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UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

OFFICE OF THE SECRETARY  
RULEMAKINGS AND  
ADJUDICATIONS STAFF

Before The Commission

Richard A. Meserve, Chairman  
Edward McGaffigan, Commissioner  
Jeffrey S. Merrifield, Commissioner  
Greta J. Dicus, Commissioner  
Nils J. Diaz, Commissioner

In the Matter of

Docket No's. 50-369-LR, 50-370-LR,  
50-413-LR, and 50-414-LR

DUKE ENERGY CORPORATION

(McGuire Nuclear Station, Units 1 and 2,  
Catawba Nuclear Station, Units 1 and 2)

February 14, 2002

NIRS RESPONSE TO APPEAL MEMORANDA OF DUKE ENERGY AND NRC STAFF TO  
ATOMIC SAFETY LICENSING BOARD JANUARY 24, 2002 RULING  
ON STANDING AND CONTENTIONS

Duke Energy and NRC staff seek to reverse decisions made by the Atomic Safety Licensing Board (ASLB) panel with respect to the consideration of plutonium (MOX) fuel and also severe accident mitigation in the current license renewal process for four Duke ice condenser reactors near Charlotte. The ASLB ruling mandates an evidentiary hearing to determine whether the upcoming use of plutonium fuel in these reactors is currently a proposal (LBP-02-04 pg 68), and therefore should be considered in any aging analyses and in the environmental impact statement process for license renewal at Duke's Catawba 1 & 2 and McGuire 1 & 2 in the Carolinas. With respect to severe accident mitigation and station blackout, the Board ruled that petitioners have defined a sufficient and genuine dispute with regard to material fact (LBP-02-04 pg 96), and therefore the concerns of Nuclear Information and Resource Service (NIRS) and Blue Ridge Environmental Defense League should be heard. NIRS asks the Commission uphold all aspects of the January 24<sup>th</sup> ASLB ruling, and also agree with Duke Energy that the

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Commission should decide the various issues individually. If the commission reverses the decision by ASLB to hear the threshold question on MOX, we ask, in the alternative, that NIRS alternatives offered here be adopted to ensure that the public has the opportunity to fully participate in the new and experimental weapons grade plutonium fuel project.

### PLUTONIUM FUEL

Nuclear Information and Resource Service appreciates the opportunity to address the Commission on matters pertaining to plutonium fuel (MOX) and particularly plutonium fuel originating from dismantled nuclear weapons. We have had a leadership role with our many members and allied organizations in bringing the public into this important and complex policy arena since 1996 (see letter to President Clinton posted at <http://www.nirs.org/mox/Russlttr.txt> ).

What is at issue here is simply when the Commission will make a ruling on whether MOX is within the scope of license renewal at Catawba and McGuire. Duke argues in their MEMORANDUM OF LAW IN SUPPORT OF APPEAL (Duke appeal) that the Commission has already made this decision by virtue of the formulation of license renewal regulations<sup>1</sup>, and therefore ASLB erred in admitting NIRS contention 1. ASLB argues that the Commission will make the decision either at this juncture by overturning their ruling of January 24, 2002, or alternately the Commission would act in the wake of any evidentiary hearing on whether MOX is in scope, as it would be likely that an appeal would be heard at that time (see LBP-02-04 pg 68) regardless of the ruling.

NIRS agrees with Duke that we are dealing with "significant and novel issues of law and

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<sup>1</sup> There is however no reference to plutonium fuel, weapons grade plutonium fuel nor MOX in the Part 50, 51 and 54 regulations. It is NIRS view that in fact there are no current rules about MOX fuel use, or its consideration.

policy" (Duke appeal pg 10). NIRS does not agree with Duke that this situation arises from the admission of the MOX contention. Rather, this unique situation is caused by Duke Energy's participation in an as yet unregulated experiment to adopt the use of weapons grade plutonium (derived from junked warheads and other waste streams) in nuclear reactors currently licensed for uranium fuel. As discussed already in this case, the current license bases of any reactor are a complex array of regulations, documents and conditions. Each and every aspect of the license basis will have to be assessed in the course of making such a sweeping change.

Duke Energy's decision to pursue license renewal was immediately AFTER plutonium fuel use was placed on the table by the March 9, 1999 signature of Robert H. Ihde on US Department of Energy Contract No. DE-AC02-99-CH10888 requisitioning "Mixed Oxide (MOX) Fuel Fabrication and Reactor Irradiation Services," wherein Catawba and McGuire are named in section H.14 Mission Reactors to Perform Irradiation Services (contract page H-23). The decision to pursue license renewal before Duke Energy is ready to ask for regulation of this activity is what has created the "untenable position," experienced by NRC staff (staff brief in support of Duke appeal pg 12) since renewal requires consideration of the very time frame of MOX fuel use, as well as many parameters that would change as a result of such a change to the license basis.

While NIRS commiserates with NRC staff about the difficulty of this situation, we again disagree on the source of the problem. It is not the admission of contentions by the ASLB that makes this juncture untenable; it is Duke seeking to extend operations into (and possibly beyond) the time frame of plutonium fuel use after they have officially committed to be part of DOE's program, but before Duke or NRC are ready to regulate this activity.<sup>2</sup> NRC has participated in creating this untenable situation since Duke sought and obtained exemptions from NRC (also

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<sup>2</sup> Duke offers their withdrawal from the plutonium fuel program as one of the alternative outcomes of this proceeding,

after signing the DOE MOX contract) to enter the renewal process early for three of four reactors in question.

Duke argues that the MOX use issues are premature. NIRS submits that it is license renewal that is premature, given the fact that Duke is under a contract that states:

“...the Contractor may only propose to replace a mission reactor if: (1) the reactor has been shutdown (sic) for economic reasons; or (2) the NRC or the utility company has required the reactor to be shutdown (sic) for safety reasons and , in either case, the shutdown (sic) will preclude accomplishment of the plutonium disposition mission schedule.”<sup>3</sup>

Given this level of obligation, NIRS is deeply concerned that any action by the Commission with regard to these reactors must fully anticipate the impact of plutonium fuel. Duke's obligation to this program is further demonstrated by a substantial taxpayer investment that is already being made in the plutonium fuel pilot program at Duke. When NRC notified Duke Energy that it would bill Duke for NRC's costs to develop the capacity to regulate weapons grade plutonium fuel use in Duke reactors, Duke responded that any NRC costs would be referred by Duke to the already referenced contract. <sup>4</sup>

If Duke and NRC are not ready to assess the environmental and safety impacts of plutonium fuel use, it is not too late for the Commission to correct the sequence and simplify the overall program of plutonium fuel development and use in Duke's reactors. NIRS respectfully supports the option offered by Duke (Duke appeal pg 28) that the Commission move to suspend or otherwise delay Duke's license renewal proceeding until such a time as Duke is either officially out of the plutonium fuel program, or alternately, a new licensing basis that reflects irradiation of weapons grade plutonium is in place. This would avoid "premature analysis" of MOX (Duke

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which NIRS would whole heartedly support, and would even support waiver of contractual obligations below.

3 US Department of Energy Contract No. DE-AC02-99-CH10888 "Mixed Oxide (MOX) Fuel Fabrication and Reactor Irradiation Services," Section H.14 Mission Reactors to Perform Irradiation Services, page H-23.

4 See letter from Duke Energy Corporation July 25, 2001 to Jesse L. Funches, Chief Financial Officer, US NRC. Duke EDO Control #G20010325.

appeal pg 23) and allow (in the event of MOX use) for the impact of plutonium fuel (and the cumulative impact) on aging and other safety matters contemplated in license extension and renewal. Environmental impacts of plutonium fuel could be analyzed with full public involvement. Perhaps equally important is the fact that this is the only way to efficiently avoid having to consider issues of safety or environmental concern more than once.

In the alternative, if the Commission continues to accept Duke's renewal application under the current license basis, there are still a number of possible paths particularly since this is as yet uncharted territory. The first is to sustain the ASLB ruling of January 24 and proceed with the development of the record on the applicability of MOX to Duke's license renewal. In the alternative, if the Commission chooses to overturn the ASLB ruling, NIRS requests that the Commission make two commitments as part of the ruling:

- 1) All issues pertaining to MOX analysis that meet contention requirements of 10 CFR 2.714 will be admissible in any future MOX / plutonium fuel proceeding under the NRC's authority with no foreclosure by any interim regulatory process or action in which MOX is not considered; and
- 2) The Commission makes a commitment to conduct a full-scale environmental impact statement process that considers MOX fuel use as a supplement to the current license EIS, whether original or renewed, at such a time as MOX use is considered to be a current proposal.

Currently there is no formal commitment from NRC to conduct an EIS on MOX use, and yet many assumptions made in the GEIS on license renewal would no longer be supported if

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MOX fuel is in use<sup>5</sup>. We disagree with Duke that the only difference between an environmental assessment and an environmental impact statement is documentation (Duke appeal note 30, pg 29). The degree of public involvement, access to information, and the bar for entering into dispute, are substantially different. Duke asserts that no environmental issue would escape review by the NRC (appeal pg. 24). We contest this assertion: if there is no EIS it is not credible that the NRC will consider every issue that might have been raised by the public, if, in fact, the public has no opportunity to raise such issues.

The Department of Energy assured NIRS from the day that the dual track plutonium disposition mission was launched<sup>6</sup> that the Commission would include the public in the environmental analysis of plutonium fuel use. Reactor communities were specifically excluded from full participation in DOE's NEPA process (even with repeated requests for inclusion from NIRS and others). NRC must carry the burden and ensure that the untenable situation that Duke Energy has created will be resolved in such a way that the NRC's mandate for public participation and protection of public health, safety and our environment is fully realized with respect to plutonium fuel. If the Commission decides to defer all plutonium fuel consideration at this time, and to proceed with Duke license renewal, NIRS asks that the proposed commitments (above) to a complete and open process be memorialized in such a ruling.

#### BREDL / NIRS Contention 2 on Station Blackout and Severe Accident Mitigation

Duke Energy and NRC Staff seek to overturn the ruling of the Atomic Safety Licensing Board in their decision to admit for hearing the combined Nuclear Information and Resource Service (NIRS) and Blue Ridge Environmental Defense League (BREDL) consolidated contention

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<sup>5</sup> Example: the off-site committed dose calculation for license renewal assumes LEU uranium fuel. Plutonium is not comparable to uranium, AND MOX fuel derived from nuclear warheads also does not mirror uranium fuel production. NIRS does not validate NRC's committed dose calculation by citing its further inaccuracy if applied to MOX.

<sup>6</sup> Secretary O'Leary in response to Mary Olson's question at DOE plutonium disposition press conference, televised on

on Duke's analysis of station blackout and associated risks of severe accidents and containment failure, and the need to assess an alternative for mitigation of station blackout accident risks in a number of ways. Duke's appeal of the judges' ruling invokes the questions of admissibility, however its overall strategy is to assert that Duke has resolved the issues in the contention by performing new analyses for its responses to NRC staff "requests for additional information" (RAI) (Duke appeal pg 38 & 39).

While NIRS applauds Ms. Franovich and the NRC Staff in adopting the questions resonant with those raised by the BREDL / NIRS contention 2, it is a specious argument that new information, filed after a ruling by the ASLB can be construed as a basis to disqualify a contention AFTER it has already been admitted. This strategy could be likened to a student arriving to class with a newly completed answers and asking for credit AFTER the exam has been graded. While we are pleased that Duke has taken these issues and completed new work, we reserve the right to have the question as to whether our concerns embodied in the consolidated contention have been satisfied be heard on the merits of the contention rather than an after-the-fact admissibility argument based on putative relief.

The Duke responses to NRC RAI (RRAI) were delayed in reaching the NIRS office, both electronically and in US Mail (most likely not to any fault of Duke's). The information is relatively new (2 weeks). We have not had adequate opportunity to assess it. Nonetheless, we believe that there is still a matter of substantial disagreement between the Duke PRA (probabilistic risk assessment ) and NUREG/CR-6427. Dr. Edwin Lyman of Nuclear Control Institute attended a public meeting between NRC Staff and the Nuclear Energy Institute on September 28, 2000

regarding risk informed changes to 10CFR50.44.<sup>7</sup> Excerpts from the meeting summary follow:

The principal focus of the meeting was on the findings of a recent NRC report on the direct containment heating issue for ice condenser plants (NUREG/CR-6427). Some of the principal points:

--- Industry representatives challenged the notion that NUREG/CR-6427 provides any new and useful information regarding this issue, and that based on the conservative assumptions used in that study (e.g. significant amounts of zirconium-water reaction, guaranteed ignition, ignition at worst time, and global burn which includes the upper containment compartments), it is not surprising that NUREG/CR-6427 concludes that containment failure is probable for those sequences.

--- Two major differences between a study prepared by Duke Power for its McGuire nuclear station, and NUREG/CR-6427, involve the assumptions regarding random ignition and the amount of hydrogen generated. NRC staff indicated that if Commission approval was received to proceed with the recommendations for risk-informed changes to 10 CFR 50.44, a more focused evaluation would be performed of these two assumptions.

--- NRC staff indicated that for ensuring mixed containment atmosphere, auxiliary power would not be required for containment fans, since properly spaced igniters should minimize the concern for local combustion.

--- Industry representatives questioned the value of providing auxiliary power just to the igniters without also providing power to the air return fans.

Dr. Lyman, likely to be called as an expert witness at any evidentiary hearing on the matter of the BREDL / NIRS consolidated contention, stated today that the discussion at this meeting was vigorous and centered around a genuine dispute on material issues of fact between NUREG/CR-6427 and Duke Energy's PRA for McGuire. For instance, the probability of random ignition given the accumulation of an explosive concentration of hydrogen is much smaller in Duke's PRA than in NUREG/CR-6427. The probability of random hydrogen ignition is important since it can influence the consequences of a station blackout sequence and thus has an impact on the SAMA cost-benefit analysis. Similarly, the question of whether air return fans are needed in a blackout influence the cost of mitigation.

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<sup>7</sup> A memorandum dated February 28, 2001 From Alan S. Kuritzky, NRR to Mark Cunningham, NRR via Mary T. Drouin, NRR, summarizing this meeting was obtained from ADAMS some time ago.



However, all of these points and the question of whether Duke has addressed the contention satisfactorily is an argument of merit. This appeal is not the appropriate arena for such a debate. If on examination of the Duke RRAI NIRS is satisfied that the concerns have been met, it will withdraw its contention, or entertain settlement. Alternately, Duke could offer a Motion for Summary Disposition to seek a ruling on merit.

NIRS finds it significant that even today (February 14, 2002) NRC staff and representatives of Nuclear Energy Institute met in Rockville, Maryland<sup>8</sup> to discuss issues pertaining to station blackout, coping and recovery in the context of atomic license renewal. NEI and NRC participants referenced hydroelectric power as an alternate AC source during station blackout events repeatedly. NRC staff, in response to NIRS query stated that Peach Bottom has hydropower as an alternate AC source, in addition to Duke's Oconee using hydro as back-up power. There was significant discussion of unresolved issues surrounding the definitions of station blackout and the scope of the license renewal with regards to the restoration of power. NIRS believes that a hearing on BREDL / NIRS contention 2 would assist in clarifying some of the underlying assumptions and presumptions that Duke has made in their original license application calculations on station blackout.

It is important to recognize the context in which these concerns were raised by NIRS. The public is hearing that nuclear reactor sites are large dirty bombs waiting to be set off. It does not take much to realize that as with any other "bomb" a reactor might "go off" accidentally. It is also becoming clear to NIRS members that a severe reactor accident might be the unintended consequence of a hostile or deranged attack on other structures such as the dams that form the artificial lakes that cool the Duke reactors or an attack on the electric distribution grid. It is the

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<sup>8</sup> Mary Olson, NIRS Director of the Southeast Office attended by phone bridge.

acceleration of violence, as well as the documented trend toward more severe weather that forms the nexus between these concerns and the future. The period of extended operation is likely to be subject to even greater levels of disruption unless a large investment in mitigation of the sources of such disruption is made.

Further, the prospect of possible large-scale electric grid failure January 1, 2000 (thankfully avoided) raised the awareness of many people to the vulnerability that US nuclear power reactors have with respect to the loss of electric power. Ensuring Diesel generator reliability has not been a priority of either the regulator or the licensees. There is often a preference for shrinking risks via various forms of "linguistic marginalization" rather than maintenance and enforcement of regulatory requirements. The short time line between "business as usual" and meltdown in the case of loss of all power on a site causes many to be incredulous that NRC did not require a reactor design feature in the first place that would use energy sources on the site (for instance the heat of the reactor itself) to generate power to perform the coping functions with greater reliability and for a longer duration than batteries currently supply. Clearly a hydroelectric installation is such an option.

While we understand that a SAMA analysis does not imply that the alternative will be implemented, it is important to remember that the cost / risk equation that is the SAMA "bottom line" is only accurate if the risk assessment is valid. This is why a hearing on merits is required to determine whether the Duke RRAIs satisfy BREDL / NIRS contention 2.

## CONCLUSION

Nuclear Information and Resource Service respectfully requests that the Commission uphold, in full, the January 24<sup>th</sup>, 2002 ruling by the Atomic Safety Licensing Board and deny both

the appeal of Duke Energy and also that of NRC Staff, on the grounds stated by NIRS in this document, and also those stated by Blue Ridge Environmental Defense League in their response to the appeals, also dated February 14, 2002.

NIRS asks that the Commission consider all alternatives discussed herein, and act to defer Duke license renewal until after the license bases for the period of the new licenses is resolved. In the alternative, NIRS asks to proceed with the evidentiary hearing slated by the ASLB to hear the threshold question. If the Commission rules instead to favor Duke on NIRS Contention 1, NIRS again asks two commitments from the Commission:

- 1) All issues pertaining to MOX analysis that meet contention requirements of 10 CFR 2.714 will be admissible in any future MOX / plutonium fuel proceeding under the NRC's authority with no foreclosure by any interim regulatory process or action in which MOX is not considered; and
- 2) The Commission makes a commitment to conduct a full-scale environmental impact statement process that considers MOX fuel use as a supplement to the current license EIS, whether original or renewed, at such a time as MOX use is considered to be a current proposal.

The ASLB has ruled that BREDL / NIRS contention 2 constitutes a genuine dispute of material fact, and NIRS finds that this dispute must be settled in the arena of a hearing of the merits, and therefore asks that we have our right to that process upheld in the decision at hand.

Respectfully Submitted,



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**BEFORE THE COMMISSION**

**February 14, 2002**

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