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USNRC

January 31, 1999 '00 FEB -3 P4:22

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

OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

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 REQUEST FOR ADMISSION OF LATE-FILED ENVIRONMENTAL CONTENTIONS

I. INTRODUCTION

Pursuant to the 10 C.F.R. § 2.714(a)(1), Orange County hereby requests admission of four environmental contentions which challenge the adequacy of the Nuclear Regulatory Commmission ("NRC") Staff's Environmental Assessment ("EA"), which the Staff issued on December 15, 1999. The EA was issued in support of an operating license amendment application submitted by Carolina Power & Light Co. ("CP&L"), which seeks leave for expansion of spent fuel pool storage capacity at the Shearon Harris nuclear power plant. The contentions are supported by the Declaration of Dr. Gordon Thompson (January 31, 2000) ("Thompson Declaration") which is attached as Exhibit 1.

As discussed in Section III below, these contentions meet the Commission's standards for late-filing.

II. CONTENTIONS

CONTENTION EC-1: Environmental Impact Statement Required

In the Environmental Assessment ("EA") for CP&L's December 23, 1998, license amendment application, the NRC Staff concludes that the proposed expansion of spent

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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, 2000). 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[1], 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.

Accordingly, the Staff must prepare an EIS that fully considers the environmental impacts of the proposed license amendment, including its effects 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.

Basis:

A. Regulatory Requirements

NEPA requires federal agencies to prepare an EIS before undertaking any major federal action which may significantly affect the quality of the human environment. 42 U.S.C. § 4332(C). The NRC's implementing regulations at 10 C.F.R. § 51.20(a) also require the NRC to prepare an EIS for any licensing or regulatory action which "is a major Federal action significantly affecting the quality of the human environment."

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1 NUREG-0575, Generic Environmental Impact Statement on Handling and Storage of Spent Light Water Power Reactor Fuel (August 1979) (hereinafter "GEIS").

Where aspects of the proposed action are addressed by a previously prepared EIS, a new EIS must be issued if there remains "major federal action" to occur, and if there is new information showing that the remaining action will affect the quality of the human environment "in a significant manner or to a significant extent not already considered." *Marsh v. Oregon Natural Resources Council*, 490 U.S. 360, 374 (1989). *See also* 10 C.F.R. § 51.92(a), which requires supplementation where the proposed action has not been completed, if: "(1) there are substantial changes in the proposed action that are relevant to environmental concerns; or (2) There are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts." Although § 51.92 technically does not apply here, where the action proposed in the original Shearon Harris EIS has already been taken, the criteria provide applicable guidance for these circumstances.

B. Substantial Changes in Physical Characteristics and Mode of Operation at Harris

If granted, the proposed license amendment would result in substantial changes to the physical characteristics and mode of operation of the Harris nuclear power plant, in two major respects. First, the number of spent fuel assemblies permitted to be stored at the Harris nuclear power plant would be more than doubled, with a corresponding increase in the inventory of radioactive material. In the event of an accident, this change could significantly increase the magnitude of a radioactive release to the environment. *See* Section F, below.

Second, in its license amendment application, CP&L proposes for the first time at Harris to rely on administrative measures rather than physical measures to prevent

criticality in fuel pools C and D. In particular, CP&L proposes to rely on control of burnup levels in the spent fuel assemblies, rather than relying exclusively on separation of fuel assemblies and solid neutron absorbers, as it does under the current operation. Orange County contends that CP&L's reliance on administrative measures for criticality prevention violates the requirements of General Design Criterion ("GDC") 62.[2] Even if the proposed administrative measures are found to be permitted by GDC 62, they constitute a significant departure from the measures used by CP&L prior to the license amendment, and they are also distinct from the physical criticality prevention measures that were previously evaluated in the NRC's Generic EIS for spent fuel storage and handling. *See* Section F, below.

C. Increment of Accident Risk Posed by Proposed License Amendment

In order to evaluate the need for a new or supplemental EIS in this proceeding, it is necessary to determine the extent to which the proposed amendment would create an additional or incremental risk of accidents. This requires a comparison of the risk posed by the existing operation with the risk posed by the proposed changes to the existing operation, *i.e.*, the activation of fuel storage pools C and D.[3] It is also necessary to evaluate previous environmental analyses of the existing operation, and determine whether they are adequate to address the incremental risk posed by the proposed license amendment.

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2 *See* Orange County's Detailed Summary of Facts, Data, and Arguments and Sworn Submission . . . With Respect to Criticality Prevention Issues (Contention TC-2), filed January 4, 2000, which is adopted and incorporated by reference herein.

3 Orange County defines "risk" as the potential for an accident, encompassing both the probability and the consequences of an accident. The County does not assume, as is sometimes done, that risk is the simple product of probability times consequences. The

The accident risk posed by the current operation of Harris can be characterized for the purpose of this analysis as the "baseline" accident risk. The baseline accident risk has two major components: (1) the risk arising from operation of the Harris reactor, and (2) the risk arising from operation of fuel pools A and B.

D. Environmental Evaluations of Existing Operations

The component of the baseline accident risk that arises from operation of the Harris reactor has been evaluated by the NRC Staff and by CP&L. The NRC's evaluation appears in the 1983 EIS prepared in support of the issuance of the operating license for Units 1 and 2.[4] The EIS examined reactor accidents only, and did not evaluate spent fuel pool accidents.

CP&L's evaluation of reactor accidents appears in CP&L's Individual Plant Examination (IPE) submittal of August 1993, and its Individual Plant Examination for External Events submittal of June 1995. Like the EIS, CP&L's IPE's did not evaluate spent fuel pool accidents.

A generic evaluation of spent fuel pool accidents appears in NUREG-0575, the NRC's GEIS for handling and storage of spent fuel. In Sections 4.2.2 and 4.2.3, the GEIS addresses potential accidents, and concludes that: "The underwater storage of aged spent fuels is an operation involving an extremely low risk of a catastrophic release of radioactivity." *Id.* at 4-13. As explained below in Section F, the findings of the GEIS regarding the risk of spent fuel pool accidents are no longer applicable, because new

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relationship between probability and consequences tends to be more complex than that.
4 NUREG-0972, Final Environmental Statement Related to the Operation of Shearon Harris Nuclear Power Plant Units 1 and 2, Docket Nos. STN 50-400 and 50-401, Carolina Power and Light Company (October 1983).

information, generated following the publication of the GEIS, shows the risks of a severe spent fuel accident during high-density pool storage of spent fuel are significant.

E. Environmental Evaluations of Proposed License Amendment

CP&L has not evaluated the increment of accident risk that would arise from operation of fuel pools C and D at Harris. The NRC Staff purports to have addressed the increment of accident risk in its EA, which concludes that:

> The proposed action will not significantly increase the probability or consequences of accidents, no changes are being made in the types of any effluents that may be released offsite, and there is no significant increase in occupational or public radiation exposure.

Id. at 6.

F. Inadequacy of EA to Evaluate Accident Risk Posed by License Amendment

The EA is incorrect in its evaluation of the increment of accident risk that would arise from operation of pools C and D at Harris, in three respects. First, new information has become available since the publication of the GEIS, showing that the accident risk for high-density pool storage of spent fuel is significant and was not properly evaluated in the GEIS, the 1983 EIS for the Harris operating license, or the EA. Second, the increment of accident risk arising from operation of pools C and D would be significant, by itself and in comparison to the baseline accident risk.[5] This increment of risk arises from the

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5 The new information also demonstrates that the component of the baseline accident risk at Harris arising from the operation of pools A and B has not been evaluated properly and is greater than represented in the GEIS or the 1983 EIS for Harris. As discussed in contention EC-2 below, the inadequacy of previous environmental analyses has implications regarding the cumulative impacts of the proposed license amendment. The focus of the instant contention, however, is the increment of risk posed by operation of pools C and D. The significance of that increment can be determined solely from the

proposed changes in the physical characteristics and mode of operation of the Harris plant, specifically the greatly increased inventory of spent fuel permitted at the Harris site and the significant weakening of criticality prevention measures. Third, the NRC Staff has not taken into account new information regarding the significant risk posed by sabotage.

1. New Information Shows Higher Accident Risk Than Previously Evaluated

New information, developed after the publication of the GEIS, shows that total or partial loss of water from a fuel pool containing high-density racks can initiate an exothermic reaction of fuel cladding, either an air-zirconium reaction or a steam-zirconium reaction. Once initiated, this reaction could spread to nearby, previously uninvolved, fuel assemblies. A significant fraction of the pool's inventory of radioactive isotopes, notably cesium-137, could be released to the atmosphere and would then travel downwind as a plume, causing extensive land contamination. The new information also shows that total or partial loss of water from a fuel pool is not a remote or speculative event. For example, a degraded-core accident at the Harris reactor, with containment failure or bypass, would almost certainly lead to interruption of cooling of the Harris fuel pools, followed by loss of water from the pools through evaporation. Restoration of

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proposed configuration of pools C and D, and the relationship of pools C and D to the Harris reactor. If an adequate evaluation of the risk posed by pools A and B became available, this evaluation would shed light on the cumulative impacts of the proposed license amendment, but would not affect the significance of the increment of risk that would arise from that amendment.

cooling water or makeup of water lost by evaporation would be precluded because onsite radiation levels would prevent access by personnel.[6]

The new information is summarized in a report by Dr. Gordon Thompson, entitled "Risks and Alternative Options Associated With Spent Fuel Storage at the Shearon Harris Nuclear Power Plant" (February 1999). A copy is attached as Exhibit 2. Dr. Thompson's report summarizes the state of knowledge about fuel pool accidents involving water loss and exothermic reaction of cladding, both generically and in the context of the Harris plant. The report shows that an accident of this type at the Harris plant could contaminate land with cesium-137 to the extent that relocation of populations could be required over an area as large as North Carolina.

The NRC Staff's EA does not reflect the present state of knowledge about potential accidents in high-density fuel pools. The EA focuses on structural failure of a fuel pool, leading to total loss of water. EA at 5-6. In support of its limited discussion of that limited issue, the EA cites four NRC reports: NUREG/CR-4982, Severe Accidents in Spent Fuel Pools in Support of Generic Issue 82; NUREG/CR-5176, Seismic Failure and Cask Drop Analysis of the Spent Fuel Pools at Two Representative Nuclear Power Plants; NUREG/CR-5281, Value/Impact Analysis of Accident Preventative and Mitigative Options for Spent Fuel Pools; and NUREG-1353, Regulatory Analysis for the Resolution of Generic Issue 82: Beyond Design Basis Accidents in Spent Fuel Pools. EA at 5-6. The present state of knowledge about fuel pool accidents, however, is not

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6 A degraded-core accident at the Harris reactor is assumed for purposes of offsite emergency response planning, is evaluated in the EIS for the Harris operating license, and, and is evaluated in CP&L's IPE submittal for Harris. These reports, however, do not discuss the effects of a reactor accident on the operation of the fuel pools at Harris.

confined to that accident scenario or the four reports cited by the NRC Staff. For example, as Dr. Thompson shows in his report, drawing upon other literature and his own analyses, the loss of water from the Harris fuel pools is an almost certain outcome of a degraded-core accident, with containment failure or bypass, at the Harris reactor. *See* Thompson Report, Appendix C. The EA does not address this matter. In addition, Dr. Thompson's report draws upon other literature and his own analyses to show that partial loss of water from a pool can be a more severe accident condition than total loss of water. *See* Thompson Report, Appendix D. The EA does not address this issue either. Thus, the EA incorrectly carries forward elements of the outdated understanding of pool accident risk that is reflected in the GEIS.

Although degraded-core reactor accidents previously have been considered for the Harris plant, it does not appear that consideration has ever been given to the potential for a degraded-core reactor accident to cause a severe spent fuel pool accident by precluding personnel access to the plant in order to restore pool cooling and provide water makeup. Moreover, neither CP&L nor the NRC Staff has ever performed an evaluation of severe spent fuel pool accidents at Harris, including fuel heat-up caused by partial uncovering of the fuel. *See* Thompson Report, Appendix D.

Indeed, the NRC Staff has never performed an adequate evaluation of the potential for severe pool accidents at any plant. Since the early 1980's, the EIS's for the licensing of all U.S. nuclear plants have considered the potential for severe accidents. This consideration has been based on the findings of the Reactor Safety Study (WASH-1400). The Reactor Safety Study's consideration of spent fuel pool accidents, and the

NRC's subsequent re-consideration of such accidents, have been summarized by the NRC as follows:

> "The risk of beyond design basis accidents in spent fuel storage pools was examined in WASH-1400. It was concluded that these risks were orders of magnitude below those involving the reactor core because of the simplicity of the spent fuel storage pool design: (1) the coolant is at atmospheric pressure, (2) the spent fuel is always subcritical and the heat source is low, (3) there is no piping which can drain the pool and (4) there are no anticipated operational transients that could interrupt cooling or cause criticality.
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> The reasons for the re-examination of spent fuel storage pool accidents are twofold. First, spent fuel is being stored instead of reprocessed. This has led to the expansion of onsite fuel storage by means of high density storage racks, which results in a larger inventory of fission products in the pool, a greater heat load on the pool cooling system, and less distance between adjacent fuel assemblies. Second, some laboratory studies have provided evidence of the possibility of fire propagation between assemblies in an air cooled environment. Together, these two reasons provide the basis for an accident scenario which was not previously considered."[7]

Despite this recognition that pool accidents represent a new, credible accident scenario, the NRC Staff has never given pool accidents the level of analysis that has been given to reactor accidents through WASH-1400, NUREG-1150, EIS's, and IPE's. *See* Thompson Report, Appendix B.

A severe pool accident is not a remote and speculative event. Its lower bound of probability is set by the probability of a degraded-core reactor accident with containment failure or bypass, because such an accident would almost certainly lead to a pool accident, as explained above. A degraded-core reactor accident with containment failure or bypass is recognized as a credible event by the NRC for purposes of evaluating environmental impacts in EIS's, as well as requiring emergency planning for the ten and fifty mile

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7 E.D.Throm, NUREG-1353, Regulatory Analysis for the Resolution of Generic Issue 82, "Beyond Design Basis Accidents in Spent Fuel Pools" at ES-1 (April 1989).

Emergency Planning Zones around nuclear plants. In addition, licensees are obligated to perform IPE's to examine the site-specific potential for accidents of this type.

Thus, the possibility exists of a class of severe pool accident scenarios that have not been previously evaluated or that have been evaluated improperly, either generically or for the Harris site. The potential and nature of this class of accidents could be examined by the use of PRA techniques that have been developed to examine degraded-core reactor accidents.

2. Significant Increment of Accident Risk Posed by License Amendment

The increment of accident risk from operating pools C and D would be significant, by itself and in comparison to the baseline accident risk, for at least three reasons.

a. Increased fuel storage capacity

First, pools C and D would have a capacity of 4,715 fuel assemblies as compared with the capacity of 3,669 fuel assemblies in pools A and B. This would result in a significant increase in the quantity of long-lived radioactive isotopes (*e.g.*, cesium-137) that could be stored at the Harris plant. An accident at pools C and D could release to the atmosphere a substantial fraction of the inventory of cesium-137 and other radioactive isotopes in these pools. *See* Thompson Report, Appendices D and E. Such a release would yield consequences that would be significant in their own right, and would also be significant in comparison to the consequences of accidents at pools A and B and/or the Harris reactor.

b. Higher density storage

Second, the center-to-center distance for PWR fuel in pools C and D would be 9.0 inches instead of the 10.5 inches in pools A and B. Other factors being equal, this reduced distance would increase the propensity of pools C and D, as compared with pools A and B, to experience an exothermic reaction of fuel cladding in the event of partial or total loss of water. Given a loss of water, the conditional probability of an exothermic reaction in pools C and D would be comparable to or greater than the conditional probability of a similar reaction in pools A and B, and would be substantial over a range of pool loading patterns.[8] Moreover, loss of water from the Harris pools would be an almost certain outcome of a degraded-core accident at the Harris reactor with containment failure or bypass, and such an accident dominates the accident consequences profile of the Harris reactor. *See* Thompson Report, Appendix B. It follows that if pools C and D are activated, the probability of a substantial release of radioactive material from these pools would be comparable to the probability of a substantial release from the Harris reactor.[9]

c. Weakening of Criticality Prevention Measures

Third, CP&L proposes to suppress criticality of PWR fuel in pools C and D by employing administrative controls on the burnup of PWR fuel that would be admitted to these pools. For criticality prevention in pools A and B, CP&L currently relies on physical measures, namely separation of fuel assemblies and the use of solid neutron absorbers. CP&L's proposed reliance on administrative controls for criticality prevention

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8 The "conditional" probability of an accident is the probability of the accident if the occurrence of an event that could cause the accident (in this case, a loss of water) is assumed.

constitutes a major and substantial change in CP&L's operation, while also significantly increasing the probability that a criticality accident would occur at the Harris plant.[10]

Moreover, the environmental impacts of the administrative criticality prevention measures proposed by CP&L have not been addressed in the NRC's GEIS for spent fuel storage and handling, which is cited by the Staff at pages 6-7 of the EA. The criticality prevention measures evaluated and approved in the GEIS as having low environmental impacts are radically different from the criticality control measures proposed by CP&L for its operating license amendment. Only two methods of preventing criticality are evaluated in the GEIS: spacing and neutron absorbing materials incorporated into storage racks. *Id.* at 3-5. The GEIS contemplates that spacing of PWR spent fuel assemblies could be safely reduced to about 12 to 14 inches in the absence of solid neutron-absorbing material in the racks, and 11 to 12 inches with the use of such neutron-absorbing materials. *Id.* The GEIS also explicitly states that: "At the present time, licensing credit for the use of soluble neutron absorbers in the storage pool water is not acceptable to the Nuclear Regulatory Commission and to date no known applications have included credit for this method." *Id.* at 3-6. No discussion of credit for burnup is mentioned.

3. Failure to Consider New Information Regarding Sabotage Risks

The large inventory and mode of management of spent fuel at the Harris plant also significantly increase the opportunities for sabotage during transportation, handling, and

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9 The probability of a substantial release from pools C and D would also be comparable to the probability of a substantial release from pools A and B.

10 *See* Orange County's Detailed Summary of Facts, Data, and Arguments and Sworn Submission . . . With Respect to Criticality Prevention Issues (Contention TC-2), filed January 4, 2000. The Summary and its Appendix C (Assessing the Probability and Consequences of Criticality Events in Fuel Pools) are adopted and incorporated by

storage of the spent fuel. While the NRC has previously declared that it is unable to make a meaningful assessment of the risks of sabotage, this declaration was made many years ago. *See Limerick Ecology Action v. NRC,* 869 F.2d 719, 741-42 (3rd Cir. 1989). Events of recent years have demonstrated that sabotage is a reasonably foreseeable and significant threat whose risks must be addressed in an EIS, whether or not those risks can be quantified. These events include the 1983 bombing of the Marine barracks in Beirut; the 1993 bombing of the World Trade Center; the February 1993 intrusion into the Three Mile Island site, in which the intruder crashed his station wagon through the security gate and rammed it under a partly opened door in the turbine building; the 1995 bombing of the Federal Courthouse in Oklahoma City; the plot to bomb the United Nations Building, FBI offices in New York City, the Lincoln Tunnel, the Holland Tunnel, and the George Washington Bridge; the 1995 release of SARIN nerve gas in the Tokyo subway; and the 1998 bombing of the U.S. embassies in Tanzania and Kenya. *See also* Thompson Report at B-4 (mock raids on U.S. nuclear plants have succeeded in at least 14 of 57 instances since 1991).

The fact that the risk of sabotage may not be easily quantifiable is not an excuse for failing to address it in an EIS. As provided in the Council on Environmental Quality's regulations implementing NEPA, 40 C.F.R. § 1502.22, the agency must make an attempt to evaluate reasonably foreseeable significant adverse effects, if the costs of obtaining the information are not exorbitant. Even if the costs of obtaining the information are exorbitant, the agency must acknowledge that the information exists but is unavailable, make a statement of the relevance of the information to the evaluation of impacts in the

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reference herein.

EIS, summarize existing relevant and credible scientific evidence, and provide the agency's evaluation of the impacts based on generally accepted theoretical approaches or research methods. *See also* 10 C.F.R. § 51.71 ("To the extent that there are important qualitative considerations or factors that cannot be quantified, these considerations or factors will be discussed in qualitative terms.").

In considering the environmental impacts of sabotage, it is particularly important to consider SAMDAs which could mitigate the impacts of sabotage. Using dry storage would substantially reduce the vulnerability of the Harris/Brunswick/Robinson spent fuel to acts of sabotage or terrorism. As discussed at page 12 of the Thompson Report, sabotage/terrorism events at a dry storage installation could release only a small fraction of the radioactive material that could be released from the Harris spent fuel pools. It is much easier to drain a spent fuel pool and cause an accident than it is to penetrate and release the radioactive contents of dry casks holding the same amount of spent fuel.

Contention EC-2: EIS Should Consider Cumulative Impacts In Light of New Information

The EA is deficient because it fails to acknowledge or evaluate the significant cumulative environmental risk posed by the operation of pools A, B, C, and D.

Basis: When an EIS is prepared, NEPA requires the NRC to "disclose the significant health, socioeconomic and cumulative consequences of the environmental impact of a proposed action." *Baltimore Gas and Electric Co. v. Natural Resources Defense Council*, 462 U.S. 87, 106-7 (1983), *citing* Council on Environmental Quality

("CEQ:) regulations at 40 C.F.R. §§ 1508.7 and 1508.8. The CEQ defines cumulative impacts as:

> the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

In considering the significance of the environmental impacts of operating fuel pools C and D, the NRC is required by law to evaluate the cumulative impacts of pools C and D in conjunction with the impacts of the current operation, including the environmental risks of operating pools A and B. The risks of high density spent fuel storage purportedly are addressed in the 1979 GEIS for spent fuel storage and handling, which claims that spent fuel pool storage has very low environmental impacts. New information, which has been developed in the time period since publication of the GEIS, shows that the GEIS constitutes an inadequate basis for drawing any conclusions about the environmental impacts of operating fuel pools A and B. *See* Contention EC-1, Section E, which is adopted and incorporated herein by reference. In fact, this new information demonstrates that there is a significant risk that a degraded-core reactor accident will lead to a spent fuel pool accident. The risks of such an accident for pools A and B are comparable to the risks of such an accident for pools C and D.

The NRC Staff should be required to consider the cumulative impacts of adding pools C and D to the operation of pools A and B. The analysis should consider the environmental risks of operating all four spent fuel pools, in light of new information which shows that the risk of a spent fuel pool accident is significant.

As stated in Contention EC-1, the significance of the increment of accident risk at Harris that would arise from operating pools C and D can be determined solely from the proposed configuration and mode of operation of pools C and D and the relationship of pools C and D to the Harris reactor. However, a more complete understanding of the cumulative accident risk associated with fuel storage at Harris would flow from an integrated risk evaluation that considered pools A, B, C and D. Such an integrated evaluation should show how the pool loading pattern, over all four fuel pools, would influence accident risk.[11] This evaluation should also address the potential for an accident at one pool to influence the development of an accident at another pool.

Contention EC-3: Scope of EIS Should Include Brunswick and Robinson Storage

The EIS for the proposed license amendment should include within its scope the storage of spent fuel from the Brunswick and Robinson nuclear power plants.

Basis: As recognized in *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), LBP-88-19, 28 NRC 145 (1988), there is no independent utility to the racking of a spent fuel pool: the only reason for the application is to permit the expansion of spent fuel storage at the plant. Here, the purpose of the proposed

11 For a given set of accident-initiating events, the fuel loading pattern would influence both the conditional probability and the consequence of a pool accident. The "conditional probability" of an accident is defined above in footnote 8 to Contention EC-1.

expansion is not only to store spent fuel generated by Harris, but also to accommodate fuel from Brunswick and Robinson.

Indeed, CP&L has a global plan for storage of spent fuel from its three North Carolina reactors. A dry storage facility with a capacity of 56 fuel assemblies is in operation at the Robinson plant. CP&L has also pursued the option of dry storage at Brunswick. In 1989, CP&L applied for an ISFSI license for Brunswick. License Application Under 10 C.F.R. Part 72. A review of the correspondence indexed by the NRC Public Document Room does not show that this application was ever withdrawn; and therefore it appears that the application is still pending. The Department of Energy's Energy Information Administration also reports that "The ISFSI at the Brunswick plant will be used only as a backup if shipping of spent nuclear fuel to the Harris plant is prohibited."[12] Thus, the dry cask storage option exists and has been partially developed, and therefore represents a viable alternative to high-density storage in pools C and D that should be considered.

The large quantity of fuel that CP&L seeks to ship from Robinson and Brunswick to the Harris plant could not be stored at Harris *but for* the issuance of the proposed license amendment. This license amendment focuses on only one storage methodology, ignoring other alternatives that are safer and also cost-effective. The NRC Staff should be required to thoroughly examine the alternative of dry storage in an EIS.

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12 EIA Report, SR/CNEAF/96-01, "Spent Nuclear Fuel Discharges from U.S. Reactors, 1994" at 46-47 (February 1996). A copy of the relevant pages is attached as Exhibit 5.

Contention EC-4: Discretionary EIS Warranted

Even if the Licensing Board determines that an EIS is not required under NEPA and 10 C.F.R. § 51.20(a), the Board should nevertheless require an EIS as an exercise of its discretion, as permitted by 10 C.F.R. §§ 51.20(b)(14) and 51.22(b).

Basis: NRC regulations in 10 C.F.R. §§ 51.20(b)(14) and 51.22(b) provide for the preparation of an EIS where, upon its own initiative or request from any party, the Commission finds that "special circumstances" exist. Special circumstances "include the circumstances where the proposed action involves unresolved conflicts concerning alternative uses of available resources within the meaning of section 102(2)(E) of NEPA."

Orange County submits that this case presents such "special circumstances," generally arising from the fact that the proposed expansion of spent fuel pool storage capacity at the Harris plant is part of a larger plan by CP&L for the management of spent fuel generated by three different reactors: Harris, Robinson, and Brunswick. Even if the Licensing Board finds that no EIS is required here, the NRC should nevertheless prepare an EIS in its discretion, in order to evaluate unresolved conflicts concerning the use of available resources for management of spent fuel from CP&L's three reactors.

As recognized in *Vermont Yankee Nuclear Power Corporation* (Vermont Yankee Nuclear Power Station), LBP-88-19, 28 NRC 145 (1988), there is no independent utility to the racking of a spent fuel pool: the only reason for the application is to permit the expansion of spent fuel storage at the plant. Here, the purpose of the proposed expansion is not only to store spent fuel generated by Harris, but also to accommodate fuel from Brunswick and Robinson. The record shows no evaluation by the NRC of the need for

additional storage capacity at any of the three plants, or whether CP&L's proposal constitutes the wisest use of available resources to meet the need. As discussed above in Contention EC-3, it is clear that there is space at the Brunswick plant for dry storage, and that CP&L contemplates dry cask storage there if its proposal for wet storage at Harris fails. Therefore, it is a viable alternative to high-density pool storage at Harris that should be fully considered.

If the proposed license amendment is approved, Shearon Harris will become the largest spent fuel storage facility east of the Mississippi River. As discussed above in Contention EC-1, the inventory of cesium-137 in the Harris spent fuel pools will be greatly increased, thus greatly increasing the consequences of reasonably foreseeable severe accidents. The decisions of whether to use wet or dry storage at Harris, and whether to ship fuel or leave it onsite at Brunswick and Robinson, should not be based on whether shipments to Harris are prohibited, but on which storage alternative is most cost-beneficial, taking into account both environmental and economic considerations. Orange County submits dry storage is a far wiser use of resources from an environmental viewpoint, because it does not entail the risks of a loss of water from the spent fuel pools. Moreover, CP&L's proposal to consolidate spent fuel from Harris, Brunswick, and Robinson into high-density racked pools at one site significantly increases the risk posed by wet storage.

Orange County strongly disputes CP&L's choices regarding the allocation of resources for continued spent fuel storage for its three North Carolina reactors. In light of this conflict regarding the use of available resources, Orange County requests the

preparation of an EIS for storage of spent fuel from the Harris, Brunswick, and Robinson nuclear plants.

Another compelling reason to prepare an EIS for CP&L's spent fuel management proposal is to address the apparent conflict between the CP&L proposal and NRC's Waste Confidence decision. NRC regulations at 10 C.F.R. § 51.23 encode the Commission's "Waste Confidence" determination that, *inter alia*,:

> There is reasonable assurance that at last one mined geologic repository will be available within the first quarter of the twenty-first century, and sufficient repository capacity will be available within 30 years beyond the licensed life for operation of any reactor to dispose of the commercial high-level waste and spent fuel originating in such reactor and generated up to that time.

In contradiction of this finding, the CP&L license amendment application gives, as the rationale for the requested spent fuel pool storage capacity expansion, the fact that "DOE spent fuel storage facilities are not available *and are not expected to be available for the foreseeable future.*" License Application, Enclosure 1 at 1 (emphasis added). Having made a determination that a repository will be available during the next quarter-century, the NRC should evaluate the apparent conflict with CP&L's determination that the resource will be *unavailable.* It should be noted in this regard that the Commission has been quite strict in forbidding state and local governments and intervenor groups from challenging its determination that a repository will be available in the next quarter century. *See, e.g., Private Fuel Storage, L.L.C.* , *supra,* LBP-98-7, 47 NRC at 241; *Vermont Yankee, supra,* LBP-87-17, 25 NRC at 853-54. The Commission must be equally strict in enforcing this decision against licensees. The Commission should not leave unexamined a licensee decision to make major changes to its spent fuel storage

program, where that decision is based on a lack of confidence in the Waste Confidence rulemaking.

III. SATISFACTION OF LATE-FILING STANDARDS

As discussed below, Orange County satisfies the standard for late-filed contentions, which is set forth in 10 C.F.R. § 2.714(a)(1).

Good Cause: Orange County has good cause for filing its environmental contentions at the present time. The County originally filed a set of environmental contentions along with its technical contentions, on April 5, 1999. At that time, the Staff had not prepared any environmental studies, or even discussed whether it would do so. At the prehearing conference in May of 1999, the Staff announced that it would prepare an EA. Orange County, CP&L, and the NRC Staff agreed that the Staff's decision to prepare an EA superseded Orange County's environmental contentions. *See* LBP-99-25, Memorandum and Order (Ruling on Standing and Contentions), 50 NRC 25, 39 (1999). The Board agreed the parties' determination, and dismissed the contentions without prejudice to their being raised "at some later juncture, as appropriate." *Id.*

The Staff issued an EA for the proposed license amendment on December 15, 1999. The EA was faxed to counsel for Orange County on December 16, 1999.

Orange County submits that the issuance of the EA establishes the appropriate juncture for filing the County's environmental contentions. The EA contains the Staff's "Finding of No Significant Impact," which determines that no EIS is warranted. Because the County seeks the preparation of a complete EIS for the Harris license amendment, this constitutes the appropriate time to file environmental contentions.

Orange County is filing these contentions within approximately 45 days after receiving the EA. [13] This is a reasonable period of time, especially given the unusual circumstances of this case.[14] This case is being conducted under "Subpart K" of the Commission's rules of practice, which establish special procedures for expedited consideration of spent fuel pool expansion cases. As permitted by the regulations, CP&L had invoked the procedure for oral argument, which involves a three-month discovery period, followed by a relatively short time frame for preparing written summaries of "*all* the facts, data, and arguments which are known to the party at such time and on which the party proposes to rely at the oral argument." 10 C.F.R. § 2.1113(a) (emphasis added). At the time of receiving the EA, Orange County's counsel was engaged more than full-time in preparing a written summaries of evidence and legal arguments regarding the two previously admitted technical contentions, TC-2 (Inadequate Criticality Prevention) and TC-3 (Inadequate Quality Assurance). In accordance with the Licensing Board's schedule, counsel for Orange County filed these written summaries on January 4, 2000. These pleadings amounted to almost 100 pages of detailed factual and legal arguments. In addition, counsel for Orange County submitted numerous exhibits in support of its arguments.

Following submission of the legal summaries, counsel's available time was almost completely taken up with the demands of preparing for the oral argument that was

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13 The 45th day was January 30, a Sunday. This pleading is being filed on the first business day that follows.

14 Orange County notes that in *Private Fuel Storage, L.L.C.* (Private Fuels Storage Facility), LBP-99-3, 49 NRC 40 (1999), *aff'ed on other grounds*, CLI-99-10, 49 NRC 318 (1999), the Licensing Board ruled that under the circumstances of a licensing proceeding for a dry cask storage facility, 45 days was a reasonable time for filing a late

scheduled for January 21, 2000. This effort included responding to evidentiary and legal summaries filed by CP&L and the NRC Staff, as well as voluminous evidentiary exhibits. From January 8 through 17, Orange County's counsel also traveled out of the country for ten days, on a non-vacation trip that had been scheduled far in advance.

The oral argument was held on January 21, 2000, and took an entire day. It was not until the following week that counsel had more than a very brief opportunity to work on the environmental contentions. During that week, counsel missed one day of work because of severe weather conditions that also closed the government for two days. In addition, counsel was unable to communicate with her clients in North Carolina for two days, because the Orange County offices were also closed due to the inclement weather. Counsel also had two other cases that demanded her attention during that week.

Thus, given the demands of presenting written and oral testimony and arguments regarding the County's technical contentions under an expedited schedule, given the fact that Orange County's counsel had to be out of the country for ten days in January, and given the delay caused by inclement weather conditions in January, the County has good cause to file its environmental contentions within approximately 45 days of receiving the EA.

Availability of Other Means to Protect County's Interest: There are no other means for the County to protect its interest in seeking the preparation of an EIS by the NRC. This hearing is the only forum in which the County can seek an EIS and have any recourse to the Commission or the Courts if its request is denied.

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intervention petition .

Extent to Which Orange County's Participation May Reasonably Be Expected to Assist in the Development of a Sound Record: The County's participation in this proceeding may be expected to fully assist in the development of a sound record in this case. The County's contentions are supported by the expert opinion of Dr. Gordon Thompson, an expert in nuclear facility safety and severe accident analysis. His Declaration and CV, which describe his experience in detail, are attached as Exhibit 1.

In support of the contentions, Dr. Thompson has prepared a report which evaluates in detail the severe accident risks posed by expansion of spent fuel storage capacity at Harris, and also examines the inadequacy of current NRC studies to address the issue. If a hearing is granted, Dr. Thompson will provide testimony consistent with the contentions and his report. The County expects that his testimony will have more detail with respect to the specifics of the Harris design, after the County has had an opportunity for discovery.

Extent to Which Orange County's Interests Will be Represented By Another Party: There are no other intervenors in this case, and therefore there are no other parties who can or will represent the County's interests if its contentions are not admitted.

Extent to Which the County's Participation Will Broaden the Issues or Delay the Proceeding: It can be expected that the litigation of environmental contentions will broaden and delay this proceeding significantly beyond the current time-table. This is not the fault of the County, however. CP&L filed its license amendment application on December 23, 1998. The NRC Staff chose to wait almost an entire year before issuing the EA. Had the NRC complied with NEPA in the first place and issued an EA in the

spring of 1999, the County's NEPA compliance issues could have been addressed in the County's original set of contentions. The County has a right to make a timely challenge to the Staff's compliance with NEPA. This right may not be abridged on grounds of broadening or delaying the proceeding.

IV. CONCLUSION

For the foregoing reasons, the County's environmental contentions should be admitted.

Respectfully submitted,

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January 31, 2000

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OFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

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

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

CERTIFICATE OF SERVICE

I certify that on January 31, 2000, copies of the foregoing ORANGE COUNTY'S REQUEST FOR ADMISSION OF LATE-FILED ENVIRONMENTAL CONTENTIONS were served on the following by e-mail and/or first class mail as indicated below:

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