



Entergy Operations, Inc.  
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2CAN010501

January 19, 2005

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555

**SUBJECT:** Supplement to Amendment Request  
For License Amendment in Support of Cycle 18 Core Reload  
Arkansas Nuclear One, Unit 2  
Docket No. 50-368  
License No. NPF-6

**REFERENCES:** 1. Entergy letter to the NRC dated July 8, 2004, "Supplemental Letter to License Amendment Request to Support Cycle 18 Core Reload" (2CAN070402)  
2. Entergy letter to the NRC dated October 14, 2004, "Supplement to Amendment Request For License Amendment in Support of Cycle 18 Core Reload" (2CAN100402)

Dear Sir or Madam:

By letter (References 1 and 2), Entergy Operations, Inc. (Entergy) proposed a change and provided a supplemental letter in response to a request for additional information related to the Arkansas Nuclear One, Unit 2 (ANO-2) Technical Specifications (TSs) in support of the cycle 18 core reload.

On November 8, 2004 and December 6, 2004, Entergy and members of your staff held conference calls to further discuss the proposed change. Entergy's response is contained in Attachment 1.

There are no technical changes proposed. The original no significant hazards consideration included in Reference 1 is not affected by any information contained in the supplemental letter. There are revised commitments contained in this letter. For completeness, Attachment 2 contains a list of all of the commitments associated with the proposed change.

If you have any questions or require additional information, please contact Dana Millar at 601-368-5445.

A001

I declare under penalty of perjury that the foregoing is true and correct. Executed on  
January 19, 2005.

Sincerely,



Dale E. James  
Acting Director, Nuclear Safety Assurance

DEJ/DM

**Attachments:**

1. Response to Request for Additional Information
2. List of Regulatory Commitments

cc: Dr. Bruce S. Mallett  
Regional Administrator  
U. S. Nuclear Regulatory Commission  
Region IV  
611 Ryan Plaza Drive, Suite 400  
Arlington, TX 76011-8064

NRC Senior Resident Inspector  
Arkansas Nuclear One  
P. O. Box 310  
London, AR 72847

U. S. Nuclear Regulatory Commission  
Attn: Mr. Drew Holland  
MS O-7 D1  
Washington, DC 20555-0001

Mr. Bernard R. Bevill  
Director Division of Radiation  
Control and Emergency Management  
Arkansas Department of Health  
4815 West Markham Street  
Little Rock, AR 72205

**Attachment 1**

**To**

**2CAN010501**

**Response to Request for Additional Information**

**Response to Request for Additional Information Related to  
License Amendment in Support of Cycle 18 Core Reload**

**Question 1:**

*The licensee indicated that if the mFDI and measured oxide thickness correlate as expected, then ANO-2 will no longer restrict the mFDI except as required to meet the 100 oxide limit. Please clarify whether the licensee intends to lift the restriction on fuel duty without the NRC's evaluation of the licensee submittal of the appropriate ZIRLO corrosion data from CE fuel design.*

**Response 1:**

Entergy will not lift the ZIRLO™ modified Fuel Duty Index (mFDI) restriction without either NRC approval of a supplement to CENPD 404-P-A that includes corrosion data from two Combustion Engineering plants (not at the same plant site) or NRC approval of Arkansas Nuclear One, Unit 2 (ANO-2) site specific corrosion data.

By letter dated July 8, 2004 (2CAN070402), Entergy stated that the maximum mFDI based on actual 16 X 16 Combustion Engineering designed fuel is 590. This value was based on information from Palo Verde and did not consider ANO-2 plant specific considerations. The calculated ANO-2 plant specific mFDI is 572. To provide adequate margin to account for variations in core design, Entergy will restrict the mFDI for each ZIRLO™ clad fuel pin to 110% of the established ANO-2 plant specific ZIRLO™ mFDI limit of 572 (i.e., 629). For a fraction of ZIRLO™ clad fuel pins in a limited number of fuel assemblies (no more than eight fuel assemblies), the fuel duty will be restricted to 120% of the ANO-2 plant specific mFDI limit of 572 (i.e., 686). The basis for the 110% and 120% multiplier was supplied by letter to the NRC dated October 14, 2004 (2CAN100402).

The basis for the mFDI limit of 572 for ANO-2 is that the ZIRLO™ fuel rod cladding would be allowed to operate within the current (OPTIN™) fuel rod cladding operational limits (of less than 100 microns best estimate maximum oxide thickness and with no more than minor spallation). A survey of actual ANO-2 reactor cycles resulted in selection of a particular set of cycles resulting in relatively adverse corrosion performance for identifying the ZIRLO™ mFDI experience limit of 572. The calculation to derive the mFDI experience limit was based on an actual multiple cycle fuel management for the ANO-2 plant, but modified analytically to push the current (OPTIN™) fuel rod cladding beyond its expected performance for the fuel management, but not beyond the current cladding's operational limits. This was accomplished with a slight increase in local power peaking within the current permitted safety analysis limit on maximum radial peaking factor and a variation on the reactor coolant temperature in an adverse direction for fuel rod corrosion, but within the current Technical Specification limit.

**Attachment 2**

**To**

**2CAN010501**

**List of Regulatory Commitments**

**List of Regulatory Commitments**

The following table identifies those actions committed to by Entergy in this document. Any other statements in this submittal are provided for information purposes and are not considered to be regulatory commitments.

COMMITMENT	TYPE (Check one)		SCHEDULED COMPLETION DATE (If Required)
	ONE- TIME ACTION	CONTINUING COMPLIANCE	
The cycle specific COLR will contain the complete identification of each of the TS referenced topical reports used to prepare the COLR (i.e., report number, title, revision, date, and any supplements).		x	
The upper design limits for ANO-2 fuel will be limited to ZIRLO™ mFDI values of 629 for the majority of the fuel assemblies and 686 for a fraction of the fuel pins in a limited number of assemblies (no more than eight fuel assemblies).		x	
Entergy will not lift the ZIRLO™ mFDI restriction without either NRC approval of a supplement to CENPD-404-P-A that includes corrosion data from two Combustion Engineering plants (not at the same plant site) or NRC approval of ANO-2 site specific corrosion data.		x	
Cycle specific evaluations will be used to verify that required power margins in the axial cutback regions are maintained within the safety analysis limitations.		x	
Hot full power (HFP) MTC test within seven days of reaching the highest RCS soluble boron concentration predicted during full power operation will be performed.	x		
Provide the necessary information from the HFP test at peak boron concentration conditions to Westinghouse for its submittal to NRC.	x		
Plant procedures will be modified as needed to reflect the calculated peak HFP MTC along with ZrB <sub>2</sub> IFBAs distinctive trend in RCS critical boron concentration.		x	
In the event of a Condition III or IV event at ANO-2, an evaluation of fuel structural integrity with respect to radial hydriding will be performed prior to power ascension.		x	
Analyses, as part of the ANO-2 reload efforts, will be performed in support of the generic implementation of ZrB <sub>2</sub> fuel to ensure that cladding bursts are precluded for Conditions I, II, III and IV events.		x	
Prior to the use of ZrB <sub>2</sub> burnable absorber coatings, the fuel design will be analyzed with applicable NRC staff approved codes and methods.		x	