RAS 2878

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE COMMISSION

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

ORANGE COUNTY'S PETITION FOR REVIEW OF LBP-00-12, LBP-00-19, AND LBP-01-09

Introduction

Pursuant to 10 C.F.R. § 2.786 (b)(1), the Board of Commissioners of Orange County, North Carolina ("Orange County") petitions the Nuclear Regulatory Commission ("NRC" or "Commission") for review of three Licensing Board decisions in this proceeding: LBP-00-12, Memorandum and Order (Ruling on Designation of Issues for an Evidentiary Hearing), 51 NRC 247 (2000); LBP-00-19 (Ruling on Late-Filed Environmental Contentions), 52 NRC 85 (2000); and LBP-01-09, Memorandum and Order (Denying Request for Evidentiary Hearing and Terminating Proceeding) (March 1, 2001).

I. FACTUAL AND PROCEDURAL BACKGROUND

A. Factual Background

In this license amendment proceeding, Carolina Power & Light Company ("CP&L"), seeks to activate two spent fuel pools (labeled "C" and "D") for which it abandoned its construction permit application and quality assurance program in the early 1980's. The piping and equipment for pools C and D have sat idle since CP&L abandoned construction of Units 2, 3, and 4 in the early 1980's.

Pools A and B now have a combined capacity of 1,128 PWR spent fuel

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assemblies and 2,541 BWR assemblies. The proposed license amendment would allow CP&L to use pools C and D for storage of an additional 1,952 PWR spent fuel assemblies and 2,763 BWR assemblies. This would bring the amount of fuel to be stored at Harris to 8,343 assemblies, which is over a thousand more assemblies than were assumed in the 1983 FEIS.[1] In order to activate pools C and D, CP&L must complete construction of the cooling system for the pools.

B. Procedural Background

The NRC Staff noticed the proposed license amendment on January 13, 1999, at 64 Fed. Reg. 2,237. Orange County filed a request for a hearing on the proposed license amendment, which was granted with respect to criticality prevention and quality assurance issues in LBP-99-25, 50 NRC 25 (1999).[2] Following a Subpart K proceeding, the Licensing Board dismissed both technical contentions in LBP-00-12.[3]

On December 15, 1999, the NRC Staff issued an Environmental Assessment ("EA") and Finding of No Significant Impact ("FONSI") for the proposed license amendment, which concluded that the proposed expansion of spent fuel storage capacity

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1 *See* CP&L License Amendment Application, Enclosure 1 at 3 (December 23, 1998). Pool D will not be filled until a later "campaign," by which time CP&L will also need to have obtained a license amendment permitting it to exceed the license's current 1.0 million BTU/hour limit on the heat load in pools C and D. At that point, however, no further licensing action will be needed regarding the number of spent fuel assemblies that can be stored in either pool C or D. The number of spent fuel assemblies permitted to be stored at the Harris site will have been previously approved in this license amendment proceeding.

2 The Board admitted Contentions TC-2 and TC-3. Contention TC-2 asserted, *inter alia*, that CP&L's reliance on control of burnup levels for criticality prevention violates GDC 62, because it constitutes an administrative measure and is therefore prohibited by GDC 62. Contention TC-3 asserted, *inter alia,* that CP&L's license amendment application does not comply with Appendix B 10 C.F.R. Part 50, because CP&L has not maintained piping and equipment in conformance with lay-up requirements of Criteria XIII, XVI, and XVII. The County also filed several environmental contentions, which were dismissed as premature. *Id.*

3 51 NRC 247 (2000). On May 22, 2000, Orange County filed a petition for review. The petition was denied without prejudice, on grounds of prematurity. *See* CLI-00-11, 51 NRC 297 (2000). Later, Orange County was given the opportunity to participate as an amicus on appeal of LBP-00-26, a decision interpreting criticality prevention requirements in a spent fuel pool expansion case involving the Millstone nuclear power plant. *See Northeast Nuclear Energy Company* (Millstone Nuclear Power Station, Unit 3),

at Harris "will not significantly increase the probability or consequences of accidents.[4]

Orange County subsequently submitted several contentions challenging the adequacy of the EA.[5] On August 7, 2000, in LBP-00-19, the Licensing Board admitted Contention EC-1 (renumbered Contention EC-6). Contention EC-6 charged that the EA failed to take into consideration new information and changed circumstances, showing the foreseeable potential for a severe spent fuel pool accident following a degraded core accident with containment failure or bypass.[6] The Board found that Orange County had established "an adequate basis to allow merits litigation on whether the following accident sequence is not 'remote and speculative' so that a further environmental analysis of the CP&L pool expansion amendment is required," with respect to the following seven-step accident scenario:

> 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.

52 NRC at 95. The Board invoked the summary procedures of Subpart K to 10 C.F.R. Part 2, and required the parties to file written presentations and deliver oral argument to determine whether the hearing should go forward. In support of its position, Orange County filed an extensive legal brief and detailed expert report by Dr. Gordon

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CLI-01-03 (January 17, 2001). Orange County filed an amicus brief on February 7, 2001.

4 Environmental Assessment Related to Expanding the Spent Fuel Pool Storage Capacity at the Shearon Harris Nuclear Power Plant (TAC No. MA4432) at 6.

5 Orange County's Request for Admission of Late-Filed Environmental Contentions (January 31, 2000) ("Environmental Contentions"). These contentions were also supported by an expert report and declaration prepared by Dr. Thompson.

6 LBP-00-19, Memorandum and Order (Ruling on Late-Filed Environmental Contentions), 52 NRC 85 (2000).

Thompson.[7] Dr. Thompson's report relied to a significant extent on information and analyses previously prepared by CP&L and the NRC Staff. His report presented substantial and material evidence that the probability of an exothermic reaction in the spent fuel pools, leading to a massive release of radiation from the pools, is foreseeable, and may not be disregarded as a remote and speculative event. Orange County's legal brief also showed that the NRC Staff unlawfully relied on assumptions regarding doses to workers during accidents that are inconsistent with the requirements of the National Environmental Policy Act ("NEPA"). *See* Orange County's Summary at 31-38.

The NRC Staff and CP&L also filed legal and evidentiary presentations, arguing that the probability of a severe spent fuel pool accident is too small to warrant consideration. Although there were some areas of agreement between the parties, their analyses showed stark differences in the information relied on, analytical approach, and results reached. At the oral argument on December 7, 2000, Orange County pointed out that CP&L's and the Staff's technical analyses contained considerable omissions and deficiencies, including failure to provide transparent technical analysis or actual calculations regarding some parameters, and oversimplification of accident behavior.

On March 1, 2001, the Licensing Board issued LBP-01-09. The decision went through each of the seven accident steps the parties had been asked to address, and compared the evidence presented by the three parties. For each of the seven steps, the

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7 *See* 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 Substantial Dispute 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 (November 20, 2000) ("Orange County's Summary re: Contention EC-6"); BCOC Exhibit 1, Declaration of Dr. Gordon Thompson (November 20, 2000) ("Thompson Declaration"); BCOC Exhibit 2, G. 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* (November 20, 2000) ("Thompson Report").

Board ruled that Orange County had not met the NRC's standard for proceeding to an evidentiary hearing. The Board accepted the NRC Staff's calculation that the probability of the seven-step accident is "conservatively in the range of" 2.0E-7 per reactor year, and found that this level of probability falls within the realm of "remote and speculative" events not cognizable under NEPA. LBP-01-09, slip op. at 34-36.

II. THE COMMISSION SHOULD GRANT REVIEW.

The three decisions below meet the Commission's standard for taking discretionary review in 10 C.F.R. § 2.786(b)(4), because they raise substantial questions with respect to their reliance on legal errors and clear factual errors. They also raise substantial and important questions of law, discretion and policy.

A. LBP-00-12 Raises Substantial Questions of Legal Error And Clearly Erroneous Factual Error.

The Licensing Board made several significant legal errors in LBP-00-12. First, the Board ruled that General Design Criterion 62 permits the administrative and procedural measures on which CP&L proposes to rely for criticality prevention. The Board's interpretation of GDC 62 is contrary to the plain language and regulatory history of GDC 62, which restricts criticality prevention measures to "physical systems and processes." CP&L's proposed method of burnup/enrichment control constitutes a non-physical and procedural criticality prevention measure that the Commission intended to exclude from the scope of GDC 62. As discussed in note 3, *supra,* the Commission has already demonstrated that it considers this issue worthy of review, by taking review in the Millstone license amendment case. For the same reasons, it should take review here.

Second, the Board clearly erred by ignoring a significant portion of Orange County's evidentiary case on quality assurance issues, *i.e.*, that video-camera inspections

conducted by CP&L were deficient because they covered only the embedded welds, and did not examine embedded piping. The Board unquestioningly assumed that piping was inspected along with the welds, without addressing any of the County's considerable evidence that only the welds were inspected.[8]

Third, the Board erred in refusing to consider the County's argument that CP&L must seek a construction permit amendment in order to use piping and equipment that were abandoned in the early 1980's.[9]

B. LBP-00-19 Raises Substantial Questions of Legal Error.

In Contention EC-6, Orange County challenged the NRC Staff's refusal to prepare an Environmental Impact Statement ("EIS") for the proposed license amendment, on the ground of new information and changed circumstances showing that the probability of a spent fuel pool accident is higher than previously considered by the Staff, and is not remote and speculative. *See* Environmental Contentions at 1-16. As an illustration for its assertion, Orange County posited a seven-step accident scenario involving a degraded core reactor accident with containment failure or bypass. Orange County asserted that such an accident would establish a "lower bound of probability" of a severe pool accident, because such an accident would almost certainly lead to a pool accident. Environmental Contentions at 11. The contention also referred to other causes of spent

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8 See Orange County's Summary Etc. Regarding Quality Assurance Issues at 36-44 (January 4, 2000). The Board also completely failed to address the County's evidence that CP&L failed to follow its own weld inspection procedures, and that a single recent water test is insufficient to demonstrate that the pipes were free of corrosive agents during a 15-year period when no records were kept. *See* Orange County's QA Summary at 29-35, 45-51. In addition, the Board's dismissal of potential leakage from spent fuel cooling pipes as insignificant constitutes an unlawful and unacceptable relaxing of NRC quality assurance standards.

9 According to the Board, this argument amounted to a new contention for which the County failed to address the late-filing standard. To the contrary, the argument constituted a permissible response to CP&L's and the Staff's assertions that CP&L's abandonment of its construction permit and QA program is of "no consequence" to this licensing proceeding. The Board's ruling erroneously sidestepped this critical issue by characterizing it as a late-filed contention.

fuel pool accidents, and NRC studies which evaluated them. *Id.* at 9-11.

In LBP-00-19, the Licensing Board admitted Contention EC-6, but only for the purpose of addressing the probability of the illustrative seven-step accident scenario identified by Orange County in the contention. 52 NRC at 97-98. The Board did not admit the broader issue of the overall probability of a spent fuel pool accident at Harris, even though Orange County had pled the issue with basis and specificity.[10] By restricting the scope of admitted Contention EC-6 to the probability of a single accident scenario, the Board arbitrarily excluded consideration of the contribution of other accident scenarios to the overall probability of a pool fire accident at Harris.[11]

The Board's ruling is based on an overly narrow reading of *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). While it may be reasonable to require an intervenor to support a contention challenging existing NRC probability calculations with a plausible accident scenario, it does not follow from those decisions that the contribution of other, uncontested probability calculations to the overall probability of a spent fuel pool fire is beyond the scope of any contention.

C. LBP-01-09 Raises Substantial Questions of Legal Error and Clear Factual Error.

In LBP-01-09, the Licensing Board committed both legal error and clear factual

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10 Consistent with its decision in LBP-00-19, in LBP-01-09, the Board addressed only the probability of the seven-step scenario admitted in LBP-00-19. The Board made no attempt to address the overall probability of a severe pool accident. Nor did it address Orange County's proposition in Contention EC-6 that the question of whether a degraded-core accident with containment bypass constituted a lower bound of probability of a pool accident. This is an important omission, because, as the Board acknowledges, the Staff has made probability estimates for other spent fuel pool accident scenarios that are higher than its estimate for the seven-step accident scenario admitted in LBP-00-19. *See* LBP-01-09, slip op. at 39.

11 For instance, NUREG-1353, Regulatory Analysis for the Resolution of Generic Issue 82: Beyond

error, in three major respects. First, the Board misapplied the standard applied in Subpart K proceedings for determining whether to order a hearing. Under 10 C.F.R. § 2.1115, the Board was required to review written evidentiary and legal presentations and conduct an oral argument to determine whether there is a genuine and substantial dispute of material fact between the parties, that can only be resolved in a hearing. The purpose of the proceeding is to separate "genuine factual issues (for subsequent adjudication) from issues of policy or law and/or frivolous factual issues."[12] Although the intervenor bears the burden of showing a genuine and substantial material issue of fact that should go to a hearing, the license amendment applicant bears the ultimate burden of proof, and the Staff also bears the burden of proof on NEPA issues. LBP-01-09, slip op. at 10-12. The Commission has likened the Subpart K process to summary disposition.[13]

Here, the Licensing Board went far beyond the bounds of determining whether there is a genuine and substantial dispute of material fact. Instead, the Board entered the merits of the dispute, weighed the credibility of each side in the dispute, and chose for one of the parties.[14] The Board had no basis for making this choice, other than its own predilections. Resolution of disputed factual issues must be reserved for trial, after hearing testimony from the experts.[15] Orange County met its burden of demonstrating a genuine and substantial dispute of material fact that could only be resolved at a full

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Design Basis Accidents in Spent Fuel Pools (1989), calculates the probability of a spent fuel pool accident at 2E-06 per reactor year. *See* LBP-01-09, slip op. at 39.

12 Proposed Rule, Hybrid Hearing Procedures for Expansion of Onsite Spent Fuel Storage Capacity at Civilian Nuclear Power Plants, 48 Fed. Reg. 54,499, 54,451 (December 5, 1983).

13 Final Rule, Hybrid Hearing Procedures for Expansion of Onsite Spent Fuel Storage Capacity at Civilian Nuclear Power Plants, 50 Fed. Reg. 41,662, 41,669 (October 15, 1985).

14 For example, the Board consistently uses terminology reflecting a weighing of the evidence, rather than the identification of genuine and substantial issues of fact. Its determinations are based on the basis of the comparative credibility (pages 21, 26, 31); reasonableness (pages 23, 26, 33), and persuasiveness (page 23) of the parties positions. The Board also makes judgments about the comparative complexity of the parties' analyses. *Id.*, slip op. at 26.

15 *Sequoyah Fuels Corp. and General Atomics* (Gore, Oklahoma Site Decontamination and

evidentiary hearing. By reaching the merits of the dispute, the Licensing Board illegally shifted the ultimate burden of proof from CP&L and the NRC Staff to Orange County.

Second, even if it were appropriate for the Board to go to the merits of the dispute, the Board's ruling was based on an arbitrary and capricious selection of facts favorable to the NRC Staff.[16] In all areas where there was a dispute between the parties as to the best probability estimate for a given step in the seven-step scenario, the Licensing Board ignored or summarily rejected Orange County's factual evidence, without providing a reasoned explanation.[17] This lack of accountability flagrantly violates NRC precedent.[18]

Decommissioning Funding), LBP-94-17, 39 NRC 359, 361 (1994).

16 The Board makes a point of not relying on CP&L's analysis. *See* LBP-01-09, slip op. at 16-17. However, throughout the decision, it summarizes CP&L's analysis uncritically, thus giving the strong impression that CP&L's analysis would constitute independent and additional grounds to rule against a hearing. This message has no basis in fact. As discussed during oral argument, CP&L's analysis is fatally defective because it omits critical data and calculations that are necessary in order to make a reasonable evaluation of the reliability of its conclusions. *See* Transcript of December 7, 2000, oral argument at 468-76, 483-83, 596, 493-95.

17 For example, the Board completely ignored Orange County's evidence regarding the type of analysis needed to make a credible probability estimate for a spent fuel pool fire. *See* Thompson 2000 Report, Section 3. The Board also misrepresents Orange County's position on the potential occurrence of a degraded-core accident at Harris. At pages 17-19, the Board misrepresents the County's estimate of the overall probability of four *selected* sequences as the County's estimate of the probability of core degradation through *all possible* sequences. The Board also misrepresents Orange County's position about the loss of spent fuel pool cooling that accompanies the four selected sequences. In discussing these sequences, the ASLB states that all of them "lead finally to a loss of cooling to the fuel pools." To the contrary, each sequence involves a loss of cooling to the fuel pools from the beginning of the accident sequence until the occurrence of core degradation and potentially beyond. This point is significant because it bears upon the potential for recover of pool cooling, and thereby on the probability of a pool fire.

At pages 19-21, the ASLB shows a complete misunderstanding of Orange County's position regarding the potential for a degraded-core accident to lead to containment bypass. The Board characterizes Orange County's analysis as "too simplistic," but fails to address the fact that Orange County drew its analysis from an NRC Staff analysis. It also fails to address the fact that the NRC Staff did not address the significance of its own analysis in its evidentiary presentation. In footnote 5, the Board again shows a poor understanding of the literature regarding the effect of high levels of fuel burnup on the release of radioactive material from a reactor to the atmosphere during a degraded-core accident. The Board ignored a relevant study, NUREG-1465, and misinterpreted a research paper on the subject. As a result, the Board arbitrarily resolved a genuine and substantial factual dispute between the parties based on its own arbitrary and ill-informed weighing of the merits of the evidence.

At pages 26-27, the Licensing Board credited the NRC Staff's analysis of deposition patterns of radioactive material onsite, partly on the ground that Orange County had not itself modeled the deposition patterns. The Board completely disregarded Orange County's criticisms of the method used by the NRC Staff to estimate onsite radiation levels. Instead, it shifted to Orange County the burden of proving that radiation levels would be higher than calculated by the Staff. These are but some examples of the many factual

Finally, the Board based its decision on a critical assumption that is inconsistent with NEPA. In order to come up with a very low probability calculation for a spent fuel pool fire, the NRC Staff assumed the workers would incur doses above regulatory limits in order to stop the accident from progressing to that point.19 *See* LBP-01-09, slip op. at 28-30. In approving a probability calculation that is based on this assumption, the Licensing Board unlawfully accepted one type of environmental harm (radiation exposure to plant workers beyond regulatory limits) as the justification for avoiding another type of environmental harm (harm to the general public and the environment caused by radiological releases from the spent fuel pools), without going through the process of fully disclosing these competing harms in an EIS.

III. CONCLUSION

Not only do the Board's decisions in this proceeding violate the law, but they raise significant concerns about the Commission's practice and policy for addressing the risks of high-density spent fuel pool storage. Accordingly, for the foregoing reasons, the Commission should take review of LBP-01-09.

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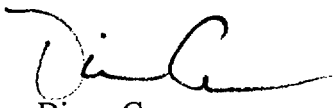
errors made by the Licensing Board. It would be impossible, given the page limitations of this petition, to list them all. These examples illustrate the extreme arbitrariness of the Licensing Board's handling of a complex and fact-intensive dispute between the parties to this proceeding.

18 *Public Service Electric and Gas Company, Atlantic City Electric Company* (Hope Creek Generating Station, Units 1 and 2), ALAB-429, 6 NRC 229, 237 (1977) ("a Licensing Board must do more than reach conclusions; it must 'confront the facts.'") (citation omitted). As in *Hope Creek*, this record "is devoid of any systematic analysis by expert witnesses for either the applicant or the staff of the differences between [two studies at issue in the hearing]." *Id.* Instead, without the benefit of the substantial expertise required to evaluate the issues at hand, the Board makes its own arbitrary judgments on the merits of the case.

19 A dose of 5 rems TEDE per year per year is the occupational dose limit established by NRC standards for protection of worker safety and health. *See* 10 C.F.R. § 20.1201(a)(1)(i). The NRC Staff assumes that workers will incur a dose of 25 rems in an accident at Harris. The issue here is not whether workers would be willing to incur such doses during a real accident, but whether such high doses can be assumed *for purposes of avoiding the preparation of an EIS.*

Respectfully submitted,



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March 16, 2001

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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

CERTIFICATE OF SERVICE

I certify that on March 16, 2001, copies of the foregoing ORANGE COUNTY'S PETITIN FOR REVIEW OF LB-00-12, LBP-00-19, AND LBP-01-09; AND ORANGE COUNTY'S MOTION FOR STAY OF LBP-01-09, were served on the following by first class mail:

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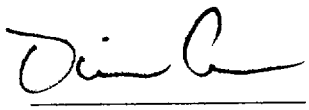

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