UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

February 11, 2005

LICENSEE: Indiana Michigan Power Company

FACILITY: Donald C. Cook Nuclear Plant, Units 1 and 2

SUBJECT: SUMMARY OF TELEPHONE CONFERENCE CALL HELD ON JANUARY 11, 2005, BETWEEN THE U.S. NUCLEAR REGULATORY COMMISSION AND INDIANA MICHIGAN POWER COMPANY, CONCERNING REQUEST FOR ADDITIONAL INFORMATION PERTAINING TO THE DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2, LICENSE RENEWAL APPLICATION

The U.S. Nuclear Regulatory Commission staff (NRC or the staff) and representatives of Indiana Michigan Power Company (I&M) held a telephone conference call on January 11, 2005, to discuss and clarify the staff's request for additional information (RAI) concerning the Donald C. Cook Nuclear Plant, Units 1 and 2, license renewal application. The conference call was useful in clarifying the intent of the staff's RAI.

Enclosure 1 provides a listing of the meeting participants. Enclosure 2 contains a listing of the RAI discussed with the applicant, including a brief description on the status of the items.

The applicant had an opportunity to comment on this summary.

Jonathan Rowley

Jonathan Rowley, Project Manager
License Renewal Section A
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Docket Nos. 50-315 and 50-316

Enclosures: As stated

cc w/encls: See next page

LIST OF PARTICIPANTS FOR TELEPHONE CONFERENCE CALL
TO DISCUSS THE DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION

JANUARY 11, 2005

Participants	Affiliations
Jonathan Rowley	Nuclear Regulatory Commission (NRC)
Gregory Makar	NRC
Carolyn Lauron	NRC
Neil Haggerty	Indiana Michigan Power Company (I&M)
Robert Kalinowski	I&M
Richard Grumbir	I&M
Bruce Mickatavage	I&M
Paul Leonard	I&M

Enclosure 1

REQUESTS FOR ADDITIONAL INFORMATION (RAI)
DONALD C. COOK NUCLEAR PLANT, UNITS 1 AND 2
LICENSE RENEWAL APPLICATION

January 11, 2005

The U.S. Nuclear Regulatory Commission staff (the staff) and representatives of Indiana Michigan Power Company (I&M) held a telephone conference call on January 11, 2005, to discuss and clarify the staff's request for additional information (RAI) concerning the Donald C. Cook Nuclear Plant, Units 1 and 2, license renewal application (LRA). The following RAI was discussed during the telephone conference call.

RAI B.1.3-2

Boral Surveillance Program: Monitoring and Trending

Part 1

In recent discussions between the applicant, NRC Region III Inspector, and NRC staff, the licensee explained that trending of Boral coupon measurements is not performed because the measurement uncertainty is equivalent to the acceptance criteria (5% B-10 decrease and 10% thickness increase). The staff's understanding is that the coupon either passes or fails the acceptance test based on these two criteria. According to the Boral Surveillance Program (12-THP-6020-SP-203), failure would require an investigation, engineering evaluation, and perhaps additional testing (such as blackness testing of the storage racks). Also according to the Boral Surveillance Program, the remaining measurement parameters are used to detect early indications of degradation and may prompt a change in measurement schedule.

In a letter dated August 11, 2004, the applicant stated that the most recent coupon thickness change ranged from -0.67% to 1.19%. This suggests a measurement precision better than ±10%. The staff asks that the licensee respond to the following:

(1) Please clarify the capability to measure and evaluate coupon thickness.

(2) Please provide the results of the coupon evaluations. How did the measured neutron attenuation and thickness compare to the acceptance criteria? What were the results and conclusions from the other measurement parameters used to detect early indications of Boral degradation? If early indications of degradation were detected, what actions were taken?

(3) In a clarification to RAI B.1.3-1, the applicant states 5% variation in B-10 areal density is within the "usual uncertainty tolerance applied in the nuclear criticality safety analyses." Please confirm that this value was used in the most recent criticality safety analyses for Cook Nuclear Plant (CNP).

Part 2

The "Schedule of Coupon Surveillance" in the applicant's Boral Surveillance Program specifies a range of years over which the first five test coupons can be removed from the rack for

evaluation. According to the schedule, the time between coupon evaluations can range from 1 year to 5 years. For example, Coupon #3 and Coupon #4 could be pulled 3 years and 8 years, respectively, after removal of Coupon #1. Starting with Coupon #6, however, the evaluation interval is 5 years.

To determine the significance of establishing a 5 year test interval, the staff asks that the applicant respond to the following:

(1) Please provide the dates that coupons were actually removed and evaluated, and

(2) Please explain how the coupon removal/evaluation times are determined. For example, how did the applicant decide if Coupon #4 would be removed and evaluated 6, 7, or 8 years after removal of Coupon #1?

Discussion: Prior to the conference call, the applicant provided a draft of its proposed response to the RAI (Enclosure 3) to aid in facilitation of the discussion during the call. The staff reviewed the draft response. During the call, the staff requested the applicant to include a discussion on improvements to its work control program to assure the boral coupon removal schedule is not missed in the future. The staff also asked the applicant to include a discussion of the current schedule for removal of the next boral coupon. The applicant agreed to include this information in the formal response letter.

Enclosure 3

Draft Response to RAI B.1.3-2

Response to RAI B.1.3-2 Draft D

RAI B.1.3-2, Part 1:

In recent discussions between the applicant, NRC Regional III inspector and NRC DE staff, the licensee explained that trending of the Boral coupon measurements is not performed because the measurement uncertainty is equivalent to the acceptance criteria (5% B-10 decrease and 10% thickness increase). The staff's understanding is that the coupon either passes or fails the acceptance test based on these two criteria. According to the Boral Surveillance Program (12-THP-6020-CSP-203), failure would require an investigation, engineering evaluation, and perhaps additional testing (such as blackness testing of the storage racks). Also according to the Boral Surveillance Program, the remaining measurement parameters are used to detect early indications of degradation and may prompt a change in the measurement schedule.

In a letter dated August 11, 2004, the applicant stated that the most recent coupon thickness change ranged from -0.67% to 1.19%. This suggests a measurement precision better than ± 10%. The staff asks that the licensee respond to the following:

1) *Clarify the capability to measure and evaluate coupon thickness.*

2) *Provide the results of the coupon evaluations. How did the measured neutron attenuation and thickness compare to the acceptance criteria? What were the results and conclusions from the other measurement parameters used to detect early indications of Boral degradation? If early indications of degradation were detected, what actions were taken?*

3) *In a clarification to RAI B.1.3-1, the applicant states 5% variation in B-10 areal density is within the "usual uncertainty tolerance applied in the nuclear criticality safety analyses." Please confirm that this value was used in the most recent criticality safety analysis for CNP.*

I&M Response to RAI B.1.3-2, Part 1:

1) For each removed coupon, the length, width, and thickness measurements are taken and recorded for predetermined locations using calibrated measuring instruments (± 0.001 inch accuracy). These measurements are recorded and compared to the initial (baseline) measurements. An increase in thickness at any point that exceeds 10 percent of the baseline thickness requires investigation and engineering evaluation. By using this process, the cumulative environmental effects (radiation, thermal, chemistry) on the coupon, and indirectly the Boral panels, can be monitored as subsequent coupons are removed and evaluated.

   The Boral Surveillance Program identifies the areas on the coupon where the measurements are to be taken. The table included at the end of this response provides a comparison of the as-measured length, width, and thickness dimensions

with coupon baseline dimensions for measurements performed to-date. The difference in thickness is presented as a percentage change with respect to the initial thickness. The thickness measurements were taken at the same locations as the five baseline measurements. No investigation or engineering evaluation was performed because the measured thicknesses did not exceed the acceptance criteria of 10 percent of the baseline thickness at any location.

2) Coupons ID 213616-1-3 and ID 213616-1-5 were removed and evaluated in 1994. These coupons were reattached to the coupon tree in January 1995. The next coupon (ID 213616-1-3) was not removed until 2001.

   The coupon evaluation results are summarized in the table included at the end of this response. As shown in the table, the Boron-10 areal density corresponds to neutron attenuation measurements. The percent differences between the baseline and measured areal density values (i.e., +1.75, +1.74, and +1.45) are within the areal density acceptance criteria (i.e., areal density decrease of no more than five percent in Boron-10 content). In addition, the range of percentages between the baseline and measured thicknesses is within the thickness acceptance criteria (i.e., increase in thickness at any point of no more than ten percent of the initial thickness at that point).

   Regarding other measurement parameters, the table shows that there was no appreciable percent difference between the baseline and measured dry weight values (i.e., 0.52, 0.06, and 0.54). Additional testing such as neutron radiograph (confirmation of uniform boron distribution within coupon) has not been performed on the evaluated coupons because no evidence of Boral degradation has been identified. Visual or photographic results are not available for the coupons evaluated in 1994. However, the visual inspection after the coupon was removed in 2001 indicated minor corrosion pitting, which had not progressed to the extent that it would affect the Boral function. No unusual surface pitting, corrosion or edge deterioration was identified. As no early coupon degradation has been observed, no engineering evaluations or actions have been taken.

3) A five percent variation in Boron-10 areal density is conservative with respect to the corresponding assumption in the most recent Spent Fuel Pool criticality analysis. The nominal Boron-10 density in the Boral absorber panel is 0.0345 grams per square centimeter (g/sq cm) and the minimum Boron-10 density assumed in the uncertainty analysis is 0.030 g/sq cm, a variation of approximately 15 percent..

RAI B.1.3-2, Part 2:

The "Schedule of Coupon Surveillance" in the applicant's Boral Surveillance Program specifies a range of years over which the first 5 test coupons can be removed from the rack for evaluation. According to the schedule, the time between coupon evaluations can range from 1 year to 5 years. For example, Coupon #3 and #4 could be pulled 3 years

and 8 years respectively after removal of coupon #1. Starting with coupon #6 however, the evaluation interval is 5 years.

To determine the significance of establishing a 5 year test interval, the staff asks the applicant to respond to the following:

1) Please provide the dates that coupons were actually removed and evaluated.

2) Please explain how the coupon removal/evaluation times are determined. For example, how did the applicant decide if coupon #4 would be removed and evaluated 6, 7, or 8 years after removal of coupon #1?

I&M Response to RAI B.1.3-2, Part 2:

1) Coupon removal and evaluation dates are as follows:

Coupon Number	Coupon removal date	Evaluation completion date
ID213616-1-3	October 1994	December 1994
ID213616-1-5	October 1994	December 1994
ID213616-1-3[(a)]	November 2001	March 2002

(a) Coupon ID213616-1-3 was removed and reinstalled in 1994. This coupon was also removed for evaluation in 2001.

As indicated in LRA Section B.1.3, Operating Experience, on Page B-25, insufficiently defined responsibilities in the controlling procedure resulted in missed samples (i.e., removal and evaluation of the Boral coupons was not performed twice between 1994 and 2001 as specified by the Boral Surveillance Program procedure).

2) The coupon removal/evaluation schedule was based on vendor recommendations. The guidance for the removal/evaluation schedule is intended to allow coupons to accumulate more radiation dose than the expected lifetime dose for normal storage. Accelerated dose is accomplished by re-installing the coupon tree in a new location surrounded by freshly discharged fuel assemblies that have been among the higher specific power assemblies in the core. This procedure was initiated at the time of the first fuel off-load following installation of the coupon tree and is repeated when coupons are removed for evaluation. After the fifth coupon is removed, the coupon tree will remain in-place, because there is no further need to accelerate dose. The remaining coupons will be removed every five years for the remaining duration of wet storage. The five-year removal frequency is further justified by the lack of coupon degradation noted when the coupon was evaluated after being in the spent fuel pit for seven years. Periodicity of coupon removal may be adjusted depending on coupon inspection results.

Boral Coupon Evaluation Results

Coupon Number	Removal Date	L1 (in.)	L2 (in.)	L3 (in.)	W1 (in.)	W2 (in.)	W3 (in.)	T1 (in.)	T2 (in.)	T3 (in.)	T4 (in.)	T5 (in.)	Dry Weight (gms)	Density (gm/cm^3)	Areal Density (gm B-10 per cm^2)
ID213616-1-3	Baseline	15.015	15.022	15.028	7.522	7.52	7.523	0.104	0.102	0.102	0.103	0.101	468.08	2.4974	0.0345
	Oct-94	15.023	15.031	15.038	7.521	7.521	7.524	0.1015	0.1005	0.102	0.102	0.1005	470.5	2.515	0.0351
	Difference (%)	0.05	0.06	0.07	-0.01	0.01	0.01	-2.40	-1.47	0.00	-0.97	-0.50	0.52	0.70	1.74
ID213616-1-5	Baseline	15.022	15.025	15.029	7.53	7.53	7.534	0.102	0.101	0.102	0.104	0.102	469.13	2.508	0.0345
	Oct-94	15.035	15.034	15.038	7.533	7.538	7.531	0.101	0.1	0.101	0.1025	0.101	469.4	2.508	0.0351
	Difference (%)	0.09	0.06	0.06	0.04	0.11	-0.04	-0.98	-0.99	-0.98	-1.44	-0.98	0.06	0.00	1.74
ID213616-1-3	Baseline	15.015	15.022	15.028	7.522	7.52	7.523	0.104	0.102	0.102	0.103	0.101	468.08	2.4974	0.0345
	Nov-01	15.019	15.025	15.021	7.524	7.5255	7.526	0.1033	0.1026	0.1032	0.1028	0.1022	470.6	2.51	0.035
	Difference (%)	0.03	0.02	-0.05	0.03	0.07	0.04	-0.67	0.59	1.18	-0.19	1.19	0.54	0.50	1.45

Difference (%) is the percent difference between the baseline and the as-measured dimensions.

Donald C. Cook Nuclear Plant, Units 1 and 2

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