

December 16, 2003

U.S. Nuclear Regulatory Commission  
Attention: Document Control Desk  
Washington, D.C. 20555

Subject: Duke Energy Corporation  
Catawba Nuclear Station, Units 1 and 2  
Docket Numbers 50-413 and 50-414  
Proposed Technical Specifications and Bases  
Amendment  
Technical Specification and Bases 3.6.10  
Annulus Ventilation System (AVS)  
Technical Specification and Bases 3.6.16  
Reactor Building  
Technical Specification Bases 3.7.10  
Control Room Area Ventilation System (CRAVS)  
Technical Specification Bases 3.7.12  
Auxiliary Building Filtered Ventilation Exhaust  
System (ABFVES)  
Technical Specification Bases 3.7.13  
Fuel Handling Ventilation Exhaust System (FHVES)  
Technical Specification and Bases 3.9.3  
Containment Penetrations  
Technical Specification 5.5.11  
Ventilation Filter Testing Program (VFTP)  
TAC Numbers MB7014 and MB7015

Reference: Letter from Duke Energy Corporation to NRC,  
same subject, dated November 13, 2003

In the reference letter, Duke Energy Corporation provided a response to an NRC Request for Additional Information dated September 11, 2003. In the response to Question 2 of the request, Duke Energy Corporation indicated that additional dose analysis work was in progress and that we would attempt to provide the results of this analysis to the NRC by November 30, 2003. Accordingly, Attachment 1 to this letter contains the additional analysis results.

A001

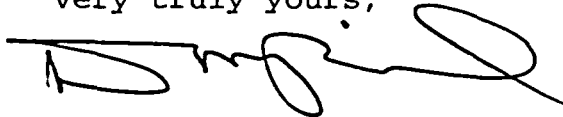
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Duke Energy Corporation has determined that the original No Significant Hazards Consideration Analysis and Environmental Analysis contained in our license amendment request submitted on November 25, 2002 are unchanged as a result of this supplemental response.

Pursuant to 10 CFR 50.91, a copy of this letter is being sent to the appropriate State of South Carolina official.

Inquiries on this matter should be directed to L.J. Rudy at (803) 831-3084.

Very truly yours,

A handwritten signature in black ink, appearing to read 'D.M. Jamil', with a stylized flourish at the end.

D.M. Jamil

Attachment

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D.M. Jamil 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.

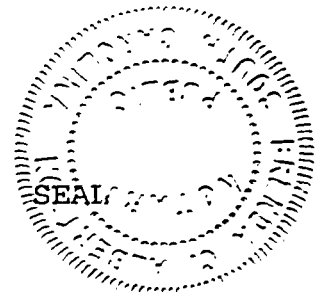


D.M. Jamil, Vice President

Subscribed and sworn to me: 12/16/03  
Date

Brenda C. Allerton  
Notary Public

My commission expires: March 6, 2008  
Date



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xc (with attachment):

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H.J. Porter, Director  
Division of Radioactive Waste Management  
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**ATTACHMENT 1**

**SUPPLEMENTAL RESPONSE TO NRC REQUEST FOR ADDITIONAL  
INFORMATION**

On November 25, 2002, Duke Energy Corporation submitted a license amendment request concerning changes to Technical Specifications and Bases for ventilation systems at Catawba Nuclear Station (Ref. 1). The request also sought Staff approval for full scope implementation of Alternative Source Term (AST) methodology at Catawba. On September 11, 2003, the Staff sent a request for additional information concerning this submittal (Ref. 2). Duke Energy Corporation sent a partial response on November 13, 2003 (Ref. 3). The response transmitted complete answers to all of the questions except Question 2, pertaining to the use of certain organ weight factors from ICRP 60 as opposed to ICRP 30 (used in tables of dose coefficients endorsed by the Staff in Regulatory Guide 1.183). In its response to Question 2, Duke Energy Corporation stated that, "Therefore, consistent with staff guidance and results of rulemaking, Duke Energy Corporation will establish the Catawba AST licensing basis consistent with the guidance presented in Regulatory Guide 1.183, the final AST Rule, the AST Standard Review Plan, and 10 CFR 50.67 and 10 CFR 50 Appendix A, GDC-19.... Duke Energy Corporation will strive to complete revisions to the supporting analyses for this license amendment request and submit these result revisions to the NRC by November 30, 2003." This letter provides the "result revisions" based on "revisions to the supporting analysis."

The original license amendment request included an analysis or radiological consequences of the Design Basis (DB) Loss of Coolant Accident (LOCA) performed with the methodology of AST. The analysis used dose coefficients from Federal Guidance Report (FGR) 11 and FGR 12 but with the following conservative exceptions taken from ICRP 60.

- 1) The thyroid weight factor was increased from 0.03 to 0.05.
- 2) The skin was taken to be an "organ" with a weight factor of 0.01.

No other exceptions were taken to the dose coefficients of FGR 11 and FGR 12. (Thus, the organ weight factors used in the analysis reported in the original submittal were not normalized but added to 1.03.)

The radiation doses presented below are the results of a supplemental analysis in which the features noted above were removed. The dose coefficients used in this analysis are taken from FGR 11 and FGR 12 and used without any modifications. The radiation doses of all limiting DB LOCA scenarios were recalculated. The submittal identified the

DB LOCA scenarios that were limiting for Total Effective Dose Equivalents (TEDEs) at the Exclusion Area Boundary (EAB), at the boundary of the Low Population Zone (LPZ), and to the control room operators. The submittal also showed that lower bound values of outside airflow rate through the pressurized filter trains (PFTs) of the Control Room Area Ventilation System (CRAVS) yielded upper bound values of TEDEs to the control room operators. All Catawba DB LOCA scenarios were reanalyzed to determine whether these conclusions remained valid. Other than taking the dose coefficients from FGR 11 and FGR 12, the supplemental analysis was completed as described in the submittal. The results of the supplemental analysis are presented below.

The DB LOCA with failure of a Residual Heat Removal System (RHRS) or Containment Spray System (CSS) Heat Exchanger remains limiting for TEDEs at offsite locations (both the EAB and LPZ). The TEDEs at the EAB and LPZ for this DB LOCA scenario are presented below:

**Table 1**  
**DB LOCA with Failure of a RHRS or CSS Heat Exchanger**  
**(Supplemental Analysis)**

	ESF System Leakage	Containment Leakage	Total
2 hr time span of maximum EAB TEDE (hr)	0.6-2.6	1.2-3.2	N/A
EAB TEDE (Rem)	2.74	2.67	5.41
LPZ TEDE (Rem)	1.40	1.71	3.11

The DB LOCA with initially closed CRAVS outside air intake and lower bound value for CRAVS total airflow rate through the control room remains limiting for TEDEs in the control room. From the supplemental analysis, the TEDE in the control room for this scenario was found to be 2.12 Rem: 1.80 Rem associated with containment leakage and 0.32 Rem associated with ESF leakage.

The TEDEs from the supplemental analysis decreased approximately 12%-25% compared to the corresponding TEDEs from the original analysis. The decrease in TEDEs was about 40% for post-LOCA ESF leakage but only 2%-10% for post-LOCA containment leakage. These reflect the relative activity of the iodine radioisotopes in the source terms.

The results of the supplemental analysis for all DB LOCA scenarios are shown below:

**Table 2**  
**Radiological Consequences of a DB LOCA at Catawba Nuclear Station (Supplemental Analysis)**

	ESF System Leakage	Containment Leakage	Total
<b>Catawba DB LOCA Scenario</b>			
	<b>Time of Maximum 2 hr Releases</b>		
Minimum Safeguards	1.4-3.4 hr	1.1-3.1 hr	
AVS Pressure Transmitter Failure	1.4-3.4 hr	0.5-2.5 hr	
RHRS/CSS Heat Exchanger Failure	1.2-3.2 hr	0.6-2.6 hr	
Closed CRAVS Outside Air Intake	1.4-3.4 hr	1.2-3.2 hr	
	<b>EAB TEDEs (Rem)</b>		
Minimum Safeguards	0.50	3.04	3.54
AVS Pressure Transmitter Failure	0.50	3.96	4.45
RHRS/CSS Heat Exchanger Failure	2.67	2.74	5.41
Closed CRAVS Outside Air Intake	0.50	2.67	3.17
	<b>LPZ TEDEs (Rem)</b>		
Minimum Safeguards	0.53	1.83	2.36
AVS Pressure Transmitter Failure	0.53	1.92	2.45
RHRS/CSS Heat Exchanger Failure	1.40	1.71	3.12
Closed CRAVS Outside Air Intake	0.53	1.71	2.24
	<b>Control Room TEDEs (Rem)</b>		
Minimum Safeguards	0.25	1.24	1.49
AVS Pressure Transmitter Failure	0.25	1.31	1.56
RHRS/CSS Heat Exchanger Failure	0.64	1.16	1.81
Closed CRAVS Outside Air Intake	0.32	1.80	2.12



References:

- 1) Letter from Duke Energy Corporation to NRC, dated November 25, 2002.
- 2) Letter from NRC to Duke Energy Corporation, Request for Additional Information, dated September 11, 2003.
- 3) Letter from Duke Energy Corporation to NRC, Response to Request for Additional Information, dated November 13, 2003.