December 28, 2000

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 NUCLEAR POWER PLANT - NRC INSPECTION REPORT 50-315/00-23(DRP)

Dear Mr. Powers:

On December 8, 2000, the NRC completed a Restart Readiness Assessment Team Inspection at your D. C. Cook Unit 1 reactor facility. Inspection results were discussed during an interim exit meeting on December 1, 2000, with you and other members of your staff. The final inspection exit meeting was conducted on December 8, 2000.

The purpose of the inspection was to evaluate the readiness of plant hardware, plant staff, and management programs to support a safe restart and continued operation of D.C. Cook Unit 1. The team focused on those processes and programs which could affect safe reactor startup and included a review of corrective actions for selected Unit 1 Restart Action Matrix Items. Additionally, the team conducted observations of routine control room activities during a continuous 48-hour period, and assessed significant evolutions and tests which were conducted prior to and after Operational Mode 4 (Hot Shutdown) entry.

There were no findings of significance identified during this inspection. The team determined that overall performance was satisfactory for Unit 1 restart and continued operation. Through observation of operation, maintenance, and testing activities, the team concluded that shift turnovers, procedural adequacy and adherence, communications, log keeping, knowledge and awareness of equipment status, and control of plant activities were adequate. Systems walked down by the team were adequately lined up to support operability and readiness for plant restart. Corrective actions for the remaining 18 Unit 1 Restart Action Matrix Items requiring action by the plant staff were determined to be adequate for restart and are described in this report.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available **electronically** for public inspection in the NRC Public Document Room **or** from the *Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from* the NRC Web site at http://www.nrc.gov/NRC/ADAMS/index.html (the Public Electronic Reading Room).

We will gladly discuss any questions you have concerning this inspection.

Sincerely,

/RA/

Geoffrey E. Grant, Director
Division of Reactor Projects

Docket No. 50-315
License No. DPR-58

Enclosure: Inspection Report 50-315/00-23

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Docket No:	50-315
License No:	DPR-58
Report No:	50-315-00-23(DRP)
Licensee:	American Electric Power Company 1 Cook Place Bridgman, MI 49106
Facility:	D. C. Cook Nuclear Generating Plant
Location:	1 Cook Place Bridgman, MI 49106
Dates:	November 27, 2000 through December 8, 2000
Inspectors:	R. Krsek, Resident Inspector, Palisades M. Kurth, Resident Inspector, Duane Arnold D. Simpkins, Resident Inspector, Davis Besse D. Passehl, Senior Project Engineer, RIII R. Walton, Reactor Engineer, RIII G. Wilson, Operator Licensing Examiner, RIII
Approved by:	Anton Vegel, Chief Reactor Projects Branch 6 Division of Reactor Projects

NRC's REVISED REACTOR OVERSIGHT PROCESS

The federal Nuclear Regulatory Commission (NRC) recently revamped its inspection, assessment, and enforcement programs for commercial nuclear power plants. The new process takes into account improvements in the performance of the nuclear industry over the past 25 years and improved approaches of inspecting and assessing safety performance at NRC licensed plants.

The new process monitors licensee performance in three broad areas (called strategic performance areas): reactor safety (avoiding accidents and reducing the consequences of accidents if they occur), radiation safety (protecting plant employees and the public during routine operations), and safeguards (protecting the plant against sabotage or other security threats). The process focuses on licensee performance within each of seven cornerstones of safety in the three areas:

Reactor Safety	Radiation Safety	Safeguards
● Initiating Events	● Occupational	● Physical Protection
● Mitigating Systems	● Public	
● Barrier Integrity		
● Emergency Preparedness		

To monitor these seven cornerstones of safety, the NRC uses two processes that generate information about the safety significance of plant operations: inspections and performance indicators. Inspection findings will be evaluated according to their potential significance for safety, using the Significance Determination Process, and assigned colors of GREEN, WHITE, YELLOW or RED. GREEN findings are indicative of issues that, while they may not be desirable, represent very low safety significance. WHITE findings indicate issues that are of low to moderate safety significance. YELLOW findings are issues that are of substantial safety significance. RED findings represent issues that are of high safety significance with a significant reduction in safety margin.

Performance indicator data will be compared to established criteria for measuring licensee performance in terms of potential safety. Based on prescribed thresholds, the indicators will be classified by color representing varying levels of performance and incremental degradation in safety: GREEN, WHITE, YELLOW, and RED. GREEN indicators represent performance at a level requiring no additional NRC oversight beyond the baseline inspections. WHITE corresponds to performance that may result in increased NRC oversight. YELLOW represents performance that minimally reduces safety margin and requires even more NRC oversight. And RED indicates performance that represents a significant reduction in safety margin but still provides adequate protection to public health and safety.

The assessment process integrates performance indicators and inspection so the agency can reach objective conclusions regarding overall plant performance. The agency will use an Action Matrix to determine in a systematic, predictable manner which regulatory actions should be taken based on a licensee's performance. The NRC's actions in response to the significance (as represented by the color) of issues will be the same for performance indicators as for inspection findings. As a licensee's safety performance degrades, the NRC will take more and increasingly significant action, which can include shutting down a plant, as described in the Action Matrix.

More information can be found at: http://www.nrc.gov/NRR/OVERSIGHT/index.html.

SUMMARY OF FINDINGS

Inspection Report 50-315/00-23, D.C. Cook Nuclear Power Plant, Unit 1. Readiness of plant hardware, plant staff, and management programs to support a safe restart and continued operation of D.C. Cook Unit 1.

The inspection team consisted of regional personnel and comprised a project engineer, three resident inspectors, a reactor engineer, and an operator licensing examiner. The inspection identified no findings.

The team conducted observations of routine control room activities during a continuous 48-hour period, in addition to limited observations of significant evolutions prior to and after entry into Operational Mode 4, “Hot Shutdown,” using Inspection Procedure 93802, “Operational Safety Team Inspection,” as guidance. The team focused on those processes and programs which could affect safe reactor startup and included a review of corrective actions for selected Unit 1 Restart Action Matrix Items. Additionally, the team assessed the auxiliary feedwater, main feedwater, emergency diesel generator, and residual heat removal systems to verify the adequacy of the systems’ configurations and overall material condition.

The team determined that overall performance was satisfactory for Unit 1 restart and continued operation.

Report Details

Summary of Plant Status

The licensee was completing Unit 1 system readiness activities and returning Unit 1 systems to service following an extended outage in preparation for plant restart.

4. OTHER ACTIVITIES (OA)

4OA5 Other

01 General Comments

The team conducted observations of control room activities during a continuous 48-hour period, in addition to observations of significant evolutions and tests conducted prior to and after entry into Operational Mode 4, “Hot Shutdown.” During this observation period, the team observed and assessed ongoing plant operations, control room log-keeping practices, communications, command and control, control room decorum, work control, procedure adequacy and usage, control board awareness, equipment status awareness, annunciator response, and shift manning and turnovers. Overall performance was satisfactory for restart and continued operation of the plant.

02 Control Room Observations

a. Inspection Scope

The team conducted observations of control room activities during a continuous 48-hour period, in addition to observations prior to and after entry into Mode 4, using Inspection Procedure 93802, “Operational Safety Team Inspection,” as guidance.

b. Findings

b.1 Log Keeping Practices

The team reviewed all control room logs generated during the control room observation period and all control room logs generated the week prior to the inspection. In addition, the team reviewed control room logs generated during subsequent observations prior to and after entry into Mode 4. The logs were reviewed for compliance with Procedure OHI-2212, “Narrative and Miscellaneous Log-keeping.” Procedure OHI-2212 established the policies and expectations for narrative log-keeping to ensure the logs were accurate and complete to allow reconstruction of event sequences for plant evolutions. The team assessed whether operational issues were documented in accordance with Procedure OHI-2212. The team noted that, in general, the types of information required to be recorded in the control room logs by operators were documented.

b.2 Communications

The team assessed communications among plant personnel within the control room to verify adherence with administrative procedures. Routine control room communications were effective, instructions were acknowledged by reactor operators, and receipt of instructions were verified by the unit supervisor. The team noted that distractions to plant operators were kept to a minimum.

Maintenance and surveillance briefings that the team observed in the control room, including briefings for infrequently performed evolutions, were effectively conducted. The briefings were performed in an orderly and efficient manner, and appropriate information was clearly communicated and acknowledged. The unit supervisor routinely stressed the importance of communications for evolutions to be successful and ensured that the responsibilities and authorities of personnel involved in the evolutions were clearly stated and understood.

b.3 Command and Control

The team observed numerous interactions between control room shift management and other licensee personnel during the observation period. The observations occurred during periods of time when activities in the control room were minimal to times when several activities were being performed concurrently. The team observed that the Shift Manager displayed command authority over the operators and overall plant operations, provided direct oversight of the Unit Supervisor and operators assigned to the Unit, and was cognizant of the Technical Specifications regarding existing and potential conditions associated with planned evolutions. The Unit Supervisor maintained control of the ongoing evolutions in the control room and exhibited ownership for ongoing operations as evidenced by frequent, effective communications with the reactor operators.

b.4 Control Room Decorum

The team was able to assess the formality of control room operations under a variety of conditions during the control room observation period. The Shift Managers and Unit Supervisors exhibited direct responsibility for minimizing control room distractions and were cognizant of activities which could distract the attention of control room operators. Additional reactor operators were utilized in the control room to perform specific tasks and surveillances, which allowed the Unit reactor operator to monitor the assigned control panels and manipulate the plant with minimal distractions.

b.5 Work Control

The team observed periods of high and low levels of work activity in the control room. Overall, the majority of work activities received sufficient preparation in the licensee's work control center. The licensee also used access badges to control the number of personnel in the control room at any one time, which proved to be an effective tool to manage control room distractions. For example, turbine testing and reactor protection system testing involved significant coordination among operators and instrument and control technicians. The testing was conducted in a well-controlled and deliberate manner. Similar observations were made during initial starts of the reactor coolant

pumps, running of the auxiliary feedwater pumps, and during reactor head venting evolutions. Control room operators remained cognizant of activities which required control room coordination.

b.6 Operating Procedure Adequacy and Usage

The team observed various plant evolutions and implementation of several procedures. These included:

- Plant Heatup from Cold Shutdown and Entry into Mode 4;
- Reactor Coolant System Venting and Filling;
- Removal of Auxiliary Pressurizer Spray and Return to Normal Charging;
- Initial Pump Starts and 2-Minute Runs of the Reactor Coolant Pumps;
- Starting and Stopping of the Residual Heat Removal Pumps and Various Other Emergency Core Cooling System Pumps;
- Slow Speed Start Test of the 1AB Emergency Diesel Generator;
- Reactor Coolant Pump Status Light Verification (Inputs to Reactor Protection System)
- Reactor Head Vent Valve Testing; and
- Reactor Trip and Bypass Breaker Testing.

Generally, procedure instructions were complete and appropriate for the specified activity. The team determined that some instrumentation and control test procedures did not always accurately specify the expected alarms that would be received during testing; however, the licensee has plans in place to actively address this issue. In other instances where procedure deficiencies were identified by the licensee, procedure changes were implemented in accordance with administrative procedures.

Pre-evolution briefings, communications during operations and maintenance testing activities, peer checking, and procedure usage were consistently performed in accordance with the licensee's standards for conduct of operations and operations department policies.

b.7 Control Board Awareness

In general, control room operators were attentive to changes in system parameters and alarming conditions. The team observed reactor operators and unit supervisors performing the required tours at the specified frequency per the licensee's administrative procedures. Plant operators closely monitored significant plant parameters, including those relative to the residual heat removal system, the chemical volume control system, and the reactor coolant system.

b.8 Equipment Status Awareness

The team attended shift briefings and questioned operators and supervisors about equipment status. In general, operators performed detailed control board walkdowns and appropriately discussed alarm status. Reactor operators and the unit supervisors were familiar with equipment status and knowledgeable about abnormal plant configurations. An example of this occurred during preparations for starting Reactor

Coolant Pump 13 for a 2-minute run. Maintenance workers informed the control room operators of impending calibrations on Pressurizer Spray Valve 1-NRV-164 which entailed cycling the spray valve numerous times. The reactor operator correctly noted to the unit supervisor that cycling the spray valve with a reactor coolant pump running was not consistent with the precautions set forth in Procedure 01-OHP-4021.001.001, "Plant Heatup from Cold Shutdown to Hot Standby." Subsequently, the unit supervisor and shift manager decided not to start the reactor coolant pump until after the work on the spray valve was complete.

In addition, the team reviewed the Technical Specification Open Items Log to verify that entries were made by reactor operators to track inoperable equipment. The team also assessed whether the appropriate action statements for the inoperable equipment were being implemented. In general, the team determined that inoperable equipment was entered into the log and that the associated actions were implemented. The team identified one minor example where the Steam Generator Power Operated Relief Valve Radiation Monitor 1-MRA-1702 was inoperable and the associated entry in the Technical Specification Open Items Log was inadvertently removed. However, corrective actions were in the process of being implemented and the radiation monitor was later declared operable within the allowed outage time of the action statement.

b.9 Annunciator Response

During the control room observation period, numerous annunciators were in the alarmed condition as a result of ongoing maintenance, testing or equipment being out-of-service. The team interviewed operators for causes of the alarms and determined that the operators were knowledgeable about the causes of the alarms and required alarm responses. The team observed that operators acknowledged receipt of alarms, referenced the appropriate annunciator response procedure, and implemented compensatory actions if required. The operators performed these activities in a timely manner.

The team also noted that reactor operators effectively communicated expected and unexpected alarms received in the control room. The operators also ensured that the unit supervisor was aware of all alarms. When unexpected alarms occurred, the team noted that control room operators appropriately communicated the unexpected alarm and initiated prompt action to determine the cause of the alarm.

b.10 Shift Manning and Shift Turnovers

Shift Manning

The control room shift staffing exceeded the minimum levels required by Technical Specification 6.2.2 and was sufficient to support safe plant operation. The Technical Specification for Mode 4 and above required two senior licensed operators and two licensed reactor operators as the minimum crew composition, with one of the two senior licensed operators being shared between Unit 1 and 2. The licensee assigned additional licensed operators to Unit 1 including additional senior licensed operators and reactor operators, to assist the operators normally assigned to the shift. The additional staffing enabled the shift to safely accomplish the large work load. The team verified

that the shift manager and unit supervisor effectively controlled work activities to ensure that safety barriers were not challenged. The team discussed plans for shift staffing after the Unit 1 restart with operations department managers and was informed that staffing would meet or exceed the staffing levels required by Technical Specification 6.2.2.

Shift Turnovers

Shift turnovers were thorough and sufficiently detailed with the exception of the minor attention-to-detail issues previously discussed. Each oncoming watchstander conducted a detailed control board walkdown, log review and verbal turnover with the off-going watchstander. Dual unit pre-turnover crew briefings were detailed and included discussions of important planned evolutions and associated plant configurations for the upcoming shift. Each on-coming watchstander stated plant conditions and evolutions affecting his watchstation. Mid-shift status briefings clearly discussed changes to the plant's safety function status and upcoming work activities.

03 Review of Procedures

a. Inspection Scope

The team reviewed a sample of 30 plant operating procedures, including procedures for startup of Unit 1 from Mode 5 (Cold Shutdown) through Mode 1 (Power Operations), to assess control and technical adequacy to support a safe restart of Unit 1.

b. Findings

b.1 Quality of Plant Operating Procedures

The team determined that the plant operating procedures were of good quality and provided adequate instruction for operators to safely conduct plant restart. Operating procedure instructions were complete and appropriate for operating activities and plant evolutions. The team noted that adequate surveillance procedures and procedural guidance existed to ensure that all Mode change requirements and Technical Specification requirements were established and maintained. The team verified that necessary equipment was available for the current plant Mode, and the licensee was performing the necessary maintenance and lineups to satisfy future Mode requirements and Technical Specifications.

b.2 Implementation of Procedures

The team evaluated a random sample of eight completed surveillance procedures performed for Mode 5 (Cold Shutdown) and those performed in preparation for the Mode 4 (Hot Shutdown) transition. In general, the surveillance procedures were adequately performed and documented.

04 Review of Control Room Drawings

a. Inspection Scope

The team sampled and reviewed 40 randomly selected aperture cards in the Unit 1 main control room to verify that the correct drawings were present in the control room.

b. Findings

Based on a sample of 40 drawings, the team determined that for these drawings, adequate procedure guidance existed to ensure that control of the plant drawings available to the operating crew reflected current plant configurations. Temporary modification tags were correctly placed on the aperture cards if needed. All drawings were properly stamped as controlled documents, and were of the proper revision. The team reviewed selected hard copied drawings and noted that all were properly controlled with the proper revision.

05 Adequacy of System Lineups

a. Inspection Scope

The team assessed the auxiliary feedwater, main feedwater, emergency diesel generator, and residual heat removal systems to verify the adequacy of the systems' configuration and overall material condition. As a part of the inspection, the team interviewed the appropriate system managers and other plant personnel, and discussed the overall system status. The team also reviewed the system turnover and affirmation reports associated with each system.

The team performed the following during this inspection:

- Walked down accessible portions of the systems utilizing plant process and instrumentation diagrams, in addition to the applicable systems' operating procedures;
- Reviewed the status of individual components within a system to ensure the entire system was operable, if required in the current Mode;
- Reviewed a sample of completed system surveillance tests;
- Observed some system affirmations conducted by the plant operating review committee and verified system affirmations for these systems were complete; and
- Inspected the material condition, configuration, and labeling of components within the systems.

The inspectors reviewed the following documents associated with system reviews:

- Unit 1 Technical Specifications
- Updated Final Safety Analysis Report, Section 14.4.3, “Analysis of Emergency Conditions”
- Main Feedwater Flow Diagrams
- Auxiliary Feedwater Flow Diagrams
- Emergency Diesel Generator Flow Diagrams
- Residual Heat Removal Flow Diagrams
- 01-OHP 4021.001.001, “Plant Heatup From Cold Shutdown To Hot Standby,” Revision 27
- 01-OHP-4021.002.012, “Restoration From RCS Draindown,” Revision 12
- 01-OHP-4021.008.001, “Filling And Venting The Safety Injection system, Residual Heat Removal System, And Boron Injection Tank,” Revision 10
- 01-OHP 4021.055.001, “Feedwater System Valve Lineup,” Revision 10a
- 01-OHP 4021.056.001, “Filling and Venting Auxiliary Feedwater System,” Revision 18
- 02-OHP-4021.008.001, “Filling And Venting The Safety Injection System, Residual Heat Removal System, And Boron Injection Tank,” Revision 7
- 01-OHP 4030.STP.027AB, “AB Diesel Generator Operability Test (Train B),” Revision 15
- 01-OHP 4030.STP.027CD, “CD Diesel Generator Operability Test (Train A),” Revision 15
- 01-OHP 4030.STP.054E, “East Residual Heat Removal Train Operability Test - Shutdown,” Revision 8
- 12-MHP-5021.SCF.001, “Scaffolding Guidelines,” Revision 0
- EHI-5071, “Inservice Testing Program Implementation,” Revision 1
- Emergency Diesel Generator System Affirmation Report
- Auxiliary Feedwater System Affirmation Report
- Residual Heat Removal System Affirmation Report

b. Findings

During the walkdowns, the team determined that, in general, the position of valves were consistent with Technical Specification and procedural requirements. Overall equipment configuration, component labeling, and material condition were acceptable. The team reviewed the status of individual components within the selected systems and ensured that the entire system was operable, if required, in the current Mode. The team determined that there were no outstanding temporary modifications or operator workarounds on the selected systems. The team determined that the selected systems were adequately lined up to support operability and readiness for plant restart.

O6 Restart Action Matrix Items

a. Inspection Scope

In a letter dated July 30, 1998, the NRC informed the licensee that an oversight panel had been established in accordance with NRC Inspection Manual Chapter 0350, “Staff Guidelines for Oversight of Operating Reactor Facilities in an Extended Shutdown as a

Result of Significant Performance Problems." Subsequently, the Inspection Manual Chapter 0350 oversight panel developed a Charter and a Restart Action Matrix to track the completion of NRC and licensee activities which were determined necessary for restart. In June 2000, the oversight panel concluded that D. C. Cook's performance improvement initiatives were sufficiently effective to support restart of Unit 2 and closed the Restart Action Matrix for Unit 2. In early August 2000, the oversight panel approved a revised charter implementing the revisions to NRC Inspection Manual Chapter 0350. The Panel approved a Restart Action Matrix for Unit 1, which includes verifying operability of safety systems and containment, as well as verifying that licensing issues necessary for restart are being addressed.

The results of the team's and other inspectors reviews of selected Restart Action Matrix items are described below.

b. Findings

b.1 (Closed) Restart Action Matrix Item 2.2, Confirm Removal of Fibrous Material in the Unit 1 Containment That Could Clog the Recirculation Sump.

The NRC had previously identified concerns associated with the control of transportable debris that could affect the containment sump suction strainers and adversely affect the emergency core cooling systems. Specifically, the NRC identified in Escalated Enforcement Item (EEI) 50-315/97017-01, EEI 50-316/97017-01, EEI 50-315/97017-04, and EEI 50-316/97017-04 that the licensee failed to establish sufficient measures to assure that the design basis was correctly translated into specifications and procedures related to the installation of fibrous material within containment. These issues were incorporated into the Unit 2 NRC Restart Action Matrix (RAM) and classified as high priority inspection Items R.2.3.5 and R.2.3.7. Inspections to assess and close the Unit 2 Restart Action Matrix items were documented in NRC Inspection Reports 50-316/99026, 50-316/99029, and 50-316/2000-07.

The principal corrective actions by the licensee included the revision of the design specifications and issuance of an engineering procedure for the control of fibrous materials in containment. The inspection and closeout of these design controls and procedure were documented in NRC Inspection Report 50-316/2000-07. To evaluate corrective actions taken to resolve this issue on Unit 1, the inspectors verified that the specifications and procedure had not been significantly revised. The team reviewed engineering head instruction EHI-5201, "Containment Recirculation Sump Protection Program," Revision 1, and 01-OHP 4030.001.002, "Containment Inspection Tours," Revision 17, and had no substantive comments.

The inspectors performed several tours of Unit 1 lower containment in order to assess the removal of fibrous material. The fibrous material that was identified in NRC Inspection Report 50-315/97017 had been removed. Inspections were also performed to determine if any other fibrous material remained inside of the Unit 1 containment in locations or configurations which were not authorized. Some minor amounts of peeling tape and fibrous debris were identified. The amounts were such that the function of the recirculation sump would not have been challenged. The licensee corrected the tape

and removed the debris. Condition Report (CR) 00325073 was written to document the minor issues. This item is closed.

b.2 (Closed) Restart Action Matrix Item 2.3, Evaluate Licensee Corrective Actions for Containment Internal Structural Walls.

Unit 1 containment internal structural walls were identified by the licensee to not meet design load margins similar to Unit 2. Unit 2 containment internal structural walls were tracked under Restart Action Matrix Item R.2.13.3. The issues on the containment internal structural walls were closely related to the revised Transient Mass Distribution (TMD) analysis tracked under Unit 1 Restart Action Matrix Item R.8.1. The licensee's modifications, compensatory measures, and calculations were reviewed under R.8.1 and determined to be acceptable for restart.

The inspectors performed field walkdowns of the Unit 1 containment internal structural walls and compared the results to the licensee's operability determination evaluation (ODE) as documented in CR 00264095. The inspectors determined that based upon the sample performed that the licensee's ODE was consistent with the as installed configuration of the containment internal structure. The inspectors also compared the corrective actions for the accumulator fan room walls to the as found field conditions in selected locations. The inspectors determined that the proposed or completed corrective actions were appropriate. This item is closed.

b.3 (Closed) Restart Action Matrix Item 8.7, Unreviewed Safety Question on Methodology Changes (Modeling of Operator Actions and Use of Actual Tube Flows) to Steam Generator Tube Rupture Analysis

The licensee's steam generator tube rupture analysis assumed that break flow through the ruptured steam generator tube will be stopped in 30 minutes following the event. This assumption was not supported by a thermal hydraulic analysis and was identified as a restart issue for Unit 2 (Unit 2 Restart Action Matrix item 3.14). The licensee performed an operability determination evaluation for Unit 2, which was reviewed by the Office of Nuclear Reactor Regulation (NRR) and found to be acceptable (ADAMS Accession Number ML003722259). The licensee also performed an operability determination evaluation for Unit 1, which was found acceptable by NRR. This item is closed.

b.4 (Closed) Restart Action Matrix Item C.3.3.d, Effectiveness of Restart Simulator/Required Training Necessary to Re-Familiarize Personnel With Operating

Prior to the restart of Unit 2, NRC Inspection Report 50-315/00-03; 50-316/00-03 concluded that, "The licensee conducted operator training at an acceptable level to provide operators with the knowledge necessary to operate systems modified during the Unit 2 outage." The inspectors discussed training with members of the Operations and Training Departments to verify that the operators had maintained proficiency on the operating unit and that specific differences between the units were identified. In addition, the inspectors reviewed the following procedures and training documents:

- 01-OHP [Operations Head Procedure] 4023.E-0, “Reactor Trip or Safety Injection,” Revision 15
- 01-OHP 4023.ECA-0.0, “Loss of All AC Power,” Revision 10
- 01-OHP 4023.E-1, “Loss of Reactor or Secondary Coolant,” Revision 10
- 01-OHP 4023.E-2, “Faulted Steam Generator Isolation,” Revision 4
- 01-OHP 4023.E-3, “Steam Generator Tube Rupture,” Revision 7
- Requalification Training (RQ)-F-2561, “Unit 1 Cycle 17 Core Design Review,” Revision 0
- RQ-R-2550, “Operational & Technical Specification Review,” Revision 0
- RQ-R-2551, “Design Change Read-It,” Revision 0
- RQ-R-2561, “Period 2506 Read-It Package,” Revision 0
- RQ-R-2562, “Period 2506 Procedure and Issues Review,” Revision 0
- RQ-R-2563, “Unit Differences Read-It,” Revision 0
- RQ-R-2564, “Unit 1 Steam Generators,” Revision 0
- RQ-R-2565, “Unit 1 Main Turbine Controls,” Revision 0

The inspectors reviewed the operations shift schedule and verified that both licensed and non-licensed operators had been assigned shifts on Unit 2 to maintain proficiency on the operating reactor plant. The operations shift schedule through Unit 1 restart maintained the cross-unit rotations.

The inspectors compared the Emergency Operating Procedures (EOPs) between Unit 1 and Unit 2. The inspectors found that the basic sequence of steps was identical between Unit 1 and Unit 2; however, a number of the reactor trip, safety injection, and contingency action setpoints differed between the two units. These differences were covered in training packages RQ-R-2562 and RQ-R-2563, which were required reading for all reactor operators. Other differences included the Unit 1 steam generators, which had been replaced during the outage, and the Unit 1 main turbine controls, which are not modeled in the plant simulator. These specific differences were discussed in RQ-R-2564 and RQ-R-2565, respectively.

Based on the conclusions in NRC Inspection Report 50-315/00-03; 50-316/00-03, the operations shift schedule, and the training conducted since the Unit 2 restart, the inspectors concluded that the operators were familiar with an operating reactor plant and were trained on the differences between the two units. This item is closed.

b.5 (Closed) Restart Action Matrix Item C.3.3.e, Assessment of Plant Staff Performance During Restart and Sustained Control Room Observations

The team performed extensive evaluations of control room activities during a continuous 48-hour period, in addition to observations of significant evolutions and tests conducted prior to and after Mode 4 entry. The team observed and assessed ongoing plant operations, control room log-keeping practices, communications, command and control, control room decorum, work control, procedure usage, control board awareness, equipment status awareness, annunciator response, and shift manning and turnovers.

Plant evolutions and implementation of procedures were observed. These included:

- Plant Heatup from Cold Shutdown and Entry into Mode 4;
- Reactor Coolant System Venting and Filling;
- Removal of Auxiliary Pressurizer Spray and Return to Normal Charging;
- Initial Pump Starts and 2-Minute Runs of the Reactor Coolant Pumps;
- Starting and Stopping of Residual Heat Removal Pumps and Various Other Emergency Core Cooling System Pumps;
- Slow Speed Start Test of 1AB Emergency Diesel Generator;
- Reactor Coolant Pump Status Light Verification (Inputs to Reactor Protection System)
- Reactor Head Vent Valve Testing; and
- Reactor Trip and Bypass Breaker Testing.

Pre-evolution briefings, communications during operations and maintenance testing activities, peer checking, and procedure usage were consistently performed in accordance with the licensee's standards for conduct of operations and operations department policies. Control room operators were attentive to changes in system parameters and alarming conditions and responded in accordance with plant procedures. Work was well-controlled such that no significant disruptions to control room decorum occurred. Control room shift staffing met Technical Specification requirements and was sufficient to support safe plant operation. Shift turnovers were thorough and sufficiently detailed.

The team has determined that plant personnel were capable of safely starting up and operating Unit 1. This item is closed.

b.6 (Closed) Restart Action Matrix Item C.4.a, Operability of Technical Specification Systems, Specifically Those with Identified Operational, Design, and Maintenance Issues

The inspectors assessed the licensee readiness for Unit 1 restart with regard to the operability of Technical Specification systems. During the recent extended outage, the licensee reviewed system readiness for restart in accordance with the Expanded System Readiness Review (ESRR) Program as described in Plant Manager Procedure (PMP) 7200.RST.004, "Expanded System Readiness Review Program," Revision 15. The ESRR program identified deficiencies, tracked corrective actions, established system test plans, and affirmed the readiness of plant systems to support plant restart. The NRC has previously documented reviews of the ESRR program in NRC inspection Reports 50-315/316/99-03, 99-06, 99-07, 99-09, and 99-33. The inspectors have found the ESRR program to be an adequate method of establishing system operability for restart. In accordance with PMP 7200.RST.002, "Startup and Power Ascension," Revision 1, the licensee will affirm the operability of systems required for restart during mode ascension. The inspectors reviewed system affirmation documentation associated with Mode 6, Mode 5, and reactor coolant pump start mode ascension hold points and concluded that mode ascension procedural controls were met.

Various operability issues associated with the ice condenser, containment, motor-and air-operated valves, auxiliary feedwater, electrical distribution, and emergency core

cooling systems have been resolved separately under Unit 1 Restart Action Matrix Items 1 through 6. As documented in previous inspection reports, the inspectors have observed the conduct of surveillance testing, including essential service water system testing, emergency core cooling system flow balancing and engineered safeguards features load sequence testing. Observed surveillance testing activities were performed in accordance with procedural controls and acceptance criteria were met. Additional testing of Technical Specification required systems will be performed in accordance with the pre-startup and power ascension testing program. During previous inspections, the inspectors reviewed operability evaluations for degraded conditions identified on several TS required systems, including: engineered safeguards ventilation damper single failure vulnerability, essential service water pump degradation, minimum component cooling water pump ventilation requirements, minimum boration flowpath temperature, full core offload spent fuel pool heat loading, and 250 Vdc minimum battery room temperature. The inspectors have also performed equipment lineup and material condition assessments of several Unit 1 TS systems, including auxiliary feedwater, residual heat removal, diesel generators, chemical and volume control, and 250 Vdc. The results of previous NRC inspections supporting closure of this item were documented in NRC Inspection Reports 50-315/316/00-19, 00-20, 00-21, and 00-22. Based on the inspectors' reviews of the licensee's process for affirming systems as ready for restart, reviews of operability determinations, material condition assessments, and walkdown of selected systems, this item is closed.

b.7 (Closed) Restart Action Matrix Item C.4.b, Operability of Required Secondary and Support Systems

The inspectors assessed the readiness of secondary plant systems to support Unit 1 restart. The licensee has included secondary plant systems, including main feed, condensate, turbine generator, circulating water, and supporting systems within the scope of the ESRR program. In accordance with PMP 7200.RST.002, secondary systems required for restart will be affirmed ready to support plant operation. The licensee has identified a Mode ascension hold point in PMP 7200.RST.002 for establishment of condenser vacuum that is required to be completed prior to Mode 3 (Hot Standby). Although the licensee had not completed all activities required for drawing condenser vacuum at the time of inspection, the condenser vacuum hold point will require affirmation of the majority of secondary systems needed for restart. Additionally, as required by PMP 7200.RST.005, "Restart and Power Ascension Testing Program," the licensee developed system test plans to document testing adequacy, completeness, and sequencing to ensure proper system functioning and performance. The inspectors reviewed the system test plans for the non-essential service water system and plant air system and identified no significant issues.

The licensee has performed flushing of the condensate system and various lube oil systems to support readiness for restart. Additional testing and verification of secondary system readiness for restart will be accomplished during pre-startup testing and power ascension testing. The acceptability of test programs for restart was addressed under Restart Action Matrix Items C.4.c, "Pre-Startup Testing," and C.4.g, "Power Ascension Program." The inspectors performed equipment alignment and material condition walkdowns on portions of the condensate, main feedwater and control air systems in order to independently assess restart readiness and identified no significant issues.

Overall, the inspectors concluded with reasonable assurance that required secondary systems would be operable to support Unit 1 restart. This item is closed.

b.8 (Closed) Restart Action Matrix Item C.4.c, Results of Pre-Startup Testing

The inspectors reviewed the results of pre-startup testing and determined that significant equipment problems have been resolved and that all required safety systems have been restored to an operable status. NRC inspections during the extended shutdown of Unit 1 have focused on the operability of systems, structures, and components important to safety, including the ice condenser, motor operated valves, essential service water, ventilation, compressed air, electrical, refueling water storage tank, and emergency core cooling valve modifications. The inspectors also performed a review of the licensee's testing activities prior to the reloading of fuel in the reactor vessel (referred to by the licensee as Open Vessel Testing). The inspectors reviewed the Unit 1 boron injection system and safety injection system surveillance tests performed during open vessel testing.

The inspection reports that documented the above assessments included, 50-315/316-00-019, 020, 021, and 022. Plant Managers Procedure-7200.RST.004, "Expanded System Readiness Review Program," required the development of test plans for safety significant plant systems. Plant Managers Procedure-7200.RST.005, "Restart and Power Ascension Testing Program," required that system test plans be reviewed by the Plant Operations Review Committee and approved by the Plant Manager. The inspectors reviewed a sample of system test plans and did not identify any significant issues. The test plans reviewed included the reactor protection system, condensate, compressed air, digital metal impact monitoring system, containment spray, auxiliary feedwater and the emergency core cooling system (safety injection). Overall, NRC inspection results determined that there is reasonable assurance that the licensee adequately executed the pre-startup test program and resolved significant equipment problems. This item is closed.

b.9 (Closed) Restart Action Matrix Item C.4.d, Adequacy of System Lineups

The inspectors assessed the licensee's readiness for restart with regard to required system alignments. As described in Section 3.2 of PMP 7200.RST.003, "System Turnover to Operations," Revision 2, a prerequisite for restart system affirmation was verification of system alignment and establishment of appropriate configuration control for identified discrepancies. The inspectors conducted partial walkdowns of systems required to be operable for Mode 5 (Cold Shutdown) or required for Unit 2 safe shutdown Appendix R support, including: residual heat removal, diesel generators, chemical and volume control, auxiliary feedwater and 250 Vdc. The inspectors confirmed that these TS required systems were aligned in accordance with appropriate procedures and identified no conditions that would prevent these systems from performing their design function. The inspectors also walked down portions of the condensate, main feedwater, and control air systems to identify any conditions that would preclude alignment and functionality for restart. At the time of the walkdown, the ESRR program system affirmation had not been completed for several secondary systems, including the condensate and main feedwater systems. The inspectors did not identify any additional issues, not already identified within the ESRR program, required

to be completed for restart during these walkdowns. The inspectors also reviewed the abnormal position log and caution tag log to identify conditions that could impact restart. Overall, the inspectors concluded with reasonable assurance that the status of system lineups and ESRR programmatic controls were adequate to align systems required to support Unit 1 restart. This item is closed.

b.10 (Closed) Restart Action Matrix Item C.4.e, Adequacy of Surveillance Tests/Testing Program

The NRC had previously documented issues related to the adequacy of the licensee's surveillance testing program. The programmatic aspects of the licensee's surveillance testing program were closed prior to the Unit 2 restart in NRC Inspection Report 50-315/00-01; 50-316/00-01. The inspectors reviewed the licensee's Unit 1 surveillance test schedule and selected surveillance procedures to verify that the licensee was appropriately scheduling and conducting those surveillance tests necessary to support Unit 1 restart. In addition, for those surveillance tests which had already been performed, the inspectors reviewed the surveillance test results to verify that the Technical Specifications requirements were met. The following documents and Unit 1 surveillance procedures were reviewed:

- Unit 1 Surveillance Database
- 01-EHP [Engineering Head Procedure] 4030.103.208, "ECCS Flow Balance - Boron Injection System," Revision 1
- 01-EHP 4030.108.208, "ECCS Flow Balance - Safety Injection System," Revision 0
- 01-EHP 4030.119.241, "ESW Flow Balance," Revision 0
- 01-EHP 4030.131.240, "Containment Sumps Operability," Revision 0
- 01-EHP 4030.STP.386, "Multiple Rod Drop Measurements," Revision 1
- 01-EHP SP.126, "ECCS Recirculation Leakage Test," Revision 0
- 12-EHP 4030.STP.262, "Ice Condenser Surveillance and Operability Assessment," Revision 0
- 12-EHP 6040 PER.364, "Excore Nuclear Instrumentation Calculations and Thermocouple Selection," Revision 7
- 01-IHP [Instrument Head Procedure] 4030.SMP.103, "Reactor Coolant Flow Protection Set III Functional Test and Calibration," Revision 3
- 01-IHP 4030.SMP.131, "Power Range Nuclear Instrumentation Functional Test and Calibration," Revision 0
- 12-IHP 6030.IMP.092, "Charging Header Cross-Flow Indication Calibration," Revision 2
- 12-MHP [Maintenance Head Procedure] 4030.010.001, "Ice Condenser Basket Weighing Surveillance," Revision 3a
- 12-MHP 4030.010.002, "Ice Condenser Flow Passage Surveillance," Revision 1a
- 12-MHP 4030.010.003, "Ice Condenser Lower Inlet Door Surveillance," Revision 0a
- 12-MHP 4030.010.004, "Ice Condenser Intermediate Deck Door 18-Month Surveillance", Revision 0
- 12-MHP 4030.010.005, "Ice Condenser Top Deck Door Surveillance," Revision 0
- 12-MHP 4030.010.007, Ice Condenser Ice Basket Surveillance," Revision 0

- 01-OHP [Operations Head Procedure] 4030.132.217A, “DG1CD Load Sequencing & ESF [engineered safety features] Testing,” Revision 0
- 01-OHP 4030.132.217B, “DG1AB Load Sequencing & ESF Testing,” Revision 0
- 01-OHP 4030.STP.002V,”Boration System Valve Position Verification and Testing,” Revision 7
- 01-OHP 4030.STP.015, “Full Length Control Rod Operability Test,” Revision 9

For each surveillance test observed, the inspectors found that the surveillance test was properly performed and that the TS requirements were met. In the case of the diesel generator load sequencing and ESF testing, the licensee noted approximately 30 authorized test exceptions due to inoperable or unavailable equipment; however, the licensee had developed a plan to complete testing of this equipment prior to entering Mode 4 on Unit 1. The inspectors also observed that the licensee had appropriately scheduled surveillance testing on Unit 1 equipment to support Mode ascension up through full power operation. The inspectors compared selected surveillance procedures to the TS surveillance requirements and found that the procedures would adequately test the equipment.

Based on this inspection and the inspection documented in NRC Inspection Report 50-315/99033; 50-316/99033, this item is closed.

b.11 (Closed) Restart Action Matrix Item C.4.f, Significant Hardware Issues Resolved

NRC inspection activities have focused on the correction of the licensee’s hardware issues and the processes used to identify and correct these issues. Items such as recirculation sump volumes, containment, and motor operated valves were assessed by NRC inspections and closed. The inspections determined that the licensee was identifying and correcting significant hardware issues. The inspections also determined that when problems were encountered that stop work orders or other prompt corrective actions were taken. For example, the high vibration of the Containment Spray Pumps was corrected by the licensee and the NRC inspection was documented in Inspection Report 50-315/316-2000-020. There were no significant material aging issues. The results of previous NRC inspections supporting closure of this item were also documented in NRC Inspection Reports 50-315/316/00-21 and 00-22.

Programmatic and functional area assessments performed by the licensee in an effort to identify and determined the extent of condition of issues were the subject of specific NRC inspections and closed as part of the Unit 2 restart assessment effort. These inspections determined that the licensee’s reviews were sufficient to ensure significant hardware, program and process issues were being identified and resolved on a timeliness appropriate to their safety significance.

Overall, NRC inspection results concluded that the licensee had resolved significant hardware issues or that the issues would be completed prior to the appropriate plant operating conditions. This item is closed.

b.12 (Closed) Restart Action Matrix Item C.4.g, Adequacy of the Power Ascension Testing Program

The inspectors reviewed the startup and power ascension testing (PAT) plan and concluded that the PAT contained comprehensive test requirements, reviews and verifications to ensure plant readiness for restart. The inspectors reviewed the following procedures: PMP-7200.RST.002, Startup and Power Ascension, Revision 1; and PMP-7200.RST.005, Restart and Power Ascension Testing Program, Revision 0A. Specific requirements were clearly identified for each of eleven plant mode holds (Mode 6, Mode 5, bumping reactor coolant pumps, Mode 4, establishing condenser vacuum, Mode 3, Mode 2, Mode 1, 30 percent reactor power, 50 percent reactor power, and 88 percent reactor power). Appropriate levels of management review and approval were required for each individual mode hold. In addition, the inspectors determined that lessons learned from the Unit 2 restart were integrated into the Unit 1 restart plan. The inspectors reviewed the power ascension testing schedule and determined that the schedule included appropriate holds at various power levels (including 30 percent and 50 percent) to assess plant conditions and to ensure continued power ascension was appropriate. This item is closed.

b.13 (Closed) Restart Action Matrix Item C.4.h, Effectiveness of Plant Maintenance Program

The inspectors reviewed the effectiveness of the maintenance program to resolve equipment problems, the scheduling of emergent work, and management of the maintenance backlog. During closure of the Unit 2 Restart Action Matrix, the inspectors evaluated and closed Unit 2 Restart Action Matrix Item C.4.h in NRC Inspection Report 50-315, 50-316/2000-16. Since Unit 2 restart in June 2000, the licensee has successfully resolved several major equipment problems, including rod control malfunctions, essential service water degradation, and containment spray pump vibration. During these maintenance activities, the licensee complied with Technical Specification requirements and consistently completed maintenance activities within the allowed outage time. The inspectors reviewed the implementation of design modifications to the emergency diesel generator air system, ice condenser, and auxiliary room coolers and concluded that these modifications were adequately performed. As documented in NRC Inspection Reports 50-315, 50-316/00-19, 00-20, and 00-22, the inspectors have previously reviewed the licensee's control of emergent work activities, including risk assessments and work scheduling, and identified no significant issues. The inspectors reviewed Restart Action Matrix Item C.4.i, "Maintenance Backlog," and concluded that the maintenance activity scoping and deferrals were satisfactory for plant restart. Based on the effectiveness of the plant maintenance program to resolve equipment problems associated with Unit 2 operation, adequate implementation of plant design modifications, and the adequate assessment and scheduling of emergent work, the inspectors determined that the plant maintenance program was adequate to support restart of Unit 1.

The inspectors reviewed the licensee's implementation of elements of the Maintenance Rule, 10 CFR 50.65, "Requirements for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants." As discussed in NRC Inspection Reports 50-315, 50-316/00-19 and 00-20, the inspectors identified weaknesses in the implementation of elements of Maintenance Rule requirements. These weaknesses involved identification of

maintenance preventable functional failures, monitoring of system unavailability, and scoping of emergency operating procedure (EOP) functions. During a followup inspection, documented in NRC Inspection Report 50-315, 50-316/00-22, the inspectors identified an additional weakness involving the timely implementation of corrective actions when performance of the radiation monitoring system did not meet performance goals.

The licensee developed Engineering Action Plan 00-516 to address maintenance rule implementation weaknesses. The licensee's corrective actions included: rescoping Maintenance Rule system functions, reverification of performance criteria adequacy, historical performance data reviews, re-evaluation of performance of structures, systems, and components (SSCs) to determine monitoring categorization under 10 CFR 50.65 paragraph (a)(1) or (a)(2), and development of action plans for systems categorized as (a)(1). These corrective actions included reviews of each Maintenance Rule system by the Maintenance Rule expert panel in order to verify the adequacy of scoping and paragraph (a)(1) or (a)(2) categorization. In order to monitor the effectiveness of (a)(1) action plans in resolving equipment problems, the licensee intends to formally track implementation of the (a)(1) action plans under the corrective action program. The inspectors concluded that these corrective actions appeared reasonable and, once completed, would provide assurance that the Maintenance Rule program would be capable of providing a feedback mechanism for plant maintenance program effectiveness.

The inspectors assessed the ability of the self-assessment and Performance Assurance audit programs to self-identify maintenance program issues. The inspectors reviewed the results of recently completed maintenance department self-assessments and performance assurance (PA) audits, including:

- August/September 2000 PA Assessment Report
- PA audit PA-00-12/NSDRC 283
- Maintenance Self Assessment SA-2000-MNT-003, Winterization/Summerization
- Maintenance Self Assessment SA-2000-MNT-014, Control of Contractors
- Maintenance Self Assessment SA-2000-MNT-008, Housekeeping

The conclusions from these assessments were generally consistent with the inspectors' observations. The inspectors concluded that PA audits and maintenance department self-assessments were adequate to identify any potential maintenance effectiveness issues until the licensee corrected weaknesses in the Maintenance Rule program.

Based on the effectiveness of maintenance performed since Unit 2 restart, the actions planned to correct Maintenance Rule program weaknesses, and the adequacy of other feedback mechanisms to identify declining trends in maintenance effectiveness, the inspectors concluded that the plant maintenance program is adequate to support Unit 1 restart. This item is closed.

b.14 (Closed) Restart Action Matrix Item C.4.i, Maintenance Backlog Managed and Impact on Operation Assessed

Prior to the Unit 2 restart, the NRC Senior Risk Analysts assessed the maintenance backlog associated with eight risk-significant systems based on the results of the licensee's probabilistic risk assessment. The eight systems included: auxiliary feedwater, the high-head injection portion of the chemical volume and control system, accumulators, the low-head injection portion of residual heat removal, power operated relief valve block valves, safety injection, containment spray, and component cooling water. The assessment by the Senior Risk Analysts was documented in NRC Inspection Report 50-315/00-04; 50-316/00-04. This inspection report concluded that, "a detailed evaluation of the backlogged items assured the inspectors that the restart scoping process was satisfactory and deferred action did not individually or collectively have a risk-significant impact on Unit 2 restart, containment performance or fire suppression capability."

The inspectors reviewed the maintenance backlog associated with the same eight systems on Unit 1 to verify that the scoping process established for the Unit 2 restart effort was also being applied to the Unit 1 restart. In addition to the NRC inspection report referenced above, the following documents were reviewed:

- Plant Managers Procedure (PMP) 7030.OPR.001, "Operability Determination," Revision 4
- PMP 7200.RST.004, "Expanded System Readiness Review Program," Revision 15a
- System Indexed Database System (SIDS)
- Operations Department Unit 1 Operability Determination List dated November 26, 2000
- CR 00319046, Aggregate operability determination for Mode 6 (Refueling)
- CR 00326096, Aggregate operability determination for Mode 4 (Hot Shutdown)

The inspectors found that the restart item deferral process described in PMP 7200.RST.004 had been revised several times since the Unit 2 restart; however, the inspectors noted that the basic deferral process was similar. The procedure revisions were made to clarify ambiguous requirements and align the deferral process with changes made to the licensee's corrective action program. The inspectors also noted that the level of review required to approve a deferred item was equivalent to the level of review for deferral needed prior to the Unit 2 restart.

The inspectors reviewed approximately 100 deferred items related to the eight safety-significant systems listed above. In each case, the deferral was properly documented in accordance with PMP 7200.RST.004, Attachment 15, and the justification for deferral, per PMP 7200.RST.004, Attachment 9, was added to the SIDS. Most of the items involved minor maintenance which would not affect plant operation or were administrative in nature (for example, updates to technical documentation or drawings). Per PMP 7030.OPR.001, the licensee planned to perform aggregate operability determinations for degraded and non-conforming conditions prior to Unit 1 mode ascension similar to the aggregate operability determinations done for the Unit 2 restart. The inspectors reviewed the aggregate operability determination for Mode 6 (Refueling),

documented in CR 00319046, and did not identify any issues which needed to be resolved prior to reloading fuel in Unit 1.

Based on this inspection and the inspection documented in NRC Inspection Report 50-315/00-04; 50-316/00-04, this item is closed.

b.15 (Closed) Restart Action Matrix Item C.4.j, Adequacy of Plant Housekeeping and Equipment Storage

The resident inspectors assessed licensee facilities to determine the adequacy of housekeeping and equipment storage. Areas assessed included Unit 1 upper and lower containment, the reactor cavity, Unit 1 upper and lower ice condenser, the auxiliary building, radioactive waste storage facilities, turbine building, diesel generator rooms, auxiliary feedwater pump rooms, essential service water pump rooms, and safety-related switchgear rooms. Additional areas assessed included equipment storage rooms within the turbine building and the auxiliary building. The inspectors determined that plant housekeeping and equipment storage were adequate for restart. This item is closed.

b.16 (Closed) Restart Action Matrix Item C.5.e, Confirmatory Action Letter Conditions Have Been Satisfied

This item was closed based on inspector assessments of licensee corrective actions related to the specific issues identified in Confirmatory Action Letter RIII-97-011, dated September 19, 1997. NRC actions regarding the Confirmatory Action Letter were documented in a letter from the Regional Administrator to the licensee dated February 2, 2000. In addition, during inspections of licensee activities related to Unit 1 restart, inspectors did not identify any issues which would indicate that the Confirmatory Action Letter conditions had not been satisfied. This item is closed.

b.17 (Closed) Restart Action Matrix Item C.5.f, Significant Enforcement Issues Have Been Resolved

The licensee documented planned corrective actions to address the Severity Level II Violation in a letter to the NRC dated March 19, 1999, “Donald C. Cook Nuclear Power Plant , Units 1 and 2 Enforcement Actions 98 -150, 98 -151, 98 -152 and 98 -186 Reply to Notice of Violation dated October 13, 1998.” Prior to Unit 2 restart, the Inspection Manual Chapter 0350 panel assessed the implementation and effectiveness of licensee corrective actions through the evaluation of inspection findings and determined that the licensee had taken sufficient corrective actions to address the enforcement issues. Since Unit 2 restart, no new significant enforcement issues have been identified, and during inspections of Unit 1 restart activities no issues were identified which would indicate that previous corrective actions to address the enforcement issues were not effective. This item is closed.

b.18 (Closed) Restart Action Matrix Item C.5.g, Allegations Have Been Appropriately Addressed

The Inspection Manual Chapter 0350 Restart Panel reviewed all open allegations on November 21, 2000, and determined none to be startup issues. The Panel discussed the allegations within the context of the health of the safety conscious work environment

at the site. The panel did not identify any issues which would indicate that the work environment at the site was not conducive to raising and resolving safety concerns. This item is closed.

4OA6 Management Meetings

Exit Meeting Summary

The team presented the inspection results to Mr. R. P. Powers and other members of licensee management at the interim exit meeting held on December 1, 2000. The team conducted the final exit meeting on December 8, 2000. The licensee acknowledged the findings presented. No proprietary information was identified.

PARTIAL LIST OF PERSONS CONTACTED

NRC Personnel
G. Grant, Director, Reactor Projects, RIII
A. Vegel, Branch Chief, RIII
D. Passehl, Project Engineer, RIII
B. Bartlett, SRI

AEP Personnel
R. Powers, Senior Vice President
C. Bakken, Site Vice President
M. Rencheck, Engineering Vice President
J. Pollock, Plant Manager
M. Finissi, Restart Director
S. Greenlee, Design Engineering Director
W. Kropp, Performance Assurance Director
R. Godley, Plant Engineering
W. Harland, Outage/Work Control
L. Weber, Operations Manager
L. Thornsberry, Systems Engineering Manager
S. Partin, Assistant OPS Manager
P. Gember, Work Control/Surveillance Manager
R. Gaston, Regulatory Affairs
R. Meister, Regulatory Affairs
B. Smalldridge, Operations/Unit 1 Restart Manager

INSPECTION PROCEDURES USED

IP 93802: Operational Safety Team Inspection

ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

None

Closed

Restart Action Matrix Item 2.2	Confirm Removal of Fibrous Material in the Unit 1 Containment That Could Clog the Recirculation Sump
Restart Action Matrix Item 2.3	Evaluate Licensee Corrective Actions for Containment Internal Structural Walls
Restart Action Matrix Item 8.7	Unreviewed Safety Question on Methodology Changes (Modeling of Operator Actions and Use of Actual Tube Flows) to Steam Generator Tube Rupture Analysis
Restart Action Matrix Item C.3.3.d	Effectiveness of Restart Simulator/Required Training Necessary to Re-Familiarize Personnel With Operating
Restart Action Matrix Item C.3.3.e	Assessment of Plant Staff Performance During Restart and Sustained Control Room Observations
Restart Action Matrix Item C.4.a	Operability of Technical Specification Systems, Specifically Those with Identified Operational, Design, and Maintenance Issues
Restart Action Matrix Item C.4.b	Operability of Required Secondary and Support Systems
Restart Action Matrix Item C.4.c	Results of Pre-Startup Testing
Restart Action Matrix Item C.4.d	Adequacy of System Lineups
Restart Action Matrix Item C.4.e	Adequacy of Surveillance Tests/Testing Program
Restart Action Matrix Item C.4.f	Significant Hardware Issues Resolved
Restart Action Matrix Item C.4.g	Adequacy of the Power Ascension Testing Program
Restart Action Matrix Item C.4.h	Effectiveness of Plant Maintenance Program

Restart Action Matrix Item C.4.i	Maintenance Backlog Managed and Impact on Operation Assessed
Restart Action Matrix Item C.4.j	Adequacy of Plant Housekeeping and Equipment Storage
Restart Action Matrix Item C.5.e	Confirmatory Action Letter Conditions Have Been Satisfied
Restart Action Matrix Item C.5.f	Significant Enforcement Issues Have Been Resolved
Restart Action Matrix Item C.5.g	Allegations Have Been Appropriately Addressed

Discussed

None

PARTIAL LIST OF DOCUMENTS REVIEWED DURING INSPECTION

Unit 1 Technical Specifications
Updated Final Safety Analysis Report, Section 14.4.3, “Analysis of Emergency Conditions”
Main Feedwater Flow Diagrams
Auxiliary Feedwater Flow Diagrams
Emergency Diesel Generator Flow Diagrams
Residual Heat Removal Flow Diagrams
1IHP4030.SMP.106, “Calibration and Channel Functional Test of Delta T/T_{avg} Protection Set III,” Revision 4
1-IHP-4030.STP.100.001, “Time Response Testing of the Reactor Protection System,” Revision 5
OHI-2212, “Narrative and Miscellaneous Log-keeping,” Revision 3
OHI-4017, “Control Board Monitoring,” Revision 0
01-OHP 4021.001.001, “Plant Heatup From Cold Shutdown To Hot Standby,” Revision 27
01-OHP-4021.002.001, “Filling and Venting the Reactor Coolant System,” Revision 26
01-OHP-4021.002.012, “Restoration From RCS Draindown,” Revision 12
01-OHP-4021.003.001, “Letdown, Charging, and Seal Water Operation,” Revision 15
01-OHP-4021.008.001, “Filling And Venting The Safety Injection system, Residual Heat Removal System, And Boron Injection Tank,” Revision 10
01-OHP 4021.055.001, “Feedwater System Valve Lineup,” Revision 10a
01-OHP 4021.056.001, “Filling and Venting Auxiliary Feedwater System,” Revision 18
02-OHP-4021.008.001, “Filling And Venting The Safety Injection System, Residual Heat Removal System, And Boron Injection Tank,” Revision 7
01-OHP 4030.STP.027AB, “AB Diesel Generator Operability Test (Train B),” Revision 15
01-OHP 4030.STP.027CD, “CD Diesel Generator Operability Test (Train A),” Revision 15
01-OHP 4030.STP.054E, “East Residual Heat Removal Train Operability Test - Shutdown,” Revision 8
12-MHP-5021.SCF.001, “Scaffolding Guidelines,” Revision 0
EHI-5071, “Inservice Testing Program Implementation,” Revision 1
Emergency Diesel Generator System Affirmation Report
Auxiliary Feedwater System Affirmation Report
Residual Heat Removal System Affirmation Report

LIST OF ACRONYMS

AEP	American Electric Power
AR	Action Request
CFR	Code of Federal Regulations
CR	Condition Report
CSC	Case Specific Checklist
DRP	Division of Reactor Projects
EEI	Escalated Enforcement Item
EOP	Emergency Operating Procedure
ESRR	Expanded System Readiness Review
ESW	Essential Service Water
I&C	Instrumentation and Controls
IHP	Instrument Head Procedure
IMP	Instrument Maintenance Procedure
IST	In-Service Test
JO	Job Order
LER	Licensee Event Report
MC	Manual Chapter
MHP	Maintenance Head Procedure
MOV	Motor Operated Valve
NFG	Nuclear fuel safety and analysis department
NRC	Nuclear Regulatory Commission
NRR	Nuclear Reactor Regulation
ODE	Operability Determination Evaluation
OE	Operating Experience
OHI	Operations Head Instruction
OHP	Operations Head Procedure
PA	Performance Assurance
PMP	Plant Manager's Procedure
PA	Performance Assurance
RAM	Restart Action Matrix
RCP	Reactor Coolant Pump
RCS	Reactor Coolant System
RO	Reactor Operator
SA	Self-assessment
SM	Shift Manager
SRO	Senior Reactor Operator
STP	System Test Plan
TM	Temporary Modification
TS	Technical Specification
URI	Unresolved Item
US	Unit Supervisor
Vac	Volts alternating current
Vdc	Volts direct current