December 28, 1998

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

SUBJECT: D. C. COOK INSPECTION REPORT 50-315/98021(DRP); 50-316/98021(DRP) AND NOTICE OF VIOLATION

Dear Mr. Powers:

On December 3, 1998, the NRC completed an inspection at your D. C. Cook Units 1 and 2 reactor facilities. The inspection was an examination of activities conducted under your license as they relate to compliance with the Commission rules and regulations and with the conditions of your license. Areas reviewed included Operations, Maintenance, Engineering, and Plant Support. Within these areas, the inspection consisted of selective examinations of procedures and representative records, interviews with personnel, and observations of activities in progress. The enclosed report presents the results of that inspection.

Overall, plant activities were conducted in a safe manner. The inspectors noted that your self-assessment program has shown improvement resulting from the implementation of a number of corrective actions. Plant Performance Assurance (PPA) questioning of plant performance has improved along with the methods that PPA has been utilizing to measure plant performance. The inspectors also noted conservative decision making during a diesel generator surveillance, and your staff promptly assessed buildings and grounds damage following a severe wind storm.

While the self-assessment program showed improvement, the inspectors continued to have concerns regarding the adequacy of corrective actions to resolve surveillance program weaknesses. A violation was identified involving the failure to ensure that a Technical Specification requirement involving boration system flow path verification was being met by an appropriate surveillance procedure. The inspectors also reviewed two surveillance procedures which had been through the review process outlined in the surveillance program restart strategy document and identified two fundamental discrepancies which should have been identified by your staff during their detailed reviews. Your continued emphasis to your staff on the importance of attention to details in implementing corrective actions to resolve surveillance program weaknesses appears warranted.

In addition, we were concerned about a non-cited violation involving the operation of safety-related equipment in a manner not directed by a procedure. Specifically, your staff identified that on October 23, 1998, the Unit 1 control room crew inappropriately used “skill of the trade” to start a second Residual Heat Removal (RHR) pump with the reactor coolant system vented to atmosphere. That operation of the RHR system was not consistent with plant procedures and resulted in operating contrary to the UFSAR.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and the enclosures will be placed in the NRC Public Document Room.

Sincerely,

Original signed by
John A. Grobe

John A. Grobe, Director
Division of Reactor Safety

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

Enclosures:
1. Notice of Violation
2. Inspection Report 50-315/98021(DRP); 50-316/98021(DRP)

cc w/encls:
J. Sampson, Site Vice President
R. Eckstein, Chief Nuclear Engineer
D. Cooper, Plant Manager
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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Sincerely,

/s/John A. Grobe

John A. Grobe, Director
Division of Reactor Safety

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NOTICE OF VIOLATION

Indiana Michigan Power Company
Donald C. Cook Nuclear Power Plant

Docket No. 50-315; 50-316
License No. DPR-58; DPR-74

During an NRC inspection conducted from October 26 through December 2, 1998, one violation of NRC requirements was identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violation is listed below:

> Unit 1 Technical Specification 4.1.2.1.b, Boration Systems Flow Paths - Shutdown, requires that, “At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the boration flow path that is not locked, sealed or otherwise secured in position, is in its correct position.”
>
> Technical Specification 4.1.2.1.b was implemented by performance of 01-Operations Head Procedure 0430.STP [surveillance test procedure].002V, “Boration Valve Position Verification and Testing,” Revision 6, Lineup Sheet No. 2, “Modes 5 and 6 Boron Injection Flowpath Verification.”
>
> Contrary to the above, on October 27, 1998, the inspectors identified that valve 1-CS-294, a manual valve in the boration flow path that is not locked sealed or otherwise secured in position, was not verified in its correct position every 31 days. Valve 1-CS-294 was not contained in the valve lineup, 01-Operations Head Procedure 4030.STP.002V Lineup Sheet 2, “Modes 5 and 6 Boron Injection Flowpath Verification,” that was utilized to verify correct position for valves in the boration flow path.
>
> This is a Severity Level IV violation (Supplement I).

The NRC has concluded that information regarding the reason for the violation, the corrective actions taken and planned to correct the violation and prevent recurrence and the date when full compliance will be achieved is already adequately addressed on the docket in NRC Inspection Report No. 50-315/98021(DRP); 50-316/98021(DRP) dated December 28, 1998. However, you are required to submit a written statement or explanation pursuant to 10 CFR 2.201 if the description therein does not accurately reflect your corrective actions or position. In that case, or if you choose to respond, clearly mark your response as a “Response to a Notice of Violation,” and send it to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, D.C. 20555 with a copy to the Regional Administrator, Region III, and a copy to the NRC Resident Inspector at the facility that is the subject of this Notice, within 30 days of the date of the letter transmitting this Notice of Violation (Notice).

If you choose to respond, your response will be placed in the NRC Public Document Room (PDR). Therefore, to the extent possible, the response should not contain any personal privacy, proprietary, or safeguards information so that it can be placed in the PDR without redaction.

Dated this 28th day of December 1998

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket Nos:	50-315; 50-316
License Nos:	DPR-58; DPR-74
Report No:	50-315/98021(DRP); 50-316/98021(DRP)
Licensee:	Indiana and Michigan Power 500 Circle Drive Buchanan, MI 49107-1395
Facility:	Donald C. Cook Nuclear Generating Plant
Location:	1 Cook Place Bridgman, MI 49106
Dates:	October 16, 1998 through December 3, 1998
Inspectors:	B. L. Bartlett, Senior Resident Inspector B. J. Fuller, Resident Inspector J. D. Maynen, Resident Inspector D. L. Pelton, Resident Inspector - Braidwood
Approved by:	A. Vegel, Chief Reactor Projects Branch 6

EXECUTIVE SUMMARY

D. C. Cook Units 1 and 2
NRC Inspection Report 50-315/98021(DRP); 50-316/98021(DRP)

This inspection included aspects of licensee operations, maintenance, engineering, and plant support. The report covers a 7-week period of resident inspection and includes the follow-up to issues identified during previous inspection reports.

Operations

! Contrary to management expectations, the Unit 1 control room crew inappropriately used “skill of the trade” to start a second Residual Heat Removal (RHR) pump with the reactor coolant system (RCS) vented to atmosphere. Running two RHR pumps with the RCS vented to atmosphere is contrary to site procedural requirements and Updated Final Safety Analysis Report Section 9.3.3. The licensee identified that deficiencies in communications, scheduling, and teamwork contributed to this event. One non-cited violation of NRC requirements was identified. (Section O1.2)

! The inspectors identified that operations department procedures did not provide assurance that signatures and initials on instructions and procedures can be used to identify the responsible individuals. The corrective actions taken in response to a condition report detailing missing signatures in an engineering procedure were narrowly focused. A generic problem encompassing signatures in most station procedures was not addressed until the inspectors questioned licensee corrective action program management. (Section O7.1)

! The licensee identified that the Nuclear Safety and Design Review Committee had failed to perform the independent review and audit functions described in the Technical Specifications. Corrective actions were initiated and changes were promptly implemented. The inspectors observed the Nuclear Safety and Design Review Committee effectively question its own function and perform oversight of technical issues in the meeting observed. (Section O7.2)

! The effectiveness of the licensee’s self-assessment program has shown improvement since the identification of the issues in NRC Inspection Reports 50-315/97-017, 97-201, 98-004, and 98-005. The improvement resulted from the implementation of a number of corrective actions. Plant Performance Assurance questioning of plant performance improved along with the methods that the Plant Performance Assurance group utilized. (Section O7.3)

Maintenance

! Overall, maintenance work was performed using approved work procedures and reflected good maintenance practices. The inspectors noted conservative decision making during a diesel generator surveillance, and the licensee’s staff promptly assessed building and grounds damage following a severe wind storm. (Section M1.1)

- The licensee has developed a comprehensive strategy for reviewing the entire Technical Specification surveillance program. However, the inspectors concluded that the licensee's surveillance review did not adequately ensure that Technical Specification requirements were met. Specifically, the inspectors identified an example where a surveillance did not meet TS requirements after the licensee had completed a detailed review of the procedure. Additionally, the inspectors identified an example of a surveillance procedure which did not ensure that the equipment was returned to an operable configuration after the completion of the test. One violation and one apparent violation of NRC requirements were identified. (Section M1.2)

Engineering

- In 1997, an NRC inspection team questioned the accuracy of the engineered safety features ventilation system heat gain calculation. A revised vendor calculation performed in response to the NRC finding showed that the engineered safety features ventilation system may not be capable of meeting its design basis. An apparent violation of NRC requirements was identified. (Section E7.1)

Plant Support

- During normal resident inspection activities, routine observations were conducted in the area of security and safeguards, fire protection, and health physics activities. No discrepancies were noted.

Report Details

Summary of Plant Status

Unit 1 remained in Mode 5, Cold Shutdown, during this inspection period. Work on Unit 1 took precedence over Unit 2.

Unit 2 remained in Mode 5, Cold Shutdown, during this inspection period. The restart schedule for Unit 2 was not yet complete.

I. Operations

O1 Conduct of Operations

O1.1 General Comments (71707)

Using the referenced inspection procedure, the inspectors conducted frequent reviews of control room and in-plant operation of equipment during the extended outage of both reactor units. The inspectors found that, overall, the plant was operated in a safe manner and in accordance with procedures. However, early in the inspection period, the licensee identified that an operating crew had operated safety-related equipment in a manner not directed by a procedure. This event was discussed below in Section O1.2. Later in the inspection period, the inspectors noted that conservative decision making and a questioning attitude were more evident. In preparation for a scheduled Unit 1 East Residual Heat Removal (RHR) system maintenance outage, Operations management trained the operating crews on the actions to take in the event that all shutdown cooling was lost. The inspectors interviewed several reactor operators and senior reactor operators on the actions that they were expected to take. A consistent answer, commensurate with plant safety, was given by all of the operators who were interviewed.

O1.2 Operation of the Residual Heat Removal System in a Manner Not Directed by a Procedure (Unit 1)

a. Inspection Scope (71707)

On October 23, 1998, the licensee identified that the Unit 1 control room crew inadvertently operated a second RHR pump with the reactor coolant system (RCS) vented to atmosphere, contrary to the Updated Final Safety Analysis Report (UFSAR). The inspectors followed up on the licensee's response to the event and reviewed the licensee's corrective actions.

b. Observations and Findings

On October 23, 1998, with the RCS vented to atmosphere and the west RHR pump running, the Unit 1 control room crew was tasked with supporting an ultrasonic flow

measurement of the RHR system. The job order associated with the flow measurement referenced Attachment 1 to Unit 1 Operations Head Procedure (OHP) 4021.017.001, "Operation of the Residual Heat Removal System," Revision 7. The control room crew reviewed the attachment and determined that the valve positions in the attachment matched those in the job order. The initial conditions for the procedure attachment required both RHR pumps to be in operation; however, the attachment did not contain the precaution against running both RHR pumps with the RCS vented. Because starting a pump was considered by the Unit Supervisor to be within the operator's "skill of the trade," the shift manager was not consulted about the use of Attachment 1. After reviewing the Technical Specifications (TSs) and an RHR flow print, the control room crew started the east RHR pump and the flow measurement was completed. The east RHR pump was run in recirculation for 16 minutes, then stopped.

Later on the shift, while preparing for a different surveillance test on the RHR system, the same Unit 1 control room crew read 01-OHP 4021.017.001, Attachment 2, "Transferring RHR Pumps With The RCS Vented To Atmosphere," Revision 8, C1, Precaution 2.4 which stated, "Only one RHR pump will be operated when the RCS is open to the atmosphere to prevent damaging both pumps in the unlikely event that the suction valve from the RCS should close." The control room crew realized that the earlier running of both RHR pumps for the ultrasonic flow measurement was not in accordance with 01-OHP 4021.017.001, Attachment 2 and notified the shift manager.

The licensee performed a formal root cause analysis of the event. The following root causes were identified:

- The communications within the operations organization was inadequate. The control room crew considered a pump start as a part of their "skill of the trade." Operations management's expectation that any safety-related equipment be operated by a procedure had not been clearly communicated.

  The licensee's corrective actions for this root cause consisted of clearly communicating the standards for procedure usage, ensuring that operating crews understood that starting safety related pumps was not considered skill of the trade, and re-emphasizing the new directions provided in a newly issued operations department procedure on control room performance.

- The planning and scheduling process was deficient. The flow measurement activity was scheduled assuming that the RCS would be pressurized. When the RCS pressurization was delayed, the activity was not rescheduled.

  The scheduling and planning of activities had previously been recognized by the licensee as needing substantial improvements. The licensee made the needed improvements to the scheduling and planning of work items an item required for restart. The broader implications of the weaknesses evident in the planning and scheduling of work activities are being addressed as part of the licensee's restart efforts. At the close of this inspection report period the corrective actions were still in progress.

- The operating shift displayed a lack of teamwork. The shift manager was not involved in the decision to operate safety-related equipment in a manner not directed by a procedure.

  The non-licensed operator, Reactor Operator, Unit Supervisor, and Shift Supervisor involved in this event were removed from shift until re-training was performed. The SS was counseled and re-trained in the need to provide management direction so that the operators were aware of the need to involve management on important decisions. The other operators were counseled and re-trained on the importance of teamwork, communications to management on important decisions, and the need to appropriately self-identify the need for management assistance.

The inspectors reviewed the final root cause report and the corrective actions. All operating shifts received additional training on the limitations for running the RHR pumps. The procedure review manual was revised to update the review process and require that the Operations Training Specialist review all procedure revisions to determine appropriate training requirements. In addition, procedure 01-OHP 4021.017.001 was revised to include the precaution against operating both RHR pumps with the RCS vented. In addition, the operating crew involved in the event briefed each of the other crews on the event, its root causes, corrective actions, and the need to appropriately follow management guidance. These actions appeared adequate to prevent recurrence.

The safety significance of running both RHR pumps simultaneously with the RCS vented to atmosphere was low. The RHR suction valves were open, and power was removed to the valve motor operators. Also, the RCS was filled and vented, so the probability of air entrainment or vortex formation at the RHR suction was low. Based on these conditions, the licensee concluded that the operability of the RHR pumps was not challenged. The inspectors reviewed the licensee's operability determination and did not have any questions.

10 CFR 50 Appendix B, Criterion V, "Instructions, Procedures, and Drawings," required, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, on October 23, 1998, starting of the Unit 1 east RHR Pump, an activity affecting quality, was not accomplished in accordance with a procedure appropriate to the circumstances. Both Unit 1 RHR pumps were run simultaneously for 16 minutes with the RCS depressurized and vented to atmosphere, contrary to 01-OHP 4021.017.001, Attachment 2. The inspectors concluded that the failure to operate the RHR system in accordance with a procedure appropriate to the circumstances was a violation of 10 CFR 50, Appendix B, Criterion V. This non-repetitive, licensee-identified and corrected violation is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-315/98021-01(DRP)).

c. Conclusions

Contrary to management expectations, the Unit 1 control room crew inappropriately used “skill of the trade” to start a second RHR pump with the RCS vented to atmosphere. Running two RHR pumps with the RCS vented to atmosphere is contrary to site procedural requirements and UFSAR Section 9.3.3. The licensee identified that deficiencies in communications, scheduling, and teamwork contributed to this event. One non-cited violation of NRC requirements was identified.

O3 Operations Procedures and Documentation

O3.1 Contingency Actions for Low Source Range Counts (Both Units)

a. Inspection Scope (71707)

The Unit 2 reactor core was refueled in October 1997, as part of a scheduled refueling outage. The lack of operating time on the core, combined with the length of the current forced shutdown, resulted in source range nuclear instrument counts decreasing below 2 counts per second (cps). The low source range count rate could mask an inadvertent boron dilution event. The inspectors reviewed a portion of the operations department daily surveillance procedure, 01 [02] Operations Head Procedure (OHP) 4030.STP.030, “Daily and Shift Surveillance Checks,” Attachment 1, “Source Range Monitor CPS Contingency Actions,” Revision 27 [25] and its associated clearance request.

b. Observations and Findings

Attachment 1 to the operations surveillance procedure provided contingency actions required to prevent a boron dilution accident when source range nuclear instrument counts were less than 2 cps. In accordance with a 10 CFR 50.59 safety evaluation, the maximum charging flow rate was limited to 130 gallons per minute unless potential boron dilution sources were isolated. The surveillance required that the operators either increase the surveillance frequency to identify any potential inadvertent boron dilution or isolate sources of unborated water which, if added to the RCS, could result in boron dilution.

The licensee implemented the isolation of unborated water sources to prevent inadvertent boron dilution. The inspectors verified the appropriate valves, as specified in the surveillance procedure, were maintained closed to isolate potential sources of unborated water from the RCS. Clearance Request 1981311 was written and placed to administratively control these valves. The inspectors reviewed the clearance request and found that the licensee was properly maintaining administrative control of the valves through use of the clearance permit system.

c. Conclusions

Following the Unit 2 refueling outage in October, 1997, the Unit 2 source range counts dropped below 2 cps. The licensee appropriately provided and implemented contingency actions to prevent inadvertently diluting the RCS boron concentration during periods when source range counts are less than 2 cps.

O7 Quality Assurance in Operations

O7.1 Control of Verification Signatures in Licensee Procedures (Both Units)

a. Inspection Scope (71707)

The inspectors reviewed operations department surveillance procedures as part of an NRC Manual Chapter (MC) 0350 Case Specific Checklist review as described in Section M1.2.

- Unit 1 Operations Head Procedure (01-OHP) 4030 Surveillance Test Procedure (STP) 002V, “Boration Valve Position Verification and Testing,” Revision 6, Change Sheet 6

- 01-OHP 4030.STP.025A, “Engineered Safety Features Fan No. 1 (1-HV-AES-1) Ventilation Exhaust Air Filter Train Test,” Revision 6, Change Sheet 1

- Plant Managers Instruction (PMI) 2010, “Instructions, Procedures, and Associated Indexes Policy,” Revision 25, Change Sheet 1

- Condition Report (CR) 98-6332, “Lack of QA [quality assurance] documentation in Operations procedures”

- CR 98-2460, “Test personnel not included on document signature page”

- CR 98-6800, “Effectiveness of corrective action taken for CR 98-2460"

b. Observations and Findings

Operations department procedures provided a blank for the data recorder or inspector to use in verifying completion of procedure steps. Operations personnel performing valve lineups and procedural steps initialed the blank provided after each position verification or step completion. Neither procedures nor valve lineup sheets required each data recorder or inspector to sign the procedure or the valve lineup sheet. The completion of the procedure was verified by the signature of one operator, and reviewed by either the Shift Manager, Assistant Shift Manager or Unit Supervisor.

10 CFR 50, Appendix B, Criteria XVII, Quality Assurance Records, requires in part, that sufficient records be maintained to furnish evidence of activities affecting quality and that inspection and test records shall as a minimum, identify the inspector or data

recorder. Plant Manager's Instruction (PMI) 2010, Step 4.12, Documentation, required department managers to ensure that signatures and initials on instructions and procedures can be used to identify the responsible individuals. The operations department secretary maintained a signature list with specimen cards for each operator to allow identification of data recorders in operations procedures. However, the operations department signature list was not maintained as a quality assurance record. The failure to maintain the operations department signature list as a quality assurance record constituted a violation of minor significance and is not subject to formal enforcement action.

A CR was initiated to document this deficiency. The operations department procedure supervisor stated that as corrective action, the operations department signature list was to be issued as an operations department procedure. The supervisor stated that procedural control would ensure the proper format, approval, and retention of the signatures as a quality assurance record. These actions appeared adequate to prevent recurrence.

The inspectors questioned the plant operations group managers to determine how each department met the identification requirements of PMI 2010. The maintenance, radiation protection and chemistry departments did not maintain quality assurance records which could identify the data recorder or inspector. The reactor engineering and testing engineering departments had incorporated signature requirements into the procedure revision checklist that each group planned for future procedure revisions.

The signature requirements for the reactor and testing groups were the corrective action for CR 98-2460 which was written against an engineering/performance testing (ENPT) procedure. The CR description reported failure of test personnel to add their name and signature to the procedure signature page. The CR description also noted that, "This appears to be a generic issue that covers numerous procedures." The CR investigation was assigned to the ENPT manager. The investigation for CR 98-2460 noted that, "PMI-2010 states that department managers are responsible for their staff. This makes it difficult to ensure other departments are living up to the same standards." In addition, the investigation stated that quality assurance department personnel confirmed the requirement to track all signatures in a procedure regardless of department. The corrective action for the deficiency described in CR 98-2460 was to revise ENPT procedure signature requirements. The corrective action of CR 98-2640 failed to address the generic issue of the effect of this condition on other departments.

The inspectors interviewed the corrective action program manager concerning the narrow focus of the corrective actions for CR 98-2460. Condition Report 98-6800 was initiated to document that the extent of corrective actions was not sufficiently broad. The investigation of the deficiency was planned to focus on how the extent of deficiencies are determined during an investigation. Training for investigators conducted in July 1998 (after the investigation of CR 98-2460) provided guidance on determining extent of condition for deficiencies and when it is appropriate to reclassify an investigation to require root cause determination. The inspectors concluded that the recent training provided to investigators should ensure that the appropriate scope of corrective actions was determined. Additionally, upgrades for root and apparent cause

investigation procedures were in progress as part of the corrective action program improvements and were scheduled to be issued in December 1998. The program upgrades appeared adequate to prevent recurrence of the deficiencies identified by the inspectors. The failure of the licensee to take adequate initial corrective actions to address signature control discrepancies constitutes a violation of minor significance and is not subject to formal enforcement action.

c. Conclusions

The inspectors identified that operations department procedures did not provide assurance that signatures and initials on instructions and procedures can be used to identify the responsible individuals. The corrective actions taken in response to a condition report detailing missing signatures in an engineering procedure were narrowly focused. A generic problem encompassing signatures in most station procedures was not addressed until the inspectors questioned licensee corrective action program management.

O7.2 Observations of Nuclear Safety and Design Review Committee (Both Units)

a. Inspection Scope (40500)

In July of 1998, the licensee identified that the Nuclear Safety and Design Review Committee (NSDRC) had failed to perform the independent review and audit functions described in the TSs. The failures of the NSDRC were identified during Plant Performance Assurance (PPA) Audit 98-19. The inspectors observed an NSDRC meeting in an effort to determine the effectiveness of the corrective actions taken to date.

b. Observations and Findings

The inspectors observed NSDRC meeting number 182 held on October 29, 1998. The inspectors observed that the licensee ensured there was a quorum prior to starting the meeting, and the inspectors independently verified the quorum. During one portion of the meeting one of the members left briefly resulting in the failure to meet the quorum. The NSDRC meeting was stopped until the member returned.

The NSDRC first considered the issues and corrective actions addressed in PPA Audit 98-19. The NSDRC was briefed on needed changes to the TSs, NSDRC procedures, and the Quality Assurance Program Description. The briefing also included the TS 6.5.2.2 requirements concerning the NSDRC members' titles. The members' titles as listed in the TS were no longer in use; therefore, the NSDRC was in violation of the TSs. The licensee took immediate corrective actions to get back into TS compliance; however, a TS change was not expected to be issued from the NRC for at least several more weeks. The failure to literally comply with the members' titles in

accordance with TS 6.5.2.2 constituted a violation of minor significance and is not subject to formal enforcement action.

The NSDRC was next briefed on the subject of bypassing the NSDRC for needed approvals that were time sensitive. The NSDRC decided that the practice was unacceptable. The inspectors verified that the practice of NSDRC bypass, if performed, would have violated the TSs concerning the operation of the NSDRC.

The NSDRC also discussed the need to ensure good corporate oversight of the facility and the desire to achieve more independent perspective of facility operations.

c. Conclusions

The licensee identified that the Nuclear Safety and Design Review Committee had failed to perform the independent review and audit functions described in the TSs. Corrective actions were initiated and changes were promptly implemented. The inspectors observed the NSDRC effectively question its own function and perform oversight of technical issues in the meeting observed.

O7.3 Effectiveness of Plant Performance Assurance (PPA) (Both Units)

a. Inspection Scope (71707 and 40500)

Problems with the licensee's self-assessment program were identified by licensee and NRC inspection programs. The need for the licensee to improve the Corrective Action Program was listed as Case Specific Checklist Item 2 of the NRC Manual Charter 0350 process. During this inspection period the inspectors performed routine observations of the licensee's self-assessment and corrective action program.

b. Observations and Findings

The effectiveness of the licensee's self-assessment program has shown improvement since the identification of the issues in NRC Inspection Reports 50-315/97-017, 97-201, 98-004, and 98-005. The improvement resulted from the implementation of a number of corrective actions. The inspectors have observed that Plant Performance Assurance (PPA) assessments of plant performance had recently improved.

The inspectors reviewed a sample of completed PPA surveillances and audits. The findings in the audits and surveillances demonstrated a deeper questioning attitude than existed previous to the corrective actions. The improved findings were due to better management support of PPA, increased rigor of PPA assessments, and an increased resistance of PPA to the acceptance of weak plant responses.

Additional improvement plans by PPA included the performance of field observations by an auditor that was not focused on a particular audit or surveillance. The auditor was encouraged to "think outside of the box" and to observe plant activities that were

deemed important. The field observations were then incorporated into the traditional audits and surveillances as appropriate. The inspectors reviewed the field observations and determined the observations demonstrated an excellent questioning attitude, were across organizational and functional lines and went beyond simple procedural compliance.

Additional PPA improvements included the implementation of a “windows” assessment tool. As assessments were made, issues would be assessed based on a set of attributes. PPA would then assign a color based upon whether the area: exceeded industry standards (Gold); met industry standards (Green); needed management attention (Yellow); was acceptable overall, but had some portions below industry standards (Red); or was not assessed (Blue). The tool was designed to help the line organizations and PPA better understand plant performance and trends.

c. Conclusions

The effectiveness of the licensee’s self-assessment program has shown improvement since the identification of the issues in Inspection Reports 50-315/97-017, 97-201, 98-004, and 98-005. The improvement resulted from the implementation of a number of corrective actions. The PPA group questioning of plant performance improved along with the methods that the PPA utilized.

O7.4 Corrective Action Program Issues

Recent NRC and licensee inspection activities have identified weaknesses in the licensee’s corrective action program. As part of the plant restart effort docketed in the Restart Plan, the licensee has committed to performing a complete assessment of the corrective action program and implementing actions to correct the identified deficiencies. In a letter dated July 30, 1998, the NRC informed the licensee that an oversight panel had been established in accordance with NRC MC 0350, and a checklist was enclosed which specified activities which the NRC considered necessary to be addressed prior to restart. Enclosure 1 to the July 30, 1998, letter, the Case Specific Checklist, included the programmatic breakdown in the corrective action process as an item to be addressed prior to restart. In accordance with MC 0350, an inspection plan was developed to evaluate the effectiveness of the licensee’s actions to correct the items listed on the Case Specific Checklist.

Previous inspection activities have also identified specific discrepancies in the corrective action program. The inspectors reviewed these previously identified corrective action deficiencies and concluded that the licensee’s restart effort and the NRC MC 0350 evaluation of the programmatic issues will adequately assess the corrective actions for the specific, previously identified items. Therefore, the following item is closed and will be tracked as part of the NRC MC 0350 evaluation process.

! (Closed) Violation 50-315/97004-02; 50-316/97004-02: Failure to take corrective actions. On March 11, 1997, Unit 2 tripped from full power as a result of a failed feed regulating valve controller. The inspectors determined that the licensee had

previously identified that the Taylor Mod 30 controllers used in the feed water regulating system were susceptible to electrostatic discharge (ESD); however, the corrective actions for this problem were not adequate to prevent recurrence. The licensee subsequently replaced the controller with a type less sensitive to ESD and directed the operators to use ESD inhibiting practices. The inspectors reviewed the licensee's response and determined that the specific conditions identified in the violation had been adequately addressed. However, the programmatic corrective action aspects of this issues, including the root causes of this violation will be evaluated as part of the inspection effort to close NRC MC 0350 Case Specific Checklist Item 2. This item is closed.

O8 Miscellaneous Operations Issues

O8.1 (Closed) Licensee Event Report 50-315/98042-00: Contrary to UFSAR Section 9.6.3.2, 2 RHR Pumps Run With the Unit Depressurized. This event is discussed above in Section O1.2. No new issues were identified in the licensee event report (LER); therefore this LER is closed.

II. Maintenance

M1 Conduct of Maintenance

M1.1 General Comments

a. Inspection Scope (62707 and 61726)

Portions of the following maintenance job orders, action requests, and surveillance activities were observed or reviewed by the inspectors:

- **!** **12 Engineering Head Procedure (EHP) 4030 STP.251.001, "AB Emergency Diesel Fuel Oil Storage Tank Leakage Testing," Revision 0

- **!** **01-OHP 4030.STP.027CD, "CD Diesel Generator Operability Test (Train A)," Revision 13

- **!** **01-OHP 4030.STP.025A, "Engineered Safety Features Fan No. 1 (1-HV-AES-1) Ventilation Exhaust Air Filter Train Test," Revision 6

- **!** **01-OHP 4030.STP.002V, "Boration Valve Position Verification and Testing," Revision 6

- **!** Job Order C46155, "1-OME-150-CD-EN [Unit 1 CD Diesel Generator], Repair

Exhaust Manifold Leaks”

b. Observations and Findings

The inspectors compared two surveillance procedures to the TS requirements. Additionally, these procedures were compared to the licensee’s surveillance program restart strategy to assess the effectiveness of the licensee’s surveillance review process. The results of the inspectors’ assessment are discussed in Section M1.2.

Overall, the inspectors observed that maintenance work in the field was performed using approved work procedures and reflected good maintenance practices. The inspectors noted conservative decision making when the Unit 1 CD diesel generator surveillance was stopped to repair a malfunctioning non-safety related bearing temperature recorder. Following a severe wind storm on November 9, 1998, the inspectors noted that the

station’s buildings and grounds were thoroughly inspected for damage and dangerous conditions. No significant damage was identified, and all identified discrepancies were properly categorized and scheduled for repair.

c. Conclusions

Overall, maintenance work was performed using approved work procedures and reflected good maintenance practices. The inspectors noted conservative decision making during a diesel generator surveillance, and the licensee’s staff promptly assessed building and grounds damage following a severe wind storm.

M1.2 Review of Surveillance Procedures (Both Units)

a. Inspection Scope (61726 and 40500)

A programmatic breakdown in the area of surveillance was identified by the NRC and documented in Inspection Reports 50-315/97-017, 98-005, and 98-007. The inspectors reviewed the licensee’s restart strategy document concerning their corrective actions, interviewed selected personnel regarding their corrective actions and selected two surveillance tests at random for review.

b. Observations and Findings

The licensee reviewed the TSs and compared them to the procedures in order to ensure that all TS requirements were tied to a procedure. The licensee then began performing a detailed review of the surveillance procedures to identify any procedures which contained the deficiencies which were listed in the restart strategy document. At the time of the inspection the licensee was approximately 30 percent completed with these detailed procedure reviews.

The surveillance procedure review group planned on performing routine self-

assessments of the surveillance procedure review initiative at a later date. In addition, the PPA group was also planning on performing reviews of the surveillance procedure review group's self-assessments. The inspectors reviewed two recently performed surveillance procedures that had been through the licensee's detailed review process.

b.1. Surveillance Procedure **01-OHP 4030.STP.002V

Unit 1 TS Surveillance 4.1.2.1.b required a monthly verification that each valve (manual, power operated or automatic) in the boration flow path was in its correct position. The verification was not required for valves in the flowpath that were locked, sealed or otherwise secured in position.

Technical Specification 4.1.2.1.b was implemented by performance of Surveillance Procedure 01-OHP 4030.STP.002V, "Boration Valve Position Verification and Testing," Revision 6, Lineup Sheet No. 2. The inspectors determined the possible boration flow paths through review of the system drawings. The valve lineup was verified by comparing Valve Lineup Sheet Number 2 to the system drawing. The inspectors identified that valve 1-CS-294, Alternate Boration to CVCS Charging Pump Suction Header Inlets, a valve in the boration flowpath, was not on valve lineup sheet Number 2 and was not verified in its correct position by Surveillance Procedure 01-OHP 4030.STP.002V. The inspectors verified that no other surveillance procedure fulfilled the requirement of TS 4.1.2.1.b. One violation of TS 4.1.2.1.b was identified.

Surveillance Procedure 01-OHP 4030.STP.002V was reviewed as part of the detailed review described above. The inspectors reviewed the checklist used to document completion of the detailed review of Surveillance Procedure 01-OHP 4030.STP.002V. The reviewer signed for completion of the review, and specifically answered YES to Item 11 of the checklist, "Does the procedure completely satisfy the TS requirement?" The review performed did not adequately ensure that the TSs were met.

Unit 1 TS 4.1.2.1.b Boration Systems Flow Paths - Shutdown, requires that, "At least once per 31 days by verifying that each valve (manual, power operated or automatic) in the flow path that is not locked, sealed or otherwise secured in position, is in its correct position." Contrary to the above, on October 27, 1998, the inspectors identified that valve 1-CS-294, a manual valve in the boration flowpath that is not locked sealed or otherwise secured in position, was not verified in its correct position. Valve 1-CS-294 was not contained in the valve lineup, 01-OHP-4030.STP.002V Lineup Sheet 2, Modes 5 and 6 Boron Injection Flowpath Verification, that was utilized to verify correct position for valves in the boration flowpath. The inspector concluded that the failure of the surveillance to verify valve 1-CS-294 in its correct position was a violation of TS 4.1.2.1.b. (50-315/98021-02 (DRP))

The safety significance of the missed monthly surveillance requirement was low. Since valve 1-CS-294 was part of the alternate boration flow path, incorrectly positioning this valve could have resulted in an inadvertent boration of the RCS and a negative reactivity addition. Also, valve 1-CS-294 was included as part of a quarterly surveillance, and this valve had not been found incorrectly positioned.

b.2. Surveillance Procedure **01-OHP 4030.STP.025A

Surveillance Procedure **01-OHP 4030.STP.025A, “Engineered Safety Features Fan No. 1 (1-HV-AES-1) Ventilation Exhaust Air Filter Train Test,” Revision 6, was intended, in part, to meet the surveillance requirement of TS 4.7.6.1.a. Technical Specification 4.7.6.1.a required that at least once per 31 days on a staggered test basis, flow though the engineered safety feature ventilation system (AES) HEPA filter and charcoal adsorbers be initiated from the control room and that the train be verified to operate for at least 15 minutes. The inspectors determined that this surveillance procedure adequately implemented TS 4.7.6.1.a as stated in the procedure objectives. However, the inspectors identified that the surveillance procedure did not adequately ensure the restoration of the AES to a configuration authorized by the normal operating procedure.

10 CFR 50, Appendix B, Criterion V, “Instructions, Procedures, and Drawings, required, in part, that activities affecting quality shall be prescribed by documented instructions, procedures, or drawings, of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings. Contrary to the above, on October 28, 1998, the inspectors identified that Surveillance Procedure **01-OHP 4030.STP.025A, “Engineered Safety Features Fan No. 1 (1-HV-AES-1) Ventilation Exhaust Air Filter Train Test,” Revision 3, was inappropriate to the circumstances in that it did not direct the operators to restore the AES system to a configuration included in the normal operating procedure or enter the appropriate TS limiting condition for operation action statement. This issue was an apparent violation of NRC requirements and will remain open for a reasonable time to allow the licensee to develop its corrective actions (EEI 50-315/98021-03 (DRP)).

b.3. Surveillance Testing Program Restart Strategy

The corrective actions identified in the licensee’s surveillance testing program restart strategy were designed to address Item 1 of the NRC MC 0350 Case Specific Checklist. Specifically, the restart strategy was designed to address the issues identified in NRC Inspection Reports 50-315/97017, 50-315/98004, 50-315/98005, 50-315/98007, and a Plant Performance Self-Assessment which was performed early in 1998. To address the issues brought up in these source documents, the licensee developed a procedure review checklist which consisted of a series of questions that the licensee’s reviewer was to answer for each surveillance procedure. The inspectors reviewed the licensee’s checklist and found that the checklists used to review the surveillance procedures in paragraphs b.1 and b.2 above did not include an item to verify that the surveillance procedure did not involve equipment preconditioning. Equipment preconditioning was previously identified as an issue in Inspection Report 50-315/98007.

The inspectors questioned the licensee about the missing checklist item. The restart strategy owner informed the inspectors that a quality assurance audit performed in October 1998, identified that the preconditioning item was missing, and the checklists were updated as a result. The licensee checked all previously reviewed surveillances; no potential preconditioning issues were identified.

c. Conclusions

The licensee developed a comprehensive strategy for reviewing the entire TS surveillance program. However, the inspectors concluded that the licensee's surveillance review did not adequately ensure that TS requirements were met. Specifically, the inspectors identified an example where a surveillance did not meet TS requirements after the licensee had completed a detailed review of the procedure. Additionally, the inspectors identified an example of a surveillance procedure which did not ensure that the equipment was returned to an operable configuration after the completion of the test. One violation and one apparent violation of NRC requirements were identified.

M3 Maintenance Procedures and Documentation

M3.1 Surveillance Testing Issues

Recent NRC and licensee inspection activities have identified significant weaknesses in the licensee's surveillance testing program. As part of the plant restart effort docketed in the Restart Plan, the licensee has committed to performing a complete assessment of the surveillance testing program and implementing actions to correct the identified deficiencies. In a letter dated July 30, 1998, the NRC informed the licensee that an oversight panel had been established in accordance with NRC MC 0350, and a checklist was enclosed which specified activities which the NRC considered necessary to be addressed prior to restart. Enclosure 1 to the July 30, 1998, letter, the Case Specific Checklist, included the programmatic breakdown in surveillance testing as an item to be addressed prior to restart. In accordance with MC 0350, an inspection plan was developed to evaluate the effectiveness of the licensee's actions to correct the items listed on the Case Specific Checklist.

Previous inspection activities have also identified specific discrepancies in the surveillance testing program. The inspectors reviewed these previously identified surveillance deficiencies and concluded that the licensee's restart effort and the NRC MC 0350 evaluation of the programmatic issues will adequately assess the corrective actions for the specific, previously identified items. Therefore, the following items are closed and will be tracked as part of the NRC MC 0350 evaluation process.

- (Closed) Inspection Follow-up Item 50-315/94018-02; 50-316/94018-02: Implementation of a ferrography program for safety-related pumps. During review of the maintenance history of the component cooling water (CCW) system in 1994, the inspectors observed that action requests (ARs) were generated to document discolored oil in two CCW pump motors. The inspectors also noted that the licensee did not analyze the oil to determine if the motors were in a degraded condition. In response to the inspector's concerns, the licensee stated that an evaluation was ongoing to determine whether the addition of motors to the ferrography program would enhance the overall predictive maintenance program. Since 1994, the licensee has implemented an oil sampling program as part of the predictive maintenance program. Cook nuclear plant procedures 12-THP 6020 CHM.302, "Oil and EHC Sampling," and 12-EHP 5030.OIL.001, "Oil

Analysis Program," delineated requirements for the testing of safety-related pump oil, the trending of the results, and actions to be taken if problems were noted. The inspectors reviewed recently issued condition reports and determined that the licensee was actively sampling oil from safety-related pumps and documenting problems and trends. The inspectors determined that the specific conditions raised by this item were adequately addressed. Based on the discussion in Section M3.1, the inspectors concluded that the licensee's corrective actions to address programmatic issues will be evaluated as part of the inspection effort to close NRC MC 0350 Case Specific Checklist Item 1. This item is closed.

- (Closed) Violation 50-315/96010-01; 50-316/96010-01: Failure to verify adequate CCW flows through surveillances. On August 28, 1996, there was no periodic surveillance performed or procedure in place to assure that component cooling water system flow to the containment air recirculation fan met the 25 gallons per minute listed in the Updated Final Safety Analysis Report (UFSAR), Table 9.5-2. Also, as of August 28, 1996, the test program did not demonstrate that component cooling system performance was satisfactory as listed in the UFSAR, Table 9.5-2. In July, 1997, a revision to UFSAR Table 9.5-2 updated the minimum flow requirements for a CCW train. The surveillance procedure, **12 EHP 4030.STP.248, "CCW Flow Balance," was revised to ensure that the acceptance criteria met or exceeded the minimum flow requirements listed in the UFSAR. The inspectors reviewed the licensee's response and determined that the specific conditions identified in the violation were adequately addressed. Based on the discussion in Section M3.1, the inspectors concluded that the licensee's corrective actions for the root causes of this violation will be evaluated as part of the inspection effort to close NRC MC 0350 Case Specific Checklist Item 1. This item is closed.

M8 Miscellaneous Maintenance Issues

M8.1 (Closed) Licensee Event Report 50-315/94007-00: Exceeded TS Action Statement Due to Unnoticed Inaccuracy in Calculation Used to Determine Rod Position. On June 7, 1994, the operators determined that the position indication for Rod B-6 was indicating greater than 12 steps from demand. Per procedure **12-IHP 6030 IMP.038, "Rod Position Determination Using R.P.I.[rod position indication] Coil Stack Voltage Data," a secondary coil stack voltage reading was taken and rod B-6 was calculated to be within 12 steps of demand position. A second and third calculation, performed at about 6-hour intervals, also determined that rod B-6 was within 12 steps of demand. During a supervisory review of the coil stack voltage data, an operator determined that the data used for the rod position calculation was incorrect. The revised calculation showed that the rod B-6 position was 26 steps greater than demand position. Per TS 3.1.3.2, the rod position indication for rod B-6 was declared inoperable, 11 hours after the position indicator error was first discovered.

Using the moveable incore detectors, the licensee determined that rod B-6 was within 12 steps of demand position. The licensee subsequently determined that **12-IHP 6030 IMP.038 was not performed exactly as written. The procedure was

revised to clarify the requirements for data collection, and the technicians were trained in the procedure requirements. The inspectors reviewed the procedure revision and operating history and did not identify any similar violations. The corrective actions discussed in the licensee event report (LER) appeared adequate to prevent recurrence.

Technical Specification 3.1.3.2 required, in part, that with a maximum of one rod position indicator channel per group inoperable, the position of the non-indicating rod be determined indirectly by the moveable incore detectors at least once per 8 hours or thermal power be reduced to less than 50 percent of rated thermal power within 8 hours. Contrary to the above, on June 7, 1994, the licensee failed to determine the position of rod B-6 using the moveable incore detectors or reduce thermal power within 8 hours of discovering the rod position indicator channel for rod B-6 was inoperable. This non-repetitive, licensee-identified and corrected violation is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-315/98021-04(DRP)). This LER is closed.

M8.2 (Closed) Licensee Event Report 50-315/95008-00: Spent fuel pool exhaust system made inoperable. On August 18, 1995, the licensee identified that a door located at the south end of the 609 feet elevation of the auxiliary building (crane bay) was stuck open during fuel movement in the spent fuel pool. This door supplemented roll-up door 2-DR-AUX-383 and acted as a ventilation boundary while the roll-up door was opened for personnel access. The licensee determined that with this door stuck open, auxiliary building integrity could not be met making the spent fuel pool ventilation system inoperable. Technical Specification 3.9.12 required that the door to be closed or under administrative control whenever irradiated fuel was in the storage pool. The TS also stated that with no fuel storage pool exhaust ventilation system operable, all operations involving movement of fuel within the storage pool must be suspended. Contrary to the above, on August 18, 1995, the licensee conducted fuel movement with the spent fuel pool ventilation system inoperable due to the stuck open door.

Once the discrepancy was identified, the licensee's immediate corrective actions included inspection and closure of the supplemental door. The supplemental door was subsequently replaced by a permanent double leaf metal hinged door under Design Change Package 02-DCP-0023. The inspectors reviewed the DCP, inspected the new door, and concluded that the appropriate changes were made to the UFSAR and the TSs. Additionally, the licensee also took actions to increase personnel sensitivity to auxiliary building ventilation boundaries by issuing guidance which defined the auxiliary building ventilation boundary and applying labels to auxiliary building doors which are part of the boundary.

The inspectors considered that the fuel movements with the spent fuel pool ventilation system inoperable constituted a violation of TS 3.9.12. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of NRC Enforcement Policy (50-315/98021-05(DRP)). This item is closed.

M8.3 (Closed) Licensee Event Report 50-315/96003-00: Data Points Deleted From Controller Due to Lack of Control of Recorder's Programming Functions Results in Surveillance

Requirement Not Being Met for Ice Bed Temperature Monitoring. On August 19, 1996, the licensee determined that 5 of the 18 specific points required to monitor ice condenser maximum ice bed temperature on recorder 1-SG-07 had been deleted from the data set used for this purpose. Technical Specification 4.6.5.1 required, in part, that the ice condenser be determined operable at least once per 12 hours by using the ice bed temperature monitoring system to verify that the maximum ice bed temperature did not exceed 27°F. Technical Specification 3.6.5.2 required, in part, that 2 resistance temperature detectors (RTDs) at 3 separate elevations for each one third of the ice condenser be operable to consider the ice bed temperature monitoring system operable. Contrary to the above, on August 19, 1996 the licensee identified that only 13 of the required 18 RTDs specific to TS 3.6.5.2 were monitored for the period of June 15, 1996, to August 19, 1996. The licensee reviewed the non-TS RTDs and determined that the ice bed temperature did not exceed 27°F. The 5 TS RTD data points were added back into the data set for ice bed temperature monitoring, and the recorder programming functions were password protected to prevent the inadvertent deletion of RTD data points. The inspectors concluded that the licensee's corrective actions appeared adequate to prevent recurrence. This non-repetitive, licensee-identified and corrected violation is being treated as a non-cited violation, consistent with Section VII.B.1 of the NRC Enforcement Policy (50-315/98021-06(DRP)). This LER is closed.

M8.4 (Closed) Licensee Event Report 50-316/96003-00: Rod position indication system tested and calibrated in a manner prohibited by the TSs. On March 1, 1996, the licensee identified that for all Unit 2 fuel cycles since 1983, the rod position indication system was operated in a manner prohibited by TS 3.1.3.3. Technical Specification 3.1.3.3 required that at least one rod position indicator channel be operable for each shutdown or control rod not fully inserted during modes 3, 4, and 5.

During refueling outages, maintenance performed on rod position indicator channels invalidated the channel functional test performed at the end of the previous refueling outage. In accordance with TS 3.1.3.3, channel functional tests must be completed on the affected rod position indicator channels when shutdown or control rod are not fully inserted during modes 3, 4, and 5. Contrary to the above, the licensee failed to recognize the need to perform the channel functional tests on affected rod position indication channels subsequent to the performance of maintenance and prior to subsequent rod movement. As a result, when control rods were withdrawn in support of rod drop testing, the licensee was in violation of TS 3.1.3.3. The licensee determined that in modes 3, 4, and 5, rod position indication was not required since the boron concentration in the RCS was increased to ensure that adequate shutdown margin is achieved and maintained in accordance with the TS. Also, no similar requirements were included in the Unit 1 TS or in NUREG-1431, Rev. 1, "Standard TSs Westinghouse Plants."

The licensee submitted a TS change request to delete TS 3.1.3.3. On May 2, 1998, the NRC issued amendment number 194 to D. C. Cook Unit 2 TSs which deleted requirement 3.1.3.3. The inspectors concluded that the movement of shutdown or control rods with rod position indication channels inoperable was an example of a violation of TS 3.1.3.3. This non-repetitive, licensee-identified and corrected violation is being treated as a Non-Cited Violation, consistent with Section VII.B.1 of NRC

Enforcement Policy (50-316/98021-07(DRP)). This item is closed.

III. Engineering

E7 Quality Assurance in Engineering Activities

E7.1 Engineered Safety Features Ventilation System

a. Inspection Scope

Inspection Report 50-315/98004; 50-316/98004 documented an apparent design control violation regarding the heat gain calculation for the engineered safety features (ESF) ventilation (AES) system. In response, the licensee requested that the vendor perform a revised heat gain calculation using appropriate input for essential service water flow rate and containment sump temperature. This apparent violation was later aggregated into the Severity Level II problem documented in the NRC's letter to the licensee dated October 13, 1998, under Section C, Control of the Facility Design Basis. On October 29, 1998, the licensee's engineering staff completed a review of the revised vendor calculation. The inspectors interviewed the system engineer and reviewed the calculation and design basis documents for the AES system.

b. Observations and Findings

Design Basis Document DB-12-RHRS, "Residual Heat Removal System," Revision 0, stated, in part, that, "The RHRS [Residual Heat Removal System] pump room and heat exchanger room HVAC [Heating, Ventilation, and Air Conditioning] system is required to maintain the RHR pump and RHR heat exchanger rooms' environment below the maximum allowable design temperature. The maximum allowable design temperature for the RHRP [RHR pump] room is 125°F." Design Basis Document DB-12-HVSR, "Engineered Safety Features Ventilation," Revision 0, stated, in part, that the AES system supports ESF systems by providing cooling to the enclosures containing the emergency core cooling pumps and heat exchangers. The document also stated that for proper operation, these enclosures are maintained at temperatures between 60°F and 125°F by the AES system. After reviewing the revised vendor calculation, MD-12-HV-002-N, "Heat Gain Calculation, AES System," Revision 0, the licensee's engineering staff concluded that several ESF enclosures could exceed the design criteria of 125°F maximum temperature.

10 CFR 50, Appendix B, Criterion III, "Design Control," required, in part, that design control measures shall provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculational methods, or by the performance of a suitable testing program. Contrary to the above, the licensee did not verify that the AES system was capable of meeting its design basis of maintaining the maximum ESF enclosure temperature of 125°F. This issue, was an apparent violation of NRC requirements and will remain open for a reasonable time to

allow the licensee to develop its corrective actions (EEI 50-315/98021-08(DRP)).

c. Conclusions

In 1997, an NRC inspection team questioned the accuracy of the engineered safety features ventilation system heat gain calculation. A revised vendor calculation performed in response to the NRC finding showed that the engineered safety features ventilation (AES) system may not be capable of meeting its design basis. One apparent violation was identified.

E8 Miscellaneous Engineering Issues

E8.1 Design Basis Issues

Recent NRC and licensee inspection activities have identified a breakdown in the maintenance of the plant design basis. As part of the plant restart effort docketed in the Restart Plan, the licensee has committed to performing a complete assessment of the design basis maintenance program and implementing actions to correct the identified deficiencies. In a letter dated July 30, 1998, the NRC informed the licensee that an oversight panel had been established in accordance with NRC MC 0350, and a checklist was enclosed which specified activities which the NRC considered necessary to be addressed prior to restart. Enclosure 1 to the July 30, 1998, letter, the Case Specific Checklist, included the programmatic breakdown in the maintenance of the plant design basis as an item to be addressed prior to restart. In accordance with MC 0350, an inspection plan was developed to evaluate the effectiveness of the licensee's actions to correct the items listed on the Case Specific Checklist.

Previous inspection activities have also identified specific discrepancies in the maintenance of the plant design basis. The inspectors reviewed these previously identified corrective action deficiencies and concluded that the licensee's restart effort and the NRC MC 0350 evaluation of the programmatic issues will adequately assess the corrective actions for the specific, previously identified items. Therefore, the following item was closed and will be tracked as part of the NRC MC 0350 evaluation process.

- (Closed) Unresolved Item 50-315/96010-02; 50-316/96010-02: Revision to the FSAR changed the minimum required CCW miscellaneous flows to nominal flows for information only. The inspectors were concerned that it was not appropriate for the UFSAR revision to describe the flow requirements for the miscellaneous header as nominal and for information only. The UFSAR was revised in July, 1997, to include the minimum flow requirements per train. The surveillance procedure, **12 EHP 4030.STP.248, "CCW Flow Balance," was also revised to ensure that the acceptance criteria met or exceeded the UFSAR minimum flow requirements as shown in Table 9.5-2. Based on the discussion in Section E8.1, the inspectors reviewed this item and concluded that the programmatic issues raised by this Unresolved Item will be evaluated as part of the inspection effort to close NRC MC 0350 Case Specific Checklist Item 3. This item is closed.

IV. Plant Support

R1 Conduct of Radiation Protection and Chemistry (71750)

During normal resident inspection activities, routine observations were conducted in area of radiation protection and chemistry using Inspection Procedure 71750. No discrepancies were noted.

S1 Conduct of Security and Safeguards Activities (71750)

During normal resident inspection activities, routine observations were conducted in the area of security and safeguards activities using Inspection Procedure 71750. No discrepancies were noted.

F1 Control of Fire Protection Activities (71750)

During normal resident inspection activities, routine observations were conducted in the area of fire protection activities using Inspection Procedure 71750. No discrepancies were noted.

X1 Exit Meeting

The inspectors presented the inspection results to members of the licensee management at the conclusion of the inspection on December 3, 1998.

PARTIAL LIST OF PERSONS CONTACTED

Licensee

#K. Baker, Engineering
#J. Carlson, Environmental Affairs
#D. Cooper, Plant Manager
#MB. Depuydt, Nuclear Licensing Supervisor
#T. Esper, Licensing
#S. Farlow, Design Engineering
#M. Finissi, Electrical and Auxiliary Systems Engineering
#C. Gilmore, Asst Work Control
#MB Greendonner, Protection
#D. Hafer, Plant Engineering Manager
#R. Huey,
#D. Morey, Business Performance
#D. Naughton, System Engineering
#F. Pisarsky, Performance Engineering
#D. Powell, Plant Engineering
#R. Powers, Senior Vice President
#T. Quaka, Engineering Effectiveness
#M. Rencheck, Vice President of Nuclear Engineering
#J. Sampson, Site Vice President

M. Skow, Performance Assurance
#G. Tollas, Assistant Operations Superintendent
#J. Tyler, Site Services Manager
#L. Van Ginhoven, Materials Management
#B. Zemo, Engineering

# Denotes those present at the December 3, 1998, exit meeting.

INSPECTION PROCEDURES USED

IP 37551	Onsite Engineering
IP 61726	Surveillance Observations
IP 62707	Maintenance Observation
IP 71707	Plant Operations
IP 71750	Plant Support Activities
IP 92700	Onsite Review of LERs

ITEMS OPENED, CLOSED, AND DISCUSSED

ITEMS OPENED

50-315/98021-01	NCV	Operation of 2 residual heat removal pumps with reactor coolant system vented
50-315/98021-02	VIO	Technical Specification valve lineup surveillance did not verify all appropriate valve positions
50-315/98021-03	EEI	Surveillance procedure did not direct the operators to restore the AES system to a configuration included in the normal operating procedure or enter the appropriate TS limiting condition for operation action statement
50-315/98021-04	NCV	Exceeded Technical Specification action statement due to unnoticed inaccuracy in calculation used to determine rod position
50-315/98021-05	NCV	Spent fuel pool exhaust system made inoperable by loss of auxiliary building integrity during fuel movement without compensatory actions being taken
50-315/98021-06	NCV	Data points deleted from controller due to lack of control of recorder’s programming functions results in surveillance requirement not being met for ice bed temperature monitoring
50-316/98021-07	NCV	Rod position indication system tested and calibrated in a manner prohibited by the Technical Specifications
50-315/98021-08	EEI	Engineered safeguards ventilation system may not be capable of meeting its design basis

ITEMS CLOSED

50-315/94007-00	LER	Exceeded Technical Specification action statement due to unnoticed inaccuracy in calculation used to determine rod position
50-315/94018-02 50-316/94018-02	IFI	Ferrography program implementation
50-315/95008-00	LER	Spent fuel pool exhaust system made inoperable by loss of auxiliary building integrity during fuel movement without compensatory actions being taken
50-315/96003-00	LER	Data points deleted from controller due to lack of control of recorder's programming functions results in surveillance requirement not being met for ice bed temperature monitoring
50-316/96003-00	LER	Rod position indication system tested and calibrated in a manner prohibited by the Technical Specifications
50-315/96010-01 50-316/96010-01	VIO	Failure to verify adequate CCW flows through surveillances
50-315/96010-02 50-316/96010-02	URI	FSAR revision changed the minimum required CCW miscellaneous flows to nominal flows for information only
50-315/97004-02 50-316/97004-02	VIO	Failure to take corrective actions
50-315/98021-01	NCV	Operation of 2 residual heat removal pumps with reactor coolant system vented
50-315/98021-02	VIO	Technical Specification valve lineup surveillance did not verify all appropriate valve positions
50-315/98021-04	NCV	Exceeded Technical Specification action statement due to unnoticed inaccuracy in calculation used to determine rod position
50-315/98021-05	NCV	Spent fuel pool exhaust system made inoperable by loss of auxiliary building integrity during fuel movement without compensatory actions being taken
50-315/98021-06	NCV	Data points deleted from controller due to lack of control of recorder's programming functions results in surveillance

		requirement not being met for ice bed temperature monitoring
50-316/98021-07	NCV	Rod position indication system tested and calibrated in a manner prohibited by the Technical Specifications
50-315/98042-00	LER	Contrary to UFSAR Section 9.6.3.2, 2 RHR pumps run with the unit depressurized

LIST OF ACRONYMS

AES	Engineered Safety Features Ventilation System
AR	Action Request
bcc	blind carbon copy
cc	carbon copy
CCW	Closed Cooling Water
CFR	Code of Federal Regulations
CR	Condition Report
cps	counts per second
CVCS	Chemical and Volume Control System
DCC	Donald C. Cook
DCP	Design Change Package
DRP	Division of Reactor Projects
EEI	Apparent Violation
EHC	Electro-Hydraulic Control
ENPT	Engineering Performance Testing Procedure
ESD	Electro-Static Discharge
ESF	Engineered Safety Feature
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilation, and Air Conditioning
IFI	Inspector Followup Item
IR	Inspection Report
JO	Job Order
LCO	Limiting Condition for Operation
LER	Licensee Event Report
MI	Michigan
NCV	Non-cited Violation
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
NSDRC	Nuclear Safety and Design Review Committee
OHP	Operations Head Procedure
PMI	Plant Manager’s Instruction
PMP	Plant Manager’s Procedure
PPA	Plant Performance Assurance
PDR	Public Document Room
QA	Quality Assurance
RCS	Reactor Coolant System
RHR	Residual Heat Removal System
RTD	Resistance Temperature Detector
STP	Surveillance Test Procedure
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item
VIO	Violation