

October 18, 2006

Mr. Mano K. Nazar
Senior Vice President and
Chief Nuclear Officer
Indiana Michigan Power Company
Nuclear Generation Group
One Cook Place
Bridgman, MI 49106

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000315/2006006;
05000316/2006006 and 05000315/2006013; 05000316/2006013

Dear Mr. Nazar:

On September 30, 2006, the U. S. Nuclear Regulatory Commission (NRC) completed an inspection at your D. C. Cook Nuclear Power Plant, Units 1 and 2. The enclosed report documents the inspection results, which were discussed on September 27, 2006, with Mr. J. Jensen and other members of your staff.

This inspection examined activities conducted under your license as they relate to safety and compliance with the Commission's rules and regulations and with the conditions of your license. The inspectors reviewed selected procedures and records, observed activities, and interviewed personnel.

Based on the results of this inspection, no findings of significance were identified.

In accordance with 10 CFR 2.390 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

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Sincerely,

/RA/

Christine A. Lipa, Chief
Projects Branch 4
Division of Reactor Projects

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

Enclosure: Inspection Report 05000315/2006006; 05000316/2006006 and
05000315/2006013; 05000316/2006013
w/Attachment: Supplemental Information

cc w/encl: M. Peifer, Site Vice President
L. Weber, Plant Manager
S. Simpson, Regulatory Affairs Manager
G. White, Michigan Public Service Commission
L. Brandon, Michigan Department of Environmental Quality -
Waste and Hazardous Materials Division
Emergency Management Division
MI Department of State Police
State Liaison Officer, State of Michigan

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U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report Nos.: 05000315/2006006; 05000316/2006006
05000315/2006013; 05000316/2006013

Licensee: Indiana Michigan Power Company

Facility: D. C. Cook Nuclear Power Plant, Units 1 and 2

Location: Bridgman, MI 49106

Dates: July 1 through September 30, 2006

Inspectors: B. Kemker, Senior Resident Inspector
J. Lennartz, Resident Inspector
M. Bielby, Operations Engineer
M. Holmberg, Reactor Engineer
G. O'Dwyer, Reactor Engineer
R. Walton, Operations Engineer
R. Winter, Reactor Engineer

Approved by: C. Lipa, Chief
Projects Branch 4
Division of Reactor Projects

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2006-006, IR 05000316/2006-006; 05000315/2006-013, IR 05000316/2006-013; 07/01/2006-09/30/2006; D. C. Cook Nuclear Power Plant, Units 1 and 2; Integrated Inspection Report.

The report covered a 13-week period of inspection by the resident inspectors and announced inspections by regional inspectors. No findings of significance were identified. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 3, dated July 2000.

A. NRC-Identified and Self-Revealed Findings

None.

B. Licensee Identified Violations

None.

REPORT DETAILS

Summary of Plant Status

Unit 1 was operated at or near full power during the inspection period with the following exceptions:

- On July 30, 2006, Unit 1 was shut down as required by the plant's Technical Specifications (TS) due to exceeding the 120 degrees Fahrenheit (°F) lower containment air temperature limit. Following the installation of a supplemental cooling water supply to the lower containment ventilation coolers and reduction of the lower containment air temperature, the licensee performed a reactor startup and synchronized the unit to the grid on August 3, 2006.
- On August 18, 2006, the licensee began a gradual power reduction (i.e., a coast down) from 100 percent to 53 percent on September 13, 2006. The unit was maintained at about 53 percent power to perform steam generator safety valve testing until September 16, 2006, when the licensee conducted a reactor shutdown for the Cycle 21 refueling outage (U1C21). The unit was defueled at the end of the inspection period.

Unit 2 was operated at or near full power during the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, Barrier Integrity, and Emergency Preparedness

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors completed three partial equipment walkdown inspection samples for the following risk significant systems:

- Unit 1 AB Emergency Diesel Generator (EDG)
- Unit 2 West Motor Driven and Turbine Driven Auxiliary Feedwater Pump Trains
- Unit 1 Train "A" Auxiliary Feedwater, Essential Service Water (ESW), and Component Cooling Water Flow Paths and Electrical Requirements to Support Safe Shutdown for Unit 2

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones. The inspectors reviewed operating procedures, system diagrams, TS requirements, and the impact of ongoing work activities on redundant trains of equipment. The inspectors verified that conditions did not exist that could have rendered the systems incapable of performing their intended functions. The inspectors also walked down accessible portions of the systems to verify system components were aligned correctly and available as necessary.

In addition, the inspectors verified that equipment alignment problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

.2 Complete System Walkdown

a. Inspection Scope

The inspectors performed one complete system walkdown inspection sample for the following risk significant system:

- Unit 2 Auxiliary Feedwater System

The inspectors interviewed the system engineer and reviewed ongoing system maintenance, open job orders, and design issues for potential effects on the ability of the system to perform its design functions. The inspectors reviewed operating procedures, system diagrams, TS requirements, and applicable sections of the Updated Final Safety Analysis Report (UFSAR) to ensure the correct system lineup. The inspectors verified acceptable material condition of system components, availability of electrical power to system components, and that ancillary equipment or debris did not interfere with system performance.

b. Findings

No findings of significance were identified.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours

a. Inspection Scope

The inspectors completed six quarterly fire protection inspection samples by performing walkdowns in the following plant areas:

- Technical Support Center Uninterruptible Power System Inverter and Battery Room (Zone 127)
- Auxiliary Building Access Control Area 609' Elevation (Zone 43)
- Unit 1 East Containment Accumulator Enclosure 612' Elevation (Zone 120)
- Unit 1 Ice Condenser 640' Elevation (Zone 132)

- Unit 1 Containment Instrument Room 612' Elevation (Zone 122)
- Unit 1 West Containment Accumulator Enclosure 612' Elevation (Zone 110)

The inspectors verified that transient combustibles and ignition sources were appropriately controlled; and, assessed the material condition of fire suppression systems, manual fire fighting equipment, smoke detection systems, fire barriers and emergency lighting units.

In addition, the inspectors verified that fire protection related problems were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R06 Flood Protection (71111.06)

.1 Internal Flood Protection

a. Inspection Scope

The inspectors performed one inspection activity related to the licensee's precautions to mitigate the risk from internal flooding events. Specifically, the inspectors verified the adequacy of internal flood protection features for the lower elevations of the Auxiliary Building. The following inspection activities were performed:

- The inspectors reviewed the Unit 1 and Unit 2 Flooding Evaluation reports, the UFSAR and other selected design basis documents to identify those areas susceptible to internal flooding.
- The inspectors performed a walkdown of the lower elevations of the Auxiliary Building to verify that the installation of components was consistent with the assumptions in the licensee's design basis and that the components would be operable in the event of flooding.
- The inspectors reviewed selected operating procedures used to identify and mitigate internal flooding events and verified that these procedures were adequate.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification Program (71111.11)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors assessed licensed operator performance and the training evaluators' critique during a licensed operator requalification evaluation in the D. C. Cook plant operations training simulator on August 29, 2006. The inspectors focused on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of emergency plan requirements. This activity represented one inspection sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Effectiveness (71111.12)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors completed three quarterly maintenance effectiveness inspection samples by evaluating the licensee's handling of selected degraded performance issues involving the following risk-significant structures, systems, and components (SSCs):

- Unit 1 and Unit 2 Power Range and Intermediate Range Nuclear Instruments
- Supplemental Diesel Generators
- Unit 1 and Unit 2 Auxiliary Feedwater System

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the SSCs. Specifically, the inspectors independently verified the licensee's handling of SSC performance or condition problems in terms of:

- appropriate work practices,
- identifying and addressing common cause failures,
- scoping of SSCs in accordance with 10 CFR 50.65(b),
- characterizing SSC reliability issues,
- tracking SSC unavailability,
- trending key parameters (condition monitoring),
- 10 CFR 50.65(a)(1) or (a)(2) classification and reclassification, and
- appropriateness of performance criteria for SSCs/functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSCs/functions classified (a)(1).

In addition, the inspectors verified that problems associated with the effectiveness of plant maintenance were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

b.1 Power Range and Intermediate Range Nuclear Instruments

The inspectors reviewed equipment performance issues associated with the power range and intermediate range nuclear instruments for both units and found multiple examples where Maintenance Rule Evaluations (MREs) were either not performed for component failures or where the completed MRE conclusion was questionable. Sufficient information or justification was not provided in some of the MREs that were completed to support the conclusion that was reached. As a result, it appeared that there were several functional failures that were either not evaluated or not correctly evaluated. The licensee wrote condition reports to address these examples and other questions raised by the inspectors in its corrective action program. This issue is considered to be an Unresolved Item (URI 05000315/316/2006006-01) pending review of MREs that will need to be completed or revised for the examples identified during this inspection.

.2 Periodic Evaluation

a. Inspection Scope

The inspectors examined the Maintenance Rule Periodic Evaluation Report completed for the period of July 2004 through March 2006. To evaluate the effectiveness of (a)(1) and (a)(2) activities, the inspectors examined a sample of (a)(1) Action Plans, performance criteria, functional failures, and condition reports. These same documents were reviewed to verify that the threshold for identification of problems was at an appropriate level and the associated corrective actions were appropriate. Also, the inspectors reviewed the Maintenance Rule procedures and processes. The inspectors focused the inspection on the following four systems (samples):

- Auxiliary Power (4160 Vac)
- Control Rod Drive
- Chemical and Volume Control System
- ESW

The inspectors verified that the periodic evaluation was completed within the time restraints defined in 10 CFR 50.65 (once per refueling cycle, not to exceed 24 months). The inspectors also ensured that the licensee reviewed its goals, monitored SSCs performance, reviewed industry operating experience, and made appropriate adjustments to the Maintenance Rule Program as a result of the above activities.

The inspectors verified that:

- the licensee balanced reliability and unavailability during the previous cycle, including a review of high safety significant SSCs;
- (a)(1) goals were met, that corrective action was appropriate to correct the defective condition, including the use of industry operating experience, and that (a)(1) activities and related goals were adjusted as needed; and
- the licensee has established (a)(2) performance criteria, examined any SSCs that failed to meet their performance criteria, and reviewed any SSCs that have suffered repeated maintenance preventable functional failures including a verification that failed SSCs were considered for (a)(1).

In addition, the inspectors reviewed Maintenance Rule self-assessments and audit reports that addressed the Maintenance Rule Program implementation.

b. Findings

No findings of significance were identified.

1R13 Maintenance Risk Assessments and Emergent Work Evaluation (71111.13)

a. Inspection Scope

The inspectors completed six inspection samples regarding maintenance risk assessments and emergent work evaluations for the following maintenance activities:

- Unit 1 AB EDG Planned Maintenance on July 18, 2006
- Unit 2 Turbine Driven Auxiliary Feedwater Pump Planned and Emergent Maintenance Activities from July 26 through July 28, 2006
- Unit 2 CD EDG Planned Maintenance from August 8 through August 9, 2006
- Unit 2 East Motor Driven Auxiliary Feedwater Pump Maintenance Concurrent with Switchyard Maintenance on September 6, 2006
- Unit 1 AB EDG Maintenance and West Centrifugal Charging Pump Maintenance During the Week of September 18, 2006
- Unit 1 Dual ESW Pump Outage from September 29 through September 30, 2006

These activities were selected based on their potential risk significance relative to the reactor safety cornerstones. As applicable for each of the above activities, the inspectors reviewed the scope of maintenance work in the plant's daily schedule, verified that plant risk assessments were completed as required by 10 CFR 50.65(a)(4) prior to commencing maintenance activities, discussed the results of the assessment with the licensee's probabilistic risk analyst and/or shift technical advisor, and verified that plant conditions were consistent with the risk assessment assumptions. The inspectors also reviewed TS requirements and walked down portions of redundant safety systems, when applicable, to verify that risk analysis assumptions were valid, that redundant safety-related plant equipment necessary to minimize risk was available for use, and that applicable requirements were met.

In addition, the inspectors verified that maintenance risk related problems were entered into the licensee's corrective action program with the appropriate significance characterization. Selected condition reports were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors completed three inspection samples associated with operability evaluations by reviewing the following condition reports (CRs):

- CR 06145114, "The Lower Containment Average Air Temperature May Not Be Representative of the Entire Lower Volume"
- CR 00800196, "ERS-1300 Not Showing Expected Activity Post Filter Change"
- CR 00801388, "Containment Purge TS"

The inspectors verified that the conditions did not render the associated equipment inoperable or result in an unrecognized increase in plant risk. When applicable, the inspectors verified that the licensee appropriately applied TS limitations and appropriately returned the affected equipment to an operable status.

In addition, the inspectors verified that problems related to the operability of safety-related plant equipment were entered into the licensee's corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

The inspectors completed two baseline inspection samples pertaining to post maintenance testing by assessing testing activities that were conducted on the following plant equipment:

- Unit 1 AB EDG Voltage Regulator Replacement
- Unit 2 CD EDG Fuel Injector Pump Replacements

The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified post maintenance testing. The inspectors verified the post maintenance testing was performed in accordance with approved procedures, that the procedures

clearly stated the acceptance criteria, and that the acceptance criteria were met. The inspectors interviewed operations, maintenance, and engineering department personnel and reviewed the completed post maintenance testing documentation.

b. Findings

No findings of significance were identified.

1R20 Refueling and Other Outage Activities (71111.20)

.1 Unit 1 Forced Outage

a. Inspection Scope

The inspectors completed one inspection sample regarding forced outage activities.

On July 30, 2006, the licensee entered a forced outage on Unit 1 following a plant shutdown required by the TS because the average lower containment exceeded the 120°F limit. The unit was maintained in Mode 3 (Hot Standby) during the forced outage since the lower containment temperature was reduced below 120°F before the time required to have the unit enter Mode 5 (Cold Shutdown). Following the flushing of lower containment ventilation coolers and installation of a temporary supplemental cooling system for the non-essential service water supply to the containment, the licensee performed a reactor startup and synchronized the unit to the grid on August 3, 2006.

The inspectors evaluated the conduct of forced outage activities to assess the control of plant configuration and management of risk. The inspectors reviewed configuration management to verify that the licensee maintained defense-in-depth commensurate with the risk plan and reviewed outage work activities to ensure that correct system lineups were maintained for key mitigating systems. The inspectors also observed portions of the reactor startup activities to verify that the TS requirements and administrative procedure requirements were met prior to changing operational modes or plant configurations. The inspectors interviewed operations, engineering, work control, and maintenance department personnel and reviewed selected procedures and documents.

b. Findings

No findings of significance were identified.

.2 Unit 2 Refueling Outage

a. Inspection Scope

On September 16, 2006, the licensee started the Cycle 21 refueling outage on Unit 1. The inspectors began refueling outage inspection activities, which are expected to be completed and documented during the next inspection period. An inspection sample was not completed during this inspection period.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors completed two inspection samples regarding surveillance testing by reviewing the following activities.. This constituted one Inservice Testing (IST) sample and one local leak rate test (LLRT) sample.

- 1-EHP-4030-134-203, "Unit 1 LLRT" (LLRT sample)
- 2-OHP-4030-208-051S, "South Safety Injection Pump System Test" (IST sample)

The inspectors observed portions of the test activities to verify that the testing was accomplished in accordance with plant procedures. The inspectors reviewed the test methodology and documentation to verify that equipment performance was consistent with safety analysis and design basis assumptions, and that testing acceptance criteria were satisfied. In addition, the inspectors verified that surveillance testing problems were being entered into the licensee's corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

1R23 Temporary Modifications (71111.23)

a. Inspection Scope

The inspectors completed one inspection sample by reviewing the following temporary modification that was utilized on plant equipment:

- 12-TM-06-32-R1, "Installation of Supplemental Containment Cooling for Units 1 and 2"

The inspectors interviewed engineering, operations and maintenance department personnel, and reviewed the design documents and applicable 10 CFR 50.59 evaluation to verify that TS and the UFSAR requirements were satisfied. The inspectors reviewed documentation and conducted plant walkdowns to verify that the modification was implemented as designed and that the modification did not adversely impact system operability or availability.

The inspectors also reviewed a sample of condition reports pertaining to temporary modifications to verify that problems were entered into the licensee's corrective action program with the appropriate significance characterization and that corrective actions were appropriate.

b. Findings

No findings of significance were identified.

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors observed activities in the plant simulator and the Technical Support Center during an emergency preparedness training drill conducted on August 22, 2006. The drill included operator participation in the plant simulator and a turnover between two emergency response duty teams. The inspectors verified the emergency classifications and notifications to offsite agencies were completed in an accurate and timely manner as required by the Emergency Plan implementing procedures. The inspectors also verified that the training drill was conducted in accordance with the prescribed sequence of events, drill objectives were satisfied and that the required prompts from the licensee drill controllers were appropriately communicated to the drill participants.

The inspectors observed the post-drill critique in the Technical Support Center and reviewed documented post-drill critique comments by licensee evaluators to verify licensee personnel and licensee drill evaluators adequately self-identified drill performance problems of significance. The inspectors also verified that condition reports were generated for drill performance problems of significance and entered into the corrective action program with the appropriate characterization and significance.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator (PI) Verification (71151)

Cornerstone: Barrier Integrity

.1 Reactor Coolant System Leakage

a. Inspection Scope

The inspectors verified the Reactor Coolant System (RCS) Leakage Performance Indicator for both units. The inspectors reviewed a sample of operating logs and the results of RCS water inventory balance calculations performed from July 1, 2004, through June 30, 2006, and verified the licensee's calculation of RCS leakage for both units.

b. Findings

No findings of significance were identified.

4OA2 Identification and Resolution of Problems (71152)

.1 Routine Review of Identification and Resolution of Problems

a. Inspection Scope

As discussed in previous sections of this report, the inspectors routinely reviewed issues during baseline inspection activities and plant status reviews to verify that they were being entered into the licensee's corrective action system at an appropriate threshold, that adequate attention was being given to timely corrective actions, and that adverse trends were identified and addressed. Some minor issues were entered into the licensee's corrective action system as a result of inspectors' observations but are not discussed in this report.

b. Findings

No findings of significance were identified.

.2 Annual Sample Review

a. Inspection Scope

The inspectors completed two annual review samples by selecting the following condition reports for in-depth review:

- CR 06117010, "Inadvertent Safety Injection Occurred on Unit 2 While Performing 2-IHP-4030-STP-180"
- CR 06112038, "2CD Fuel Injection Pump Seizures"

The inspectors verified the following attributes during their review of the licensee's evaluations and corrective actions for the above condition reports:

- complete and accurate identification of the problem in a timely manner commensurate with its safety significance and ease of discovery;
- consideration of the extent of condition, generic implications, common cause and previous occurrences;
- evaluation and disposition of operability/reportability issues;
- classification and prioritization of the resolution of the problem, commensurate with safety significance;
- identification of the root and contributing causes of the problem; and
- identification of corrective actions which were appropriately focused to correct the problem.

b. Findings

No findings of significance were identified.

4OA3 Event Followup (71153)

.1 Actions to Address Unit 1 Lower Containment High Temperatures/Plant Shutdown as Required by TS

a. Inspection Scope

On the evening of July 29, 2006, operators identified that Unit 1 lower containment air temperature had exceeded the 120°F limit of TS 3.6.5, Condition 'A.' The licensee subsequently performed a reactor shutdown on July 30th to comply with the TS action requirement. Very warm Lake Michigan water temperatures (over 80°F for many days) and warm ambient temperatures (upper 80's and lower 90's) created a problem for cooling the Containment Building, which utilizes non-essential service water to provide cooling to air coolers in the Containment Building. The inspectors reviewed the licensee's actions to address the elevated lower containment temperatures and observed portions of the reactor shutdown from the Control Room. The inspectors also verified that the licensee completed a 4-hour notification of the plant shutdown to the NRC Operations Center as required by 10 CFR 50.72(b)(2)(I).

b. Findings

No findings of significance were identified.

.2 Actions to Address Unit 2 Lower Containment High Temperatures

a. Inspection Scope

During late July and early August 2006, the inspectors reviewed the licensee's actions to address elevated lower containment temperatures in Unit 2. The licensee shut down Unit 1 on July 30th because operators identified that the 120°F lower containment air temperature limit of TS 3.6.5, Condition 'A' had been exceeded. The average lower containment temperature for Unit 2 had been tracking only 4 - 5°F below that of Unit 1 and was very near the 120°F limit. The licensee installed a temporary modification to provide supplemental cooling to the lower containment air coolers while concurrently exploring other possible solutions.

b. Findings

No findings of significance were identified.

.3 (Closed) Licensee Event Report (LER) 05000316/2006-005-00: "Failure to Comply with TS Surveillance Requirement 3.6.1.1." The licensee failed to perform an as-found local leak rate test for containment isolation valve 2-SI-189 (emergency core cooling system safety valves discharge to the primary relief tank containment isolation check valve) prior to performing maintenance that affected the valve's leak tightness as required by the plant's TS. Although the licensee promptly recognized the failure to complete an as-found local leak rate test for 2-SI-189, the inspectors identified that the licensee did not recognize and correctly evaluate this as a failure to comply with TS Surveillance Requirement (SR) 3.6.1.1. Two findings, a Non-Cited Violation of TS SR 3.6.1.1 and a Severity Level IV Non-Cited Violation of 10 CFR 50.73(a)(1), were documented in NRC Inspection Report 05000315/316/20060004. The licensee reported this as a condition

prohibited by the plant's TS in accordance with 10 CFR 50.73(a)(2)(i)(B). The inspectors determined that the information provided in LER 05000316/2006-005-00 did not raise any new issues or change the conclusion of the initial review. This LER is closed.

- .4 (Closed) LER 05000316/2006-03-00: "Inadvertent Emergency Core Cooling System Actuation During Testing." On April 27, 2006, with Unit 2 in Mode 5, an inadvertent main steam line low pressure safety injection actuation signal occurred on both trains during surveillance testing. All plant safety equipment operated as expected; however, there was no actual injection into the RCS due to the low temperature over-pressure protection system alignment in effect. The root cause of the inadvertent safety injection actuation was instrument maintenance personnel not following the licensee's requirements for procedure use and adherence when using the bypass function to clear the standing reactor trip signals during testing. The inspectors verified that the licensee completed an 8-hour notification of this event to the NRC Operations Center as required by 10 CFR 50.72(b)(3)(iv)(A).

As a prerequisite to the surveillance test, instrument maintenance technicians needed to clear existing reactor trip signals. An instrument maintenance supervisor decided to use a Job Order Activity to bypass existing reactor trip signals by utilizing a newly installed bypass switch in the reactor protection system in lieu of using the applicable surveillance test procedure attachment. The use of a Job Order Activity to perform this task was not allowed by the licensee's procedure use and adherence procedure. The bypass switch had just been installed by a plant modification and operations personnel were not yet trained on its function. As a result, plant operators did not prevent the Job Order Activity from being issued. Knowledge weaknesses by the instrument maintenance supervisor on how the bypass switch functioned also contributed to this event.

Additionally, during the post-event review, the licensee identified that the pressurizer surge line temperature changed about 200°F over a short period of time during the transient. The licensee evaluated this condition as acceptable for continued operation. The inspectors noted that the licensee appropriately accounted for this incremental increase in pressurizer surge line fatigue stress in accordance with TS 5.5.4.

The inspectors reviewed the licensee's root cause evaluation, the engineering evaluation of the pressurizer surge line temperature transient, and corrective actions. The inspectors concluded that this event was a performance deficiency since instrument maintenance personnel failed to follow the surveillance test procedure, which is a procedure required by TS 5.4.1.a and Regulatory Guide 1.33, Appendix A, Revision 2. The inspectors concluded that this violation of TS 5.4.1.a constitutes a violation of minor significance and is not subject to formal enforcement action in accordance with Section IV of the NRC's Enforcement Policy. This finding was of minor significance because there was no adverse consequence to the plant due to the Mode 5 low temperature over-pressure protection system alignment in effect during the testing. The licensee reported this event as a valid actuation of the containment isolation, emergency core cooling system, and emergency alternating current electrical power systems in accordance with 10 CFR 50.73(a)(2)(iv)(A). This LER is closed.

- .5 (Closed) LER 05000316/2006-004-00: "Failure to Comply With TS 3.8.2, AC Sources - Shutdown, LCO [Limiting Condition for Operation] 3.8.2.b." On May 1, 2006, with Unit 2

in Mode 5, Cold Shutdown, it was determined that TS 3.8.2.b, which required one EDG to be operable, had not been met for two separate occasions totaling 12 hours and 32 minutes between April 21 and April 22, 2006.

On April 21, 2006, the Unit 2 CD EDG was declared operable after testing activities were completed following planned maintenance to replace fuel injector pumps with new pumps. Between April 21st and 22nd, the Unit 2 AB EDG was inoperable for a total 12 hours and 32 minutes for planned testing. Subsequently, on April 22nd, three fuel injector pumps seized during additional testing activities on the CD EDG because foreign material caused mechanical binding. Consequently, the CD EDG was considered inoperable back to the time that the fuel injector pumps had been replaced. As a result, both Unit 2 EDGs were inoperable during the 12 hours and 32 minutes that the AB EDG was inoperable on April 21st and 22nd. The licensee reported this as a condition prohibited by the plant's TS in accordance with 10 CFR 50.73(a)(2)(i)(B) and as an event that could have prevented the removal of residual heat in accordance with 10 CFR 50.73(a)(2)(v)(B).

The inspectors reviewed the circumstances that led to this event and did not identify any licensee performance deficiencies. Testing activities after the fuel injector pumps were replaced on the CD EDG were considered reasonable for the work scope. Also, licensee personnel had previously implemented reasonable corrective actions to address operating experience regarding fuel injector pump failures due to foreign material introduced during the fabrication process, which required the vendor to perform an 8-hour bench test of the new fuel injector pumps prior to shipping them to the licensee. However, as noted in the licensee's root cause evaluation, this time the foreign material was introduced by the vendor during bench testing.

Technical Specification 3.8.2.b, Condition B, required actions when the one required EDG was inoperable were to immediately: suspend core alterations, suspend movement of irradiated fuel assemblies, suspend operations involving positive reactivity additions, and initiate action to restore the required EDG to operable status. During the time that both EDGs were inoperable, no core alterations were in progress, irradiated fuel assemblies were not being moved, and no evolutions to add positive reactivity were in progress. Also, because this issue was identified after the AB EDG was in an operable status, compliance with the TS requirements was restored.

The inspectors noted that during the time both EDGs were inoperable, the AB EDG was available to satisfy the safety function to power residual heat removal equipment, if needed, except for a brief period. In accordance with plant procedures, the AB EDG lockout relay was tripped to conduct cylinder leak checks prior to testing. This evolution rendered the EDG unavailable for approximately 10 minutes on April 21st, when conducted in a controlled fashion. During the evolution, plant operators were stationed in the EDG room and in communication with operators in the Control Room. Consequently, if the EDG were needed, operators could suspend cylinder leak checks and reset the lockout relay to restore the EDG to an available status. Licensee personnel indicated that restoration from the cylinder leak checks could be accomplished in approximately 3 minutes by the operators if the EDG was needed.

The inspectors concluded that this violation of TS 3.8.2.b, Condition B, constitutes a violation of minor significance and is not subject to formal enforcement action in accordance with Section IV of the NRC's Enforcement Policy. The licensee entered this violation into its corrective action program as CR 06121035. This LER is closed.

4OA5 Other Activities

.1 Reactor Vessel Head Replacement (71007)

a. Inspection Scope

From September 5, 2006, through September 14, 2006, inspectors performed an on-site review of fabrication and pre-service records related to replacement of the Unit 1 reactor pressure vessel head in accordance with Section 02.03 and Step 02.05(e) of Inspection Procedure 71007 "Reactor Vessel Head Replacement Inspection." This review was performed to determine if the fabrication of the vessel head was completed in accordance with Section III of the American Society for Mechanical Engineers (ASME) Code, 1995 Edition through 1996 Addenda and to determine if pre-service nondestructive examinations (NDE) were completed in accordance with Section XI of the ASME Code 1989 Edition No Addenda. Specifically, the inspectors reviewed samples of the following records:

- Fabrication process sheets, fabrication drawings, and NDE records to determine if the manufacturing process included provisions for NDE as required by the construction Code;
- NDE records and procedures used for pre-service and fabrication examinations to determine if Code qualified examinations were completed and examination results met Code acceptance criteria;
- Weld data sheets, weld procedures, and weld procedure qualification records, to determine if Code qualified weld procedures were used in fabrication of the J-groove welds, control rod drive housing mechanism (CRDM) flange-to-adaptor sleeve welds and head cladding welds;
- Certified Material Test Reports for materials used in fabrication of the reactor vessel head including weld materials to determine if appropriate chemical, mechanical tests and heat treatment records existed to meet material and Code specifications;
- Non-conformance reports issued by the licensee's fabricator and subcontractors to determine if fabrication related deviations were appropriately tracked, evaluated and resolved; and
- Audit records of the head fabricator and subcontractors associated with welding activities and NDE to determine if these activities had been properly controlled in accordance with the contract specifications or Code requirements.

The records reviewed by the inspectors are identified in the attachment to this report.

b. Finding

No findings of significance were identified.

.2 Verification of Reactor Vessel Head Lift Commitments (71007)

a. Inspection Scope

The inspectors verified the licensee's commitments and plans for lifting the reactor vessel head from the vessel and setting it on a stand in the Containment Building to provide reasonable assurance of safety in response to NRC staff concerns identified with the licensee's reactor head drop analysis. The licensee's commitments included a limitation on lift height, flooding of the reactor cavity while lifting the head, various administrative controls, and other compensatory measures. As part of this verification, the inspectors interviewed operations and engineering staff, attended the licensee's pre-job briefing, and directly observed the reactor vessel head lift activities. Docketed correspondence between the NRC staff and the licensee regarding the reactor vessel head lift commitments is referenced in the Documents Reviewed section at the end of this report.

b. Findings

No findings of significance were identified.

.3 Mitigating Systems Performance Index Verification (TI 2515/169)

a. Inspection Scope

On June 12, 2006, the NRC issued Regulatory Issue Summary 2006-07, "Changes to the Safety system Unavailability Performance Indicators." The purpose of this Regulatory Issue Summary (RIS) was to inform licensees that beginning on April 1, 2006, the agency replaced the Safety System Unavailability (SSU) performance indicators (PI) with the Mitigating Systems Performance Index (MSPI). The RIS and Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Performance Indicator Guideline," provided guidance for calculating and submitting MSPI data to the NRC. The NRC inspection program is implemented within the framework of the Reactor Oversight Process (ROP). The performance indicators and inspection findings provide the two major inputs into the assessment of licensee performance under the ROP. The MSPI monitors the unavailability and the unreliability of the same four safety systems that comprise the SSU. It also monitors the cooling water support systems for those four safety systems. For pressurized water reactors, these systems include:

- (1) Emergency Alternating Current
- (2) High Pressure Injection
- (3) Auxiliary Feedwater
- (4) Residual Heat Removal

(5) Cooling Water Support (Emergency Service Water and Component Cooling Water)

The objective of Temporary Instruction (TI) 2515/169, "Mitigating Systems Performance Index Verification," was to validate the unavailability and unreliability input data and to verify accuracy of the first reporting results for the 2006 second quarter. During the week of August 14, 2006, the inspectors reviewed the licensee's MSPI data and supporting documentation. The results of the inspectors' review included documenting observations and conclusions in response to the questions identified in TI 2515/169.

b. Observations

Summary

The inspectors did not identify any significant discrepancies based upon validation of the unavailability and unreliability input data, and verification of accuracy of the 2006 second quarter MSPI results.

Evaluation of Inspection Requirements

In accordance with the requirements of TI 2515/169, the inspectors evaluated and answered the following questions:

1. For the sample selected, did the licensee accurately document the baseline planned unavailability hours for the MSPI systems?

Yes. The licensee accurately documented the baseline planned unavailability hours for the MSPI systems in accordance with the prescribed method outlined in NEI 99-02, Revision 4.
2. For the sample selected, did the licensee accurately document the actual unavailability hours for the MSPI systems?

Yes. The licensee accurately documented the actual unavailability hours for the MSPI systems in accordance with the prescribed method outlined in NEI 99-02, Revision 4.
3. For the sample selected, did the licensee accurately document the actual unreliability information for each MSPI monitored component?

Yes. The licensee accurately documented the actual unreliability information for each MSPI monitored component in accordance with the guidance outlined in NEI 99-02, Revision 4.
4. Did the inspectors identify significant errors in the reported data, which resulted in a change to the indicated index color? Describe the actual condition and corrective actions taken by the licensee, including the date when the revised PI information was submitted to the NRC.

No. The inspectors did not identify significant errors in the reported data that resulted in a change to the indicated index color.

5. Did the inspectors identify significant discrepancies in the basis document which resulted in: (1) a change to the system boundary, (2) an addition of a monitored component, or (3) a change in the reported index color? Describe the actual condition and corrective actions taken by the licensee, including the date of when the bases document was revised.

No. The inspectors did not identify significant discrepancies in the basis document that resulted in either: (1) a change to the system boundary, (2) an addition of a monitored component, or (3) a change in the reported index color.

c. Findings

No findings of significance were identified.

4OA6 Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. J. Jensen and other members of the licensee's staff at the conclusion of the inspection on September 27, 2006. The licensee acknowledged the findings presented. The inspectors asked the licensee whether any materials examined during the inspection should be considered proprietary. Proprietary information was examined during this inspection, but is not specifically discussed in this report.

.2 Interim Exit Meetings

Interim exits were conducted for:

- Maintenance Effectiveness Periodic Evaluation with Mr. J. Jensen and other members of licensee management on July 21, 2006.
- Reactor Vessel Head Replacement Fabrication Review (IP 71007) with Mr. D. Fadel and other members of the licensee's staff on September 14, 2006, and final phone exit meeting on September 21, 2006. The licensee confirmed that none of the potential report input discussed was considered proprietary.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

L. Bush, Site Senior License Holder
P. Carteaux, Emergency Preparedness Manager
E. Crane, RVCH Project
T. Craven, System Engineering
J. Eaton, Maintenance Rule Program Engineer
H. Etheridge, Regulatory Affairs Specialist
D. Fadel, Design Engineering Director
J. Gebbie, Plant Engineering Director
C. Graffenius, Emergency Preparedness Coordinator
D. Hafer, RVCH Project
J. Jensen, Support Services Vice President
J. Kingseed, RVCH Project
Q. Lies, Operations Manager
R. Meister, Regulatory Affairs Specialist
M. Peifer, Site Vice President
S. Simpson, Regulatory Affairs Manager
W. Wah, System Engineering
L. Weber, Plant Manager
V. Woods, Performance Assurance Manager

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000315/2006006-01 05000316/2006006-01	URI	Incomplete Maintenance Rule Evaluations for Nuclear Instrumentation Component Failures (Section 1R12.b.1)
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Closed

05000316/2006-005-00	LER	Failure to Comply with TS Surveillance Requirement 3.6.1.1 (Section 4OA3.3)
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05000316/2006-003-00	LER	Inadvertent Emergency Core Cooling System Actuation During Testing (Section 4OA3.4)
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05000316/2006-004-00	LER	Failure to Comply With TS 3.8.2, AC Sources - Shutdown, LCO 3.8.2.b (Section 4OA3.5)
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05000315/2515/169 05000316/2515/169	TI	Mitigating Systems Performance Index Verification (Section 4OA5.3)
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Discussed

05000316/2006004-06	NCV	Failure to Perform As-found Local Leak Rate Testing for a Containment Isolation Valve (Section 4OA3.3)
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05000316/2006004-07	NCV	Failure to Submit a Required Licensee Event Report (Section 4OA3.3)
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LIST OF DOCUMENTS REVIEWED

The following is a list of licensee documents reviewed during the inspection. Inclusion on this list does not imply that the NRC inspectors reviewed the documents in their entirety but rather that selected sections or portions of the documents were evaluated as part of the overall inspection effort. Inclusion of a document in this list does not imply NRC acceptance of the document or any part of it, unless this is stated in the body of the inspection report.

1R04 Equipment Alignment

1-OHP-4021-032-008AB, "Operating DG1AB Sub Systems", Lineup Sheets 1, 2, and 3, Revision 8

2-OHP-4021-056-001, "Filling and Venting Auxiliary Feedwater System," Lineup Sheets 1, 3, and 4, Revision 21

OP-2-5106A, "Flow Diagram Unit 2 Auxiliary Feedwater," Revision 54

01-OHP-4030-066-4025, "Unit 1 Appendix R and Ventilation Requirements For Unit 2," Attachment 1, "Unit 1 Train Electrical Power Source Requirements Four Unit 2 Modes 1-4," Revision 5

01-OHP-4030-066-4025, "Unit 1 Appendix R and Ventilation Requirements For Unit 2," Attachment 3, "Unit 1 Train A CCW Flowpath Requirements For Unit 2 Modes 1-4," Revision 5

01-OHP-4030-066-4025, "Unit 1 Appendix R and Ventilation Requirements For Unit 2," Attachment 4, "Unit 1 Train A ESW Flowpath Requirements For Unit 2 Modes 1-4," Revision 5

01-OHP-4030-066-4025, "Unit 1 Appendix R and Ventilation Requirements For Unit 2," Attachment 5, "Unit 1 Train A AFW Flowpath Requirements For Unit 2 Modes 1-3," Revision 5

2-OHP-4021-056-001, "Filling and Venting Auxiliary Feedwater System," Revision 21

OP-2-5105D-19, "Flow Diagram Unit 2 Steam Generating System," Revision 19

OP-2-5113-66, "Flow Diagram Unit 2 ESW," Revision 66

System Health and Status Report - Unit 2 Auxiliary Feedwater System, May 1, 2006 through June 30, 2006

Operator Work Around List, July 14, 2006

Open Work Order List, Unit 1 and Unit 2 Auxiliary Feedwater System, September 24, 2006

1R05 Fire Protection

D. C. Cook Fire Hazards Analysis, Units 1 and 2, Revision 12

D. C. Cook Fire Pre-Plan, Units 1 and 2, Revision 2

1R06 Flood Protection

D. C. Cook Updated Final Safety Analysis Report, Revision 20

SL-5369, "Flooding Evaluation for AEP DC Cook Unit #2," May 19, 2000

OP-12-5123-10, "Station Drainage Auxiliary Building," Revision 10

1R11 Licensed Operator Requalification Program

RQ-E-3104C, "Period 3104 As-Found Simulator Evaluation C," Revision 0

1R12 Maintenance Effectiveness

PMI-5035, "Maintenance Rule Program," Revision 11

PMP-5035-MRP-001, "Maintenance Rule Program Administration," Revision 4

12-EHP-5035-MRP-001, "Maintenance Rule Program Administration," Revision 13

D. C. Cook Nuclear Power Plant Periodic Assessment of Maintenance Effectiveness Report October 5, 2001 - June 30, 2004, dated October 31, 2003

D. C. Cook Nuclear Power Plant Periodic Assessment of Maintenance Effectiveness Report
 July 1, 2004 to March 31, 2006, dated June 28, 2006
 SA-2004-ESY-005-QH, "Maintenance Rule Self-Assessment Report," July 19, 2004
 Maintenance Rule Scoping Document, "Essential Service Water," Revision 7
 Maintenance Rule Scoping Document, "Control Rod Drive," June 27, 2001
 Maintenance Rule Scoping Document, "Chemical Volume Control," Revision 2
 Maintenance Rule Scoping Document, "Nuclear Instrumentation," Revision 1
 Maintenance Rule Scoping Document, "Auxiliary Feedwater," Revision 2
 Maintenance Rule Scoping Document, "Supplemental Diesel Generators," Revision 0
 Unit 1 and Unit 2 Feedwater Pump Unavailability Data, September 2006
 System Health and Status Reports - Unit 1 and 2 Auxiliary Feedwater, May 1, 2006 through
 June 30, 2006
 Maintenance Rule Evaluation Desktop Guide, Revision 1
 Maintenance Rule a(1) Action Plan, "Nuclear Instrumentation," July 1, 2001 through
 January 1, 2002
 Maintenance Rule a(1) Action Plan, "Nuclear Instrumentation," May 1, 2003 through
 March 31, 2004
 (a)(1) Action Plans - ESW, November 18, 2005
 (a)(1) Action Plans - Control Rod Drive, May 24, 2005
 (a)(1) Action Plans - Chemical Volume Control, May 27, 2005
 CR 04288058, "During the Performance of 2-OHP-5030-012-002 Aligning Rod Control Drive
 System, the Supply Breaker 2-21A1 Opened 10 Seconds after Starting," October 14, 2004
 CR 03158021, "Examination of Previously Installed 1E and 2E ESW Pump Bowls Identified
 Damage and Adhesion," June 7, 2003
 CR 04204020, "NRC Comments on Maintenance Rule Periodic Evaluation Report,"
 July 22, 2004
 CR 04204027, "NRC Comments on Maintenance Rule Periodic Evaluation Report,"
 July 22, 2004
 Reliability CR List for 12-SDG Supplemental Diesel Generator, August 29, 2006
 Maintenance Rule Reliability Failures (8/29/2004 to 8/29/2006) for SDG-Supplemental Diesel
 Generator, August 29, 2006
 Maintenance Rule (a)(1) Action Plan, "Supplemental Diesel Generators," July 7 2006
 AR 00120082 and CR 06003056, "12-OHP-4030-033-001 Supplemental Diesel Bi-Monthly
 Surveillance Test Failure," January 3, 2006
 AR 00121090 and CR 0626013, "During Surveillance Run the Supplemental Diesel Generator
 #1 Failed to Get to Speed and Voltage Prior to the Trip Time," January 26, 2006
 AR 00127505 and CR 06153072, "While Performing SDG Quarterly Surveillance Following
 Maintenance, the 12-53-T1 SDG Output Crosstie Breaker Failed to Close," June 2, 2006
 AR 00127523 and CR 06156002, "During Restoration of the Replacement of the SDG
 Synchronizing Relay, a Loss of Emergency Power Occurred," June 5, 2006
 AR 00125226 and CR 06107030, "SDG Diesel Output Breaker Failed to Close During Normal
 Bi-Monthly Surveillance," April 17, 2006
 AR 00125633 and CR 06115024, "The Supplemental Diesel Generators Are Unavailable Some
 Indications on the 'System Control Screen' Are Missing," April 25, 2006
 CR 05136099, "A Common Cause Evaluation Is Needed to Perform an Assessment of Unit 1
 and Unit 2 Nuclear Instrumentation System," May 16, 2005
 CR 04054002, "Unit 1 Intermediate Range -35 Loss of Detector Voltage," February 23, 2004
 CR 05116001, "Unit 1 Reactor Trip from 1-NRI-35, Nuclear Instrumentation Channel I
 Intermediate Range Neutron Flux Detector High Level Trip," April 26, 2005

CR 05111055, "-36, Nuclear Instrumentation Intermediate Range Detector Channel II, Has Oscillating Indication on Amperes and Startup Rate," April 21, 2005
CR 05114058, "-36 Appears to Have Failed Low," April 24, 2005
CR 04154072, "Trending of Intermediate Range Nuclear Instruments Identified that the Plant Process Computer Indication for 2-NRI-35 Has Increased Significantly," June 2, 2004
CR 04327040, "-35 Intermediate Range Flux Level High Trip Did Not Clear When Nuclear Instrument Power Was 13 Percent," November 22, 2004
CR 05022010, "The High Level Rod Stop Did Not Clear on 2-NRI-35, Channel I Intermediate Range Nuclear Instrument," January 21, 2005
CR 03026005, "During Reactor Trip Response, -36 Spiked Low," January 26, 2003
CR 03198011, "1-NRI-41 Slowly Ramped Up in Power Upon Restoration from a Channel Calibration," July 17, 2003
CR 02147002, "During Time Response Testing the Negative Rate Trip for -42 Exceeded Its Target Value by 0.06 Seconds," May 27, 2002
CR 02044016, "Power Range Rate Circuit Card for 1-NRI-43 Drawer Is Giving an Unusual Trace for the Time Delay," February 13, 2002
CR 05131024, "Step Change in -44 Lower Detector Signal," May 11, 2005
CR 05325004, "Step Change in -44 Lower Detector Signal," November 21, 2005
CR 06048003, "Excessive Ripple Voltage Found on High Voltage Power Supply," February 17, 2006
CR 05030022, "Power Range Channel -43 Spiked High to About 102.5 Percent and Caused Rods (Control Bank D) to Insert Rods 1.5 Steps," January 30, 2005
AR 00801093, "Unit 1 West Motor Driven Auxiliary Feedwater Pump Breaker Charging Motor Failed," September 25, 2006
AR 00801831, "Unit 2 MS-108 Valves Have Steam Leak," September 25, 2006
CR 05274007, "Unit 1 MS-108 Valves Have Steam Leak," October 1, 2005
CR 05114021, "Unit 1 Turbine Driven Auxiliary Feedwater Pump Failed Time Flow Test," May 5, 2005

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," September 3 through 9, 2006
PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," September 17 through 23, 2006
PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," September 24 through 30, 2006
Control Room Logs, September 6 - 7, September 18 - 22, September 29 - 30
Daily Work Schedules, September 6 - 7, September 18 - 22, September 29 - 30
PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 59, Week 3, July 16 through 22, 2006
PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 59, Week 4, July 23 through 29, 2006
PMP-2291-OLR-001, "On-Line Risk Management," Data Sheet 1, "Work Schedule Review and Approval Form," Cycle 59, Week 6, August 6 through 12, 2006
CR 06350963, "2CD EDG Rolled On Air While Picking Up Clearance," August 9, 2006

1R15 Operability Evaluations

D. C. Cook Units 1 and 2 TSs and Bases
D. C. Cook Updated Final Safety Analysis Report, Revision 20
CR 06145114, "The Lower Containment Average Air Temperature May Not Be Representative of the Entire Lower Volume," May 25, 2006
CR 00801388, "Containment Purge TS," August 9, 2006
CR 00800196, "ERS-1300 Not Showing Expected Activity Post Filter Change," July 3, 2006
Calculation MD-12-HV-048-N, "Lower Containment Temperature Evaluation for Past Operability Determination," Revision 0
10 CFR 50.59 Screening Tracking Number 2006-0290-00, "Revise Unit 1 and Unit 2 TS Bases 3.6.5, "Containment Temperature," Page B3.6.5-3, to Change the Method of Determining Lower Containment Air Temperature," Revision 0
10 CFR 50.59 Screening Tracking Number 2006-0305-00, "Revise Unit 1 and Unit 2 OHP-4021-028-005, "Operation of the Containment Purge System," Revision 0
Control Room Logs, July 26 through July 30, 2006
2-OHP-4021-028-005, "Operation of the Containment Purge System," Revision 22

1R19 Post Maintenance Testing

PMP-2291-PMT-001, "Work Management Post Maintenance Testing Matrices," Revision 6
Work Order Package 55231506 05, "1-OME-150-AB Contingency Job Order, Replace Voltage Regulator," September 18, 2006
1-OHP-4021-032-001AB, "DG1AB Operation," Revision 13
1-OHP-4021-032-001AB, "DG1AB Operation," Data Sheet 1, "DG1AB Operation Data - Control Room," and Data Sheet 2, "DG1AB Operating Data - Local," September 19, 2006

1R20 Refueling and Outage Activities

D. C. Cook Updated Final Safety Analysis Report, Revision 20
D. C. Cook Unit 1 TSs
Unit 1 Control Room Logs, July 28 through August 3, 2006
Unit 1 Control Room Logs, September 16 through September 30, 2006
PMP-4100-SDR-001, "Plant Shutdown Safety and Risk Management," Revision 13
1-OHP-4021-002-005, "RCS Draining," Revision 33

1R22 Surveillance Testing

2-OHP-4030-208-051S, "South Safety Injection Pump System Test," Revision 3
1-EHP-4030-134-203, "Unit 1 LLRT," Revision 4

1R23 Temporary Modifications

12-TM-06-32-R1, "Installation of Supplemental Containment Cooling for Units 1 and 2," Revisions 0 and 1
D. C. Cook Updated Final Safety Analysis Report, Revision 20

1EP6 Drill Evaluation

Emergency Plan Drill - June 6, 2006 Exercise Objectives
Emergency Plan Drill - August 22, 2006 Exercise Objectives
Emergency Plan Time Line - August 22, 2006
Emergency Plan Time Line - June 6, 2006
RMT-2080-OSC-001, "Activation and Operation of the OSC," Revision 5
PMP-2080-EPP-101, "Emergency Classification," Revision 7

AR 00801830, "Missed Notification During 8/22/2006 Emergency Response Organization Drill"
August 23, 2006

4OA1 Performance Indicator (PI) Verification

Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline,"
Revision 4

OHI-4032, "Leakage Monitoring Program," Revision 4
Control Room Logs, July 1, 2004 through June 30, 2006

4OA2 Problem Identification and Resolution

CR 06117010, "Unit 2 Inadvertent Safety Injection," June 23, 2006

2-MOD-60009, "Unit 2 RPS Bypass Channel Installation," March 30, 2006

AR 06270044, "NRC Commitments Not Met by Commitment Due Date," September 27, 2006

CR 06112038, "2CD EDG Fuel Injection Pump Seizures, April 2006," April 22, 2006

CR 06108075, "5 Front Bank Cylinder on Unit 2 CD Diesel has Indications of Not Firing,"
April 18, 2006

CR 06109050, "2-OME-150CD 5F Cylinder Fuel Injector is Not Working," April 19, 2006

4OA3 Event Response

Unit 1 Control Room Logs, July 29 through July 30, 2006

Unit 2 Control Room Logs, July 29 through August 12, 2006

LER 05000316/2006-006-00, "Failure to Comply with TS Surveillance Requirement 3.6.1.1,"
August 2, 2006

LER 05000316/2006-003-00, "Inadvertent Emergency Core Cooling System Actuation During
Testing," June 23, 2006

LER 05000316/2006-004-00, "Failure to Comply With TS 3.8.2, AC Sources - Shutdown,
LCO 3.8.2.b," June 29, 2006

CR 06121035, "2CD EDG Declared Operable on April 21 with Subsequent Failure on April 22,"
May 1, 2006

Purchase Order 190-0000042524, Revision 3, November 23, 2005

CR 05091019, "During Performance of Procedure 1-MOD-35181-TP-1-AB, Emergency Diesel
Generator 1 AB Governor Replacement Modification Test, the Diesel Was Shutdown Due to
Noise Coming from 2R Cylinder," April 1, 2005

4OA5 Other

4OA5.1 Reactor Vessel Head Replacement

Audit and Surveillance Records

AEP Trip Report, January 17 - 22, 2005

AEP Trip Report, June 6 - 9, 2005

AEP Trip Report, September 24 - 30, 2005

AEP Trip Report, February 27, 2006 through March 3, 2006

AEP Trip Report, May 9 - 13, 2006

AREVA Yearly Surveillance Plan 2004 (The Japan Steel Works) LTD, Heat Treatment, July 30,
2004

AREVA Quality Assurance Report No. 04 RI 039, Japan Steel Works audit of UT and
MT records, July 1, 2004

AREVA Audit Checklist, NDE and Welder Qualifications/Certifications, June 9, 2004

Exelon/NUPIC Report Number 19511 for Exelon Audit SR-2006-29, Test and Inspection, Welding Personnel Qualification, and Commercial Grade Dedication, June 15, 2006
Global Quality Assurance Report, December 5 - 8, 2005
Global Quality Assurance Report, January 1 - 16, 2005
Global Quality Assurance Report, January 18, 2005
Global Quality Assurance Report, January 16-27, 2006
Global Quality Assurance Report, February 26, 2006 through March 11, 2006
Global Quality Assurance Report, April 12-26, 2006
Global Quality Assurance Report, June 6, 2006
Global Quality Assurance Report, June 15, 2006

Certified Material Test Reports

Special Metals, Inconel Welding Electrode, Lot WC51G0, June 7, 2004
Special Metals, Inconel Welding Electrode, Lot WC96F4, June 7, 2004
Special Metals, Inconel Welding Electrode, Lot WC96F5, February 13, 2003
Special Metals, Inconel Welding Electrode, Heat NX3900JK, February 13, 2003
Special Metals, Inconel Filler Metal, Heat NX3900JK, February 18, 2004
Bohler, Heat 087/2005 SA 182M Latch Housings, May 4, 2005
Bohler, Heat 088/2005 SA 182M Latch Housings, June 6, 2005
Bohler, Heat 089/2005 SA 182M Latch Housings, June 6, 2005
Bohler, Heat 090/2005 SA 182M Latch Housings, May 20, 2005
Bohler, Heat 091/2005 SA 182M Latch Housings, June 6, 2005
Bohler, Heat 092/2005 SA 182M Latch Housings, June 8, 2005
Bohler, Heat 093/2005 SA 182M Latch Housings, June 8, 2005
Bohler, Heat 096/2005 SA 182M Latch Housings, June 8, 2005
Bohler, Heat 148/2005 SA 182M Latch Housings, June 8, 2005
Bohler, Heat 149/2005 SA 182M Latch Housings, March 3, 2005
Valinox, Heat VN 03010 SB-167 Lots 01A and 01B, February 13, 2004
Japan Steel Works, Heat JQA-04-005, Forged Closure Head, March 25, 2004

Condition Reports Written As a Result of NRC Inspection

CR 06257015, NRC Information Request Item Not Provided, September 14, 2006
CR 06257025, Replacement CRDM Housing Weld RT Exams, September 14, 2006
CR 06257026, Ultrasonic Exam of CRDM Peripheral Dissimilar Metal Welds, September 14, 2006

Drawings

5030472E, Specification Drawing DC Cook Unit 1 Replacement RVCH
BUHPDK/NCC0001, Closure Head Forging Procurement, Revision A
BUHPDK/NCC0190, Fitting Up and Welding of CRDM and Vent Pipes Assembly, Revision D
BUHPDK/NCC0200, Fitting Up and Welding of CRDM and Vent Pipe Details, Revision D
BUHPDK/NCC0502, Machining for Nondestructive Examinations, Revision B
BUHPDK/NCC0503, Internal Diameter Machining and Honing, Revision E
BUHPDK/NCC0504, External Final Machining Nozzle and Cone of Flange, Revision D
BUHPDK/NCC5000, Weld Map Drawing, Revision D

Fabrication Nondestructive Examination Reports and Procedures

Liquid Penetrant Examination Report CC/DK11 9004 0070, PT of CRDM Excavations, September 17, 2005

Liquid Penetrant Examination Report CC/DK11 9004 0070, PT of CRDM Excavations, October 14, 2005

Liquid Penetrant Examination Report CC/DK11 9004 0070, PT of CRDM Excavations, October 15, 2005

Liquid Penetrant Examination Report CC/DK11 9004 0070, PT of CRDM Excavations, October 18, 2005

Liquid Penetrant Examination Report CC/DK11 9004 0070, PT of CRDM Excavations, October 27, 2005

Liquid Penetrant Examination Report CC/DK11 3200 0070, PT of CRDM Sleeve Chamfers, September 22, 2005

Liquid Penetrant Examination Report CC/DK11 3330 0050, PT of CRDM Machining, January 19, 2006

Liquid Penetrant Examination Report CC/DK11 3330 0060, PT of CRDM Inside/Outside Surface, January 19, 2006

Liquid Penetrant Examination Report CC/DK11 3230 0070, PT of CRDM Machining, January 25, 2006

Liquid Penetrant Examination Report CC/DK11 3090 0080, PT of Lifting Lugs, September 28, 2005

Liquid Penetrant Examination Report CC/DK11 9003 0040, PT of Excavations, May 28, 2005

Liquid Penetrant Examination Report CC/DK11 9003 0240, PT of Repaired Area, May 28, 2005

Liquid Penetrant Examination Report CC/DK11 3007 0150, PT Before Cladding, May 25, 2005

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Liquid Penetrant Examination Report CC/DK11 3495 0070, Nozzle Boring and Groove Buttering, January 16, 2006

Liquid Penetrant Examination Report CC/DK11 3514 0210, J-groove Weld Root Pass, February 1, 2006

Liquid Penetrant Examination Report CC/DK11 3512 0210, J-groove Weld Root Pass, February 2, 2006

Liquid Penetrant Examination Report CC/DK11 3510 0250, J-groove Weld 1st Stage 1/4 Inch, February 8, 2006

Liquid Penetrant Examination Report CC/DK11 3514 0250, J-groove Weld 1st Stage 1/4 Inch, February 9, 2006

Liquid Penetrant Examination Report CC/DK11 3512 0250, J-groove Weld 1st Stage 1/4 Inch, February 9, 2006

Liquid Penetrant Examination Report CC/DK11 3510 0290, J-groove Weld 2nd Stage 1/4 Inch, February 13, 2006

Liquid Penetrant Examination Report CC/DK11 3512 0290, J-groove Weld 2nd Stage 1/4 Inch, February 13, 2006

Liquid Penetrant Examination Report CC/DK11 3514 0290, J-groove Weld 2nd Stage 1/4 Inch, April 18, 2006

Liquid Penetrant Examination Report CC/DK11 3510 0330, J-groove Weld 3rd Stage 1/4 Inch, February 20, 2006

Liquid Penetrant Examination Report CC/DK11 3512 0330, J-groove Weld 3rd Stage 1/4 Inch, February 25, 2006

Liquid Penetrant Examination Report CC/DK11 3514 0330, J-groove Weld 3rd Stage 1/4 Inch, February 25, 2006
Liquid Penetrant Examination Report CC/DK11 3512 0550, J-groove Weld PT White, March 21, 2006
Liquid Penetrant Examination Report CC/DK11 3514 0550, J-groove Weld PT White, March 31, 2006
Liquid Penetrant Examination Report CC/DK11 3020 0950, Cladding, May 25, 2005
Liquid Penetrant Examination Report CC/DK11 2000 0450, Cladding, November 29, 2005
Liquid Penetrant Examination Report CC/DK11 2000 0650, Cladding, December 5, 2005
Liquid Penetrant Examination Report CC/DK11 3510 0858, Cladding, March 21, 2006
Liquid Penetrant Examination Report CC/DK11 3512 1500, Cladding, March 31, 2006
Liquid Penetrant Examination Report CC/DK11 9001 0270, PT of Clad Repair; May 26, 2005
Liquid Penetrant Examination Report CC/DK11 3720 1600, CRDM and VP Welds After Heat Treatment, May 9, 2006
Magnetic Particle Examination Report CC/DK11 3720 1200, Base Metal After Hydrostatic Test, May 23, 2006
Ultrasonic Examination Report CC/DK11 2000 510, Cladding After Grinding, November 29, 2005
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CORSDK/NCC0102, Radiographic Examination of The Flange to Sleeve Weld of CRDM D.C. Cook RRVCH Unit 1 and 2, Revision C
COVSDK/NCC0203, Ultrasonic Testing of Stainless Cladding, Revision A

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AREVA TTZSDK/NCC 001, Postweld Heat Treatment of Replacement Closure Head D. C. Cook Unit 1, Revision A
AREVA Heat Treatment Report, November 3, 2005

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AREVA NCR No. 2005-0604, Aligned Rounded Indications CRDMC No. 8, 46, 51, 53, 87 and 40, October 11, 2005
AREVA NCR No. 2005-0606, J-groove Weld Buttering Indications Nozzle No. 42, 47 and 55, September 14, 2005
AREVA NCR No. 2005-0612, Tool Marks on Lifting Lugs, December 22, 2005
AREVA NCR No. 2006-0601, Location of Stud Holes 12, 28 and 44 Not in Accordance with Drawing, April 4, 2006
AREVA NCR No. 2006-0602, Indication at Nozzle No. 9, 47, 51 and 52, January 16, 2006
AREVA NCR No. 2006-0607, Scratch on Nozzle Boring ID Surface, May 26, 2006
AREVA NCR No. 2006-0606, Marks on CRDM 12, 53, 73 and 68, November 5, 2006
AREVA NCR No. 2006-2765, J-groove Weld Undercut at Nozzles No. 75 and 77, June 29, 2006

NRC Order 03-009 Baseline Examinations and Procedures

RPV Head Penetration (J-groove weld) UT Data Sheets (Blade Probe), May 10 - 29, 2006
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RPV Head Penetration (J-groove weld) UT Indication Sheets (Rotating Probe), May 17 - 29, 2006
AREVA Procedure 54-ISI-100-14, Remote Ultrasonic Examination of Reactor Head Penetrations, December 6, 2004

Other Baseline Examination Records and Procedures (AREVA)

Penetration RPV Head UT Data Sheets (CRDM Housing Welds), May 10-26, 2006
Procedure 54-ISI-111-04, Ultrasonic Examination of Control Rod Drive Mechanism Housing Welds, July 13, 2005

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Liquid Penetrant Examination Report, TC Nozzles No's 74, 75, 76, 77 and 79, May 10, 2006
Liquid Penetrant Examination Report, CRDM Nozzles No's 70, 71, 72, and 73, May 10, 2006
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EDS-01, UT Examination Data Sheet Nozzles No's 74, 75, 76, 77 and 79, May 19, 2006
Procedure 54-ISI-240-43, Visible Solvent Removable Liquid Penetrant Examination Procedure, February 1, 2006
Procedure 54-ISI-829-06, Manual Ultrasonic Examination of Dissimilar Metal Piping Welds, August 16, 2005

Radiographic Film Records

CRDMC 01, July 11, 2005
CRDMC 06, July 12, 2005
CRDMC 07, July 12, 2005
CRDMC 08, July 8, 2005
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CRDMC 09, July 12, 2005
CRDMC 25, July 15, 2005
CRDMC 38, July 13, 2005
CRDMC 40, August 2, 2005
CRDMC 46, July 25, 2005
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CRDMC 75, November 11, 2005
CRDMC 81, November 14, 2005

Weld Procedures and Qualification Documents (AREVA)

WPS SOFSDK/NCC0010, Welding of Stainless Steel to Nickel Base Alloy (P43) by Gas Tungsten Arc Welding Process, Revision B
WPS SOFSDK/NCC0011, Welding by Shielded Metal Arc Welding (SMAW) of Nickel Alloy (P-43) to Low Alloy Steel (P3G3) Buttered with Nickel Alloy, Revision A
WPS SOFSDK/NCC0004, Austenitic Stainless Steel Corrosion Resistant Weld Metal Overlay by Submerged Arc Welding with Strip, Revision A
WPS SOFSDK/NCC0005, Austenitic Stainless Steel Corrosion Resistant Weld Metal Overlay by Shielded Metal Arc Welding, Revision A
WPS SOFSDK/NCC0008, Austenitic Stainless Steel Corrosion Resistant Weld Metal Overlay by Submerged Arc Welding on Shielded Metal Arc Welding (SMAW), Revision A
WPS SOFSDK/NCC0013, Repair by Shielded Metal Arc Welding of Nickel Alloy, Revision A
PQR Welding of Stainless Steel to Nickel Base Alloy (P43) by Gas Tungsten Arc Welding Process, Revision H
PQRs Welding by SMAW of Nickel Alloy (P-43) to Low Alloy Steel (P3G3) Buttered with Nickel Alloy, Revision A
PQRs Austenitic Stainless Steel Corrosion Resistant Weld Metal Overlay by Submerged Arc Welding with Strip, Revision C
PQRs Austenitic Stainless Steel Corrosion Resistant Weld Metal Overlay by SMAW, Revision B
PQR Austenitic Stainless Steel Corrosion Resistant Weld Metal Overlay by Submerged Arc Welding on SMAW, Revision B
PQR Repair by SMAW of Nickel Alloy, Revision B

Weld Data Records (AREVA)

SAW SS Cladding of Mating Surface (309L), January 5, 2005
SMAW Cladding (308L), January 26-27, 2005
SAW SS Cladding of the Closure Head (308L), March 5, 2005
SAW SS Cladding of the Closure Head (309L), March 5, 2005
Buttering of CRDM Grooves, June 21 - 28, 2005
Buttering of CRDM Grooves, June 30, 2005 - July 7, 2005
Buttering of CRDM Grooves, June 10 - 20, 2005
Buttering of CRDM Grooves, June 1 - 9, 2005
SMAW of Root Pass of CRDM Nozzles No's 1-45, January 31, 2006 - February 1, 2006.
SMAW of Sequence 3 CRDM Nozzles No's 1-45, February 10, 2006

4OA5.2 Reactor Vessel Head Lift

Letter from J. Jensen, Indiana Michigan Power Company, to U. S. Nuclear Regulatory Commission, AEP:NRC:6514, Subject: Donald C. Cook Nuclear Plant Units 1 and 2, Justification for Reactor Vessel Head Lift with Fuel in the Core, September 22, 2006
Letter from J. Caldwell, U. S. Nuclear Regulatory Commission, Region III, to M. Nazar, Indiana Michigan Power Company, Subject: Commitments and Plans Related to Reactor Pressure Vessel (RPV) Head Lifts at D. C. Cook Nuclear Power Plant, September 22, 2006

Letter from C. Pederson, U. S. Nuclear Regulatory Commission, Region III, to M. Nazar, Indiana Michigan Power Company, Subject: Commitments and Plans Related to Reactor Pressure Vessel (RPV) Head Lifts at D. C. Cook Nuclear Power Plant, September 29, 2006

LIST OF ACRONYMS USED

ADAMS	Agency-wide Documents and Management System
AFW	Auxiliary Feedwater
ASME	American Society of Mechanical Engineers
CFR	Code of Federal Regulations
CR	Condition Report
CRDM	Control Rod Drive Housing Mechanism
°F	Degrees Fahrenheit
U1C21	D. C. Cook Unit 1 Cycle 21 Refueling Outage
EDG	Emergency Diesel Generator
ESW	Essential Service Water
IST	Inservice Testing
LCO	Limiting Condition for Operation
LER	Licensee Event Report
LLRT	Local Leak Rate Test
MRE	Maintenance Rule Evaluations
MSPI	Mitigating Systems Performance Index
NCR	Non-Conformance Report
NCV	Non-Cited Violation
NDE	Nondestructive Examinations
NEI	Nuclear Energy Institute
NRC	Nuclear Regulatory Commission
PARS	Publicly Available Records
PI	Performance Indicator
RCS	Reactor Coolant System
RIS	Regulatory Issue Summary
ROP	Reactor Oversight Process
RPV	Reactor Pressure Vessel
SMAW	Shielded Metal Arc Welding
SSC	Structures, Systems, and Components
SSU	Safety System Unavailability
SR	Surveillance Requirement
TI	Temporary Instruction
TS	Technical Specification
UFSAR	Updated Final Safety Analysis Report
URI	Unresolved Item