April 10, 2002

EA-02-065

Mr. A. C. Bakken III
Senior Vice President
Nuclear Generation Group
American Electric Power Company
500 Circle Drive
Buchanan MI 49107

SUBJECT: NOTICE OF ENFORCEMENT DISCRETION FOR INDIANA MICHIGAN POWER COMPANY REGARDING D.C. COOK, UNIT 2 (NOED-02-3-001)

Dear Mr. Bakken:

By letter dated April 8, 2002, you requested that the NRC exercise discretion not to enforce compliance with the actions required in Technical Specification (TS) 3.8.2.3, "D.C. Distribution - Operating," for D.C. Cook Unit 2. Your letter documented information previously discussed with the NRC in a telephone conference which was initiated on April 4, 2002, and was completed on April 5, 2002. At the time of the telephone conference, the plant was in Operational Mode 1 with a plant power reduction in progress. The principal NRC staff members who participated in that telephone conference included: Geoffrey Grant, Director, Division of Reactor Projects (DRP), RIII; Anton Vegel, Chief, Reactor Projects Branch 6, DRP, RIII; Singh Bajwa, Director, Project Directorate-III, Division of Licensing Project Management, NRR; Cornelius Holden, Section Chief, Electrical and Instrumentation and Control Branch (EEIB), NRR; John Stang, Senior Project Manager, NRR; Brian Kemker, Senior Resident Inspector, D.C. Cook; Sonia Burgess, Senior Reactor Analyst, RIII; and Saba Saba, Senior Electrical Engineer, EEIB, NRR. Your staff stated that on April 5, 2002, at 2:12 a.m. (EST), D.C. Cook Unit 2 would not be in compliance with TS 3.8.2.3.b due to the inoperability of the Unit 2 AB 250-volt D.C. battery unless the plant was in at least a hot standby condition.

Specifically, with the Unit 2 AB battery inoperable, TS 3.8.2.3.b required the restoration of the battery to operable status within 2 hours or be in at least Hot Standby within the next 6 hours and in Cold Shutdown within the following 30 hours. Your staff requested that a Notice of Enforcement Discretion (NOED) be issued pursuant to the NRC's policy regarding exercise of discretion for an operating facility, set out in Section VII.C, of the "General Statement of Policy and Procedures for NRC Enforcement Actions" (Enforcement Policy), NUREG-1600, and be effective for 11 hours, ending at 7:12 a.m. (EST) on April 5, 2002. Specifically, you requested an extension of the allowed outage time of 2 hours by an additional 11 hours to replace three degraded Unit 2 AB battery cells, and complete all necessary post maintenance testing activities. This letter documents our telephone conversation at 12:20 a.m. (EST) on April 5, 2002, during which we orally granted this NOED. We understand that upon reaching the expiration of this NOED, you initiated appropriate action in accordance with the TS.

Subsequently, the condition causing the need for this NOED was corrected, and you exited from TS 3.8.2.3.b on April 5, 2002, at 7:55 a.m. (EST). Your staff requested this NOED after problems were identified with the Unit 2 AB battery. On April 3, 2002, during the performance of the Unit 2 AB battery weekly TS surveillance test, cracks were discovered on the top covers of three cells. A subsequent review of the surveillance test results on April 4, 2002, determined the cracks to be "abnormal deterioration" as defined by TS 4.8.2.3.2.c.1. This TS states that no visual indications of physical damage or abnormal deterioration shall be present on the battery cells, cell plates, and battery rack. As such, the Unit 2 AB battery was declared inoperable on April 4, 2002, at 6:12 p.m. (EST). Your staff determined that although the cracking was considered to be abnormal deterioration, it did not impact the functionality of the Unit 2 AB battery.

Your staff determined that the cause for the cell top cover cracking was the build up of corrosion deposits around the positive post of the battery cells. On December 13, 2001, during performance of the 92-day TS 4.8.2.3.2 surveillance requirement for the Unit 2 AB battery, it was noted that the sealing material between the positive post and the cell top was breaking away on the inside of 23 of the 116 battery cells. Based on your staff's discussions with the battery vendor, your staff concluded that the breaking away of the seal ring was caused by corrosion of the sacrificial lead ring which is bonded to the positive battery post. At the time, the condition was not considered abnormal deterioration because the lead ring is designed to corrode to some degree in order to protect the positive post from corrosion.

One of the affected battery cells was replaced and destructive testing was performed on it by the vendor in February 2002. The failure analysis report published in March 2002 concluded that the accelerated corrosion was caused by the failure of the coating between the lead ring and the rubber sealing ring. The coating failure was attributed to a misapplication of the coating, and/or damage to the coating during the burning of the lead ring to the positive post. The report also concluded that the corrosion could build up, potentially causing the battery covers to crack. However, the vendor concluded that this condition was considered a maintenance issue rather than a battery performance issue, and that a long-term solution would be to replace those cells affected by the coating failure.

Following the discovery of cracks on three of the battery cell top covers (of the 23 previously identified in December 2001), your staff subsequently determined that, per TS 4.8.2.3.2.c.1, the condition rendered the affected cells, and the Unit 2 AB battery, inoperable. Actions were initiated on April 4, 2002, to replace the affected cells. However, your staff determined that the three cells could not be replaced within the T.S. 3.8.2.3, Limiting Condition for Operation (LCO) Action "b" time requirements. Consequently, your staff contacted the NRC to request enforcement discretion to allow for replacement of the three cells without necessitating a plant shutdown.

Your staff requested this NOED after consideration of the safety significance and potential consequences of such an action. Your staff determined that extending the allowed outage time for the Unit 2 AB battery for an additional 11 hours, while completing repairs, would allow for the plant to remain at power and would not result in an undue risk to the health and safety of the public. The conclusion was based on risk insights that quantitatively indicated no net increase

in radiological risk as a result of having the Unit 2 AB battery out of service for an additional 11 hours. Your evaluation determined that the risk associated with maintaining the plant at power for a total of 13 hours with the Unit 2 AB battery inoperable was lower than the risk associated with performing a reactor shutdown. As a compensatory measure during the period of the NOED, your staff committed to not removing from service any safety related or important secondary equipment. In addition, the Unit 2 AB battery, although degraded, remained functional throughout the cell replacements.

The NRC's basis for this discretion considered: (1) the availability of the redundant Unit 2 CD battery; (2) the functionality of the Unit 2 AB battery was not affected in the short term by the cracked cell covers; (3) the compensatory measures to reduce the probability of a plant transient while ensuring the availability of other safety related equipment; and (4) the probabilistic risk assessment of the condition which indicated that the risk associated with keeping the plant at power for a total of 13 hours with the Unit 2 AB battery inoperable was lower than the risk associated with performing a plant shutdown.

Although the NRC does not have a plant specific shutdown risk analysis, we did perform a qualitative evaluation of this issue and determined that the risk of continued operation with your compensatory measures for the additional 11 hour period of the NOED did not result in an increased risk over shutting down with the Unit 2 AB battery inoperable. The basis of our decision was that there was no net increase in risk associated with extending the AOT of the Unit 2 AB battery from 2 hours to a total of 13 hours. In addition, although the battery was considered inoperable for the analysis, the battery was maintained functional throughout the cell replacements. Based on this qualitative evaluation the NRC accepted your staff's safety rationale.

Regarding the Unit 2 AB battery cell replacement evolution and the functionality of the battery during the replacements, we understood during the telephone conversations on April 4 and 5, 2002, that some degradation of the battery capacity would occur when battery cells were jumpered while replacement cells were being installed. However, in your written request dated April 8, 2002, your staff stated that three temporary cells were jumpered across the cell being replaced to maintain the overall battery bank capacity and terminal voltage. We understand that by jumpering in three temporary cells, the ability of the battery to perform its intended function was enhanced above what was understood during the telephone conversation. With the exception of this item, the NRC staff determined that your verbal and written NOED requests were consistent.

Based on the above considerations, the NRC staff concluded that Criterion B.2.1.1.a and the applicable criteria in Section C.4 to NRC Manual Chapter 9900, "Technical Guidance, Operations - Notices of Enforcement Discretion" were met. Criterion B.2.1.1.a states that for an operating plant, the NOED is intended to avoid unnecessary transients as a result of compliance with the license condition and, thus, minimize potential safety consequences and operational risks.

On the basis of the NRC staff's evaluation of your request, we have concluded that issuance of this NOED is consistent with the Enforcement Policy and staff guidance, and had no adverse

impact on public health and safety. Therefore, we exercised discretion not to enforce compliance with LCO Action "b" in TS 3.8.2.3 for 11 hours starting at 8:12 p.m. (EST), on April 4, 2002 until 7:12 a.m. (EST), on April 5, 2002.

As stated in the Enforcement Policy, action will be taken, to the extent that violations were involved, for the root cause that led to the noncompliance for which this NOED was necessary.

Sincerely,

/RA/

Geoffrey E. Grant, Director
Division of Reactor Projects

Docket No. 50-316
License No. DPR-74

cc: J. Pollock, Site Vice President
M. Finissi, Plant Manager
M. Rencheck, Vice President, Strategic Business Improvements
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Michigan Department of Environmental Quality
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