

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION  
BEFORE THE COMMISSION

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In the Matter of

DUKE ENERGY CORPORATION

Docket No's. 50-413-OLA,  
50-414-OLA

Catawba Nuclear Station, Units 1 and 2)

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**DECLARATION OF DR. EDWIN S. LYMAN  
IN SUPPORT OF BREDL PETITION FOR DISCRETIONARY  
REVIEW AND STAY MOTION**

Under penalty of perjury, Edwin S. Lyman declares as follows:

1. My name is Edwin S. Lyman. I am a Senior Staff Scientist at the Union of Concerned Scientists.
2. I am a qualified expert on matters relating to nuclear power plant security and nuclear power plant safety. My curriculum vitae was submitted in this proceeding on October 21, 2003, as an attachment to my declaration supporting Blue Ridge Environmental Defense League's ("BREDL's") first set of safety contentions. The Atomic Safety and Licensing Board approved my qualifications as a security expert in *Duke Energy Corporation* (Catawba Nuclear Station, Units 1 and 2), LBP-04-13, 60 NRC 21 (2004).
3. I served as BREDL's expert witness in hearings before the ASLB on contested safety and security issues related to Duke's application for a license amendment to use lead test assemblies ("LTAs") of mixed oxide ("MOX") fuel at the Catawba nuclear power plant, including BREDL Security Contention 5.
4. During a hearing that was held the week of January 11-14, 2005, I presented testimony regarding my view that Duke has failed to justify its request for an exemption from certain security regulations applicable to facilities that possess formula quantities of strategic special nuclear material ("SSNM"). Each MOX LTA contains 20 kilograms, or ten formula quantities, of plutonium. As I testified, Duke has not shown with a high level of assurance that if the exemption is granted, Duke will be able to protect the plutonium MOX fuel against the design basis threat ("DBT") for theft in 10 C.F.R. § 73.1(a)(2), which is significantly more severe than the DBT for sabotage in 10 C.F.R. § 73.1(a)(1). The security requirements from which Duke seeks to be excused are highly significant requirements that were developed specifically to ensure protection of materials that could be used in nuclear weapons from theft by terrorists. Therefore, I believe that to allow Duke to possess the four plutonium MOX LTAs at the Catawba plant would pose an

unacceptable risk of irreparable harm to public health and safety and the common defense and security.

5. The Staff's letter to Duke of March 3, 2005, appears to equate the security risk posed by the MOX LTAs with the security risk posed by conventional low enriched uranium ("LEU") fuel, which is enriched to less than 20% uranium-235. Letter from Robert E. Martin, Sr., NRC, to H.B. Barron, Duke, re: Catawba Nuclear Station, Units 1 and 2 re: Issuance of Amendments (TAC Nos. MB7863 and MB7844), Enclosure 1 at 10. This is a completely erroneous argument that is inconsistent with all domestic and international standards and requirements regarding security and safeguards for nuclear materials. The process needed to convert LEU fuel to highly enriched uranium usable in a nuclear weapon requires uranium enrichment capability. Uranium enrichment is so much more difficult that the process needed to separate plutonium from the uranium in an unirradiated MOX fuel assembly as to be utterly incomparable for purposes of establishing security requirements. I would also note that the NRC Staff has never advanced this theory before in Supplement 1 of its Safety Evaluation Report of May 5, 2004 or in the course of the litigation on Security Contention 5.

6. I believe it is appropriate for the Commission to review BREDL's petition on an expedited basis because the four MOX LTAs that Duke intends to use at the Catawba nuclear plant are likely to be shipped from France to the United States during the next few weeks.

7. In light of the deficiencies in Duke's security measures for protection of plutonium MOX fuel, I believe that the fuel would be more secure if stored at the Savannah River site until such time as the ASLB issues a decision favorable to Duke. In this regard, I would note that the K-area plutonium storage facility is a Category I facility. Moreover, I am not aware of any obstacles that would prevent the U.S. Department of Energy ("DOE") from leaving the four plutonium MOX fuel assemblies in France until the ASLB resolves the contested issues regarding Security Contention 5. If it proves necessary to ship the plutonium MOX fuel assemblies immediately, however, they can be stored at the Savannah River Site K-Area plutonium storage facility until such time the NRC determines that security measures at the Catawba plant are adequate.

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Edwin S. Lyman, Ph.D.

March 9, 2004