to be classified as "remote and speculative," what would be the overall scope of the environmental impact analysis the staff would be required to prepare (i.e., limited to the impacts of that accident sequence or a full blown EIS regarding the amendment request)?

Id. at 98-99.

Following a two-month discovery period,[1] on November 20, 2000, the parties filed their section 2.1113(a) summaries, with accompanying witness affidavits and documentary exhibits, in support of their respective positions on whether there is a genuine and substantial factual dispute that requires resolution in an evidentiary hearing as well as the efficacy of the staff's EA determination that an EIS is not required for the CP&L amendment. See Summary of Facts, Data, and Arguments on Which Applicant Proposes to Rely at the Subpart K Oral Argument Regarding Contention EC-6 (Nov. 20, 2000) [hereinafter CP&L Summary]; NRC Staff Brief and Summary of Relevant Facts, Data and Arguments Upon Which the Staff Proposes to Rely at Oral Argument on Environmental Contention EC-6 (Nov. 20, 2000) [hereinafter Staff Summary]; Detailed Summary of Facts, Data and Arguments And Sworn Submission on Which Orange County Intends to Rely at Oral Argument to Demonstrate the Existence of a Genuine and

[1] In accord with the 60-day schedule established by the Board in LBP-00-19, 52 NRC at 100, the formal discovery period relative to this BCOC contention began on August 21, 2000, and was scheduled to conclude on October 20, 2000. On October 13, 2000, BCOC filed a motion for an extension of time for discovery, briefing, and oral argument, requesting that the Board extend the discovery period to the full 90-day period permitted under 10 C.F.R. § 2.1111. See [BCOC] Motion for Extension of Schedule for Discovery, Briefing and Oral Argument and Request for Expedited Consideration at 2-9 (Oct. 13, 2000). The Board denied the BCOC request on the basis, among other things, that the requested extension was not justified under that provision's "exceptional circumstances" standard. See Licensing Board Memorandum and Order (Denying Discovery Deadline Extension Motion) (Oct. 19, 2000) at 3-4 (unpublished).

Substantial Dispute of Fact with the Licensee Regarding the Proposed Expansion of Spent Fuel Storage Capacity at the Harris Nuclear Power Plant with Respect to the Need to Prepare an Environmental Impact Statement to Address the Increased Risk of a Spent Fuel Pool Accident (Contention EC-6) (Nov. 20, 2000) [hereinafter BCOC Summary]. And in support of their summary statements, each of the parties took a somewhat different approach. BCOC places particular reliance on its supporting witness, Dr. Gordon Thompson, and a November 2000 report he prepared giving his views on the probability of a release from the Shearon Harris SFPs as a result of a severe reactor accident. See BCOC Summary, exh. 2 (Dr. Gordon Thompson, The Potential for a Large, Atmospheric Release of Radioactive Material from Spent Fuel Pools at the Harris Nuclear Power Plant: The Case of a Pool Release Initiated by a Severe Reactor Accident (Nov. 20, 2000)) [hereinafter Thompson Report]. CP&L, on the other hand, provided what it claims is a "state-of-the-technology" probabilistic analysis done by a contractor specifically to address the BCOC contention. See CP&L Summary, exh. 1, attach. C (Erin Engineering and Research, Inc., Technical Input for Use in the Matter of Shearon Harris Spent Fuel Pool Before the Atomic Safety and Licensing Board (Nov. 2000)) [hereinafter Erin Report]. For its part, as outlined in the affidavit of the four staff witnesses that accompanied the staff's written summary, see Affidavit of Gareth W. Parry, Stephen F. LaVie, Robert L. Palla, and Christopher Gatton in Support of NRC Staff Brief and Summary of Relevant Facts, Data and Arguments Upon which the Staff Proposes to Rely at Oral Argument on [EC-6] (Nov. 17, 2000) [hereinafter Staff Affidavit], the staff addresses the contention by providing an analysis of existing CP&L probabilistic risk assessment (PRA)-related documents, principally an August 1993 individual plant examination (IPE); a June 1995 individual plant examination for external events (IPEEE); and a 1995 probabilistic safety study (PSA) that updates the 1993 IPE, and other existing information relating to the Shearon Harris facility, including NUREG-1488,

Revised Livermore Seismic Hazard Estimates for Sixty-Nine Nuclear Power Plants East of the Rocky Mountains, a seismic hazards analysis for sixty-nine nuclear power plants east of the Rocky Mountains; SECY-00-0007, Proposed Staff Plan for Low Power and Shutdown Risk Analysis Research to Support Risk-Informed Regulatory Decision-Making (Jan. 12, 2000), concerning low power or shutdown degraded core probabilities; portions of the Shearon Harris facility Final Safety Analysis Report (FSAR); CP&L information submitted in support of its December 1998 application; information obtained in discovery; and a September 2000 facility tour, see Staff Summary at 27-35. Subsequently, on December 7, 2000, the Licensing Board held a day-long oral argument with respect to contention EC-6 in Raleigh, North Carolina.[2] See Tr. at 443-706.

II. ANALYSIS

A. Standards Governing 10 C.F.R. § 2.1115 Determination Regarding the Need for an Evidentiary Hearing to Resolve Admitted Issues

1. The Nuclear Waste Policy Act of 1982 and Implementing Regulations

The procedures in 10 C.F.R. Part 2, Subpart K were established in response to a congressional mandate found in the Nuclear Waste Policy Act of 1982 (NWPA). NWPA section 134, 42 U.S.C. § 10154, states:

> (a) In any Commission hearing under section 189 of the Atomic Energy Act of 1954 (42 U.S.C. 2239) on an application for a license, or for an amendment to an existing license . . . to expand spent nuclear fuel storage capacity at the site of a civilian

[2] On December 21, 2000, the staff notified the Board and the other parties that, in accordance with 10 C.F.R. § 50.91, on that date it had issued a final no significant hazards consideration determination and a license amendment authorizing the requested SFP expansion at the Shearon Harris facility. See Board Notification 2000-06 (Dec. 21, 2000). By memorandum and order dated February 14, 2001, the Commission directed CP&L not to store spent fuel under the license amendment pending further Commission order or a Board order approving the amendment. See CLI-01-07, 53 NRC __ , __ (slip op. at 1, 6) (Feb. 14, 2001).

> nuclear power reactor . . . the Commission shall . . . provide an opportunity for oral argument . . . . The oral arguments shall be proceeded by such discovery procedures as the rules of the Commission shall provide. The Commission shall require each party to submit in written form . . . a summary of the facts, data, and arguments that such party proposes to rely. . . .
>
> (b) At the conclusion of any oral argument under subsection (a), the Commission shall designate any disputed issues of fact, together with any remaining questions of law, for resolution in an adjudicatory hearing only if it determines that---
>
> (A) there is a genuine and substantial dispute of fact which can only be resolved with sufficient accuracy by the introduction of evidence in an adjudicatory hearing; and
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> (B) the decision of the Commission is likely to depend in whole or in part on the resolution of such dispute.

Sections 2.1113 and 2.1115 of Title 10 of the Code of Federal Regulations incorporate these requirements as mandated by the NWPA. Thus, section 2.1115(a)(1), (2) provides that

> after due consideration of the oral presentation and the written facts and data submitted by the parties and relied on at the oral argument, the presiding officer shall promptly by written order: (1) designate any disputed issues of fact, together with any remaining issues of law, for resolution in an adjudicatory hearing; and (2) dispose of any issues of law or fact not designated for resolution in an adjudicatory hearing.

Moreover, a two-part test for determining whether an evidentiary hearing is required for resolution of the issues is articulated in section 2.1115(b):

> (1) There is a genuine and substantial dispute of fact which can only be resolved with sufficient accuracy by the introduction of evidence in an adjudicatory hearing; and
>
> (2) The decision of the Commission is likely to depend in whole or in part on the resolution of that dispute.

2. Burden of Proof

Also relevant to our determination here is the question of the burden of proof. In this Subpart K proceeding, the parties disagree as to who bears the ultimate burden of proof

regarding the merits of the BCOC environmental contention. For its part, BCOC argues that, as the Board indicated in LBP-00-12, 51 NRC at 254-55, with respect to technical contentions, although the burden of proof for demonstrating the existence of a genuine and substantial factual dispute so as to require an evidentiary hearing is on the party seeking that hearing, the ultimate burden to demonstrate that an EIS is unnecessary belongs to the staff and the applicant. See BCOC Summary at 14-15 (citing Louisiana Energy Services (Claiborne Enrichment Center), LBP-96-25, 44 NRC 331, 338 (1996)); Tr. at 461-63, 673-76. CP&L and the staff disagree with this assessment. Citing a Licensing Board decision in Yankee Atomic Electric Company (Yankee Nuclear Power Station), LBP-96-2, 43 NRC 61, 90, rehearing granted in part and denied in part, CLI-96-7, 43 NRC 235 (1996), and judicial holdings in Citizen Advocates for Responsible Expansion, Inc. v. Dole, 770 F.2d 423 (5th Cir.), rehearing en banc denied, 777 F.2d 701 (5th Cir. 1985), and Louisiana v. Lee, 758 F.2d 1081 (5th Cir. 1985), cert. denied, 475 U.S. 1044 (1986), they declare that although BCOC does not bear the ultimate burden of proof regarding the propriety of staff's EA determination that an EIS is not necessary, BCOC still has the burden of showing there is an accident sequence that goes beyond the "remote and speculative" threshold so as to require that the staff then shoulder that ultimate burden by, for instance, establishing that the accident sequence does not have to be considered anyway or is not going to have any significant impacts other than those already discussed in its EA analysis. See CP&L Summary at 17; Staff Summary at 8-9, 36-37; Tr. at 647-48, 666-72.

We agree with BCOC that as the proponent of the need for an evidentiary hearing it bears the burden of establishing that need, but that the staff bears the ultimate burden to demonstrate its compliance with NEPA in its determination that an EIS was not necessary relative to the CP&L SFP expansion request. See Louisiana Energy Services (Claiborne

Enrichment Center), CLI-98-3, 47 NRC 77, 89 (1998). As we understand it, the crux of the argument by CP&L and the staff is that, despite having provided a litigable contention in connection with the question of whether there is a non-remote and speculative accident sequence that requires EIS consideration, in the context of this Subpart K proceeding BCOC still has the burden of establishing that the accident sequence it has posited is indeed not remote and speculative. We do not agree. Once BCOC crossed the admissibility threshold relative to its accident sequence contention, the ultimate burden in this Subpart K proceeding then rested with the proponent of the NEPA document -- the staff (and the applicant to the degree it becomes a proponent of the staff's EIS-related action) -- to establish the validity of that determination on the question whether the accident sequence is an EIS-preparation trigger.[3]

B. "Expert" Status of BCOC Witness Dr. Gordon Thompson

Also in controversy are the "expert" qualifications of BCOC's sole supporting affiant, Dr. Gordon Thompson. As previously noted, BCOC has proffered Dr. Thompson as an expert on nuclear power plant design and operation and provided a November 2000 report prepared by Dr. Thompson as one of the principal supporting sources for its claims about the need for an evidentiary hearing. See BCOC Summary at 15-21; Tr. at 511-14, 518-20, 684-85. Both CP&L and the staff, however, contest Dr. Thompson's expertise relative to the matters at issue in this

[3] Although it might be asserted that the section 2.1115(b) burden imposed on BCOC as the party seeking an evidentiary hearing to establish there are appropriate factual or legal disputes is the equivalent of the "burden to go forward" that is normally ascribed to an intervenor challenging a license application, see Philadelphia Electric Co. (Limerick Generating Station, Units 1 and 2), ALAB-262, 1 NRC 163, 191 (1975), this does not account for the fact that an intervenor generally is accorded the opportunity to build its case on the basis of witness cross-examination alone, see Tennessee Valley Authority (Hartsville Nuclear Power Plant, Units 1A, 2A, 1B & 2B), ALAB-463, 7 NRC 341, 356 (1976). Nor does this assertion account for the post-Subpart K revision to the 10 C.F.R. § 2.714 standards for the admission of contentions that enhanced the showing needed for litigable issue statements.

proceeding.[4] See CP&L Summary at 20-28; Staff Summary at 18-23; Tr. at 535-37, 650-51, 702.

When the qualifications of an expert witness are challenged, the party sponsoring the witness has the burden of demonstrating his or her expertise. See Pacific Gas and Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-410, 5 NRC 1398, 1405 (1977). Further, although the Federal Rules of Evidence (FRE) are not directly applicable to Commission proceedings, NRC presiding officers often look to the rules for guidance, including FRE 702 that allows a witness to be qualified as an expert "'[i]f scientific, technical or other specialized knowledge will assist the trier of fact to understand the evidence or determine a fact in issue.'" Duke Power Co. (William B. McGuire Nuclear Station, Units 1 and 2), ALAB-669, 15 NRC 453, 475 (1982) (quoting FRE 702). In addition, agency caselaw indicates that the qualifications of an expert are established by showing either academic training or relevant experience, or some combination of the two. See Pacific Gas and Electric (Diablo Canyon Nuclear Power Plant, Units 1 and 2), LBP-78-36, 8 NRC 567, 570 (1978).

In the first phase of this proceeding, which addressed the two admitted BCOC-proffered technical contentions, the staff argued that Dr. Thompson did not qualify as an expert witness based on his knowledge, skill, experience, training, or education. The staff maintained that Dr. Thompson was not qualified to render an expert opinion on spent fuel criticality and hence argued that his opinion testimony related to the contention at issue, TC-2, should be disregarded. Noting the staff's objection to his testimony, the Board refrained from making a bench ruling declaring him ineligible to provide expert testimony, but later held that by reason of his experience and training, "his expertise relative to reactor technical issues seems largely

[4] BCOC has not challenged the qualifications of the witnesses proffered by CP&L or the staff in support of their written summaries. Our review of their qualifications provides us with no reason to do so either.

policy-oriented rather than operational." LBP-00-12, 51 NRC at 267 n.9. The Board also noted that it would give his testimony "appropriate weight commensurate with his expertise and qualifications" regarding issues of criticality prevention. Id.

In the present phase of this proceeding, BCOC reaffirms the expert qualifications of Dr. Thompson, and argues that the Board should re-evaluate its finding in LBP-00-12 that Dr. Thompson's opinions were largely "policy oriented" in that: (1) the Board overlooked his extensive knowledge relating to nuclear power plant operation and design; and (2) the contention now at hand involves new technical topics -- probabilistic risk assessment and the phenomenology of spent fuel storage -- that were not addressed in the previous phase of this proceeding. See BCOC Summary at 16. In support of the former assertion, BCOC delineates Dr. Thompson's various qualifications relating to those subjects.

According to BCOC, Dr. Thompson is highly qualified to give expert testimony relative to contention EC-6 based on his education, training, and experience. BCOC points out that Dr. Thompson received a bachelor's degree in mechanical engineering, mathematics, and physics from the University of New South Wales and later received a doctoral degree from Oxford University in the area of applied mathematics. See id.; see also id. exh.1, at 2-4 (Nov. 20, 2000 declaration of Dr. Thompson), attach. A (Gordon Thompson curriculum vitae). BCOC stresses that Dr. Thompson has more than twenty years of experience relating to nuclear facilities and their associated risks, noting that, in addition to the year he has had becoming intimately familiar with the Shearon Harris plant, Dr. Thompson also evaluated design and accident risk considerations for an array of nuclear facilities around the world. And of particular importance to this proceeding, BCOC declares, is his familiarity with probabilistic risk assessments (PRAs), including both general studies using PRA analysis and a number of studies regarding accident risks posed by plant operations and SFP storage. See id. at 17-21.

While Dr. Thompson may have little experience in the actual operation of a nuclear power plant or in PRA preparation, see CP&L Summary, exh. 8, at 9-15, 17-20 (Oct. 16, 2000 deposition of Gordon R. Thompson), given his education and experience relating to nuclear facility and SFP design, particularly his experience with spent fuel storage issues and his previous activities with probability assessments, we cannot say that his testimony will not aid the Board in determining and/or understanding the probability of the seven step accident sequence. Therefore, we give Dr. Thompson's testimony due weight in the subject areas in which we believe he possesses knowledge and experience that can aid the Board in its determinations regarding EC-6.

With these items resolved, we turn to the BCOC contention at issue.

C. Contention EC-6 -- Accident Scenario Probability

As admitted, BCOC's contention EC-6 challenges the NRC staff's EA determination not to prepare an EIS on the ground that the proposed CP&L license amendment is a major federal action having a significant impact on the human environment because the seven-event accident scenario identified by BCOC is not remote and speculative. In our determination admitting this contention, the Board included an extensive discussion of the Appeal Board and Commission decisions in the decade-old Vermont Yankee SFP expansion proceeding in which a similar NEPA concern was raised. See LBP-00-19, 52 NRC at 95-97. There, the Commission concluded that "future decisions that accident scenarios are remote and speculative must be more specific and more soundly based on the actual probabilities and accident scenarios being analyzed." Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-90-7, 32 NRC 129, 132 (1990). Further, the Commission indicated that although a finding that the probability for an entire accident sequence was 1×10^{-4} per reactor year (i.e., 1E-04 per reactor year in scientific notation, or one occurrence in ten thousand reactor years) should be

returned to the Commission for further consideration, a lower probability would be subject to the presiding officer's judgment regarding the remote and speculative nature of the accident. See Vermont Yankee Nuclear Power Corp. (Vermont Yankee Nuclear Power Station), CLI-90-4, 31 NRC 333, 336 (1990).

Consistent with this guidance and the first question we posed in LBP-00-19, each of the parties addressed the seven-item BCOC-postulated accident sequence in terms of the probabilities involved at each step (or at related steps) and for the sequence as a whole. We, in turn, address the parties' approach to each step of the postulated scenario in seeking to determine whether there are factual or legal disputes that warrant further exploration in an evidentiary hearing and, if not, whether the probability assigned to the entire scenario falls into the category of "remote and speculative" so as not to require further NEPA analysis.

In doing so, however, we provide one general observation regarding the methodology utilized by CP&L, which consisted essentially of preparing a new PRA for the contention EC-6 accident scenario, as contrasted with the analytical efforts of the staff and BCOC. In posing the first question, we did not ask, nor did we expect, that the parties would undertake an entirely new PRA for this contention. Indeed, to do so would suggest, incorrectly in our view, that staff EA determinations on issues like that raised in contention EC-6 cannot be made without a full PRA analysis. Instead, our request for a best estimate was intended to obtain the fruits of the type of analysis that we anticipate the staff generally would undertake in reaching such a determination, i.e., one based on existing materials available to it, probabilistic and otherwise, supplemented by additional information it might obtain from the applicant in an environmental report or through requests for additional information (RAIs). As it turns out, the analysis undertaken by the staff did indeed most closely follow the process that we anticipated would be utilized to answer the first question. Thus, as between CP&L and the staff, the staff's analysis

is the one to which we have looked in the first instance relative to BCOC's competing claims regarding the probabilities involved in the different steps of the contention EC-6 accident sequence, while viewing CP&L's PRA-enhanced analysis as a beneficial, although not dispositive, confirmation of the validity of the staff's analysis to the degree the CP&L analysis yielded a probability estimate that was equal to or lower than the staff's estimate.

1. Event 1 -- A degraded core accident.

This first step in BCOC's postulated sequence of events leading to an exothermic reaction in the SFP assumes a serious reactor accident in which the core becomes damaged to the degree that radioactive material normally contained within the fuel rods in the core is released into the reactor and subsequently into the reactor containment building. See Thompson Report at 24-26; CP&L Summary at 56; Staff Summary at 27-30; Tr. at 467-72, 539-41.

a. BCOC Position. In its discussion regarding event one of the contention EC-6 scenario, BCOC relies on the November 20, 2000 declaration of BCOC's sole witness, Dr. Gordon Thompson and his November 2000 report, see Thompson Report at 24-26, 48; id. app. C (Level 1 PRA analysis). And relative to this part of the scenario, BCOC references CP&L's 1993 IPE, its 1995 IPEEE, and its 1995 PSA analyses as the basis for its estimate of the degraded core accident sequence probability as the starting point of the overall sequence. BCOC actually describes four degraded core sequences that have as common features a loss of high-pressure coolant injection, loss of feedwater to the steam generators, and failure of reactor coolant pump seals, all of which lead finally to a loss of cooling to the fuel pools. BCOC also asserts that, instead of relying on the seismic hazard curves developed by the Electric Power Research Institute (EPRI) that were used by CP&L in its PSA seismic component, BCOC adjusted the core accident estimated probability to reflect staff-endorsed seismic hazard curves

from Lawrence Livermore National Laboratory. See Thompson Report at 25-26; id. app. C at C-2 to -3. BCOC's estimate for the degraded core accident portion of the overall sequence thus is 3.1E-05 per reactor year. See Thompson Report at 48 (Table 1, Estimated Probability of a Degraded-Core Accident at Harris, Selected Sequences).

b. CP&L Position. CP&L did not calculate a specific probability for event one with respect to a degraded core accident or, as CP&L and the staff refer to it, a CDF. Instead, CP&L evaluated event one and event two -- containment failure or bypass -- using PRA techniques. CP&L's analysis included internal events as initiators, such as steam generator tube rupture, loss of coolant accident or station blackout. In addition, CP&L used the 1995 Harris plant IPEEE for determining probabilities from external events, such as fires and seismic events, and shutdown events. The results of these estimate analyses were presented in the ERIN Report and summarized in an affidavit by CP&L's expert Dr. Edward T. Burns. See Erin Report, at 4-1 to -76; CP&L Summary, exh. 1, at 9-10 (Affidavit of Edward T. Burns, Ph.D.) [hereinafter Burns Affidavit]. The CP&L best estimate of the combined probability for events one and two of the postulated sequence is summarized in the Erin Report at Table 5-1 and was determined to be 7.67E-06. See Burns Affidavit at 14.

c. Staff Position. The staff determined by analysis of existing CP&L and staff reports that the best estimate of CDF probability at the Harris plant, including contributions from internal and external initiating events from full power, low power, and shutdown states, is 1.2E-04. See Staff Summary at 28, Staff Affidavit at 15-20. The staff claims its determination of the CDF is likely to be conservative, since the frequency of initiating events has been shown to be considerably lower than assumed in the 1993 IPE, a principal document used by the staff in its determination of CDF. See Staff Affidavit at 117; compare id. exh. 9, § 3, at 45 ([CP&L]

Probabilistic Safety Assessment (Rev. 1 Oct. 1995) (Table 3-17)) with id. exh. 6 at 3-18 ([CP&L] Individual Plant Examination Submittal (Aug. 1993) (Table 3-4)).

d. Board Analysis. The record before us makes it apparent that, by any measure, the degraded core accident that is the first step of BCOC's postulated sequence is a low frequency occurrence. The staff estimates a CDF of 1.2E-04 per reactor year and BCOC puts a CDF at 3.1E-05 per reactor year. Although an argument can be made that BCOC's lower number utilizes appropriate conservatisms, nonetheless we accept the staff's higher probability number as an appropriate starting point for the sequence. Moreover, in light of our adoption of the staff's number, nothing regarding BCOC's assertions in connection with this aspect of the overall sequence evidences a dispute that warrants an evidentiary hearing.

2. Event 2 -- Containment failure or bypass.

The second step of BCOC's postulated sequence assumes that the reactor containment building is breached such that radioactive material within the reactor building or radioactive material within the reactor coolant system bypasses the reactor containment and is disbursed in other plant buildings or in the environment outside the reactor containment building. See Thompson Report at 26-29; CP&L Summary at 56; Staff Summary at 30-31; Tr. at 472-75, 542-45, 576-83, 627.

a. BCOC position. BCOC draws on information from NUREG-1570, Risk Assessment of Severe Accident-Induced Steam Generator Tube Rupture (Mar. 1998), see Thompson Report, app. D, at 1 (Level 2 PRA analysis), to calculate the probabilities of a containment bypass. Although noting that other modes of containment failure may exist, BCOC discusses only the estimated probability of temperature-induced steam generator tube rupture (TI-SGTR) for selected degraded core accident sequences at Shearon Harris in its analysis of the containment failure/bypass step of the postulated sequence. Without including other

mechanisms of containment failure, BCOC estimates the probability of containment bypass at 0.5 (50 percent). See Thompson Report at 26-28, id. at 49 (Table 2, Estimated Probability of [TI-SGTR] for Selected Degraded-Core Accident Sequences at Harris).

b. CP&L Position. See section II.C.1.b above.

c. Staff Position. The staff again relies on CP&L's IPE and PSA as the starting point for its analysis of the probability of containment failure and/or bypass, as supplemented by staff reports and responses to staff discovery. See Staff Affidavit at 28-30. The staff used a conditional containment failure probability of 0.2 (20 percent) for its analysis relative to the seven-step sequence. See Staff Affidavit at 31-32. In deriving this figure, the staff provides an analysis of various failure modes, including early containment failures, see id. at 32-37; late containment failures, id. at 37-40; very late containment failures, id. at 40-41; containment isolation failures, id. at 41-42; and containment bypass failures, id. at 42-46. In this regard, the staff assigns a conditional failure probability for a TI-SGTR of 0.021 (2.1 percent). See id. at 45. Furthermore, the staff determined that a probability of 0.1 (ten percent) should be assigned to those containment failures of most concern, namely early and late containment failures. See Staff Affidavit at 69-71.

d. Board Analysis. The Board views BCOC's analysis as too simplistic for several reasons. BCOC concentrates its overall containment failure or bypass argument on the probability of a TI-SGTR and without giving adequate consideration to the specific details of accident scenarios, containment and equipment configuration, and plant operating procedures that will affect the overall probability for containment failure or bypass. In this regard, BCOC has not considered, for example, the recent procedural changes adopted by CP&L not to run reactor coolant pumps after a severe accident. See Tr. at 543-45. Nor does BCOC consider the timing of containment failure based on various accident scenarios and has not linked

various containment failure or bypass modes with specific core damage scenarios. In contrast, the staff provides a credible analysis of the various containment failure and bypass modes that could be experienced at the Harris plant that is sufficient, in our estimation, to establish the validity of its estimate without the need for a further evidentiary hearing on this portion of the postulated accident scenario.[5]

In any event, regardless of these analytical differences, BCOC and the staff do not differ significantly in their analyses of the cumulative probabilities of the postulated sequence through event two. As shown in the table below, see infra p. 35, at step two each of the parties shows a probability on the order of 1E-05 per reactor year. The need to utilize further evidentiary proceedings relative to this sequence step thus is not evident. Further, because the parties appear to agree on the overall probability of the basic mechanisms of accident damage and the immediate consequences of those damage mechanisms, our conclusion regarding the sufficiency of the staff's EA determination relative to BCOC's EC-6 concern is based principally on our review of the parties' analyses of the remaining events.

[5] In the context of this event and related event four concerning access preclusion by high radiation levels, BCOC also raises concerns about factual disputes relating to the radiological effects of high burnup fuel in the event of a containment breach or bypass, building wake effects relative to radioactive dispersion, and the staff's use of the ARCON computer dispersion model. See Thompson Report at 28-29; Tr. at 475-77. Relative to high burnup fuel, in addition to the lack of any explanation of a dispersal mechanism in the context of the TI-SGTR accident scenario championed by BCOC, the report that is the basis for this concern, see Thompson Report, exh. Schmitz and [Papin], 1999 (Franz Schmitz & Joelle Papin, High burnup effects on fuel behavior under accident conditions: the tests CABRI REP-Na, 270 Journal of Nuclear Materials 55 (1999)), is not representative of the circumstances at Shearon Harris. Given BCOC's failure to attempt any dispersion modeling, see section II.C.4.a, as contrasted with the staff's showing regarding its dispersion modeling efforts, see Staff Affidavit at 104-06, BCOC's assertions regarding the adequacy of the staff's dispersion methodology are speculative, at best. Thus, none of these items presents a dispute that warrants further consideration in an evidentiary hearing.

3. Event 3 -- Loss of spent fuel pool cooling.

This step in BCOC's postulated sequence assumes that, as a result of the two accident sequence events discussed above, the ability to cool or provide makeup water to cover the highly radioactive spent fuel stored in the SFPs is lost. See Thompson Report at 29; CP&L Summary at 57; Staff Summary at 28-30; Tr. at 481-84, 545-47.

a. BCOC Position. BCOC asserts that for the selected accident sequences it utilized for event one, it is a certainty, i.e., a probability of 1.0 (100 percent), that the spent fuel system would become inoperative due to either failure of electric power on the site, causing a loss of power to the SFP cooling pumps, or unavailability of component cooling water to cool the SFP heat exchangers. See Thompson Report at 29, 52. Furthermore, BCOC asserts that these failures are not recoverable, a matter we address more fully regarding event five below.

b. CP&L Position. Based on an extensive probabilistic analysis of the loss of fuel pool cooling as a result of the postulated accident, CP&L concluded that the addition of a second (redundant) fuel pool cooling and cleanup system in conjunction with the planned activation of pools C and D actually would reduce the likelihood of a fuel pool cooling failure from what it is for the present pools A and B.

c. Staff Position. In analyzing this sequence step, the staff assessed the probability that the containment failure or containment bypass-related radioactive materials would cause the failure of the component cooling water system, which removes heat from the SFP cooling and cleanup heat exchangers, and failure of the electrical system, thus resulting in a loss of power for SFP cooling and cleanup system pumps. Using information from the IPE for the CDF and applying plant specific information for internal events, seismic events, and fires, the staff determined that the overall frequency of events that could lead to an interruption of fuel pool cooling, estimated to be approximately 6.3E-05 per reactor year, is dominated by a loss of

offsite power that would affect the operation of the facility's normal and emergency ventilation and exhaust systems. See Staff Affidavit at 117-18. The staff further concluded that the probability of a degraded core accident that leads to an interruption of the SFP cooling function and a containment failure prior to SFP cooling restoration is bounded by 6.3E-6. This determination was based on the staff's conclusion that the containment failure modes of most concern are the early and late containment failures with a combined probability of 0.1 (ten percent). See Staff Affidavit at 69-71.

d. Board Analysis. The Board is seriously troubled by BCOC's claim of certainty -- its use of a probability of one -- that there will be a loss of SFP cooling as a result of a degraded core accident and containment failure. Putting aside the fact that this claim seemingly ignores the fundamental benefits of engineered safety principles, such as physical separation, redundancy, and diversity in connection with equipment necessary for SFP cooling, the staff provides persuasive evidence that the probability of a loss of SPF cooling and makeup is dominated by a loss of offsite power and that there are only limited circumstances after containment failure in which cooling would be lost. Moreover, as is discussed below, the staff provides a persuasive showing that in many instances credit should be given for the successful recovery of equipment for cooling.

By countering effectively BCOC's argument that the probability of losing SFP cooling is certain (i.e., 1.0) for all accident scenarios, the staff also counters BCOC's argument that a further evidentiary hearing is warranted relative to this portion of the accident sequence. The staff's qualitative analysis of the probability of a containment failure or bypass after a degraded core accident is reasonable and supports its conclusion that a containment failure or bypass after a degraded core accident would not have a significant effect in addition to that SFP cooling loss probability that exists for a loss of offsite power.

4. Event 4 -- Extreme radiation levels precluding personnel access.

This step in the BCOC postulated sequence assumes that the extreme radiation levels resulting from a reactor containment building breach or bypass precludes access to areas vital to restoring cooling and or makeup water to the fuel pools. See Thompson Report at 28-32; CP&L Summary at 57-60; Staff Summary at 31-33; Tr. at 476-79, 484-90, 547-56, 627-30, 637-38, 686, 693, 701-02.

a. BCOC Position. BCOC estimates that as a result of the degraded core and steam generator tube rupture scenarios analyzed, a release of radioactive material through the safety relief valve (SRV) and power operated relief valve (PORV) vent stacks would result in the deposition on the plant site of five percent of the tellurium, ten percent of the iodine, and ten percent of the cesium radioactive isotopes in the Shearon Harris reactor core within an assumed 200 meter radius centered on the stacks. From this deposition of radioactive material, BCOC calculates dose rates of up to seventy-six rem per minute outside and up to 110-1100 rem per day during the first release day (300-3000 total for the first seven days) in the control room and the nearby technical support center (TSC) if there was an offsite power failure that caused an electrical failure to the ventilation systems for these areas after the four-hour battery backup was exhausted. The control room and TSC are critical areas, according to BCOC, because they are needed for command and communications to coordinate and manage needed activities like maintaining control over the SFP cooling pumps. See Thompson Report at 29-32; id. app. E (Radiation Exposure at the Harris site after an accident). Given these radiation levels, which would lead to radiation doses to personnel asserted to violate regulatory limits so as to preclude anyone from going into these areas, BCOC also assigns this portion of the sequence a probability of 1.0 (100 percent). See id. at 52.

b. CP&L Position. For the postulated sequence, CP&L calculated radiation levels for areas for which access would be required to assure makeup and cooling to the fuel pools. Using computer modeling of plant thermal hydraulics and the transport of radioactivity, CP&L attempted to determine access, timing, and adverse conditions for critical areas of the plant. These calculations are described in the affidavits of CP&L witnesses Michael J. DeVoe and Benjamin W. Morgan. See CP&L Summary, exhs. 6-7 (Affidavit of Michael J. DeVoe (Nov. 15, 2000); Affidavit of Benjamin W. Morgan (Nov. 15, 2000) [hereinafter Morgan Affidavit]). This information was, in turn, used as the basis for calculating access times based on radiation fields in the following event, for which CP&L provided an overall probability estimate.

c. Staff Position. The staff performed a detailed qualitative assessment of the impact of radioactive material releases from the postulated sequence on accessibility to critical areas of the reactor auxiliary building (RAB) and the fuel handling building (FHB) needed to assure makeup and cooling water to the pools. The staff used information on plant layout, expected meteorologic probabilities, and the consequences of the postulated accident scenarios to analyze the radiological and environmental (i.e., steam and heat) conditions at areas of the plant where expected remedial action would be required. This information was drawn from various sections of the Shearon Harris FSAR and staff reports prepared for this litigation. See Staff Affidavit, exhs. 15 ([CP&L] Response to NRC Staff's First Set of Interrogatories Directed to [CP&L] Regarding Contention EC-6 (Sept. 26, 2000)), 20 (Shearon Harris FSAR, chap. 9), 58 (Shearon Harris FSAR, chap. 12), 63 (Stephen F. LaVie, Staff Analysis of Harris Site Meteorology (Nov. 2000)), 65 (Stephen F. LaVie, Staff Analysis of Radioactivity Release Due to [SFP] Boiling (Nov. 2000)), 72 (Stephen F. LaVie, Staff Analysis of Post-Accident Ground Deposition Dose Rate (Nov. 2000)) [hereinafter Staff Ground Deposition Analysis]. In its detailed review, the staff considered direct shine from the containment building, direct shine

from accident generated radioactivity in piping systems outside containment, radioactive material in the air of the RAB and the FHB, and radiation from uncovered fuel in the FHB to calculate radiation fields expected to be encountered at various times after the accident and after containment failure or bypass by personnel attempting to restore fuel pool cooling. The staff also calculated radiation fields at various FHB access points separated by varying distance and direction from expected accident release points. See Staff Affidavit at 98-99. The staff further considered the historical meteorologic probabilities as to which direction the wind would blow the plume from the release points. The staff concluded that the FHB access points in relation to expected release points made it unlikely that plume fallout from a breach or bypass would affect all available access points so as to totally preclude access. See Staff Ground Deposition Analysis at iii.

d. Board Analysis. BCOC did not perform the detailed calculations of expected radiation fields in various areas of the Shearon Harris plant to which access is needed to restore fuel pool cooling. See Tr. at 686. As a consequence, the upshot of its efforts -- a simplistic determination that a fixed amount of radioactive material will deposit uniformly in a 200-meter circle centered on the plant SRV and PORV stacks -- is unrealistically conservative and lacks a reasonable scientific basis by failing, as it does, to account for building and equipment configuration, historical meteorological data, and accident scenarios. On the other hand, staff expert Stephen F. LaVie, who has significant experience and training in such calculations, see Staff Affidavit at 2, id. exh. 2 (Resume of Stephen F. LaVie), has provided a credible explanation about the time dependent, post-accident radiological environment both within and external to the FHB from which access times available to restart fuel pool cooling or make up can be calculated. Certainly, we find no basis in the information provided by BCOC to convene an evidentiary hearing relative to this segment of the postulated sequence.

5. Event 5 -- Inability to restart cooling or makeup due to extreme radiation doses.

This step in BCOC's postulated sequence assumes that CP&L will be unable to recover SFP cooling because the extreme radiation levels from the material escaping from the reactor building precludes plant staff from restoring SFP cooling and makeup water. See Thompson Report at 32-38; CP&L Summary at 57-60; Staff Summary at 31-35; Tr. at 490-95, 556-69 593-94, 630-37, 651-53, 683-84, 694-96, 700-04.

a. BCOC Position. BCOC claims that CP&L cannot use a dose in excess of five rem, the maximum permissible occupational dose allowed in one year by NRC regulations, 10 C.F.R. § 20.1201(a)(1), in planning to recover from an accident. BCOC argues that to use a dose in excess of this value is inappropriate for two reasons. First, according to BCOC, doses in excess of five rem can be foreseen and therefore are not covered by the United States Environmental Protection Agency (EPA) protective action guideline (PAG) 2.5 allowing doses of up to twenty-five rem for life saving and protection of large populations. In addition, BCOC argues that workers will not accept such doses in an emergency. According to BCOC, the radiation field it calculates from the postulated accident exposes personnel in the control room and the TSC to radiation exposures in excess of the five-rem per year dose limit of section 20.1201(a)(1) and General Design Criterion (GDC) 19, 10 C.F.R. Part 50, App. A, Criterion 19, making the control room uninhabitable for a period in excess of seven days. This, in turn, would lead to the collapse of the Harris plant command structure and preclude access to areas needed to control SFP cooling. Moreover, BCOC declares this would be exacerbated by the fact that areas outside and inside the RAB would be inaccessible to personnel because of the accident-generated harsh radiation environment and the certainty that electric power likewise would be interrupted for the period that the command structure was inoperative, i.e., in excess of seven days. Finally, BCOC maintains that all the options required to provide cooling

or makeup to the fuel pools require human intervention and such actions would be precluded because of the extreme radiation levels in and around the plant, thus leading to the conclusion that, once again, this portion of the sequence should be assigned a probability of 1.0 (100 percent). See Thompson Report at 32-38, 52; id. app F (Radiation exposure: health effects and regulatory limits).

b. CP&L Position. CP&L expert Benjamin Morgan calculated accessibility to in-plant areas and areas outside the plant buildings using industry-accepted computer codes and NRC Regulatory Guide 1.25, "Assumptions Used for Evaluating the Potential Radiological Consequences of a Fuel Handling Accident in the Fuel Handling and Storage Facility for Boiling and Pressurized Water Reactors." Mr. Morgan indicated the results of these calculations show that various areas of the plant to which access would be necessary after the postulated accident would be reachable to perform activities to provide SFP cooling or make up. See Morgan Affidavit at 4-10; see also id. attachs. B-C (In-Plant Dose Calculation Results; Environmental Dose Calculation Results). Further, CP&L asserts that BCOC misinterprets both NRC regulations and EPA PAG 2.5 relative to worker doses and maintains that the CP&L analysis is consistent with the EPA twenty-five rem PAG. See Tr. at 593-94.

c. Staff Position. Based on the assumption that from the beginning of the accident sequence SFP cooling recirculation is unavailable, the staff also provided an analysis of the time available for recovery activities before the water in the SFPs boils so as to lower the water level to the top of the fuel storage racks such that makeup is required. See Staff Affidavit at 62-69. According to the staff, fifteen days would be available for recovery for pools A and B and ten days for pools C and D. The staff then analyzed the alternative methods to provide for pool cooling or makeup. See id. at 72-78. Finally, the staff determined response personnel stay times in the various areas specifically required to recover SFP cooling or makeup

functions. These stay times were based on the EPA-sanctioned PAG 2.5 permissible dose of up to twenty-five rem, which the staff declares is appropriate under NRC requirements and this EPA guidance, see Tr. at 633-37, and the radiation fields determined by the staff at various locations, as outlined in section II.C.4.c above. See Staff Affidavit at 79-111. From this analysis, the staff determined that there would be options for access to provide makeup or cooling to the pools. See id. at 111. Further, the staff assessed the likelihood of successful operational activities using such access by utilizing a Human Reliability Analysis (HRA) methodology and concluded that, once the makeup method decision was made, the likelihood of success in achieving makeup was high. See Staff Affidavit at 111-16. Notwithstanding this conclusion, albeit noting that no HRA methodology has been constructed to provide human error probabilities for such recovery situations, the staff nonetheless assigned what is described as a conservative probability of 0.1 (10 percent) that the SFP cooling restoration or makeup would not be successful. See Staff Affidavit at 116-17. Finally, the staff agrees with CP&L that BCOC misinterprets both NRC regulations, including the agency's emergency planning response requirements, see 10 C.F.R. § 50.47(b)(11), and EPA PAG 2.5 relative to worker doses and asserts that the staff's analysis is consistent with the EPA twenty-five rem PAG. See Tr. at 630-37.

d. Board Analysis. Considering first the question of the maximum allowable dose to be used in calculating whether access can be effected in an emergency situation, it is clear to us from a review of the applicable regulatory provisions -- 10 C.F.R. §§ 20.1001(b), 20.1201(a)(1), 50.47(b)(11) -- that there is no regulatory bar that prohibits CP&L from using a twenty-five rem dose limit in an actual emergency or in planning a response to such an emergency to assure

SFP cooling after an accident.[6] Likewise, EPA PAG 2.5 clearly allows a dose of up to twenty-five rem for life saving and protection of large populations. See Staff Affidavit, exh. 55, at 2-9 to -11 (EPA, Manual for Protective Action Guides and Protective Actions for Nuclear Incidents (May 1992)).[7] Moreover, because this dose is within regulatory standards, the Board will not engage in the unsupported surmise, as BCOC would have us do, that knowledgeable plant personnel would be wholly unwilling to accept such doses in an emergency such as the postulated accident sequence. The Board thus concludes that it is appropriate to use a permissible dose of twenty-five rem for purposes of calculating stay times and probabilities that personnel at the plant would be able to perform the necessary activities required to restore SFP cooling and makeup.

As noted above, using the calculated radiation fields and the twenty-five rem person dose, the staff calculated times available to perform SFP cooling and makeup restoration

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[6] In this regard, unlike BCOC, see Thompson Report at 33 & n.64, in the context of reviewing what clearly are low probability accident scenarios, we do not equate consideration of radiation exposure in the course of doing a probability analysis with "forseeability" relative to the EPA PAG so as to mandate application of five-rem exposure limit.

[7] In pertinent part, this EPA PAG provides:

> Doses to all workers during emergencies should, to the extent practicable, be limited to 5 rem. There are some emergency situations, however, for which higher exposure limits may be justified. Justification of any such exposure must include the presence of conditions that prevent the rotation of workers or other commonly-used dose reduction methods. Except as noted below, the dose resulting from such emergency exposure should be limited to 10 rem for protecting valuable property, and to 25 rem for life saving activities and the protection of large populations. In the context of this guidance, exposure of workers that is incurred for the protection of large populations may be considered justified for situations in which the collective dose avoided by the emergency operation is significantly larger than that incurred by the workers involved.

Staff Affidavit, exh. 55, at 2-11.

activities for the various alternative methods of providing makeup or cooling to the SFPs. See Staff Affidavit at 109 (Table 2, Makeup Alternatives). The staff's analysis in support of its probability estimate, which is supported by CP&L's detailed evaluation, appears reasonably thorough and credible based on existing regulations and guidance for exposure to emergency workers, as well as on the expected radiation fields in locations at which SFP cooling recovery actions must take place and the availability of various alternative sources of cooling water. In contrast, BCOC provides us with no credible analysis, other than its unsupported assertion about uniform radioactive materials disposition and its mistaken interpretation of NRC requirements and EPA's PAG 2.5, to support its conclusion that any access to areas of the plant needed for SFP recovery and makeup would be precluded by high radiation fields.[8] Once again, we find nothing relative to this sequence event that establishes the need for an evidentiary hearing.

6. Event 6 -- Loss of most or all pool water through evaporation.

At this step of the postulated accident sequence, all of the water covering the spent fuel is assumed lost by evaporation because cooling or makeup water could not be restored. See Thompson Report at 39-40; CP&L Summary at 60-62; Staff Summary at 33-34; Tr. at 495-97, 560-64, 638.

a. BCOC Position. BCOC asserts that with the loss of SFP cooling capability after the postulated accident, boiling would occur in the pools to such an extent that the water level

[8] Relative to this event, BCOC also makes the assertion that a purported staff failure to make any assessment of the probability of restoring cooling provides a litigable dispute, see Tr. at 483, a claim that we find wholly without merit or worthy of further consideration in an evidentiary hearing given the discussion above regarding the staff's analysis. The same is true of BCOC's claim of a factual dispute regarding firefighter access to a 195 degree Fahrenheit (F) steam environment in the FHB, see Tr. at 494-95, which does not account for existing firefighter training, see CP&L Summary, exh. 5, at 10 (temperatures in range of 300 degrees F not unusual during fire brigade training sessions) (Affidavit of Eric A. McCartney).

would reach the top of the fuel in pool A in a period of 4.7 days and pools C and D in a period of 10.2 to 116 days, depending on the heat load in the pool. BCOC also contends that this would happen with certainty -- a probability of 1.0 or 100 percent -- because the high radiation fields described in section II.C.4.a above would preclude any recovery of cooling or makeup systems to the pools. And this loss of water in pool A, BCOC declares, would result in an exothermic oxidation reaction that would release radioactive material in and around the FHB. See Thompson Report at 39-40.

b. CP&L Position. CP&L calculates it will take more than eight days to uncover fuel in pools A and B and almost 100 days to uncover fuel in pools C and D. See Burns Affidavit at 11-12. It is unlikely this would ever happen, according to CP&L, because there are many ways to establish makeup and cooling to the SFPs, possibilities that will be enhanced by the redundant SFP cooling and cleanup system for pools C and D that provide additional pathways for makeup water injection. See Erin Report, at A-28 to -30 (Table A-1, [SFP] Makeup). CP&L concluded that at least one makeup water lineup was possible within four days for all the accident-initiating sequences of the postulated core damage accident. See Burns Affidavit at 12.

c. Staff Position. The staff likewise analyzed the probability of success in restoring cooling and makeup water to the SFPs after the postulated accident and containment failure or bypass. For a late containment failure scenario -- i.e., with failure at ninety hours -- the staff concluded there was a high probability of success in restoring cooling. The control room would be habitable for most of the period and alarms would indicate pool cooling failure and level reductions such that the plant staff could respond in a timely manner. See Staff Affidavit at 111-14. For an early containment failure scenario, the staff assumed that although the control room would not be habitable, command and control would be available in the TSC

and/or the NRC incident response center. Moreover, citing NRC emergency operations center guidance regarding post-accident SFP cooling, the staff asserted it would be unreasonable to assume there was any likelihood after the postulated accident that SFP cooling would be forgotten or ignored. See id. at 114. Additionally, the staff reviewed the methods required by CP&L plant staff to restore cooling or initiate makeup and determined that there is a high likelihood of success in obtaining access and performing the necessary functions to restore cooling or makeup. As was noted previously in section II.C.5.c, the staff assigned a probability of no greater than 0.1 (ten percent) that such actions would be unsuccessful. See Staff Affidavit at 116-17.

d. Board Analysis. As we have already noted, the Board adopts the staff's analysis regarding CP&L's ability to provide SFP makeup and cooling. As we discussed in section II.C.5.d above, the staff calculated reasonable stay times for the many SFP cooling and makeup methods. Even if CP&L loses the ability to run the plant from the control room there are procedures in place for both CP&L and the NRC to exercise command and control to make decisions about safeguarding SFP cooling integrity. Putting aside the relatively low makeup water flow rates that likely would be needed, there are myriad ways to get the recovery makeup water into the fuel pools, which are not adequately accounted for in BCOC's assignment of a certainty to this step of the sequence. Ultimately, nothing presented by BCOC establishes the need to proceed to an evidentiary hearing on this aspect of the postulated scenario.

7. Event 7 -- Initiation of an exothermic oxidation reaction in pools C and D.

At this final step of BCOC's postulated accident sequence, the spent fuel cladding spontaneously ignites after the cooling water is lost by evaporation as a result of the steps one through six above. Such a reaction essentially means that the fuel rapidly oxidizes (i.e., burns) and releases high levels of radioactive material into the environment around the Shearon Harris

plant site. See Thompson Report at 40-42; CP&L Summary at 65-68; Staff Summary at 6; Tr. at 497-99, 564-67, 596-97, 639-41, 694.

a. Parties' Position. This last step of BCOC's postulated sequence looks to the probability that an exothermic oxidation reaction would occur in the pools after the fuel pool cooling water evaporates and the fuel is uncovered. Therefore all parties agreed for the purpose of this analysis it is prudent to assume that an exothermic reaction would take place. Although CP&L and the staff are skeptical that such a reaction would take place with certainty, particularly if evaporation of the fuel pooling water occurred in a pool containing only aged spent fuel, see CP&L Summary at 67; Staff Affidavit at 124, they both accept for purposes of the analysis that an exothermic oxidation reaction would occur in pools C and D with certainty, i.e., with a probability of 1.0 (100 percent).

b. Board Analysis. The Board accepts that there is no controversy among the parties associated with this event in BCOC's postulated accident sequence. As such it does not provide a basis for further evidentiary hearings.

8. Cumulative Scenario Probability

As a result of its analysis of the contention EC-6 accident sequence, BCOC provides a probability of 1.6E-05 per reactor year as its best estimate of the overall probability of an oxidation reaction in pools C and D. See BCOC Summary at 40. CP&L's best estimate is 2.7E-08. See CP&L Summary at 51. The staff provides a best estimate of the overall probability of the postulated accident scenario as 2.0E-07 per reactor year. See Staff Summary at 44. The Board's summary of the overall cumulative probabilities (per reactor year) determined by each of the parties for BCOC's postulated accident sequence is presented in the table below. The cumulative probability at step N (S_N) is defined as the product of the

probability of all the preceding steps up to and including step N, namely $S_N = P_1 P_2 P_3 \ldots P_N$, where P_N is the individual probability for step N.[9]

BCOC Contention EC-6 Accident Scenario Cumulative Probability (S_N)				
Sequence Event (N)		BCOC S_N	CP&L S_N	Staff S_N
1	Degraded core accident	3.1E-05		1.2E-04
2	Containment failure or bypass	1.6E-05	7.7E-06[a]	
3	Loss of SFP Cooling and/or Makeup Loss	1.6E-05		6.3E-06[c]
4	Radiation Dose Precludes Access	1.6E-05		
5	Inability to restart SFP cooling	1.6E-05		2.0E-07[d]
6	Loss of part or all of SFP water by evaporation	1.6E-05	2.7E-08[b]	2.0E-07
7	Initiation of an exothermic oxidation reaction in Pools C and D.	1.6E-05	2.7E-08	2.0E-07
Overall Sequence Probability (per reactor year)		**1.6E-05**	**2.7E-08**	**2.0E-07**

[a] CP&L combined its analysis of the first two steps.
[b] CP&L combined its analysis of steps three through six.
[c] Staff combined its analysis of steps two and three.
[d] Staff combined its analysis of steps four and five.

Relative to these estimates, for the reasons set forth in sections II.C.1 through II.C.7 above, the Board concludes that the overall probability of the BCOC postulated accident sequence resulting in an exothermic oxidation reaction in the Harris plant SFPs is conservatively in the range described by the staff: 2.0E-07 per reactor year (2 occurrences in 10 million reactor years) or less.

[9] In this context S_1 represents the probability of occurrence of step one of the postulated accident sequence. S_2 represents the probability of the occurrence of step one and step two of the scenario. Finally, S_7 represents the probability of occurrence of the entire seven-event accident sequence.

D. Cumulative Scenario Probability as Remote and Speculative

With this probability figure before us, we must next consider whether it appropriately can be characterized as "remote and speculative" within the meaning of NEPA, so as to provide a substantive basis for the BCOC challenge to the staff's EA determination. Citing agency consideration of severe accident probability estimates for reactor-related internal and/or external events in various NEPA or Atomic Energy Act contexts, both CP&L and the staff assert that probabilities on the order of at least 1E-06 (one in one million) should be considered remote and speculative for NEPA purposes. See CP&L Summary at 46-50 (citing, e.g., SECY-98-231, Authorization of the Trojan Reactor Vessel Package for One-time Shipment for Disposal (Oct. 2, 1998) (1E-06); NUREG–1437, Generic Environmental Impact Statement for License Renewal of Nuclear Power Plants § 5.2.3.1 (Supp. 2 1999) (8.9E-05)); Staff Summary at 36-43 (citing, e.g., Pacific Gas & Electric Co. (Diablo Canyon Nuclear Power Plant, Units 1 and 2), ALAB-877, 26 NRC 287, 293 (1987) (3E-05 to 1E-10); Florida Power & Light Co. (St. Lucie Nuclear Power Plant, Unit No. 2), ALAB-603, 12 NRC 30, 45 (1980) (1E–06 to 1E-07); Public Service Electric & Gas Co. (Hope Creek Generating Station, Units 1 and 2), LBP-78-15, 7 NRC 642, 699 (1978) (1E-06)); see also Tr. at 605-12, 659-61. BCOC, on the other hand, while suggesting that its probability estimate of 1.6E-05 is sufficient to establish that the contention EC-6 accident sequence is not remote and speculative, also declares that several factors should counsel serious Board concern about whether, in this proceeding, lower probability estimates should be considered as falling within the category of remote and speculative. Among these are the need to take a "hard look" at potential environmental consequences in an EA; the level of uncertainty that is involved in the probability analyses used to support the EA determination; and particular uncertainty factors such as the use of unverifiable judgments rather than calculations to account for unknown aspects of plant

behavior, the degree to which acts of malice, gross design errors, unforseen accident sequences or phenomena, or degraded operation standards could influence those probability analyses, and dependance on new and untested applications of PRA techniques. See BCOC Summary at 23-30; see also Tr. at 499-508.

Notwithstanding the suggestion that we draw a "line in the sand" by declaring "remote and speculative" those matters whose probabilities fall into the range of 1E-06 or higher, in the context of this proceeding we need do no more than determine whether the staff's 2.0E-07 per reactor year probability analysis estimate that we find compelling falls beyond that line. The various agency determinations cited by CP&L and the staff indicate that this estimate falls within the category of remote and speculative matters, assuming we do not consider the BCOC concerns described above sufficient to remove this estimate from that category.

In this regard, we note that whatever may have been the case previously, the information submitted by the staff in its section 2.1113 written presentation regarding contention EC-6 makes it readily apparent that, relative to its EA determination, any requisite "hard look" has been taken at this point. See 10 C.F.R. § 51.34(b). And concerning the matter of probability analysis uncertainty, BCOC has not presented any specific information other than its expressed concerns about the reliability of the probability analysis process used in addressing its contention EC-6, particularly the purported lack of "peer review." See BCOC Summary at 28, 29; Tr. at 499-501, 507-08, 514, 686-89.

Dr. Thompson apparently was the sole contributor to BCOC's position. See Thompson Report at 2. No peer review of Dr. Thompson's work was performed. See Tr. at 524. In contrast, CP&L and the staff both attest to a peer review-type process in connection with their

analyses.[10] In connection with the staff's submission, which we have explained in section II.C. we consider an appropriate probability analysis tool in this instance,[11] the staff confirms that the key documents it used -- the CP&L 1993 IPE, 1995 IPEEE, and 1995 PSA -- were subject to peer review when created. In addition, the IPE and IPEEE were reviewed by the staff independent of this proceeding. Moreover, the staff's analysis of the key elements of the contention EC-6 scenario had internal peer or supervisory review: the staff fielded a panel of risk analysis practitioners from various disciplines to prepare its position, which was then subjected to a peer review by employees from the agency's Office of Nuclear Regulatory Research. See Staff Summary at 25-26, 34-35; Staff Affidavit at 9, 15, 16-17, 122; Tr. at 644-45.

The Board recognizes that, consistent with the Commission's guidance in its Vermont Yankee opinion "that future decisions that accident scenarios are remote and speculative must be more specific and more soundly based on the actual probabilities and accident scenarios being analyzed," CLI-90-07, 32 NRC at 132, we must have a significant degree of confidence in the reliability of the analyses we receive from the parties. At the same time, we do not think necessary, and did not request that the parties provide, a new, detailed PRA analysis relative to the contention EC-6 accident scenario. As was noted above, all of the parties began their

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[10] According to CP&L, to answer the "best estimate" question posed by the Board in LBP-00-19, with considerable assistance from outside contractor ERIN Engineering and Research, Inc., CP&L sought to obtain a probability analysis of BCOC's postulated accident sequence. In doing so, ERIN reviewed and utilized existing plant-specific information, including the Shearon Harris PSA and IPEEE, which were not prepared by ERIN and are in accord with NRC Generic Letter 88-20, to provide an updated Shearon Harris PSA. This work, in turn, was reviewed by CP&L personnel and ERIN personnel who were not members of the immediate team performing the analysis. Moreover, CP&L declares that its contractor was hired to answer the Board's questions, not to satisfy its client CP&L. See CP&L Summary at 52-53; Tr. at 540-41, 569-71, 585-88, 595-96, 690-92.

[11] In large part, BCOC's uncertainty concerns relate to the CP&L PRA analysis in the ERIN Report rather than the staff's analysis. See Tr. at 678-83.

evaluations of the postulated sequence with the CP&L PSA and/or IPE or IPEEE that have undergone peer review. Further, in the absence of any specific evidence of bias or mistake, the subsequent internal review of the components of its contention EC-6 probability analysis by staff senior technical or supervisory personnel who were not involved in preparing the staff's analysis is adequate in this context to provide the Board with confidence in the reliability of the staff analysis regarding all of the important issues associated with each step of the postulated sequence. Cf. United States v. Chemical Foundation, Inc., 272 U.S. 1, 14-15 (1926) (presumed that government official can be expected faithfully to execute his or her official duties). Thus, the fact that the peer review process for the staff's contention EC-6 probability analysis may not be fully in accord with BCOC's criteria of complete independence is not a disqualifying factor, or one that mandates further evidentiary proceedings.

E. Additional Board Questions

As was noted in section II.B. above, the Board also asked for party responses to two additional questions regarding (1) the relevance of a 2E-06 per reactor year estimate in NUREG-1353, a 1989 staff generic study of SFP design basis accidents, and concerns about exothermic reactions expressed in an April 13, 2000 ACRS letter; and (2) the required scope of any EIS, if one is found to be necessary.

Regarding the first of these two Board inquiries, BCOC questions the relevance of NUREG-1353 because that report did not consider the seven step sequence being examined under contention EC-6 and because the SFP conditions assumed in NUREG-1353 are not representative of the Shearon Harris rack configuration and fuel loading characteristics. With regard to the April 2000 ACRS letter, BCOC notes that although the February 2000 staff draft technical study on SFP accident risk at decommissioning plants that is the subject of the ACRS letter did not address partial drainage or fuel/rack relocation heat transfer implications, it did

acknowledge the limitations of previous analyses relative to exothermic reactions. See BCOC Summary at 40; Thompson Report at 44-46. Both CP&L and the staff likewise declare NUREG-1353 has no direct relevance to the individual events in the scenario since that report uses a high ground acceleration earthquake rather than severe core damage accidents as an initiating event. And with regard to the April 2000 ACRS letter, CP&L and the staff assert that the exothermic reaction concern that is the focus of that letter is irrelevant because it has been assigned a probability of 1.0 (100 percent) in scenario event seven. See CP&L Summary at 73-77; Staff Summary at 44-46, Tr. at 612-13.

After reviewing the arguments of the parties regarding this question, the Board agrees that NUREG-1353 has no direct relevance to our resolution of BCOC contention EC-6. The assignment of a probability of 1.0 to scenario step seven has incorporated the concerns raised in connection with the April 2000 ACRS letter as well.[12] And neither, of course, provides cause for further evidentiary proceedings.

Finally, given our disposition of this proceeding, the EIS-scope matter posed in the final question does not provide grounds for an evidentiary hearing or, indeed, warrant further consideration in this proceeding.

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[12] Following the Board's December 2000 section 2.1113 oral argument, the agency released the October 2000 final version of the staff study on SFP accident risks at decommissioning plants in which the staff concluded that although the risk of an exothermic reaction in the form of a zirconium fire was very low, the radiological effects of such a fire would be serious. See Technical Study of Spent Fuel Pool Accident Risk at Decommissioning Nuclear Power Plants (Oct. 2000) at viii (available at www.nrc.gov/NRC/REACTOR/DECOMMISSION/SF/index.html). Because a probability of 1.0 already has been assigned to the step in the contention EC-6 scenario that postulates an exothermic reaction, this report is not relevant to the matters at issue in this proceeding.

III. CONCLUSION

Based on the record before us, pursuant to 10 C.F.R. § 2.1115, we conclude intervenor BCOC has failed to demonstrate relative to its contention EC-6 challenge to CP&L's December 1998 Harris facility SFP expansion amendment request, that there is any genuine and substantial dispute of fact or law that only can be resolved with sufficient accuracy in an evidentiary hearing. At the same time, we find the staff has demonstrated the sufficiency of its analysis, which places the overall probability that the accident sequence postulated under BCOC contention EC-6 will result in an exothermic oxidation reaction in the Harris facility SFPs conservatively in the range of 2.0E-07 per reactor year or less. As a result, the staff has met its burden to establish that such a scenario can properly be characterized as "remote and speculative" so as not to warrant preparation of an EIS regarding CP&L's amendment application.

We thus dispose of this contention by affirming the staff's December 1999 EA FONSI determination, as supplemented by this decision and the accompanying record and, having resolved the only outstanding matter at issue in this cause, terminate this proceeding.

For the foregoing reasons, it is this first day of March 2001, ORDERED, that:

1. With respect to BCOC contention EC-6, Environmental Impact Statement Required, in accordance with 10 C.F.R. § 2.1115(b), because (a) there is no genuine and substantial dispute of fact or law that only can be resolved with sufficient accuracy by the introduction of evidence in an evidentiary hearing; and (b) the NRC staff has established that the accident scenario that is basis for that issue statement is remote and speculative so as not to warrant the preparation of an EIS, the December 1999 staff EA FONSI determination relative to the

December 1998 CP&L SFP expansion license amendment application is affirmed, as supplemented by this decision and the record accompanying it; and,

2. Because there are no remaining disputed issues of fact or law requiring resolution in an adjudicatory hearing and all issues in this proceeding have been resolved in favor of granting the December 1998 license amendment application, the staff is authorized to issue the license amendment requested by CP&L and, pursuant to section 2.1115(a)(2), this proceeding is dismissed.

In accordance with 10 C.F.R. §§ 2.760, 2.764, and the Commission's decision in CLI-01-07, 53 NRC __ (slip op. at 1, 6) (Feb. 14, 2001), this decision shall become effective immediately. It will constitute the final decision of the Commission forty (40) days from the date of issuance, or on Tuesday, April 10, 2001, unless a petition for review is filed in accordance with 10 C.F.R. § 2.786, or the Commission directs otherwise. Within fifteen (15) days after service of this decision, any party may file a petition for review with the Commission on the grounds specified in 10 C.F.R. § 2.786(b)(4). The filing of a petition for review is mandatory for a party to have exhausted its administrative remedies before seeking judicial review. Within ten (10) days after service of a petition for review, any party to the proceeding may file an answer

supporting or opposing Commission review. The petition for review and any answers shall conform to the requirements of 10 C.F.R. § 2.786(b)(2)-(3).

THE ATOMIC SAFETY
AND LICENSING BOARD[13]

/RA/

G. Paul Bollwerk, III
ADMINISTRATIVE JUDGE

/RA/

Dr. Peter S. Lam
ADMINISTRATIVE JUDGE

/RA/

Thomas D. Murphy
ADMINISTRATIVE JUDGE

Rockville, Maryland

March 1, 2001

[13] Copies of this memorandum and order were sent this date by Internet e-mail transmission to counsel for (1) applicant CP&L; (2) intervenor BCOC; and (3) the staff.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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

CERTIFICATE OF SERVICE

I hereby certify that copies of the foregoing LB MEMORANDUM AND ORDER (DENYING REQUEST FOR EVIDENTIARY HEARING AND TERMINATING PROCEEDING) (LBP-01-09) have been served upon the following persons by U.S. mail, first class, or through NRC internal distribution.

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Office of the Secretary of the Commission

Dated at Rockville, Maryland,
this 1st day of March 2001