Duke Power
A Duke Energy Company

Duke Power
Energy Center
P.O. Box 1006
Charlotte, NC 28201-1006

March 16, 2003

U. S. Nuclear Regulatory Commission
Attention: Document Control Desk
Washington, DC 20555-0001

Subject: Duke Energy Corporation
Catawba Nuclear Station Units 1 and 2, Docket Nos. 50-413, 50-414
Amended Information Regarding Radiological Consequences for
MOX Fuel Lead Assemblies

References:
1. M. S. Tuckman letter dated February 27, 2003 to U. S. Nuclear Regulatory Commission (NRC), Catawba Nuclear Station Units 1 & 2, Docket Nos. 50-413, 50-414, McGuire Nuclear Station Units 1 & 2, Docket Nos. 50-369, 50-370, Proposed Amendments to the Facility Operating License and Technical Specifications to Allow Insertion of Mixed Oxide (MOX) Fuel Lead Assemblies and Request for Exemption from Certain Regulations in 10 CFR Part 50
2. NRC Letter dated July 25, 2003 to M. S. Tuckman, Request for Additional Information Re: Mixed Oxide Lead Fuel Assemblies (TAC Nos. MB7863, 7864, 7865, 7866)
3. M. S. Tuckman Letter dated November 3, 2003 to the NRC, MOX Fuel Lead Assembly License Amendment Request
4. NRC Letter dated February 4, 2004 to H. B. Barron, Request for Additional Information Re: Mixed Oxide Lead Fuel Assemblies (TAC Nos. MB7863 and MB77864)
5. H. B. Barron Letter dated March 1, 2004 to the NRC, MOX Fuel Lead Assembly License Amendment Request

In Reference 1 Duke Energy submitted an application to amend the operating licenses of McGuire and Catawba to allow the use of four MOX fuel lead assemblies. The application was subsequently amended to apply to Catawba only.

In Reference 2 the NRC staff transmitted a Request for Additional Information (RAI) related to the Reference 1 license amendment request. Duke responded to questions related to radiological assessments in Reference 3. In the Reference 3 Response to Question 3b, Duke evaluated the

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bounding impact of four MOX fuel lead assemblies on doses by adjusting dose results based on relative releases of I-131. The adjustment was incorrectly applied. Attachment 1 to this letter provides a correction to the Response to Question 3b as contained in Reference 3.

In Reference 4 the NRC staff transmitted another RAI related to the radiological consequences of using four MOX fuel lead assemblies. Duke responded to that RAI in Reference 5. As was the case in Reference 3, the adjustment to the dose results was incorrectly applied in the Response to Question 1. Attachment 2 to this letter provides a correction to the Response to Question 1 as contained in Reference 5.

The corrections provided herein have no significant impact on the conclusions in the submittals. This statement applies both to Reference 2 and Reference 4. Inquiries on this matter should be directed to Michael T. Cash at (704) 382-5826.

W.R. Mc Collum
Senior Vice President Nuclear Generation
Duke Energy Corporation

Attachments

Oath and Affirmation

W.R. Mc Collum affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.

W.R. Mc Collum

Subscribed and sworn to before me on this 16TH day of March 2004.

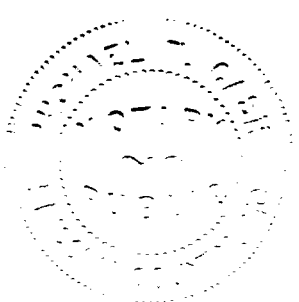
Notary Public

My Commission expires:

MICHAEL T. CASH
Notary Public
Lincoln County, North Carolina
Commission Expires January 22, 2008

January 22, 2008
Date

Seal



cc: with attachment

L. A. Reyes
U. S. Nuclear Regulatory Commission Regional
Administrator, Region II Atlanta Federal Center
61 Forsyth St., SW, Suite 23T85
Atlanta, GA 30303

R. E. Martin (addressee only)
NRC Project Manager
U. S. Nuclear Regulatory Commission
Mail Stop O-8G9
Washington, DC 20555-0001

E. F. Guthrie
Senior Resident Inspector
U. S. Nuclear Regulatory Commission
Catawba Nuclear Station

J. B. Brady
Senior Resident Inspector
U. S. Nuclear Regulatory Commission
McGuire Nuclear Station

Diane Curran
Harmon, Curran, Spielberg & Eisenberg, LLP
1726 M Street, N.W.
Suite 600
Washington, DC 20036

Mary Olson
Director, Southeast Office
Nuclear Information and Resource Service
P.O. Box 7586
Asheville, NC 28802

H. J. Porter, Director
Division of Radioactive Waste Management
Bureau of Land and Waste Management

Department of Health and Environmental Control
Columbia, SC 29201

bcc: attachment

Richard Clark-DCS
Patrick Rhoads-DOE
David Alberstein-DOE
Don Spellman-ORNL
NCMPA-1
NCEMC
PMPA
SRE

bcc: w/attachment (via email)

S. P. Nesbit
M. T. Cash
F. J. Verbos
J. L. Eller
S. P. Schultz
L. F Vaughn
M. W. Scott
L. J. Rudy
J. Hoerner – Framatome ANP
G. A. Meyer – Framatome ANP

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NRIA File/ELL - EC05O
MOX File 1607.2304
Catawba Document Control File 801.01– CN04DM
Catawba RGC Date File (J. M. Ferguson – CN01SA)

ATTACHMENT 1

Corrections to November 3, 2003 Submittal

Response to RADIOLOGICAL CONSEQUENCES Question 3b, beginning on p. 93

Note: Numerical values with changes from previously reported values are enclosed in brackets [ ]

The fourth paragraph in "Evaluations" (i.e., the paragraph beginning "The LOCA evaluation ..." plus the bulleted list) should read:

> The LOCA evaluation is illustrated as follows:
>
> - The number of MOX fuel lead assemblies assumed to be failed (4) is multiplied by the increase in I-131 inventory in MOX relative to LEU (1.09) and a factor to account for the increase in the release fraction being assumed for I-131 for MOX (1.5) to give 6.54. This value represents the equivalent number of LEU assemblies that correspond to 4 MOX assemblies. Note: the increase in I-131 release fraction is per the response to Radiological Consequences Question 3(g).
> - The 6.54 value is added to the number of LEU assemblies assumed to be failed (193 - 4 = 189) to give 195.54.
> - The 195.54 sum is divided by the total number of failed assemblies (193) to give 1.0132, the dose multiplier for a LOCA with four MOX fuel lead assemblies.
> - Subtracting one from the dose multiplier gives 0.0132 or **[1.32%]**, the fractional or percentage increase in dose due to four MOX fuel lead assemblies.
> - The existing dose results are multiplied by the dose multiplier of 1.0132 to calculate the projected thyroid dose with four MOX fuel lead assemblies. For the EAB thyroid dose for the TID LOCA scenario, the current dose is 89 Rem. Multiplied by 1.0132, this gives a total projected thyroid dose of **[90.17]** Rem with four MOX fuel lead assemblies.

The last paragraph in "Evaluations" should read:

> The same calculational process yields an increase in the locked rotor thyroid dose of **[11.96%]** and the rod ejection thyroid dose of **[2.63%]**. The respective total projected exclusion (EAB) thyroid doses are **[4.14]** Rem and **[1.03]** Rem. All of these increases are very small. These results are summarized in Table Q3(b)-2. The results do not remove an appreciable amount of margin.

In addition the following should be considered when reading the "Evaluations" section following the above paragraph:

> It should be noted that this methodology provides a conservatively high estimation of the dose impact of using MOX fuel. For the locked rotor and rod ejection accidents that involve less than 100% fuel failure, the methodology assumes that all of the MOX fuel rods fail

while only some of the LEU fuel rods fail, thereby magnifying the relative impact of MOX fuel. As shown in Tables Q3(b)-1 and Q3(b)-2, the absolute impact on dose is still small.

Modify Tables Q3(b)-1 and Q3(b)-2 to read as follows.

Table Q3(b)-1
Offsite and Control Room Doses with LEU Cores and
Projected Doses with MOX Lead Assembly Cores
for LOCAs with TID and AST Releases

Receptor	TID Dose Limit (Rem Thyroid)	All LEU Core & TID Releases [1] (Rem Thyroid)	MOX Lead Assemblies & Increased TID Releases (Rem Thyroid)	TEDE Dose Limit (Rem TEDE)	All LEU Core & AST Releases [2] (Rem TEDE)	MOX Lead Assemblies & Increased AST Releases (Rem TEDE)
EAB	300	89	**[90.2]**	25	7.2	**[7.29]**
LPZ	300	25	**[25.3]**	25	4.0	**[4.05]**
Control Room	30	5.3	**[5.37]**	5	2.7	**[2.74]**

[1] Catawba UFSAR
[2] Reference Q3(b)-3

Table Q3(b)-2
Offsite Thyroid Doses with Full LEU Cores and
Projected Thyroid Doses with MOX Lead Assemblies
for Locked Rotor and Rod Ejection Accidents

Receptor	Locked Rotor Dose Limit (Rem)	Locked Rotor with all LEU Core[1,3] (Rem)	Locked Rotor with MOX Lead Assemblies[2] (Rem)	Rod Ejection Dose Limit (Rem)	Rod Ejection with all LEU Core[1,3] (Rem)	Rod Ejection with MOX Lead Assemblies[2] (Rem)
EAB	30	3.7	**[4.1]**	75	1.0	**[1.03]**
LPZ	30	1.2	**[1.3]**	75	0.1	0.10

[1] Standard TID releases.
[2] Increased TID releases.
[3] Note that for those accidents where there are multiple applicable cases (such as for concurrent and pre-exiting spiking), the result of the case with the highest dose is shown.

ATTACHMENT 2

Correction to the March 1, 2004 Submittal

Responses to Radiological Question 1, p. 5

Note: Numerical values with changes from previously reported values are bracketed **[ ]**

Under "Response Conclusion," the last sentence should read as follows:

> Examining up to a 23% increase in I-131 activity due to MOX as suggested in the question would increase the calculated final dose results by at most **[0.4]** Rem from those reported in Reference Q1-2.