

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

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In the Matter of	)	
	)	
DUKE ENERGY CORPORATION	)	Docket Nos. 50-369, 50-370,
	)	50-413 and 50-414
	)	
(McGuire Nuclear Station,	)	
Units 1 and 2, and	)	September 6, 2002
Catawba Nuclear Station	)	
Units 1 and 2)	)	
_____	)	

**Down The Rabbit-Hole**

(NB: Quotations from Lewis Carroll are *italicized* in this brief)

The Blue Ridge Environmental Defense League is challenging Duke Energy's application for license renewal at its Catawba and McGuire nuclear power stations. Our immediate goal is to stop the renewal of Nuclear Regulatory Commission operating licenses for four of the most dangerous commercial reactors in the United States. Also, we oppose the plutonium fuel program for nuclear power which is being implemented by Duke and the US Department of Energy.

Our precedent-setting campaign is exposing fundamental flaws in the federal government's plutonium waste plans and the utility's nuclear power operations. But the world of the Nuclear Regulatory Commission has many tiny doors and rabbit-holes. *Alice In Wonderland* is a fairy tale, but real-life Nuclear Regulatory Commission proceedings share similar convolutions of words and common sense.

*"The King cackled out 'Silence!' and read out from his book, 'Rule Forty-two.*

*All persons more than a mile high to leave the court.'*

*'I'm not a mile high,' said Alice.*

*'You are,' said the King.*

*'Nearly two miles high,' added the Queen.*

*'Well, I shan't go, at any rate,' said Alice: 'besides, that's not a regular rule: you invented it just now.'*

*'It's the oldest rule in the book,' said the King.*

*'Then it ought to be Number One,' said Alice.*

In September 2001 BREDL formally petitioned NRC on behalf of our members in the Charlotte-Rock Hill area to intervene in Duke Energy's license renewals for Catawba and McGuire. The plants are located about twenty miles from Charlotte. The Nuclear Regulatory Commission granted Duke 40-year operating licenses; to operate longer, the owner must apply for a renewal. According to federal regulations, an application for license renewal cannot be submitted to the NRC before the plant has operated for 20 years.

*"The Mock Turtle replied; 'And then the different branches of Arithmetic-- Ambition, Distraction, Uglification, and Derision.'"*

Duke Power began operating its two McGuire reactors in 1981 and 1983; the two units at Catawba started up in 1985 and 1986. However, Duke Power requested an exemption from the 20 year minimum which was granted by the NRC, allowing the company to submit applications for all four plants in 2001. We believe Duke sought the exemption to segment its re-licensing process, separating the issues of extended operation from questions involving the use of plutonium fuel, slated to begin in 2007.

Like all other commercial nuclear reactors in the United States, Duke's power plants use uranium fuel. An atomic chain reaction releases neutrons which splits other atoms; this fission reaction must be precisely controlled in order to produce electric power. Compared to uranium, plutonium releases more neutrons at higher speed and energy. A higher energy release leads to a more rapid breakdown of the metal alloys which contain and control the nuclear chain reaction. A fundamental issue which must be addressed by operators seeking license extensions

centers on the wear and tear on an aging reactors' metal and concrete structures. With the exemption, Duke could obtain new licenses for all four reactors before converting them to the untested plutonium fuel.

*“Let me see: four times five is twelve, and four times six is thirteen, and four times seven is...”*

In October BREDL filed a second petition which called upon NRC to dismiss Duke Energy's license renewal request. Duke's Environmental Impact Statement did not include the impacts of plutonium fuel on aging reactor systems and hardware or the increased security risks from terrorist attacks in the aftermath of September 11. Also, we contend that the NRC improperly granted an exemption from the 20-year license application requirement. This petition was ultimately denied by NRC which said the “license renewals at issue, if granted, will not take effect for at least another 20 years.”

*“‘Give your evidence,’ said the King; ‘and don't be nervous, or I'll have you executed on the spot.’”*

As a result of our September petition, the Nuclear Regulatory Commission ruled that BREDL had legal standing. So, on November 29, 2001 we filed contentions, or legal arguments, detailing specific issues in five areas. BREDL argued that Duke's license renewal application: 1) failed to include non-cancer effects of radiation exposure to the public including birth defects, infant mortality, and neurological effects; 2) failed to assess human reliability and the ability of plant personnel to prevent or reduce the impact of accidents in the aging reactors; 3) failed to assure that critical steam generator hardware can avoid catastrophic failure; 4) failed to adequately address the effects of metal fatigue and embrittlement in the reactor vessel, and 5) failed to demonstrate that reactor structures can contain radiation during a severe accident. The plants use an “ice condenser” system: a method of reducing pressure inside a nuclear reactor's containment building during an accident by venting gases to baskets of ice to absorb heat. Such reactors reduce the thickness of concrete walls from the typical 12 feet to just 3 feet, relying on

the ice to prevent heat and pressure from exploding the containment building and releasing radiation in a Chernobyl-style accident.

*“Curiouser and curiouser!”*

In December BREDL staff appeared before a three judge panel of the Atomic Safety Licensing Board to provide further information. Arguing before the judges in the US District Courtroom in Charlotte, we faced a peculiar nuclear logic. In 1996 the NRC developed a Generic Environmental Impact Statement for nuclear power plants. Issues which apply to all types of reactors are designated Category One; issues which apply to a specific plant are Category Two issues. Nuclear plants are at risk from terrorist attacks and we raised this safety issue. But on December 19<sup>th</sup> we were stunned to hear a Duke attorney argue: “Terrorist attacks are not a category one or category two issue and are not appropriate here.” The NRC agreed.

*“What do you mean by that?” said the Caterpillar sternly. “Explain yourself!”*

Together, the NRC judges, NRC staff, and Duke attorneys worked to whittle down our case, seeking ways to avoid dealing with the substance of our contentions. For example, Jesse Riley, an expert witness who challenged the original Catawba license in the 1980’s, said that the engineering standard for stress cracking was inadequate and that the license renewal should be rejected. Referring to the re-licensing proceedings, he said, “NRC has set up a bureaucratic device, a rule structure inhibiting the introduction of new material.” Mr. Riley said that, contrary to what Duke has presented, the systems which were put in place 20 years ago were designed for only 40 years of operation. He added, “We are playing with enormous danger; let’s not try for 60!” But our contention on metal fatigue and embrittlement of the reactor vessel was dismissed by the judges who said this was not the place to raise this issue.

*“That’s the judge,” she said to herself, “because of his great wig.”*

But some issues raised by BREDL and the Nuclear Information Resource Service in a separate filing were not sidestepped. On January 24, 2002 the ASLB panel of judges issued

their ruling, saying, “BREDL and NIRS have provided a sufficient, reasonably specific explanation of the bases of their contentions...to show that a genuine dispute exists with regard to the facts....”

For the first time in Nuclear Regulatory Commission history, the judges allowed contentions opposing re-licensing of a nuclear power reactor to move to the hearing stage. The panel said that Duke’s license renewal application was “incomplete and insufficient.” The judges reworded and combined our contentions with those submitted by the Nuclear Information Resource Service into two basic issues Consolidated Contention One: Duke failed to account for plutonium fuels impacts during the license renewal period for the Catawba and McGuire plants, and Consolidated Contention Two: Duke failed to utilize published NRC guidance on ice condenser vulnerabilities and failed to address certain severe accidents caused by a loss of power at the reactor.

*‘Consider your verdict,’ the King said to the jury. ‘Not yet, not yet!’ the Rabbit hastily interrupted. ‘There’s a great deal to come before that!’*

The ruling of the judges was a precedent. It caused a stir in the nuclear industry and pressure mounted on BREDL and NIRS to negotiate a settlement. In the months that followed several telephone conferences occurred which involved all the parties to the intervention: NRC, Duke, NIRS, and BREDL. At one point an ASLB judge admonished us for taking a hard bargaining position, warning us against “hanging tough.” But we continue to insist that Duke provide the documents which would allow a full, independent assessment of 20 years of additional operations.

*“I want a clean cup,” interrupted the Hatter: “let’s all move one place on.”*

A setback occurred in April when the Nuclear Regulatory Commission dismissed Consolidated Contention One, on plutonium fuel impacts. In January the Atomic Safety Licensing Board had concluded correctly that Duke was planning to use plutonium fuel. Federal regulations require that a plant will continue to be operated in same manner after license renewal

(10 C.F.R. § 54.29). In an unusual move, the full Commission overruled the panel of judges who it had appointed to decide this very question. Despite our requests, NRC staff attorneys have failed to provide us with a single precedent for this reversal.

The switch to plutonium fuel requires Duke amend its license. But Duke told the NRC that the conversion might not happen, explaining, “Substantial uncertainties and contingencies continue to surround the program.” But a week after the NRC threw out our contention, a *Charlotte Observer* headline read: “Duke Power reaffirms plutonium-use plans.” Duke program manager Steve Nesbit acknowledged this saying, “The important thing, from our point of view and the government’s point of view, is to get started.”

*“Would you tell me,” said Alice, a little timidly, “why you are painting those roses?”*

Our remaining Consolidated Contention Two centers on the reactors’ ice condenser vulnerabilities during severe accidents caused by a loss of power at the reactors. For example, large amounts of flammable hydrogen gas can be produced during core melt accidents in nuclear power plants. At the Three Mile Island meltdown in 1979, over 800 pounds of hydrogen was released to the reactor containment building, leading to spontaneous ignition.

Duke says that measures to prevent hydrogen explosions during a loss of power at its plants would be too costly. But guidance documents published by Sandia National Laboratory (NUREG/CR-6427) state that “ice condenser plants are substantially less robust than other Westinghouse plants with large dry or sub atmospheric containments.” Only nine ice condenser reactors have been constructed; Duke operates four of them at Catawba and McGuire. They rely on ice to reduce temperature and pressure during an accident, Duke’s Catawba and McGuire reactors have much thinner walls than TMI’s to prevent the escape of radiation.

*“‘Nonsense!’ said Alice, very loudly and decidedly, and the Queen was silent.”*

In May BREDL hired Diane Curran to represent us before the NRC. Ms. Curran is an expert on the National Environmental Policy Act and has a great deal of experience with

Nuclear Regulatory Commission cases. We have also enlisted the help of Dr. Edwin Lyman, President of the Nuclear Control Institute. Together they have spearheaded the re-writing of our remaining contention on severe accidents which now details eight fatal flaws in Duke's license renewal:

1. Duke has not supported its severe accident analysis with risk assessment documents. NEPA requires a "hard look" at the impacts of proposed federal actions.
2. Duke failed justify its assumptions on the sequence of events leading to core damage and containment rupture. Duke's failure to support its assertions violates NEPA.
3. Duke failed to justify conclusions which conflict with federal guidance on ice condenser containment (NUREG/CR-6427).
4. Duke failed account for uncertainties in its severe accident analysis. This failure fatally undermines the credibility of its results.
5. Duke's severe accident analysis understated the consequences of accidents because it relied on assumptions that are unreasonable and unsupported.
6. Duke failed to obtain peer review for revisions to its risk assessment document which forms the basis for its accident analysis.
7. Duke inflated the cost of critical safety features, resulting in a flawed cost-benefit analysis.
8. Duke failed to include the alternative of *not* renewing the McGuire and Catawba reactors.

*"Here one of the guinea-pigs cheered, and was immediately suppressed by the officers of the court. (As that is rather a hard word, I will just explain to you how it was done. They had a large canvas bag, which tied up at the mouth with strings: into this they slipped the guinea-pig, head first, and then sat upon it.) 'I'm glad I've seen that done,' thought Alice. 'I've so often read in the newspapers, at the end of trials, "There was some attempts at applause, which was immediately suppressed by the officers of the court," and I never understood what it meant till now.'"*

From the beginning, Duke has refused to release documents which would allow an independent analysis of their reactors' safety: the probabilistic risk assessment. On July 29, 2002 the Atomic Safety Licensing Board judges convened a telephone conference and directed the parties to proceed to discovery, which could result in the release of the documents. But Duke, unsatisfied with the result, asked for "reconsideration" of the judges' decision. The NRC staff attorneys, as usual, agreed with Duke.

*"'Let's go on with the game,' the Queen said to Alice."*

On August 28, 2002 the ASLB Panel judges issued a Memorandum and Order which suspends further discovery and holds in abeyance *bona fide* agreements reached by all parties on July 29<sup>th</sup>. Moreover, the ASLB Panel abandoned its responsibility in the matter by asking the Commission to rule on the scope of NUREG/CR-6427 and its applicability to Duke's reactors. The ASLB Panel said, "How these two central issues are resolved may largely determine...whether information Duke has provided...has rendered moot...Consolidated Contention 2."

*"They're dreadfully fond of beheading people here; the great wonder is, that there's any one left alive!"*

United States Nuclear Regulatory Commission proceedings have the trappings of a legal system, but lack the imperative of seeking justice. The end result is an abdication of regulatory authority with regard to nuclear power.

We expect to have a full hearing on Contention Two and the disclosure of the documents in question. We maintain that Duke's safety analysis is incomplete and that severe accidents are possible. If Catawba or McGuire lose electrical power, a chain of events could lead to hydrogen explosions and releases of radioactive materials into the air and water, contaminating the Charlotte area for decades. Our campaign will continue until the Nuclear Regulatory Commission responds to the safety concerns raised by the people of North and South Carolina.



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Louis Zeller

September 6, 2002