



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION II
SAM NUNN ATLANTA FEDERAL CENTER
61 FORSYTH STREET SW SUITE 23TB5
ATLANTA, GEORGIA 30303-8931

January 24, 2005

EA-04-189
EA-04-236

Duke Energy Corporation
ATTN: Mr. D. M. Jamil
Site Vice President
Catawba Nuclear Station
4800 Concord Road
York, SC 29745

SUBJECT: NOTICE OF VIOLATION (CATAWBA NUCLEAR STATION - NRC INSPECTION
REPORT 05000413/2005006 AND 05000414/2005006)

Dear Mr. Jamil:

This refers to the in-office inspection completed by the Nuclear Regulatory Commission (NRC) staff on October 29, 2004, concerning Duke Energy Corporation's (DEC) proposed license amendment request (LAR) of February 27, 2003. DEC's request, as supplemented by additional letters through December 10, 2004, proposed to revise its Technical Specifications to allow the use of four mixed oxide (MOX) fuel lead test assemblies (LTAs) at Catawba Nuclear Station Units 1 and 2.

The results of the inspection, including the identification of three apparent violations, were discussed with you and your staff on November 1, 2004, and were forwarded to you by NRC Inspection Report No. 05000413,414/2004010, dated November 3, 2004. Based on the results of the inspection, a pre-decisional enforcement conference was held on December 17, 2004, in the NRC's White Flint North office in Rockville, MD, with you and members of your staff to discuss the apparent violations, their significance, root causes, and your corrective actions. A listing of conference attendees, material presented by the NRC, and material presented by DEC are included as Enclosures 2, 3, and 4, respectively.

Based on the information developed during the inspection and presented at the conference, the NRC has determined that violations of NRC requirements occurred. One cited violation (EA-04-189) is set forth in the enclosed Notice of Violation (Notice), and the circumstances surrounding it are described in detail in NRC Inspection Report No. 05000413/2004010. The cited violation involves two examples of DEC's failure to submit complete and accurate information in violation of 10 CFR 50.9. The first such example involves DEC's initial failure to indicate that the reactor core would also include eight next generation fuel (NGF) LTAs as part of the complete core loading of 193 fuel assemblies. The second example involved DEC's initial reliance on radiation dose evaluations that were not based on the current plant design basis accident radiation dose estimates.

At the conference, DEC stated that it did not contest the violation. DEC also stated that its submittal of the inaccurate information was unintentional. Based on DEC's review of the issues, the root causes for the first example involved inadequate preparation and review for accuracy of

the MOX LAR and inadequate attention to the literal accuracy of statements in the submittal. The root causes for the second example involved a failure to maintain Updated Final Safety Analysis Report (UFSAR) Chapter 15 dose information current as well as inadequate preparation and review of DEC's responses to the NRC's request for additional information (RAI).

Providing complete and accurate information to the NRC is essential to our mission to ensure public health and safety. In both examples, as part of the license amendment review process, it was necessary for the NRC staff to conduct substantial further inquiry to review the acceptability of the thermal-hydraulic conditions, mechanical design, and radiation doses for the actual intended core composition. Therefore, the NRC concludes that this violation should be characterized at Severity Level III in accordance with the Enforcement Policy. Regarding the first violation example, the NRC concluded in its July 27, 2004, safety evaluation supplement that the effect of the eight NGF LTAs on the core had been conservatively evaluated by DEC and that the NGF LTAs would not have any significant effect on the MOX LTAs. The impact of the second example (regarding updated dose information) on the staff's safety evaluation is still under NRC review, but is not expected to result in a different regulatory position.

In accordance with the Enforcement Policy, a base civil penalty in the amount of \$60,000 is considered for a Severity Level III violation. Because your facility has not been the subject of escalated enforcement actions within the last 2 years, the NRC considered whether credit was warranted for *Corrective Action* in accordance with the civil penalty assessment process in Section VI.C.2 of the Enforcement Policy.

DEC's completed corrective actions included the following: DEC reviewed, clarified, and/or corrected its MOX LAR submittals and RAI responses; DEC management immediately took steps to reinforce its expectations regarding accuracy and precision in its submittals and RAI responses; regarding the FSAR Chapter 15 dose information, DEC informed the NRC of the error upon discovery and submitted updated dose information to the NRC; DEC reviewed the FSAR Chapter 15 results against the licensing basis calculations; and DEC also identified the need to correct the loss of coolant accident control room dose for the unfiltered control room leakage and emergency core cooling system leakage. DEC's planned corrective actions included the following: increased formality in the preparation, review, and internal approval of documents submitted to the NRC by creating a separate Basis Document for each LAR and response to an RAI; training of the DEC staff on the standards for completeness and accuracy in NRC correspondence; and FSAR update process improvements. Additional corrective actions taken or planned by DEC were also discussed at the conference. Based on the above, the NRC concluded that credit was warranted for the factor of *Corrective Action*.

Therefore, to encourage prompt and comprehensive correction of violations and in recognition of the absence of previous escalated enforcement action, I have been authorized to propose that no civil penalty be assessed in this case. However, similar violations in the future could result in further escalated enforcement action. Issuance of this Notice constitutes escalated enforcement action, that may subject you to increased inspection effort.

An additional violation was discussed at the conference involving DEC's failure to update the FSAR as required by 10 CFR 50.71(e). Because of its low safety significance and because the issue was entered into your corrective action program (Problem Investigation Process

Nos. G-04-0334 and C-04-4116), the NRC is treating this Severity Level IV violation as a non-cited violation (NCV), consistent with Section VI.A of the NRC Enforcement Policy.

The NRC has concluded that information regarding the reason for the violations, the corrective actions taken and planned to correct the violations and prevent recurrence, and the date when full compliance will be achieved is adequately addressed in the information provided by DEC at the conference (Enclosure 4). Therefore, you are not required to respond to the violations documented in this letter unless the description herein does not accurately reflect your corrective actions or your position. In that case, or if you choose to provide additional information, you should follow the instructions specified in the enclosed Notice.

For administrative purposes, this letter is issued as a separate NRC Inspection Report, No. 05000413/2005006 and 05000414/2005006, and the above violations are identified as follows: VIO 05000413,414/2005006-01, Failure to Provide Complete and Accurate Information Involving MOX Amendment Fuel Assemblies and Related Dose Calculations; and NCV 05000413,414/2005006-02, Failure to Update the FSAR Involving Dose Calculations. Accordingly, AV 05000413,414/2004010-01, AV 05000413,414/2004010-02, and AV 05000413,414/2004010-03 are closed.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter, its enclosures, and your response (if you chose to provide one) will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), which is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. To the extent possible, the response should not include any personal privacy, proprietary, classified, or safeguards information so that it can be made available to the Public without redaction. The NRC also includes significant enforcement actions on its Web site at www.nrc.gov; select **What We Do**, **Enforcement**, then **Significant Enforcement Actions**.

Sincerely,

/RA/

William D. Travers
Regional Administrator

Docket Nos.: 50-413, 50-414
License Nos.: NPF-35, NPF-52

Enclosures:

1. Notice of Violation
2. List of Attendees
3. Information Presented by NRC
4. Information Presented by DEC

DEC

4

cc w/encls:

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DATE	1/18/05	1/18/05	01/04/05	01/13/05	01/05/05

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NOTICE OF VIOLATION

Duke Energy Corporation
Catawba Units 1 and 2

Docket No. 50-413, 50-414
License No. NPF-35, NPF-52
EA-04-189

During an NRC inspection completed on October 29, 2004, a violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," (Enforcement Policy), the violation is listed below:

10 CFR 50.9(a) states, in part, that information provided to the Commission by an applicant for a license or by a licensee shall be complete and accurate in all material respects.

Contrary to the above, on February 27, 2003, November 3, 2003, and March 16, 2004, the licensee submitted incomplete and inaccurate information regarding a proposed amendment to the facility operating license, to allow the irradiation of four mixed oxide (MOX) lead test assemblies (LTAs). Specifically:

- A. The proposed license amendment of February 27, 2003, failed to indicate that the reactor core would also include eight next generation fuel LTAs as part of the complete core loading of 193 fuel assemblies. This information was material to the NRC in that, as part of the license amendment review, substantial further inquiry by the NRC was necessary to review the thermal-hydraulic conditions and mechanical design arising from the proposed reactor core composition.
- B. The above submittals included radiation dose evaluations that were not based on the current plant design basis accident radiation doses. This information was material to the NRC, in that as part of the license amendment review, substantial further inquiry by the NRC was necessary to review the radiation doses arising from the proposed reactor core composition.

This is a Severity Level III Violation (Supplement VII).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance was achieved is already adequately addressed on the docket in the information provided by DEC at the conference (Enclosure 4). However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or your position. In that case, or if you choose to respond, clearly mark your response as a "Reply to a Notice of Violation - EA-04-189," and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555 with a copy to the Regional Administrator, Region II, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you contest this enforcement action, you should also provide a copy of your response, with the basis for your denial, to the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001.

Enclosure 1

If you choose to respond, your response will be made available electronically for public inspection in the NRC Public Document Room or from the NRC's document system (ADAMS), to the extent possible, it should not include any personal privacy, proprietary, or safeguards information so that it can be made available to the public without redaction. ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html>. If personal privacy or proprietary information is necessary to provide an acceptable response, then please provide a bracketed copy of your response that identifies the information that should be protected and a redacted copy of your response that deletes such information. If you request withholding of such material, you must specifically identify the portions of your response that you seek to have withheld and provide in detail the bases for your claim of withholding (e.g., explain why the disclosure of information will create an unwarranted invasion of personal privacy or provide the information required by 10 CFR 2.390(b) to support a request for withholding confidential commercial or financial information). If safeguards information is necessary to provide an acceptable response, please provide the level of protection described in 10 CFR 73.21.

In accordance with 10 CFR 19.11, you may be required to post this Notice within 2 working days.

Dated this 24th day of January 2005

LIST OF ATTENDEES

Nuclear Regulatory Commission:

W. Travers, Region II (RII)
V. McCree, RII
M. Ernstes, RII
R. Borchardt, Office of Nuclear Reactor Regulation (NRR)
J. Nakoski, NRR
E. Hackett, NRR
R. Landry, NRR
S. Peters, NRR
S. LaVie, NRR
R. Franovich, NRR
S. Gagner, Office of Public Affairs
L. Trocine, Office of Enforcement
J. Hull, Office of General Counsel

Duke Energy Corporation:

W. McCollum
D. Jamil
L. Keller
T. Geer
T. Ray
S. Schultz
S. Negbit
R. Cummings
T. Shafeek-Horton

Members of the Public:

L. Zeller, BREDL
S. Dolley, McGraw Hill

**PREDECISIONAL ENFORCEMENT CONFERENCE AGENDA
CATAWBA NUCLEAR STATION**

**DECEMBER 17, 2004
NRC WHITE FLINT OFFICE, ROCKVILLE, MARYLAND**

- I. OPENING REMARKS, INTRODUCTIONS, AND SUMMARY OF ISSUES
 - W. Travers, Regional Administrator, Region II (RII)
 - B. Sheron, Associate Director for Project Licensing and Technical Analysis, Office of Nuclear Reactor Regulation (NRR)
- II. NRC ENFORCEMENT POLICY
 - C. Evans, Regional Counsel and Director of Enforcement Staff, RII
- III. STATEMENTS OF CONCERNS/APPARENT VIOLATION(S)
 - V. McCree, Director, Division of Reactor Projects, RII
- IV. LICENSEE PRESENTATION
- V. BREAK/NRC CAUCUS
- VI. NRC FOLLOWUP QUESTIONS
- VII. CLOSING REMARKS
 - W. Travers, Regional Administrator, RII

Apparent Violation #1

10 CFR 50.9(a) states, in part, that information provided to the Commission by an applicant for a license or by a licensee shall be complete and accurate in all material respects.

Contrary to the above, on February 27, 2003, the licensee submitted incomplete and inaccurate information contained in a proposed amendment to the facility operating license, to allow the irradiation of four mixed oxide lead test assemblies

(LTAs). Specifically, the proposed license amendment failed to indicate that the reactor core would also include eight next generation fuel LTAs as part of the complete core loading of 193 fuel assemblies. This information was material to the

NRC, in that as part of the license amendment review, substantial further inquiry by

the NRC was necessary to review the thermal-hydraulic conditions and mechanical

design arising from the proposed reactor core composition.

Apparent Violation #2

10 CFR 50.9(a) states, in part, that information provided to the Commission by an applicant for a license or by a licensee shall be complete and accurate in all material respects.

Contrary to the above, on February 27, 2003, November 3, 2003, and March 16, 2004, the licensee submitted incomplete and inaccurate information regarding a proposed amendment to the facility operating license, to allow the irradiation of four

mixed oxide (MOX) lead test assemblies. Specifically, these submittals included radiation dose evaluations that were not based on the current plant design basis accident doses, resulting in providing the commission with inaccurate MOX dose evaluations. This information was material to the NRC, in that as part of the license

amendment review, substantial further inquiry by the NRC was necessary to review

the radiation doses arising from the proposed reactor core composition.

Apparent Violation #3

10 CFR 50.71(e), Maintenance of Records, requires that the Final Safety Analysis

Report (FSAR) shall be periodically updated to assure that the information included

in the report contains the latest information developed. The submittal update shall

contain all the changes necessary to reflect information and analyses submitted to

the Commission by the licensee since the submittal of the original FSAR.

Section (e)(4), requires that subsequent revisions shall be filed annually or 6

months after each refueling outage provided the interval does not exceed 24

months and the revision must reflect all the changes up to a maximum of 6 months

prior to the date of filing.

Contrary to the above, the licensee failed to update FSAR Table 15-14 to include

the latest information developed regarding the design basis accident doses

associated with low enriched uranium cores. Specifically, as documented in DEC's

letter of August 27, 1996, the accident dose calculations for the locked rotor and

ejected rod analyses were revised to reflect the steam generator replacements in

Catawba Unit 1. However, the revised dose values were not incorporated into

FSAR Table 15-14. Similarly, FSAR Table 15-14 was not updated when these same dose values were subsequently revised again to reflect modifications to the

auxiliary feedwater systems of both units, which were implemented in 1997 (Unit 2)

and 1998 (Unit 1).



Catawba Nuclear Station Predecisional Enforcement Conference

Apparent Violations of 10CFR50.9 & 10CFR50.71(e)

December 17, 2004

Participants



<u>Name</u>	<u>Title</u>
Dhiaa Jamil	Site Vice President
Bill Mc Collum	Vice President - Nuclear Support
Tom Geer	Division Manager - Nuclear Engineering
Tom Ray	Manager - Safety Assurance
Steve Schultz	Manager - Nuclear Design & Radiological Engineering
Lee Keller	Manager - Regulatory Compliance
Steve Nesbit	Manager - MOX Fuel Project

Agenda



- Opening Remarks Dhiaa Jamil
- Apparent Violations of 50.9 Tom Geer
 - Root Causes
 - Corrective Actions
 - Significance
- Apparent Violation of 50.71(e) Tom Ray
 - Root Cause
 - Corrective Actions
 - Significance
- Closing Remarks Dhiaa Jamil

Opening Remarks



- Duke Power does not contest the violations.
- Inaccurate information was unintentional.
- Inaccurate information did not result in a different regulatory position for the first apparent violation, and is not expected to result in a different regulatory position for the second apparent violation.
- The third apparent violation regarding failure to update the UFSAR was a contributing factor for submitting inaccurate dose information; however, no other regulatory submittals were affected.
- Corrective actions to prevent recurrence are in place or planned.

1st 50.9 Apparent Violation



Issue:*

“February 27, 2003, LAR and supplements were not complete and accurate, in that the submittals failed to identify that the reactor core would also include eight NGF LTAs.”

*NRC letter to Duke dated November 3, 2004

1st 50.9 Apparent Violation



Background:

- In December 2002, Duke requested an exemption for use of low tin ZIRLO™ in a LTA program planned for C1C15. NRC granted the exemption in August 2003.
- Original MOX fuel LAR (2/27/03) applied to all four McGuire and Catawba units and targeted insertion in either M2C17 or C1C16. On 9/23/03 the MOX LAR was amended to apply to Catawba only.
- MOX fuel LAR was intended to reflect a representative core design typical of MNS or CNS operation. The MOX submittal did not reflect a cycle-specific core design for M2C17 or C1C16. In several instances the LAR referred to the co-resident fuel as Westinghouse RFA design.

1st 50.9 Apparent Violation



Background Continued:

- Duke inserted eight Westinghouse NGF LTAs into C1C15 in December 2003 and informed NRC of the NGF LTA program in a March 2004 submittal of the C1C15 startup report.
- In April 2004, NRC asked for clarification regarding plans for any other types of fuel in the C1C16 core other than RFA.

1st 50.9 Apparent Violation



Root Causes :

- Inadequate preparation and review for accuracy of the MOX LAR.
- Inadequate attention to literal accuracy for statements in this submittal.

1st 50.9 Apparent Violation



Completed Corrective Actions:

- April 16, 2004 -- Duke Power clarified to the NRC that C1C16, targeted for the MOX LTAs, would also contain eight NGF LTAs in their second cycle of operation.
- Immediately took steps to reinforce expectations for accuracy and precision in submittals and RAI responses.
- Duke Power reviewed the LAR and associated correspondence with an emphasis on identifying any other inconsistencies between the licensing correspondence and the planned C1C16 design. Duke Power provided NRC with a summary of the review on May 13, 2004.

1st 50.9 Apparent Violation



Planned Corrective Actions:

- Increase formality in preparation, review, and internal approval of documents submitted to the NRC by creating a separate Basis Document for each LAR and response to RAI.
- Training on the standards for completeness and accuracy in NRC correspondence.

1st 50.9 Apparent Violation



Significance:

- Cycle-specific reload design analyses properly addressed mixed core effects.
- Use of “exclusion zone” in C1C16 core design precluded any significant impact of NGF LTAs on MOX fuel lead assemblies (or vice versa).
- Inadvertent omission in LAR documentation was addressed with supplemental information.
- In a safety evaluation supplement, the NRC concluded that the effect of the eight NGF LTAs on the core had been conservatively evaluated by Duke Power and that the NGF LTAs would not have any significant effect on the MOX LTAs.

2nd 50.9 Apparent Violation



Issue:*

“February 27, 2003 submittal and supplements used inaccurate radiation dose information for the proposed reactor core composition.”

*NRC letter to Duke dated November 3, 2004

2nd 50.9 Apparent Violation



Background:

- August 27, 1996 -- Catawba supplements steam generator replacement LAR with revised dose information for SGTR, Locked Rotor and Rod Ejection accidents (includes effects of AFW modifications). A note in the submittal specified that the revised dose information would be included in the next update to the Catawba UFSAR.
- September 1997 -- UFSAR revision published without revising the dose information.
- February 2003 -- MOX LAR submitted.

2nd 50.9 Apparent Violation



Background continued:

- Scaling analyses for the impact of four MOX LTAs on doses were provided in RAI responses.
- Scaling analyses for Locked Rotor and Rod Ejection accidents were based on erroneous UFSAR dose information for low enriched uranium cores.
- August 2004 – Duke identifies inaccurate dose information in response to RAIs and informs NRC.

2nd 50.9 Apparent Violation



Root Causes:

- UFSAR Chapter 15 dose information not current.
- Inadequate preparation and review of RAI responses.

2nd 50.9 Apparent Violation



Completed Corrective Actions:

- Informed the NRC of error.
- Nuclear engineering formally documented the scaling calculations associated with the MOX LAR dose RAIs.
- Independent technical review of the MOX LAR and RAI responses for accuracy and agreement with basis calculations.
- Reviewed the Chapter 15 results against the licensing basis calculations.
- Identified the need to correct the LOCA control room dose for unfiltered control room inleakage and ECCS leakage.
- Submitted correct dose information to the NRC.
- Corrected CNS UFSAR Chapter 15 dose information.

2nd 50.9 Apparent Violation



Planned Corrective Action:

- Improve rigor and oversight of LAR preparation and RAI responses by creating a separate Basis Document for each LAR and response to RAI.
- UFSAR update process improvements.

2nd 50.9 Apparent Violation



Significance:

- The corrected dose information is not expected to result in a different regulatory position.
- The error did require additional NRC review.
- The error was licensee identified and promptly reported.

UFSAR Apparent Violation



Issue:*

“Failure to periodically update Table 15-14 of the UFSAR, based on changes that have been made to the facility.”

*NRC letter to Duke dated November 3, 2004

UFSAR Apparent Violation



Background:

- August 27, 1996 -- Catawba supplements steam generator replacement LAR with revised dose information for SGTR, Locked Rotor and Rod Ejection accidents (includes effects of AFW modifications). A note in the submittal specified that the revised dose information would be included in the next update to the Catawba UFSAR.
- September 1997 -- UFSAR revision published without revised dose information.
- August 2004 -- Identified that Locked Rotor and Rod Ejection accident dose information in UFSAR Table 15-14 was not current.

UFSAR Apparent Violation



Root Cause:

- Process for updating the UFSAR was weak in that it relied on a single individual.

UFSAR Apparent Violation



Completed Corrective Actions:

- Regulatory documents developed since 1996 (OBD/NCIs, LARs, Generic Letter and Bulletin responses, NOED requests, and LERs) have been reviewed for potential reliance on inaccurate dose information provided from UFSAR Chapter 15. No other regulatory submittals relied on the out-of-date UFSAR Chapter 15 dose information.
- Placed correct UFSAR Chapter 15 dose information in UFSAR Tracking Tool.
- McGuire and Oconee Chapter 15 accident dose results confirmed to be accurate.
- Assigned ownership of all subsections of Chapter 15 that involve radiological consequences to Nuclear Engineering - Radiological.

UFSAR Apparent Violation



Planned Corrective Action:

- Enhance UFSAR revision process to require UFSAR Section Owners to confirm accuracy of their sections as part of revision process.
- Enhance UFSAR Revision Tracking Tool.

UFSAR Apparent Violation



Significance:

- The out-of-date Chapter 15 dose information contributed to inaccurate information being submitted to NRC as part of MOX LAR RAI.
- No other regulatory submittals relied on the out-of-date UFSAR Chapter 15 dose information.
- The UFSAR error was self identified.

Closing Remarks

