February 7, 2001

Mr. Robert P. Powers, Senior Vice President
Indiana Michigan Power Company
Nuclear Generation Group
500 Circle Drive
Buchanan, MI 49107

SUBJECT: DONALD C. COOK NUCLEAR PLANT, UNIT 1 - REQUEST FOR ADDITIONAL INFORMATION, "TECHNICAL SPECIFICATION CHANGE REQUEST SPRAY ADDITIVE TANK MAXIMUM VOLUME AND SODIUM HYDROXIDE CONCENTRATION," DATED JANUARY 2, 2001 (TAC NO. MB0908)

Dear Mr. Powers:

On January 2, 2001, Indiana Michigan Power Company (I&M) submitted a proposed license amendment request that would revise Technical Specifications (TS) 3/4.6.2.2.a for the Unit 1 spray additive tank to require a contained volume between 4,000 and 4,600 gallons of between 30 and 34 percent by weight sodium hydroxide (NaOH) solution. In addition, the proposed amendment would make four types of format changes to the revised Unit 1 page:

1. Reformat the header to include numbered first and second tier TS section titles and a full-width single line to separate the header section titles from the page text.

2. Reformat the footer to include "COOK NUCLEAR PLANT-UNIT 1" on the left side of the page, "Page (page number)" center page, "AMENDMENT (past amendment numbers, with strikethrough, and ending with the current amendment number)" on the right side, and a full-width single line to separate the footer from the page text.

3. Delete the double lines under "LIMITING CONDITION FOR OPERATION" and "SURVEILLANCE REQUIREMENTS."

4. Fully justify the text and change the font.

The Nuclear Regulatory Commission (NRC) staff has reviewed your request and concluded that it does not provide technical information in sufficient detail to enable the staff to make an independent assessment regarding the acceptability of the proposal in terms of regulatory requirements and the protection of public health and safety.

The NRC staff finds that the additional information identified in the enclosure is needed.

Draft questions were provided to your staff on January 29, 2001, and were discussed with Mr. J. Waters et al, on February 2, 2001. The questions in the enclosure to this letter are the same as the draft questions. A mutually agreeable target date of March 5, 2001, for your response was established. The NRC staff will begin review of your amendment application when your response to the enclosed questions is received.

If circumstances result in the need to revise the target date, please contact me at (301) 415-1345 at the earliest opportunity.

Sincerely,

***/RA/***

John F. Stang, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosure: As stated

cc w/encl: See next page

If circumstances result in the need to revise the target date, please contact me at (301) 415-1345 at the earliest opportunity.

Sincerely,

***/RA/***

John F. Stang, Senior Project Manager, Section 1
Project Directorate III
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket Nos. 50-315 and 50-316

Enclosure: As stated

cc w/encl: See next page

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ACCESSION NO. ML010380040

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cc:

Regional Administrator, Region III
U.S. Nuclear Regulatory Commission
801 Warrenville Road
Lisle, IL 60532-4351

Attorney General
Department of Attorney General
525 West Ottawa Street
Lansing, MI 48913

Township Supervisor
Lake Township Hall
P.O. Box 818
Bridgman, MI 49106

U.S. Nuclear Regulatory Commission
Resident Inspector's Office
7700 Red Arrow Highway
Stevensville, MI 49127

David W. Jenkins, Esquire
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

Mayor, City of Bridgman
P.O. Box 366
Bridgman, MI 49106

Special Assistant to the Governor
Room 1 - State Capitol
Lansing, MI 48909

Drinking Water and Radiological
Protection Division
Michigan Department of
Environmental Quality
3423 N. Martin Luther King Jr Blvd
P.O. Box 30630, CPH Mailroom
Lansing, MI 48909-8130

Ronald Gaston
Director, Regulatory Affairs
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

David A. Lochbaum
Union of Concerned Scientists
1616 P Street NW, Suite 310
Washington, DC 20036-1495

A. Christopher Bakken, Site Vice President
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

Michael W. Rencheck
Vice President, Nuclear Engineering
Indiana Michigan Power Company
Nuclear Generation Group
500 Circle Drive
Buchanan, MI 49107

**REQUEST FOR ADDITIONAL INFORMATION FOR**

**D. C. COOK UNIT 1**

**SUBMITTAL C0101-05 (SPRAY ADDITIVE TANK MAXIMUM VOLUME AND SODIUM HYDROXIDE CONCENTRATION), DATED JANUARY 2, 2001**

1. The submittal provided a statement that you determined the maximum allowed contained volume and sodium hydroxide concentration for the spray additive tank to support a bounding calculation of the maximum pH value for the containment spray solution and for the water contained in the containment recirculation sump under postulated accident conditions. You indicated that the analyses performed using the proposed Unit 1 maximum volume and sodium hydroxide concentrations verified that the acceptance criteria were satisfied for loss-of-coolant-accident (LOCA) events. However, the analyses were not provided for review, nor was a description of how the conclusion was reached.

   In order to begin our review, Nuclear Regulatory Commission (NRC) staff requests that you describe in detail and justify the analyses performed, the assumptions made in the analyses, and the results of the analyses.

2. Your Updated Final Safety Analysis Report (UFSAR), Section 6.3.1, "Design Bases - Containment Heat Removal Systems," states the following:

   "(Unit 1only)

   The Containment Spray System is designed to deliver sufficient sodium hydroxide solution which, when mixed with water from the Refueling Water Storage Tank (RWST) which contains approximately 1.5 percent by weight boric acid (2000 ppm Boron), reactor coolant system water and the melted ice, gives a final spray water pH of approximately 9.3 after the spray additive sodium hydroxide (NaOH) tank is emptied."

   Does your bounding calculation assume 2,000 ppm of boron as stated in the UFSAR or does it use between 2,400 ppm and 2,600 ppm as stated in Technical Specification 3/4.5.5.b? Explain the discrepancy between the UFSAR and the Technical Specification? What is the range of pH in the injection mode using your bounding calculation? Justify your results.

ENCLOSURE

3. Your UFSAR, Section 6.3.1, “Design Bases - Containment Heat Removal Systems,” states the following:

   “(Unit 1only)

   The Containment Spray System is designed to deliver sufficient sodium hydroxide solution which, when mixed with water from the Refueling Water Storage Tank (RWST) which contains approximately 1.5 percent by weight boric acid (2000 ppm Boron), reactor coolant system water and the melted ice gives a final spray water pH of approximately 9.3 after the spray additive sodium hydroxide (NaOH) tank is emptied.”

   “(Unit 2 only)

   The Containment Spray System is designed to deliver sufficient sodium hydroxide solution which, when mixed with water from the Refueling Water Storage Tank (RWST) which contains approximately 1.5 percent by weight boric acid (2400 to 2600 ppm Boron), accumulator water, reactor coolant system water and the melted ice, results in the solution recirculated within containment after a LOCA having a pH in the range of 7.6 to 9.5.”

   According to the UFSAR, the Unit 1 analysis does not take into account the accumulator water and the Unit 2 analysis does. Does your bounding calculation for Unit 1 take the accumulator water into account? If not, justify.

4. In your submittal, you stated that “to facilitate the pH analyses of the LOCA events, the calculations performed assumed the Unit 2 maximum values that are now proposed for Unit 1.

   Unit 2 UFSAR Section 6.3.2, “System Design - System Description - Spray Additive Tank,” states the following: “The tank contains sufficient sodium hydroxide solution to ensure that, when mixed with the refueling water, accumulator water, reactor coolant and melted ice in the containment sump, the solution recirculated within containment after a LOCA has a pH between 7.6 and 9.5.”

   Unit 2 Technical Specification (TS) Bases 3/4.6.2.2, “Spray Additive System,” states the following: “The limits on NaOH volume and concentration ensure a pH value of between 8.5 and 11.0 for solution recirculated within containment after a LOCA.”

   Unit 2 Technical Specification (TS) Bases 3/4.5.5, “Refueling Water Storage Tank,” states the following: “The limits on contained water volume and boron concentration of the RWST also ensure a pH value of between 7.6 and 9.5 for the solution recirculated within containment after a LOCA.”

   Explain the differences in these Unit 2 UFSAR and TS bases. Since the Unit 1 bounding analysis uses the same values as Unit 2, does the Unit 1 bounding analysis ensure a pH between 8.5 and 11.0 or 7.6 and 9.5 for the solution recirculated within containment after a LOCA? Explain.

5. Your UFSAR, Section 6.3.2, “System Design - System Description,” states the following:

   “During the time period that NaOH solution is added to the spray flow, 26 gpm (approximate) is diverted from the Containment Spray Pump discharge and used as motive water for the eductor. The eductor draws 38 gpm (approximate) {Unit 1 only} and between 23 and 64 gpm {Unit 2 only} from the spray additive tank which produces a solution in the recirculation sump suitable for iodine retention.”

   Explain how the bounding calculation pH range is between 7.6 and 9.5 for the solution recirculated within containment after a LOCA for Unit 1 and Unit 2 yet the eductor draws different flow rates from the spray additive tank for Unit 1 and Unit 2. What assumptions were made? Justify.

6. In your submittal, you stated that “the proposed upper limit on volume and concentration for the spray additive tank, also, supports a bounding equipment qualification (EQ) calculation of pH during the LOCA and main steam line break (MSLB) events. What is the pH range for the bounding EQ calculation ? Does this pH range bound the chemical effects for injection phase and recirculation phase ?