

RELATED CORRESPONDENCE

June 18, 2004

DOCKETED
USNRCUNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

June 24, 2004 (10:30AM)

BEFORE THE ATOMIC SAFETY AND LICENSING BOARDOFFICE OF SECRETARY
RULEMAKINGS AND
ADJUDICATIONS STAFF

In the Matter of:

DUKE ENERGY CORPORATION

(Catawba Nuclear Station,
Units 1 and 2)Docket Nos. 50-413-OLA
50-414-OLADUKE ENERGY CORPORATION'S SECOND SUPPLEMENTAL RESPONSE TO BLUE
RIDGE ENVIRONMENTAL DEFENSE LEAGUE'S FIRST DISCOVERY REQUEST

On April 14, 2004, Duke Energy Corporation ("Duke") filed a Response to the March 31, 2004 "Blue Ridge Environmental Defense League's First Set of Discovery Requests Directed to Duke Energy Corporation ("BREDL's First Set"). Consistent with the direction of the Licensing Board in Paragraph 15 of its "Corrected Order (Confirming Matters Addressed at March 25 Telephone Conference)," addressing the parties' obligation to supplement discovery responses in this proceeding, Duke provided its first supplemental response to BREDL's First Set on May 5, 2004. Duke herein provides its second supplemental response to BREDL's First Set.

GENERAL INTERROGATORY NO. 2: *For Contentions I, II, and III, give the name, address, profession, employer, area of professional expertise, and educational and scientific experience of each person whom Duke expects to call as a fact or expert witness at the hearing. For expert witnesses, provide a list of all publications authored by the witness within the preceding ten years and a listing of any other cases in which the witness has provided fact and/or expert testimony and/or submitted affidavit(s) or declaration(s) within the preceding four years. For purposes of answering this interrogatory, the educational and scientific experience of expected witnesses may be provided by a resume of the*

person attached to the response. Fact and expert witnesses should be distinguished.

Duke Response to General Interrogatory 2:

Based on the discovery responses provided by BREDL and the deposition of Dr. Lyman, Duke has identified an additional individual it may call as a witness on Contention I: Dr. J. Kevin McCoy. The requested witness information for Dr. McCoy is provided in Attachment 1. Dr. McCoy's resume is provided as Attachment 2.

GENERAL INTERROGATORY NO. 3: *For each witness identified in response to General Interrogatory No. 2 above, describe the facts and opinions to which each witness is expected to testify, including a summary of the grounds for each opinion, and identify the documents (including all pertinent pages or parts thereof), data or other information which each witness has reviewed and considered, or is expected to consider or to rely on for his or her testimony.*

Duke Response to General Interrogatory 3:

The facts and opinions as to which Dr. McCoy would testify are summarized below:

➤ Dr. J. Kevin McCoy

Like conventional uranium fuel, mixed oxide (MOX) fuel is in the form of sintered ceramic pellets. The MOX pellets in the Catawba lead assemblies will be more than 95% uranium dioxide. With respect to the phenomenon of fuel relocation during a postulated design basis loss of coolant accident (LOCA), the MOX pellets are expected to respond in a manner that is fundamentally similar to uranium fuel. Any variation with respect to filling ratio, etc., will be insignificant.

Grounds for opinion:

- Duke Power analyses, as documented in the February 27, 2003 Duke Energy Corporation MOX fuel lead assembly license amendment request ("LAR") and subsequent related submittals (e.g., responses to NRC requests for additional information).

- Professional experience in materials engineering (metallurgy and ceramics) and the behavior of commercial nuclear fuel and fuel cladding.
- Post-irradiation examination results for MOX and uranium fuel.

Documents That May Be Relied Upon:

At this time Dr. McCoy has not identified any specific documents he will rely upon. A supplement will be provided if he identifies any additional documents.

REQUEST NO. 2: All documents in your possession, custody or control relevant to each BREDL admitted contention, and to the extent possible, segregated by contention and separated from already produced documents.

REQUEST NO. 3: All documents (including experts' opinions, workpapers, affidavits, and other materials used to render such opinion) supporting or otherwise relating to testimony or evidence that you intend to use in the hearing on each BREDL admitted contention.

Duke Response to General Document Production Requests 2 and 3:

Attachment 3 identifies additional documents being provided in response to these two document production requests. None of the documents being provided are proprietary. However, we understand that the enclosed document from the Nuclear Energy Agency is copyrighted. Duke has obtained copyright permission to provide the copy.

Respectfully submitted,

A handwritten signature in black ink that reads "David A. Repka". The signature is fluid and cursive, with a long horizontal line extending to the right.

David A. Repka
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ATTORNEYS FOR DUKE ENERGY
CORPORATION

Dated in Washington, District of Columbia
This 18th day of June 2004

Attachment 1

General Interrogatory No. 2 - Prospective Witnesses
(Contention I)

Name	Address	Profession	Employer	Area of Expertise
Dr. J. Kevin McCoy	Framatome ANP, Inc. AREVA Lynchburg, VA	Materials Engineering	Framatome ANP, Inc.	Behavior of commercial nuclear fuel

Dr. J. Kevin McCoy

**Advisory Engineer - Materials
Framatome ANP, Inc.**

General Background

Dr. McCoy, a veteran scientist/engineer, has more than 20 years' experience, largely in the nuclear industry. He has proposed, planned, and executed research projects for the Nuclear Regulatory Commission (NRC), the Air Force Office of Scientific Research (AFOSR), the National Science Foundation (NSF), and the Electric Power Research Institute (EPRI). Dr. McCoy's research included developing models for waste glass degradation, identifying a new mechanism for densification of ceramics, vectorizing computer codes to run 500 times faster, and studying boundaries between quasi-periodicity and chaos as it applies to hydrogen embrittlement. In his research, Dr. McCoy developed methods for calculating the positions of atoms at a crack tip. He even found a method for calculating the energy barrier that must be surmounted to break one atomic bond.

Dr. McCoy worked on the Yucca Mountain Project (YMP) for nearly eight years, providing leadership and technical expertise on materials selection and nuclear waste behavior. He coordinated the efforts of Framatome ANP, Inc. and Lawrence Livermore National Laboratory to identify material properties and make material selection for the waste packages slated for use in the proposed geologic repository. Also, Dr. McCoy led the revision of a comprehensive report on nuclear waste behavior. This report summarizes \$25 million worth of research and is one of nine major documents used to support the site recommendation for the nation's first high-level radioactive waste repository.

His recent work has focused on the behavior of commercial nuclear fuel. In the past three years he has written or revised topical reports on dry fuel storage and the performance of a mixed oxide fuel assembly. He has also written several reports on poolside postirradiation examinations of irradiated fuel.

Education

- Ph.D., Materials Engineering, Purdue University
- M.S., Metallurgical Engineering, Purdue University
- B.S. (with Highest Distinction), Metallurgical Engineering, Purdue University

Qualifications/Certifications

- Good conversational and written French
- Listed in Who's Who in Science and Engineering
- Member, American Nuclear Society.

Publications

- Civilian Radioactive Waste Management System Management & Operating Contractor, *Waste Form Degradation Process Model Report*, TDR-WIS-MD-000001 REV 00 ICN 01, July 2000.

Representative of more than 30 peer-reviewed journal articles authored or co-authored are:

- D. Stahl, J. K. McCoy, and R. D. McCright, "Impact of Thermal Loading on Waste Package Material Performance", in *Scientific Basis for Nuclear Waste Management XVIII*, 671-678, ed. T. Murakami and R. C. Ewing, Materials Research Society, Pittsburgh (1995).
- J. K. McCoy, D. Stahl, and T. A. Buscheck, "A Corrosion Model for Waste Package Corrosion-Allowance Materials", in *Proceedings of the Sixth Annual International Conference on High Level Radioactive Waste Management*, 565-567, American Nuclear Society, La Grange Park, Illinois, and American Society of Civil Engineers, New York (1995).
- J. K. McCoy, "Fuel and Cladding Oxidation Under Expected Repository Conditions", in *Proceedings of the Seventh Annual International Conference on High Level Radioactive Waste Management*, 396-397, American Nuclear Society, La Grange Park, Illinois, and American Society of Civil Engineers, New York (1996).

Publications - continued

- J. K. McCoy, "Mechanical Failure of Commercial Spent Nuclear Fuel Cladding", in *Proceedings of the Sixth International Conference on Nuclear Engineering*, 632-633, American Society of Mechanical Engineers, New York (1998).
- J. A. Blink, T. W. Doering, J. K. McCoy, R. W. Andrews, J. H. Lee, D. Sevougian, V. Vallikat, D. G. McKenzie, and J. N. Bailey, "Factors Affecting Performance of Engineered Barriers", in *Proceedings of the Eighth Annual International Conference on High-Level Radioactive Waste Management*, 290-292, American Nuclear Society, La Grange Park, Illinois (1998).

Applicable Work Experience

Advisory Engineer II, Framatome ANP, 1993 – Present

- Revised topical report on performance of a mixed oxide fuel assembly. Report compares materials and performance of mixed oxide and low-enriched uranium fuels
- Wrote topical report on behavior of spent nuclear fuel in dry storage. Provided justification for increasing the allowable burnup limit
- Prepared six reports on poolside postirradiation examinations of nuclear fuel assemblies
- Predicted behavior of high-level radioactive wastes and support selection of waste container material
- Led revision of a comprehensive report on nuclear waste behavior. Report summarizes \$25 million worth of research and is one of nine major documents that supported site recommendation for the nation's first high-level nuclear waste repository
- Critically reviewed models for creep rupture of spent fuel cladding. Determined that previous models did not adequately account for cladding texture. Showed that inclusion of the effects of texture increases predicted creep life by a factor of six
- Developed novel mathematical approach for describing degradation of spent nuclear fuel. The new approach is based on a deep insight into the similarities in the degradation

behavior of fuel rods that start to degrade at different times. Lengthy performance calculations are now performed more than ten times faster

- Developed computer model to simulate bending and breaking of fuel rods during earthquakes. Proved that earthquakes strong enough to break fuel rods occur only once in a million years and would have very little effect on repository performance.

Principal Research Scientist, Battelle, Metals and Ceramics Department, Columbus, Ohio (1981–1992)

- Proposed, planned, and executed research projects. Analyzed physical processes in materials, mostly with C code. Provided own research support. Served as system administrator for departmental UNIX computer system with twenty users
- Developed methods for calculating the positions of atoms at a crack tip. Found method to calculate the energy barrier that must be surmounted to break one atomic bond. Knowing the height of the barrier is critical for calculating crack growth rates. This breakthrough came after several years of unsuccessful efforts by other scientists
- Developed technique for instrumenting hot isostatic pressing. Instrumentation provides a continuous record of material behavior and increases the amount of data obtained from costly experiments by three to five times
- Managed personal computer resources for department with fifty users. Planned hardware acquisitions and allocated resources.

Supplemental Index to Documents Produced

Document Description	Date of Document	Beginning Bates Number	Ending Bates Number	Responsive To	Proprietary
Proceeding of the Topical Meeting on LOCA Fuel Safety Criteria	3/22-23/01	010972	011076	General No. 2, 3	No
E-mail from Bob Harvey to Steve Nesbit	6/7/2004	011077	011079	General No. 2, 3	No
An IPSN Research Programme to Resolve Pending LOCA Issues		011080	011090	General No. 2, 3	No
CSNI Report 129, PWR Fuel Behaviour in Design Basis Accident Conditions, IECD/NEA, December 1986	12/1/1986	011091	011316	General No. 2, 3	No
Nesbit, Steve and Eller, Jim "Basis for the Design of Reactor Cores Containing Weapons Grade MOX Fuel" Advances in Nuclear Fuel Management III, American Nuclear Society, October 2003	10/1/2003	011317	011328	General No. 2, 3	No

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

Docket Nos. 50-413-OLA
50-414-OLA

CERTIFICATE OF SERVICE

I hereby certify that copies of "DUKE ENERGY CORPORATION'S SECOND SUPPLEMENTAL RESPONSE TO BLUE RIDGE ENVIRONMENTAL DEFENSE LEAGUE'S FIRST DISCOVERY REQUEST," in the captioned proceeding, have been served on the following by deposit in the United States mail, first class, this 18th day of June, 2004. Additional e-mail service, designated by *, has been made this same day, as shown below.

Copies of the referenced filing with the documents being provided in connection with the filing have been served by courier only to counsel for Blue Ridge Environmental Defense League and the NRC Staff (identified by †).

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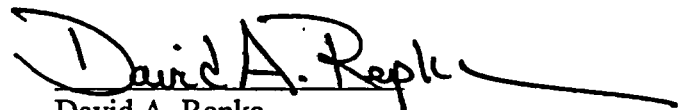
Office of the Secretary*
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Attn: Rulemakings and Adjudications Staff
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Office of Commission Appellate
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**Adjudicatory File
Atomic Safety and Licensing Board Panel
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