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UNITED STATES  
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

February 18, 1999

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OFFICE OF THE  
ATTORNEY GENERAL  
ADJUTANT GENERAL

MEMORANDUM TO: G. Paul Bollwerk, III, Acting  
Chief Administrative Judge  
Atomic Safety and Licensing Board Panel

FROM: Annette L. Vietti-Cook, Secretary

*Annette L. Vietti-Cook*

SUBJECT: REQUEST FOR HEARING OF THE BOARD OF  
COMMISSIONERS OF ORANGE COUNTY;  
NORTH CAROLINA

Attached is a petition for leave to intervene submitted on February 12, 1999, by the Board of Commissioners of Orange County, North Carolina. The County is seeking intervention in response to the issuance by the NRC staff of a proposed no significant hazard consideration notice with respect to a license amendment request of Carolina Power and Light Company to amend the operating license for the Shearon Harris Plant (Docket No. 50-400). The proposed amendment would support a modification to the plant to increase the spent fuel storage capacity by adding rack modules to spent fuel pools "C" and "D" and placing the pools in service. The notice was published in the Federal Register at 64 Fed. Reg. 2237 (January 13, 1999).

The request for hearing, is being referred to you for appropriate action in accordance with 10 C.F.R. § 2.772(j).

Attachment: As stated

cc: OGC  
CAA  
OPA  
EDO  
NRR  
William D. Johnson  
Vice President and Senior Counsel  
Carolina Power & Light Company  
Diane Curran, Esquire

Template=SECY-031

SECY-02

DOCKETED  
February 12, 1999

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE SECRETARY OF THE COMMISSION

'99 FEB 17 P4:07

OFFICE OF THE  
REGISTRAR  
ADJUDICATING OFFICE

In the Matter of )  
 )  
CAROLINA POWER & LIGHT )  
 (Shearon Harris Nuclear )  
 Power Plant) )

Docket No. 50-400

**ORANGE COUNTY'S  
REQUEST FOR HEARING AND  
PETITION TO INTERVENE**

**I. INTRODUCTION**

Pursuant to the notice of opportunity to request a hearing and petition to intervene, published in the Federal Register on January 13, 1999, 64 Fed. Reg. 2,237, the Board of Commissioners of Orange County, North Carolina, hereby requests a hearing and petitions to intervene in the license amendment proceeding regarding expansion of the spent fuel pool storage capacity at the Shearon Harris nuclear power plant.

**II. FACTUAL BACKGROUND**

Carolina Power & Light ("CP&L") has applied for a license amendment that would allow it to increase the spent fuel storage capacity at the Harris plant, by adding rack modules to spent fuel pools C and D and placing the pools in service. Pools C and D were part of the original Harris design, intended to serve the plant's Units 2 and 3. Units 2 and 3 were canceled, and therefore the pools have remained empty. Now CP&L seeks to use the pools for storing spent fuel from the Harris reactor, as well as the Brunswick and Robinson reactors.

CP&L seeks modifications to the plant's design to allow it to install racks and store up to 8,405 spent fuel assemblies in Pools C and D. In order to meet NRC safety requirements, the

plant's design would have to be modified to provide cooling by the component cooling water ("CCW") system for Unit 1. Because the CCW system has a limited heat load capacity, CP&L would alter its tech specs to impose administrative limits on the heat load in pools C and D, such that they would not exceed 1.0 million BTU/hour.<sup>1</sup> CP&L also seeks permission to use coolant piping installed some years ago for Unit 2, for which quality assurance documentation has been either lost or purged.

### **III. REQUEST FOR HEARING AND PETITION TO INTERVENE**

#### **A. Orange County Has Standing to Intervene on Behalf of Its Citizens.**

Under the Atomic Energy Act and the rules and regulations of the Commission, "any person whose interest may be affected by a proceeding and who desires to participate" in a licensing proceeding may file a request for hearing and petition to intervene. 10 C.F.R. § 2.714(a)(1). A party's right to intervene under the Act is based upon whether (1) the action being challenged could cause injury-in-fact to the petitioner, and (2) such injury is arguably within the zone of interests protected by the Atomic Energy Act or the National Environmental Policy Act ("NEPA"). *Vermont Yankee Nuclear Power Station*, (Vermont Yankee Nuclear Power station), LBP-90-6, 31 NRC 85, 89 (1990), citing *Portland General Electric Co.* (Pebble Springs Nuclear Power Plant, Units 1 and 2), CLI-76-27, 4 NRC 610, 613-14 (1976).

#### **1. Orange County Will Suffer Injury-In-Fact If the NRC Grants the Proposed License Amendment.**

Orange County will suffer injury-in-fact if the proposed license amendment is granted. Orange County is a political subdivision of the State of North Carolina, charged with carrying

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<sup>1</sup>At some later point, CP&L plans to upgrade the CCW to accommodate a larger heat load.

out state policies on a local level and authorized to protect the citizens of the County through its police powers. The entire county lies within the 50-mile Emergency Planning Zone around the Harris facility, and part of the county lies within 15 miles of the plant. The proposed license amendment threatens the County's interest in protecting the health and welfare of its citizens and the integrity of the environment in which they live.

The risk of injury to Orange County posed by the proposed license amendment is "distinct and palpable." *Kelly v. Selin*, 42 F.2d 1501, 1508 (6<sup>th</sup> Cir.), *cert. denied*, 115 S.Ct. 2611 (1995), *quoting Warth v. Seldin*, 422 U.S. 490, 501 (1975). The injury is also directly "traceable" to the proposed license application and can be redressed by a decision denying the application. As discussed in the attached comments on the NRC Staff's proposed determination of no significant hazards, the proposed license amendment would raise the probability of an accident at the plant, create the possibility of a new accident not previously reviewed by the NRC, and reduce the plant's safety margin. If the proposed license amendment is granted, there is an increased risk of an accident in the spent fuel pool or the plant, which could cause a significant radiological release to the environment. *See Declaration of Gordon Thompson* (February 12, 1999), which is attached to Orange County's Comments in Opposition to No Significant Hazards Determination and Conditional Request for a Stay of Effectiveness (February 12, 1999).<sup>2</sup>

**2. Orange County's Interests Fall Within the Zone Protected by the Atomic Energy Act and the National Environmental Policy Act.**

Orange County seeks a hearing for the purpose of addressing the safety and

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<sup>2</sup>Copies of Orange County's comments and Dr. Thompson's Declaration are attached to this pleading, and are adopted and incorporated by reference in support of Orange County's standing to participate in this proceeding.

environmental risks posed by the proposed license amendment. These concerns fall well within the zone of interests protected by the Atomic Energy Act and NEPA.

**B. Statement of Aspects on Which Orange County Seeks to Intervene**

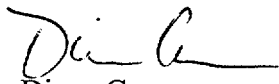
Pursuant to 10 C.F.R. § 2.714(b)(2), a hearing petitioner is required to state the “specific aspect or aspects of the subject matter of the proceeding” as to which it wishes to intervene. The purpose of this requirement is not to judge the admissibility of the issues, but to determine whether the petitioner specifies “proper aspects” for the proceeding. *Consumers Power Co.* (Midland Plant, Units 1 and 2), LBP-78-27, 8 NRC 275, 278 (1978). The requirement is satisfied by identifying general potential areas of concern that are within the scope of the proceeding. *Vermont Yankee, supra*, 31 NRC at 89.

The aspects of the proceeding on which Orange County seeks to intervene are set forth in detail in the attached Declaration of Dr. Gordon Thompson, Sections F and G, and in the attached No Significant Hazards Comments, Section II. To summarize, Orange County seeks to address the safety and environmental risks posed by the proposed cooling and electrical backup system for the spent fuel pools, the use of coolant piping for which quality assurance documentation is no longer available, the use of administrative measures to compensate for the additional heat load placed on the CCW cooling system, the partial leakage of the spent fuel pool, and the importation, transfer and handling of a large additional quantity of spent nuclear power plant fuel to the Shearon Harris site.

### III. CONCLUSION

For the foregoing reasons, Petitioner Orange County is entitled under the Atomic Energy Act and NRC regulations to a hearing, and should be permitted to intervene in this proceeding, pending the admission of at least one contention.

Respectfully submitted,



Diane Curran

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February 12, 1999

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE NRC STAFF

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

**ORANGE COUNTY'S COMMENTS IN OPPOSITION  
TO NO SIGNIFICANT HAZARDS DETERMINATION  
AND CONDITIONAL REQUEST FOR A STAY OF EFFECTIVENESS**

**INTRODUCTION**

Pursuant to 10 C.F.R. § 50.92(a)(2), Orange County, North Carolina, hereby submits the following comments in opposition to the Nuclear Regulatory Commission's ("NRC's" or "Commission's") proposed No Significant Hazards determination regarding a proposed license amendment to permit expansion of spent fuel storage capacity at the Shearon Harris nuclear power plant. The proposed license amendment and finding of no significant hazards considerations were noticed in the Federal Register on January 13, 1999, 64 Fed. Reg. 2,237. These comments are supported by the attached Declaration of Dr. Gordon Thompson (February 12, 1999) (hereinafter "Thompson Declaration").

The proposed No Significant Hazards finding should be withdrawn because the operational changes allowed by the proposed license fail to satisfy any of the three criteria in 10 C.F.R. § 50.92 for dispensing with a prior hearing. The finding should also be withdrawn because the proposed amendment does not satisfy the NRC's standard for a categorical exemption from the procedural requirements of the National Environmental Policy Act ("NEPA"), as set forth in 10 C.F.R. § 51.22(c). Therefore, as required by NEPA and 10 C.F.R.

§ 51.25, the Staff must prepare an Environmental Impact Statement ("EIS") or an Environmental Assessment ("EA") prior to issuing the proposed license amendment. Finally, the issuance of a license amendment prior to the conduct of a hearing in this case exceeds the purpose and authority granted by Congress in passing the *Sholly* amendment to the Atomic Energy Act.

In the event that the NRC Staff rejects these comments and decides to go ahead with a final finding that the license amendment poses no significant hazards considerations, Orange County requests the Staff to stay the effectiveness of the proposed license amendment for ten days, in order to maintain the status quo while the County appeals the Staff's decision.

### **FACTUAL BACKGROUND**

Carolina Power & Light ("CP&L") has applied for a license amendment that would allow it to increase the spent fuel storage capacity at the Harris plant, by adding rack modules to spent fuel pools C and D and placing the pools in service.<sup>1</sup> Pools C and D were part of the original Harris design, intended to serve the plant's Units 2 and 3. Unit 2 and 3 were cancelled, and therefore the pools have remained empty. Now CP&L seeks to use the pools for storing spent fuel from the Harris reactor, as well as the Brunswick and Robinson reactors.

CP&L seeks modifications to the plant's design to allow it to install racks and store up to 8,405 spent fuel assemblies in Pools C and D. In order to meet NRC safety requirements, the plant's design would have to be modified to provide cooling by the component cooling water ("CCW") system for Unit 1. Because the CCW system has a limited heat load capacity, CP&L would alter its tech specs to impose administrative limits on the heat load in pools C and D, such

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<sup>1</sup>For a more detailed description of the proposed license amendment, *see* Thompson Declaration, section E.



that they would not exceed 1.0 million BTU/hour.<sup>2</sup> CP&L also seeks permission to use coolant piping installed some years ago for Unit 2, for which quality assurance documentation has been either lost or purged.

The January 13, 1999, Federal Register notice sets forth the reasons why the NRC Staff believes the proposed amendment poses no significant hazards. It also offers interested members of the public an opportunity to request a hearing on the proposed license amendment. The Federal Register notice provides no indication that the Staff has performed any environmental review under NEPA: the notice contains no reference to an EIS, EA, or Finding of No Significant Impact ("FONSI").

Simultaneously with the filing of these comments, Orange County has filed a Request for Hearing and Petition to Intervene regarding the proposed license amendment. Orange County's Request for Hearing and Petition to Intervene (February 12, 1999). The County seeks a prior hearing on the safety and environmental issues raised by the proposed license amendment, including all of the concerns raised in these No Significant Hazards comments.

### ARGUMENT

#### **I. THE PROPOSED LICENSE AMENDMENT DOES NOT SATISFY THE NRC'S STANDARD FOR A DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS.**

Under Section 189a of the Atomic Energy Act, the issuance of a license or license amendment must await the conclusion of any public hearing that is granted. 42 U.S.C. § 4432(a)(1). Pursuant to the "*Sholly*" amendment to Section 189a, 42 U.S.C. § 4432(a)(2), the NRC may issue a license amendment *prior* to the hearing, if it finds the amendment would pose

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<sup>2</sup>At some later point, CP&L plans to upgrade the CCW to accommodate a larger heat load.

"no significant hazards considerations." The NRC standard for making a No Significant Hazards determination is found in 10 C.F.R. § 50.92, which provides that the NRC may make find that a license amendment poses no significant hazards considerations if it would not:

- (1) Involve a significant increase in the probability or consequences of an accident previously evaluated;
- (2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or
- (3) Involve a significant reduction in a margin of safety.

As discussed in the attached Declaration of Dr. Gordon Thompson, none of these criteria is satisfied by the proposed license amendment.

**A. The Staff Fails to Show That the Operation of the Facility In Accordance With the Proposed License Amendment Would Not Involve a Significant Increase in the Probability or Consequences of an Accident Previously Evaluated.**

In the Federal Register notice, the Staff concludes that operation of the Harris facility in accordance with the proposed license amendment would not involve a significant increase in the probability or consequences of an accident previously evaluated. As discussed in the Thompson Declaration, this claim is false, for several reasons. Activation of pools C and D will roughly double the total number of fuel handling operations to be conducted at Harris. Assuming that the general nature of fuel handling operations continues as before, the probability of a fuel assembly drop or misloaded fuel assembly, integrated over the entire period of the Harris operating license, will increase significantly, by a factor of two. If probability is integrated over the remaining period of the Harris operating license, rather than over its total duration, then activation of pools C and D will more than double the probability of a fuel assembly drop or a misloaded fuel assembly. The probability of a criticality accident will also be more than doubled, and the consequences of a criticality accident may also be significantly increased. Thompson Declaration, par. 42.

Moreover, activation of pools C and D will add to the electrical load and CCW heat load of existing Harris systems. It will also add to the burden of work on the Harris operators. These effects will increase the probability of two categories of accidents. First, they will significantly increase the probability of accidents associated with the Harris reactor, because the reactor's CCW and electrical systems and its operators will be under greater stress. Second, they will significantly increase the probability of accidents at the Harris pools that are attributable to interruptions in cooling and electricity supply and to increased operator stress. Thompson Declaration, par. 43.

The Staff is also incorrect in stating that the consequences of accidents will not increase. To the extent that severe accidents have been previously evaluated, their consequences will be significantly increased by the activation of pools C and D. The fuel storage capacity of these pools will roughly double the storage capacity at Harris, creating the potential for a doubled inventory of radioactivity. Severe accidents could affect some or all of the Harris pools. Thus, the potential doubling of radioactivity in the pools could significantly increase the consequences of such accidents. Thompson Declaration, par. 44.

**B. The Staff Fails to Show That the Operation of the Facility In Accordance With the Proposed License Amendment Would Not Create the Possibility of a New or Different Kind of Accident From Any Accident Previously Evaluated.**

Under its regulations, the NRC may not make a no significant hazard determinations if it finds that a proposed license amendment would create even the *possibility* of a new or different kind of accident not previously evaluated. The Staff may not rationalize the amendment by addressing the merits of how likely the accident is to occur. *San Luis Obispo Mothers for Peace v. U.S. NRC*, 799 F.2d 1268 (9<sup>th</sup> Cir. 1986).

According to the Federal Register notice, the only kind of accident that might conceivably be considered new is the accidental drop of a fuel rack; but that accident was already considered in relation to pool B. 64 Fed. Reg. at 2,239. Thus, the Staff concludes that the proposed license amendment would not create the possibility of a new or different kind of accident from any accident previously evaluated. As discussed in Section J of the Thompson Declaration, this conclusion is incorrect, for several reasons.

First, it does not appear that there has been any site-specific evaluation of the probability or consequences of severe accidents at pools A and B at Harris. The NRC has performed evaluations of accidents involving loss of water from fuel pools, generically and for sites other than Harris. However, these evaluations are seriously deficient because they failed to consider partial uncovering of fuel. *See* Thompson Declaration, Sections G and H. Thus, at pools A and B there exists the possibility of new or different kinds of accident from any accident previously evaluated. The same possibility will exist at pools C and D if these are activated. Severe accidents at some or all of the Harris pools could lead to offsite radiation exposure an order of magnitude larger than the exposure from the Chernobyl accident.

Second, the addition of pools C and D to the Unit 1 cooling system creates the possibility of a new accident that was not previously considered. As Dr. Thompson points out, the IPE and IPEEE studies performed for Harris did not address the provision of backup electrical power and CCW service to pools C and D. As Dr. Thompson points out, the need to provide cooling to pools C and D will place increased stress on the CCW system and backup diesel generators as well as the plant operators during a design basis loss of coolant accident ("LOCA"), thereby creating the possibility of a new accident.

**C. The Staff Fails to Show That the Operation of the Facility In Accordance With the Proposed License Amendment Would Not Involve a Significant Reduction in a Margin of Safety.**

The Staff's conclusion that the operation under the license amendment would not involve a reduction in a safety margin is without merit. The information provided in the license amendment application clearly demonstrates that the plant's safety margin would be significantly reduced by the proposed license amendment. As discussed in the Thompson Declaration, Section I, activation of pools C and D will create an additional heat load on the existing CCW system. CP&L proposes to meet this load in the short term by exploiting the margin in the CCW system. The safety margin will be reduced even further if, during a LOCA, the operators must divert water from the RHR to the spent fuel pools. This will increase stress on the operators and create opportunities for human error. Thus, the reduction in the CCW safety margin caused by the increased heat load is significant. Certainly, the NRC has provided no reason to conclude that it is not significant.<sup>3</sup>

The Staff fails to address the impact on the margin of safety caused by CP&L's proposal to use a cooling system for pools C and D using piping that will not satisfy ASME code requirements. See Thompson Declaration, pars. 23 and 50. As Dr. Thompson observes, this action could potentially cause a significant reduction in margins of safety for pool cooling. CP&L's alternative analysis has not been subjected to any public scrutiny or rigorous review. It deserves, at the least, thorough consideration at a licensing hearing before the license amendment

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<sup>3</sup> Moreover, as pools C and D become filled and the reactor receives a power uprate, the load on the CCW system will increase further. CP&L offers no assurance that the present margin of safety will be restored by upgrading the CCW system to accommodate these burdens.

is issued.

The margin of safety is also affected by CP&L's proposal to provide electrical service to pools C and D from the existing Unit 1 system, which includes the Unit 1 dedicated emergency diesel generators. These diesel generators already serve the safety systems in Unit 1 and spent fuel storage pools A and B. By adding pools C and D to the load carried by the Unit 1 diesel generators, CP&L would add stress on the diesel generators and on the plant operators in the event of a loss of offsite power. These effects could significantly reduce the margin of safety at the Harris reactor and the fuel pools.

## **II. THE PROPOSED NO SIGNIFICANT HAZARDS FINDING FAILS TO MEET THE NRC'S STANDARD FOR AN EXEMPTION FROM THE PROCEDURAL REQUIREMENTS OF NEPA.**

The Federal Register notice makes no mention of NEPA or its requirements to issue an EIS or EA in support a proposed federal action that may significantly affect the quality of the human environment. Presumably, the Staff believes that it is exempt from the requirement to prepare an EIS or EA under 10 C.F.R. § 51.22(c)(9)(i). This provision allows the NRC to forego preparation of an EIS or EA "with respect to installation or use of a facility component located within the restricted area, as defined in part 20" of NRC regulations, if, *inter alia*, the amendment "involves no significant hazards consideration."

As demonstrated in Dr. Thompson's Declaration, the proposed amendment fails to satisfy any of the criteria for a finding of No Significant Hazards considerations. Therefore, the NRC Staff erred in relying on the exemption.

Moreover, an EIS or EA must be prepared because the proposed license amendment entails more than redesigning the Harris plant and installing and activating a spent fuel cooling

system. It also involves the importation of a significant quantity of spent nuclear power plant fuel from other nuclear power plants around the area, and the doubling of the inventory of spent fuel on the site. In fact, if the license amendment is granted, the Shearon Harris plant would become the largest spent fuel storage facility east of the Mississippi River. 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. While the importation of additional spent fuel is not covered by the license amendment application, it is the intended result of the amendment. To narrowly focus the NEPA inquiry on the racking and cooling of the spent fuel pools would constitute unlawful segmentation of the NEPA decisionmaking process. *Id.* However, this is just what the NRC Staff apparently did in determining that no EIS or EA is required in this case.

The NEPA questions that Orange County would raise in a hearing on the application include issues relating to the risk of the proposed cooling system; the impacts of foreseeable severe accidents involving a greatly increased inventory of spent fuel on the site, including the impacts of an accident involving partial drainage of the spent fuel pools; the impacts of transporting and handling additional fuel; the environmental risks raised by using materials lacking proper QA certification; and the need for the increased spent fuel pool capacity.<sup>4</sup>

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<sup>4</sup>With respect to need, CP&L asserts in Enclosure 1 to its license amendment application that it has implemented a spent fuel shipping program "because DOE spent fuel storage facilities are not available and are not expected to be available in the foreseeable future." This assertions contradicts the Commission's Waste Confidence decision, which forbids challenges to the NRC's assumption that a federal repository will be available by the first quarter of the 21<sup>st</sup> century. The conflict between CP&L's assertion and the Waste Confidence decision must be addressed in a public hearing before the amendment can be allowed to go forward.

### III. THE PROPOSED ISSUANCE OF A LICENSE PRIOR TO COMPLETION OF A HEARING EXCEEDS THE AUTHORITY GRANTED BY THE SHOLLY AMENDMENT.

The *Sholly* amendment to the Atomic Energy Act allows the Commission to issue a license amendment before completion of a hearing if it finds the amendment would pose "no significant hazards considerations," and directs the Commission to promulgate implementing regulations. The language of 10 C.F.R. § 50.92 provides that the Commission "may" make a determination that no significant hazards considerations are involved, if it finds that the criteria for such a determination are met. However, the regulations do not *require* a determination in every case where the criteria are satisfied.

Even if the Staff finds that the criteria are satisfied here, it should withdraw the proposed finding in this case, because there are no circumstances warranting the immediate issuance of a license amendment before a hearing can be held. As former Commissioner Asselstine has previously pointed out, Congress intended the *Sholly* amendment to the Atomic Energy Act to have limited purposes:

In requesting the enactment of the *Sholly* amendment, the Commission described in some detail the actions in which it foresaw a need for this authority. The Commission emphasized the need for a large number of unforeseen and unanticipated changes to the detailed technical specifications in the operating licenses for nuclear power plants that arise each year through such activities as refueling of the plant. The Commission argued that the need to hold a hearing on each of these changes, if one is requested, would be burdensome to the Commission and could disrupt the operation of a number of plants. In order to avoid this problem, the Commission asked the Congress to reinstate the authority that the Commission had exercised in similar situations since 1962. *A reracking amendment is substantially different from the situations described by the Commission in requesting the Sholly amendment because reracking involves a substantial physical modification to the plant and because the need for reracking can be anticipated.*

*Pacific Gas and Electric Company* (Diablo Canyon Nuclear Power Plant, Units 1 and 2), CLI-86-12, 24 NRC 1, 17, Separate Views of Commissioner Asselstine (1986) (emphasis added).



Commissioner Asselstine also pointed out language in the legislative history indicating that Congress did not intend the *Sholly* amendment to apply to the reracking of spent fuel pools. *Id.* at 16.

Even assuming for purposes of argument that the No Significant Hazards criteria are met, the circumstances of this case raise a number of potentially significant safety issues that should be addressed in a public hearing before the license amendment is issued, including design modifications that would add a significant demand load to safety cooling and electrical backup systems, use of cooling pipe whose quality assurance documentation is missing, the lack of any previous assessment of the impacts of partial drainage of the spent fuel pools on an extremely large inventory of spent fuel.

Moreover, there is no particular urgency to this license amendment. The proposed changes are to take place over an extended period of time. Even if the changes are perceived by CP&L as urgent, they could have been anticipated years before. Under the circumstances, there is no justification for issuing the license amendment before a hearing can be conducted.

**IV. IF THE STAFF ISSUES A FINAL DETERMINATION OF NO SIGNIFICANT HAZARDS CONSIDERATIONS, IT SHOULD STAY THE EFFECTIVENESS OF THE DETERMINATION FOR TEN DAYS PENDING ORANGE COUNTY'S APPEAL.**

In the event that the Staff rejects these comments and decides to finalize the proposed No Significant Hazards determination, Orange County requests the Staff to stay the effectiveness of the finding for ten days, in order to maintain the status quo while Orange County prepares an appeal of the determination. Orange County further requests that the Staff respond to this request at least ten days before issuing the license amendment, so that Orange County may be apprised of the need to take appropriate alternative measures to preserve the status quo.

## V. CONCLUSION

For the foregoing reasons, the Staff should withdraw the proposed determination of no significant hazards considerations for the proposed amendment to the Shearon Harris operating license. If the Staff decides to deny this request, it should stay the effectiveness of its determination for ten days to preserve the status quo while appeals are taken.

Respectfully submitted,



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February 12, 1999

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE NRC STAFF

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

**DECLARATION OF DR. GORDON THOMPSON**

I, Gordon Thompson, declare as follows:

**A. Introduction**

1. I am the executive director of the Institute for Resource and Security Studies (IRSS), a nonprofit, tax-exempt corporation based in Massachusetts. Our office is located at 27 Ellsworth Avenue, Cambridge, MA 02139. IRSS was founded in 1984 to conduct technical and policy analysis and public education, with the objective of promoting peace and international security, efficient use of natural resources, and protection of the environment.

2. This Declaration pertains to an application by Carolina Power and Light (CP&L) for an amendment to Facility Operating License No. NPF-63, which covers the Shearon Harris nuclear power plant. The staff of the Nuclear Regulatory Commission (NRC) has reviewed CP&L's application and proposes to determine that the amendment request involves no significant hazards consideration. The NRC has sought public comments on the proposed determination.<sup>1</sup> Through this Declaration, I offer comments on the NRC staff's proposed determination. I have prepared these comments pursuant to an agreement by IRSS to provide technical information and other services to Orange County, North Carolina.

**B. My Professional Background**

3. I received an undergraduate education in science and mechanical engineering at the University of New South Wales, in Australia. Subsequently, I pursued graduate studies at Oxford University and received from that institution a Doctorate of Philosophy in mathematics in 1973, for analyses of plasmas undergoing thermonuclear fusion. During my graduate studies I was associated with the fusion research program of the UK Atomic Energy Authority.

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<sup>1</sup> Federal Register: January 13, 1999 (Volume 64, Number 8), pages 2237-2241.

4. During my professional career, I have performed technical and policy analyses on a range of issues related to international security, energy supply, environmental protection, and sustainable use of natural resources. Since 1977, a significant part of my work has consisted of technical analyses of safety and environmental issues related to nuclear facilities. These analyses have been sponsored by a variety of nongovernmental organizations and local, state and national governments, predominantly in North America and western Europe. Drawing upon these analyses, I have provided expert testimony in legal and regulatory proceedings, and have served on committees advising US government agencies. My CV is provided here as Attachment A.

### **C. Scope of My Review**

5. In preparation of this Declaration, I reviewed the NRC's Federal Register notice for the proposed license amendment, the Final Safety Analysis Report for the Shearon Harris Nuclear Power Plant, the Final Environmental Statement related to the operation of Shearon Harris Nuclear Power Plant, Units 1 and 2 (NUREG-0972, October 1983), and CP&L's application for the proposed license amendment. I also reviewed various correspondence and technical documents relating to the proposed license amendment and to risks of spent fuel storage, which are identified below.

6. The information that has been provided by the NRC and CP&L to date does not contain all of the detail that I would need to provide a complete, final statement about the hazards associated with the proposed license amendment. I would expect to review the full body of detailed evidence and present my final evaluation in the context of a hearing. However, even the limited information provided so far is adequate to permit me to identify serious safety concerns which preclude the NRC from making a "no significant hazards" determination. These issues should be addressed through the systematic, public process that a prior licensing hearing can provide.

### **D. The "No Significant Hazards" Standard**

7. The NRC has stated its standard for determining that a license amendment request involves no significant hazards consideration.<sup>2</sup> The standard is met if operation of the facility in accordance with the proposed amendment would not: (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in a margin of safety.

8. In my professional opinion, based on the preliminary evidence provided by the NRC and CP&L, operation of the Shearon Harris plant in accordance with the license amendment proposed by CP&L will violate all three of the conditions set forth in the preceding paragraph. Therefore, the NRC staff should reverse its position and should

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<sup>2</sup> Ibid.

determine that CP&L's license amendment request does not involve no significant hazards consideration.

#### **E. The License Amendment in Context - Spent Fuel Management at Harris**

9. Before discussing my concerns about the safety implications of the proposed license amendment, I provide here some background information about spent fuel management at the Harris plant and CP&L's proposal to increase the spent fuel storage capacity at Harris. Unless specified otherwise, the information presented here is drawn from CP&L's license amendment application or from CP&L's Final Safety Analysis Report (FSAR) for the Harris plant.
10. The Harris plant features one pressurized-water reactor (PWR). The core of this reactor contains 157 fuel assemblies, with a center-center distance of about 8.5 inches. The Harris plant was to have four reactors but only one was built. A fuel handling building was built to serve all four reactors. This building contains four fuel pools (A, B, C, D), a cask loading pool and three fuel transfer canals, all interconnected but separable by gates. Pools A and B contain fuel racks. Pools C and D are flooded but do not contain racks. The cooling and water cleanup systems for pools C and D were never completed.
11. Pool A now contains six PWR racks (360 fuel assembly spaces) and three BWR racks (363 spaces), for a total pool capacity of 723 fuel assemblies. Pool B contains twelve PWR racks (768 spaces) and seventeen BWR racks (2,057 spaces), and is licensed to store one additional BWR rack (121 spaces), for a total pool capacity of 2,946 fuel assemblies. Thus, pools A and B now have a combined capacity of 3,669 fuel assemblies. The center-center distance in pools A and B is 10.5 inches for PWR fuel and 6.25 inches for BWR fuel.
12. Pools A and B store spent fuel from the Harris reactor and from CP&L's Brunswick plant and Robinson plant. The Brunswick plant has two boiling-water reactors (BWRs) while the Robinson plant has one PWR. Shipment of spent fuel from Brunswick and Robinson to Harris is said by CP&L to be necessary to allow core offload capacity in the pools at Brunswick and Robinson.
13. CP&L seeks an amendment to its operating license so that it can activate pools C and D at Harris. By activating these pools, CP&L expects to have sufficient spent fuel storage capacity for all four CP&L reactors (Harris, Robinson and the two Brunswick reactors) through the end of their current operating licenses.
14. CP&L plans to install racks in pool C in three campaigns (approximately in 2000, 2005 and 2014), to create 927 PWR spaces and 2,763 BWR spaces, for a total pool capacity of 3,690 fuel assemblies. Thereafter, CP&L plans to install racks in pool D in two campaigns (approximately in 2016 and at a date to be determined), to create 1,025 PWR spaces. Thus, the ultimate capacity of pools C and D will be 4,715 fuel assemblies. The center-center distance will be 9.0 inches for PWR fuel and 6.25 inches for BWR fuel.

15. The PWR racks in pools C and D have a smaller center-center distance than the racks in pools A and B (9.0 inches instead of 10.5 inches). This arrangement allows more PWR fuel to be placed in a given pool area but also means that PWR fuel in pools C and D is more prone to undergo criticality. In response, CP&L proposes to include in the Technical Specifications for Harris a provision that PWR fuel will not be placed in pools C and D unless it has relatively low enrichment and high burnup.<sup>3</sup>

#### **F. Some Technical Safety Issues Raised By the Proposed License Amendment**

16. CP&L's plan for the activation of pools C and D raises a variety of technical safety issues. This section of my Declaration describes some of those issues. Later parts of the Declaration relate these issues to the NRC's standard for a "no significant hazards" determination.

17. NRC regulations require that spent fuel storage pools must be cooled by safety grade cooling systems. When the Harris plant was designed, the intention was that pools C and D would be cooled by the component cooling water (CCW) system for the second unit of the Harris plant.<sup>4</sup> That unit was never built, and therefore the Unit 2 CCW system does not exist. In the absence of a second CCW system, CP&L plans to cool pools C and D by connecting their cooling systems to the CCW system of the first unit. This system already provides cooling to pools A and B and serves other, important safety functions. Attachment B provides supporting information.<sup>5</sup> It should be noted that CP&L considered, but has not pursued, the option of cooling pools C and D by a new, independent system that could have had dedicated emergency diesel generators. Attachment C provides information in support of this point.<sup>6</sup> Three significant safety issues are raised by the fact that the spent fuel pool cooling arrangement originally designed for pools C and D of the Harris plant was not completed. These issues relate to the heat loading of the existing CCW system, the load on the existing emergency diesel generators, and the loss of some important quality assurance documentation for cooling piping at pools C and D.

18. **Heat load.** According to CP&L's license amendment application, the bounding heat load from the fuel in pools C and D will be 15.6 million BTU/hour.<sup>7</sup> At present, the CCW system cannot absorb this additional heat load. Thus, CP&L proposes to include in

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<sup>3</sup> License amendment application, Enclosure 5.

<sup>4</sup> The Harris pools have their own closed-circuit cooling systems, which can transfer heat to the relevant CCW system through heat exchangers.

<sup>5</sup> Attachment B is a portion of a set of viewgraphs (titled "Harris Spent Fuel Pool 'C' and 'D' Activation") shown by CP&L representatives during a meeting with NRC staff on 16 July 1998.

<sup>6</sup> Attachment C is an NRC staff memo about a meeting between CP&L representatives and NRC staff on 3 March 1998, together with a portion of a set of viewgraphs (titled "HNP Spent Fuel Pool 'C' and 'D' Activation") shown by CP&L during that meeting.

<sup>7</sup> License amendment application, Enclosure 7, page 5-16.

the Technical Specifications for Harris an interim provision that the heat load in pools C and D will not be allowed to exceed 1.0 million BTU/hour.<sup>8</sup> CP&L claims that an additional heat load of 1.0 million BTU/hour can be accommodated by the existing CCW system, and that the fuel to be placed in pools C and D will not create a heat load exceeding 1.0 million BTU/hour through 2001.

19. Apparently, CP&L contemplates a future upgrade of the CCW system, so that the CCW system can accommodate an additional heat load of 15.6 million BTU/hour from pools C and D. This contemplated upgrade is not described in the present license amendment application. Attachment C indicates that CP&L plans to perform the upgrade of the CCW system concurrent with a power uprate for the Harris reactor. Apparently, a 4.5 percent power uprate will be associated with steam generator replacement, and there will be a subsequent further power uprate of 1.5 percent. A chart in Attachment C shows that the projected CCW heat load, including the reactor power uprate and the use of pools C and D, will substantially exceed the capability of the present CCW system.

20. To summarize, CP&L's short-term plan (through 2001) for cooling pools C and D is to exploit the margin in the existing CCW system, so as to accommodate an additional heat load of 1.0 million BTU/hour. CP&L's longer-term plan is to upgrade the CCW system, in a manner not yet specified, so as to accommodate an additional heat load of 15.6 million BTU/hour. The CCW upgrade must also accommodate an increase in the rated power of the Harris reactor. Attachment B indicates CP&L's expectation that the design of the CCW upgrade will commence in mid-1999 and will be completed in early 2001, one year after pool C enters service.

21. In order to avoid exceeding the available margin in the existing CCW system while cooling pools C and D, CP&L may be obliged to require its operators to divert some CCW flow from the residual heat removal (RHR) heat exchangers during the recirculation phase of a design-basis loss-of-coolant accident (LOCA) event at the Harris reactor.<sup>9</sup> This raises a safety issue because, during the recirculation phase of a LOCA, operation of the RHR system is essential to keeping the reactor core and containment in a safe condition. Both CP&L and the NRC have identified the proposed additional heat load on the Unit 1 CCW system as an "unreviewed safety question," i.e., a safety question that has not been previously reviewed by the NRC Staff.<sup>10</sup> It should be noted in this context that exploitation of the margin in the existing CCW system may involve changes in design assumptions that include fouling factors and tube plugging limits. See Attachment C. The discussion of CCW capability which is provided in Enclosure 9 of CP&L's license amendment application is insufficient to determine the nature and significance of the assumptions made by CP&L.

**22. Backup diesel generators.** The cooling systems for pools C and D will draw electrical power from the electrical systems of the existing Harris plant. If electricity

<sup>8</sup> License amendment application, Enclosure 5.

<sup>9</sup> License amendment application, Enclosure 9.

<sup>10</sup> Ibid; Federal Register notice for this application.

supply to the cooling pumps for pools C and D is interrupted, the pools will heat up and eventually boil. CP&L says that pools C and D will begin to boil after a time period "in excess of 13 hours", assuming a bounding decay heat load of 15.6 million BTU/hour.<sup>11</sup> To prevent the onset of pool boiling in the event of a loss of offsite power, the Harris operators may be obliged to provide electrical power to pools C and D from the emergency diesel generators, which also serve pools A and B and the reactor. In the present license amendment application, CP&L does not address the ability of the emergency diesel generators to meet the additional electrical loads associated with pools C and D. CP&L does mention in the Harris FSAR the potential for connecting "portable pumps" to bypass the pool cooling pumps should the latter be inoperable.<sup>12</sup> However, the characteristics, capabilities and availability of such portable pumps are not addressed in the present license amendment application. Meeting the electrical load of pools C and D from the systems of the existing Harris plant is a safety issue because it could increase the probability of design-basis or severe accidents at the Harris reactor or at pools A through C.

23. **Lack of QA documents.** Activation of pools C and D will require the completion of their cooling and water cleanup systems, and the connection of their cooling systems to the existing CCW system. CP&L states that approximately 80% of the necessary piping was completed before the second Harris reactor was cancelled.<sup>13</sup> However, some of the quality assurance documentation for the completed piping is no longer available. Much of the completed piping is embedded in concrete and is therefore difficult or impossible to inspect. To address this situation, CP&L proposes an Alternative Plan to demonstrate that the previously completed piping and other equipment is adequate for its purpose.<sup>14</sup> Nevertheless, the cooling systems for pools C and D will not satisfy ASME code requirements. Attachment D provides supporting information.<sup>15</sup> Failure to satisfy ASME code requirements could increase the probability of design-basis or severe accidents at pools C and D.

#### **G. The Degree of Hazard Posed by Spent Fuel Storage at Harris**

24. The NRC and CP&L have performed and published site-specific analyses which provide information about potential severe accidents at the Harris reactor. However, to my knowledge neither NRC nor CP&L has performed any site-specific analysis which

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<sup>11</sup> License amendment application, Enclosure 7, page 5-8.

<sup>12</sup> Harris FSAR, page 9.1.3-4, Amendment No. 48.

<sup>13</sup> License amendment application, Enclosure 1, page 4.

<sup>14</sup> License amendment application, Enclosure 8.

<sup>15</sup> Attachment D is a portion of a set of viewgraphs (titled "10CFR50.55a Alternative Plan") shown by CP&L representatives during a meeting with NRC staff on 16 July 1998.



examines potential severe accidents affecting any of the Harris fuel pools, including pools C and D.

25. The NRC examined severe reactor accidents in its Final Environmental Statement for the Harris plant.<sup>16</sup> Site-specific consequence modelling was performed by the NRC for hypothetical accidents that released as much as 82 percent of the inventory of cesium isotopes in the reactor core. CP&L has submitted to the NRC an Individual Plant Examination (IPE) for the Harris plant.<sup>17</sup> In addition, CP&L has submitted a similar analysis (an IPEEE) for "external" initiating events.<sup>18</sup> The IPE and IPEEE studies examined the potential for severe reactor accidents that could release substantial amounts of radioactivity.

26. In the absence of similar studies for the Harris pools, one must perform scoping calculations to indicate the degree of hazard posed by spent fuel storage at Harris. The degree of hazard is important when one considers the relevance of a safety issue to a determination of "no significant hazards". If preliminary evidence about a safety issue suggests the potential for accidents with either high probability or large consequences, then the NRC staff should not make a determination of "no significant hazards".

27. The radioisotope cesium-137 is one important indicator of the hazard potential posed by a nuclear facility. This isotope has a half-life of 30 years, emits intense gamma radiation, and is released comparatively readily during severe accidents. The 1986 Chernobyl accident released about 90,000 TBq (27 kg) of cesium-137 to the atmosphere, which accounted for most of the offsite radiation exposure attributable to that accident. Official estimates indicate that this exposure will cause 50-100 thousand extra cancer fatalities worldwide over the next 70 years.<sup>19</sup>

28. The core of the Harris reactor contains 157 PWR fuel assemblies. At shutdown, this core contains about 155,000 TBq (47 kg) of cesium-137.<sup>20</sup> When a spent fuel assembly is discharged from the reactor, it will contain more cesium-137 than the average assembly at shutdown. CP&L plans an eventual, aggregate capacity in the Harris pools of 3,080 PWR assemblies and 5,304 BWR assemblies. Note that the cesium-137 content in each BWR assembly will be about one quarter the cesium-137 content in each PWR assembly,

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<sup>16</sup> NRC, Final Environmental Statement related to the operation of Shearon Harris Nuclear Power Plant, Units 1 and 2, NUREG-0972, October 1983.

<sup>17</sup> CP&L, Shearon Harris Nuclear Power Plant, Individual Plant Examination Submittal, Final Report, 31 August 1993.

<sup>18</sup> CP&L, Shearon Harris Nuclear Power Plant Unit No. 1, Individual Plant Examination for External Events Submittal, June 1995.

<sup>19</sup> Allan S Krass, Consequences of the Chernobyl Accident (Cambridge, Massachusetts: Institute for Resource and Security Studies, December 1991).

<sup>20</sup> NRC, Final Environmental Statement, page 5-50.

if both assemblies have been discharged for an equal period.<sup>21</sup> After discharge, the content of cesium-137 in a fuel assembly will decay exponentially with a half-life of 30 years.

29. As a simplified illustration, assume that all fuel assemblies in the Harris pools have been discharged for an equal period. Further assume that all four pools are full and contain 3,080 PWR assemblies and 5,304 BWR assemblies. The pools will then contain as much cesium-137 as 4,406 PWR assemblies.  $(3,080 + 5,304 \times 1/4 = 4,406)$  Note that 4,406 PWR assemblies represent 28 cores of the Harris reactor.

30. If an accident can be postulated that releases to the environment a significant fraction of the cesium-137 in the Harris pools, then it is clear that the consequences of this accident would be large. The offsite radiation exposure could be an order of magnitude larger than the exposure from the Chernobyl accident. Activation of pools C and D could lead to an accident which creates offsite radiation exposure as much as two times higher than the exposure that would arise from a similar accident involving only pools A and B.

#### **H. Loss of Water from Spent Fuel Pools at Harris**

31. Loss of water from one or more of the Harris pools could initiate a release to the environment of a significant fraction of the cesium-137 in the pools. This potential exists because the cladding of PWR or BWR fuel is a zirconium alloy which can react exothermically with air or steam. Thus, if the water in a fuel pool is removed and the fuel is partially or totally uncovered, one must be concerned about the possibility of a runaway air-zirconium or steam-zirconium reaction. Such a reaction could release cesium-137 and other radioisotopes from affected fuel into the fuel building. That building was not designed to contain radioisotopes released during a vigorous exothermic reaction in the pools, and it can be assumed that most of the volatile radioisotopes entering the building from the affected fuel would be released from the building as an atmospheric plume.

32. Several reports prepared by or for the NRC have examined the conditions under which a runaway zirconium reaction might occur.<sup>22</sup> However, these reports have concentrated almost entirely on a postulated condition of instantaneous, complete loss of water from a pool. Such a condition is unrealistic in any scenario which preserves the configuration of the spent fuel racks. If water is lost by drainage or evaporation and no makeup occurs, then complete loss of water will always be preceded by partial

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<sup>21</sup> The ratio of one quarter derives from the parameters shown in the license amendment application, Enclosure 7, page 5-15.

<sup>22</sup> Relevant reports include: V L Sailor et al, Severe Accidents in Spent Fuel Pools in Support of Generic Safety Issue 82, NUREG/CR-4982, July 1987; E D Throm, Regulatory Analysis for the Resolution of Generic Issue 82, "Beyond Design Basis Accidents in Spent Fuel Pools", NUREG-1353, April 1989; and R J Travis et al, A Safety and Regulatory Assessment of Generic BWR and PWR Permanently Shutdown Nuclear Power Plants, NUREG/CR-6451, August 1997.

uncovering of the fuel. If makeup is considered, the water level could fall, rise or remain static for long periods.

33. Partial uncovering of the fuel will often be a more severe condition than complete loss of water because, during partial uncovering, convective heat loss is suppressed by the residual water at the base of the fuel assemblies. As a result, longer-discharged fuel with a lower heat output may undergo a runaway steam-zirconium reaction during partial uncovering while it would not undergo a runaway air-zirconium reaction if the pool were instantaneously emptied.

34. I am aware of only one instance in which reports produced by or for the NRC address the hazard posed by partial uncovering, namely in a report prepared for the NRC by Sandia Laboratories and published in 1979.<sup>23</sup> Part of this report did address a situation of partial uncovering, but used a crude heat transfer model and neglected to consider the onset of a steam-zirconium reaction. Nevertheless, the report found (page 76) that ".....an incomplete drainage can potentially cause a more severe heatup problem than a complete drainage, if the residual water remains near the baseplates". A portion of the 1979 Sandia report is provided here as Attachment E. An internal NRC memo mentions the consideration of partial uncovering in the 1979 Sandia report.<sup>24</sup> Otherwise, it appears that the NRC has ignored the hazard posed by partial uncovering. This hazard was not reflected in the regulatory analysis whereby the NRC purportedly resolved Generic Issue 82.<sup>25</sup>

35. In a situation of falling water level, a fuel assembly might first undergo a runaway steam-zirconium reaction, then switch to an air-zirconium reaction as water falls below the base of the rack and convective air flow is established. In this manner, a runaway air-zirconium reaction could occur in a fuel assembly that is too long-discharged (and therefore produces too little heat) to suffer such a reaction in the event of instantaneous, complete loss of water. Conversely, a rising water level could precipitate a runaway steam-zirconium reaction in a fuel assembly that had previously been completely uncovered but had not necessarily suffered a runaway air-zirconium reaction while in that condition. The latter point is highly significant in the context of emergency measures to recover control of a pool which has experienced water loss. Inappropriate addition of water to a pool could exacerbate the accident.

36. The NRC's failure to consider partial uncovering of fuel should be borne in mind when one reviews NRC-sponsored reports that purport to address the hazard posed by water loss from a fuel pool. This hazard should be re-analyzed through detailed modelling. The modelling should consider both partial and complete uncovering and the

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<sup>23</sup> Allan S Benjamin et al, Spent Fuel Heatup Following Loss of Water During Storage, NUREG/CR-0649, March 1979.

<sup>24</sup> Internal NRC Memorandum from J T Han to M Silberberg, "Response to a NRR request to review SNL studies regarding spent fuel heatup and burning following loss of water in storage pool", 21 May 1984.

<sup>25</sup> E D Throm, op cit.

transition from one of these states to the other. Also, the modelling should cover: (1) thermal radiation, conduction, and steam or air convection; (2) air-zirconium and steam-zirconium reactions; (3) variations along the fuel rod axis; and (4) radial variations within a representative fuel rod, including effects of the pellet-cladding gap. Experiments will probably be required to support and validate the modelling.

37. Until the problem of water loss is re-analyzed in this manner, there is no basis for determining when fuel has been discharged for a sufficiently long period that it will not suffer a runaway zirconium reaction in the event of water loss. If the problem were to be properly analyzed through validated models, such a determination could be made within some margin of error, but the determination should consider site-specific factors. For example, the detailed design of a rack might be an important site-specific factor.

38. No determination of this kind has been made for pools C and D at Harris, nor does the methodology now exist to make such a determination. In any case, there is nothing in the license amendment application and its proposed modifications to the Harris Technical Specifications which prohibits the placing of freshly discharged fuel in pools C and D. Reports previously prepared for the NRC concede that freshly discharged fuel can experience a runaway air-zirconium reaction in the event of complete water loss.

39. A variety of events, alone or in combination, could lead to partial or complete uncovering of spent fuel in the Harris pools. This class of events should be subjected to the kind of systematic analysis that is performed in an IPE and an IPEEE. Relevant events include: (1) an earthquake, cask drop, aircraft crash, human error, equipment failure or sabotage event that leads to direct leakage from the pools; (2) siphoning of water from the pools through accident or malice; (3) interruption of pool cooling, leading to pool boiling and loss of water by evaporation; and (4) loss of water from active pools into adjacent pools or canals that have been gated off and drained. Interactions with the Harris reactor should be considered. For example, a reactor accident might release radioactivity that precludes personnel access to the plant for purposes of maintaining or restoring pool cooling.

## **I. Increased Probability or Consequences of Accidents Previously Evaluated**

40. The Federal Register notice of this license amendment application claims that the probability of a spent fuel assembly drop or a misloaded fuel assembly is not significantly increased if the license amendment is approved and pools C and D are activated. This claim is false, because activation of pools C and D will roughly double the total number of fuel handling operations to be conducted at Harris. Assuming that the general nature of fuel handling operations continues as before, the probability of a fuel assembly drop or misloaded fuel assembly, integrated over the entire period of the Harris operating license, will increase significantly, by a factor of two. This point has been made by David Lochbaum of the Union of Concerned Scientists, in a 22 January 1999 letter to the NRC Commissioners. A copy of his letter is provided here as Attachment F. If probability is integrated over the remaining period of the Harris operating license, rather than over its total duration, then activation of pools C and D will more than double the probability of a fuel assembly drop or a misloaded fuel assembly.

41. A spent fuel assembly drop or a misloaded fuel assembly are members of a broader class of accidents that could arise during the movement of fuel from other CP&L stations to Harris, and during fuel movement within Harris. This class of accidents will include design-basis accidents and severe accidents. Assuming that the general nature of fuel movement continues as before, the probability of accidents in this class, integrated over the entire period of the Harris operating license, will double if pools C and D are activated. If integrated over the remaining period of the operating license, the probability will more than double.

42. The PWR racks in pools C and D will be safe against criticality for a comparatively narrow range of fuel enrichment and burnup. Thus, assuming that the general nature of fuel movement continues as before, the probability of a criticality accident will be significantly increased if pools C and D are activated. This probability will increase on a per-movement basis, so it will more than double when integrated over the entire period of the Harris operating license. The consequences of a criticality accident may also be significantly increased.

43. Activation of pools C and D will add to the electrical load and CCW heat load of existing Harris systems. It will also add to the burden of work on the Harris operators. These effects will increase the probability of two categories of design-basis or severe accidents. First, they will significantly increase the probability of accidents associated with the Harris reactor, because the reactor's CCW and electrical systems and its operators will be under greater stress. Second, they will significantly increase the probability of accidents at the Harris pools that are attributable to interruptions in cooling and electricity supply and to increased operator stress. Also, the inability of cooling piping at pools C and D to meet ASME code requirements could significantly increase the probability of design-basis or severe accidents at these pools.

44. As mentioned in paragraph 24 above, to my knowledge there has been no site-specific analysis of severe accidents affecting any of the Harris pools. To the extent that such accidents have been previously evaluated, their consequences will be significantly increased by the activation of pools C and D. The fuel storage capacity of these pools will roughly double the storage capacity at Harris, creating the potential for a doubled inventory of radioactivity. Severe accidents could affect some or all of the Harris pools. As I have discussed in paragraph 30 above, the potential doubling of radioactivity in the pools could significantly increase the consequences of severe accidents.

#### **J. Possibility of New or Different Kinds of Accident from any Accident Previously Evaluated**

45. To my knowledge, there has been no site-specific evaluation of the probability or consequences of severe accidents at pools A and B at Harris. A variety of severe accidents are possible and should be subjected to the kind of systematic analysis that is performed in an IPE and IPEEE. The NRC has performed evaluations of accidents involving loss of water from fuel pools, generically and for sites other than Harris.

However, these evaluations are seriously deficient because they failed to consider partial uncovering of fuel. To summarize, at pools A and B there exists the possibility of new or different kinds of accident from any accident previously evaluated. The same possibility will exist at pools C and D if these are activated.

46. Provision of electrical power, including power from emergency diesel generators, and CCW service from the existing Harris plant to pools C and D could introduce the potential for design-basis or severe accidents that are new or different from any accident previously considered. The IPE and IPEEE studies performed for Harris did not address the provision of electrical power and CCW service to pools C and D. As an example of the potential for new or different accidents, the need to provide cooling to pools C and D will place increased stress on the CCW system, the emergency diesel generators, and the plant operators during a design-basis LOCA.

47. Severe accidents at some or all of the Harris pools could lead to offsite radiation exposure an order of magnitude larger than the exposure from the Chernobyl accident. Activation of pools C and D could significantly increase both the probability and consequences of such accidents. Thus, CP&L's proposed license amendment poses a "significant hazard" by any reasonable definition of that term.

#### **J. Significant Reductions in Margins of Safety.**

48. Activation of pools C and D will create an additional heat load on the existing CCW system. CP&L proposes to meet this load in the short term by exploiting the margin in the CCW system. In my professional opinion, the reduction in the CCW safety margin caused by the increased heat load is significant. Both the NRC and CP&L have also recognized that increasing the heat load on the CCW system constitutes an unreviewed safety question. The safety margin will be especially reduced if, during a LOCA, the operators must divert water from the RHR to the spent fuel pools. This will increase stress on the operators and create opportunities for human error.

49. As pools C and D become filled and the reactor receives a power uprate, the load on the CCW system will increase further. CP&L offers no assurance that the present margin of safety will be restored by upgrading the CCW system to accommodate these burdens.

50. CP&L proposes to activate pools C and D using cooling systems that will not satisfy ASME code requirements. This action could potentially cause a significant reduction in margins of safety for pool cooling. CP&L's Alternative Plan has not been subjected to any public scrutiny or rigorous review. It deserves, at the least, thorough consideration at a licensing hearing before the license amendment is issued.

51. CP&L proposes to provide electrical service to pools C and D from the existing (Unit 1) electrical system at Harris, having rejected the option of dedicated emergency diesel generators to serve pools C and D. The existing diesel generators already serve the safety systems in Unit 1 and spent fuel storage pools A and B. By adding pools C and D to the load carried by the Unit 1 diesel generators, CP&L would add stress on the diesel generators and on the plant operators. In the event of a loss of offsite power, these effects could significantly reduce the margin of safety at the Harris reactor and the fuel pools.

#### **L. Environmental Review**

52. As discussed above, the original design of the Shearon Harris plant called for cooling of spent fuel pools C and D by the Unit 2 CCW system. The FEIS for the operating license presumably based its conclusions on this design. I have seen no analysis by the NRC Staff, either in the 1983 FEIS or in a subsequent Environmental Impact Statement or Environmental Assessment, of the environmental impacts of altering the Shearon Harris design to provide for cooling of pools C and D by the Unit 1 CCW system.

#### **M. Conclusions**

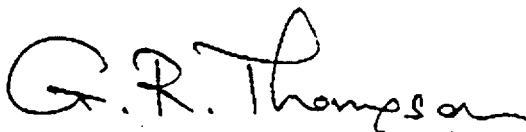
53. From the preliminary evidence presented by the NRC and CP&L, I conclude that operation of the Shearon Harris plant in accordance with the license amendment proposed by CP&L will violate all three of the NRC's conditions for a determination of "no significant hazards." Therefore, the NRC staff should reverse its position and should determine that CP&L's license amendment request does not involve no significant hazards consideration.

54. The proposed license amendment raises serious safety concerns which deserve prior consideration at a licensing hearing.

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I declare, under penalty of perjury, that the foregoing facts provided in my Declaration are true and correct to the best of my knowledge and belief, and that the opinions expressed herein are based on my best professional judgment.

Executed on 12 February 1999.



Gordon Thompson

# ATTACHMENT A

## INSTITUTE FOR RESOURCE AND SECURITY STUDIES

### Curriculum Vitae: GORDON R. THOMPSON

December 1996

#### Professional expertise

Consulting technical and policy analyst in the fields of energy, environment, sustainable development, and international security.

#### Education

- Ph.D. in applied mathematics, Oxford University (Balliol College), 1973.
- B.E. in mechanical engineering, University of New South Wales, Sydney, Australia, 1967.
- B.Sc. in mathematics & physics, University of New South Wales, 1966.

#### Current appointment

- Executive director, Institute for Resource & Security Studies (IRSS), Cambridge, MA.

#### Project sponsors and tasks (selected)

- Environmental School, Clark University, Worcester, MA, 1996: session leader at the Summer Institute, "Local Perspectives on a Global Environment".
- Nuclear Free Local Authorities, UK, 1996: review of the safety of high level radioactive waste storage at the Sellafield complex.
- Greenpeace Germany, Hamburg, 1995-1996: a study on war, terrorism and nuclear power plants.
- HKH Foundation, New York, and Winston Foundation for World Peace, Washington, DC, 1994-1996: studies and workshops on preventive action and its role in US national security planning.
- Carnegie Corporation of New York, Winston Foundation for World Peace, Washington, DC, and others, 1995: collaboration with the Organization for Security and Cooperation in Europe to facilitate improved coordination of activities and exchange of knowledge in the field of conflict management.
- World Bank, 1993-1994: a study on management of data describing the performance of projects funded by the Global Environment Facility (joint project of IRSS and Clark University).
- International Physicians for the Prevention of Nuclear War, 1993-1994: a study on the international control of weapons-usable fissile material.



*Curriculum Vitae for Gordon R. Thompson*  
*December 1996*

- Government of Lower Saxony, Hannover, Germany, 1993: analysis of standards for radioactive waste disposal.
- University of Vienna (using funds supplied by the Austrian government), 1992: review of radioactive waste management at the Dukovany nuclear plant, Czech Republic.
- Sandia National Laboratories, 1992-1993: advice to the US Department of Energy's Office of Foreign Intelligence.
- US Department of Energy and Battelle Pacific Northwest Laboratories, 1991-1992: advice for the Intergovernmental Panel on Climate Change regarding the design of an information system on technologies that can limit greenhouse gas emissions (joint project of IRSS, Clark University and the Center for Strategic and International Studies).
- Winston Foundation for World Peace, Boston, MA, and other funding sources, 1992-1993: development and publication of recommendations for strengthening the International Atomic Energy Agency.
- MacArthur Foundation, Chicago, IL, W. Alton Jones Foundation, Charlottesville, VA, and other funding sources, 1984-1993: policy analysis and public education on a "global approach" to arms control and disarmament.
- Energy Research Foundation, Columbia, SC, and Peace Development Fund, Amherst, MA, 1988-1992: review of the US government's tritium production (for nuclear weapons) and its implications.
- Coalition of Environmental Groups, Toronto, Ontario (using funds supplied by Ontario Hydro under the direction of the Ontario government), 1990-1993: coordination and conduct of analysis and preparation of testimony on accident risk of nuclear power plants.
- Greenpeace International, Amsterdam, Netherlands, 1988-1990: review of probabilistic risk assessment for nuclear power plants.
- Bellerive Foundation, Geneva, Switzerland, 1989-1990: planning for a June 1990 colloquium on disarmament and editing of proceedings.
- Iler Research Institute, Harrow, Ontario, 1989-1990: analysis of regulatory response to boiling-water reactor accident potential.
- Winston Foundation for World Peace, Boston, MA, and other funding sources, 1988-1989: analysis of future options for NATO (joint project of IRSS and the Institute for Peace and International Security).
- Nevada Nuclear Waste Project Office, Carson City, NV (via Clark University, Worcester, MA), 1989-1990: analyses of risk aspects of radioactive waste management and disposal.
- Ontario Nuclear Safety Review (conducted by the Ontario government), Toronto, Ontario, 1987: review of safety aspects of CANDU reactors.
- Washington Department of Ecology, Olympia, WA, 1987: analysis of risk aspects of a proposed radioactive waste repository at Hanford.

*Curriculum Vitae for Gordon R. Thompson*  
*December 1996*

- Natural Resources Defense Council, Washington, DC, 1986-1987: preparation of testimony on hazards of the Savannah River Plant.
- Lakes Environmental Association, Bridgton, ME, 1986: analysis of federal regulations for disposal of radioactive waste.
- Greenpeace Germany, Hamburg, 1986: participation in an international study on the hazards of nuclear power plants.
- Three Mile Island Public Health Fund, Philadelphia, PA, 1983-1989: studies related to the Three Mile Island nuclear plant.
- Attorney General, Commonwealth of Massachusetts, Boston, MA, 1984-1989: analyses of the safety of the Seabrook nuclear plant.
- Union of Concerned Scientists, Cambridge, MA, 1980-1985: studies on energy demand and supply, nuclear arms control, and the safety of nuclear installations.
- Conservation Law Foundation of New England, Boston, MA, 1985: preparation of testimony on cogeneration potential at a Maine papermill.
- Town & Country Planning Association, London, UK, 1982-1984: coordination and conduct of a study on safety and radioactive waste implications of the proposed Sizewell nuclear plant.
- US Environmental Protection Agency, Washington, DC, 1980-1981: assessment of the cleanup of Three Mile Island Unit 2 nuclear plant.
- Center for Energy & Environmental Studies, Princeton University, Princeton, NJ, and Solar Energy Research Institute, Golden, CO, 1979-1980: studies on the potentials of renewable energy sources.
- Government of Lower Saxony, Hannover, FRG, 1978-1979: coordination and conduct of studies on safety aspects of the proposed Gorleben nuclear fuel cycle center.

Other experience (selected)

- Principal investigator, project on "Exploring the Role of 'Sustainable Cities' in Preventing Climate Disruption", involving IRSS and three other organizations, 1990-1991.
- Visiting fellow, Peace Research Centre, Australian National University, 1989.
- Principal investigator, Three Mile Island emergency planning study, involving IRSS and Clark University, Worcester, MA, 1987-1989.
- Co-leadership (with Paul Walker) of a study group on nuclear weapons proliferation, Institute of Politics, Harvard University, 1981.
- Foundation (with others) of an ecological political movement in Oxford, UK, which contested the 1979 Parliamentary election.
- Conduct of cross-examination and presentation of evidence, on behalf of the Political Ecology Research Group, at the 1977 Public Inquiry into proposed expansion of the reprocessing plant at Windscale, UK.

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*December 1996*

- Conduct of research on plasma theory (while a PhD candidate), as an associate staff member, Culham Laboratory, UK Atomic Energy Authority, 1969-1973.
- Service as a design engineer on coal-fired plants, New South Wales Electricity Commission, Sydney, Australia, 1968.

Publications (selected)

- *Safety of the Storage of Liquid High-Level Waste at Sellafield* (with Peter Taylor), Nuclear Free Local Authorities, UK, November 1996.
- *Assembling Evidence on the Effectiveness of Preventive Actions, their Benefits, and their Costs: A Guide for Preparation of Evidence, Version 1.0*, IRSS, Cambridge, MA, August 1996.
- *War, Terrorism and Nuclear Power Plants*, Working Paper No. 165, Peace Research Centre, Australian National University, Canberra, October 1996.
- "The Potential for Cooperation by the OSCE and Non-Governmental Actors on Conflict Management" (with Paula Gutlove), *Helsinki Monitor*, Volume 6 (1995), Number 3.
- "Potential Characteristics of Severe Reactor Accidents at Nuclear Plants", "Monitoring and Modelling Atmospheric Dispersion of Radioactivity Following a Reactor Accident" (with Richard Sclove, Ulrike Fink and Peter Taylor), "Safety Status of Nuclear Reactors and Classification of Emergency Action Levels", and "The Use of Probabilistic Risk Assessment in Emergency Response Planning for Nuclear Power Plant Accidents" (with Robert Goble), in D. Golding, J. X. Kasperson and R. E. Kasperson (eds), *Preparing for Nuclear Power Plant Accidents*, Westview Press, Boulder, CO, 1995.
- *A Data Manager for the Global Environment Facility* (with Robert Goble), Environment Department, The World Bank, June 1994.
- *Preventive Diplomacy and National Security* (with Paula Gutlove), Winston Foundation for World Peace, Washington, DC, May 1994.
- *Opportunities for International Control of Weapons-Usable Fissile Material*, ENWE Paper #1, International Physicians for the Prevention of Nuclear War, Cambridge, MA, January 1994.
- "Article III and IAEA Safeguards", in F. Barnaby and P. Ingram (eds), *Strengthening the Non-Proliferation Regime*, Oxford Research Group, Oxford, UK, December 1993.
- *Risk Implications of Potential New Nuclear Plants in Ontario* (prepared with the help of eight consultants), a report for the Coalition of Environmental Groups, Toronto, submitted to the Ontario Environmental Assessment Board, November 1992 (3 volumes).
- *Strengthening the International Atomic Energy Agency*, Working Paper No. 6, IRSS, Cambridge, MA, September 1992.

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*December 1996*

- *Design of an Information System on Technologies that can Limit Greenhouse Gas Emissions* (with Robert Goble and F. Scott Bush), Center for Strategic and International Studies, Washington, DC, May 1992.
- *Managing Nuclear Accidents: A Model Emergency Response Plan for Power Plants and Communities* (with six other authors), Westview Press, Boulder, CO, 1992.
- "Let's X-out the K" (with Steven C. Sholly), *Bulletin of the Atomic Scientists*, March 1992, pp 14-15.
- "A Worldwide Programme for Controlling Fissile Material", and "A Global Strategy for Nuclear Arms Control", in F. Barnaby (ed), *Plutonium and Security*, Macmillan Press, UK, 1992.
- *No Restart for K Reactor* (with Steven C. Sholly), Working Paper No. 4, IRSS, Cambridge, MA, October 1991.
- *Regulatory Response to the Potential for Reactor Accidents: The Example of Boiling-Water Reactors*, Working Paper No. 3, IRSS, Cambridge, MA, February 1991.
- *Peace by Piece: New Options for International Arms Control and Disarmament*, Working Paper No. 1, IRSS, Cambridge, MA, January 1991.
- *Developing Practical Measures to Prevent Climate Disruption* (with Robert Goble), CENTED Research Report No. 6, Clark University, Worcester, MA, August 1990.
- "Treaty a Useful Relic", *Bulletin of the Atomic Scientists*, July/August 1990, pp 32-33.
- "Practical Steps for the 1990s", in Sadrudin Aga Khan (ed), *Non-Proliferation in a Disarming World*, Proceedings of the Groupe de Bellerive's 6th International Colloquium, Bellerive Foundation, Geneva, Switzerland, 1990.
- *A Global Approach to Controlling Nuclear Weapons*, Occasional Paper published by the Institute for Resource and Security Studies, October 1989.
- *IAEA Safety Targets and Probabilistic Risk Assessment* (with three other authors), Greenpeace International, Amsterdam, August 1989.
- *New Directions for NATO* (with Paul Walker and Pam Solo), published jointly by IRSS and the Institute for Peace and International Security (both of Cambridge, MA), December 1988.
- "Verifying a Halt to the Nuclear Arms Race", in F. Barnaby (ed), *A Handbook of Verification Procedures*, Macmillan Press, UK, 1990.
- "Verification of a Cutoff in the Production of Fissile Material", in F. Barnaby (ed), *A Handbook of Verification Procedures*, Macmillan Press, UK, 1990.

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*December 1996*

- "Severe Accident Potential of CANDU Reactors," Consultant's Report in *The Safety of Ontario's Nuclear Power Reactors*, Ontario Nuclear Safety Review, Toronto, February 1988.
- *Nuclear-Free Zones* (edited with David Pitt), Croom Helm Ltd, Beckenham, UK, 1987.
- *Risk Assessment Review For the Socioeconomic Impact Assessment of the Proposed High-Level Nuclear Waste Repository at Hanford Site, Washington* (edited; written with five other authors), prepared for the Washington Department of Ecology, December 1987.
- *The Nuclear Freeze Revisited* (written with Andrew Haines), Nuclear Freeze and Arms Control Research Project, Bristol, UK, November 1986. Variants of the same paper have appeared as Working Paper No. 18, Peace Research Centre, Australian National University, Canberra, February 1987, and in *ADIU Report*, University of Sussex, Brighton, UK, Jan/Feb 1987, pp 6-9.
- *International Nuclear Reactor Hazard Study* (with fifteen other authors), Greenpeace, Hamburg, Federal Republic of Germany (2 volumes), September 1986.
- "What happened at Reactor Four" (the Chernobyl reactor accident), *Bulletin of the Atomic Scientists*, August/September 1986, pp 26-31.
- *The Source Term Debate: A Report by the Union of Concerned Scientists* (with Steven C. Sholly), Union of Concerned Scientists, Cambridge, MA, January 1986.
- "Checks on the spread" (a review of three books on nuclear proliferation), *Nature*, 14 November 1985, pp 127-128.
- Editing of *Perspectives on Proliferation*, Volume I, August 1985, published by the Proliferation Reform Project, IRSS.
- "A Turning Point for the NPT ?", *ADIU Report*, University of Sussex, Brighton, UK, Nov/Dec 1984, pp 1-4.
- "Energy Economics", in J. Dennis (ed), *The Nuclear Almanac*, Addison-Wesley, Reading, MA, 1984.
- "The Genesis of Nuclear Power", in J. Tirman (ed), *The Militarization of High Technology*, Ballinger, Cambridge, MA, 1984.
- *A Second Chance: New Hampshire's Electricity Future as a Model for the Nation* (with Linzee Weld), Union of Concerned Scientists, Cambridge, MA, 1983.
- *Safety and Waste Management Implications of the Sizewell PWR* (prepared with the help of six consultants), a report to the Town & Country Planning Association, London, UK, 1983.
- *Utility-Scale Electrical Storage in the USA: The Prospects of Pumped Hydro, Compressed Air, and Batteries*, Princeton University report PU/CEES #120, 1981.

*Curriculum Vitae for Gordon R. Thompson*  
*December 1996*

- *The Prospects for Wind and Wave Power in North America*, Princeton University report PU/CEES # 117, 1981.
- *Hydroelectric Power in the USA: Evolving to Meet New Needs*, Princeton University report PU/CEES # 115, 1981.
- Editing and part authorship of "Potential Accidents & Their Effects", Chapter III of *Report of the Gorleben International Review*, published in German by the Government of Lower Saxony, FRG, 1979--Chapter III available in English from the Political Ecology Research Group, Oxford, UK.
- *A Study of the Consequences to the Public of a Severe Accident at a Commercial FBR located at Kalkar, West Germany*, Political Ecology Research Group report RR-1, 1978.

Expert presentations and testimony (selected)

- Center for Russian Environmental Policy, Moscow, 1996: presentation at a forum in parallel with the G-7 Nuclear Safety Summit.
- Lacey Township Zoning Board, New Jersey, 1995: testimony regarding radioactive waste management.
- Ontario Court of Justice, Toronto, Ontario, 1993: testimony regarding Canada's Nuclear Liability Act.
- Oxford Research Group, seminar on "The Plutonium Legacy", Rhodes House, Oxford, UK, 1993: presentation on nuclear safeguards.
- Defense Nuclear Facilities Safety Board, Washington, DC, 1991: testimony regarding the proposed restart of K-reactor, Savannah River Site.
- Conference to consider amending the Partial Test Ban Treaty, United Nations, New York, 1991: presentation on a global approach to arms control and disarmament.
- US Department of Energy, hearing on draft EIS for new production reactor capacity, Columbia, SC, 1991: presentation on tritium need and implications of tritium production options.
- Society for Risk Analysis, 1990 annual meeting, New Orleans, special session on nuclear emergency planning: presentation on real-time techniques for anticipating emergencies.
- Parliamentarians' Global Action, 11th Annual Parliamentary Forum, United Nations, Geneva, 1990: presentation on the potential for multilateral nuclear arms control.
- Advisory Committee on Nuclear Facility Safety, public meeting, Washington, DC, 1989: submission on public access to information and on government accountability.
- Peace Research Centre, Australian National University, seminar on "Australia and the Fourth NPT Review Conference", Canberra, 1989: proposal of a universal nuclear weapons non-proliferation regime.

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*December 1996*

- Carnegie Endowment for International Peace, Conference on "Nuclear Non-Proliferation and the Role of Private Organizations", Washington, DC, 1989: options for reform of the non-proliferation regime.
- US Department of Energy, EIS scoping hearing, Columbia, SC, 1988: appropriate scope of an EIS for new production reactor capacity.
- International Physicians for the Prevention of Nuclear War, 6th and 7th Annual Congresses, Koln, FRG, 1986 and Moscow, USSR, 1987: relationships between nuclear power and the threat of nuclear war.
- County Council, Richland County, SC, 1987: implications of severe reactor accidents at the Savannah River Plant.
- Maine Land Use Regulation Commission, 1985: cogeneration potential at facilities of Great Northern Paper Company.
- Interfaith Hearings on Nuclear Issues, Toronto, Ontario, 1984: options for Canada's nuclear trade and Canada's involvement in nuclear arms control.
- Sizewell Public Inquiry, UK, 1984: safety and radioactive waste implications of the proposed Sizewell nuclear plant.
- New Hampshire Public Utilities Commission, 1983: electricity demand and supply options for New Hampshire.
- Atomic Safety & Licensing Board, US Nuclear Regulatory Commission, 1983: use of filtered venting at the Indian Point nuclear plants.
- US National Advisory Committee on Oceans and Atmosphere, 1982: implications of ocean disposal of radioactive waste.
- Environmental & Energy Study Conference, US Congress, 1982: implications of radioactive waste management.

Miscellaneous

- Married, two children.
- Extensive experience in public speaking before professional and lay audiences, and in interviews with print and broadcast journalists.
- Author of numerous newspaper, newsletter, and magazine articles and book reviews.

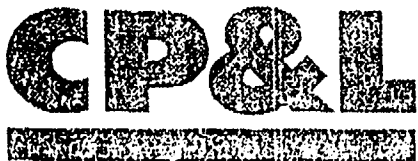
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# Harris Spent Fuel Pool 'C' and 'D' Activation

Project Update  
July 16, 1998



ATTACHMENT B



# Background

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## ● Original HNP Design

- ◆ Four (4) nuclear units; four (4) fuel pools; two (2) cooling systems
- ◆ Pools 'A' and 'B' to support Units 1 and 4
- ◆ Pools 'C' and 'D' to support Units 2 and 3
- ◆ A separate, fully-redundant, 100% capacity cooling and cleanup system for each set of pools
  - Pool 'C' and 'D' cooling system to be supported by Unit 2 CCW and Unit 2 electrical systems

# Background (Continued)

---

- Units 2, 3 and 4 canceled in early 1980's,
  - ◆ All four pools completed
  - ◆ Pools 'A' and 'B' placed in service to support HNP Unit 1 and spent fuel shipping from BNP and RNP
  - ◆ Cooling system for pools 'C' and 'D' was not completed
    - Construction stopped when unit 2 canceled in 1983
- Plan at time of Unit 1 license was to complete cooling system and place pools 'C' and 'D' in service when necessary
- Fuel Pool 'C' is needed in early 2000 to support spent fuel shipping requirements from BNP and RNP

# Schedule

ID	PROJECT	Task Name	1998				1999				2000				2001			
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1	PHASE 1 COOLING																	
2		SFPC DESIGN																
3		CCW DESIGN																
4		INSTALLATION																
5		SYS TEST																
6	RACKS																	
7		DESIGN/ANALYSIS																
8		RACK FABRICATION																
9		INSTALL RACKS																
10																		
11	LICENSING																	
12		50.55A																
13		T.S. CHANGE																
14		NRC MEETING																
15		REVISE SUBMITTAL/CCW USQ																
16		NRC REVIEW/APPROVE																
17	SUPPORT PROJECTS																	
18		DESIGN																
19		INSTALLATION																
21	PHASE 2- CCW UPGRADE																	
22		DESIGN																
23		INSTALLATION																
24		OUTAGE TIE-INS																



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D.C. 20555-0001

March 11, 1998

**LICENSEE:** CAROLINA POWER AND LIGHT COMPANY

**PLANT:** SHEARON HARRIS, UNIT 1

**SUBJECT:** SUMMARY OF MEETING WITH THE CAROLINA POWER AND LIGHT COMPANY (CP&L)

On March 3, 1998, the staff met with representatives of Carolina Power & Light Company (CP&L) to discuss the Shearon Harris Nuclear Power Plant (SHNPP) 'C' and 'D' spent fuel pools activation project. Enclosure 1 is a list of meeting attendees. Enclosure 2 is a copy of the handout provided at the meeting. The CP&L presentation included background information, a discussion of licensing activities, and the project schedule.

Background

Originally, SHNPP was intended to be a four unit site with four fuel pools (A, B, C, and D) and two Fuel Pool Cooling and Cleanup systems (FPCCS). Although three of the four units were canceled, the construction of all four pools and one of the FPCCS was completed. Also, a portion of the piping for the other FPCCS was installed. Currently pools 'A' and 'B' are in service and not only store SHNPP fuel, but also store spent fuel from other CP&L plants (Brunswick Units 1 & 2, and Robinson). Pools 'C' and 'D' are not in service.

CP&L has determined that pools 'C' and 'D' will be needed to ensure all four units maintain a prudent operating reserve for core off loads. According to CP&L, pool 'C' is needed by early 2000 to support fuel shipments from Brunswick and Robinson. In order to place pools 'C' and 'D' in service, the FPCCS and pool racking must be completed for pools 'C' and 'D'.

Licensing Activities

CP&L identified three licensing activities associated with the completion of pools 'C' and 'D'. The first is a potential unreviewed safety question (USQ) associated with the modification of the Unit 1 Component Cooling Water (CCW) System. Although the Unit 1 CCW system was not originally designed to cool the FPCCS for pools 'C' and 'D', CP&L has determined that the Unit 1 CCW system has sufficient margin to accept the 'C' and 'D' FPCCS load. The original design was for the Unit 1 CCW to cool the FPCCS for pools 'A' and 'B', and for the Unit 2 CCW system to cool the FPCCS for pools 'C' and 'D'. The staff asked several questions about the spent fuel pool, the FPCCS, and CCW system designs. The staff also inquired about SHNPP fuel handling practices.

The second licensing activity discussed involved piping certification for the 'C' and 'D' FPCCS. A portion of the piping for the 'C' and 'D' FPCCS is already installed, with some embedded in concrete, making approximately 14 field welds inaccessible. CP&L inadvertently disposed of the piping certification records for the installed piping, which makes it unable to demonstrate that the piping satisfies the design requirements of American Society of Mechanical Engineers (ASME) Code Section III. CP&L stated that it intends to request relief from ASME Code Section III. The staff stated that a relief request from the requirements of ASME Code

- 2 -

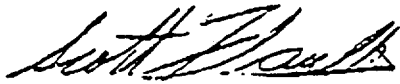
Section III would not be appropriate. The staff recommended that CP&L propose an alternative method, as allowed by 10 CFR 50.55a, that provides an acceptable level of safety and quality. CP&L agreed with the staff's comments and stated that a relief request was not the appropriate terminology for its request. CP&L stated that it intends to propose a piping certification plan, which includes tests and inspections, as an alternative method to the requirements of ASME Code Section III.

CP&L also intends to submit a Technical Specification (TS) change for high density racks in pools 'C' and 'D'. The TS change would modify SHNPP spent fuel capacity.

#### Schedule

CP&L stated that the TS change and the piping certification plan will be ready for submittal this summer, and the CCW USQ will be ready by fall. Due to the complex nature of this review, the staff recommended that CP&L make one complete submittal that includes all three licensing activities as oppose to three separate submittals. The staff also recommended that CP&L may want to meet with the staff again in the summer to discuss, in more detail, the TS change and the piping certification plan.

CP&L agreed with the staff's recommendations, and intends to submit one amendment encompassing all three licensing activities in the fall. CP&L stated that approval is needed by the end of 1999.

  
Scott C. Flanders, Project Manager  
Project Directorate II-1  
Division of Reactor Projects - I/II  
Office of Nuclear Reactor Regulation

Docket No. 50-400

cc w/enclosures:  
See next page

# **HNP Spent Fuel Pool 'C' and 'D' Activation**

**Project Status**  
**March 3, 1998**



# **SFP Cooling Options Considered**

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- **Independent Cooling**
  - ◆ **With and without dedicated emergency diesel generators**
- **Unit 1 Component Cooling Water (CCW)**
  - ◆ **'As Is' (current design assumptions)**
  - ◆ **CCW with some changes in design assumptions (fouling factors, tube plugging limits, flow rates, IST limits, etc.)**
  - ◆ **CCW with system modifications to improve thermal-hydraulic performance**
- **Dry storage facilities instead of pools 'C' and 'D'**

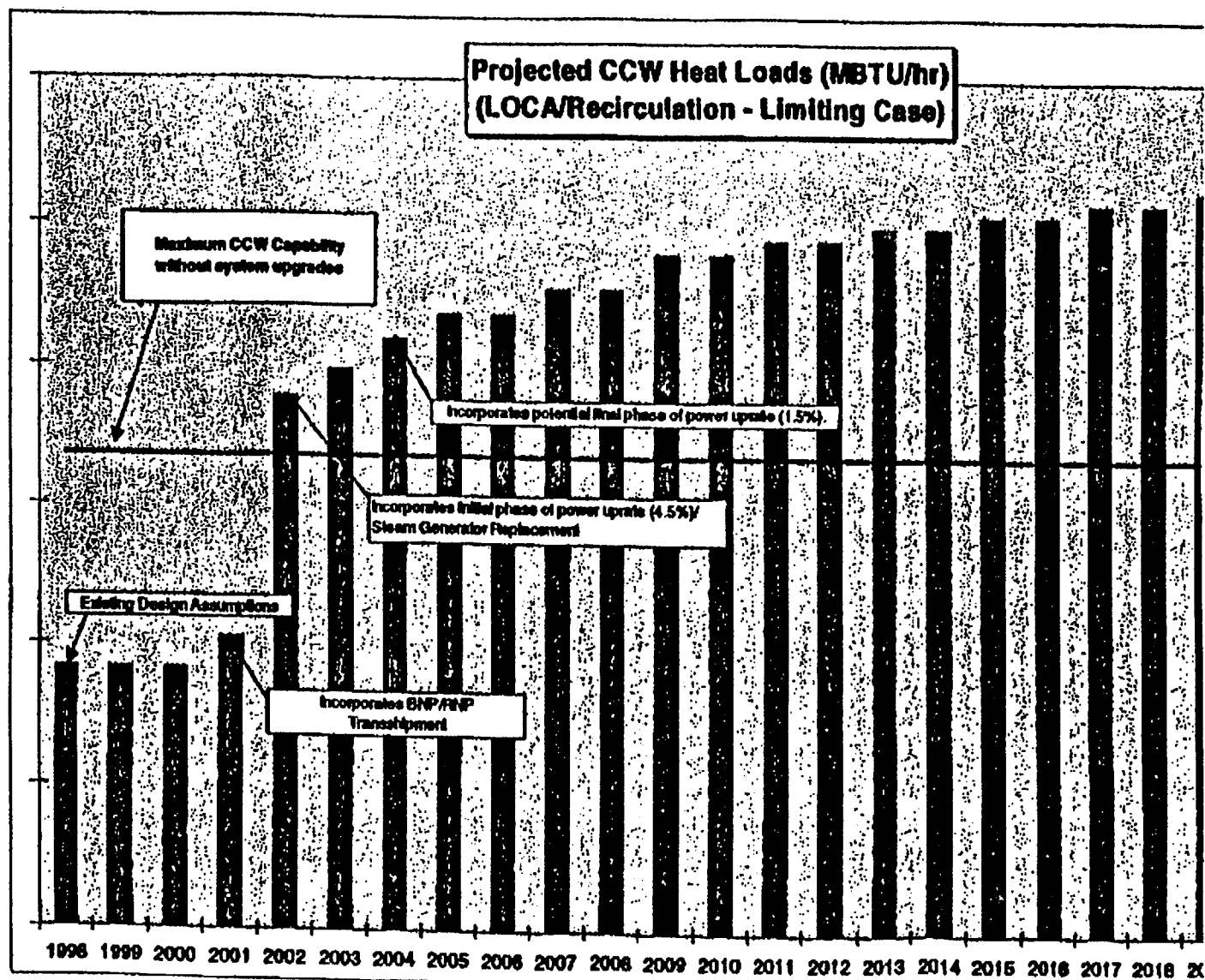
# Cooling System Completion

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- **Use CCW to provide cooling to fuel pool cooling**
  - ◆ **Phase 1 - Complete fuel pool cooling loop work and tie-ins to CCW (1998-1999)**
    - Existing system adequate for near-term operation until power uprate is implemented
  - ◆ **Phase 2 - Perform CCW system upgrade concurrent with power uprate (1999 - 2001)**
    - Final scoping and detailed design/implementation to occur after sufficient power uprate analysis has been completed



# Projected CCW Heat Loads



# **10CFR50.55a Alternative Plan**

**Project Update**  
**July 16, 1998**



# **Spent Fuel Storage Facilities - Current Configuration**

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- **Fuel Handling Building completed**
  - ◆ **Embedded piping installed, inspected and tested**
  - ◆ **HVAC system completed**
- **Unit 1 (South) A and B Spent Fuel Pools and supporting systems completed, operating**
- **Unit 2 (North) C and D Spent Fuel Pools installed, but supporting systems not completed**
  - ◆ **Spent Fuel Pool Cooling major equipment installed**
  - ◆ **Majority of Spent Fuel Pool Cooling System piping installed**
  - ◆ **Significant portion of CCW piping in Fuel Handling Building installed; but no Unit 2 CCW and RWST available**

# **Completing North Spent Fuel Pool Facilities - ASME Code Compliance**

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- **Partially completed systems were never issued a Partial Data Report**
  - ◆ **No partial N stamp on completed portion of construction**
  - ◆ **Original N Certificate Program no longer maintained**
- **Field installation records for piping discarded**
  - ◆ **Records purged during document control cleanup effort**
  - ◆ **Includes Code required records for weldments**

# Conclusion

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- **Cannot satisfy ASME code requirements in completing North Spent Fuel Pools Cooling Systems using originally constructed portion of piping**
- **“Alternative Plan” per 10CFR50.55a(3) necessary for completion of construction**
  - ◆ **Requires demonstration of “acceptable level of quality and safety” or hardship without compensating increase in quality and safety**

# ATTACHMENT E

NUREG/CR-0649  
SAND77-1371  
R-3

## SPENT FUEL HEATUP FOLLOWING LOSS OF WATER DURING STORAGE

Allan S. Benjamin  
David J. McCloskey  
Dana A. Powers  
Stephen A. Dupree

Date Published: March 1979

Sandia Laboratories  
Albuquerque, New Mexico 87185  
operated by  
Sandia Corporation  
for the  
U.S. Department of Energy

Prepared for  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555  
Under Interagency Agreement DOE 40-550-75  
NRC FIN No. A2050

## 5. OTHER CONSIDERATIONS

### 5.1 Effect of Incomplete Drainage

Many spent fuel holder designs provide only a single inlet hole for convective flow through each fuel element, located in the baseplate or near the bottom of the holder. If there is a complete pool drainage, the air must circulate down and under the fuel elements before passing through the baseplate inlet hole into the fuel assembly. An incomplete drainage could block this flow and reduce the effectiveness of natural convective cooling. Open frame configurations are, of course, exempt from this possibility because the flow does not have to pass through an inlet hole in order to gain proximity to the fuel element.

A detailed analysis of spent fuel heatup in the event of an incomplete drainage has not been undertaken. However, an approximate analysis has been performed to estimate the amount of aggravation that might occur if the water ceased to drain after exposing all but the bottom portion of the fuel elements. The analysis is included in Appendix B and is based, among other things, upon upper and lower bound estimates of the thermal radiation absorbed by the water from the hot fuel rods above. The temperature distribution along the rods is prescribed in this analysis according to estimates made of the likely distribution that would occur just prior to the onset of self-sustaining clad oxidation. The amount of heat produced above the water level is then determined together with the amount that could be removed by various mechanisms, including water boiling (latent heat), convection to the steam produced

by boiling (sensible heat), radiation to the building, and convection to the air. If the heat removal rate is determined to be larger than the rate of production, then the configuration is coolable; if the heat removal rate is smaller than the rate of production, overheating resulting in clad rupture or melting will occur.

The results for a 1-year decay time are presented in Table VIII. Consider first the case where the drainage uncovers the upper 80 percent of the fuel rods, leaving the lower 20 percent still covered (third column). The heat transferred to the remaining water by decay from the immersed portions and by radiation from above is 3.6 - 4.9 KW per assembly (line 2c). This implies that about an hour might be required to raise the water temperature to boiling (assuming all the assemblies produce the same decay heat) and that the water recession rate following the inception of boiling will be about 10 cm/h (lines 3 and 4). Meanwhile, the decay heat produced above the water line is about 4.5 KW per assembly (line 5), and the capability for removing heat as the clad temperatures approach the lower limit of self-sustaining oxidation is 5.7 - 8.7 KW per assembly (line 6e). Since the heat removal capability exceeds the heat production (line 7), the geometry is temporarily coolable.

If, however, the drainage were to uncover the whole length of the rods but still to constrict the flow, either by blocking the baseplate holes or by not allowing enough space for unrestricted flow in the base region, then the heat production would exceed the heat removal capability (line 7, first column) and the clad would overheat. The same situation would eventually occur if, rather than immediately draining to this position, the water were to drain part way down the rods and then boil off down to the baseplates over a period of time. Table VIII indicates that there is a good chance of overheating, in



Table VIII.

Estimates of Heat Removal Capability in an  
Incompletely Drained Pool, One Year Decay Time\*

1. Normalized water level ( $z_w/L$ )	0.0	0.1	0.2
2. Heat transferred to water, per assembly (KW):			
a. by decay heat	0.0	0.2	0.6
b. by thermal radiation from above	0.3 - 1.3	1.2 - 2.6	3.0 - 4.3
c. total	0.3 - 1.3	1.4 - 2.8	3.6 - 4.9
3. Time to start boiling (hours)	1.0 - 4.3	0.9 - 1.8	0.7 - 1.0
4. Water surface recession rate (cm/hr)	0.7 - 3.2	3.5 - 7.0	9.0 - 12.2
5. Decay heat produced by spent fuel above water level, per assembly (KW)	5.1	4.9	4.5
6. Removal of heat produced by spent fuel above water level, per assembly (KW):			
a. by radiation to water	0.3 - 1.3	1.2 - 2.6	3.0 - 4.3
b. by radiation to building	0.0 - 0.9	0.0 - 0.9	0.0 - 0.9
c. by transfer to water vapor	0.2 - 0.8	0.9 - 1.8	2.3 - 3.1
d. by transfer to air	0.4	0.4	0.4
e. total	0.9 - 3.4	2.5 - 5.7	5.7 - 8.7
7. Heat removal surplus (deficit) per assembly (KW), line 6e minus line 5.	(4.2)-(1.7)	(2.4)-0.8	1.2 - 4.2

\* PWR spent fuel in cylindrical baskets. One year decay time assumed, uniformly throughout pool. Numerical ranges (e.g., 0.3 - 1.3) give lower and upper-bound estimates. See Appendix B.

fact, if the water were to recede below the level where the lower 10% of the rods is still immersed.

A comparison of the peak clad temperature rise versus time for PWR spent fuel with a 1-year minimum decay time in a well-ventilated room is shown in Figure 26. The temperature rise corresponding to an incomplete drainage down to the bottom of the rods, calculated by utilizing the lower-bound radiation estimate, is compared with previous cases for a complete drainage with varying baseplate hole sizes. The clad oxidation effect has not been calculated for the case of incomplete drainage (blocked inlets), because it is believed to be substantially reduced by the unavailability of oxygen within the assembly.

Nearly, a 1-year minimum decay time is not sufficient to preclude overheating for this case.

The approximate method used for bracketing the thermal radiation downward to the water and upward to the building is not considered to be precise enough to allow prediction of the minimum allowable decay time in the event of an incomplete drainage. This problem could be approached by formulating a detailed thermal radiation model to calculate shape factors and include the shadowing of radiating surfaces by fuel rods and tie plates. By incorporating this radiation capability into the overall heat transfer models described in Sections 3.3 and 3.4, a credible prediction of the minimum allowable decay time could be obtained. No attempt to do this, however, has been made.

It is clear, however, that an incomplete drainage can potentially cause a more severe heatup problem than a complete drainage, if the residual water level remains near the baseplates. From a practical point of view, it might be possible to make provisions for either completing the drainage or refilling the pool, if this should happen. However, it would

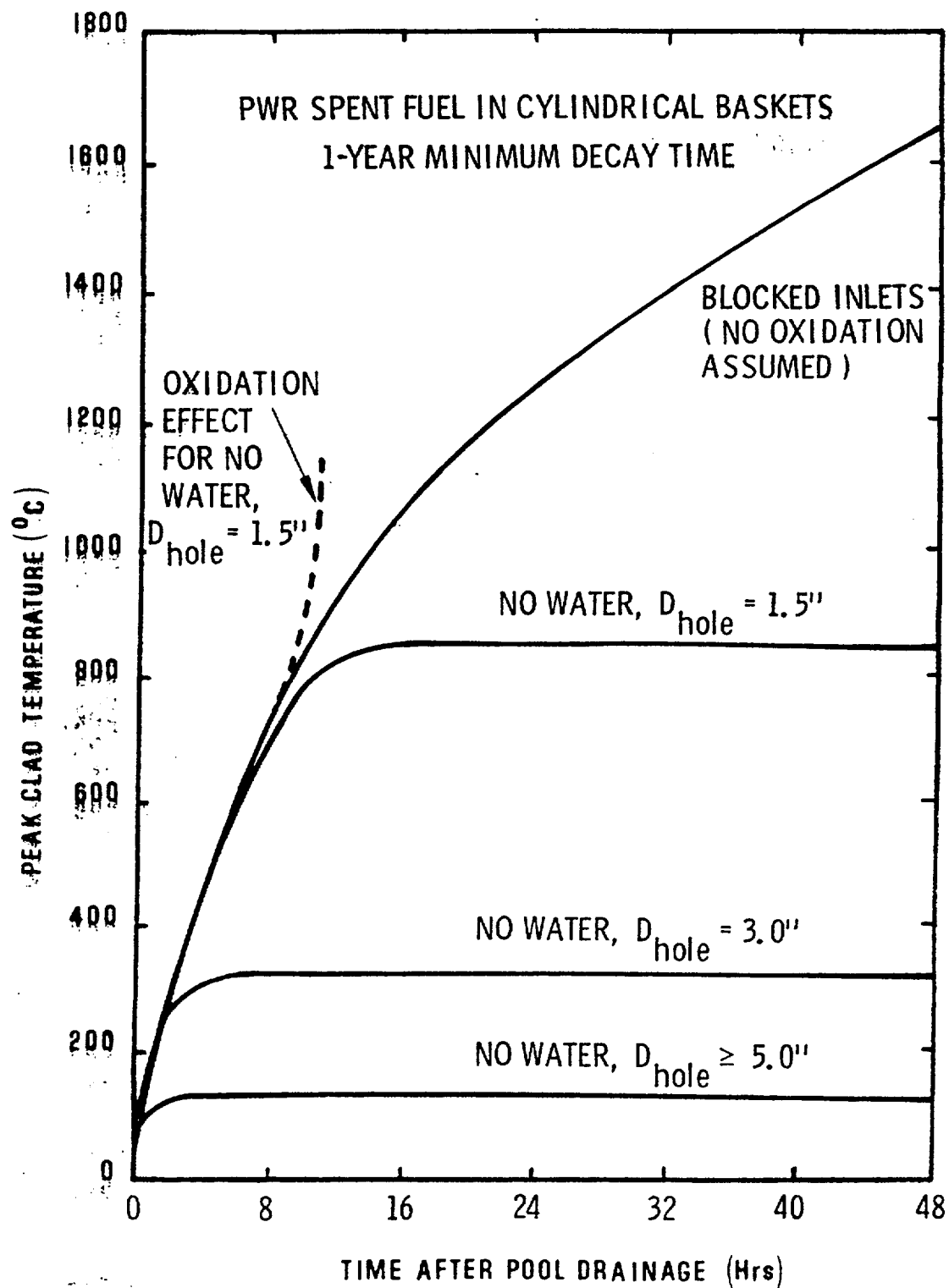


Figure 26. Estimated Heatup of PWR Spent Fuel With Residual Water Sufficient to Block Flow Inlets, Well-Ventilated Room

seem that the special problems associated with an incomplete drainage could best be circumvented by modifying the spent fuel holders to include inlet holes at various elevations along the vertical, rather than just at the baseplate level. According to the predictions, these inlet holes would only be required for the bottom 20 percent of the fuel rod length if the spent fuel were at least a year old. With these additional inlets, the beneficial effect of natural convection would not be cancelled by an incomplete drainage.

## 5.2 Effect of Surface Crud

Iron oxides are known to deposit upon the outside of the fuel pins during normal operation of the reactor, and these deposits are likely to remain on the fuel pins during storage of the spent fuel. Typically, the iron oxide crud buildup on BWR fuel pins is on the order of 25 to 100 microns and in the form of  $\text{Fe}_2\text{O}_3$ , whereas the buildup on PWR pins is on the order of only 1 to 5 microns and in the form of  $\text{Fe}_3\text{O}_4$ .<sup>16</sup> A calculation was made to determine whether a 100 micron  $\text{Fe}_2\text{O}_3$  coating on the BWR fuel pins would affect the heatup of these pins during a pool drainage accident, and it was found that the overall effect on the fuel pin temperature was less than one degree.

The question was also raised as to whether some of the crud, which would be contaminated, could be levitated by the air flows produced by natural convection after a pool drainage and thereby produce a health hazard. An analysis of the weight and drag characteristics of iron oxide particles revealed that a BWR fuel assembly having a decay time of 90 days prior to loss of water can produce upward air currents sufficient to levitate a 200-micron sized particle, whereas an assembly allowed to decay for 250 days can levitate a 175-micron sized particle. Since any spallation of the crud would produce particles of roughly the same size as the thickness of the

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**UNION OF  
CONCERNED  
SCIENTISTS**

**ATTACHMENT F**

January 22, 1999

Chairman Shirley A. Jackson  
Commissioner Nils J. Diaz  
Commissioner Greta J. Dicus  
Commissioner Edward McGaffigan, Jr.  
Commissioner Jeffrey S. Merrifield  
United States Nuclear Regulatory Commission  
Washington, DC 20555-0001

**SUBJECT: CURRENT EXAMPLE OF RISK-DEFORMED REGULATION**

Dear Chairman and Commissioners:

During the January 11<sup>th</sup> Commission briefing on risk-informed regulation and during the January 20<sup>th</sup> briefing on the proposed reactor oversight process, I expressed our concern that the NRC and the nuclear industry are making risk decisions using incomplete and inaccurate data. As a current example, I call your attention to the license amendment application dated December 23, 1998, by the Carolina Power & Light Company involving spent fuel storage at the Harris Nuclear Power Plant and the subsequent proposed no significant hazards consideration determination (*Federal Register*: January 13, 1999, Vol. 64, No. 8) prepared by the NRC staff.

The licensee and the NRC staff have improperly downplayed the risk associated with the proposed activity. Their risk characterization is wrong. The licensee should be required to resubmit a corrected application and another *Federal Register* notice issued with a corrected proposed no significant hazards consideration determination.

The error involves the determination made by the licensee and endorsed by the staff regarding the affect of the proposed activity, namely placing storage racks in Spent Fuel Pools 'C' and 'D' at the Harris plant, on the probability of a fuel handling accident. From the *Federal Register* notice:

"The probability that any of the accidents in the above list [a spent fuel assembly drop in a spent fuel pool / loss of spent fuel pool cooling flow / a seismic event / misloaded fuel assembly] can occur is not significantly affected by the activity itself. ... The probabilities of accidental fuel assembly drops or misloadings are primarily influenced by the methods used to lift and move these loads. The method of handling loads during normal plant operations is not significantly changed, since the same equipment (i.e., Spent Fuel Handling Machine and tools) and procedures as those in current use in pools 'A' and 'B' will be used in pools 'C' and 'D.' Since the methods used to move loads during normal operations remain nearly the same as those used previously, there is no significant increase in the probability of an accident."

January 22, 1999

Page 2 of 2

It is precisely this type of "smoke and mirrors" shenanigans that we decried during the briefings. The logic seems proper at face value, but it does not take much effort to show that it is wrong. In Enclosure 1 to the license amendment submittal, the licensee reported that the total storage capacity of pools 'A' and 'B' is 3,669 assemblies and that the proposed activity will add 4,715 storage locations in pools 'C' and 'D.' Thus, if the amendment is granted, CP&L will handle – pick up and move – about twice as many irradiated fuel assemblies as they will if the amendment is not granted.

Consider for a moment the old game of Russian roulette using a six-chamber revolver loaded with a single bullet. CP&L and the NRC staff would apparently conclude that the probability of losing the game are not increased whether one or two turns are taken because, after all, the same method and the same equipment are used each turn. Their logic is simply wrong. The probability of a fuel handling accident at Harris will nearly double if the license amendment request is granted. This material fact contradicts the conclusion of the licensee and the staff that there will be "no significant increase in the probability," unless doubling the risk is not significant.

Luckily, there's an opportunity to fix the mistake this time. Unfortunately, it's not the first, and probably won't be the last, time this mistake is made. The NRC staff made this same mistake in April 1998 when it allowed the Paducah facility to continue operating with its risk doubled.

We have no intention at this time of formally intervening in this Harris licensing action. We trust that the NRC staff will take the necessary steps to have the licensee fix the fundamental flaw in the licensing amendment request before granting it.

Sincerely,



David A. Lochbaum  
Nuclear Safety Engineer

February 12, 1999

DOCKETED  
USNRC

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE NRC STAFF

'99 FEB 17 P4:07

OFFICE OF THE  
REGISTERED  
ADJUTANT GENERAL

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

**NOTICE OF APPEARANCE OF DIANE CURRAN**

Pursuant to 10 C.F.R. § 2.713(b), undersigned counsel hereby notifies the Commission that she is an attorney of good standing, licensed in the District of Columbia and the State of Maryland, who is duly authorized to represent the Board of Commissioners of Orange County, North Carolina, in the license amendment proceeding for the proposed expansion of spent fuel pool storage capacity at the Shearon Harris Nuclear Power Plant.

Respectfully submitted,

  
Diane Curran

HARMON, CURRAN, SPIELBERG, & EISENBERG  
2001 "S" Street N.W., Suite 430  
Washington, D.C. 20009  
202/328-3500  
FAX: 202/328-6918  
e-mail: DCurran.HCSE@zzapp.org

February 12, 1999

DOCKETED  
USNRC

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE NRC STAFF

'99 FEB 17 P4:07

OFFICE OF THE SECRETARY  
RULEMAKING AND ADJUDICATIONS  
ADJUDICATIONS OFFICE

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

**CERTIFICATE OF SERVICE**

I certify that on February 12, 1999, copies of the foregoing Orange County's Request for Hearing and Petition to Intervene and Orange County's Comments in Opposition to No Significant Hazards Determination were served on the following by first class mail or as otherwise indicated:

Secretary of the Commission (also by e-mail)  
Attention: Rulemakings and Adjudications Staff  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Office of the General Counsel  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

William D. Johnson  
Vice President and Senior Counsel  
Carolina Power & Light Co.  
Post Office Box 1551  
Raleigh, NC 27602

  
Diane Curran



Written data, views or comments for consideration by the committee may be submitted, preferably with 20 copies, to Joanne Goodell at the address provided below. Any such submissions received prior to the meeting will be provided to the members of the Committee and will be included in the record of the meeting. Because of the need to cover a wide variety of subjects in a period of time, there is usually insufficient time on the agenda for members of the public to address the committee orally. However, any such requests will be considered by the Chair who will determine whether or not time permits. Any request to make an oral presentation should state the amount of time desired, the capacity in which the speaker would appear, and a brief summary of the content of the presentation. Individuals with disabilities who need special accommodations should contact Theresa Berry (phone: 202-693-1999; FAX: 202-693-1641) one week before the meeting.

An official record of the meeting will be available for public inspection in the OSHA Technical Data Center (TDC) located in Room N2625 of the Department of the Labor Building (202-693-2350). For additional information contact: Joanne Goodell, Occupational Safety and Health Administration (OSHA); Room N-3641, 200 Constitution Avenue NW, Washington, D.C., 20210 (phone: 202-693-2400; FAX: 202-693-1641; e-mail: jgoodell@osha-no.osha.gov; or at www.osha.gov).

Signed at Washington, D.C., this 7th day of January, 1999.

Charles N. Jeffress,

Assistant Secretary of Labor for Occupational Safety and Health.

[FR Doc. 99-744 Filed 1-12-99; 8:45 am]

BILLING CODE 4510-28-M

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice 99-013]

### NASA Advisory Council, Minority Business Resource Advisory Committee; Meeting

AGENCY: National Aeronautics and Space Administration.

ACTION: Notice of meeting.

SUMMARY: In accordance with the Federal Advisory Committee Act, Pub. L. 92-463, as amended, the National Aeronautics and Space Administration announces a forthcoming meeting of the

NASA Advisory Council, Minority Business Resource Advisory Committee.

DATES: Wednesday, January 27, 1999, 9:00 a.m. to 4:00 p.m. and Thursday, January 28, 1999, 9:00 a.m. to noon.

ADDRESSES: National Aeronautics and Space Administration, Lyndon B. Johnson Space Center, Building 1, Room 820, Houston, TX 77058-3696.

FOR FURTHER INFORMATION CONTACT: Mr. Ralph C. Thomas III, Code K, National Aeronautics and Space Administration, Washington, DC 20546, (202) 358-2088.

SUPPLEMENTARY INFORMATION: The meeting will be open to the public up to the seating capacity of the room. The agenda for the meeting is as follows:

- MBRAC Subpanel Reports
- Status of MBRAC Recommendations
- Special Issues
- Action Items
- Call to Order
- Reading of Minutes
- Agency Small Disadvantaged Business (SDB) Program
- Report of Chair
- Public Comment
- Center Directorate Reports
- Report on NASA FY 98 SDB Accomplishments

It is imperative that the meeting be held on these dates to accommodate the scheduling priorities of the key participants. Visitors will be requested to sign a visitors' register.

Dated: January 7, 1999.

Matthew M. Crouch,

Advisory Committee Management Officer, National Aeronautics and Space Administration.

[FR Doc. 99-741 Filed 1-12-99; 8:45 am]

BILLING CODE 7510-01-P

## NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice 99-012]

### Notice of Prospective Patent License

AGENCY: National Aeronautics and Space Administration.

ACTION: Notice of prospective patent license.

SUMMARY: NASA hereby gives notice that Benick Brands, Inc., of Glastonsbury, Connecticut, has applied for an exclusive license to practice the inventions described and claimed in U.S. Patent No. 5,772,912, entitled "Environmentally Friendly Anti-Icing Fluid," and in NASA Case No. ARC-12069-9GE, entitled "Anti-Icing Fluid or Deicing Fluid." Both inventions are assigned to the United States of America as represented by the Administrator of

the National Aeronautics and Space Administration. Written objections to the prospective grant should be sent to NASA Ames Research Center.

DATES: Responses to this notice should be received by March 15, 1999.

FOR FURTHER INFORMATION CONTACT: Kathleen Dal Bon, Patent Counsel, NASA Ames Research Center, Mail Stop 202A-3, Moffett Field, CA 94035-1000; telephone (650) 604-5104.

Dated: January 7, 1999.

Edward A. Frankle,

General Counsel.

[FR Doc. 99-742 Filed 1-12-99; 8:45 am]

BILLING CODE 7510-01-P

## NATIONAL BIPARTISAN COMMISSION ON THE FUTURE OF MEDICARE

### Public Meeting

The National Bipartisan Commission on the Future of Medicare will hold a public meeting on Tuesday, January 26, 1999 at the Cannon House Office Building, Cannon Caucus Room 340, Washington, DC. Please check the Commission's web site for additional information: <http://Medicare.Commission.Gov>

Tuesday, January 26, 1999, 9:00 a.m.

### Tentative Agenda

Members of the Commission to discuss options to reform the Medicare program.

If you have any questions, please contact the Bipartisan Medicare Commission, ph: 202-252-3380.

I hereby authorize publication of the Medicare Commission meetings in the Federal Register.

Julie Hasler,

Office Manager, National Bipartisan Medicare Commission.

[FR Doc. 99-681 Filed 1-12-99; 8:45 am]

BILLING CODE 1132-00-M

## UNITED STATES NUCLEAR REGULATORY COMMISSION

[Docket No. 50-400]

### Carolina Power & Light; Notice of Consideration of Issuance of Amendment to Facility Operating License, Proposed No Significant Hazards Consideration Determination, and Opportunity for a Hearing

The U.S. Nuclear Regulatory Commission (the Commission) is considering issuance of an amendment to Facility Operating License No. NPF-63 issued to Carolina Power & Light (CP&L or the licensee) for operation of the Shearon Harris Nuclear Power Plant

located in Wake and Chatham Counties, North Carolina.

The proposed amendment would support a modification to the plant to increase the spent fuel storage capacity by adding rack modules to spent fuel pools (SFPs) "C" and "D" and placing the pools in service. In order to activate the pools, CP&L requests that the NRC review and approve the following:

i. Revised Technical Specification 5.6 to identify PWR burnup restrictions, BWR enrichment limits, pool capacities, heat load limitations and nominal center-to-center distances between fuel assemblies in the racks to be installed in SFPs 'C' and 'D.'

ii. 10 CFR 50.55a Alternative Plan to demonstrate acceptable level of quality and safety in the completion of the component cooling water (CCW) and 'C' and 'D' cooling and cleanup piping.

iii. The cooling system for SFPs 'C' and 'D' cannot be N stamped in accordance with ASME Section III since some installation records are not available, a partial turnover was not performed when construction was halted following the cancellation of Unit 2 and CP&L's N certificate program was discontinued following completion of Unit 1.

iv. Unreviewed safety question for additional heat load on the CCW system. The acceptability of the 1.0 MBtu/hr heat load from SFPs 'C' and 'D' was demonstrated by the use of thermal-hydraulic analyses of the CCW system under various operating scenarios. The dynamic modeling used in the thermal-hydraulic analyses identified a decrease in the minimum required CCW system flow. Due to the residual heat removal heat exchangers. This change has not been previously reviewed by the NRC and is deemed to constitute an unreviewed safety question.

Before issuance of the proposed license amendment, the Commission will have made findings required by the Atomic Energy Act of 1954, as amended (the Act) and the Commission's regulations.

The Commission has made a proposed determination that the amendment request involves no significant hazards consideration. Under the Commission's regulations in 10 CFR 0.92, this means that operation of the facility in accordance with the proposed amendment would not (1) involve a significant increase in the probability or consequences of an accident previously evaluated; or (2) create the possibility of a new or different kind of accident from any accident previously evaluated; or (3) involve a significant reduction in the margin of safety. As required by 10 CFR 0.91(a), the licensee has provided its

analysis of the issue of no significant hazards consideration, which is presented below:

1. Involve a significant increase in the probability or consequences of an accident previously evaluated.

In the analysis of the safety issues concerning the expanded pool storage capacity within Harris' Fuel Handling Building, the following previously postulated accident scenarios have been considered:

a. A spent fuel assembly drop in a Spent Fuel Pool.

b. Loss of Spent Fuel Pool cooling flow.

c. A seismic event.

d. Misloaded fuel assembly.

The probability that any of the accidents in the above list can occur is not significantly increased by the activity itself. The probabilities of a seismic event or loss of Spent Fuel Pool cooling flow are not influenced by the proposed changes. The probabilities of accidental fuel assembly drops or misloadings are primarily influenced by the methods used to lift and move these loads. The method of handling loads during normal plant operations is not significantly changed, since the same equipment (i.e., Spent Fuel Handling Machine and tools) and procedures as those in current use in pools 'A' and 'B' will be used in pools 'C' and 'D'. Since the methods used to move loads during normal operations remain nearly the same as those used previously, there is no significant increase in the probability of an accident. Current shipping activities at the Harris Nuclear Plant will continue as previously licensed. The consequences of an accident involving shipping activities [are] not changed and there is no significant increase in the probability of an accident.

During rack installation, all work in the pool area will be controlled and performed in strict accordance with specific written procedures. Any movement of fuel assemblies which is required to be performed to support this activity (e.g., installation of racks) will be performed in the same manner as during normal refueling operations.

Accordingly, the proposed activity does not involve a significant increase in the probability of an accident previously evaluated.

The consequences of the previously postulated scenarios for an accidental drop of a fuel assembly in the Spent Fuel Pool have been re-evaluated for the proposed change. The results show that such the postulated accident of a fuel assembly striking the top of the storage racks will not distort the racks sufficiently to impair their functionality. The minimum subcriticality margin,  $K_{eff}$  less than or equal to 0.95, will be maintained. The structural damage to the Fuel Handling Building, pool liner, and fuel assembly resulting from a fuel assembly drop striking the pool floor or another assembly located within the racks is primarily dependent on the mass of the falling object and the drop height. Since these two parameters are not changed by the proposed activity from those considered previously, the structural damage to these items remains unchanged. The radiological dose at the exclusion area

boundary will not be increased from those previously considered, since the pertinent fuel parameters remain unchanged. These dose levels remain "well within" the levels required by 10 CFR 100, paragraph 11, as defined in Section 15.7.4.II.1 of the Standard Review Plan. Thus, the results of the postulated fuel drop accidents remain acceptable and do not represent a significant increase in consequences from any of the same previously evaluated accidents that have been reviewed and found acceptable by the NRC.

The consequences of a loss of Spent Fuel Pool cooling have been evaluated and found to have no increase. The concern with this accident is a reduction of Spent Fuel Pool water inventory from bulk pool boiling resulting in uncovering fuel assemblies. This situation would lead to fuel failure and subsequent significant increase in offsite dose. Loss of spent fuel pool cooling at Harris is mitigated in the usual manner by ensuring that a sufficient time lapse exists between the loss of forced cooling and uncovering fuel. This period of time is compared against a reasonable period to re-establish cooling or supply an alternative water source. Evaluation of this accident usually includes determination of a time to boil, which in the case of pools 'C' and 'D' is in excess of 13 hours based on a consideration of end of plant life heat loads. This evaluation neglects any possible cooling from the connection to pools 'A' and 'B' through the transfer canal. The 13 hour period is much shorter than the onset of any significant increase in offsite dose, since once boiling begins it would have to continue unchecked until the pool surface was lowered to the point of exposing active fuel. The time to boil represents the onset of loss of pool water inventory and is commonly used as a gauge for establishing the comparison of consequences before and after a refueling project. The heatup rate in the Spent Fuel Pool is a nearly linear function of the fuel decay heat load. Subsequent to the proposed changes, the fuel decay heat load will increase because of the increase in the number assemblies from those considered from Pools 'A' and 'B' alone. The methodology used in the thermal-hydraulic analysis determined the maximum fuel decay heat loads. In the unlikely event that pool cooling is lost to pools 'C' and 'D', sufficient time will still be available for the operators to provide alternate means of cooling before the onset of pool boiling. Therefore, the proposed change represents no increase in the consequences of loss of pool cooling.

The consequences of a design basis seismic event are not increased. The consequences of this accident are evaluated on the basis of subsequent fuel damage or compromise of the fuel storage or building configurations leading to radiological or criticality concerns. The new racks have been analyzed in their new configuration and found safe during seismic motion. The fuel stored in these racks has been determined to remain intact and the racks maintain the fuel and fixed poison configurations subsequent to a seismic event. The structural capability of the pool and liner will not be exceeded under the appropriate combinations of dead weight, thermal, and seismic loads. The Fuel

Handling Building structure will remain intact during a seismic event and will continue to adequately support and protect the fuel racks, storage array, and pool moderator/coolant. Thus, the consequences of a seismic event are not increased.

Fuel misloading and mislocation accidents were previously credible occurrences, since fuel could be placed at an unintended storage location or could have been lowered outside and adjacent to a storage rack in Pools 'A' or 'B'. However, neither of these two scenarios previously represented any concern because of the flux trap style of the rack designs in these two pools. Similar procedures, equipment and methods of fuel movement will be used for Pools 'C' and 'D' as those used previously for Pools 'A' and 'B'. Therefore, the proposed activity does not represent any increase in the probability of occurrence. The proposed non-flux trap design racks for Pools 'C' and 'D' require administrative controls to ensure that fuel assemblies meet effective enrichment criteria or to storage. Under these conditions, misloading of a fuel assembly by placement in an unintended storage cell has no significant consequences. Therefore, the only remaining potential mislocation of a fuel assembly is for an assembly to be lowered outside of and directly adjacent to a storage rack. This accident occurring in Pools 'C' or 'D' has been analyzed for the worst possible storage configuration subsequent to the proposed activity and it has been shown that the consequences remain acceptable with respect to the same criteria used previously. Thus, there is no increase in consequences for fuel mislocation or misloading.

Therefore it is concluded that the proposed changes do not significantly increase the probability or consequences of any accident previously evaluated.

2. Create the possibility of a new or different kind of accident from any previously analyzed.

To assess the possibility of new or different kind of accidents, a list of the important parameters required to ensure safe fuel storage was established. Safe fuel storage is defined here as providing an environment, which would not present any significant threats to workers or the general public (i.e., meeting the requirements of 10 CFR 100 and 10 CFR 20). Any new events, which would modify these parameters sufficiently to place them outside of the boundaries analyzed for normal conditions and/or outside of the boundaries previously considered for accidents would be considered to create the possibility of a new or different accident. The criticality and radiological safety evaluations were reviewed to establish the list of important parameters. The fuel configuration and the existence of the moderator/coolant were identified as the only two parameters, which were important to safe fuel storage. Significant modification of these two parameters represents the only possibility of an unsafe storage condition. Once the two important parameters were established, an additional step was taken to determine what events (which were not previously considered) could result in changes to the storage configuration or moderator/coolant presence during or subsequent to the proposed changes.

This process was adopted to ensure that the possibility of any new or different accident scenario or event would be identified. Due to the proposed activity, an accidental drop of a rack module during construction activity in the pool was considered as the only event which might represent a new or different kind of accident.

A construction accident resulting in a rack drop is an unlikely event. The proposed activity will utilize the defense-in-depth approach for these heavy loads. The defense-in-depth approach is intended to meet the requirements of NUREG-0612 and preclude the possibility of a rack drop. All movements of heavy loads over the pool will comply with the applicable administrative controls and guidelines (i.e. plant procedures, NUREG-0612, etc.). A temporary hoist and rack lifting rig will be introduced to lift and suspend the racks from the bridge of the Auxiliary Crane. These items have been designed in accordance with the requirements of NUREG-0612 and ANSI N14.6 and will be similar to those used recently to install storage rack modules in Pool 'B'.

The postulated rack drop event is commonly referred to as a "heavy load drop" over the pools. Heavy loads will not be allowed to travel over any racks containing fuel assemblies. The danger represented by this event is that the racks will drop to the pool floor and the pool structure will be compromised leading to loss of moderator/coolant, which is one of the two important parameters identified above. Although the analysis of this event has been performed and shown to be acceptable, the question of a new or different type of event is answered by determining whether heavy load drops over the pool have been considered previously. As stated above, heavy loads (storage rack modules) were recently installed in Pool 'B' using similar methods. Therefore, the rack drop does not represent a new or different kind of accident.

The proposed change does not alter the operating requirements of the plant or of the equipment credited in the mitigation of the design basis accidents. The proposed change does not affect any of the important parameters required to ensure safe fuel storage. Therefore, the potential for a new or previously unanalyzed accident is not created.

3. Involve a significant reduction in the margin of safety.

The function of the Spent Fuel Pool is to store the fuel assemblies in a subcritical and coolable configuration through all environmental and abnormal loadings, such as an earthquake or fuel assembly drop. The new rack design must meet all applicable requirements for safe storage and be functionally compatible with Pools 'C' and 'D'.

CP&L has Addressed the Safety Issues Related to the Expanded Pool Storage Capacity in the Following Areas:

1. Material, mechanical and structural considerations. The mechanical, material, and structural designs of the new racks have been reviewed in accordance with the applicable provisions of the NRC Guidance entitled, "Review and Acceptance of Spent

Fuel Storage and Handling Applications". The rack materials used are compatible with the spent fuel assemblies and the Spent Fuel Pool environment. The design of the new racks preserves the proper margin of safety during normal and abnormal loads. It has been shown that such loads will not invalidate the mechanical design and material selection to safely store fuel in a coolable and subcritical configuration.

## 2. Nuclear Criticality

The methodology used in the criticality analysis of the expanded Spent Fuel Pool meets the appropriate NRC guidelines and the ANSI standards (GDC 62, NUREG 0800, Section 9.1.2, the OT Position for Review and Acceptance of Spent Fuel Storage and Handling Applications, Reg. Guide 1.13, and ANSI/ANS 8.17). The margin of safety for subcriticality is maintained by having the neutron multiplication factor equal to, or less than, 0.95 under all accident conditions, including uncertainties. This criterion is the same as that used previously to establish criticality safety evaluation acceptance and remains satisfied for all analyzed accidents.

## 3. Thermal-hydraulic and Pool Cooling

The thermal-hydraulic and cooling evaluation of the pools demonstrated that the pools can be maintained below the specified thermal limits under the conditions of the maximum heat load and during all credible accident sequences and seismic events. The pool temperature will not exceed 137°F during the highest heat load conditions. The maximum local water temperature in the hot channel will remain below the boiling point. The fuel will not undergo any significant heat up after an accidental drop of a fuel assembly on top of the rack blocking the flow path. A loss of cooling to the pool will allow sufficient time (>13 hours) for the operators to intervene and line up alternate cooling paths and the means of inventory make-up before the onset of pool boiling. The thermal limits specified for the evaluations performed to support the proposed activity are the same as those that were used in the previous evaluations. It has also been demonstrated that adequate margin exists in the Unit 1 CCW system to support near term operation of the pools subject to the requirements of the proposed changes to the Technical Specifications.

Based on the preceding discussion it is concluded that this activity does not involve a significant reduction in the margin of safety.

The NRC staff has reviewed the licensee's analysis and, based on this review, it appears that the three standards of 10 CFR 50.92(c) are satisfied. Therefore, the NRC staff proposes to determine that the amendment request involves no significant hazards consideration.

The Commission is seeking public comments on this proposed determination. Any comments received within 30 days after the date of publication of this notice will be considered in making any final determination.

Normally, the Commission will not issue the amendment until the expiration of the 30-day notice period. However, should circumstances change during the notice period such that failure to act in a timely way would result, for example, in derating or shutdown of the facility, the Commission may issue the license amendment before the expiration of the 30-day notice period, provided that its final determination is that the amendment involves no significant hazards consideration. The final determination will consider all public and State comments received. Should the Commission take this action, it will publish in the **Federal Register** a notice of issuance and provide for opportunity for a hearing after issuance. The Commission expects that the need to take this action will occur very infrequently.

Written comments may be submitted by mail to the Chief, Rules and Directives Branch, Division of Administrative Services, Office of Administration, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and should cite the publication date and page number of this **Federal Register** notice. Written comments may also be delivered to Room 6D59, Two White Flint North, 11545 Rockville Pike, Rockville, Maryland, from 7:30 a.m. to 4:15 p.m. Federal workdays. Copies of written comments received may be examined at the NRC Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC. The filing of requests for hearing and for leave to intervene is discussed below.

By February 12, 1999, the licensee may file a request for a hearing with respect to issuance of the amendment to the subject facility operating license and any person whose interest may be affected by this proceeding and who wishes to participate as a party in the proceeding must file a written request for a hearing and a petition for leave to intervene. Requests for a hearing and a petition for leave to intervene shall be filed in accordance with the Commission's "Rules of Practice for Domestic Licensing Proceedings" in 10 CFR Part 2. Interested persons should consult a current copy of 10 CFR 2.714 which is available at the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at the Cameron Village Regional Library, 1930 Clark Avenue, Raleigh, North Carolina 27605. If a request for a hearing or petition for leave to intervene is filed by the above

date, the Commission or an Atomic Safety and Licensing Board, designated by the Commission or by the Chairman of the Atomic Safety and Licensing Board Panel, will rule on the request and/or petition; and the Secretary or the designated Atomic Safety and Licensing Board will issue a notice of hearing or an appropriate order.

As required by 10 CFR 2.714, a petition for leave to intervene shall set forth with particularity the interest of the petitioner in the proceeding, and how that interest may be affected by the results of the proceeding. The petition should specifically explain the reasons why intervention should be permitted with particular reference to the following factors: (1) the nature of the petitioner's right under the Act to be made party to the proceeding; (2) the nature and extent of the petitioner's property, financial, or other interest in the proceeding; and (3) the possible effect of any order which may be entered in the proceeding on the petitioner's interest. The petition should also identify the specific aspect(s) of the subject matter of the proceeding as to which petitioner wishes to intervene. Any person who has filed a petition for leave to intervene or who has been admitted as a party may amend the petition without requesting leave of the Board up to 15 days prior to the first prehearing conference scheduled in the proceeding, but such an amended petition must satisfy the specificity requirements described above.

Not later than 15 days prior to the first prehearing conference scheduled in the proceeding, a petitioner shall file a supplement to the petition to intervene which must include a list of the contentions which are sought to be litigated in the matter. Each contention must consist of a specific statement of the issue of law or fact to be raised or controverted. In addition, the petitioner shall provide a brief explanation of the bases of the contention and a concise statement of the alleged facts or expert opinion which support the contention and on which the petitioner intends to rely in proving the contention at the hearing. The petitioner must also provide references to those specific sources and documents of which the petitioner is aware and on which the petitioner intends to rely to establish those facts or expert opinion. Petitioner must provide sufficient information to show that a genuine dispute exists with the applicant on a material issue of law or fact. Contentions shall be limited to matters within the scope of the amendment under consideration. The contention must be one which, if proven, would entitle the petitioner to

relief. A petitioner who fails to file such a supplement which satisfies these requirements with respect to at least one contention will not be permitted to participate as a party.

Those permitted to intervene become parties to the proceeding, subject to any limitations in the order granting leave to intervene, and have the opportunity to participate fully in the conduct of the hearing, including the opportunity to present evidence and cross-examine witnesses.

If a hearing is requested, the Commission will make a final determination on the issue of no significant hazards consideration. The final determination will serve to decide when the hearing is held.

If the final determination is that the amendment request involves no significant hazards consideration, the Commission may issue the amendment and make it immediately effective, notwithstanding the request for a hearing. Any hearing held would take place after issuance of the amendment.

If the final determination is that the amendment request involves a significant hazards consideration, any hearing held would take place before the issuance of any amendment.

A request for a hearing or a petition for leave to intervene must be filed with the Secretary of the Commission, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Rulemakings and Adjudications Staff, or may be delivered to the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, by the above date. A copy of the petition should also be sent to the Office of the General Counsel, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, and to William D. Johnson, Vice President and Senior Counsel, Carolina Power & Light Company, Post Office Box 1551, Raleigh, North Carolina 27602, attorney for the licensee.

Nontimely filings of petitions for leave to intervene, amended petitions, supplemental petitions and/or requests for hearing will not be entertained absent a determination by the Commission, the presiding officer or the presiding Atomic Safety and Licensing Board that the petition and/or request should be granted based upon a balancing of the factors specified in 10 CFR 2.714(a)(1)(i)-(v) and 2.714(d).

The Commission hereby provides such notice that this is a proceeding on an application for a license amendment falling within the scope of section 134 of the Nuclear Waste Policy Act of 1982 (NWPA), 42 U.S.C. 10154. Under section 134 of the NWPA, the

Commission, at the request of any party to the proceeding, must use hybrid hearing procedures with respect to "any matter which the Commission determines to be in controversy among the parties."

The hybrid procedures in section 134 provide for oral argument on matters in controversy, preceded by discovery under the Commission's rules and the designation, following argument of only those factual issues that involve a genuine and substantial dispute, together with any remaining questions of law, to be resolved in an adjudicatory hearing. Actual adjudicatory hearings are to be held on only those issues found to meet the criteria of section 134 and set for hearing after oral argument.

The Commission's rules implementing section 134 of the NHPA are found in 10 CFR Part 2, Subpart K, "Hybrid Hearing Procedures for Expansion of Spent Fuel Storage Capacity at Civilian Nuclear Power Reactors" (published at 50 FR 41662 dated October 15, 1985). Under those rules, any party to the proceeding may invoke the hybrid hearing procedures by filing with the presiding officer a written request for oral argument under 10 CFR 2.1109. To be timely, the request must be filed within ten (10) days of an order granting a request for hearing or petition to intervene. The presiding officer must grant a timely request for oral argument. The presiding officer may grant an untimely request for oral argument only upon a showing of good cause by the requesting party for the failure to file on time and after providing the other parties an opportunity to respond to the untimely request. If the presiding officer grants a request for oral argument, any hearing held on the application must be conducted in accordance with the hybrid hearing procedures. In essence, those procedures limit the time available for discovery and require that an oral argument be held to determine whether any contentions must be resolved in an adjudicatory hearing. If no party to the proceeding timely requests oral argument, and if all untimely requests for oral argument are denied, then the usual procedures in 10 CFR Part 2, Subpart G apply.

For further details with respect to this action, see the application for amendment dated December 23, 1998, which is available for public inspection at the Commission's Public Document Room, the Gelman Building, 2120 L Street, NW., Washington, DC, and at the local public document room located at the Cameron Village Regional Library, 1930 Clark Avenue, Raleigh, North Carolina 27605.

Dated at Rockville, Maryland, this 7th day of January 1999.

For the Nuclear Regulatory Commission.

**Scott Flanders,**

*Project Manager, Project Directorate II-3, Division of Reactor Projects—I/II, Office of Nuclear Reactor Regulation.*

[FR Doc. 99-758 Filed 1-12-99; 8:45 am]

BILLING CODE 7590-01-P

## NUCLEAR REGULATORY COMMISSION

[Docket Number 40-8102]

### Exxon Coal and Minerals Company

**AGENCY:** Nuclear Regulatory Commission.

**ACTION:** Notice of receipt of Exxon Coal and Minerals Company's application for establishing alternate concentration limits in source material license SUA-1139 for the Highland Uranium Mill in Converse County, Wyoming; notice of opportunity for a hearing.

**SUMMARY:** Notice is hereby given that the U.S. Nuclear Regulatory Commission (NRC) has received, by letter dated December 18, 1998, an application from Exxon Coal and Minerals Company (ECMC) to establish Alternate Concentration Limits (ACLs) for nickel, radium (Ra 226+228), and natural uranium (UNAT); and amend accordingly Source Material License No. SUA-1139 for the Highland uranium mill.

**FOR FURTHER INFORMATION CONTACT:** Mohammad W. Haque, Uranium Recovery Branch, Division of Waste Management, U.S. Nuclear Regulatory Commission, Washington, DC 20555. Telephone (301) 415-6640.

**SUPPLEMENTARY INFORMATION:** ECMC's application to amend Source Material License SUA-1139, which describes the proposed change and the reasons for the request, is being made available for public inspection at NRC's Public Document Room at 2120 L Street, N.W. (Lower Level), Washington, DC 20555.

The NRC hereby provides notice of an opportunity for a hearing on the license amendment under the provisions of 10 CFR Part 2, Subpart L, "Informal Hearing Procedures for Adjudications in Materials and Operator Licensing Proceedings." Pursuant to § 2.1205(a), any person whose interest may be affected by this proceeding may file a request for a hearing. In accordance with § 2.1205(c), a request for hearing must be filed within 30 days of the publication of this notice in the *Federal Register*. The request for a hearing must be filed with the Office of the Secretary, either:

(1) By delivery to the Docketing and Service Branch of the Office of the Secretary at One White Flint North, 11555 Rockville Pike, Rockville, MD 20852; or

(2) By mail or telegram addressed to the Secretary, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, Attention: Docketing and Service Branch.

In accordance with 10 CFR 2.1205(e), each request for a hearing must also be served, by delivering it personally, or by mail, to:

(1) The applicant, Exxon Coal and Minerals Company, P.O. Box 1314, Houston, Texas 77251-1314, Attention: David Range; and

(2) The NRC staff, by delivery to the Executive Director for Operations, One White Flint North, 11555 Rockville Pike, Rockville, MD 20852, or by mail addressed to the Executive Director for Operations, U.S. Nuclear Regulatory Commission, Washington, DC 20555.

In addition to meeting other applicable requirements of 10 CFR Part 2 of NRC's regulations, a request for a hearing filed by a person other than an applicant must describe in detail:

(1) The interest of the requestor in the proceeding;

(2) How that interest may be affected by the results of the proceeding, including the reasons why the requestor should be permitted a hearing, with particular reference to the factors set out in § 2.1205(g);

(3) The requestor's areas of concern about the licensing activity that is the subject matter of the proceeding; and

(4) The circumstances establishing that the request for a hearing is timely in accordance with § 2.1205(c).

The request must also set forth the specific aspect or aspects of the subject matter of the proceeding as to which petitioner wishes a hearing.

Dated at Rockville, Maryland, this 5th day of January 1999.

**N. King Stablein,**

*Acting Chief, Uranium Recovery Branch, Division of Waste Management, Office of Nuclear Material Safety and Safeguards.*

[FR Doc. 99-756 Filed 1-12-99; 8:45 am]

BILLING CODE 7590-01-P

## NUCLEAR REGULATORY COMMISSION

[Docket No. 72-09]

### Public Service Company of Colorado, Fort St. Vrain Independent Spent Fuel Storage Installation; Exemption

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Public Service Company of Colorado (PSCO, the licensee) holds Materials