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July 25, 2012

AEP-NRC-2012-56  
10 CFR 50.90  
10 CFR 50.46  
10 CFR 50.12

Docket No.: 50-316

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

SUBJECT: Donald C. Cook Nuclear Plant Unit 2  
Docket No. 50-316  
Response to Request for Additional Information Regarding the License Amendment  
Request for Use of Optimized ZIRLO™ Fuel Rod Cladding (TAC No. ME7323)

References:

1. Letter from J. P. Gebbie, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC) Document Control Desk, "License Amendment Request for Unit 2 Use of Optimized ZIRLO™ Fuel Rod Cladding," AEP-NRC-2011-56, dated September 29, 2011, NRC Agencywide Documents Access and Management System (ADAMS) Accession No. ML11286A198.
2. E-mail from P. S. Tam, U. S. NRC, to H. L. Etheridge and M. K. Scarpello, Indiana Michigan Power Company, "D. C. Cook Unit 2 – Draft RAI re. Proposed Amendment to Use Optimized ZIRLO Fuel (TAC ME7323)," dated June 26, 2012. ADAMS Accession No. ML12178A534

Dear Sir or Madam:

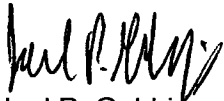
By Reference 1, I&M, the licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, requested an amendment to CNP's Unit 2 Technical Specification (TS) 4.2.1 which currently states, "Each assembly shall consist of a matrix of Zircalloy or ZIRLO fuel rods..." I&M proposed the following changes: 1) adding Optimized ZIRLO™ to the approved fuel rod cladding materials identified in TS 4.2.1; 2) correcting the current TS spelling of Zircalloy to Zircaloy, which reflects the spelling used consistently by the industry and by the U. S. NRC. I&M also proposed adding a Westinghouse topical report to the analytical methods used to determine the core operating limits previously reviewed and approved by the NRC as identified in TS 5.6.5b. By Reference 2, the NRC transmitted a request for additional information (RAI) regarding the proposed amendment. This letter provides the response to the RAI.

Enclosure 1 to this letter provides an affirmation statement regarding the information in this letter. Enclosure 2 provides I&M's response to the RAI's.

A001  
NRC

This letter contains no new or revised regulatory commitments. Copies of this letter and its enclosures are being transmitted to the Michigan Public Service Commission and Michigan Department of Environmental Quality, in accordance with the requirements of 10 CFR 50.91. Should you have any questions, please contact Mr. Michael K. Scarpello, Regulatory Affairs Manager, at (269) 466-2649.

Sincerely,



Joel P. Gebbie  
Site Vice President

DMB/kmh

Enclosure:


1. Affirmation
2. Response to NRC Request for Additional Information Related to Use of Optimized ZIRLO™ Fuel Rod Cladding

c: C. A. Casto, NRC Region III  
J. T. King, MPSC  
S. M. Krawec, AEP Ft. Wayne, w/o enclosures  
MDEQ-RMD/RPS  
NRC Resident Inspector  
P. S. Tam, NRC Washington DC

AFFIRMATION

I, Joel P. Gebbie, being duly sworn, state that I am Site Vice President of Indiana Michigan Power Company (I&M), that I am authorized to sign and file this request with the Nuclear Regulatory Commission on behalf of I&M, and that the statements made and the matters set forth herein pertaining to I&M are true and correct to the best of my knowledge, information, and belief.

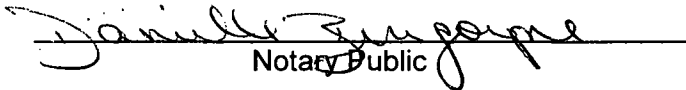
Indiana Michigan Power Company



Joel P. Gebbie  
Site Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 25 DAY OF July, 2012

  
Notary Public

My Commission Expires 04-04-2018

**DANIELLE BURGOYNE**  
Notary Public, State of Michigan  
County of Berrien  
My Commission Expires 04-04-2018  
Acting in the County of Berrien

## Enclosure 2 to AEP-NRC-2012-56

### RESPONSE TO NRC REQUEST FOR ADDITIONAL INFORMATION RELATED TO USE OF OPTIMIZED ZIRLO™ FUEL ROD CLADDING

On September 29, 2011, Indiana Michigan Power Company (I&M), licensee for Donald C. Cook Nuclear Plant (CNP) Units 1 and 2, requested an amendment to CNP's Unit 2 Technical Specification (TS) 4.2.1 which currently states, "Each assembly shall consist of a matrix of Zircalloy or ZIRLO fuel rods..." I&M proposed the following changes: 1) adding Optimized ZIRLO™ to the approved fuel rod cladding materials identified in TS 4.2.1; 2) correcting the current TS spelling of Zircalloy to Zircaloy, which reflects the spelling used consistently by the industry and by the U. S. Nuclear Regulatory Commission (NRC). I&M also proposed adding a Westinghouse topical report to the analytical methods used to determine the core operating limits previously reviewed and approved by the NRC as identified in TS 5.6.5b. On June 26, 2012, the NRC provided an e-mail requesting additional information related to this proposed amendment request. The RAI's and responses are provided below.

#### **NRC RAI #1**

*Regarding compliance with Condition 2, your application stated that "For any fuel using Optimized ZIRLO™ fuel cladding, the maximum fuel rod burnup limit for Westinghouse fuel designs will continue to be 62 GWd/MTU until such time that a new fuel rod burnup limit is approved for use." Please state where and how a regulatory limit of 62 GWd/MTU was imposed for Westinghouse fuel design such that it is applicable to D. C. Cook Unit 2.*

#### **I&M Response to NRC Request**

The CNP Unit 2 Updated Final Safety Analysis Report (UFSAR) Section 3.2.1.1.1 states that the fuel rod average burnup limit of 60,000 megawatt days per metric tonne of Uranium (MWD/MTU) defined in WCAP-10125-P-A, "Extended Burnup Evaluation of Westinghouse Fuel," can be extended to 62,000 MWD/MTU provided the requirements of WCAP-12488-A, "Westinghouse Fuel Criterion Evaluation Process," are met. WCAP-12488-A states that the Westinghouse Fuel Criteria Evaluation Process (FCEP) can be used to justify additional fuel rod average exposures of up to 2000 MWD/MTU beyond the 60,000 MWD/MTU limit.

WCAP-12488-A was incorporated into the CNP Unit 2 Licensing Basis with an UFSAR Change Request (UCR) and associated 50.59 Evaluation. The UCR was approved on August 10, 2000, and incorporated into Revision 16.4 of the CNP Unit 2 UFSAR.

By letter dated, May 25, 2006, to Westinghouse, the NRC increased the burnup limit contained in WCAP-12610-P-A, "VANTAGE+ Fuel Assembly Reference Core Report," from 60,000 MWD/MTU to 62,000 MWD/MTU provided that the evaluation of the fuel design performance is performed with WCAP-15063-P-A, "Westinghouse Improved Performance Analysis and Design Model (PAD 4.0)." WCAP-12610-P-A and WCAP-15063-P-A have been incorporated into the CNP licensing basis in January 2002 with the Unit 2 Cycle 13 core reload.

The control for this limit on a cycle-by-cycle basis is confirmed as follows:

Westinghouse is required to confirm that the 62,000 MWD/MTU rod burnup limit is not violated during the documentation of the Reload Safety Analysis Checklist (RSAC) Summary calculation note for each core reload. The RSAC summary is generated by Westinghouse during the design of each loading pattern to confirm that the loading pattern does not create a core configuration which exceeds any of the assumptions used in accident analysis. The technical basis for the methods used during the generation of the RSAC is WCAP-9272-P-A, "Westinghouse Reload Safety Evaluation Methodology," as required by CNP Technical Specifications Section 5.6.5.b.1. This technical basis is documented in each cycle specific reload evaluation.

## **NRC RAI #2**

*Both conditions 6 and 7 set forth by the NRC staff's safety evaluation on Optimized ZIRLO™ fuel say that "[t]he licensee is required to ensure that Westinghouse has fulfilled the following commitment..." Condition 8 does not have such a sentence but fulfillment is clearly dependent upon Westinghouse providing information on material strengths in the future. Thus, fulfillment of these three conditions would depend on an entity that is not regulated by the D. C. Cook Unit 2 operating license and amendments thereof. In order for the NRC staff to ensure that Westinghouse will perform certain duties such that D. C. Cook Unit 2 will meet the provisions of these 3 conditions, please describe the contractual agreements that the licensee and Westinghouse have made in this regard.*

## **I&M Response to NRC Request**

The CNP fuel contract requires that for each region of fuel, Westinghouse will provide verification that the cycle-specific parameters meet the applicable fuel rod design requirements. The verification / evaluation will include among other parameters, clad free standing and strain.

As higher burnups/fluences are achieved for Optimized ZIRLO™ clad fuel rods, additional data would need to be sent to the NRC (per Conditions 6, 7, and 8) in order to support the above stated contractually agreed-upon fuel rod design evaluations and verifications for Unit 2 reloads and confirm the applicability of Westinghouse approved models with Optimized ZIRLO™ clad fuel rods.