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AEP:NRC:6054-05
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Docket Nos.: 50-315
50-316

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
11555 Rockville Pike
Rockville, Maryland 20852

Donald C. Cook Nuclear Plant Units 1 and 2
UPDATE TO RESPONSE TO
NUCLEAR REGULATORY COMMISSION GENERIC LETTER 2004-02:
POTENTIAL IMPACT OF DEBRIS BLOCKAGE ON EMERGENCY RECIRCULATION
DURING DESIGN BASIS ACCIDENTS AT PRESSURIZED WATER REACTORS

References:

1. Nuclear Regulatory Commission (NRC) Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004 (ML042360586).

2. Letter from D. P. Fadel, Indiana Michigan Power Company (I&M), to NRC Document Control Desk, "90 Day Response to Nuclear Regulatory Commission Generic Letter 2004-02: Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized Water Reactors," AEP:NRC:5054-04, dated March 4, 2005 (ML050750069).

3. Letter from J. N. Jensen, I&M, to NRC Document Control Desk, "Nuclear Regulatory Commission Generic Letter 2004-02 – Information Requested by September 1, 2005," AEP:NRC:5054-11, dated August 31, 2005 (ML052510512).

4. Letter from J. N. Jensen, I&M, to NRC Document Control Desk, "Nuclear Regulatory Commission Generic Letter 2004-02 – Revision of Commitments," AEP:NRC:5054-14, dated December 19, 2005 (ML060030459).

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5. Letter from P. S. Tam, NRC, to M. K. Nazar, I&M, "Donald C. Cook Nuclear Plant, Units 1 and 2 - Request for Additional Information Re: Response to Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Recirculation During Design-Basis Accidents at Pressurized-Water Reactors' (TAC Nos. MC4679 and MC4680)," dated February 9, 2006 (ML060370547).

6. Letter from C. Haney, NRC, to Holders of Licenses for Pressurized Water Reactors, "Alternative Approach for Responding to the Nuclear Regulatory Commission Request for Additional Information Letter Re: Generic Letter 2004-02," dated March 28, 2006. (ML060870274).

By Generic Letter (GL) 2004-02 (Reference 1), the NRC requested that pressurized water reactor licensees evaluate the potential for post-accident debris to impede or prevent the recirculation functions of emergency core cooling and containment spray systems. I&M's responses to GL 2004-02 for the Donald C. Cook Nuclear Plant (CNP) were transmitted by References 2, 3, and 4. By Reference 3, I&M committed to provide update information by June 30, 2006. Attachment 1 to this letter provides that update.

Attachment 1 also provides a portion of the additional information requested by the NRC in Reference 5. The remainder of the information requested in Reference 5 will be provided in future updates consistent with Reference 6, which modified the response schedule for Reference 5. Attachment 2 to this letter provides a sketch of the configuration following anticipated plant modifications. Attachment 3 to this letter provides a tabulation of the information requests in Reference 5 that are addressed in this letter. Attachment 4 provides the new regulatory commitments made in this letter in tabular form.

As described in Attachment 1, I&M's resolution of the issues identified in GL 2004-02 includes installation of additional strainers in locations remote from the recirculation sump. This approach is necessitated by the congested conditions in the relatively small CNP ice condenser containment. The unique nature of this approach has resulted in unanticipated analysis, design, and installation challenges. I&M expects to resolve these challenges in time to complete all corrective actions in Unit 2 by December 31, 2007, as requested in GL 2004-02. However, I&M is requesting, by separate correspondence, an extension of the December 31, 2007, GL 2004-02 due date for Unit 1, until its subsequent refueling outage in Spring 2008.

Should you have any questions, please contact Ms. Susan D. Simpson, Regulatory Affairs Manager, at (269) 466-2428.

Sincerely,

Joseph N. Jensen
Site Support Services Vice President

JRW/jen

Attachments:

1. Update to I&M Response to Nuclear Regulatory Commission Generic Letter 2004-02
2. Sketch of Sump and Strainers Following Anticipated Modifications
3. NRC Request for Additional Information Items Addressed in this Letter
4. Regulatory Commitments

c: J. L. Caldwell – NRC Region III
K. D. Curry – AEP Ft. Wayne
J. T. King – MPSC
MDEQ – WHMD/RPMWS
NRC Resident Inspector
P. S. Tam – NRC Washington, DC

AFFIRMATION

I, Joseph N. Jensen, being duly sworn, state that I am 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

Joseph N. Jensen
Site Support Services Vice President

SWORN TO AND SUBSCRIBED BEFORE ME

THIS 27th DAY OF June, 2006

Regan D. Wendzel
Notary Public

My Commission Expires REGAN D. WENDZEL
Notary Public, Berrien County, MI
My Commission Expires Jan. 21, 2009

ATTACHMENT 1 TO AEP:NRC:6054-05

UPDATE TO I&M RESPONSE TO
NUCLEAR REGULATORY COMMISSION GENERIC LETTER 2004-02

References for this attachment are identified on Page 21 and Page 22

By Generic Letter (GL) 2004-02 (Reference 1), the U. S. Nuclear Regulatory Commission (NRC) requested that pressurized water reactor (PWR) licensees evaluate the potential for post-accident debris to impede or prevent the recirculation functions of the emergency core cooling system (ECCS) and the containment spray system (CTS). Indiana Michigan Power Company's (I&M's) responses to GL 2004-02 for the Donald C. Cook Nuclear Plant (CNP) were transmitted by References 2, 3, and 4. By Reference 3, I&M committed to provide an update by June 30, 2006. This attachment provides that update.

Unless otherwise indicated, the information provided in this attachment consists of additions to, or clarifications of, information provided in References 2, 3, and 4. Cases in which the information provided in References 2, 3, or 4 is superseded are explicitly identified in this attachment. The information contained in this attachment is presented in the same format as Attachment 1 of Reference 3, i.e., the information is preceded by the associated requested information item from GL 2004-02.

Reference 5 transmitted an NRC request for additional information (RAI) regarding I&M's responses to GL 2004-02 transmitted by References 2 and 3. By Reference 6, the NRC modified the schedule for responding to Reference 5. This attachment provides information that addresses some of the questions included in Reference 5. The RAI question number addressed is indicated in parentheses following the text that provides the requested information in this attachment. Attachment 3 to this letter provides a table of the RAI questions addressed in this attachment and the location in this attachment where they are addressed.

In this attachment, reference is made to the GR (Guidance Report) and SER (Safety Evaluation Report). The GR and SER are, respectively, the Nuclear Energy Institute (NEI) report, published in May 2004, providing guidance on evaluating PWR sump performance, and the NRC report, published in December 2004, that documented the NRC's safety evaluation of the NEI guidance. The GR and SER were published jointly as Volume 1 and Volume 2 of Reference 7.

In this attachment, reference is made to future updates. Consistent with Reference 3 and Reference 6, I&M intends to submit updates by December 31, 2006, and by December 31, 2007.

Requested Information Item 2(a)

Confirmation that the ECCS and CSS [containment spray system] recirculation functions under debris loading conditions are or will be in compliance with the regulatory requirements listed in the Applicable Regulatory Requirements section of this generic letter. This submittal should *address the configuration of the plant that will exist once all modifications required for regulatory compliance have been made and this licensing basis has been updated to reflect the results of the analysis described above.*

Response Update

In Reference 3, I&M identified Westinghouse Electric Corporation (Westinghouse) as the lead organization in the contractor team assembled to perform the required baseline analyses and evaluations. Westinghouse was to provide I&M with a baseline report, and I&M would then perform an Owner's Acceptance Review (OAR) of the report. I&M's OAR of the Westinghouse report was completed on March 17, 2006. The Baseline Report conformed to the guidance provided in the GR and SER, except as identified in Reference 3 and this attachment. The following activities were addressed in the Baseline Report:

- Break Selection
- Debris Generation and Zone of Influence (Excluding Coatings)
- Debris Characteristics (Excluding Coatings)
- Latent Debris
- Debris Transport (including sump fluid velocity profiles, sump screen debris accumulation)
- Coatings Evaluation
- Head Loss Evaluation
- Chemical Effects
- Upstream Effects
- Downstream Effects

There are several unverified assumptions in the Baseline Report that require further evaluation by I&M. The Baseline Report serves as the starting point for identifying the actions necessary to resolve the issues identified in GL 2004-02. As additional analyses and testing are completed, I&M will use the information to build on the baseline assumptions and conclusions. Updated information related to completion of these activities will be provided in future updates.

Updated information for previously identified actions is provided below:

- Containment Walkdowns - In Reference 2, I&M stated that containment walkdowns would be performed during the next CNP Unit 1 and Unit 2 refueling outages. The Unit 1 walkdowns were completed during the Spring 2005 refueling outage. The results of these walkdowns were reported in Reference 3. The Unit 2 walkdowns were completed during the Spring 2006 refueling outage. These walkdowns were performed in accordance with the GR and SER and NEI 02-01 (Reference 8).

These walkdowns included:

- o Identifying, quantifying, and characterizing Marinite insulation, both qualified and unqualified labels, fire proof tape, other debris sources, and insulation in containment.
- o Collecting latent debris samples to quantify debris sources in the containment.
- o Evaluating proposed equipment locations.
- o Validating previously identified assumptions.

The analysis and review of the walkdown report is ongoing. The results of the walkdown will be included as input to a containment latent debris calculation.

I&M will perform additional confirmatory walkdowns during the Fall 2006 Unit 1 refueling outage and Fall 2007 Unit 2 refueling outage. Due to the conservatism of the associated analyses, I&M does not expect that the results of these walkdowns will adversely impact the final refined analyses. These walkdowns will provide further confirmation of the accuracy and conservatism of the analyses being performed. Results of these walkdowns will be included in future updates, by either explicitly describing the results or by incorporating the results as supporting information for the refined analyses (RAI Question 35).

- Debris Generation and Transport Analyses – In Reference 3, I&M stated that bounding (Unit 1 and Unit 2) debris generation and debris transport analyses were performed in support of the Baseline Report. Review and acceptance of the debris generation and transport analyses were completed on March 17, 2006, as part of the OAR of the Baseline Report.

  I&M will be performing refined debris generation and transport analyses utilizing design solutions (physical changes) based on anticipated plant modifications described below and on information obtained from the previously described confirmatory walkdowns.

- Determination of Strainer and Screen Requirements (and/or anticipated plant modifications) – The following description of the anticipated plant modifications supersedes the description provided in Reference 3. The anticipated plant modifications are based on the results of the Baseline Report, initial large scale strainer head loss testing, and walkdowns to determine the available space in which to install the strainers. As described in detail below, the anticipated plant modifications would include replacing the existing strainer with a larger capacity strainer, addition of one or two large capacity remote strainers, installation of sump level instrumentation, installation of debris interceptors, and other plant changes.

  <u>Strainers (See Attachment 2 to this letter)</u>

  I&M has completed the evaluation of strainer vendors and selected Control Components Incorporated (CCI) to provide the recirculation sump strainers. CCI will provide pocket-style strainers to be installed in the locations described below. The anticipated strainers would have a maximum opening of approximately 1/12 inch (2.1 millimeters).

The existing recirculation sump strainer located in the Reactor Coolant System (RCS) Loop 2 area inside the crane wall would be replaced with a new strainer (designated as the main strainer) supplied by CCI. The anticipated modification includes removing the currently installed grating, mesh screen, auxiliary steel at the face of the recirculation sump, and portions of a concrete curb. Installation of the anticipated new strainer would result in a surface area increase from the current value of approximately 85 square feet (ft^2) to approximately 900 ft^2.

One or two remote strainers would be installed in the annulus region between the crane wall and containment wall. Water from the remote strainers would be routed through rectangular waterways to the front section of the recirculation sump behind the main strainer assembly. The waterways from the remote strainers would penetrate the crane wall. One waterway would enter into the sump directly through the crane wall (which functions as a partition wall inside the sump). The other waterway would enter into the sump through an opening in the sump sidewall. The remote strainers would provide an additional surface area of approximately 1000 ft^2 to 1800 ft^2. The amount of additional flow area would depend on final determination of whether two remote strainers are required to assure proper ECCS and CTS performance. The resulting combined surface area of the main and remote strainers would be approximately 1900 ft^2 to 2700 ft^2.

Instrumentation

Two new safety-related level instruments would be installed in the main recirculation sump. These instruments would provide indication and alarm in the control room. A low sump level would be indicative of excessive strainer blockage. The level alarm setpoint would be selected to provide advance warning of potential air entrainment prior to indication of degraded pump flow or motor amps oscillation.

Debris Interceptors

Debris interceptors would be installed to prevent blockage of the five existing and three new 10-inch diameter openings in the overflow wall which separates the loop compartments from the annulus region. The debris interceptors would be fabricated from perforated stainless steel plates with 1/2-inch diameter round openings in the vertical portions, with a protruding ledge at the top of the vertical section. The top would be covered with a solid stainless steel plate that extends beyond the vertical section. The vertical perforated plate sections would be approximately 34 to 36 inches tall. The solid top plate would prevent debris from falling into the area between the 10-inch diameter flow openings and the vertical perforated plate sections of the debris interceptor. There would be a 6-inch gap (approximately) between the vertical perforated plate sections and the top plate to ensure that a sufficient flow area exists in the event that debris completely blocks the vertical perforated plate sections.

One metal wire type safety gate would be installed to serve as a debris interceptor in the annulus region. This debris interceptor would reduce the potential transport of large transient debris to the remote strainers.

Debris interceptors would be installed on top of each of the three containment equalization – hydrogen skimmer (CEQ) fan room floor drains. The East CEQ fan room has one floor drain and the West CEQ fan room has two floor drains. The debris interceptors would consist of a 15-inch square stainless steel box with a perforated plate having 1/2-inch diameter round openings to prevent debris from restricting water flow from these rooms.

Debris interceptors would be added to the existing wide range containment level instrumentation. The debris interceptors would be constructed of perforated stainless steel plate having 1/2-inch diameter round openings. These debris interceptors would minimize the potential for plugging the bottom opening of the water level instrument stilling well piping.

Other Plant Changes

To provide sufficient flow to the containment annulus region, three new 10-inch diameter openings would be created in the overflow wall. This would be in addition to the five existing 10-inch holes.

The existing steel radiation shields on the annulus side of the overflow wall that limit the potential for radiation streaming through the existing 10-inch holes would be extended to provide coverage for the additional holes. In addition, the radiation shields would be positioned 2 inches off the floor. This would provide a less restrictive pressure drop and allow a path to flush small debris that could potentially build up between the 10-inch holes and the shields.

Currently, there are five 3/4-inch diameter vent holes drilled through the concrete cover of the front section of the recirculation sump. These holes are covered by wire mesh held in place by a steel frame bolted to the concrete. These vents, due to their horizontal orientation, are susceptible to plugging by debris. In addition, the mesh openings are larger than the anticipated strainer openings. To ensure that these vents are operational at all times; the mesh would be removed and the vents would be extended using collector boxes. These would be connected to the existing 6-inch vent line from the rear sump area that vents above the containment maximum flood level.

Currently, the 6-inch vent line has a flat plate vent cover with 1/4-inch diameter holes on the top. The cover would be replaced with a cylinder vent cover with holes in the vertical cylinder section and a solid plate top. By venting through the side of the cylinder, debris that accumulates on top of the vent cover would not adversely impact venting ability. The vent holes would be smaller than the maximum opening in the strainers. This would prevent debris from bypassing the strainers.

The existing 8-inch diameter crossover pipe between the recirculation sump and the lower containment sump would be capped. This would prevent water from bypassing the strainers and entering the recirculation sump from the lower containment sump.

- Downstream Effects Evaluation - A baseline downstream effects evaluation was performed as part of the Baseline Report. The evaluation bounded both units and was consistent with WCAP-16406-P (Reference 9). The evaluation assessed required flow areas susceptibility to blockage, and potential impact of abrasive wear to ECCS and CTS components. Review and acceptance of the baseline downstream effects evaluation was completed March 17, 2006, as part of the OAR of the Baseline Report.

  The downstream effects evaluation identified a potential for core blockage based on very conservative methodology. Resolution of this issue for CNP will be performed coincident with industry efforts to address downstream effects. I&M anticipates that refined analyses and testing will demonstrate that a core blockage scenario is not a credible event at CNP based on the very low fraction of fibrous debris that exists in the Unit 1 and Unit 2 containments.

Requested Information Item 2(b)

A general description of and implementation schedule for all corrective actions, including any plant modifications, that you identified while responding to this generic letter. Efforts to implement the identified actions should be initiated no later than the first refueling outage starting after April 1, 2006. All actions should be completed by December 31, 2007. Provide justification for not implementing the identified actions during the first refueling outage starting after April 1, 2006. If all corrective actions will not be completed by December 31, 2007, describe how the regulatory requirements discussed in the Applicable Regulatory Requirements section will be met until the corrective actions are completed.

Response Update

In Reference 3, I&M stated that CNP would be in full compliance with the regulatory requirements discussed in the Applicable Regulatory Requirements section of GL 2004-02 by December 31, 2007, including the implementation of all required corrective actions. Due to the expanded scope of certain issues and the need to perform additional CNP-specific analyses, I&M has had to adjust the completion date for several planned actions. During the Fall 2006 refueling outage, I&M will perform Unit 1 plant modifications based on preliminary analyses. By separate correspondence, I&M is requesting extension of the GL 2004-02 December 31, 2007, compliance due date to allow deferral of some modifications in Unit 1.

The following table identifies changes to activities described in the corresponding table provided in Reference 3. This table does not include those actions for which an extension is being requested.

Action Description	Implementation Date/Schedule
1. Containment walkdowns for determination and/or validation of debris sources including insulation and latent debris.	Unit 2 walkdowns were completed during the Spring 2006 refueling outage. Confirmatory walkdowns will be completed during the Unit 1 Fall 2006 and Unit 2 Fall 2007 Refueling Outages.
2. Completion of actions to qualify and validate the design of the containment recirculation sump strainers. The key predecessor activities are: a. Head loss testing of the replacement strainers using the results of the site-specific debris generation and debris transport evaluations, including site-specific debris mix (or equivalent materials). b. Site-specific chemical effects testing. c. Testing to support the use of a zone of influence (ZOI) of five times the pipe break diameter (5D ZOI) for qualified coatings destruction pressure. d. Testing to support other than 100 percent fines generation for calcium silicate insulation fragments. e. Final review and acceptance of the downstream effects evaluations. f. Strainer structural qualification.	Prior to December 31, 2007 The key predecessor activities will be completed so as to support the refined analysis by December 31, 2007

Action Description	Implementation Date/Schedule
g. Hydraulic analysis to support the strainer configurations described in the preceding update to Requested Information Item 2(a).	
3. Replacement of existing containment recirculation sump strainers (except for remote strainers in Unit 1).	Unit 1: Prior to restart from Fall 2006 refueling outage. Unit 2: Prior to restart from Fall 2007 refueling outage.
4. Installation of debris interceptor/trash rack modifications at locations deemed appropriate by the computational fluid dynamics (CFD) analysis and the upstream effects evaluation (except for debris interceptors in the new over flow wall openings and in the Unit 1 annulus region).	Unit 1: Prior to restart from Fall 2006 refueling outage. Unit 2: Prior to restart from Fall 2007 refueling outage.

For Action Description Items 5 through 13 listed in Reference 3, there are no changes or status updates.

Requested Information Item 2(c)

A description of the methodology that was used to perform the analysis of the susceptibility of the ECCS and CSS recirculation functions to the adverse effects of post-accident debris blockage and operation with debris-laden fluids. The submittal may reference a guidance document (e.g., Regulatory Guide 1.82, Rev. 3, industry guidance) or other methodology previously submitted to the NRC. (The submittal may also reference the response to Item 1 of the Requested Information described above. The documents to be submitted or referenced should include the results of any supporting containment walkdown surveillance performed to identify potential debris sources and other pertinent containment characteristics.)

Response Update

The Baseline Report identified those areas where additional actions are required for I&M to comply with the requirements identified in GL 2004-02. These actions include verifying assumptions, updating CNP calculations related to the containment sump, and performing refined analyses for debris generation, transport, chemical effects, and downstream effects.

The Baseline Report included the following analyses:

1. Break Selection
2. Debris Generation and Zone of Influence (Excluding Coatings)
3. Debris Characteristics (Excluding Coatings)
4. Latent Debris
5. Debris Transport
6. Coatings Evaluation
7. Head Loss
8. Chemical Effects
9. Upstream Effects
10. Downstream Effects

Updated information is provided for each item whose status has changed since submittal of Reference 3.

1. Break Selection

When selecting the appropriate breaks to be included in the analyses, I&M followed the guidance provided in both the GR and SER. In Reference 3, I&M considered not only the double-ended guillotine breaks (DEGBs) in the RCS loops, but also the worst break location for break sizes up to and including the size of the largest attachment pipe to the RCS (14 inches for CNP). This method of evaluation is known as the Alternate Evaluation Methodology as described in Chapter 6 of the GR. The limiting debris generation break size (DGBS) was determined to be a double-ended break of the 14-inch pressurizer surge line. This break location generated the largest quantities of calcium silicate debris, which can impact the head loss across the strainers. This analysis was performed in a traditional design-basis fashion (RAI Question 37).

Exception(s) Taken to GR and SER for Break Selection

I&M does not expect to take any exceptions to the GR and SER regarding Break Selection analysis other than those identified in Reference 3.

2. Debris Generation and Zone of Influence (Excluding Coatings)

In Reference 3, I&M stated it planned to have testing performed to determine the appropriate size distribution of calcium silicate and Marinite insulation to be used in the refined analysis. I&M is having testing performed to support the assumption of other than 100 percent fines generation for insulation. I&M intends to have Marinite insulation tested to determine its susceptibility to erosion to support the assumption of less than 100 percent fines generation for that insulation.

I&M is continuing to evaluate other debris generation concerns for the identified break locations. I&M will provide the results in a future update.

Exception(s) Taken to the GR and SER for Debris Generation and ZOI

I&M does not expect to take any exceptions to the GR and SER regarding the Debris Generation and ZOI analysis other than those identified in Reference 3.

3. Debris Characteristics (Excluding Coatings)

Walkdowns have been completed in both Unit 1 and Unit 2 containments to confirm the type and amount of insulation in containment. The Unit 2 walkdown was completed during the Spring 2006 refueling outage. Evaluation of the results of the walkdowns is continuing and may result in minor changes to the debris listings provided in Reference 3.

The walkdown information will be fully integrated into the refined analyses. I&M will provide the results in a future update.

Exception(s) Taken to the GR and SER for Debris Characteristics

I&M stated in Reference 3 that it may take an exception to the size distribution of calcium silicate insulation within the ZOI, and the percentage of calcium silicate and Marinite insulation pieces that may be reduced to fines when subjected to erosion within the transport pool. I&M also stated that it planned to have testing performed to determine the appropriate size distribution to be used in the refined analysis.

I&M has not completed testing to fully evaluate these issues. I&M will provide the results in a future update.

4. Latent Debris

I&M stated in Reference 2 that walkdowns would be performed during the Spring 2006 Unit 2 refueling outage to quantify the amount of Latent Debris. These walkdowns were completed.

The data from these walkdowns is being analyzed and validated. The results will be documented in a walkdown report which provides input to the containment latent debris calculation. I&M will provide the results in a future update.

Exception(s) Taken to the GR and SER for Latent Debris

I&M does not expect to take any exceptions to the GR and SER regarding the latent debris calculation other than those identified in Reference 3.

5. Debris Transport

In Reference 3, I&M stated that the approach curb to the sump was 7 inches high. I&M anticipates removing all or part of the 7-inch curb. The anticipated strainer assembly has a built-in curb of approximately 4 inches.

Based on current analysis and design, I&M is planning installation of a partially sacrificial strainer. As described in the update to the response to Item 2(a), I&M anticipates replacing the existing strainer with a new strainer (designated as the main strainer) with an available surface area of approximately 900 ft^2 (approximately 960 percent greater than the current strainer). This strainer is in the loop compartment inside the containment crane wall. Additional strainer(s) (designated as remote strainer(s)) would be installed in the annulus region of the containment building, between the crane wall and containment wall. These remote strainer(s) would be connected directly to the recirculation sump via waterway(s) that would go through the crane wall into the front section of the sump. The remote strainer(s) would provide a minimum of an additional 1000 ft^2 of strainer surface area. This design ensures that sufficient water flow exists to maintain long term core and containment cooling. The anticipated operation of the sacrificial strainer system is described below.

Once water level in the loop compartment exceeds approximately 4 inches during the injection phase of a loss of coolant accident (LOCA), debris laden water would begin to flow through the main strainer. When level in the recirculation sump reaches floor level (598 foot, 9 3/8 inch elevation), the clean water from the recirculation sump would begin to flow in the reverse direction through the waterways towards the remote strainer(s). Initially, this would only fill the waterways until the water level reaches approximately 8.5 inches above the floor, the height of the lowest set of strainer elements in the remote strainer. When the loop compartment water level exceeds this height, strained water would begin backflowing out of the remote strainer(s). Additionally, debris laden water would flow from inside the loop compartment to the debris interceptor anticipated for installation (in the loop compartment) to protect the 10-inch diameter flow holes through the overflow wall. This flow would continue into the overflow wall area between the overflow wall and the curb at the annulus side of the crane wall opening, until the level reaches approximately 12 inches above the floor. This is the height of the curb on the annulus side of the overflow wall area. By the time this level is reached, water flow out of the remote strainer(s) would have been fully established. These two flow paths would continue until the containment water level reaches approximately 7.7 feet above the floor, at which time recirculation flow would begin. Once recirculation flow begins, the reverse flow through the remote strainer(s) would cease.

During the time that the containment (pool) fill is occurring, a significant quantity of debris laden fluid would be transported to the main strainer, partially coating it with debris. This would result in a debris induced head loss across the main strainer. Since all the events in which sump recirculation is required take place within the loop compartment, the only loose debris that would be generated in the annulus region and subsequently transported to the remote strainer(s) would be latent debris, unqualified coatings, and fine debris that travels from the loop compartment to the annulus region via the crane wall openings. The remote strainer(s) would be essentially debris free.

There would be a defined head loss associated with the waterway(s) connecting the remote strainer(s) to the main strainer. Until the time that the main strainer becomes substantially blocked by debris, the preferential flow path would be through the main strainer. The division of flow between the main and remote strainers would be a function of the head loss through the associated strainer and waterway elements. In addition, due to the flow of water through the remote waterway(s), there is a credible scenario in which the main strainer would be partially backwashed, preventing full blockage of the main strainer.

A preliminary CFD analysis was performed that demonstrated that, even with the main strainer completely blocked, there would be sufficient flow through the remote strainer(s) to maintain water level inside the recirculation sump to support core and containment cooling. However due to the pocket strainer design, it is not expected that the main strainer would become completely blocked with debris. A sensitivity CFD analysis was performed demonstrating that even with only 10 percent of the main strainer available for flow, water level inside the recirculation sump would remain substantially above the calculated vortex limit.

To ensure that the analysis and testing is conservatively bounding, I&M does not intend to take credit for near field effects. Therefore, strainer testing is being performed with debris introduced from above and directly in front of the strainer pockets after stable flow in the test loop has been established. This prevents debris settling prior to reaching strainer pockets and eliminates near field effects (RAI Question 43).

I&M will provide the analysis results in a future update.

Exception(s) Taken to the GR and SER for Debris Transport

I&M stated in Reference 3 that it planned to use the following to develop its final debris transport model:

- Results of Electric Power Research Institute (EPRI) testing performed for unqualified materials to determine the fraction of unqualified coatings that could fail as chips that would, via a Stokes settling velocity determination, settle out in the transport pool prior to reaching the sump strainer.

- Whether the non-direct settling potential for the entrance point of a coating chip into the pool will be factored into the analyses.

I&M is evaluating the above items for possible incorporation into the Debris Transport Model. When a final determination is made as to whether these analyses methods will be applied, I&M will inform the NRC in a future update to GL 2004-02.

I&M does not expect to take any exceptions to the GR and SER regarding the debris transport analysis other than those identified in Reference 3.

6. Coatings Evaluation

I&M stated in Reference 3 that EPRI was testing unqualified coating systems to determine debris characteristics. In addition, I&M stated that it may elect to use this data. I&M is continuing to evaluate EPRI testing results for possible incorporation into the coatings evaluation.

Exception(s) Taken to the GR and SER for Coatings Evaluation

I&M is continuing to pursue the use of a reduced ZOI, 5D ZOI, for qualified coatings rather than the 10D ZOI specified in the GR and SER. Preliminary test results from Westinghouse have demonstrated that use of the 5D ZOI is reasonable and provides a conservative margin for CNP-specific coatings. The Westinghouse test report is currently undergoing review. When the final Westinghouse test results become available, and I&M has accepted the report, I&M will provide the results in a future update.

7. Head Loss

The Baseline Report indicates that the Unit 2 West Residual Heat Removal (RHR) Pump has the least margin for head loss. The maximum acceptable head loss for this pump is 7.43 feet, based on an assumed water level at elevation 602 feet 10 inches. This is approximately 4 feet above the containment floor.

Below is a description of preliminary results from analyses and testing performed to determine the resultant head loss based on the anticipated strainer modifications.

Net positive suction head (NPSH) is not the most limiting condition for CNP. Since CNP employs a fully-vented recirculation sump design, the limiting condition is a sump level in which significant air entrainment occurs. Air entrainment occurs either when a vortex is formed in the sump or when a significant drawdown in the sump level occurs such that the rear sump chamber vent pipe becomes voided.

The minimum water level outside the sump during a large break LOCA event was determined to be 5.9 feet above the containment floor. This level occurs approximately 10 hours after event initiation and exists for a relatively short duration. Once the ice in the ice condenser fully melts, the containment water level is approximately 15 feet above the containment floor. Even at this level, the recirculation sump would remain fully vented.

The bottom of the vent pipe in the rear chamber of the sump is approximately 2 feet below the containment floor. For the scenario of a voided vent pipe, the strainer head loss limit is approximately 7.9 feet. A conservatively calculated vortexing limit of 601.5 feet inside the sump has been established consistent with current licensing basis methodology through scaled testing. For this scenario, the head loss limit is approximately 3.2 feet. The 601.5-foot limit is approximately 4.7 feet above the bottom of the vent pipe in the rear chamber. Thus the limiting head loss limit is 3.2 feet when containment water level is at its minimum, 10 hours into the event.

As part of the process of validating the anticipated strainer design, preliminary large scale strainer testing results indicated that the maximum expected head loss at 9 to 13 degrees Centigrade is approximately 55.5 milibars. This can be normalized to the design temperature of 87.8 degrees Centigrade or 190 degrees Fahrenheit using the approximately linear viscosity of water with temperature relationship. This results in a head loss of 0.52 feet without chemical effects. This was based on the debris resulting from a DEGB of the RCS loop piping. This scenario produces the maximum particulate debris. This was determined by CCI in November and December of 2005.

A preliminary CFD analysis that modeled the anticipated CNP design with the main strainer completely blocked by debris has recently been completed. This case represents the worst possible scenario for actual operation of the recirculation system. At 100 percent recirculation flow rate, it was determined that the head loss would be 4.12 feet. With the main strainer having 10 percent available flow area, the head loss would be 0.98 feet. These results demonstrate a level of consistency with the preliminary large scale strainer testing performed at the vendor's facility.

Preliminary test results indicate that the anticipated CNP strainer design would adequately meet the specified head loss requirements. Additional strainer testing is to be conducted. I&M will provide the results in a future update.

Exception(s) Taken to the GR and SER for Head Loss

I&M does not expect to take any exceptions to the GR and SER recommendations regarding the head loss analysis.

8. Chemical Effects

In Reference 3, I&M stated that it would perform site-specific chemical effects testing. Strainer testing will also be performed based on the methodology described in WCAP-16530 (Reference 10). I&M is planning to perform an integrated 30-day chemical effects and strainer head loss test which bounds all contributing containment materials for chemical interactions and agglomeration effects.

As a minimum, the overall chemical effects analysis will include:

- Predicting the chemical effects precipitate based on CNP-specific containment materials and locations.
- Comparing the amounts of materials in the submerged and spray zones to that used in the Integrated Chemical Effects Tests (ICET).
- Comparing boron concentration, buffering agent concentration, and pH with the ICET that most closely matches CNP conditions and identifying any significant differences from that ICET.
- Performing site-specific strainer testing using actual precipitates or surrogate material to determine predicted versus actual head loss.
- Using a test loop with actual plant materials and the site specific LOCA event sequence to evaluate head loss over a 30-day mission time. This test will also determine any agglomeration impacts on strainer head loss.

I&M will provide the results in a future update to GL 2004-02 (RAI Questions 8 and 12).

Exception(s) Taken to the GR and SER for Chemical Effects

I&M does not expect to take any exceptions to the GR and SER recommendations regarding chemical effects.

9. Upstream Effects

I&M is evaluating upstream effects specific to CNP. Five locations have been identified as having potential upstream effects:

- 10-inch diameter flow holes in the overflow wall.
- Radiation (shine) shields on the annulus side of the 10-inch diameter holes.
- CEQ fan room floor drains.
- CEQ fan room drain line to the lower containment sump (Unit 2 only).
- Inlet ports to the existing containment wide range level instruments stilling wells.

The anticipated plant modifications include debris interceptors to protect these potential blockage points, except for the radiation shields and the CEQ fan room drain line to the lower containment sump. The existing radiation shields are approximately 2 feet tall and flush with the floor. The anticipated shields would have a 2-inch gap at the bottom to preclude a buildup of small debris that could potentially interfere with flow through the 10-inch holes. For the CEQ fan room drain line to the Unit 2 lower containment sump, an opening would be created in the cover of the lower containment sump to ensure an adequate area exists to support the required flow through this line. Information confirming the installation of the debris interceptors, modified shields, and flow area opening, in the form of general design information, will be provided in a future update.

Exception(s) Taken to the GR and SER for Upstream Effects

I&M does not expect to take any exceptions to the GR or the SER recommendations regarding upstream effects.

10. Downstream Effects

As described in Reference 3, a downstream effects evaluation was performed as part of the Baseline Report. The evaluation bounded both units and was performed consistent with WCAP-16406-P (Reference 9). The evaluation assessed the susceptibility for blockage of required flow areas and the potential for abrasive wear to detrimentally impact the required ECCS and CTS functions. The Pressurized Water Reactor Owner's Group (PWROG) is involved in discussions with the NRC to address questions and concerns regarding WCAP-16406-P.

In addition, the Baseline Report documented an evaluation of specific downstream effects issues for CNP. Review and acceptance of the baseline downstream effects evaluation was completed on March 17, 2006, as part of the OAR of the Baseline Report. The CNP-specific evaluation, which was based on an extremely conservative analysis, determined that there would be potential for core blockage to occur.

I&M is continuing to evaluate downstream effects and will perform a final analysis once the final requirements and expectations for performing this evaluation are documented in the expected NRC Safety Evaluation. For select areas associated with downstream effects, I&M intends to perform some of the evaluations in parallel with the ongoing review of the WCAP. I&M will provide the results in a future update.

Exception(s) Taken to the GR and SER for Downstream Effects

I&M does not expect to take any exceptions to the GR or the SER recommendations regarding downstream effects.

Requested Information Item 2(d)

The submittal should include, at a minimum, the following information:

(i) The minimum available NPSH margin for the ECCS and CSS pumps with an unblocked sump screen.

Response Update

In Reference 3, I&M indicated that the Unit 2 West RHR Pump had the least margin for head loss. The maximum acceptable head loss for this pump is 7.43 feet, based on an assumed water level of 602' 10". This is approximately 4 feet above the containment floor.

However, as described in the discussion of "Head Loss" in the update to Requested Information Item 2(c), available NPSH available is not the most limiting criterion for CNP. Since CNP employs a fully-vented recirculation sump design, the limiting condition is a sump level in which significant air entrainment occurs. Air entrainment occurs when either a vortex is formed in the sump or when a significant drawdown in the sump level occurs such that the rear chamber vent pipe becomes voided.

The minimum water level outside the sump during a large break LOCA event was determined to be 5.9 feet above the containment floor. This level occurs approximately 10 hours after event initiation and is of a relatively short duration. Even at this level, the sump will remain fully vented.

The bottom of the vent pipe in the rear chamber is approximately 2 feet below the containment floor. For the scenario of a voided vent pipe, the strainer head loss limit is approximately 7.9 feet. A conservatively calculated vortexing limit of 601.5 feet inside the sump has been established consistent with current licensing basis methodology through scaled testing. For this scenario, the head loss limit is approximately 3.2 feet. The 601.5-foot limit is approximately 4.7 feet above the bottom of the vent pipe in the rear chamber. Thus, the limiting head loss limit is 3.2 feet when containment water level is at its minimum, 10 hours into the event.

(ii) The submerged area of the sump screen at this time and the percent of submergence of the sump screen (i.e., partial or full) at the time of the switchover to sump recirculation.

Response Update

In Reference 3, I&M stated that the final sump design would ensure that the sump screen area would be 100 percent submerged. As described in Section 7, "Head Loss," of the response to Item 2(c), CNP has a fully-vented sump. This would not adversely effect the sump level. At the time of switchover to sump recirculation, the vent would be filled to a level above the strainer. Therefore, the strainer would remain fully submerged.

(iii) The maximum head loss postulated from debris accumulation on the submerged sump screen, and a description of the primary constituents of the debris bed that result in this head loss. In addition to debris generated by jet forces from the pipe rupture, debris created by the resulting containment environment (thermal and chemical) and CSS washdown should be considered in the analyses. Examples of this type of debris are disbonded coatings in the form of chips and particulates and chemical precipitants caused by chemical reactions in the pool.

Response Update

As stated in Reference 3, the containment environment and chemical contribution to head loss will be determined as described in Section 8, "Chemical Effects," of the response to Item 2(c). As described in the response to Section 7, "Head Loss," of Requested Information Item 2(c), testing and analyses are being performed to determine the maximum head loss for the anticipated plant modifications. I&M will provide the results in a future update.

(iv) The basis for concluding that the water inventory required to ensure adequate ECCS or CSS recirculation would not be held up or diverted by debris blockage at choke-points in containment recirculation sump return flowpaths.

Response Update

As described in the preceding update to Section 9, "Upstream Effects" of Requested Information Item 2(c), I&M is continuing to evaluate upstream effects specific to CNP. Five locations have been identified as having potential upstream effects. I&M anticipates implementing plant modifications to address these locations and provide additional information as described.

(v) The basis for concluding that inadequate core or containment cooling would not result due to debris blockage at flow restrictions in the ECCS and CSS flowpaths downstream of the sump screen, (e.g., a HPSI throttle valve, pump bearings and seals, fuel assembly inlet debris screen, or containment spray nozzles). The discussion should consider the adequacy

of the sump screen's mesh spacing and state the basis for concluding that adverse gaps or breaches are not present on the screen surface.

Response Update

As described in the preceding update to Section 10, "Downstream Effects," of Requested Information Item 2(c), a CNP-specific evaluation, which was based on an extremely conservative analysis, determined that there would be potential for core blockage to occur. I&M is continuing to evaluate downstream effects and will and provide additional information in a future update.

(vi) Verification that close-tolerance subcomponents in pumps, valves and other ECCS and CSS components are not susceptible to plugging or excessive wear due to extended post-accident operation with debris-laden fluids.

Response Update

As described in the preceding update to Section 10, "Downstream Effects," of Requested Information Item 2(c), a downstream effects evaluation was performed as part of the Baseline Report. The evaluation bounding both units was performed consistent with WCAP-16406-P (Reference 9). I&M is continuing to evaluate downstream effects and will provide additional information in a future update.

(vii) Verification that the strength of the trash racks is adequate to protect the debris screens from missiles and other large debris. The submittal should also provide verification that the trash racks and sump screens are capable of withstanding the loads imposed by expanding jets, missiles, the accumulation of debris, and pressure differentials caused by post-LOCA blockage under predicted flow conditions.

Response Update

In Reference 3, I&M identified the hydrostatic and seismic loads to which the anticipated strainers could be subjected. The only other credible loads that the anticipated strainers could be subjected to are hydrodynamic loads. The specific loads are currently being analyzed by the strainer vendor and the modification design vendor for acceptability of the strainer, debris interceptors, connecting waterways, and other hardware designs. I&M will provide the results in a future update.

(viii) If an active approach (e.g., backflushing, powered screens) is selected in lieu of or in addition to a passive approach to mitigate the effects of the debris blockage, describe the approach and associated analyses.

Response Update

I&M stated in Reference 3 that it did not plan to install an active strainer design. I&M considers that the anticipated design described in the preceding update to Section 5, "Debris Transport," of Requested Information Item 2(c) will provide the most reliable and effective method of addressing the issues identified in GL 2004-02.

Requested Information Item 2(e)

A general description of and planned schedule for any changes to the plant licensing bases resulting from any analysis or plant modifications made to ensure compliance with the regulatory requirements listed in the Applicable Regulatory Requirements section of this generic letter. Any licensing actions or exemption requests needed to support changes to the plant licensing basis should be included.

Response Update

In Reference 3, I&M identified four potential changes to the plant licensing bases and a potential license amendment that may result from the analyses or plant modifications. One of these involved a potential licensing basis change to UFSAR Section 6.1 to establish the Alternate Evaluation methodology from Section 6 of the GR as the sump strainer design basis criteria for mitigating the effects of a design basis LOCA.

I&M does not anticipate that it will be necessary to submit a request for exemption from any regulations as a result of applying the Section 6 methodology, since that methodology has been approved by the NRC as documented in the SER. I&M's current intent is to demonstrate that the strainer configuration would be able to mitigate the effects of a DEGB. I&M intends to continue utilizing the DGBS. The substantial margin that will exist between the DGBS and DEGB will be used to address potential effects such as chemical effects (RAI Question 40).

Reference 4 described I&M's commitments to submit Unit 1 and Unit 2 amendment requests to establish Technical Specifications Limiting Conditions for Operation for additional flowpaths to the recirculation sumps if the refined evaluation determines the flow paths must function to mitigate a design basis loss of coolant accident. I&M committed to submit Unit 1 and Unit 2 amendment requests within 60 days following completion of their respective refined evaluations if the respective refined evaluation demonstrated the need for a license amendment. I&M also committed to notify the NRC Licensing Project Manager upon completion of the refined evaluation(s), thereby establishing the start date(s) for the 60 day period(s). If a respective refined evaluation demonstrates the need for additional flowpaths, I&M committed to establish administrative controls to assure safety while the respective amendment request is under NRC review.

Requested Information Item 2(f)

A description of the existing or planned programmatic controls that will ensure that potential sources of debris introduced into containment (e.g., insulations, signs, coatings, and foreign materials) will be assessed for potential adverse effects on the ECCS and CSS recirculation functions. Addressees may reference their responses to GL 98-04, "Potential for Degradation of the Emergency Core Cooling System and the Containment Spray System after a Loss-of-Coolant Accident Because of Construction and Protective Coating Deficiencies and Foreign Material in Containment," to the extent that their responses address these specific foreign material control issues.

Response Update

In Reference 3, I&M stated that programmatic controls were implemented during the 1997 -2000 extended shutdown to ensure that potential sources of debris introduced into containment were assessed for possible adverse effects on the ECCS and CTS recirculation functions. I&M also identified the programs and procedures that would be reviewed and revised as necessary. A vendor is performing a high level review of CNP documents to determine the scope of required changes. A further review of these documents will be performed to determine if specific changes are required. Further information regarding these changes will be included in a future update.

References for this Attachment

1. NRC Generic Letter 2004-02, "Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," dated September 13, 2004 (ML042360586).

2. Letter from D. P. Fadel, Indiana Michigan Power Company (I&M), to U. S. Nuclear Regulatory Commission (NRC) Document Control Desk, "90 Day Response to Nuclear Regulatory Commission Generic Letter 2004-02: Potential Impact of Debris Blockage on Emergency Recirculation During Design Basis Accidents at Pressurized-Water Reactors," AEP:NRC:5054-04, dated March 4, 2005 (ML050750069).

3. Letter from J. N. Jensen, I&M, to NRC Document Control Desk, "Nuclear Regulatory Commission Generic Letter 2004-02 - Information Requested by September 1, 2005," AEP:NRC:5054-11, dated August 31, 2005 (ML052510512).

4. Letter from J. N. Jensen, I&M, to NRC Document Control Desk, "Nuclear Regulatory Commission Generic Letter 2004-02 – Revision of Commitments," AEP:NRC:5054-14, dated December 19, 2005 (ML060030459).

5. Letter from P. S. Tam, NRC, to M. K. Nazar, I&M, "Donald C. Cook Nuclear Plant, Units 1 and 2 - Request for Additional Information Re: Response to Generic Letter 2004-02, 'Potential Impact of Debris Blockage on Emergency Recirculation During Design-Basis Accidents at Pressurized-Water Reactors' (TAC Nos. MC4679 and MC4680)," dated February 9, 2006 (ML060370547).

6. Letter from C. Haney, NRC, to Holders of Licenses for Pressurized Water Reactors, "Alternative Approach for Responding to the Nuclear Regulatory Commission Request for Additional Information Letter Re: Generic Letter 2004-02," dated March 28, 2006 (ML060870274).

7. Nuclear Energy Institute report NEI 04-07, "Pressurized Water Reactor Sump Performance Methodology," dated December 2004 (ML041550332).

8. Nuclear Energy Institute report NEI 02-01, "Condition Assessment Guidelines: Debris Sources Inside PWR Containments," Revision 1, dated September 2002 (ML030420318).

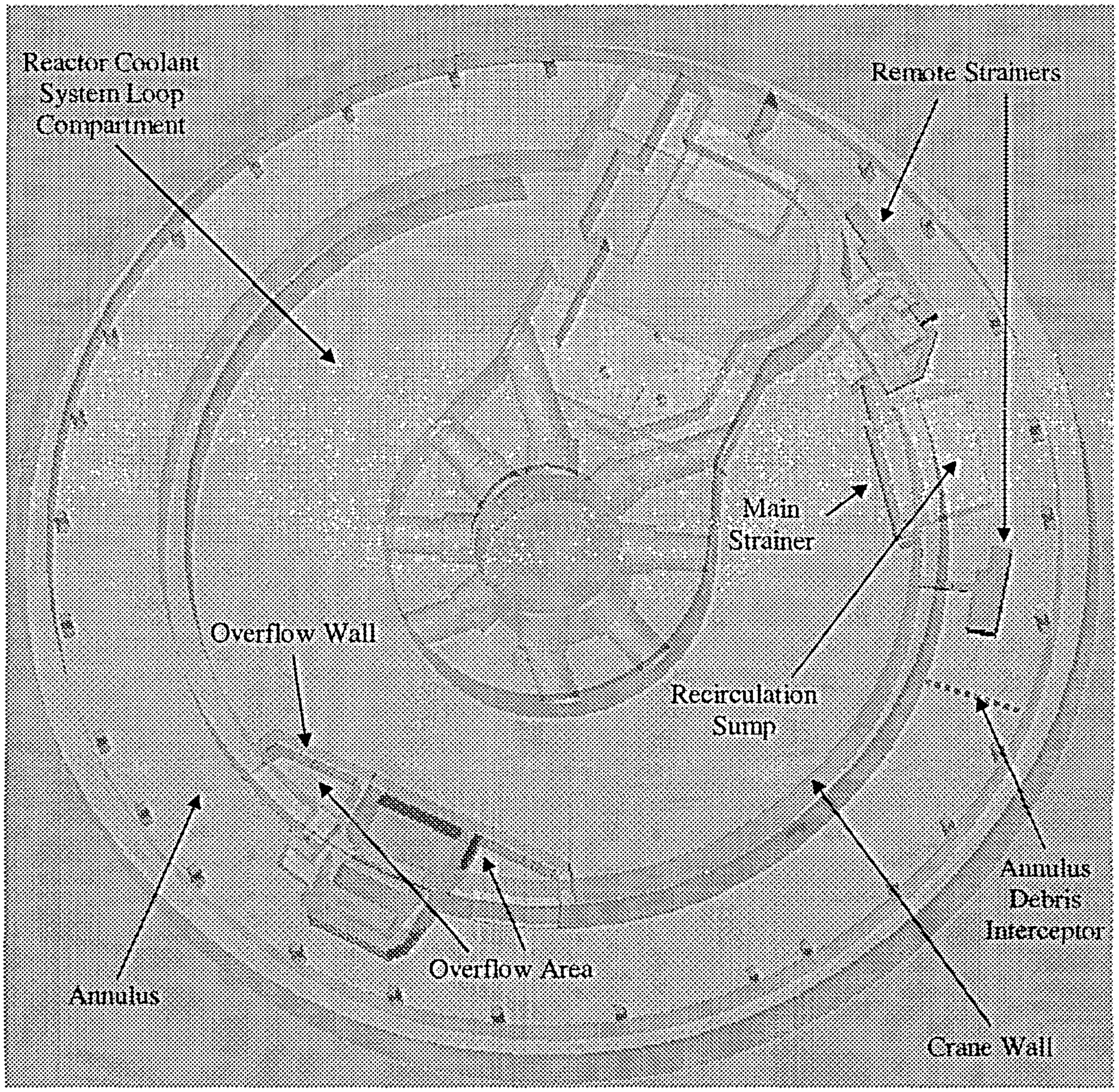
9. Westinghouse document WCAP-16406-P, "Evaluation of Downstream Sump Debris Effects in Support of GSI-191," dated June 2005, transmitted to NRC by Westinghouse Owners Group letter No. WOG-05-331 dated July 18, 2005.

10. WCAP-16530, Evaluation of Post-Accident Chemical Effects in Containment Sump Fluids to Support GSI-191," dated February 2006 (ML060890509).

ATTACHMENT 2 TO AEP:NRC:6054-05

SKETCH OF SUMP AND STRAINERS FOLLOWING ANTICIPATED MODIFICATIONS

(Note that either one or two remote strainers may be installed)



ATTACHMENT 3 TO AEP:NRC:6054-05

NRC REQUEST FOR ADDITIONAL INFORMATION ITEMS
ADDRESSED IN THIS LETTER

The following table identifies the information items requested in the letter from P. S. Tam, U. S. Nuclear Regulatory Commission, to M. K. Nazar, Indiana Michigan Power Company, dated February 9, 2006 (ML060370547) that are addressed in Attachment 1 to this letter, and the locations in Attachment 1 in which they are addressed.

NRC RAI Question	Where Addressed in Attachment 1
Question 8 Discuss your overall strategy to evaluate potential chemical effects including demonstrating that, with chemical effects considered, there is sufficient net positive suction head (NPSH) margin available during the ECCS mission time. Provide an estimated date with milestones for the completion of all chemical effects evaluations.	Description of "Chemical Effects" on page 15.
Question 12 For your plant-specific environment, provide the maximum projected head loss resulting from chemical effects (a) within the first day following a LOCA, and (b) during the entire ECCS recirculation mission time. If the response to this question will be based on testing that is either planned or in progress, provide an estimated date for providing this information to the NRC.	Description of "Chemical Effects" on page 15.
Question 35 The licensee states that the final containment walkdowns for Unit 1 and Unit 2 will be completed in accordance with Nuclear Energy Institute (NEI) 02-01 during the Fall 2006 and Fall 2007 outages, respectively. The licensee also states that bounding analyses have already been completed in the areas of debris generation and transport. Please discuss the plans to incorporate the results of these future containment walkdowns into these analyses.	Description of "Containment Walkdowns" on page 3.

NRC RAI Question	Where Addressed in Attachment 1
Question 37 Please discuss the treatment of LBLOCAs and small-break loss-of-coolant accident (SBLOCAs) in the debris generation analyses. The staff SE on the alternate evaluation methodology defines a "debris generation break size" which distinguishes between customary and realistic design-basis analyses. This methodology classifies all American Society of Mechanical Engineers Boiler and Pressure Vessel Code (ASME Code) Class 1 reactor coolant system (RCS) attached piping, and breaks in the RCS main loop piping equivalent to a double-ended guillotine break (DEGB) of a 14-inch schedule 160 pipe as being analyzed using design-basis analyses. The licensee identifies LBLOCAs as those greater than a 14-inch diameter pipe. It is not clear how the licensee is treating these breaks. For example, the DC Cook 14 inch diameter pressurizer surge line and 14 inch diameter residual heat removal (RHR) system cooldown pipe to RCS Loop No. 2 should be treated in a traditional design-basis analysis fashion. It is not clear that breaks in these lines were treated in this manner.	Description of "Break Selection" on page 9.
Question 40 Please discuss any evaluations or considerations for exemption requests as a result of applying the Section 6 methodology. The NEI guidance report, "Pressurized Water Reactor Sump Performance Evaluation Methodology," NEI 04-07, and associated NRC staff SE recognized that exemptions from the regulations may be needed if this methodology was applied.	Updated response to NRC Question 2(e) on page 20.
Question 43 Has debris settling upstream of the sump strainer (i.e., the near-field effect) been credited or will it be credited in testing used to support the sizing or analytical design basis of the proposed replacement strainers? In the case that settling was credited for either of these purposes, estimate the fraction of debris that settled and describe the analyses that were performed to correlate the scaled flow conditions and any surrogate debris in the test flume with the actual flow conditions and debris types in the plant's containment pool.	Discussion of "Debris Transport" on page 12.

ATTACHMENT 4 TO AEP:NRC:6054-05

REGULATORY COMMITMENTS

The following table identifies those actions committed to by Indiana Michigan Power Company (I&M) in this document. Any other actions discussed in this submittal represent intended or planned actions by I&M. They are described to the Nuclear Regulatory Commission (NRC) for the NRC's information and are not regulatory commitments.

Commitment	Date
The remainder of the information requested in the letter from P. S. Tam, NRC, to M. K. Nazar, I&M, dated February 9, 2006 (ML060370547), will be provided in future updates.	December 31, 2006, and December 31, 2007