

July 19, 2007

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 05000315/2007004;
05000316/2007004

Dear Mr. Nazar:

On June 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 July 10, 2007 with Mr. M. Peifer 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, two findings of very low safety significance (Green), one of which also involved a violation of NRC requirements, were identified. However, 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.

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 Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

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 05000315/2007004; 05000316/2007004
w/Attachment: Supplemental Information

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

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 Document Room or from the Publicly Available Records (PARS) component of NRC's document system (ADAMS). ADAMS is accessible from the NRC Web site at <http://www.nrc.gov/reading-rm/adams.html> (the Public Electronic Reading Room).

Sincerely,

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 05000315/2007004; 05000316/2007004
w/Attachment: Supplemental Information

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

DOCUMENT NAME: C:\FileNet\ML072040388.wpd

Publicly Available Non-Publicly Available Sensitive Non-Sensitive

To receive a copy of this document, indicate in the concurrence box "C" = Copy without attach/encl "E" = Copy with attach/encl "N" = No copy

OFFICE	RIII	RIII	RIII		
NAME	BKemker:ntp	AWilson	CLipa		
DATE	07/19/07	07/19/07	07/19/07		

OFFICIAL RECORD COPY

Letter to M. Nazar from C. Lipa dated July 19, 2007

SUBJECT: D. C. COOK NUCLEAR POWER PLANT, UNITS 1 AND 2
NRC INTEGRATED INSPECTION REPORT 05000315/2007004;
05000316/2007004

DISTRIBUTION:

TEB

RidsNrrDirslrib

GEG

KGO

BJK1

CAA1

LSL (electronic IR's only)

C. Pederson, DRS (hard copy - IR's only)

DRPIII

DRSIII

PLB1

TXN

ROPreports@nrc.gov (inspection reports, final SDP letters, any letter with an IR number)

U.S. NUCLEAR REGULATORY COMMISSION

REGION III

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

Report Nos.: 05000315/2007004; 05000316/2007004

Licensee: Indiana Michigan Power Company

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

Location: Bridgman, MI 49106

Dates: April 1 through June 30, 2007

Inspectors: B. Kemker, Senior Resident Inspector
J. Lennartz, Resident Inspector
J. Bozga, Reactor Engineer
A. Garmoe, Reactor Engineer
M. Phalen, Health Physicist
A. Wilson, Reactor Engineer

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

Enclosure

SUMMARY OF FINDINGS

IR 05000315/2007-004, IR 05000316/2007-004; 04/01/2007-06/30/2007; D. C. Cook Nuclear Power Plant, Units 1 and 2; Maintenance Risk Assessments and Emergent Work Control, Surveillance Testing.

The report covered a 13-week period of inspection by the resident inspectors and an announced inspection by a regional health physics inspector. Two Green findings, one of which had an associated Non-Cited Violation (NCV), were 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

- Green. A finding of very low safety significance was identified through a self-revealing event. During painting surface preparation activities in the Unit 2 AB emergency diesel generator (EDG) room, the licensee failed to establish appropriate foreign material exclusion controls by allowing foreign material to collect on the EDG fuel injector pumps' metering rods. This resulted in an inoperable EDG when foreign material on one of the fuel injector pump metering rods became lodged in the pump and prevented the metering rod from further movement. No violation of regulatory requirements was identified. Corrective actions included verifying that the affected fuel injector pump metering rod was free to move, cleaning and lubricating the engine governor linkage, and cleaning other light dust from the engine and the room. The licensee also ran the other three EDGs to verify no common cause failure existed and then cleaned and lubricated the engine governor linkage after each of the runs.

This finding was of more than minor significance because it is 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 Unit 2 AB EDG was rendered inoperable by foreign material present on the engine. The finding was of very low safety significance because it did not represent a design or qualification deficiency, loss of safety function for a single train for greater than its Technical Specification (TS) allowed outage time, and was not risk-significant due to external event initiators. The primary cause of this finding was not related to any of the cross-cutting areas because none of the cross-cutting aspects was determined to be a significant contributor to the finding. (Section 1R13)

- Green. A finding of very low safety significance with an associated NCV of TS 5.4.1.a was self-revealed. On two separate occasions, a maintenance craftsman performed procedure steps to connect a multi-meter to an emergency diesel generator (EDG) kilowatt meter using incorrectly configured test leads, which caused a short-circuit and

subsequent failure of a fuse in the EDG metering circuit when the engine was started during surveillance testing. This adversely affected the operability and availability of both the Unit 1 AB and CD EDGs. Corrective actions included replacing the fuses, coaching the maintenance craftsman involved with the incidents, and temporary suspension of his qualifications.

This finding was of more than minor significance because it is 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 use of incorrectly configured test leads rendered the EDGs inoperable and unavailable to perform their safety function. The finding was of very low safety significance because it did not represent a design or qualification deficiency, loss of safety function for a single train for greater than its TS allowed outage time, and was not risk-significant due to external event initiators. The primary cause of this finding was related to the cross-cutting area of human performance because the licensee's human error prevention techniques were not used commensurate with the risk of the task being performed. Specifically, the maintenance craftsman failed to appropriately control the test leads and to use self-verification techniques to ensure that correctly configured test leads were used during EDG testing. (IMC 0305 H.4(a)) (Section 1R22)

B. Licensee Identified Violations

One violation of very low safety significance, which was identified by the licensee has been reviewed by the inspectors. Corrective actions taken or planned by the licensee have been entered into the licensee's corrective action program. The violation and the corrective action tracking number are listed in Section 4OA7 of this report.

REPORT DETAILS

Summary of Plant Status

Unit 1 and Unit 2 were operated at or near full power during the inspection period.

1. REACTOR SAFETY

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

1R01 Adverse Weather Protection (71111.01)

.1 Plant Systems Preparations for High Temperature and High Wind Conditions

a. Inspection Scope

The inspectors evaluated the licensee's preparations for high temperature and high wind conditions, focusing on the offsite power system and ultimate heat sink. The inspectors reviewed severe weather and plant de-winterization procedures and performed general area plant walkdowns, including the switchyard.

During walkdowns of the plant conducted during the second week of June 2007, the inspectors observed housekeeping conditions and verified that material capable of becoming an airborne missile hazard during high wind conditions or severe weather was appropriately restrained. The inspectors reviewed the licensee's protocols and procedures for communications with transmission system operator to verify that the appropriate information would be exchanged when issues arise that could impact the offsite power system. Additionally, the inspectors reviewed selected action requests and condition reports for the identification and resolution of equipment deficiencies associated with adverse weather mitigation. This activity represented one system inspection sample.

b. Findings

No findings of significance were identified.

1R04 Equipment Alignment (71111.04)

.1 Partial System Walkdowns

a. Inspection Scope

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

- Unit 2 West Essential Service Water Train
- Unit 1 Turbine Driven Auxiliary Feedwater and East Motor Driven Auxiliary Feedwater Trains
- Unit 1 East Containment Spray Train
- Unit 1 South Safety Injection Train

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.

1R05 Fire Protection (71111.05)

.1 Routine Resident Inspector Tours

a. Inspection Scope

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

- Fire Zone 5, Auxiliary Building 587 Elevation, East End
- Fire Zone 6N, Auxiliary Building 587 Elevation, Northwest End
- Fire Zone 6S, Auxiliary Building 587 Elevation, Southwest End
- Fire Zone 6M, Auxiliary Building 587 Elevation, West End
- Fire Zone 17A, Unit 1 West Motor Driven Auxiliary Feedwater Pump Room
- Fire Zone 17B, Unit 2 West Motor Driven Auxiliary Feedwater Pump Room
- Fire Zones 29C and 29D, Unit 2 Essential Service Water Pump Rooms
- Fire Zone 126, Technical Support Center

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.

1R06 Flood Protection Measures (71111.06)

.1 External Flood Protection Features

a. Inspection Scope

The inspectors completed one inspection sample regarding external flood protection measures by verifying the adequacy of flood protection features for the essential service water pump rooms. The inspectors reviewed design documentation; reviewed preventive maintenance activities on components related to external flood protection; and, reviewed corrective actions that have been implemented for problems previously entered into the licensees corrective action program regarding external flood protection. The inspectors also reviewed plant procedures that would be used to respond to external flooding to verify that the directed actions could be achieved.

b. Findings

No findings of significance were identified.

.2 Internal Flood Protection Features

a. Inspection Scope

The inspectors completed two inspection samples regarding flood protection measures for internal floods. The inspectors verified the adequacy of internal flood protection features for the essential service water pipe tunnel and the refueling water storage tank pipe tunnel areas, which contained risk significant piping and components.

The inspectors conducted walkdowns in the areas, reviewed design documentation and reviewed preventive maintenance activities on components related to flood protection. The inspectors verified the adequacy of the following attributes as applicable to each area:

- flood barriers such as watertight doors between flood areas;
- area sump pumps and sump level alarms;
- sealing of electrical conduits;
- drain system screens/covers in place to prevent debris from disabling the drain system; and
- potential internal flood sources such as expansion joints in piping systems.

The inspectors also reviewed plant procedures that would be used to respond to internal flooding. The inspectors verified that operator actions directed in the procedure would not be impeded by the flooding; and, verified that any equipment or tools needed to accomplish the procedure actions were staged or readily available.

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 completed one quarterly inspection sample of licensed operator requalification training by observing a crew of licensed operators during simulator training on May 15, 2007. The inspectors assessed the operators' response to the simulated events, which included a large break loss of coolant accident concurrent with safety injection failing to automatically actuate. 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 ability of licensee evaluators and the operating crews 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 two 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 Steam Generator Power Operated Relief Valves
- Unit 1 and 2 4160 Volt Breakers

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 Reserve Auxiliary Transformer 1-TR101-AB
- emergent maintenance on Supplemental Diesel Generators concurrent with planned maintenance on Unit 1 West Auxiliary Feedwater Pump
- planned maintenance on Unit 2 AB Emergency Diesel Generator (EDG)
- planned restoration of Unit 2 Circulating Water Pump 22 following maintenance
- emergent maintenance on Unit 2 AB EDG following failure to load during testing
- emergent maintenance to address Unit 2 Reactor Coolant Pump 23 seal leakage

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

b.1 Inadequate Foreign Material Exclusion Controls During Painting Surface Preparations Affected Operability of the Unit 2 AB EDG

Introduction

A finding of very low safety significance (Green) was identified through a self-revealing event. During painting surface preparation activities in the Unit 2 AB EDG room, the licensee failed to establish appropriate foreign material exclusion controls by allowing foreign material to collect on the EDG fuel injector pumps' metering rods. This resulted in an inoperable EDG when foreign material on one of the fuel injector pump metering rods became lodged in the pump and prevented the metering rod from further movement. No violation of regulatory requirements was identified.

Description

On April 24, 2007, operators started the Unit 2 AB EDG for a monthly surveillance test in accordance 2-OHP-4030-232-027AB, "AB Diesel Generator Operability Test (Train B)," Attachment 2, "DG2AB Fast Speed Start." Per the test procedure, operators start the engine, parallel the generator to the safety bus, and gradually load it to 3500 kilowatts. During the test, operators discovered that load on the EDG could not be raised above 1900 kilowatts. All indications on the engine appeared to be normal for the load that it was carrying. The licensee performed a failure investigation and discovered that the metering rod on the #3 front bank fuel injector pump was stuck. The governor was unable to increase the output of the EDG because all twelve fuel injector pumps are connected together through linkage with the governor. Operators were able to reduce load on the EDG to zero due to a design feature (i.e., springs in the linkage at each fuel injector pump), which allowed the other non-sticking fuel injector pump metering rods to be re-positioned.

The licensee removed the Unit 2 AB EDG from service and prepared to repair/replace the affected fuel injector pump. The licensee determined that replacement of the fuel injector pump was not necessary based on the system engineer's assessment. The system engineer noted that the engine's exhaust temperature indications for all twelve cylinders were normal with the engine loaded at 1900 kilowatts and his visual inspection of the running engine governor linkage identified that the #3 front bank fuel injector pump metering rod was not moving. With the engine shut down, maintenance craftsmen verified that the #3 front bank fuel injector pump metering rod was free to move, cleaned and lubricated the engine governor linkage, and cleaned other light dust from the engine and the room. No manual action was required to free the metering rod after the engine was shut down. The foreign material was not identified or recovered. The licensee successfully re-performed the surveillance test and declared the EDG operable.

The investigation team determined that the apparent cause of the sticking fuel injector pump metering rod was paint dust and debris on the back side of the rod being drawn into the pump as the governor demanded an increase in output from the fuel injector pumps. This was based on the coincidence of the malfunction with ongoing painting

surface preparation activities in the EDG room, the presence of dust and paint chips found on the engine's horizontal surfaces above and below the fuel injector pumps, the lack of similar incidents outside of painting surface preparation activities in the past, and a similar incident in the late 1980s. Major coatings restoration work was ongoing on the floors, walls, ceilings, piping and components in the EDG room. The work began on the morning of April 17 and involved scraping, sanding, and grinding to remove the old coatings.

The inspectors noted that the same painting surface preparation activities had been ongoing in all four of the EDG rooms and challenged the licensee to demonstrate that the presence of foreign material causing the failure of the Unit 2 AB EDG was not a potential common cause failure mode for the other three EDGs. In early discussions with the licensee's engineering staff, the licensee's intent was only to perform preventive maintenance on the engines to clean and lubricate the engine governor linkage. While this was considered to be an appropriate activity to ensure that the other engines would not have a similar failure due to the buildup of dust/grit on the linkage and fuel injector pump metering rods, it would not satisfy the TS 3.8.1.B.4 requirement to rule out a common cause failure mode or perform the surveillance test on the other EDGs. The licensee concluded that performing the surveillance test for the other three EDGs was necessary and satisfactorily completed surveillance test runs for the other three EDGs within the required 24-hour period. The licensee then performed preventive maintenance to clean and lubricate the engine governor linkage after each of the runs.

The inspectors reviewed the licensee's apparent cause evaluation and noted that although the work performed was not actually on any of the engines, the work instructions for the painting surface preparation activities in the EDG rooms did not have specific guidance for the protection of the engines from potential foreign material intrusion. The lack of specific foreign material exclusion instructions to protect the engines during these activities may have contributed to the introduction of foreign material onto the fuel injector pump metering rod. The licensee concluded that its procedure for controlling the work activities (12-MHP-5021-001-209, "Painting Permit") was adequate, in that the effect of painting surface preparation activities on adjacent equipment was considered. However, the licensee determined that an appropriate corrective action would include revision to the procedure to add appropriate notes, cautions, and/or prerequisites to specifically address an engineering review of any painting and preparation work in the EDG rooms. The painting permit should specify the administrative controls to be put in place to protect the fuel metering rods from collecting debris during surface preparation work.

Analysis

The inspectors determined that failing to establish appropriate foreign material exclusion controls for work in the Unit 2 AB EDG room was a licensee performance deficiency warranting a significance evaluation. The inspectors assessed this finding using the Significance Determination Process (SDP). The inspectors reviewed the examples of minor issues in Inspection Manual Chapter (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 finding 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 since the Unit 2 AB EDG was rendered inoperable by foreign material present on the engine. The inspectors performed a Phase 1 SDP review of this finding 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 finding was of very low safety significance (Green) because it did not represent a design or qualification deficiency, loss of safety function for a single train for greater than its TS allowed outage time, and was not risk-significant due to external event initiators.

Cross-cutting Aspects

The inspectors concluded that this finding was not related to any of the cross-cutting areas because none of the cross-cutting aspects was determined to be a significant contributor to the finding.

Enforcement

No violation of regulatory requirements was identified because the work activity was not directly associated with the safety-related function of an SSC. This issue is considered to be a finding (FIN 05000316/2007004-01) and was entered in the licensee's corrective action program as Action Request (AR) 00812696.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors completed five inspection samples associated with operability evaluations by reviewing the following action requests:

- AR 00813225, "Train B Lower Distribution Ignition System Switch Found Out of Position"
- AR 00813943, "Not All Containment Recirculation Drain Paths Are in Surveillances"
- AR 00807044, "Potentially Incorrect Acceptance Criteria"
- AR 00810366, "Post Accident Containment Hydrogen Monitoring System Backup Air System Leak"
- AR 00812696, "Cannot Raise Load on 2AB Diesel to More Than 1900 Kilowatts"

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.

b. Findings

A finding related to an event that rendered the Unit 2 AB EDG inoperable is discussed in Section 1R13 of this inspection report. No other findings of significance were identified.

1R19 Post Maintenance Testing (71111.19)

a. Inspection Scope

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

- Unit 1 East Essential Service Water System Train
- Unit 1 West Motor Driven Auxiliary Feedwater Pump
- Unit 1 and 2 345 Kilo-volt Switchyard Breaker 52-L1
- Unit 2 South Control Room Ventilation System Train

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.

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 two Inservice Testing (IST) samples.

- Review of Two EDG Surveillance Test Failures in November 2006
- 12-OHP-4030-066-121FD, "Diesel Fire Pump Operability Test," Attachment 1, "East Diesel Fire Pump Operability Test"
- 1-OHP-4030-116-020W, "West Component Cooling Water Loop Surveillance Test" (IST)
- 2-OHP-4030-STP-027AB, "AB Diesel Generator Operability Test (Train 2)," Attachment 2, "DG2AB Fast Speed Start"
- 1-IHP-4030-SMP-131, "Power Range Nuclear Instrumentation Functional Test"

- 1-IHP-4030-SMP-121, "Steam Generator 1&3 Steam/Feed Flow Mismatch and Steam Pressure Protection Set II Channel Operational Test and Calibration"
- 1-OHP-4030-108-051S, "South Safety Injection Pump System 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 being entered into the licensee's corrective action program with the appropriate characterization and significance.

b. Findings

b.1 Use of Incorrectly Configured Test Leads Rendered Two EDGs Inoperable

Introduction

A finding of very low safety significance (Green) with an associated Non-Cited Violation of TS 5.4.1.a was self-revealed. On two separate occasions, a maintenance craftsman performed procedure steps to connect a multi-meter to an EDG kilowatt meter using incorrectly configured test leads, which caused a short-circuit and subsequent failure of a fuse in the EDG metering circuit when the engine was started during surveillance testing. This adversely affected the operability and availability of the two EDGs.

Description

On November 17, 2006, operators started the Unit 1 AB EDG for a monthly surveillance test in accordance 1-OHP-4030-132-027AB, "AB Diesel Generator Operability Test (Train B)," Attachment 1, "DG1AB Slow Speed Start." Per the surveillance test procedure, a maintenance craftsman installed a multi-meter using test leads to two phases of the Unit 1 AB EDG kilowatt meter in the Control Room to provide a more accurate indication of EDG frequency. Upon starting the EDG, operators noted that both Control Room and local speed and frequency indications were faulted and shut down the engine. The maintenance craftsman removed the multi-meter and test leads after the engine was shut down and operators realigned the EDG for standby. The licensee investigated the problem, but no formal failure investigation process was used and the test equipment was not quarantined. The licensee found one of the two fuses was open in the metering circuit and replaced both fuses. The open circuit caused the loss of indications and also rendered the EDG inoperable because the output breakers would not close due to loss of breaker interlocks. In the interim, a shift change took place so a different maintenance craftsman installed the multi-meter with different test leads for the post maintenance test. Operators started the EDG and successfully completed the testing. The cause for the fuse failure was initially attributed to age-related failure.

On November 28, 2006, operators started the Unit 1 CD EDG for a monthly surveillance test in accordance 1-OHP-4030-132-027CD, "CD Diesel Generator Operability Test (Train A)," Attachment 1, "DG1CD Slow Speed Start." Upon starting the EDG,

operators noted that both Control Room and local speed and frequency indications were faulted and shut down the engine. A formal failure investigation was performed, but the test equipment was again not quarantined or examined. This time, however, the maintenance craftsman did not remove the multi-meter and test leads after the engine was shut down. As with the Unit 1 AB EDG test failure just 11 days before, the investigation team checked the two metering circuit fuses and found a single fuse open. The team replaced both fuses. The cause for the fuse failure was again assumed to be age-related failure. Operators started the EDG for a post maintenance test and subsequently shut down the engine when they encountered a loss of speed and frequency indications. The investigation team again found a single fuse open in the metering circuit.

The licensee's investigation team then examined the test equipment and discovered that the test leads used with the multi-meter were incorrectly configured for the application. The two leads were cross-connected at the multi-meter connecting plug, which shorted two phases of the metering circuit together. The fuse opened as designed to protect the circuit when the engine was started and the generator field was flashed. Before the generator field was developed, there was no current present to cause the fuse to open. The incorrectly configured test leads were previously made for a special test purpose; however, the maintenance craftsman failed to appropriately control the test leads to ensure that they would not be used for other applications. Upon connection of the multi-meter, the maintenance craftsman failed to appropriately use self-verification techniques to ensure that correctly configured test leads were used. A second maintenance craftsman who performed the concurrent verification step in the test procedure for connecting the multi-meter to the EDG kilowatt meter also did not identify the incorrectly configured test leads.

The inspectors reviewed the licensee's apparent cause evaluations and corrective actions for the two EDG test failures and discussed the evaluations with the licensee's staff. The inspectors noted that there were two independently performed evaluations for the two test failures. The first test failure was evaluated by the system engineering department and the second test failure was evaluated by the maintenance department. The inspectors found this overall approach in evaluating the two test failures separately to be questionable because it led to an incomplete evaluation of the overall problem. Neither evaluation addressed why the actual cause for the first test failure of the Unit 1 AB EDG on November 17 was not promptly identified and corrected, with actions taken to prevent recurrence of the same problem during testing of the Unit 1 CD EDG on November 28th.

The inspectors reviewed the evaluation for AR 00805533 performed by the system engineering department for the Unit 1 AB EDG test failure and noted the following:

- (1) The evaluation was an equipment apparent cause evaluation performed by the cognizant system engineer and focused on the Unit 1 AB EDG test failure. No corrective actions were identified besides replacing the fuses.
- (2) The inspectors discussed the evaluation with the system engineer. While he noted in the evaluation that both test failures were caused by the installation of incorrectly configured test leads to the kilowatt meter, no actions were discussed

with respect to the human performance aspects of the incident. The system engineer explained that his evaluation was focused on the equipment failure and the second apparent cause evaluation was focused on the human performance errors. The system engineer noted in the evaluation that the actual cause for the Unit 1 AB EDG test failure had not been determined until investigation of the Unit 1 CD EDG test failure on November 28.

- (3) There was no evaluation of the impact on EDG operability and availability as a result of the incident. In response to the inspectors' questions, the system engineer identified that the EDG output breakers would not close due to loss of breaker interlocks. This was not discussed in the evaluation.
- (4) There was no evaluation of the investigation team's failure to identify the actual cause of the test failure on November 17, so that its recurrence during testing on November 28 could have been precluded.

The inspectors reviewed the evaluation for AR 00805984 performed by the maintenance department for the Unit 1 CD EDG test failure and noted the following:

- (1) The evaluation was a human performance apparent cause evaluation and focused on the Unit 1 CD EDG test failure. The original evaluation made no mention of the previous Unit 1 AB EDG test failure. The inspectors interviewed the evaluator and asked why the first test failure was not mentioned and whether the same maintenance craftsman was involved with both tests. The evaluator answered that he was not aware of the first test failure when he performed the evaluation.
- (2) In response to the inspectors' questions, the licensee revised the human performance apparent cause evaluation to address both test failures. The cause was determined to be the same for both EDG test failures. The same maintenance craftsman used the same incorrectly configured test leads for both EDG tests. Corrective actions included coaching the maintenance craftsman involved with the incidents and temporary suspension of his qualifications.
- (3) The surveillance test procedures required concurrent verification of the test lead connections to the kilowatt meter. The inspectors noted that there was no evaluation of the missed opportunity for the licensee's concurrent verification practices to identify the incorrectly configured test leads before they were used.
- (4) There was no evaluation of the impact on EDG operability and availability as a result of the incident. The fact that the EDG output breakers would not close due to loss of breaker interlocks was not discussed.
- (5) There was no evaluation of the investigation team's failure to identify the actual cause of the first test failure on November 17, so that its recurrence during testing on November 28 could have been precluded. The licensee's evaluation concluded that because the action request for the first test failure event and its evaluation had not been completed prior to testing the Unit 1 CD EDG on November 28, there was no mechanism in place to prevent recurrence. The

inspectors challenged this conclusion because the actual mechanism to prevent recurrence should have been the licensee's formal failure investigation or troubleshooting processes, which were not used. The test equipment setup could have been quarantined following the first test failure and the investigation team could have examined it to find the incorrectly configured test leads that created the short circuit.

In response to the inspectors' questions regarding the two apparent cause evaluations, the licensee initiated AR 00813950 to perform a more in-depth evaluation of the two events commensurate with their significance.

Analysis

The inspectors determined that the failure to appropriately control the test leads and to appropriately use self-verification techniques to ensure that correctly configured test leads were used during testing of the Unit 1 AB and CD EDGs was a licensee performance deficiency warranting a significance evaluation. The inspectors assessed this finding using the SDP. The inspectors reviewed the examples of minor issues in IMC 0612, Appendix E, and determined that there were no examples related to this issue. Consistent with the guidance in IMC 0612, Appendix B, the inspectors determined that the finding 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 since the use of incorrectly configured test leads rendered the EDGs inoperable and unavailable to perform their safety function. The inspectors performed a Phase 1 SDP review of this finding using the guidance provided in IMC 0609, Appendix A. In accordance with the "SDP Phase 1 Screening Worksheet for IE, MS, and B Cornerstones," the inspectors determined that this finding was of very low safety significance (Green) because it did not represent a design or qualification deficiency, loss of safety function for a single train for greater than its TS allowed outage time, and was not risk-significant due to external event initiators.

Cross-cutting Aspects

The inspectors concluded that this finding affected the cross-cutting area of human performance. The licensee's human error prevention techniques were not used commensurate with the risk of the task being performed. Specifically, the maintenance craftsman failed to appropriately control the test leads and to use self-verification techniques to ensure that correctly configured test leads were used during testing of the Unit 1 AB and CD EDGs. (IMC 0305 H.4(a))

Enforcement

Unit 1 TS 5.4.1.a requires, in part, that written procedures shall be established, implemented, and maintained covering the applicable procedures recommended in Regulatory Guide 1.33, Revision 2, Appendix A, February 1978. Appendix A of Regulatory Guide 1.33, Revision 2, recommends procedures covering surveillance tests and inspections for emergency power tests. Procedures 1-OHP-4030-132-027AB,

"AB Diesel Generator Operability Test (Train B)," Attachment 1, "DG1AB Slow Speed Start," and 1-OHP-4030-132-027CD, "CD Diesel Generator Operability Test (Train A)," Attachment 1, "DG1CD Slow Speed Start," were written to cover an activity referenced in Appendix A of Regulatory Guide 1.33. Contrary to the above, during EDG surveillance testing on November 17, 2006, and again on November 28, 2006, the licensee failed to correctly implement the requirements of the above procedures. Specifically, a maintenance craftsman performed Step 4.4.2 of the above procedures to connect a multi-meter to an EDG kilowatt meter using incorrectly configured test leads, which caused a short-circuit and subsequent failure of a fuse in the EDG metering circuit when the engines were started. Because of the very low safety significance, this violation is being treated as a Non-Cited Violation consistent with Section VI.A of the NRC Enforcement Policy (NCV 05000315/2007004-02). The licensee entered this violation into its corrective action program as AR 07172040.

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 June 19, 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: Public Radiation Safety

2PS3 Radiological Environmental Monitoring and Radioactive Material Control Programs (71122.03)

.1 Reviews of Radiological Environmental Monitoring Reports, Data and Quality Control

a. Inspection Scope

The inspectors reviewed the Annual Radiological Environmental Operating Reports (AREOR) for calendar years 2005 and 2006. The inspectors also reviewed the results

of the routine land use census performed in 2005 and 2006. The inspectors reviewed changes made to the Offsite Dose Calculation Manual (ODCM) in 2005 and 2006 relative to the radiological environmental monitoring program (REMP). The inspectors also examined the results of the vendor laboratory quality assurance programs, including intra-laboratory and inter-laboratory comparisons. The inspectors assessed REMP implementation, as documented in the respective AREORs, against requirements of the TSs and the ODCM and evaluated changes to the program to determine whether there was any potential effect on capability to monitor the impacts of radioactive effluents on the environment. Additionally, the inspectors evaluated the current locations of the environmental monitoring stations and the types of samples collected from each location to determine if they were consistent with the ODCM and with NRC guidance in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light Water Cooled Nuclear Power Plants," Regulatory Guide 4.8, "Environmental TSs for Nuclear Power Plants" and an associated NRC Branch Technical Position.

These reviews represented three inspection samples.

b. Findings

No findings of significance were identified.

.2 Examination of the Radiological Environmental Monitoring Stations and Meteorological Towers

a. Inspection Scope

The inspectors visited selected onsite environmental air sample monitoring stations and examined each station's location as described in the ODCM to assess equipment material condition and operability and to verify that monitoring station orientation relative to plant effluent release points, equipment configuration, and vegetation growth control, allowed for the collection of representative samples. The inspectors examined the locations of selected onsite and near site thermoluminescent dosimeters (TLDs), which measured radiation levels directly, to verify that they were installed as described in the ODCM. In addition, the inspectors examined drinking water sampling stations (indicator and control sites) to evaluate the suitability of each in complying with the ODCM. The inspectors also examined equipment located at the primary and back-up meteorological towers to verify that the towers were sited adequately and that instrumentation was installed consistent with applicable industry guidance. The inspectors examined meteorological data readouts and atmospheric stability information provided by the plant process computer to determine if the equipment was operable. In addition, data recording capabilities were discussed with the licensee's environmental staff to verify that meteorological data were sampled and compiled consistent with the Regulatory Guide.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.3 Reviews of Radiological Environmental Monitoring Equipment Maintenance and Testing

a. Inspection Scope

The inspectors reviewed calibration and maintenance records for 2005 and 2006, which documented work on environmental air sampling pumps and meteorological tower equipment. This review encompassed calibration records for associated measurement and test equipment used for air sampling pump calibration to verify that the testing and maintenance programs for this equipment were implemented consistent with procedural requirements and industry standards. The inspectors discussed air sample pump maintenance practices with the licensee's environmental staff and reviewed overall data recovery success rates and the actions taken to address the minor equipment failures which were experienced.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

.4 Reviews of REMP Sample Collection and Laboratory Analyses

a. Inspection Scope

The inspectors accompanied a REMP technician and observed sample collection and handling associated with the changing-out of air particulate filters and charcoal cartridges, milk collection, sample collection preparation and analysis of surface water, and observed the sampling practices at the municipal drinking water treatment facilities. The inspectors verified that the samples were collected in accordance with the applicable sampling procedure and determined whether appropriate practices were used to ensure sample integrity and chain-of-custody. The inspectors also observed the REMP technician perform air sample pump train leak checks to verify that they were accomplished consistent with the procedure and were adequate to ensure no in-leakage paths existed which could impact sample representativeness.

The inspectors reviewed the results of the vendor's inter-laboratory comparison and internal cross-check programs, including cross-checks on radio-analyses of environmental media and evaluation of environmental TLDs. The inspectors also reviewed lower limit of detection values achieved by the vendor for various sample media. These reviews were performed to assess the analytical detection capabilities for radio-analyses of environmental samples and to determine whether the vendor had demonstrated capability to perform precise and accurate radiological measurements with the necessary sensitivity.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified

.5 Unrestricted Release of Material From Radiologically Controlled Areas

a. Inspection Scope

The inspectors observed several individuals and various material/equipment being released from the radiologically controlled area (RCA) of the plant at the job coverage coordinator control point. The inspectors also observed radiation protection technicians performing radiological surveys of miscellaneous materials being surveyed for released from the RCA. The methods used for control, survey, and release of materials from these areas was evaluated to determine consistency with regulatory guidance and compliance with the licensee's procedures.

The inspectors verified that the radiation monitoring instrumentation was appropriate for the radiation types present and was in current calibration. The inspectors reviewed the licensee's criteria for the survey and release of potentially contaminated material and verified that there was adequate guidance on how to respond to indications which may signal the presence of licensed radioactive material. The inspectors reviewed the licensee's procedures and ensured the radiation detection sensitivities were consistent with the NRC guidance contained in IE Circular 81-07 and IE Information Notice 85-92 for surface contamination and with applicable NRC Health Physics Positions (HPPOS-221) for volumetrically contaminated material. Through interviews, the inspectors verified that the Radiation Protection staff had a clear understanding of the radioactive material control program requirements and understood the proper radiation survey equipment to use for various unconditional release applications.

The inspectors verified that the licensee evaluated the impact of difficult-to-measure radionuclides on its radiation survey program including those radionuclides that decay via electron capture. The inspectors reviewed the licensee's procedures to verify that the radiation detection instrumentation was used at its typical sensitivity level based on appropriate counting parameters (i.e., counting times and background radiation levels). The inspectors verified that the licensee had not established a "release limit" by altering the instrument's typical sensitivity through such methods as raising the energy discriminator level or locating the instrument in a high radiation background area.

These reviews represented two inspection samples.

b. Findings

No findings of significance were identified.

.6 Identification and Resolution of Problems for the Radiological Environmental Monitoring and Radioactive Material Control Programs

a. Inspection Scope

The inspectors reviewed licensee corrective action documents generated between July 2005 and March 2007 that related to the REMP or to radioactive material control issues. The results of Performance Assurance Department audits and REMP self-assessments were also reviewed, as were the results of a joint nuclear utility audit of the vendor laboratory. These reviews were conducted to determine if the licensee adequately assessed the effectiveness of its programs and whether the licensee, through its corrective action program, identified individual problems and trends, evaluated contributing causes and extent of condition, and developed corrective actions to achieve lasting results.

These reviews represented one inspection sample.

b. Findings

No findings of significance were identified.

4. OTHER ACTIVITIES

4OA1 Performance Indicator Verification (71151)

.1 Reactor Coolant System Specific Activity

a. Inspection Scope

The inspectors sampled the licensee's submittals for the Reactor Coolant System Specific Activity performance indicator (PI) for the period January 2006 through March 2007. The inspectors used PI definitions and guidance contained in Revision 4 of Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," to verify the accuracy of the PI data. These reviews represented two samples, one for each operating unit. The following PI data was reviewed:

The inspectors reviewed Chemistry Department records including isotopic analyses for selected dates in 2006 through March 2007, to determine if the greatest dose equivalent iodine (DEI) values determined during steady state operations corresponded to the values reported to the NRC. The inspectors also reviewed selected DEI calculations including the application of dose conversion factors as specified in plant's TSs. Additionally, the inspector accompanied two chemistry technicians and observed the collection and preparation of reactor coolant system samples to evaluate compliance with the licensee's sampling procedure. Further, sample analyses and calculation methods were discussed with chemistry staff to determine their adequacy relative to TSs, licensee procedures and industry guidelines.

b. Findings

No findings of significance were identified.

.2 Mitigating Systems Performance Index

a. Inspection Scope

The inspectors completed ten performance indicator inspection samples pertaining to the Mitigating System Performance Index. The inspectors reviewed a sample of plant records and data against the reported performance indicators for the following:

- Unit 1 and Unit 2 High Pressure Safety Injection Systems
- Unit 1 and Unit 2 Auxiliary Feedwater Systems
- Unit 1 and Unit 2 Emergency AC [Alternating Current] Power Systems
- Unit 1 and Unit 2 Residual Heat Removal Systems
- Unit 1 and Unit 2 Support Cooling Water Systems

The inspectors reviewed control room logs, the Maintenance Rule database, and maintenance and test data from July 2006 through March 2007. The inspectors verified that the unavailability time and the demand failure data for the mitigating systems were reported accurately.

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, however these are not discussed in this report.

b. Findings

No findings of significance were identified.

.2 Semi-annual Trend Review

a. Inspection Scope

The inspectors completed one inspection sample regarding the semi-annual review of trends. The inspectors reviewed repetitive or closely related issues documented in the licensee's corrective action program to look for trends not previously identified. The inspectors also reviewed action requests regarding licensee-identified trends to verify that corrective actions were effective in addressing the trend and implemented in a timely manner commensurate with the significance.

b. Findings and Observations

No findings of significance were identified.

4OA6 Meetings

.1 Resident Inspectors' Exit Meeting

The inspectors presented the inspection results to Mr. M. Peifer and other members of the licensee's staff at the conclusion of the inspection on July 10, 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 is not specifically discussed in this report.

.2 Interim Exit Meetings

An interim exit meeting was conducted for the Public Radiation Safety Radiological Environmental Monitoring Program and Radioactive Material Control Program inspection with Mr. J. Jensen and other members of the licensee's staff on May 4, 2007.

4OA7 Licensee-Identified Violations

The following violation of very low safety significance (Green) was identified by the licensee and is a violation of NRC requirements, which meets the criteria of Section VI of the NRC Enforcement Policy for being dispositioned as a Non-Cited Violation.

Cornerstone: Public Radiation Safety

The requirement of 10 CFR 20.1802 states that each licensee shall control and maintain constant surveillance of licensed material that is in a controlled or unrestricted area and that is not in storage. Contrary to the above, on July 13, 2005, a radiologically contaminated sling and harness were identified in the unrestricted area of the radioactive materials building. Gamma analysis by multi-channel analyzer identified that licensed material was present on the sling and harness in low levels of the isotopes cobalt (Co) 60 and cesium (Cs) 137. This incident was identified by and documented in the licensee's corrective action program as AR 05194079. Initial

corrective actions included taking immediate possession and control of the radioactive material. Additionally, an extensive extent of condition review was initiated by the licensee including a detailed site wide survey to identify any potentially radioactive material that may be located in radiologically uncontrolled areas. Long term corrective actions were taken by the licensee to revise the applicable procedures to institute additional administrative controls for the handling, radiological survey, and release of radioactive materials.

This issue represents a performance deficiency as defined in IMC 0612 in that the issue is the result of not meeting a requirement where the cause was reasonably within the licensee's ability to foresee and correct, and should have been prevented. This finding is more than minor because it is associated with the cornerstone attribute of program and processes for material release and the cornerstone objective for ensuring the adequate protection of the public health and safety from exposure to radioactive materials released into the public domain as a result of routine civilian nuclear reactor operation. The inspector then screened the finding for significance in accordance with IMC 0609, Appendix D, "Public Radiation Safety SDP." The finding was of very low safety significance because although it did involve radioactive material control, the finding did not involve the transportation of radioactive material, public exposure was less than 0.005 rem, and there were less than five occurrences of findings involving the control of radioactive material for the last two years.

ATTACHMENT: SUPPLEMENTAL INFORMATION

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee

J. Beer, Health Physicist
T. Brown, Radiation Protection Manager
R. Crane, Regulatory Compliance Supervisor
H. Etheridge, Regulatory Affairs Specialist
D. Foster, Environmental Specialist
J. Gebbie, Plant Engineering Director
J. Harner, Environmental Manager
J. Jensen, Site Vice President
R. Lingle, Systems Engineering Manager
R. Meister, Regulatory Affairs Specialist
C. Moeller, Radiation Protection General Supervisor
M. Peifer, Support Services Vice President
S. Simpson, Regulatory Affairs Manager
S. Vasquez, Maintenance Manager
W. Wah, System Engineer
L. Weber, Plant Manager
C. Wohlgamuth, Environmental Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

Opened and Closed

05000316/2007004-01	FIN	Inadequate Foreign Material Exclusion Controls During Painting Surface Preparations Affected Operability of 2AB Emergency Diesel Generator (Section 1R13)
05000315/2007004-02	NCV	Use of Incorrectly Configured Test Leads Rendered Two EDGs Inoperable (Section 1R22)

Discussed

None

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.

1R01 Adverse Weather Protection

12-OHP-4022-001-010, "Severe Weather," Revision 5
PMP-3100-IOA-001, "Inter-Organizational Agreement Between the AEP Utility Operations and AEP Nuclear Generation Group for Assistance to Cook Nuclear Plant," Revision 2
12-OHP-4022-082-004, "Degraded Offsite AC Voltage Response," Revision 5
1-OHP-4024-121, "Annunciator #121 Response: Generator," Revision 29
12-IHP-5040-EMP-004, "Plant Winterization and De-Winterization," Revision 9
AR 07017048, "Contingency fo Unit 1 Bus Duct Supplemental Cooling"
AR 00808901, "Power Supply Voltage Readings on New Digital Controls System Turbine Controls"
CR 05277047, "2005 Summer Readiness Critique"
CR 05028010, "2-AM-INV Frequency High Out of Specification"
CR 05157068, "Evaluate Request for Change to Preventive Maintenance Program for Components 1-TR-MAIN, 2-TR-MAIN-1/2/3"
AR 00800511, "Enhance PMP-2291-EXE-001 to Reference Grid Alerts/Warnings"

1R04 Equipment Alignment

D. C. Cook Nuclear Plant Updated Final Safety Analysis Report, Section 9.5, "Component Cooling System," Revision 20
D. C. Cook Nuclear Plant Unit 1 TSs
12-OHP-4021-019-001, "Operation fo the Essential Service Water System," Revision 32
1-OHP-4021-009-001, "Placing the Containment Spray System in Standby Readiness," Revision 12
OP-1-5142-43, "Flow Diagram Emergency Core Cooling (SIS)"
1-OHP-4021-008-002, "Placing Emergency Core Cooling System in Standby Readiness," Revision 19
1-OHP-4021-056-001, "Filling and Venting Auxiliary Feedwater System", Revision 25
OP-1-5106A-59, "Flow Diagram Aux-Feedwater Unit 1", Revision 59

1R05 Fire Protection

Fire Hazards Analysis, Fire Zones 5, 6M, 6N, 6S, 17A, 17B, 29C, 29D, and 126, Revision 13
Fire Pre-Plan, Fire Areas B, E, O, P, and EE, Revision 4
AR 00813160, "Abandoned Thermo-Lag Material Seismic Question"
AR 00116694, "Fire Pre-Plan for TSC Halon"
CR 06066042, "Emergency Lighting Packs"
AR 07179033, "Revise FHA as applicable for Fire Zone 126 (TSC)"

1R06 Flood Protection Measures

SD-061206-001, Flooding Evaluation Report for D. C. Cook Nuclear Plant, Revision 0
Updated Final Safety Analysis Report Table 14.4.2-1A, "Equipment Required To Shutdown Reactor (Unit 1)," Revision 21
Updated Final Safety Analysis Report Table 14.4.2-1, "Equipment Required To Shutdown Reactor (Unit 2)," Revision 21
1/2-OHP-5030-067-001, "Heater Drain Pump Area Flood Control Pump Functional Check," Revision 001/002
CR 05158029, "Determine if a Functional Test RT (Recurring Task) Needs to be Created"
12-OHP-4022-001-009, Seiche," Revision 3
1-OHP-4022-019-001, "ESW System Loss/Rupture," Revision 6
AR 00812660, "Discrepancies / Typos in Annunciator Response Procedures"
1-OHP-4024-118 Drop 84, "ESW Pipe Tunnel Sump Level Hi-Hi," Revision 19
2-OHP-4024-218 Drop 84, "ESW Pipe Tunnel Sump Level Hi-Hi," Revision 13
AR 00812706, "Engineering Evaluation of U1 ESW Tunnel Per NRC Walkdown"
AR 00812673, "Engineering Evaluation of U2 ESW Tunnel Per NRC Walkdown"
AR 00800186, "X-Cutting Issue Regarding Timeliness of Repair to 12-DR-129"
AR 00803504, "Incorrect PM Determination For 12-DLA-700"
AR 00808122, "12-DR-129, As Left Gap of 0.007"
Work Order R0229488, "1-XJ-73, Inspect Expansion Joint," February 1, 2005
Work Order R0267976, "2-XJ-54W, Inspect Expansion Joint," May 15, 2006
Work Order 55285767-02, "Inspect Turbine Room Sump Overflow Check Valve," January 24, 2007
Work Order 01308017, "1-XJ-73, Correct Elongation Issue," May 2, 2002

1R11 Licensed Operator Requalification Program

RQ-E-3201B, Simulator Exercise Guide, Cycle 3201 As-Found Simulator Evaluation B, Revision 0

1R12 Maintenance Effectiveness

Maintenance Rule Scoping Document for Reactor Protection System, Revision 1
Maintenance Rule a(1) Action Plan for Reactor Protection System Test Injection Switches, Revisions 2,3 and 4
Maintenance Rule 24-Month Functional Failure Report for Reactor Protection System, April 2007
Maintenance Rule Two-Year Unavailability Report for Reactor Protection System, April 30, 2007
AR 00807708, "Reactor Protection Converter Found Out of Tolerance"
AR 00806112, "Steam Generator Narrow Range Channel 1 Failed Low"
Maintenance Rule Scoping Document for Radiation Monitoring System, Revision 7
AR 00812571, "Reevaluate Radiation Monitoring System Maintenance Rule Monitoring Criteria"
Maintenance Rule Scoping Document for 4 Kilovolt / 600 Volt Alternating Current Electrical Distribution System, Revision 5
AR 00803826, "Three (3) Breakers Failed Instantaneous Trip"
Maintenance Rule (a)(1) Action Plan for Main Steam System, Revision 1
Maintenance Rule Scoping Document, "Main Steam System," Revision 2
Maintenance Rule Two-year Unavailability Report for Main Steam System, June 26, 2007
AR 00804837, "EACE - 2-MRV-223, SG PORV, Failed to Open"
AR 00809658, "1-MRV-223 Stroke Open Time Too Long"

AR 00800968, "2-MRV-223 Did Not pass Initial Stroke Time"
AR 00125503, "2MRV243 Would Not Fully Stroke While Calibrating The Position Transmitter"
AR 00801332, "2-MRV-223 Leak By"
AR 00807973, "2-MRV-223 Stroked Too Fast In Closed Direction"
AR 00807702, "Air Hose to 2-MRV-233 Found Disconnected From Actuator"
AR 00806189, "SG #12 PORV Lifting"

1R13 Maintenance Risk Assessments and Emergent Work Evaluation

PMP-2291-SCH-001, "Work Control Activity Scheduling Process," Revision 16
PMP-2291-WAR-001, "Work Activity Risk Management Process," Revision 13
PMP-2291-OLR-001, "On-Line Risk Management," Revision 11
Control Room Logs, April 16 through 18, May 14 through 17, and June 11 through 15, 2007
PMP-2291-OLR-001, On-Line Risk Management, Unit 1 and Unit 2 Part 1 Configuration Risk Assessment, April 16 through 18, May 14 through 17, and June 11 through 15, 2007
Daily Work Activity Schedules, April 16 through 18, May 14 through 17, and June 11 through 15, 2007
AR 07163049, "Scheduled Activities for U2 AB EDG CMP Not Risked Properly"
AR 07135010, "SDG2 Output Breaker 12-52-G2 Tripped Open"
AR 07133004, "Both SDGs Tripped Off on Over Voltage"
AR 05229007, "Safety Related Pumps Are Not Always Consistently Considered Available or Unavailable for Risk Assessments"
AR 00802117, "LCO [Limiting Condition for Operation] Windows Exceeded Scheduled Duration and Impacted Work"
Infrequently Performed Test Evolution Briefing Guide for Start of Circulating Water Pump #22 With Both Units Operating at 100% Power, April 18, 2007
AR 00812696, "Cannot Raise Load on Diesel to More Than 1900 Kilowatts"
Unit 2 Control Room Logs, April 24-25, 2007
PRA-STUDY-034, "D.C. Cook Nuclear Plant Probabilistic Risk Assessment of 2AB EDG Loading Failure on April 24, 2007," Revisions 0 and 1

1R15 Operability Evaluations

AR 00813943, "Not All Containment Drain Paths Are In Surveillances"
AR 00813225, "Train B Lower Distribution Ignition System (DIS) Found Out of Position"
DC Cook Updated Final Safety Analysis Report, Table 14.3.6-17a, Containment Regional Designation / Igniter Assembly Locations - Unit 1, Revision 16.6
DC Cook Updated Final Safety Analysis Report, Table 14.3.6-17, Ignitor Assembly Locations - Unit 2, Revision 19.1
AR 00810366, "Post Accident Containment Hydrogen Monitoring System Backup Air System Leak"
2-EHP-6040-240-001A, "Unit 2 Post Accident Containment Hydrogen Monitoring System Backup Bottle Air Supply Train A Capacity Test," Revision 0
AR 00807044, "Potentially Incorrect Acceptance Criteria"
1-E-N-ELCP-120-002, "120V AC Control Room Instrumentation Distribution (CRID) Loading and Voltage Drop Analysis - Unit 1 Calculation", Revision 1
Design Information Transmittal DIT-S-01028-01, "Range of Allowable Indicated AC Output Voltage for CRID Inverters," Revision 1
1-OHP-4030-114-031, "Operation Weekly Surveillance Checks", Data Sheet 1, "Breaker Alignment"

1R19 Post Maintenance Testing

Work Order 55255239-01, "Replace HFA Relay 1-20X-FMO-212-OP-AUX," May 16, 2007
Work Order 55233375-01, "Perform Full Preventive Maintenance on 1-FMO-242-ACT, West MDAFP Discharge to Steam Generator #1 Control Valve" May 16, 2007
Work Order 55238332-01, "Perform Full Preventive Maintenance on 1-FMO-212-ACT, West MDAFP Discharge to Steam Generator #4 Control Valve" May 16, 2007
Work Order 55291745-01, 1-21-L1L, Modify Relay Settings, April 11, 2007

1R22 Surveillance Testing

1-OHP-4030-108-051S, "South Safety Injection Pump System Test", Revision 3
1-IHP-4030-SMP-121, "Steam Generator 1& 3 Steam/Feed Flow Mismatch and Steam Pressure Protection Set II Channel Operational Test and Calibration", Revision 6
WCAP-12741, "Westinghouse Menu Driven Setpoint Calculation Program (STEPIT)", as Approved in Unit 1 and Unit 2 License Amendments 175 and 160, May 13, 1994
12-OHP-4030-066-121FD, "Diesel Fire Pump Operability Test," Revision 5
D.C. Cook Nuclear Plant Unit 1 Technical Requirements Manual (TRM) and TRM Bases," Revision 16
AR 07097006, "Conflicting Technical Requirements Manual Surveillance Requirements"
OP-12-5152T-10, "Flow Diagram Fire Protection-Water Piping in Pump House Floor El. 598'0" Units 1 & 2," Revision 10
OP-12-5152S-3, "Flow Diagram Fire Protection-Water Piping at N & S Storage Tanks Units 1 & 2," Revision 3
1-OHP-4030-132-027AB, "AB Diesel Generator Operability Test (Train B)," Attachment 1, "DG1AB Slow Speed Start," Revision 0
1-OHP-4030-132-027CD, "CD Diesel Generator Operability Test (Train A)," Attachment 1, "DG1CD Slow Speed Start" Revision 0
AR 00805533, "Loss of Frequency/Voltage Indication During Slow Start"
AR 00805984, "1-OME-150-CD Incorrect Test Lead Setup"
Unit 1 Control Room Logs, November 17 and 28, 2006
1-IHP-4030-SMP-131, "Power Range Nuclear Instrumentation Functional Test" Revision 10
AR 07137041, "1-N42 Drawer Meter Found Out of Spec"
AR 07137027, "1-N42 Control Power Fuses Blew"

1EP6 Drill Evaluation

EMD-32a, Nuclear Plant Event Notification, June 19, 2007
PMP-2080-EPP-100, "Emergency Response," Attachment 8, "Notification of Off-Site Agencies," Revision 9
PMP-2080-EPP-101, "Emergency Classification," Revision 10

2PS3 Radiological Environmental Monitoring and Radioactive Material Control Programs

PMP-6010-OSD-001; Offsite Dose Calculation Manual; Revision 21
PMP-6010-RPP-301; Control of Material in a Restricted Area; Revision 19
Annual Radiological Environmental Operating Reports for 2005 and 2006
12-THP-6010-RPP-301; Radiation Protection Actions for Restricted Area Material Control; Revision 4
12-THP-6010-RPC-550; Calibration of Radiation Protection Multi-Channel Analysers with CAS Software; Revision 4
12-THP-6010-RPI-503; Quality Control of Laboratory Counting Equipment; Revision 9

12-THP-6010-RPP-007; Radiation Protection Calculations and Technical Bases Documents; Basis Document for the Establishment of Set Points for Automated Free Release Monitors for Personnel, Equipment and Components; Revision 0
 12-THP-6010-RPP-007; Radiation Protection Calculations and Technical Bases Documents; Site Wide Radiological Surveys; Revision 1
 12-THP-6010-RPP-401; Performance of Radiation and Contamination Surveys, Revision 22
 12-THP-6010-RPC-514; Calibration of the AVS-28A With the AVT-100 Air Volume Totalizer; Revision 4
 12-THP-6010-RPP-630; Collection of REMP Surface Water Samples; Revision 4
 12-THP-6010-RPP-632; Collection of Environmental Air Samples; Revision 5
 12-THP-6010-RPP-633; Collection of Environmental Radiation Dosimeters; Revision 5
 12-THP-6010-RPP-635; Collection of Milk Samples; Revision 1
 12-THP-6010-RPP-636; Collection of Fish Samples; Revision 2b
 12-THP-6010-RPP-637; Collection of Lake Sediment Samples; Revision 2
 12-THP-6010-RPP-638; Collection of Grape and Broadleaf Samples; Revision 3
 12-THP-6010-RPP-640; Land Use Census; Revision 4
 12-THP-6010-RPP-913; Scaling Factor Determination; Revision 1
 12-THP-6020-CHM-311; Turbine Room Sump; Revision 14
 NUPIC Audit No. 19954; Joint Audit of AREVA NP Environmental Laboratory; October 23-26, 2006
 AREVA NP Environmental Laboratory, Semi-Annual Quality Assurance Status Reports; July - December 2006
 Calibration Records; 2-IHP-6030-IMP-333; Meteorological Instrumentation Calibration; Performed in April 2007; September 2006; and April 2006
 AR 05194079; Contaminated Sling and Harness Found in Radioactive Materials Building Clean Area; July 13, 2005
 AR 05230024; Results from Radiological Site Wide Sweep inside the Radioactive Materials Building; August 18, 2005
 AR 05025045; Self-Assessment for REMP; August 23, 2005
 AR 00115105; Results from Radiological Site Wide Sweep Of Cold Tool Room; August 31, 2005
 AR 07014007; Radioactive Material Outside of the Restricted Area; January 14, 2007
 AR 07015074; Add REMP Groundwater Wells MW-20, 21 to the ODCM; January 15, 2007
 AR 07024050; Lifting Sling Found in Cold Tool Crib with Fixed Contamination; January 24, 2007
 AR 07040042; Contaminated Items Found During Site Wide Sweep Survey; February 9, 2007
 AR 07050026; Radioactive Material Identified During Site Wide Sweep; February 16, 2007
 AR 00804793; Self-Assessment for REMP; October 29, 2006
 AR 00807456; Possible Radioactive Material Outside of the Restricted Area; January 11, 2007
 AR 00807508; Radioactive Material Outside of the Restricted Area; January 14, 2007
 AR 00810466; Site Wide Sweep Roll-Up; March 13, 2007

40A1 Performance Indicator Verification

Nuclear Energy Institute 99-02, "Regulatory Assessment Performance Indicator Guideline," Revision 4
 Unit 1 and Unit 2 Control Room Logs, July 1, 2006 through March 31, 2007
 MSPI Derivation Report, March 2007
 PRA-MSPI-BASIS, "MSPI Basis Document," Revision 1
 PRA-MSPI-002, "Baseline Unavailability for MSPI," Revision 1

PMP-7110-PIP-001, Data Sheet 5, "Safety System Unavailability - High Pressure Safety Injection System," July 2006 - March 2007
PMP-7110-PIP-001, Data Sheet 6, "Safety System Unavailability - Auxiliary Feedwater System," July 2006 - March 2007
PMP-7110-PIP-001, Data Sheet 7, "Safety System Unavailability - Residual Heat Removal System," July 2006 - March 2007
1-OHP-4030-117-050W, "West Residual Heat Removal Train Operability Test Modes 1-4," Revision 7
1-OHP-4030-156-017T, "Turbine Driven Auxiliary Feedwater System Test," Revision 2
1-OHP-4030-156-017E, East Motor Driven Auxiliary Feedwater System Test, Revision 2
1-OHP-4030-108-051N, North Safety Injection Pump System Test, Revision 3
AR 07186027, "Potential For Procedures to Not Support MSPI Data"
PMP-7110-PIP-001, "Regulatory Oversight Program Performance Indicators and Monthly Operating Report Data - Reactor Coolant System Specific Activity," Revision 8
12-THP-6020-CHM-101, "Reactor Coolant System," Revision 22
12-THP-6020-CHM-109, "Chemical and Volume Control System," Revision 15
12-THP-6020-INS-026, "Gamma Spectrometry System," Revision 3

4OA2 Identification and Resolution of Problems

Various Departmental Roll-up Meeting Minutes and Reports, April 2007
4th Quarter 2006 Trend Report
1st Quarter 2007 Trend Scorecard, May 15, 2007
Performance Assurance Audit 07-04, "Plant Operations," April 19, 2007
AR 00801181, "Potential Trend in Incorrect Reportability Determinations"
AR 00811754, "AR Screening Discrepancies"

LIST OF ACRONYMS USED

AC	Alternating Current
ADAMS	Agency-wide Documents and Management System
AR	Action Request
AREOR	Annual Radiological Environmental Operating Report
DEI	Dose Equivalent Iodine
EDG	Emergency Diesel Generator
FIN	Finding
IMC	Inspection Manual Chapter
IST	Inservice Testing
NCV	Non-Cited Violation
NRC	Nuclear Regulatory Commission
ODCM	Offsite Dose Calculation Manual
PARS	Publicly Available Records
PI	Performance Indicator
RCA	Radiologically Controlled Area
REMP	Radiological Environmental Monitoring Program
SDP	Significance Determination Process
SSC	Structures, Systems, and Components
TLD	Thermoluminescent Dosimeter
TS	Technical Specifications