February 2, 2000

Mr. R. P. Powers
Senior Vice President
Nuclear Generation Group
American Electric Power Company
500 Circle Drive
Buchanan, MI 49107-1395

SUBJECT: CLOSURE OF CONFIRMATORY ACTION LETTER RIII-97-011

Dear Mr. Powers:

This letter is to inform you that the NRC has completed its review of the actions taken by American Electric Power as specified in NRC Confirmatory Action Letter RIII-97-011 issued on September 19, 1997. The Confirmatory Action Letter was issued after both D. C. Cook units were shutdown based upon findings from an NRC Architect and Engineering team inspection conducted from August 4 through September 12, 1997. The inspection identified several issues regarding the ability of the emergency core cooling systems to perform their design basis function. The Confirmatory Action Letter also described actions to address the identification of fibrous material in containment.

Following shutdown, additional system and programmatic deficiencies were identified. The NRC implemented the Inspection Manual Chapter 0350 oversight process for the D. C. Cook restart and issued a Case Specific Checklist documenting a comprehensive list of system and programmatic issues needing resolution before restart.

The Confirmatory Action Letter documented nine specific technical issues and the actions you intended to take to address those issues prior to restart of either unit at the D. C. Cook facility. The Confirmatory Action Letter also addressed actions you would take to bound the issues by determining whether the engineering problems that could affect system operability also existed in other safety related systems. In your letters dated October 25 and December 15, 1999, you provided additional information regarding your actions to resolve these issues.

We have evaluated your actions described in these letters through inspection and review. We also conducted preliminary discussions regarding these issues with you during the November 17, 1999, public meeting.

1. NRC's conclusions and findings with respect to the nine specific technical issues in the Confirmatory Action Letter are based on the results of:

   - The Engineering and Corrective Action Team Inspection conducted from November 29, 1999 through January 5, 2000 (Report 50-315/99029 and 50-316/99029). This inspection addressed Confirmatory Action Letter Items 1, 2, 5, 6, 7, and 8.

- The Surveillance Testing and Emergency Operating Procedures Inspection conducted from December 6, 1999 through January 5, 2000 (Report 50-315/99033 and 50-316/99033). This inspection addressed Confirmatory Action Letter Item 4.

- The Instrument Uncertainty/Cable Separation Inspection conducted from November 8, 1999 through January 5, 2000 (Report 50-315/99032 and 50-316/99032). This inspection addressed Confirmatory Action Letter Item 9.

- The NRC staff review of the design basis requirements for the capability to cool down the units consistent with design basis requirements addressed in Confirmatory Action Letter Item 3.

A summary of the individual technical issues and the basis for resolution is contained in the enclosure to this letter. The reports of the inspections addressing those specific technical issues will be issued separately.

2. NRC evaluated your actions to bound the issues and determine whether system operability was affected. You performed an assessment to determine whether the types of engineering problems that contributed to the technical issues addressed in the Confirmatory Action Letter existed in other safety related systems and whether they affected system operability. You defined long-term improvement initiatives and completed a comprehensive assessment of your systems, technical programs and organizational functions to identify the extent of problems at D. C. Cook requiring resolution prior to restart.

   The NRC completed several inspections (Reports 50-315;316/99002, 50-315;316/99003, 50-315;316/99006, 50-315;316/99007 and 50-315;316/99013) evaluating the effectiveness of your problem discovery efforts. NRC concluded that your assessments were conducted utilizing a structured approach and were successful in identifying the breadth of the engineering problems that could potentially affect safety system functions. The identified problems have been entered into your corrective action system and appropriately prioritized for closure. The reports addressing NRC evaluation of the actions you have taken to bound the extent of the engineering problems at D. C. Cook have been issued and are publicly available.

The NRC Inspection Manual Chapter 0350 Restart Panel evaluated the NRC staff's assessment of the actions taken to address the Confirmatory Action Letter issues and has concluded that the Confirmatory Action Letter issues have been adequately resolved. I have evaluated the Panel's recommendation and, in consultation with the Director, Office of Nuclear Reactor Regulation, and with the Deputy Executive Director for Regulatory Programs, have concluded that D. C. Cook's actions associated with Confirmatory Action Letter RIII-97-011 are satisfactory. Therefore, the Confirmatory Action Letter is closed.

This closure is based on the description of activities contained in your letters dated October 25 and December 15, 1999, our review of those letters, and on our inspections and evaluations of your activities. I understand that you will inform us should the basis for closure of the

Confirmatory Action Letter change as described in your letters. The remaining activities required for restart of the D. C. Cook plant will be managed through the Inspection Manual Chapter 0350 oversight process. The NRC plans to continue to hold regular public meetings with your staff to discuss progress toward restart of the units.

If you have any questions regarding the information in this letter, please contact me at 630-829-9657, or John Grobe at 630-829-9700.

Sincerely,

(Original signed by J.E. Dyer)

J. E. Dyer
Regional Administrator

Docket Nos. 50-315; 50-316
License Nos. DPR-58; DPR-74

Enclosure: As stated

cc w/encl: A. C. Bakken III, Site Vice President
J. Pollock, Plant Manager
M. Rencheck, Vice President, Nuclear Engineering
R. Whale, Michigan Public Service Commission
Michigan Department of Environmental Quality
Emergency Management Division
MI Department of State Police
D. Lochbaum, Union of Concerned Scientists

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Michigan Department of Environmental Quality
Emergency Management Division
MI Department of State Police
D. Lochbaum, Union of Concerned Scientists

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Enclosure

Summary of Confirmatory Action Letter Issues

Confirmatory Action Letter Issue 1, Recirculation Sump Inventory/Containment Dead Ended Compartments

"Analyses will be performed to demonstrate that the recirculation sump level is adequate to prevent vortexing, or appropriate modifications will be made".

Staff's Assessment of Confirmatory Action Letter Issue 1

The licensee performed analyses of loss-of-coolant-accident and main steamline break scenarios to ensure adequate inventory would be maintained in the recirculation sump. The licensee identified five required plant modifications:

- Installing a sump float switch;
- Installing a return drain line for the hydrogen skimmer fans into the sump;
- Increasing the height of the refueling water storage tank overflow line;
- Installing an opening in the crane wall to increase communication between the active sump region and the annular region; and
- Changing hydrogen skimmer damper positions and starting the associated fans earlier to provide more inventory to the sump earlier.

The licensee completed the calculations and analyses for the modifications. The NRC Office of Nuclear Reactor Regulation office approved the associated amendment for this item on December 13, 1999. The team reviewed the licensee's actions and this item is closed.

Confirmatory Action Letter Issue 2, Recirculation Sump Venting

"Venting will be re-installed in the recirculation sump cover. The design will incorporate foreign material exclusion requirements for the sump".

Staff's Assessment of Confirmatory Action Letter Issue 2

This item involved improper plugging of vent holes in the "roof" of the containment recirculation sump enclosures. Additionally, the original design of these vents lacked foreign material exclusion protection. The licensee re-established the vent holes and installed foreign material exclusion screens over the vent holes. The team reviewed the licensee's actions and this item is closed.

Confirmatory Action Letter Issue 3, Thirty-six Hour Cooldown With One Train of Cooling

"Analyses will be performed that will demonstrate the capability to cool down the units consistent with design basis requirements and necessary changes to procedures will be completed".

Staff's Assessment of Confirmatory Action Letter Issue 3

This Confirmatory Action Letter (CAL) issue related to the ability of a unit at D. C. Cook to shut down from full power operation and cool down to ≤ 200°F (MODE 5, Cold Shutdown) within 36 hours as specified by Technical Specification (TS) 3.0.3 with only one train of the component cooling water (CCW) system available. In NRC Inspection Report 50-315/97-201; 50-316/97-201 the inspectors postulated this capability of the CCW system to be the design and licensing basis of D. C. Cook based on (1) language in the 1973 Licensing Safety Evaluation Report (SER) for D. C. Cook which stated one train of the CCW system was capable of handling the needs of a unit during cool down, (2) application of TS 3.0.3 which requires placing a unit in MODE 5 within 36 hours, and (3) the requirements of Criterion III of Appendix B to 10 CFR Part 50. The licensee was unable to demonstrate the postulated capability of the CCW system to the inspectors. As a result, the licensee committed to demonstrate this capability and make the necessary changes to procedures to provide assurance that a single train of the CCW system was capable of cooling down a unit to MODE 5 within 36 hours.

By letter dated December 15, 1999, the licensee indicated that steps had been taken to revalidate the responses to the CAL. With respect to CAL Issue #3, the licensee concluded that there was no regulatory basis for applying a system design requirement to a unit cooldown performed to meet TS 3.0.3. The licensee also stated in its letter that a TS 3.0.3 required 36-hour shutdown with only one train of the CCW system available as the only means to remove decay heat is not part of the D. C. Cook licensing or design basis.

The Office of Nuclear Reactor Regulation (NRR) reviewed the basis of CAL Issue #3 and the licensee's position stated in its December 15, 1999, letter. The NRR staff considers that the statement in the 1973 SER concerning the ability of one CCW train serving the needs of a unit during cool down is not clear and subject to interpretation. The statement does not imply that one train of the CCW system alone is always sufficient to satisfy the 36 hour cool down time limit of TS 3.0.3. In the event TS 3.0.3 requires a cool down of the unit to ≤ 200°F and only one CCW train is operable, operators may use other non-safety systems to reach MODE 5 within 36 hours. Therefore, the NRR staff finds that there is no licensing or design basis requirement to be able to cool down a unit at D. C. Cook within 36 hours as specified in TS 3.0.3 utilizing only one train of CCW.

In conclusion, the NRR staff determined that the coupling of the statement in the 1973 licensing SER concerning the capability of the CCW system and the required cool down time limits of TS 3.0.3 in NRC inspection report 50-315/97-201; 316/97-201 was not appropriate. Linking the design capability of a single train of the CCW system and the TS 3.0.3 shutdown requirements is beyond the licensee's design and licensing basis. However; the capability to meet all TS action requirement time limits, including those contained in TS 3.0.3, continues to be a requirement of the facility operating license.

Therefore, based on review of the licensee's December 15, 1999 letter, CAL Issue #3 has been resolved and is closed.

Confirmatory Action Letter Issue 4, ES-1.3 (Switchover to Recirculation Sump) Procedure

"Changes to the emergency procedure used for switchover of the emergency core cooling and containment spray pumps to the recirculation sump will be implemented. These changes will provide assurance that there will be adequate sump volume, with proper consideration of instrument bias and single failure criteria".

Staff's Assessment of Confirmatory Action Letter Issue 4

The licensee revised the Unit 2 procedure for switchover of the emergency core cooling and containment spray pumps to the recirculation sump, Procedure 02-OHP 4023 ES-1.3, Transfer to Cold Leg Recirculation. The revision was one part of a complete overhaul of the emergency operating procedure program. This included rewriting all of the emergency operating procedures and performing validation and verification activities on all the procedures. The licensee completed validation and verification of Procedure 02-OHP 4023 ES-1.3, and the Plant Operations Review Committee conditionally approved the procedure pending engineering approval of some of the setpoints and a modification to install float level switches in the containment sump so that adequate sump volume can be verified. Although outstanding items remain, the procedure was sufficiently developed such that changes in the final procedure from the procedure reviewed are expected to be minor in nature. Programmatic controls through both the emergency operating procedure program and Plant Operations Review Committee should ensure that outstanding items are addressed prior to final procedure approval.

The procedure attributes included:

- Ensuring sufficient water from the refueling water storage tank would be transferred into containment before the switchover is completed;
- Ensuring single active failures would not prevent successful switchover to recirculation; and
- Providing continuous emergency core cooling system injection flow during the switchover for all postulated single failures.

The inspector reviewed the procedure and verified that the procedure met the intent of the Westinghouse Emergency Response Guidelines that instrument uncertainties were accounted for. An isolated error associated with an ES-1.3 setpoint value was identified during the inspection. Corrective actions were promptly initiated to address the error. The inspector also observed operator training in the simulator on the procedure and verified that operators were able to perform the procedure expeditiously and well within the time assumptions used in the most recent accident analyses. This item is closed.

Confirmatory Action Letter Issue 5, Compressed Air Overpressure

"Overpressure protection will be provided downstream of the 20 psig, 50 psig, and 85 psig control air regulators to mitigate the effects of a postulated failed regulator".

Staff's Assessment of Confirmatory Action Letter Issue 5

This item involved lack of overpressure protection on several control air headers. The licensee completed a design change package to install redundant relief protection on the affected headers. The team reviewed the design change package and considered the proposed modification to be adequate. This item is closed.

Confirmatory Action Letter Issue 6, Residual Heat Removal (RHR) Suction Valve Interlock

"A Technical Specification change to allow operation in Mode 4 with the RHR suction valves open and power removed is being processed. Approval of this change by the NRC will be required prior to restart".

Staff's Assessment of Confirmation Action Letter Issue 6

This item involved the licensee's failure to recognize the need for an amendment to the Technical Specifications when operating practices were changed in response to industry events. The licensee submitted a license amendment request which was approved by the NRC on December 10, 1997. The team reviewed the design change associated with the amendment and considered it adequate. This item is closed.

Confirmatory Action Letter Issue 7, Fibrous Material in Containment

"Removal of fibrous material from containment that could clog the recirculation sump will be completed".

Staff's Assessment of Confirmatory Action Letter Issue 7

The licensee:

- Performed an operability assessment of the containment recirculation sump;
- Removed or encapsulated the material that could clog the sump;
- Removed several thousand pounds of foreign material from both containments;
- Upgraded foreign material exclusion standards for containment; and
- Revised the containment inspection procedure.

The licensee established a standard for transportable fibrous material in containment and will use this standard for final containment walkdown prior to restart. The team had no further concerns. This item is closed.

Confirmatory Action Letter Issue 8, Refueling Water Storage Tank (RWST) Mini-flow Recirculation Lines

"Only two of six mini-flow recirculation line valves have leakage verification tests. Justification will be provided that the total leakage for the six valves is less than 10 gpm to ensure that Part 100 dose rates are not exceeded if containment sump water were to leak back to the RWST during a design basis accident".

Staff's Assessment of Confirmatory Action Letter Issue 8

The licensee:

- Developed a procedure to leak test additional valves with postulated post-accident leak path to the refueling water storage tank;
- Augmented the in-service test program to leak test additional valves;
- Performed leak testing of additional valves; and
- Demonstrated by testing that total leakage back to the refueling water storage tank was less than 10 gallons per minute.

The inspectors reviewed these licensee actions and consider them adequate. This item is closed.

Confirmatory Action Letter Issue 9, Instrument Uncertainties Incorporated into Procedures and Analyses

"Emergency procedures and other important-to-safety procedures, calculations, or analyses will be reviewed to account for instrument uncertainties".

Staff's Assessment of Confirmatory Action Letter Issue 9

Confirmatory Action Letter (CAL) Issue 9, "Instrument Uncertainties Incorporated into Procedures and Analyses" required review of emergency procedures and other important-to-safety procedures, calculations, or analyses to account for instrument uncertainties. The CAL noted that Issue 9 was not an issue requiring completion prior to Unit 2 restart. The licensee committed to the development of an instrument uncertainty program to satisfy CAL Issue 9.

The inspection reviewed the Instrument Uncertainty Program developed by the licensee. The inspection determined that the approach taken by the licensee to address the instrument uncertainty issue was broad-based. At the time of the inspection, documents had been developed and were awaiting final approval, which defined the instrument uncertainty program. The licensee's review of emergency procedures and other important-to-safety procedures identified approximately 1100 plant procedures which required review. At the time of the inspection, 247 procedures had been reviewed and approved. Completion of the procedure revisions and calculations was ongoing. The inspection reviewed a sample of those procedures and found them adequate. This review resulted in changes to the Critical Parameter List and identified 208 instrument uncertainty calculations requiring completion. At the time of the inspection, 45 of these calculations had been completed and approved. The inspection reviewed a sample of the completed calculations and found them adequate. The inspectors concluded that the approach to identify critical parameters and identify which ones required uncertainty calculations was adequate.

In conclusion, the inspection determined that the actions completed regarding the instrument uncertainty program demonstrated that the licensee has adequately resolved this CAL item. This item is closed.