

July 28, 2006

Mr. Mano K. Nazar  
Senior Vice President and  
Chief Nuclear Officer  
Indiana Michigan Power Company  
Nuclear Generation Group  
One Cook Place  
Bridgman, MI 49106

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT 1 (DCCNP-1) - EXTENSION OF  
COMPLETION DATE FOR ACTIONS IN RESPONSE TO GENERIC LETTER  
2004-02 (TAC NO. MC4679)

Dear Mr. Nazar:

On September 13, 2004, the Nuclear Regulatory Commission (NRC) staff issued Generic Letter (GL) 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors" (Accession No. ML042360586). Indiana Michigan Power Company (I&M) responded to GL 2004-02 by letters dated March 4, August 31, and December 19, 2005, and June 27, 2006 (two letters).

I&M originally committed to be in full compliance with GL 2004-02 by December 31, 2007, including the implementation of all required corrective actions. By the last referenced letter, I&M requested to extend the completion date of several DCCNP-1 modifications to be deferred until the March 2008 refueling outage. The NRC staff evaluated I&M's request, and found the extension of completion date for certain actions acceptable as is set forth in the enclosed safety evaluation. If you need any clarification, please do not hesitate to call me at 301-415-1451.

Sincerely,

**/RA/**

Peter S. Tam, Senior Project Manager  
Plant Licensing Branch III-1  
Division of Operating Reactor Licensing  
Office of Nuclear Reactor Regulation

Docket No. 50-315

Enclosure:  
As stated

cc w/encl: See next page

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OFFICE	NRR:LPL3-1/PM	NRR:LPL3-1/LA	NRR:SSIB/BC	NRR:LPL3-1/(A)BC
NAME	PTam	THarris	MScott*	LRaghavan
DATE	07/25/06	07/25/06	07/18/06	07/28/06

\*Safety evaluation transmitted by memo of 7/18/06.

**OFFICIAL RECORD COPY**

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SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION

INDIANA MICHIGAN POWER COMPANY, LLC (I&M)

D. C. COOK NUCLEAR PLANT, UNIT 1 (DCCNP-1)

EXTENSION OF COMPLETION DATE OF CERTAIN

GENERIC LETTER (GL) 2004-02 ACTIONS

DOCKET NO. 50-315

1.0 INTRODUCTION

On September 13, 2004, the Nuclear Regulatory Commission (NRC) staff issued GL 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors" (Accession No. ML042360586). I&M (the licensee) responded to GL 2004-02, by letters dated March 4, August 31, and December 19, 2005 (Accession Nos. ML050750069, ML052510512, ML060030459), and June 27, 2006 (two letters, Accession Nos. ML061860251 and ML061860257).

I&M originally committed to be in full compliance with GL 2004-02 by December 31, 2007, including the implementation of all required corrective actions. By the last referenced letter, I&M requested to extend the completion date of several DCCNP-1 modifications to be deferred until the March 2008 refueling outage. The NRC staff's evaluation of this extension request follows.

2.0 TECHNICAL EVALUATION

I&M stated that it plans to take the following actions during the fall 2006 DCCNP-1 refueling outage to address the issues identified in GL 2004-02:

- Replacement of the existing 85-square-foot recirculation sump strainer with a 900-square-foot strainer;
- Removal of calcium silicate insulation from the pressurizer relief tank and associated piping;
- Installation of additional level instrumentation in containment; and
- Removal of certain labels within containment.

In its June 27, 2006, letter I&M stated that the design and installation of remote strainers and related waterways had proven more challenging than anticipated, and that it was requesting deferral of the following actions until the March 2008 DCCNP-1 refueling outage:

ENCLOSURE

- Installation of one or two (to be determined) remote strainers with waterways connecting to the existing recirculation sump;
- Creation of additional openings in the overflow wall (to facilitate flow into the annulus area) and modification of associated radiation shields; and
- Installation of debris interceptors in the containment annulus and the overflow wall.

I&M stated that there are design and installation challenges associated with remote strainer(s) and waterways that channel water from the remote strainers to the recirculation sump. These challenges are:

- Ice condenser containments are small, and therefore, congested, limiting the size of the remote strainer or strainers. Issues regarding chemical effects, insulation fines and qualified coatings loss-of-coolant accident (LOCA) zones of influence (ZOI) are still being resolved and could require remote strainer redesign;
- Fabrication of the remote strainers is behind schedule;
- Waterways from the remote strainers to the recirculation sump, due to equipment congestion, need to be designed to follow other than straight-line paths, creating hydraulic and structural issues, and resulting in a requirement to relocate a number of existing components;
- Additional waterway analyses have delayed completion of the refined overall analysis;
- The waterways are unique in the nuclear industry, resulting in a lack of industry experience to draw upon in their design;
- Installation of the waterways requires cutting through the containment crane wall, a reinforced structural element, a specialized task for which the needed resources are in limited supply within the construction industry; and
- There are other activities in the fall 2006 outage which must be tightly coordinated due to the congested containment, including reactor vessel head replacement, reactor coolant resistance temperature detector bypass removal, reactor coolant pump replacement, and pressurizer piping connection weld overlays.

I&M stated that it would conduct containment walkdowns during the DCCNP-1 fall 2006 refueling outage to confirm debris source information, including insulation, and latent debris, and that it would qualify and validate the design of all strainers by December 31, 2007.

I&M stated that the risk-reducing mitigative measures to be in effect during, and the sump clogging-related plant modifications to be completed by, the extension period would be:

- Increased net-positive head loss margin from the 900-square-foot replacement strainer, which will maintain strainer head loss approximately 1.5 feet or more below the maximum acceptable strainer head loss for all LOCA events;

- Reduction in strainer opening size from 1/4-inch to 1/12-inch, reducing downstream blockage and wear potential;
- Use of a pocket-style strainer which, through its complex geometry, inhibits formation of a thin fiber bed;
- Removal of calcium silicate insulation from the pressurizer relief tank, the pressurizer safety and relief valve piping, and pressurizer relief tank drain piping inside the crane wall;
- Removal of qualified and unqualified labels within potential LOCA ZOIs, as well as certain other unqualified labels.
- Improvements to sump venting and reduction in strainer bypass areas to below 1/12-inch;
- Installation of redundant, safety-related level instruments inside the recirculation sump to provide early indication of strainer blockage, with an associated control room alarm;
- Installation of debris interceptors in the drain path from the containment equalization - hydrogen skimmer fan rooms;
- Installation of debris interceptors at the wide-range containment level instruments; and
- Capping of the existing 8-inch-diameter crossover pipe between the recirculation sump and the lower containment sump to reduce unfiltered water bypass of the recirculation sump strainers.

I&M stated that various analytical conservatisms in the strainer head loss calculation are expected to be relaxed as a result of in-progress testing, analyses and calculations.

I&M stated that it has implemented containment cleanliness control measures for:

- Selection of materials to be introduced into containment;
- Processes for material introduction into containment;
- Containment work activities;
- Containment cleanliness maintenance activities;
- Containment entry and closeout;
- Identification, evaluation and resolution of degraded or questionable coating conditions, and;
- Insulation configuration.

I&M stated that it would review and modify as necessary the following programs, processes and standards:

- Containment coatings programs;
- Containment inspection and surveillance programs;
- Change management processes;
- Engineering design specifications and standards procedures;
- Maintenance planning and work control programs; and
- Material control programs.

I&M stated that the aluminum surface area in the DCCNP-1 containment is a factor of 100 less than that represented in the relevant NRC chemical precipitate tests, showing that aluminum precipitates from the DCCNP-1 sodium hydroxide pH buffer would provide only minimal impact on strainer head loss. I&M further stated that the relevant NRC chemical precipitate tests for the sodium tetraborate in the ice contained within the DCCNP-1 ice condenser showed no significant precipitates to cause head losses. I&M also stated that DCCNP-1 does not use trisodium phosphate in its containment.

I&M provided a DCCNP-1 listing of bases for continued operation as laid out in GL 2004-02, including interim compensatory measures instituted for DCCNP-1 by I&M in response to Bulletin 2003-01.

Based on the above review, the NRC staff has confidence that I&M has a plan that will result in the installation of final GL 2004-02 modifications that provide acceptable strainer function with adequate margin for uncertainties. Furthermore, the NRC staff has concluded that I&M has or will have put mitigation measures in place to adequately reduce risk for the requested short extension period, and it is, therefore, acceptable to extend the completion date for the corrective actions for the issues discussed in GL 2004-02 (i.e., the installation of one or two remote strainers and their associated waterways connecting through the crane wall to the existing recirculation sump, creation of additional openings in the overflow wall to facilitate flow into the annulus area, modifications to the radiation shields associated with overflow walls, and installation of debris interceptors in the overflow wall and in the annulus) until the completion of the DCCNP-1 spring 2008 refueling outage, currently scheduled to begin in March 2008. Should I&M elect to begin the DCCNP-1 outage more than 30 days after March 31, 2008, I&M will need to provide the NRC additional justification for further delay in completing corrective actions for GL 2004-02.

Principal Contributor: L. Whitney

Date: July 28, 2006