INDIANA MICHIGAN POWER

Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106
aep.com

August 5, 2008

AEP-NRC-2008-9

Docket Nos.: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Mail Stop O-P1-17
Washington, DC 20555-0001

Donald C. Cook Nuclear Plant Units 1 and 2
RESPONSE TO 2007 STEAM GENERATOR TUBE INSPECTION REPORT
REQUEST FOR ADDITIONAL INFORMATION

References:
1. Letter from Joseph N. Jensen, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC) Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, 2007 Steam Generator Tube Inspection Report," AEP:NRC:8691, dated March 18, 2008 (ML080870429).
2. Letter from Peter S. Tam, NRC, to Michael W. Rencheck, I&M, "D. C. Cook Nuclear Plant, Unit 2 (DCCNP-2) – Request for Additional Information, Regarding Steam Generator Inspection Report for Year 2007 (TAC No. MD8397)," dated July 11, 2008 (ML081790843).

In Reference 1, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant Unit 1 and Unit 2, provided the Nuclear Regulatory Commission (NRC) the 2007 Steam Generator Tube Inspection Report.

In Reference 2, the NRC requested additional information regarding I&M's submittal. The attachment to this letter provides I&M's response to the request for additional information.

This letter contains no new or revised commitments. Should you have any questions, please contact Mr. John A. Zwolinski, Regulatory Affairs Manager, at (269) 466-2478.

Sincerely,

Quinton A. Lies for Joe Jensen

Joseph N. Jensen
Site Support Services Vice President

SLA/rdw

Attachment:

Response to 2007 Steam Generator Tube Inspection Report Request for Additional Information

c: R. Aben – Department of Labor and Economic Growth
T. A. Beltz – NRC Washington DC
J. L. Caldwell – NRC Region III
K. D. Curry – AEP Ft. Wayne, w/o attachment
J. T. King – MPSC, w/o attachment
MDEQ – WHMD/RPS, w/o attachment
NRC Resident Inspector

bc: J. P. Gebbie
J. N. Jensen
C. R. Lane
Q. S. Lies
P. W. Monk
J. E. Newmiller
A. Petrowsky
R. G. Pickard
D. J. Poupard
M. W. Rencheck
M. E. Skow
L. J. Weber
J. A. Zwolinski

Attachment to AEP-NRC-2008-9

STEAM GENERATOR TUBE INSPECTION REPORT
REQUEST FOR ADDITIONAL INFORMATION

In Reference 1, Indiana Michigan Power Company (I&M), the licensee for Donald C. Cook Nuclear Plant (CNP) Unit 1 and Unit 2, provided the Nuclear Regulatory Commission (NRC) the 2007 Steam Generator Tube Inspection Report.

In Reference 2, the NRC requested additional information regarding I&M's submittal. I&M's response to the request for additional information is provided below.

NRC Request 1

Indiana Michigan Power Company (I&M) mentioned that at the time of the 2007 inspection, the steam generators (SGs) had operated for 132.6 effective full power months (EFPM). Please clarify this statement by providing the following information: For each refueling outage and SG tube inspection outage since the replacement of the SGs, please provide the cumulative EFPM that the SGs have operated.

I&M Response to Request 1

CNP Unit 2 SG's were replaced prior to the start of fuel cycle 7. The subsequent accumulated EFPM of operation and the associated end of cycle (EOC) SG inspections for the replacement SG's are noted in the following table.

Note: The statement of 132.6 EFPM in the original submittal (Reference 1) stated it did not include the first cycle of operation (13.36 EFPM). Not including the first cycle of operation was intended to allow comparison to the Technical Specification (TS) 5.5.7.d.2 sequential inspection period length of 144 EFPM which is noted within the TS to not begin until after the first inservice inspection of the SG's.

The additional cycle 17 EFPM data in the table pertains to the current ongoing cycle of operation that has been accumulating after the 2007 SG inspection was completed. Therefore, this value was not included in the original submittal.

Cook Unit 2			
Cycle Number	**Replacement SG EFPM**	**Accumulated SG EFPM**	**Notes**
7	13.36	13.36	EOC SG Inspection
8	13.34	26.70	EOC SG Inspection
9	14.65	41.35	EOC SG Inspection
10	14.02	55.37	No EOC SG Inspection
11	15.05	70.42	EOC SG Inspection
12	16.85	87.27	EOC SG Inspection
13	12.50	99.77	No EOC SG Inspection
14	14.18	113.95	EOC SG Inspection
15	15.83	129.78	No EOC SG Inspection
16	16.18	145.96	EOC Inspection
17	4.54 +	150.50 +	Cycle ongoing – EFPM data thru 3/26/08

NRC Request 2

I&M indicated that no abnormal conditions were identified during the inspection of the steam drum area (including the feedring, J-nozzles, and moisture separator units). Please discuss whether any degradation was observed during these inspections.

I&M Response to Request 2

An area of minor surface pitting was found on the underside of the primary separator diffuser window (also known as the primary separator intermediate plate assembly) on SG 22. This was not considered abnormal given the service time of this unit and was not indicative of any threat to the functionality or integrity of the separator assembly. Periodic future inspections will continue to monitor this area in all of the Unit 2 SG's.

NRC Request 3

Please discuss the results of I&M's foreign object search and retrieval efforts. If any loose parts were left in the SG, please discuss whether I&M confirmed that it was acceptable (from a tube integrity standpoint) to leave these loose parts in the steam generator.

I&M Response to Request 3

Foreign object search and retrieval (FOSAR) efforts were completed on SG's 21, 22, and 24. No foreign objects were detected in SG 23. The results of the FOSAR efforts are summarized in the following table and associated discussion:

SG	Object Description	Region	Detection Method	Eddy Current Results	Disposition
21 Item A	Metal curl 0.75" long <1mm OD	Cold leg annulus	Visual	No tube damage in or around location	Retrieved: No future action.
21 Item B	Wire strand 0.5" long very thin	Hot leg annulus	Visual	No tube damage in or around location	Retrieved: No future action.
21 Item C	Sludge	Hot Leg Top of Tubesheet @ R24-25/C13	Eddy Current (ECT)	No tube damage in or around location	Not retrieved: Visually confirmed as a sludge rock. Object broke into pieces while attempting retrieval. Left in place. No future action.
21 Item D	Sludge	Hot Leg Top of Tubesheet @ R22-23/C8	ECT	No tube damage in or around location	Not retrieved: Visually confirmed as a sludge rock but not accessible for retrieval. Reexamine during next scheduled inspection in Fall 2010.

SG	Object Description	Region	Detection Method	Eddy Current Results	Disposition
22 Item E	Small wire 0.5" long 0.055" dia.	Hot Leg Top of Tubesheet @ R38/C54-55	Visual	No tube damage in or around location	Not retrieved: Visually confirmed as a small wire. Item was fixed to the tubesheet and dispositioned to be left in place. Reexamine during next scheduled inspection in Fall 2010.
22 Item F	Metal strip 4" long 0.125" wide	Cold Leg Top of Tubesheet @ R3/C55-56	Historical FOSAR & ECT indication	No tube damage in or around location	Not retrieved: Visually confirmed to not have moved. Item is fixed to the tubesheet and was dispositioned to be left in place in the previous inspection. Reexamine during next scheduled inspection in Fall 2010.
22 Item G	Sludge	Hot Leg Top of Tubesheet @ R8/C31	ECT	No tube damage in or around location	Not retrieved: Visually confirmed as a sludge rock. Reexamine during next scheduled inspection in Fall 2010.
22 Item H	Nothing found	Hot Leg Top of Tubesheet @ R18/C50	Historical ECT indication	No tube damage in or around location	Nothing found during FOSAR (limited access). Reexamine during next scheduled inspection in Fall 2010.
22 Item I	Sludge	Hot Leg Top of Tubesheet @ R28/C56-57	ECT	No tube damage in or around location	Not retrieved: Visually confirmed as a sludge rock. Reexamine during next scheduled inspection in Fall 2010.
24 Item J	Metallic strip 1" long 0.13" wide	Hot Leg Top of Tubesheet @ R8/C42-43	Visual	No tube damage in or around location	Not retrieved: Visually confirmed as a small wire. Item was fixed to a sludge deposit and dispositioned to be left in place. Reexamine during next scheduled inspection in Fall 2010.

As noted in the above table, several items could not be retrieved from the secondary side of the SG and were left in place. All of the above items were documented and dispositioned under CNP's Corrective Action Program (Action Request 819443) and in the U2C17 Steam Generator Condition Monitoring and Operational Assessment Evaluation (Areva Doc. # 51-9063150-000) to ensure that tube integrity would be maintained.

- Sludge rocks: Identified as being incapable of causing tube damage and were acceptable to be left in the SG.

- Items E, F, & J: Evaluated following industry guidance and determined to not impact tube integrity.

  - Item E: Identified during the 2007 inspection by FOSAR. It was not touching any tubes and was not identified by ECT. Retrieval attempts were unsuccessful and the object could not be moved by either FOSAR equipment or the 1500 pounds per square inch (psi) sludge lancing operation. Expanded ECT of the tube and the surrounding area (12 tubes) confirmed no degradation was present.

Evaluations determined that no tube damage is expected from this object and that integrity will be maintained. This area will be reexamined during the next scheduled inspection to validate that there has been no change in the current conditions.

- Item F: Identified during its 2004 inspection and dispositioned to be left in place. FOSAR efforts in 2007 confirmed that the object was in the same location. Expanded ECT of the tube and the surrounding area (36 tubes) confirmed no degradation was taking place. Evaluations determined no tube damage is expected from this object and tube integrity will be maintained. This area will be reexamined during the next scheduled inspection to validate that there has been no change in the current conditions.

- Item J: Identified during the 2007 inspection by FOSAR. The metal object was anchored to sludge deposits. It was not touching any tubes and was not identified by ECT. Retrieval attempts were unsuccessful and the object could not be moved by either FOSAR equipment or the 1500 psi sludge lancing operation. Evaluations determined that it is likely to remain in its present location. Expanded ECT of the tube and the surrounding area (12 tubes) confirmed no degradation was present. Evaluations determined no tube damage is expected from this object and tube integrity will be maintained. This area will be reexamined during the next scheduled inspection to validate that there has been no change in the current conditions.

NRC Request 4

Please confirm that the condition monitoring limit for wear at the tube support plate is 41-percent through-wall (which would indicate that such indications may need to be plugged at through-wall depths much less than the technical specification repair criteria).

I&M Response to Request 4

Tube support indication condition monitoring limits for Unit 2 2007 inspection is 41 percent (%), as stated in CNP's Unit 2 Steam Generator Condition Monitoring and Operational Assessment.

The limit for support plate wear is very conservative as a result of using a bounding primary-to-secondary pressure differential value in the condition monitoring calculation. Instead of using the standard industry methodology of three times normal operating pressure differential (3 x 1430 pounds per square inch absolute (psia)), the support plate indications were evaluated against a condition monitoring limit based upon three times design pressure differential (3 x 1600 psi).

In addition, the extents of the indications were assumed to be equal to the thickness of the support plate for ease of calculation. Had an indication-specific extent measurement been used, additional conservatism would have been removed and the condition monitoring limit would have been increased. Based upon the available margin between the maximum indication size and the calculated condition monitoring limit, further calculation refinement was not warranted.

The above calculation resulted in a conservative condition monitoring limit. CNP acknowledges this methodology increases the potential for tube repair at lower levels. However, due to the small indication size, stable indication growth rate, and the general lack of indications to date, no low-level through-wall repairs have been required in order to maintain our desired inspection interval.

NRC Request 5

I&M indicated that no active degradation (as defined by the Electric Power Research Institute) was identified during the 2007 inspections. In addition, I&M indicated that the "indications of interest were limited to seven support plate wear indications." Please discuss whether any degradation/flaws (other than the seven support plate wear indications) were observed.

I&M Response to Request 5

No additional degradation or flaws were observed during this inspection.

References

1. Letter from Joseph N. Jensen, I&M, to U. S. NRC Document Control Desk, "Donald C. Cook Nuclear Plant Units 1 and 2, 2007 Steam Generator Tube Inspection Report," AEP:NRC:8691, dated March 18, 2008 (ML080870429).

2. Letter from Peter S. Tam, NRC, to Michael W. Rencheck, I&M, "D. C. Cook Nuclear Plant, Unit 2 (DCCNP-2) – Request for Additional Information, Regarding Steam Generator Inspection Report for Year 2007 (TAC No. MD8397)", dated July 11, 2008 (ML081790843).