

November 7, 2007

Mr. Michael W. Rencheck
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 05000315/2007005; 05000316/2007005

Dear Mr. Rencheck:

On September 30, 2007, 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 October 17, 2007, 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, one Severity Level IV Violation of NRC requirements was identified. Because of the very low safety significance and because the issue was entered into your corrective action program, the NRC is treating the violation as a Non-Cited Violation in accordance with Section VI.A.1 of the NRC's Enforcement Policy. If you contest the subject or severity of a Non-Cited Violation, you should provide a response within 30 days of the date of this inspection report, with the basis for your denial, to the U.S. Nuclear Regulatory Commission, ATTN: Document Control Desk, Washington, DC 20555-0001, with a copy to the Regional Administrator, U.S. Nuclear Regulatory Commission - Region III, 2443 Warrenville Road, Suite 210, Lisle, IL 60532-4352; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the Resident Inspector's Office at the D. C. Cook Nuclear Power Plant.

M. Rencheck

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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

cc w/encl: J. Jensen, Site Vice President
L. Weber, Plant 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

M. Rencheck

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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. 05000315/2007005; 05000316/2007005

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, 2007

Inspectors: B. Kemker, Senior Resident Inspector
J. Lennartz, Resident Inspector
J. Bozga, Reactor Engineer
A. Garmoe, Reactor Engineer
M. Holmberg, Senior Reactor Engineer
J. Neurauter, Reactor Engineer
M. Phalen, Health Physicist
A. Wilson, Reactor Engineer
G. O'Dwyer, Reactor Engineer

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

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2007-005, IR 05000316/2007-005; 07/01/2007-09/30/2007; D. C. Cook Nuclear Power Plant, Units 1 and 2; Event Response.

The report covered a 13-week period of inspection by the resident inspectors and announced inspection by regional inspectors. One Severity Level IV Non-Cited Violation (NCV) was identified. The significance of most findings is indicated by their color (Green, White, Yellow, Red) using Inspection Manual Chapter (IMC) 0609, "Significance Determination Process," (SDP). Findings for which the SDP does not apply may be "Green" or be assigned a severity level after NRC management review. The NRC's program for overseeing the safe operation of commercial nuclear power reactors is described in NUREG-1649, "Reactor Oversight Process," Revision 4, dated December 2006.

A. NRC-Identified and Self-Revealed Findings

Cornerstone: Mitigating Systems

- Severity Level IV. The inspectors identified a Non-Cited Violation of Technical Specification 3.5.2. Both Unit 2 residual heat removal discharge header safety valves failed pressure lift testing during the Unit 2 Cycle 16 refueling outage. A common cause (i.e., bonding of the disc and seating surfaces caused by the formation of an oxide film on the disc and seat) was identified for the two failed pressure lift tests. The two failed pressure lift tests resulted in two inoperable emergency core cooling system trains for greater than the Technical Specification allowed outage time. No performance deficiency was associated with this event because appropriate maintenance and testing had been performed in accordance with the regulatory requirements. Therefore, cross-cutting aspects were not assessed. Both valves were replaced during the refueling outage.

The violation was reviewed under the traditional enforcement process; however, the underlying technical issue was evaluated using the Significance Determination Process. The violation was of more than minor significance because it was related to the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the passive safety function of the piping system would not have been protected from an over-pressure condition. The violation was of very low safety significance because it was not a design or qualification deficiency, did not result in an actual loss of system safety function, and was not risk-significant due to external event initiators. (Section 4OA3.3)

REPORT DETAILS

Summary of Plant Status

Unit 1 was operated at or near full power during the inspection period with one exception. On August 28, 2007, Unit 1 experienced an automatic reactor trip due to the loss of a main feedwater pump. Following necessary maintenance activities, the licensee completed a reactor startup and synchronized the unit to the grid on August 29th.

Unit 2 was operated at or near full power until September 4, 2007, when the licensee began a gradual power reduction (i.e., a coast down) from 100 percent to 80 percent. On September 13th, the licensee reduced power to 70 percent to perform steam generator safety valve testing. On September 14th, the licensee reduced power to 60 percent due to an inoperable main steam safety valve. The licensee conducted a reactor shutdown for the Cycle 17 refueling outage (U1C17) on September 15th. The unit was de-fueled at the end of the inspection period.

1. REACTOR SAFETY

Cornerstones: Initiating Events, Mitigating Systems, and Barrier Integrity

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

The inspectors completed two partial equipment alignment inspection samples by performing walkdowns of the following risk significant systems:

- Unit 1 East and West Auxiliary Feedwater Trains during maintenance on the Turbine Driven Auxiliary Feedwater Pump
- Unit 1 East Residual Heat Removal Train during maintenance on the West Residual Heat Removal Pump

The inspectors selected these systems based on their risk significance relative to the reactor safety cornerstones. The inspectors reviewed operating procedures, system diagrams, Technical Specification (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 action requests 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 completed one full system equipment alignment inspection sample by performing a walkdown of the following risk significant system:

- Unit 2 Safety Injection 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 to ensure the correct system configuration. 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:

- Fire Zone 9, Unit 1 Quadrant 3N Cable Tunnel EI 596'
- Fire Zone 23, Unit 2 Quadrant 3N Cable Tunnel EI 596'
- Fire Zone 75, Unit 2 Containment Lower Volume
- Fire Zone 76, Unit 2 Containment Upper Volume
- Fire Zone 6A, Auxiliary Building Pipe Tunnel - EI. 601'
- Fire Zones 13 and 21, Unit 1 and Unit 2 Diesel Oil Pump Rooms

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 action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R07 Heat Sink Performance (71111.07B)

.1 Biennial Review of Heat Sink Performance

a. Inspection Scope

The inspectors reviewed the performance of the Unit 1 West Motor Driven Auxiliary Feedwater Pump Room Refrigeration Unit/Air Cooler (1-HV-AFP-WAC) and Unit 2 South Control Room Chiller Condenser (2-HE-64S) which satisfied the requirement for two samples. These heat exchangers were chosen for review based on many factors, e.g., the high risk achievement worth in the licensee's probabilistic risk analysis, the important safety-related mitigating system support functions and relatively low margin. This review resulted in the completion of two inspection samples. While on-site, the inspectors verified that the inspection, engineering, and maintenance activities were adequate to ensure proper heat transfer. This was done by conducting independent heat transfer capability calculations; reviewing the methods used to inspect the heat exchangers; verifying that the as-found inspection or test results were appropriately dispositioned; and interviewing personnel. The inspectors also verified, by review of procedures, inspection results, and interviews that chemical treatments, ultrasonic tests and methods used to control biotic fouling, corrosion, and macro-fouling were sufficient to ensure required heat exchanger performance. The inspectors verified that the condition and operation of these heat exchangers were consistent with design assumptions in heat transfer calculations by reviewing related procedures and surveillances. This was performed by reviewing inspect/clean work orders, calculations, and completed surveillance tests. During the inspection, the inspectors walked down the accessible portions of the selected heat exchangers, and verified the installed configurations complied with design documents and material condition was adequate.

Also, while on-site, the inspectors verified two attributes of the ultimate heat sink (UHS) as required by Inspection Procedure 71111.07B, Section 2.02, Items d.5 and d.6. The inspectors verified that the licensee had appropriate controls in place to ensure functionality of the UHS during adverse weather conditions, (e.g., icing or high temperatures and to control biotic fouling). The inspectors walked down portions of the greenhouse focusing on the accessible portions of the traveling water screens and forebay level sensing radar probes, and verified installation configurations complied with design documents and material condition was adequate.

The inspectors reviewed corrective action documents concerning heat exchanger or heat sink performance issues to verify that the licensee had an appropriate threshold for identifying issues. The inspectors also evaluated the effectiveness of the corrective actions for identified issues, including engineering justifications for operability.

The documents that were reviewed are included at the end of the report.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Regualification Program (71111.11)

.1 Resident Inspector Quarterly Review

a. Inspection Scope

The inspectors completed one quarterly inspection sample of licensed operator regualification training by observing a crew of licensed operators during simulator training on September 4, 2007. The inspectors assessed the operators' response to the simulated events, which included a component cooling water leak into the seal water heat exchanger, failure of a motor driven auxiliary feedwater pump to start and a steam generator tube rupture concurrent with a failure of the steam generator stop valves to close. The inspectors focused on alarm response, command and control of crew activities, communication practices, procedural adherence, and implementation of Emergency Plan requirements. The inspectors also observed the post-training critique to assess the licensee evaluators' and the operating crew's ability to self-identify performance deficiencies.

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 (SSC):

- Unit 1 and 2 Emergency Diesel Generators
- Unit 1 and 2 Non-essential Service Water System Containment Isolation Valves
- Unit 1 and 2 Ventilation Stack Radiation Monitors

The inspectors assessed performance issues with respect to the reliability, availability, and condition monitoring of the SSC. 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 SSC 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 SSC functions classified (a)(2) and/or appropriateness and adequacy of goals and corrective actions for SSC 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 action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

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

- planned maintenance on Unit 1 AB Emergency Diesel Generator,
- emergent maintenance on Unit 1 CD Emergency Diesel Generator and planned maintenance on 345 Kilovolt Breaker "K",
- planned maintenance on Unit 1 Turbine Driven Auxiliary Feedwater Pump,
- planned maintenance to replace the Unit 2 West Essential Service Water Pump,
- planned maintenance on Unit 2 West Essential Service Water Pump and Unit 2 West Residual Heat Removal System, and
- emergent maintenance on Unit 2 CD Emergency Diesel Generator Room Ventilation System and planned maintenance on 345 Kilovolt Breaker "N1".

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, reviewed Control Room logs, 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 action requests 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 action requests (AR):

- AR 07073001, "Found Fuel Oil Leak on Unit 1 AB Emergency Diesel Generator"
- AR 07068031, "Potential Modeling Inaccuracies Identified in Load Flow Calculation"
- AR 00818889, "Leak Discovered on 3 Front of Unit 2 AB Emergency Diesel Generator"

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, appropriately returned the affected equipment to an operable status, and reviewed the licensee's evaluation of the issues with respect to the regulatory reporting requirements.

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. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

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

- Unit 1 East Auxiliary Feedwater Pump
- Unit 1 East Residual Heat Removal System
- Unit 1 AB Emergency Diesel Generator
- Unit 1 CD Emergency Diesel Generator
- Unit 1 Turbine Driven Auxiliary Feedwater Pump

- Unit 1 South Safety Injection Pump
- Unit 1 West Essential Service Water Pump
- Unit 2 Source Range Nuclear Instrument Detector N-31

The inspectors reviewed the scope of the work performed and evaluated the adequacy of the specified post maintenance testing. The inspectors verified that 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.

In addition, the inspectors verified that problems related to the conduct of post maintenance testing of safety-related plant equipment were entered into the licensee's corrective action program with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

1R20 Refueling and Outage Activities (71111.20)

.1 Unit 1 Forced Outage

a. Inspection Scope

The inspectors completed one inspection sample regarding forced outage activities.

On August 28, 2007, Unit 1 experienced an automatic reactor trip due to low steam generator water level coincident with low feedwater flow on the #11 steam generator (coincident with steam flow/feedwater flow mismatch). The cause was a loss of the east main feedwater pump due to a malfunction of the non-safety related digital controls system. Consequently, the main feedwater pump digital controls system cabinet temperature increased due to a loss of cooling. The power supplies for the main feedwater pump controller (two auctioneered power supplies) overheated. Plant operators maintained the unit in Mode 3 during the forced outage. The unit was restarted on August 29th.

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 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 15, 2007, the licensee started the Cycle 17 refueling outage on Unit 2. 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 seven inspection samples regarding surveillance testing by reviewing the activities listed below. This included five In-service Testing (IST), one ice condenser, and one local leak rate testing (LLRT) samples.

- 12-MHP-4030-010-001, "Ice Condenser Basket Weighing Surveillance," (Ice Condenser)
- 2-EHP-4030-234-203, "Unit 2 LLRT," (LLRT)
- 12-EHP-4030-051-256, "MSSV [Main Steam Safety Valve] Setpoint Verification with Lift Assist Device," (IST)
- 2-OHP-4030-219-022W, "West Essential Service Water System Test," Attachment 1, "West ESW Group A and Comprehensive Pump Test," (IST)
- 1-OHP-4030-117-050W, "West Residual Heat Removal Train Operability Test Modes 1-4" (IST)
- 2-OHP-4030-256-017E, "East Motor Driven Auxiliary Feedwater System Test," (IST)
- 1-OHP-4030-114-011, "Containment and ISI [In-service Inspection] Valve Operability Test," Attachment 8, "NEW Valves Test" (IST)

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 entered into the licensee's corrective action program with the appropriate characterization and significance. Selected action requests were reviewed to verify that corrective actions were appropriate and implemented as scheduled.

b. Findings

No findings of significance were identified.

Cornerstone: Emergency Preparedness

1EP6 Drill Evaluation (71114.06)

a. Inspection Scope

The inspectors completed one inspection sample regarding emergency preparedness drill evaluations by observing a simulator training evolution for licensed operators on September 4, 2007, which required emergency plan implementation. Licensee emergency preparedness personnel had pre-designated that the opportunities for the Shift Manager to classify the event and make required notifications would be evaluated and included in performance indicator data regarding drill and exercise performance.

The inspectors verified that the Shift Manager classified the emergency condition and completed the required notifications to state and local police authorities in an accurate and timely manner as required by the Emergency Plan implementing procedures. The inspectors also observed the post-training critique to verify that licensee evaluators appropriately identified performance deficiencies.

b. Findings

No findings of significance identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety

2OS1 Access Control to Radiologically Significant Areas (71121.01 and 71007)

.1 Plant Walkdowns/Boundary Verifications and Radiation Work Permit Reviews

a. Inspection Scope

The inspectors identified the following radiologically significant work areas within high and locked high radiation areas of the plant and other potentially exposure significant work activities and selectively reviewed radiation work permit (RWP) packages and radiation surveys for these areas. The inspectors evaluated the radiological controls to determine if these controls including postings and access control barriers were adequate:

- Reactor Vessel Head Replacement in Unit 2 Upper Containment,
- Resistance Temperature Detector Bypass Removal in Unit 2 Lower Containment,
- Unit 2 Containment Sump Modification in Unit 2 Lower Containment, and
- Transporting the Upper Internals from the Storage Pit back to the Unit 2 Reactor Vessel.

The inspectors reviewed the RWP that governed activities in these radiologically significant areas to identify the work control instructions and control barriers that had been specified. For these activities, electronic dosimeter alarm set points for both integrated dose and dose rate were evaluated for conformity with survey indications and plant procedures. Workers were interviewed to determine if they were aware of the radiological conditions in their work areas and the actions required when their electronic dosimetry malfunctioned or alarmed.

The inspectors walked down and surveyed several high and locked high radiation area boundaries in the Auxiliary and Unit 2 Containment Buildings to determine if the prescribed radiological access controls were in place, that licensee postings were complete and accurate, and that physical barricades/barriers were adequate. During the walkdowns, the inspectors challenged access control boundaries to determine if high radiation area and locked high radiation area access was controlled in compliance with the licensee's procedures, TS, the requirements of 10 CFR 20.1601, and was consistent with Regulatory Guide 8.38, "Control of Access to High and Very High Radiation Areas in Nuclear Power Plants."

The inspectors reviewed the RWP for those work activities with the potential to generate airborne radioactivity to determine whether adequate engineering controls (e.g., use of ventilation systems, surface wetting, vacuuming, etc.) were provided to reduce the potential for worker internal exposure. Work activities with the potential for airborne transuranic radioactivity such as work on the resistance temperature detector bypass removal and work associated with the reactor vessel head replacement were evaluated to determine if the licensee had performed surveys to identify whether alpha emitting radionuclides were present.

The inspectors reviewed the licensee's procedures and methods for the assessment of internal dose as required by 10 CFR 20.1204, to determine if methodologies were technically accurate and would include the impact of hard to detect radionuclides such as pure beta or alpha emitters, if applicable. No worker intakes that resulted in a committed effective dose equivalent in excess of 50 millirem occurred during the period reviewed by the inspectors (September 2006 - September 2007).

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.2 Job-In-Progress Reviews and Review of Work Practices in Radiologically Significant Areas

a. Inspection Scope

The inspectors reviewed the licensee's procedure and practices associated with dosimetry placement (both whole body and extremity dosimetry) and with the use of multiple whole body dosimetry for work in high radiation areas having significant dose gradients for compliance with the requirements of 10 CFR 20.1201 and applicable

industry guidelines. Work in areas where dose rate gradients were subject to significant variation, including work on the resistance temperature detector bypass removal and work associated with the reactor vessel head replacement, were reviewed to evaluate the licensee's practices for dosimetry placement.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Radiation Worker Performance

a. Inspection Scope

During job performance observations that included the reactor vessel head replacement, the resistance temperature detector bypass removal, the containment sump modification, and transporting the upper internals from the storage pit back to the Unit-2 reactor vessel, the inspectors evaluated radiation worker performance with respect to stated radiation protection work requirements and evaluated whether workers were aware of the radiological conditions, the RWP controls and limits in place and whether their performance had accounted for the level of radiological hazards present.

The inspectors also reviewed radiological problem reports generated primarily in 2007 (year-to-date), which found that the cause of the event was due to radiation worker errors to determine if there was an observable pattern traceable to a similar cause, and to determine if this matched the corrective action approach taken by the licensee to resolve the identified problems.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.4 Radiation Protection Technician Staffing, Training and Proficiency

a. Inspection Scope

During job observations and plant walkdowns, the inspectors evaluated radiation protection staff performance with respect to radiation protection work requirements, conformance with procedures and those requirements specified in the RWP, and assessed proficiency with respect to radiation protection requirements, station procedures and health physics practices.

The inspectors reviewed selected radiological problem reports generated primarily in 2007 (year-to-date) to determine the extent of any specific problems or trends that may have been caused by deficiencies with radiation protection technician (RPT) work control and to determine if the corrective action approach taken by the licensee to resolve the reported problems, if applicable, was adequate.

Additionally, the inspectors reviewed RPT contractor staffing to support the reactor vessel head replacement project and the training provided to these supplemental radiation protection staff. The staffing and training was reviewed to determine if the licensee supported the head replacement project with sufficiently qualified and trained radiation protection staff.

These reviews represented completion of a portion of Inspection Procedure 71007. Completion of IP 71007 will be documented when all portions are completed.

b. Findings

No findings of significance were identified.

2OS2 As-Low-As-Reasonably-Achievable (ALARA) Planning and Controls
(71121.02 and 71007)

.1 Radiological Work Planning

a. Inspection Scope

The inspectors reviewed the licensee's list of refueling outage work ranked by estimated exposure and reviewed the following radiologically significant work activities:

- Reactor Vessel Head Replacement in Unit 2 Upper Containment,
- Resistance Temperature Detector Bypass Removal in Unit 2 Lower Containment,
- Unit 2 Containment Sump Modification in Unit 2 Lower Containment, and
- Transporting the Upper Internals from the Storage Pit back to the Unit 2 Reactor Vessel.

For each of the activities listed above, the inspectors reviewed the RWP, the ALARA Plan, and the associated total effective dose equivalent ALARA evaluations (i.e., respirator evaluations), as applicable. The reviews were performed in order to verify that the licensee had established radiological engineering controls and dose mitigation criteria that were based on sound radiation protection principles in order to achieve occupational exposures that were ALARA.

The inspectors compared the exposure results achieved for the initial nine days of the scheduled outage, including the dose rate reductions and person-rem expended, with the doses projected in the licensee's ALARA planning for the above listed work activities. Reasons for inconsistencies between intended (projected) and actual work activity doses as well as time/labor differences were examined to determine if the activities were planned reasonably well and to ensure the licensee was cognizant of and evaluated any work planning deficiencies.

The inspectors compared the person-hour estimates provided by maintenance planning to the radiation protection ALARA staff with the actual work activity time expenditures in order to evaluate the accuracy of these time estimates. The interfaces between radiation protection and maintenance groups were reviewed to identify potential interface problems that may have contributed to significantly flawed time/labor estimates which impacted dose projections.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.2 Verification of Dose Estimates and Exposure Tracking Systems

a. Inspection Scope

The inspectors reviewed the licensee's assumptions for selected individual outage job estimates, focusing on the estimate for the reactor head replacement and the resistance temperature detector bypass removal, and evaluated the methodology and practices for projecting work activity specific exposures. This included evaluating both dose rate and time/labor estimates for adequacy compared to historical station specific or industry data.

The inspectors reviewed the licensee's process for adjusting outage exposure estimates when unexpected changes in scope, emergent work or other unanticipated problems were encountered which could significantly impact worker exposures.

The licensee's exposure tracking system was examined to determine whether the level of exposure tracking detail, exposure report timeliness, and exposure report distribution was sufficient to support control of outage work exposures. Radiation work permits were reviewed to determine if they covered an excessive number of work activities to ensure they allowed work activity specific exposure trends to be detected and controlled. During the conduct of exposure significant work, the inspectors evaluated licensee management's awareness of the exposure status of the work and any plans to intervene if exposure trends increased significantly beyond exposure estimates.

These inspection samples were credited in Inspection Report 05000315/20060004; 05000316/2006004.

b. Findings

No findings of significance were identified.

.3 Job Site Inspections and ALARA Controls

a. Inspection Scope

The inspectors observed aspects of the following four jobs being performed in high radiation and potentially airborne radioactivity areas for work activities that presented the greatest radiological risk to workers:

- Reactor Vessel Head Replacement in Unit 2 Upper Containment,
- Resistance Temperature Detector Bypass Removal in Unit 2 Lower Containment,
- Unit-2 Containment Sump Modification in Unit 2 Lower Containment, and
- Transporting the Upper Internals from the Storage Pit back to the Unit 2 Reactor Vessel.

The licensee's use of ALARA controls for these work activities was evaluated to determine whether:

- the licensee developed and effectively used engineering controls, including the use of lead shielding, to achieve dose reductions and to verify that the controls were consistent with the licensee's ALARA reviews; and
- workers were cognizant of work area radiological conditions and utilized low dose waiting areas when subjected to temporary work delays.

Job performance was observed to determine if radiological conditions in the work areas were adequately communicated to workers through one of the pre-job briefings. The inspectors also evaluated the adequacy of the oversight provided by the radiation protection staff and the administrative and physical controls used over ingress/egress into these areas.

The inspectors attended job briefings and observed ongoing work activities to determine if workers received appropriate on-the-job supervision to ensure the ALARA requirements were met. This included determining if the first-line job supervisor ensured that the work activity was conducted in a dose efficient manner by minimizing work crew size, ensuring that workers were properly trained, and ensuring that proper tools and equipment were available when the job started.

Additionally, the inspectors reviewed individual worker exposures for selected work groups/crews involved in higher dose jobs to determine if significant exposure variations existed among workers performing similar tasks. Actions taken by the licensee to address any deficiencies with radworker practices were reviewed, as applicable.

This review represented two samples.

b. Findings

No findings of significance were identified.

.4 Source-Term Reduction and Control

a. Inspection Scope

The inspectors determined if the licensee had developed an understanding of the plant source-term, which included knowledge of input mechanisms in order to reduce the source-term. The licensee's source-term control strategy, which included a process for evaluating radionuclide distribution plus a shutdown and operating chemistry plan which can minimize the source-term external to the core, was evaluated. Other methods used by the licensee to control the source-term, including component/system decontamination and the use of shielding, were evaluated.

This review represented one sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Reactor Coolant System Leakage

a. Inspection Scope

Cornerstone: Barrier Integrity

The inspectors completed two performance indicator verification samples by verifying 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, 2006, through June 30, 2007, and verified the licensee's calculation of RCS leakage for both units.

b. Findings

No findings of significance were identified.

.2 Radiation Safety Performance Indicator Verification

a. Inspection Scope

The inspectors reviewed, at a minimum, the most recent 12 months of Licensee Event Reports (LER), licensee data reported to the NRC, selected plant logs, and NRC inspection reports to verify the following performance indicators reported by the licensee for the second Quarter of 2007

Cornerstone: Occupational Radiation Safety

- Occupational Exposure Control Effectiveness

Cornerstone: Public Radiation Safety

- Radiological Effluent Technical Specifications (RETS) / Offsite Dose Calculation Manual (ODCM) Radiological Effluent Occurrence

The inspectors verified that the licensee accurately reported performance as defined by the applicable revision of Nuclear Energy Institute Document 99-02, "Regulatory Assessment Performance Indicator Guideline."

These performance indicator reviews constituted two inspection samples.

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 they are not discussed in this report.

b. Findings

No findings of significance were identified.

.2 Annual Review of Operator Workarounds

a. Inspection Scope

The inspectors completed one baseline inspection sample regarding an in-depth review of operator workarounds, which included assessing the cumulative effect of existing workarounds. The inspectors reviewed operator burden items identified by licensee personnel for Unit 1 and Unit 2, which included operator workarounds, control room deficiencies, temporary modifications and lit annunciators. The inspectors verified that operator workarounds were being identified at an appropriate threshold; that the workarounds did not adversely impact the operator's ability to implement abnormal and emergency operating procedures; and, that the cumulative effect of operator burdens did

not adversely impact mitigating system functions. The inspectors also reviewed condition reports to verify that appropriate corrective actions have been proposed or implemented in a timely manner commensurate with the significance of the issue.

b. Findings and Observations

No findings of significance were identified.

4OA3 Event Followup (71153)

The inspectors completed three inspection samples regarding event follow-up.

.1 Unit 1 Reactor Trip Response

a. Inspection Scope

On August 28, 2007, the Unit 1 reactor automatically tripped due to low steam generator water level coincident with low feedwater flow on the #11 steam generator (coincident with steam flow/feedwater flow mismatch). The cause was a loss of the east main feedwater pump due to a malfunction of the non-safety-related digital controls system. The main feedwater pump digital controls system cabinet temperature increased due to a loss of cooling. Consequently, the power supplies for the main feedwater pump controller (two load-sharing power supplies) overheated.

The inspectors evaluated control room operator performance immediately following the reactor trip. This evaluation included direct observation in the Unit 1 control room, review of the control room operators' use of emergency and normal plant operating procedures, and initial actions to mitigate the event. The inspectors interviewed plant personnel and reviewed applicable portions of the TS, plant procedures, control room logs, plant process computer data, and the reactor trip report.

b. Findings

No findings of significance were identified.

.2 (Closed) LER 05000315/2006-002-01: "Failure to Comply with TS 3.6.13, Divider Barrier Integrity," Supplement 1.

The licensee failed to correct a previously identified degraded condition affecting the Unit 1 containment divider barrier seal, which rendered the divider barrier seal inoperable. The inspectors reviewed LER 05000315/2006-002-00 in NRC Inspection Report 05000315/316/2007003 and concluded that the issue was a finding of minor significance and a violation of TS 3.6.13. The licensee submitted Supplement 1 to LER 05000315/2006-002-00 to better describe the cause of the event based upon comments provided by the inspectors during their review of the original LER. The inspectors determined that the information provided in Supplement 1 to LER 05000315/2006-002-00 did not raise any new issues or change the conclusion of the initial review. This LER is closed.

.3 (Closed) LER 05000316/2006-006-00: "Failure to Comply with TS 3.5.2, ECCS [Emergency Core Cooling System] - Operating."

The inspectors reviewed AR 00125377 and AR 00125378, which documented two failed pressure lift tests for the Unit 2 residual heat removal discharge header safety valves (2-SV-104E and 2-SV-104W) during the Unit 2 Cycle 16 refueling outage. A common cause (i.e., bonding of the disc and seating surfaces caused by the formation of an oxide film on the disc and seat) was identified for the two failed pressure lift tests. The inspectors determined that the licensee had incorrectly concluded that the valve test failures did not affect system operability, and therefore initially failed to report the event as required by 10 CFR 50.73(a)(1). As a result, the inspectors documented a Severity Level IV Non-Cited Violation of 10 CFR 50.73(a)(1) in NRC Inspection Report 05000315/316/2007003. The licensee submitted LER 05000316/2006-006-00 to report this event as a condition prohibited by the plant's TS in accordance with 10 CFR 50.73(a)(2)(i)(B) and as an event where a single cause resulted in two independent trains to become inoperable in a single system designed to remove residual heat and mitigate the consequences of an accident in accordance with 10 CFR 50.73(a)(2)(vii). The inspectors determined that the information provided in LER 05000316/2006-006-00 did not change the conclusion of the initial review.

The inspectors evaluated the history of these safety valves and found that appropriate maintenance and testing had been performed in accordance with the regulatory requirements. Therefore, the inspectors did not identify a performance deficiency associated with this event and cross-cutting aspects were not assessed. However, the inspectors determined that the two failed pressure lift tests resulted in two inoperable ECCS trains for greater than the TS allowed outage time. Because both ECCS trains were inoperable during plant operation, TS 3.5.2, Conditions A.1 and B.1, were not met and the required actions were not performed.

Because this violation of the plant's TS was not associated with a performance deficiency, the inspectors evaluated the issue using the traditional enforcement process and assessed the significance of the underlying issue using the Significance Determination Process (SDP). The inspectors reviewed the examples of minor issues in IMC 0612, "Power Reactor Inspection Reports," Appendix E, "Examples of Minor Issues," and determined that there were no examples related to this issue. Consistent with the guidance in IMC 0612, Appendix B, "Issue Screening," the inspectors determined that the violation was of more than minor significance because this issue was associated with the Equipment Performance attribute of the Mitigating Systems cornerstone and adversely affected the cornerstone objective of ensuring the availability, reliability, and capability of systems that respond to initiating events to prevent undesirable consequences. Specifically, the passive safety function of the piping system would not have been protected from an over-pressure condition. The inspectors performed a Phase 1 SDP review of this issue using the guidance provided in IMC 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations." In accordance with the "SDP Phase 1 Screening Worksheet for IE [Initiating Events], MS [Mitigating Systems], and B [Barriers] Cornerstones," the inspectors determined that this violation was of very low safety significance because it was not a design or qualification deficiency, did not result in an actual loss of system safety function, and was not risk-significant due to external event initiators. Because of

the very low safety significance, this violation is being treated as a Severity Level IV Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000316/2007005-01). The licensee entered this violation into its corrective action program as AR 00808822. This LER is closed.

4OA5 Other Activities

.1 Reactor Vessel Closure Head (RVCH) Replacement (IP 71007)

a. Inspection Scope

a.1 Pre-service Inspection

From September 4 through 7, 2007, the inspector conducted a review of the licensee's pre-service examination records for the Unit 2 replacement RVCH, including baseline examinations of the J-groove weld areas to support future In-service examinations required by NRC Order EA 03-009. The inspectors reviewed these records to evaluate conformance with the 1989 Edition of the American Society of Mechanical Engineers Boiler and Pressure Vessel Code, Section XI; NRC Order EA 03-009; and, 10 CFR 50, Appendix B requirements.

a.2 Replacement RVCH Modification Inspection

On June 11, 2007, the inspector initiated a review of the modification package for the Unit 2 RVCH replacement. The inspection elements included:

- review of the licensee's safety evaluations, design change packages, fabrication drawings, and certified design reports;
- modifications to the enhanced service structure and other design changes in support of the RVCH replacement;
- review of the licensee's documentation related to control of heavy loads, including the licensee's polar crane preventive maintenance, testing, and inspection program;
- review of the licensee's calculations for polar crane rigging and special lifting devices;
- review of the licensee's calculations related to a postulated reactor vessel head drop;
- review of the licensee's procedures that remove and install the reactor vessel head during refueling operations, including the heavy load safe load path; and,
- review of the licensee's procedures that control the total weight lifted by the polar crane and the polar crane rated lift capacity.

Inspector follow-up activities related to the inspection were on-going at the end of the inspection period.

b. Findings

No findings of significance were identified.

.2 Review of World Association of Nuclear Operators (WANO) / Institute of Nuclear Power Operations (INPO) Assessment Report

The inspectors completed a review of the WANO/INPO report for the D.C. Cook Nuclear Plant assessment conducted in June 2006. During this review, the inspectors did not identify any new safety significant issues.

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 October 17, 2007. 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 it is not specifically discussed in this report.

.2 Interim Exit Meetings

An interim exit meeting was conducted for the Reactor Vessel Head Replacement (pre-service record review) with Mr. J. Jensen and other members of the licensee's staff on September 7, 2007 and on September 21, 2007. The inspectors returned proprietary information reviewed during the inspection and the licensee confirmed that none of the potential report input discussed was considered proprietary.

An interim exit meeting was conducted for the Occupational Radiation Safety Radiological Access Control and ALARA inspection with Mr. J. Jensen and other members of the licensee's staff on September 28, 2007. No proprietary information was discussed.

An interim exit meeting was conducted for the results of the heat sink biennial inspection with the Director of Plant Engineering, Mr. J. Gebbie, and other members of licensee management and staff at the conclusion of the inspection on August 17, 2007.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Beer, Staff Health Physicist
R. Crane, Regulatory Compliance Supervisor
J. Gebbie, Plant Engineering Director
D. Hafer, Reactor Vessel Closure Head Project Manager
J. Harner, Environmental Manager
J. Jensen, Site Vice President
J. Kingseed, Reactor Vessel Closure Head Project
C. Lane, Engineering Programs Manager
Q. Lies, Operations Manager
R. Lingle, Systems Engineering Manager
R. Meister, Regulatory Affairs Specialist
C. Moeller, Radiation Protection General Supervisor
R. Niedzielski, Regulatory Affairs Specialist
M. Peifer, Support Services Vice President
S. Simpson, Regulatory Affairs Manager
S. Vasquez, Maintenance Manager
D. Walton, ALARA Supervisor
L. Weber, Plant Manager
J. Nimtz, Nuclear Regulatory Affairs Compliance Coordinator
A. Feliciano, Design Engineer Mechanical
W. Mammoser, Design Engineer Mechanical Supervisor
W. McCrory, Emergency Service Water System Manager
J. Anderson, GL 89-13 Program Owner
R. Pickard, Engineering Programs Supervisor
E. Ridgell, Engineering Programs Manager

Nuclear Regulatory Commission

A. M. Stone, Engineering Branch 2 Chief, DRS, Region III

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened

05000316/2007005-01	NCV	Failure to Comply with TS 3.5.2, ECCS - Operating (Section 4OA3.3)
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Closed

05000315/2006-002-01	LER	Failure to Comply with TS 3.6.13, Divider Barrier Integrity (Section 4OA3.2)
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05000316/2007005-01	NCV	Failure to Comply with TS 3.5.2, ECCS - Operating (Section 4OA3.3)
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05000316/2006-006-00	LER	Failure to Comply with TS 3.5.2, ECCS - Operating (Section 4OA3.3)
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Discussed

05000316/2007003-03	NCV	Failure to a Submit 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

OP-2-5143A-3, "Flow Diagram Emergency Core Cooling (RHR) Accumulator Piping Unit No. 2," Revision 3
OP-2-5142-50, "Flow Diagram Emergency Core Cooling (SIS)," Revision 50
2-OHP-4021-008-002, "Placing ECCS in Standby Readiness", Rev. 17
AR 00128044, "Equipment Apparent Cause Evaluation Action Request for Accumulator #24"
AR 00809803, "An Air Void Was Found in the Piping Downstream of 1-IMO-350"
System Health and Status, "Emergency Core Cooling System," April 1 through June 30, 2007
D. C. Cook Nuclear Plant UFSAR, Section 6.2, "Emergency Core Cooling Systems," Rev. 21
1-OHP-4021-056-001, Lineup Sheet 1, "Unit 1 Auxiliary Feedwater," Revision 26
1-OHP-4021-056-001, Lineup Sheet 2, "East MDAFP Lineup," Revision 26
1-OHP-4021-056-001, Lineup Sheet 3, "West MDAFP Lineup," Revision 26
1-OHP-4021-008-002, "Placing ECCS in Standby Readiness," Revision 19

1R05 Fire Protection

Fire Hazards Analysis, Fire Zones 6A, 9, 23, Revision 13
Fire Pre-Plan, Fire Areas AA, E, H, Revision 4
AR 07221004, "Debris Found in Electrical Cable Trays"

1R07 Biennial Heat Sink Performance

MD-12-HV-032-N; Control Room Temperature Historic Data Evaluation; Revision 3
MD-12-HV-018-N; AFW Pump Room and Hallway Heat Load Calculation; Revision 1
MD-12-ESW-106-N; Assessment of Increased Lake Water Temperature on Safety-Related Systems; Revision 2
MD-12-ESW-76-N; ESW Pump NPSH Available and Submergence; Revision 0
SA-2003-ENU-004; Comprehensive Self-Assessment of GL 89-13 Program; dated August 2003
MDS-607; Heat Exchanger Tube Plugging; Revision 5
EC 47117; Increase U1 TS 3.7.9 Bases UHS Max Temp from 86.8 F to 87.4 F; Revision 1
EC 47897; Increase U2 TS 3.7.9 Bases UHS Max Temp from 86.8 F to 88.7 F; Revision 1
12-OHP-4022-057-001; Screen House Forebay Degraded Condition; dated February 17, 2005
12-OHP-5030-057-001; Screen House Vulnerability Determination; Revision 15
12-THP-6020-CHM-313; Chlorination; Revision 15
12-THP-6020-CHM-315; Miscellaneous Cooling Systems; Revision 5
Control Room Ventilation System Health Report; 1st Quarter 2007
Engineered Safety Features Ventilation Health Report; 1st Quarter 2007
Work Order 55225659-02; Control Room Air Conditioning Liquid Chiller Condenser Inspection; dated March 20, 2007
Job Order R0234498-04; Inspections/Cleaning of 2-HE-64S; dated April 29, 2003
Job Order R0244496-04; Inspections/Cleaning of 1-HV-AFP-WAC; dated March 21, 2005
AR 81818; Tracking CR for GL 89-13 Self-Assessment SA-2003-ENU-004; dated August 21, 2003

AR 93172; AFW Pump Room Condensation Slipping Hazard; dated June 13, 2004
CR 04165007; Condensation of AFW Pump Room Coolers; dated December 13, 2005
AR 119447; Tracking CR for AFW Pump Room Coolers; dated December 13, 2005
CR 05347013/AR 00119447-01; AFW Pump Room Larger Drains; dated December 13, 2005
WO 55034710; Repair Leak on U1 TDAFP Room Cooler; dated June 20, 2006
WO 55248795; Condensation Leak on U1 TDAFP Room Cooler; dated October 6, 2005
AR 800225; MDS-607 Has No Tube Plug Limit for AFP Room Coolers; dated
November 22, 2005

Corrective Action Documents Generated as a Result of NRC Heat Sink inspection
eSAT 07227045; NRC Identified MD-12-ESW-76-N was not Updated; dated August 16, 2007
eSAT 07228040; Clarification of NRC Identified Ambiguity in 1/2-OHP-4024-123 CW
Annunciator Response; dated August 16, 2007
eSAT 07228050; NRC Identified Wiring Diagrams not Updated; dated August 16, 2007
eSAT 07229005; Clarification of NRC Identified Ambiguity in MD-12-ESW-106-N;
dated August 17, 2007
AR 00817280; Calc MD-12-ESW-076-N Admin Error; dated August 15, 2007
eSAT 07228074; Incomplete Document Provided to NRC Inspector;
dated August 16, 2007

1R11 Licensed Operator Requalification Program
RQ-S-3204A, Cycle 3204 As-Found Simulator Evaluation A, Revision 0
Crew Periodic Simulator Evaluation, Shift P, September 4, 2007

1R12 Maintenance Effectiveness
Maintenance Rule Scoping Document for Emergency Diesel Generators, Revision 2
Maintenance Rule a(1) Action Plan for Unit 2 Emergency Diesel Generators, Revision 0
Maintenance Rule 24-Month Functional Failure Report for EDGs, August 2007
Maintenance Rule Two-Year Unavailability Report for EDGs, August 7, 2007
AR 00804063, "1AB EDG Automatic Voltage Regulator Evaluation"
AR 00805533, "Loss of Frequency/Voltage Indication During Slow Start"AR 00805984,
"1-OME-150-CD Incorrect Test Lead Setup"
AR 00812044, "2-AFW-19 Breaker Tripped Twice"
AR 00812692, "Failure of 2-PP-46-3 Boric Acid Transfer Pump"
AR 00801161, "Supplemental Diesel Generator Failure to Start and Load Following Loss of
69 Kilovolt Emergency Power"
AR 00808114, "Maintenance Rule Evaluation for Broken Damper That Allows Cold Air in the
Unit 2 West Main Steam Enclosure"
AR 00814301, "East Turbine Auxiliary Cooling Water Pump Unexpectedly Electrically Tripped"
AR 00804813, "#10 Chiller Motor Burned Up"
AR 00815486, "1-WCR-905, NEW to Lower Vent Unit #2 Inoperable"
Maintenance Rule Scoping Document, Radiation Monitoring System, March 21, 2006
System Health and Status, Radiation Monitoring Systems Unit 1 and Unit 2, 2nd Quarter 2007
AR 07219007, U-2 Vent Stack Rad Monitor Flooded During Heavy Rain Storm"
AR 07249045, "Maintenance Rule Scoping Criteria Question"

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

PMP-2291-SCH-001, "Work Control Activity Scheduling Process," Revision 19
PMP-2291-WAR-001, "Work Activity Risk Management Process," Revision 14
PMP-2291-OLR-001, "On-Line Risk Management," Unit 1 and Unit 2 Part 1 Configuration Risk Assessment, July 17-18, July 26-30, July 31- August 3, September 5-7, September 9-13
Control Room Logs, July 17-18 and 26-30, July 31- August 3, September 5-7 and 9-13
Daily Work Activity Schedules, July 17-18 and 26-30, July 31- Aug. 3, Sept. 5-7 and 9-13
AR 0720653, "STA Training on Using the Safety Monitor Online Risk Program"

1R15 Operability Evaluations

Calculation MD-12-DG-004-N, Diesel Fuel Oil Consumption Rate, Verification of DG Fuel Oil Storage and Day Tank Volumes, and Transfer Pump and Diesel Exhaust Line Sizing, Rev. 2
AR 07073001, Fuel Oil Leak on Unit 1 AB EDG
AR 00818889-05, "2AB Emergency Diesel Generator 3F Fuel Injector Pump Leak"

1R19 Post Maintenance Testing

1-OHP-4030-117-050E, "East RHR Train Operability Test Modes 1-4," Revision 5
AR 06357027, "EDG 1AB Load Bank Tripped"
AR 00816057, "U1 AB EDG Supply Fan Breaker Would Not Open When Fan Stopped"
AR 07207061, "TDAFP Test Valve Failed IST Stroke Closed"
1-OHP-4030-132-027AB, "AB Diesel Generator Operability Test (Train B)" Attachment 2, "DG1AB Fast Speed Start," July 18, 2007
WO 55243353-03, "1-DGAB-AVAR-REM, Replace Voltage Adjust Rheostat," July 18, 2007
WO 55244377-02, "Replace Unit 1 AB Diesel Quick Exhaust Valves," July 18, 2007
1-OHP-4030-156-017T, "Turbine Driven Auxiliary Feedwater System Test," July 27, 2007
WO 55299329-01, "South Safety Injection Pump System Test," August 13, 2007
1-OHP-4021-032-001CD, "DG1CD Operation," August 1, 2007
1-OHP-4030-132-027CD, "CD Diesel Generator Operability Test (Train A), August 1, 2007
WO 55246276-01, "1-CA-6985, Replace Quick Exhaust Valve," August 1, 2007
WO 55272335-01, "Replace 1-POV-1/2-CD," August 1, 2007
AR 07250027, "Level of Detail Required for PMT on Safety Related SSCs"
1-OHP-4030-119-022W, "West Essential Service Water System Test, September 11, 2007
WO 55246658-13, "1-PP-7W, Perform Pre-service Operability Test," September 11, 2007
2-IHP-4030-SMP-229, "Source Range Nuclear Instrumentation Operational Test and Calibration," September 20, 2007

1R20 Refueling and Other Outage Activities

D. C. Cook Updated Final Safety Analysis Report, Revision 21
Unit 1 Control Room Logs, August 28 through August 29, 2007
Unit 2 Control Room Logs, September 15 through September 30, 2007
PMP-4100-SDR-001, "Plant Shutdown Safety and Risk Management," Revision 13
2-OHP-4021-001-004, "Plant Cooldown From Hot Standby to Cold Shutdown," Revision 43
OHI-6100, "Control of Operations Department Forms," Attachment 4, "Unit 2 RCS Cooldown Rate Limit Curve," September 15-19
OHI-6100, "Control of Operations Department Forms," Attachments 5A and 5B, "RCS/PRZ Cooldown Record," September 15-19
2-OHP-4021-002-005, "RCS Draining," Attachment 2, "RCS Drain to One to Two Feet Below Reactor Vessel Flange with Fuel in Core," Revision 28
AR 07264032, "Administrative Cool Down Rates Were Exceeded"

1R22 Surveillance Testing

TDB-1-FIG-14, "Safety and Relief Valve Surveillance Acceptance Criteria - Unit 1 Valves," Revision 12
12-MHP-4030-001-001, "IST Safety Valve Bench Testing," Revision 6
1-OHP-4030-117-050W, "West RHR Train Operability Test Modes 1-4," Revision 7
TDB-1-FIG-15-1, "Safety Related Pump In-service Test Hydraulic Reference," Revision 99
TDB-1-FIG-15-2, "Safety Related Pump In-service Test Vibration Reference," Revision 85
Work Order 55280395-01, "1-WCR-929, Inspect, Clean and Lube Valve," July 23, 2006
1-OHP-4030-114-011, "Containment Isolation and ISI Valve Operability Test," Attachment 8, "NEW Valves Test," Revision 4
TDB-1-FIG-19-1, "Power Operated Valve Stroke Time Limits," Revision 79
AR 00815486, "1-WCR-905, NEW to Lower Vent Unit #2 Inoperable"
12-MHP-4030-010-001, "Ice Condenser Basket Weighing Surveillance," Revision 13
2-OHP-4030-219-022W, "West Essential Service Water System Test," Attachment 1, "West ESW Group A and Comprehensive Pump Test," July 23, 2007
12-EHP-4030-051-256, "Main Steam Safety Valve Setpoint Verification With Lift Assist Device," Revision 12
AR 00818906, "Remove 2-SV-2B-1 for NWS Testing"
AR 0726022, "2-SV-1A-1 Failed its As-Found Set-Pressure Setpoint Test"

1EP6 Drill Evaluation

EMD-32a Michigan State Police, Nuclear Plant Event Notification, September 4, 2007
PMP-2080-EPP-100, "Emergency Response," Attachment 8, "Notification of Off-Site Agencies," Revision 9
PMP-2080-EPP-101, "Emergency Classification," Revision 10
AR 07261014, "Simulator Scenario Did Not Adequately Address Eplan"

2OS1 Access Control to Radiologically Significant Areas

12-THP-6010-RPP-00,; RP-06-03; Internal Dose from Hard to Detect Radionuclide, Revision 0
12-THP-6010-RPP-007, RP-07-02, Technical Basis for DC Cook's Alpha Program, Revision 0
12-THP-6010-RPP-104, Personnel Dosimetry Use in Varying Radiation Fields, Revision 08
Lesson Plan RP-J-0708, Radiation Protection Alpha program Changes, Tracking Number AR00814064
PMP-6010-RPP-003, High, Locked High, and Very High Radiation Area Access, Revision 18
Radiation Protection Department Key Log September 25, 2007
RWP 07-2101, U2C17 - Refueling Prep Activities, Tool Inspections, Testing, Lubes and Minor Maintenance, Revision 01
RWP 07-2107, Unit-2 Reactor Vessel Closure Head (RVCH) Replacement, Revision 00
RWP 07-2123, U2C17 - Temporary Shielding, Revision 00
RWP 07-2145, U2C17 - Valve Maintenance / Repair (Containment), Revision 00
RWP 07-2173, U2C17 Resistance Temperature Detector (RTD) Modification, Revision 00
RWP 07-2187, U2C17 - Under Reactor Vessel Head Inspection, Revision 00
Technical Specification 5.7 High Radiation Area, Amendment No. 287
THG-026, Locked High Radiation Area and Very High Radiation Area Weekly Verification Process, Revision 09
U2C17 Refueling Outage Reactor Vessel Closure Head Replacement Project Plan, August 09, 2007
U2C17 Refueling Outage Reactor Vessel Closure Head Replacement Training Matrix (and Associated Lesson Plans), September 27, 2007

2OS2 As-Low-As-Reasonably-Achievable Planning and Controls

In addition to the documents listed above, the following documents were also reviewed:
12-THP-6010 RPP-014, Total Effective Dose Equivalent Calculation Sheets, Revision 7,
DC Cook Nuclear Power Plant Dose Reduction five Year Plan - 2007
Plant Status Report, various 2007
RWP Total Report, September 25, 2007
Station ALARA Committee Meeting (A-07-27F), September 25, 2007
The Plan-It, various 2007
U2C17 Outage Daily ALARA Report, September 23, 2007
U2C17 Outage Command Center (OCC) Turnover meeting Agenda, various 2007
U2C17 Shutdown Source Term Action Plan, September 24, 2007, Revision 1

4OA1 Performance Indicator Verification

Unit 1 and Unit 2 Control Room Logs, July 1, 2006 through June 30, 2007
12-THP-6010-RPP-601, Annual Radioactive Effluent Release Report, Revision 07
AR Screenings and Searches various strategies, codes and dates
Attention Logs, including Electronic Dosimeter Dose/Rate Alarm Reports, various 2006/2007
PIG-002, Performance Improvement group Desktop Guide Administrative Functions of the
Performance Improvement Group, Revision 2
PMP-7110-PIP-001, Regulatory Oversight Program Performance Indicators, Revisions 8 and 9

4OA2 Identification and Resolution of Problems

AR 05140067, "#3 Accumulator Requires Pressurization Weekly to Maintain Technical
Specification Pressure"
AR 00807243, "WARB Not Meeting at Specified Frequency"
AR 00126762, "Stator Cooling Water Tank Pressure is Lowering"
AR 00804005, "Fuse Blown for Back-up Power to Load Tap Changer for TR101CD"
Unit 1 and Unit 2 Operator Burdens
PMP-4010-OWA-001, "Oversight and Control of Operator Workarounds," Revision 2
Unit 1 and Unit 2 Temporary Modification Log Index
Work Around Review Board Meeting Agenda and Meeting Minutes, June 29, 2007

4OA3 Event Response

AR 06276085, "Missing Bolts on Divider Barrier Seal"
AR 00803578, "Divider Barrier Seal Deficiencies"
AR 07244002, "Source Range Visual Audio Count Rate Channel"
OHI-4000, "Conduct of Operations: Standards," Attachment 14, Reactivity Control, Rev. 31
Unit 1 Control Room Logs, August 28, 2007
PMP-4010-TRP-001, "Reactor Trip Review," Revision 7, Post Trip Report Package for Unit 1
Reactor Trip on August 28, 2007
AR 00125377, "While Performing R0226722 to Test and Replace 2-SV-104W, the Installed
Valve Failed Its Set Pressure Test by Failing to Lift at 1.25 Times the Setpoint Value"
AR 00125378, "While Performing R0246231 to Test and Replace 2-SV-104E, the Installed
Valve Failed Its Set Pressure Test by Failing to Lift at 1.25 Times the Setpoint Value"
AR 00808822, "Inappropriate Closure of Past Operability Determination and Reportability"

4OA5 Other

AR 07249067, "Failure to Document Acceptance of a Reflector"

AR 07249034, "Several Minor Documentation Quality Concerns Identified"

Nondestructive Examination Certification of Personnel Qualification for several individuals, January 30, 2007, January 31, 2007, and February 16, 2007, respectively

AREVA Report 51-9051275-00, "DC Cook Unit 2 RVCH Replacement Baseline NDE Final Report," August 21, 2007

Hydrotest Report CC/DK012 3710 0240, April 19, 2007

RRVCH Receipt Inspection Plan, July 26, 2007

AEP Letter; RRVCH and CRDMs, August 9, 2004.

Section 2.5 of FANP-04-1880, "Pre-service Baseline Inspection," June 28, 2004

Section 6.13 of Specification No. ES-MECH-0903-QCN, "Reactor Vessel Replacement Head,"

AREVA Drawing 1GA20063, "CRDM DC Cook Unit 2 I.L.H. Assembly Details," Revision B

AREVA Drawing BUEPDK/NCC5002, "RRVCH DC Cook Unit 2 Weld Map Drawing," Revision A

Liquid Penetrant Examination Data Sheet, Nozzles No. 72 thru 78, May 5, 2007

Liquid Penetrant Examination Data Sheet, Nozzles No. 66 thru 70, May 5, 2007

Magnetic Particle Examination Data Sheet, Shroud Support Lugs, May 7, 2007

Magnetic Particle Examination Data Sheet, Lifting Lugs, May 7, 2007

Reactor Pressure Vessel Head Penetration Ultrasonic Data Sheets, May 6-14, 2007

03-9049826, Baseline Reactor Head Nozzle Penetration Remote Visual Inspection Plan for D. C. Cook Unit 2, May 3, 2007

AREVA Procedure 54-ISI-240-44, "Visible Solvent Removable Liquid Penetrant Examination Procedure," August 4, 2006

AREVA Procedure 54-ISI-270-44, "Wet or Dry Magnetic Particle Examination Procedure," March 15, 2006

AREVA Procedure 51-ISI-605-0, "Automated Ultrasonic Examination of RPV Closure Head Small Bore Penetrations," February 8, 2007

AREVA Procedure 51-ISI-604-002, "Automated Ultrasonic Examination of Open Tube RPV Closure Head Penetrations," February 8, 2007

AREVA Procedure 51-ISI-603-003, "Automated Ultrasonic Examination of RPV Closure Head Penetrations Containing Thermal Sleeves," February 8, 2007

AREVA Procedure 51-ISI-367-07, "Visual Examination for Leakage of Reactor Head Penetrations," September 14, 2004

LIST OF ACRONYMS USED

ADAMS	Agency Documents Access and Management System
AFW	Auxiliary Feedwater
ALARA	As-Low-As-Reasonably-Achievable
AR	Action Request
CFR	Code of Federal Regulations
CR	Condition Report
ECCS	Emergency Core Cooling System
ESW	Essential Service Water
IMC	Inspection Manual Chapter
INPO	Institute of Nuclear Power Operations
ISI	In-service Inspection
IST	In-service Testing
LER	Licensee Event Report
LLRT	Local Leak Rate Testing
NCV	Non-Cited Violation
NPSH	Net Positive Suction Head
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
RCS	Reactor Coolant System
RETS	Radiological Effluent Technical Specifications
RPT	Radiation Protection Technician
RVCH	Reactor Vessel Closure Head
RWP	Radiation Work Permit
SDP	Significance Determination Process
SSC	Structures, Systems, and Components
TDAFP	Turbine Driven Auxiliary Feedwater Pump
TS	Technical Specifications
WANO	World Association of Nuclear Operators