



UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
REGION IV  
611 RYAN PLAZA DRIVE, SUITE 400  
ARLINGTON, TEXAS 76011-4005

October 25, 2007

Stewart B. Minahan,  
Vice President-Nuclear and CNO  
Nebraska Public Power District  
P.O. Box 98  
Brownville, NE 68321

SUBJECT: COOPER NUCLEAR STATION - NRC INTEGRATED INSPECTION  
REPORT 05000298/2007004

Dear Mr. Minahan:

On September 22, 2007, the U.S. Nuclear Regulatory Commission (NRC) completed an inspection at your Cooper Nuclear Station. The enclosed integrated inspection report documents the inspection findings which were discussed on October 4, 2007, with Mr. M. Colomb, General Manager of Plant Operations, 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 four findings were evaluated under the risk significance determination process as having very low safety significance (Green). Three of these findings were determined to be violations of NRC requirements. However, because these violations were of very low safety significance and the issues were entered into your corrective action program, the NRC is treating these findings as noncited violations, consistent with Section VI.A.1 of the NRC's Enforcement Policy. These noncited violations are described in the subject inspection report. If you contest the violations or significance of the violations, 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 copies to the Regional Administrator, U.S. Nuclear Regulatory Commission, Region IV, 611 Ryan Plaza Drive, Suite 400, Arlington, Texas 76011-4005; the Director, Office of Enforcement, U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001; and the NRC Resident Inspector at the Cooper Nuclear Station facility.

In accordance with 10 CFR 2.390 of the NRC's Rules of Practice, a copy of this letter, its enclosure, and your response will be made available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records 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).

Should you have any questions concerning this inspection, we will be pleased to discuss them with you.

Sincerely,

*/RA/*

Michael C. Hay, Chief  
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Division of Reactor Projects

Docket: 50-298  
License: DPR-46

Enclosure: NRC Inspection Report 05000298/2007004  
w/Attachment: Supplemental Information

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SUNSI Review Completed: **WCW** ADAMS:  Yes  No Initials: **WCW**  
 Publicly Available  Non-Publicly Available  Sensitive  Non-Sensitive

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SRI:DRP/C	C:SPE:DRP/C	C:DRS/EB1	C:DRS/PSB	C:DRS/OB
NHTaylor	WCWalker	WBJones	MPShannon	ATGody
<i>/E-WCWalker for/</i>	<i>/RA/</i>	<i>/RA/</i>	<i>/RA/</i>	<i>/RA/</i>
10/25/07	10/25/07	10/22/07	10/22/07	10/22/07
C:DRS/EB2	C:DRP/C			
LJSmith	MCHay			
<i>/RA DLProulx for/</i>	<i>/RA/</i>			
10/22/07	10/25/07			

**U.S. NUCLEAR REGULATORY COMMISSION**

REGION IV

Docket: 50-298  
License: DPR-46  
Report: 05000298/2007004  
Licensee: Nebraska Public Power District  
Facility: Cooper Nuclear Station  
Location: P.O. Box 98  
Brownville, Nebraska  
Dates: June 24 through September 22, 2007  
Inspectors: N. Taylor, Senior Resident Inspector  
M. Chambers, Resident Inspector  
R. Lantz, Senior Emergency Preparedness Inspector  
L. Ricketson, P.E., Senior Health Physicist  
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Approved By: M. Hay, Branch C, Division of Reactor Projects

## TABLE OF CONTENTS

SUMMARY OF FINDINGS .....	-3-
REPORT DETAILS .....	-6-
REACTOR SAFETY .....	-6-
1R04 <u>Equipment Alignment</u> .....	-6-
1R05 <u>Fire Protection</u> .....	-7-
1R11 <u>Licensed Operator Requalification</u> .....	-8-
1R12 <u>Maintenance Rule</u> .....	-8-
1R13 <u>Maintenance Risk Assessments and Emergent Work Evaluation</u> .....	-9-
1R15 <u>Operability Evaluations</u> .....	-9-
1R19 <u>Postmaintenance Testing</u> .....	-10-
1R22 <u>Surveillance Testing</u> .....	-11-
1EP2 <u>Alert Notification System Testing</u> .....	-11-
1EP3 <u>Emergency Response Organization Augmentation Testing</u> .....	-12-
1EP5 <u>Correction of Emergency Preparedness Weaknesses and Deficiencies</u> ...	-12-
RADIATION SAFETY .....	-12-
2OS1 <u>Access Control to Radiologically Significant Areas</u> .....	-13-
2OS2 <u>ALARA Planning and Controls</u> .....	-14-
2PS1 <u>Radioactive Gaseous and Liquid Effluent Treatment and Monitoring Systems</u>	-15-
OTHER ACTIVITIES .....	-17-
4OA1 <u>Performance Indicator Verification</u> .....	-17-
4OA2 <u>Problem Identification and Resolution</u> .....	-18-
4OA3 <u>Event Follow-up</u> .....	-21-
4OA6 <u>Meeting, Including Exit</u> .....	-26-
ATTACHMENT: SUPPLEMENTAL INFORMATION .....	A-1
KEY POINTS OF CONTACT .....	A-1
LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED .....	A-2
LIST OF DOCUMENTS REVIEWED .....	A-2
LIST OF ACRONYMS .....	A-8

## SUMMARY OF FINDINGS

IR 05000298/2007004; 06/24/2007 - 09/22/07; Cooper Nuclear Station: Radioactive Gaseous and Liquid Effluent Treatment And Monitoring Systems, Identification and Resolution of Problems, Event Followup.

The report covered a 3-month period of inspection by resident inspectors and region-based inspectors. Three Green noncited violations and one Green finding were identified. The significance of most findings is indicated by their color (Green, White, Yellow, or Red) using Inspection Manual Chapter 0609, "Significance Determination Process." Findings for which the significance determination process 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 3, dated July 2000.

### A. NRC-Identified and Self-Revealing Findings

#### Cornerstone: Mitigating Systems

- Green. The inspectors identified a Green finding regarding the licensee's failure to follow the requirements of industrial safety procedures. Specifically, licensee personnel violated the requirements of Administrative Procedure 0.36, "Industrial Safety Procedure," and Administrative Procedure 0.36.6, "Monitoring for Industrial Gases," during a chemical injection treatment in the service water system. Specifically, the licensee failed to properly post the hazardous work permit, the individuals performing the work did not review the permit, and licensee personnel did not immediately evacuate the work area as required following a toxic gas release. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2007-06421.

The finding is more than minor because if left uncorrected it could become a more significant safety concern in that failure to follow industrial safety procedures during chlorine dioxide injections could put personnel at significant risk of injury and could have resulted in a larger toxic gas release in the intake structure, inhibiting the operators' ability to access safety related equipment to mitigate the consequences of an accident. Using Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," the finding was determined to be of very low safety significance because it did not result in a loss of safety function for any mitigating system. The cause of this finding is related to the human performance cross cutting component of work practices in that licensee personnel did not follow the requirements of industrial safety procedures as required (H.4(b)). (Section 4OA3)

- Green. The inspectors identified a noncited violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," regarding the licensee's failure to promptly identify and correct a condition adverse to quality. Specifically, a degraded condition that was discovered in the service water supply piping to Diesel Generator 2 on August 16, 2007, was not evaluated for its effect on the operability of Diesel Generator 2 until prompted

by inspectors on August 17, 2007. As a result, additional unavailability time was necessary to repair the degraded condition. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2007-05590.

The finding is more than minor because if left uncorrected, the flow erosion of the Diesel Generator 2 service water supply piping could have become a more significant safety concern. Using Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," the finding was determined to be of very low safety significance because it did not represent an actual loss of safety function of the diesel generator for greater than its technical specification allowed outage time. The cause of this finding is related to the problem identification and resolution cross cutting component of corrective action program in that the licensee did not correct the degraded condition of the Diesel Generator 2 service water piping in a timely manner (P.1(a)). (Section 4OA2)

Cornerstone: Emergency Preparedness

- Green. The inspectors identified a noncited violation of 10 CFR 50.47 (b)(4) regarding the licensee's failure to establish adequate procedural guidance to implement the emergency plan. Specifically, Emergency Plan Implementing Procedure 5.7.1, "Emergency Classification", Revision 35, contained inadequate procedural guidance in that it did not identify any specific entry criteria for Emergency Action Level 5.1.2. This issue was entered into the licensee's corrective action program as Condition Report CR-CNS-2007-05135.

The finding is more than minor because it is associated with the Emergency Preparedness cornerstone attribute of procedural quality and affects the associated cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," the finding was determined to be of very low safety significance since the EAL classification process that was in place prior to August 30, 2007 could have resulted in a failure to declare a Notification of Unusual Event when it should have been declared. The cause of this finding is related to the human performance cross cutting component of resources in that complete and accurate procedures were not adequately maintained to support the emergency plan (H.2(c)). (Section 4OA3)

Cornerstone: Public Radiation Safety

- Green. The inspector identified a noncited violation of 10 CFR 20.1302(a) because the licensee's surveys of effluents containing radioactive particulates originating in the multi-purpose facility were not adequate to ensure compliance with the dose limits for individual members of the public required by 10 CFR 20.1301. The surveys were not adequate because the configuration of the radioactive effluent monitoring system in the multi-purpose facility was changed in 2007, and the sampling lines in the new configuration were not analyzed for line loss. The licensee documented the situation in the corrective action program and declared the multi-purpose facility effluent monitoring system inoperable. Further corrective action is being evaluated.

The finding is greater than minor because it is associated with the Public Radiation Safety Cornerstone attribute of equipment and instrumentation and affects the cornerstone objective in that the failure to perform adequate surveys of radioactive effluents could result in increased public dose. When processed through the Public Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it: (1) was not a radioactive material control finding, (2) was an effluent release program finding, (3) impaired the licensee's ability to assess dose, (4) it did not result in a failure to assess dose, (5) did not result in public doses that exceeded the values of 10 CFR Part 50, Appendix I, or 10 CFR 20.1301(d). In addition, this finding had cross-cutting aspects in the area of human performance and the component of resources because the licensee did not ensure complete, accurate, and up-to-date design documentation requests and specifications were supplied to outsourced engineering providers. (H.2.(c)) (Section 2PS1)

## REPORT DETAILS

### Summary of Plant Status

The plant began the inspection period at 100 percent power. On August 11, 2007, reactor power was reduced to approximately 70 percent for a planned rod pattern exchange and surveillance testing. During the power ascension, one of four circulating water discharge valves stuck shut, and as a result the licensee held power at approximately 93 percent. On August 13, 2007, the licensee returned to full power and remained there for the rest of the inspection period.

#### 1. REACTOR SAFETY

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

#### 1R04 Equipment Alignment (71111.04Q)

##### .1 Partial System Walkdown

###### a. Inspection Scope

The inspectors: (1) walked down portions of the two risk important systems listed below and reviewed plant procedures and documents to verify that critical portions of the selected systems were correctly aligned; and (2) compared deficiencies identified during the walkdown to the licensee's UFSAR and the licensee's CAP to ensure problems were being identified and corrected.

- August 7, 2007, Division II Residual Heat Removal (RHR) during planned maintenance on Div 1RHR
- September 18, 2007, Reactor Core Isolation Cooling (RCIC) during High Pressure Coolant Injection Maintenance

The inspectors completed two samples.

###### b. Findings

No findings of significance were identified.

##### .2 Complete System Walkdown (71111.04S)

###### a. Inspection Scope

The inspectors: (1) reviewed plant procedures, drawings, the UFSAR, TSs, and vendor manuals to determine the correct alignment of the Reactor Building Ventilation System; (2) reviewed outstanding design issues, operator workarounds, and UFSAR documents

to determine if open issues affected the functionality of the Reactor Building Ventilation System; and (3) verified that the licensee was identifying and resolving equipment alignment problems.

- September 19, 2007, Reactor Building Ventilation System

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R05 Fire Protection

Fire Protection Tours (71111.05Q)

a. Inspection Scope

The inspectors walked down the six plant areas listed below to assess the material condition of active and passive fire protection features and their operational lineup and readiness. The inspectors: (1) verified that transient combustibles and hot work activities were controlled in accordance with plant procedures; (2) observed the condition of fire detection devices to verify they remained functional; (3) observed fire suppression systems to verify they remained functional and that access to manual actuators was unobstructed; (4) verified that fire extinguishers and hose stations were provided at their designated locations and that they were in a satisfactory condition; (5) verified that passive fire protection features (electrical raceway barriers, fire doors, fire dampers, steel fire proofing, penetration seals, and oil collection systems) were in a satisfactory material condition; (6) verified that adequate compensatory measures were established for degraded or inoperable fire protection features and that the compensatory measures were commensurate with the significance of the deficiency; and (7) reviewed the UFSAR to determine if the licensee identified and corrected fire protection problems.

- July 11, 2007, Fire Zone 20A, Service Water Pump Room
- July 25, 2007, Fire Zone 9B, Cable Expansion Room
- July 25, 2007, Fire Zone 1B, Core Spray Pump Room
- July 25, 2007, Fire Zone 1G, Hydraulic Drive Pump Area
- August 10, 2007, Fire Zone 20A, Service Water Pump Room During B Strainer Cleaning
- September 20, 2007, Fire Zone 1A, RCIC and Core Spray Pump Room

Documents reviewed by the inspectors included:

Administrative Procedure 0.23, CNS Fire Protection Plan, Revision 49

The inspectors completed six samples.

b. Findings

No findings of significance were identified.

1R11 Licensed Operator Requalification (71111.11Q)

a. Inspection Scope

The inspectors observed testing and training of senior reactor operators and reactor operators to identify deficiencies and discrepancies in the training, to assess operator performance, and to assess the evaluator's critique. The inspectors' observations were performed on August 10, 2007 by monitoring control rod manipulation during a scheduled downpower and an effectiveness review of requalification training.

The inspectors completed one sample.

b. Findings

No findings of significance were identified.

1R12 Maintenance Rule (71111.12Q)

a. Inspection Scope

The inspectors reviewed the maintenance effectiveness performance issues listed below to: (1) verify the appropriate handling of structure, system, and component (SSC) performance or condition problems; (2) verify the appropriate handling of degraded SSC functional performance; (3) evaluate the role of work practices and common cause problems; and (4) evaluate the handling of SSC issues reviewed under the requirements of the maintenance rule, 10 CFR Part 50, Appendix B, and the TSs.

- September 4, 2007, CRD-V-101(25-27) leakage on May 19, 2007
- September 4, 2007, Failure of Division 1 Service Water Strainer on August 1, 2007

Documents reviewed by the inspectors included:

- Functional Failure Evaluations for functions CRD-F02A and CRD-V-F03a
- Functional Failure Evaluations for functions SW-F01A and SW01C
- CR-CNS-2007-05210

The inspectors completed two samples.

b. Findings

No findings of significance were identified.

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

a. Inspection Scope

The inspectors reviewed the three maintenance activities listed below to verify: (1) performance of risk assessments when required by 10 CFR 50.65 (a)(4) and licensee procedures prior to changes in plant configuration for maintenance activities and plant operations; (2) the accuracy, adequacy, and completeness of the information considered in the risk assessment; (3) that the licensee recognized, and/or entered as applicable, the appropriate licensee-established risk category according to the risk assessment results and licensee procedures; and (4) the licensee identified and corrected problems related to maintenance risk assessments.

- June 28, 2007, Reactor Vessel Level Control System Troubleshooting
- August 7, 2007, Work on RHR-MOV-13A
- August 13, 2007, Emergent Downpower for Circulating Water System Manipulation

Documents reviewed by the inspectors included:

- Work Order (WO) 4572910
- Administrative Procedure 0.49, "Schedule Risk Assessment," Rev. 19
- Administrative Procedure O-PROTECT-EQP, "Protected Equipment Program," Rev. 5
- CR-CNS-2007-05331

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1R15 Operability Evaluations (71111.15)

a. Inspection Scope

The inspectors: (1) reviewed operator shift logs, emergent work documentation, deferred modifications, and standing orders to determine if an operability evaluation was warranted for degraded components; (2) referred to the UFSAR and other design basis documents to review the technical adequacy of licensee operability evaluations; (3) evaluated compensatory measures associated with operability evaluations; (4) determined degraded component impact on any TSs; (5) used the Significance Determination Process to evaluate the risk significance of degraded or inoperable equipment; and (6) verified that the licensee has identified and implemented appropriate corrective actions associated with degraded components.

The following equipment performance issues were reviewed:

- July 10, 2007, Diesel Generator (DG) 1 Operability with High Service Water Sediment Levels
- August 15, 2007, DG 2 Service Water Piping Leak
- August 30, 2007, DG Lubricating Oil and Jacket Water Heat Exchanger Tube Plugs Over-torqued
- September 7, 2007, DG 1 Operability Common Cause Review
- September 11, 2007, DG 1 Operability Following Day Tank Level Control System Failure

Documents reviewed by the inspectors included:

- CR-CNS-2007-05571
- CR-CNS-2007-05875
- CR-CNS-2007-04688
- CR-CNS-2007-06143

The inspectors completed five samples.

b. Findings

No findings of significance were identified.

1R19 Postmaintenance Testing (71111.19)

a. Inspection Scope

The inspectors selected four post-maintenance tests associated with the maintenance activities listed below for risk significant systems or components. For each item, the inspectors: (1) reviewed the applicable licensing basis and/or design basis documents to determine the safety functions; (2) evaluated the safety functions that may have been affected by the maintenance activity; and (3) reviewed the test procedure to ensure it adequately tested the safety function that may have been affected. The inspectors either witnessed or reviewed test data to verify that acceptance criteria were met, plant impacts were evaluated, test equipment was calibrated, procedures were followed, jumpers were properly controlled, the test data results were complete and accurate, the test equipment was removed, the system was properly re-aligned, and deficiencies during testing were documented. The inspectors also reviewed the UFSAR to determine if the licensee identified and corrected problems related to postmaintenance testing.

- August 3, 2007, Post-Accident Sampling System following relief valve replacements and valve rebuilds
- August 7, 2007, RHR-MOV-13A test following motor pinion inspection/repair
- August 10, 2007, Service Water B zurn strainer following inspection
- August 16, 2007, DG 2 Service Water piping repair

The inspectors completed four samples.

b. Findings

No findings of significance were identified.

1R22 Surveillance Testing (71111.22)

a. Inspection Scope

The inspectors reviewed the UFSAR, procedure requirements, and TSs to ensure that the three surveillance activities listed below demonstrated that the SSCs tested were capable of performing their intended safety functions. The inspectors either witnessed or reviewed test data to verify that the following significant surveillance test attributes were adequate: (1) preconditioning; (2) evaluation of testing impact on the plant; (3) acceptance criteria; (4) test equipment; (5) procedures; (6) jumper/lifted lead controls; (7) test data; (8) testing frequency and method demonstrated TS operability; (9) test equipment removal; (10) restoration of plant systems; (11) fulfillment of American Society Mechanical Engineers Code requirements; (12) engineering evaluations, root causes, and bases for returning tested SSCs not meeting the test acceptance criteria were correct; (13) reference setting data; and (14) annunciators and alarms setpoints. The inspectors also verified that the licensee identified and implemented any needed corrective actions associated with the surveillance testing.

- August 1, 2007, DG Fuel Oil Availability
- August 6, 2007, Standby Liquid Control Tank Sample
- August 7, 2007, RHR-MO-13A following motor pinion inspection

The inspectors completed three samples.

b. Findings

No findings of significance were identified.

1EP2 Alert Notification System Testing (71114.02)

a. Inspection Scope

The inspector discussed with licensee staff the status of offsite siren and tone alert radio systems to determine the adequacy of licensee methods for testing the alert and notification system in accordance with 10 CFR 50, Appendix E, "Emergency Planning and Preparedness." The inspector observed a monthly siren test on July 24, 2007, performed from the Emergency Operation Facility. The licensee's alert and notification system testing program was compared with criteria in NUREG-0654, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," Revision 1, Federal Emergency Management Agency (FEMA) Report REP-10, "Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants," and the licensee's current FEMA-approved alert and notification system design report. The inspector also reviewed the references listed in the Attachment to this report.

The inspector completed one sample during the inspection.

b. Findings

No findings of significance were identified.

1EP3 Emergency Response Organization Augmentation Testing (71114.03)

a. Inspection Scope

The inspector discussed with licensee staff the status of primary and backup systems for augmenting the on-shift emergency response staff to determine the adequacy of licensee methods for staffing emergency response facilities. The inspector reviewed the references listed in the Attachment to this report related to the emergency response organization (ERO) augmentation system to evaluate the licensee's ability to staff the emergency response facilities in accordance with the licensee emergency plan and the requirements of 10 CFR 50 Appendix E.

The inspector completed one sample during the inspection.

b. Findings

No findings of significance were identified.

1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)

a. Inspection Scope

The inspector reviewed the licensee's corrective action program (CAP) requirements in Administrative Procedure 0.5.CR, "Condition Report Initiation, Review, and Classification," Revision 7. The inspector reviewed summaries of approximately 200 condition reports assigned to the emergency planning department during calendar years 2006 and 2007, and selected 26 for detailed review against the program requirements. The inspector evaluated the response to the corrective action requests to determine the licensee's ability to identify, evaluate, and correct problems in accordance with the licensee program requirements and 10 CFR 50.47(b)(14) and 10 CFR 50 Appendix E. The inspector also reviewed other documents listed in the attachment to this report.

The inspector completed one sample during the inspection.

b. Findings

No findings of significance were identified.

2. RADIATION SAFETY

Cornerstone: Occupational Radiation Safety [OS]

## 2OS1 Access Control To Radiologically Significant Areas (71121.01)

### a. Inspection Scope

This area was inspected to assess the licensee's performance in implementing physical and administrative controls for airborne radioactivity areas, radiation areas, high radiation areas, and worker adherence to these controls. The inspector used the requirements in 10 CFR Part 20, the technical specifications, and the licensee's procedures required by technical specifications as criteria for determining compliance. During the inspection, the inspector interviewed the radiation protection manager, radiation protection supervisors, and radiation workers. The inspector performed independent radiation dose rate measurements and reviewed the following items:

- Radiation work permits, procedures, engineering controls, and air sampler locations
- Conformity of electronic personal dosimeter alarm set points with survey indications and plant policy; workers' knowledge of required actions when their electronic personnel dosimeter noticeably malfunctions or alarms
- Barrier integrity and performance of engineering controls in airborne radioactivity areas
- Physical and programmatic controls for highly activated or contaminated materials (non-fuel) stored within spent fuel and other storage pools.
- Self-assessments, audits, licensee event reports, and special reports related to the access control program since the last inspection
- Corrective action documents related to access controls
- Licensee actions in cases of repetitive deficiencies or significant individual deficiencies
- Radiation work permit briefings and worker instructions
- Adequacy of radiological controls, such as required surveys, radiation protection job coverage, and contamination control during job performance
- Dosimetry placement in high radiation work areas with significant dose rate gradients
- Changes in licensee procedural controls of high dose rate - high radiation areas and very high radiation areas
- Controls for special areas that have the potential to become very high radiation areas during certain plant operations

- Posting and locking of entrances to all accessible high dose rate - high radiation areas and very high radiation areas
- Radiation worker and radiation protection technician performance with respect to radiation protection work requirements
- Either because the conditions did not exist or an event had not occurred, no opportunities were available to review the following item:
- Adequacy of the licensee's internal dose assessment for any actual internal exposure greater than 50 millirem committed effective dose equivalent

The inspector completed 18 of the required 21 samples.

b. Findings

No findings of significance were identified.

2OS2 ALARA Planning and Controls (71121.02)

a. Inspection Scope

The inspector assessed licensee performance with respect to maintaining individual and collective radiation exposures as low as is reasonably achievable (ALARA). The inspector used the requirements in 10 CFR Part 20 and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspector interviewed licensee personnel and reviewed:

- Current 3-year rolling average collective exposure
- Assumptions and basis for the current annual collective exposure estimate, the methodology for estimating work activity exposures, the intended dose outcome, and the accuracy of dose rate and man-hour estimates
- Declared pregnant workers during the current assessment period, monitoring controls, and the exposure results
- Self-assessments, audits, and special reports related to the ALARA program since the last inspection

Documents reviewed by inspector included:

Condition Reports: 2007-05267, 2007-05268

Procedures

- 9.ALARA.5 ALARA Planning and Controls, Revision 17
- 9.ALARA.9 Dose Determination to the Embryo/Fetus, Revision 0

The inspector completed 4 of the required 15 samples.

b. Findings

No findings of significance were identified.

2PS1 Radioactive Gaseous and Liquid Effluent Treatment And Monitoring Systems (71122.01)

a. Inspection Scope

This area was inspected to ensure that the gaseous and liquid effluent processing systems are maintained so that radiological releases are properly mitigated, monitored, and evaluated with respect to public exposure. The inspector used the requirements in 10 CFR Part 20, 10 CFR Part 50 Appendices A and I, the Offsite Dose Calculation Manual, and the licensee's procedures required by technical specifications as criteria for determining compliance. The inspector interviewed licensee personnel and reviewed:

- Effluent monitoring system modifications

Documents reviewed by inspector included:

- NEDC 92-207 - Kaman Radiation Monitor Sample Line Plate Out Calculation
- Change Evaluation Document 6015500 - Multi-Purpose Facility Kaman Effluent Monitor Replacement
- Drawing Number: SKE-6015500-01, Revision B

The inspector completed 1 of the required 11 samples.

b. Findings

Introduction. The inspector identified a noncited violation of 10 CFR 20.1302(a) because the licensee's surveys of effluents containing radioactive particulates were not adequate to ensure compliance with the dose limits for individual members of the public in 10 CFR 20.1301. The violation had very low safety significance.

Description. The licensee replaced the instruments used to detect radioactive particulates and iodine in the multi-purpose facility ventilation exhaust with sampling filters. The design modification on the effluent monitoring system became operational February 13, 2007. During a walkdown of the sampling system, the inspector noted the licensee modified the sampling line configuration through the introduction of a tee in the line to allow switching of the air flow to either the A or B sampler. Following interviews and a review of design change documents, the inspector determined the licensee had not reviewed the design changes using the same methodology, from ANSI 13.1 - 1969, "American National Standard Guide to Sampling Airborne Radioactive Materials in Nuclear Facilities," it committed to using when the effluent monitoring instrumentation was originally installed. ANSI 13.1 - 1969 states, "Elbows in sampling lines should be avoided, if at all possible."

In response, the licensee documented the problem in the CAP, declared the multi-purpose facility effluent monitoring system inoperable, and performed an apparent cause evaluation. The apparent cause evaluation identified two contributing factors. The design change was "outsourced" and the work request or task agreement contained no instructions the design needed to conform to the ANSI 13.1 - 1969 methodology. Also, the design preparer (vendor) and reviewer (in-house) had the mindset the design was downgraded with less stringent design requirements.

The licensee walked down the effluent sampling lines to determine the extent of condition and found the remaining sampling lines met the ANSI 13.1 - 1969 guidelines, with the exception of those to the alternate samplers in the turbine, radwaste, and reactor buildings. The alternate samplers also used tee connectors. (Condition Report 2007-05726, Corrective Action 2 will address the alternate sampler configuration.)

Analysis. The licensee made changes to a previously analyzed effluent sampling system without updating its analysis to determine the effect on iodine plateout and particle deposition of placing a 90 degree bend in effluent sampling lines. Because the licensee had not followed the ANSI guidance for system analysis nor tested the final configuration to determine the effect on particulate sampling, it could not confirm its sampling results were representative of multi-purpose facility effluent releases. Without representative samples, the licensee could not adequately perform an evaluation or survey. The failure to survey effluents is a performance deficiency. The finding is associated with one of the Public Radiation Safety cornerstone attributes (plant equipment and instrumentation) and affects the associated cornerstone objective, in that the failure to survey effluents for radioactivity could lead to increased public dose. The finding involved an occurrence in the licensee's radiological effluent monitoring program that is contrary to NRC regulations. When processed through the Public Radiation Safety Significance Determination Process, the finding was determined to be of very low safety significance because it: (1) was not a radioactive material control problem, (2) was an effluent release program problem, (3) impaired the licensee's ability to assess dose, (4) did not result in a total failure to assess dose because the licensee had other means of assessing the effects of particulate and iodine on public dose, and (5) did not result in public doses that exceeded the values of 10 CFR Part 50, Appendix I, or 10 CFR 20.1301(d). In addition, this finding had cross-cutting aspects in the area of human performance and the component of resources because the licensee did not ensure complete, accurate, and up-to-date design documentation requests and specifications were supplied to outsourced engineering providers. (H.2.(c))

Enforcement. Part 20.1302(a) of Title 10 of the Code of Federal Regulations requires the licensee make or cause to be made, as appropriate, surveys of radiation levels in unrestricted and controlled areas and radioactive materials in effluents released to unrestricted and controlled areas to demonstrate compliance with the dose limits for individual members of the public in 10 CFR 20.1301. The licensee violated 10 CFR 20.1302(a) when they made surveys of radioactive materials in effluents released to unrestricted areas using samples which could not be verified as representative of the effluent stream. This violation was entered into the licensee's CAP by Condition Reports CR-2007-05726 and CR-2007-05733. Because this violation was determined to be of

very low safety significance and was entered into the licensee's CAP, it is being treated as a noncited violation, consistent with Section VI.A of the NRC Enforcement Policy: NCV 05000298/2007004-01, "Failure to Survey Radioactive Effluents".

#### 4. OTHER ACTIVITIES

##### 4OA1 Performance Indicator Verification (71151)

###### a. Inspection Scope

###### Cornerstone: Emergency Preparedness

The inspector reviewed licensee evaluations for the three emergency preparedness cornerstone performance indicators of Drill and Exercise Performance, ERO Participation, and Alert and Notification System Reliability, for the period July 1, 2006 through June 30, 2007. The definitions and guidance of the Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revisions 3 and 4, and the licensee Performance Indicator Procedure 0-PI-1, "Performance Indicator Program," Revision 20, were used to verify the accuracy of the licensee's evaluations for each performance indicator reported during the assessment period.

The inspector reviewed a sample of drill and exercise scenarios and licensed operator simulator training sessions, notification forms, and attendance and critique records associated with training sessions, drills, and exercises conducted during the verification period. The inspector reviewed selected emergency responder qualification, training, and drill participation records. The inspector reviewed alert and notification system testing procedures, maintenance records, and a 100 percent sample of siren test records. The inspector also reviewed other documents listed in the Attachment to this report.

The inspector completed three samples during the inspection.

###### Cornerstone : Occupational Radiation Safety

###### Occupational Exposure Control Effectiveness

The inspector reviewed licensee documents from April 1 through June 30, 2007. The review included corrective action documentation that identified occurrences in locked high radiation areas (as defined in the licensee's technical specifications), very high radiation areas (as defined in 10 CFR 20.1003), and unplanned personnel exposures (as defined in Nuclear Energy Institute (NEI) 99-02, "Regulatory Assessment Indicator Guideline," Revision 4). Additional records reviewed included ALARA records and whole body counts of selected individual exposures. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. In addition, the inspector toured plant areas to verify that high radiation, locked high radiation, and very high radiation areas were properly controlled. Performance indicator definitions and guidance contained in NEI 99-02, Revision 4, were used to verify the basis in reporting for each data element.

The inspector completed the required sample (1) in this cornerstone.

Cornerstone: Public Radiation Safety

Radiological Effluent Technical Specification/Offsite Dose Calculation Manual  
Radiological Effluent Occurrences

The inspector reviewed licensee documents from April 1 through June 30, 2007. Licensee records reviewed included corrective action documentation that identified occurrences for liquid or gaseous effluent releases that exceeded performance indicator thresholds and those reported to the NRC. The inspector interviewed licensee personnel that were accountable for collecting and evaluating the performance indicator data. Performance indicator definitions and guidance contained in NEI 99-02, Revision 4, were used to verify the basis in reporting for each data element.

The inspector completed the required sample (1) in this cornerstone.

b. Findings

No findings of significance were identified.

4OA2 Problem Identification and Resolution (71152)

.1 Emergency Preparedness Problem Identification and Resolution

a. Inspection Scope

The inspector selected 26 condition reports for detailed review. The condition reports were reviewed to ensure that the full extent of the issues were identified, an appropriate evaluation was performed, and appropriate corrective actions were specified and prioritized. The inspector evaluated the condition reports and corrective actions against the requirements of Administrative Procedure 0.5.CR, "Condition Report Initiation, Review, and Classification," Revision 7.

b. Findings and Observations

No findings of significance were identified.

.2 Access Control and ALARA Planning and Controls

a. Inspection Scope

The inspector evaluated the effectiveness of the licensee's problem identification and resolution process with respect to the following inspection areas:

- Access Control to Radiologically Significant Areas (Section 2OS1)
- ALARA Planning and Controls (Section 2OS2)

b. Findings and Observations

No findings of significance were identified.

.3 Selected Issue Follow-up Inspection

a. Inspection Scope

In addition to the routine review, the inspectors selected the issues listed below for a more in-depth review. The inspectors considered the following during the review of the licensee's actions: (1) complete and accurate identification of the problem in a timely manner; (2) evaluation and disposition of operability/reportability issues; (3) consideration of extent of condition, generic implications, common cause, and previous occurrences; (4) classification and prioritization of the resolution of the problem; (5) identification of root and contributing causes of the problem; (6) identification of corrective actions; and (7) completion of corrective actions in a timely manner.

- July 27, 2007, RHR 13D declutch mechanism failure
- July 31, 2007, Simulator modeling error
- August 17, 2007, Flow Erosion in DG2 Service Water Piping

Documents reviewed by inspectors included:

- CR-CNS-2007-05070
- CR-CNS-2007-03569
- CR-CNS-2007-05624

The inspectors completed three samples.

b. Findings

Introduction. The inspectors identified a Green NCV regarding the licensee's failure to promptly identify and correct a condition adverse to quality. Specifically, a degraded condition was discovered in the service water supply piping to DG2 but was not evaluated for its effect on the operability of DG2 until prompted by inspectors on August 17, 2007. As a result, additional unavailability time was necessary to repair the degraded condition.

Description. On August 16, 2007, during a planned surveillance test of DG2, licensee personnel discovered a through-wall leak in the service water supply piping to DG2. As a result of the through-wall leak in the piping, the licensee declared both loops of service water inoperable due to cross-connected nature of the system. Shortly thereafter, the licensee closed a normally open cross connect valve, splitting the two service water loops and restoring the operability of service water loop A. This left DG2 and service water loop B inoperable and the licensee began planning a repair.

In preparation for the repair, licensee personnel conducted an ultrasonic survey of the area surrounding the leak for the purpose of determining the most appropriate repair method. As a precaution, the surrounding piping was also surveyed for indications of

pipe wall thinning. This survey revealed an additional area of pipe that appeared to be less than the minimum wall thickness of 0.111 inches. The estimated thickness at this location was 0.1 inches.

This additional indication was discussed during the planning process for the through-wall leak. As documented in CR-CNS-2007-05624, the licensee considered the options available to address the degraded condition of the service water piping in DG2. While there was recognition that an additional degraded condition existed beyond the through-wall leak, the licensee elected not to attempt a repair of this area because the necessary replacement parts had not yet been received. The decision was made to repair only the through-wall leak. This repair was planned and completed by Work Order 4583607 during the night shift on August 16. DG2 was loaded for a post-maintenance test at 0247 on August 17, 2007.

Upon reporting to the site on the morning of August 17, the inspectors noted the discussion in the outage control center logs about the second indication of wall thinning below minimum wall thickness. The inspectors challenged the licensee regarding this additional indication and learned that the condition had not been entered into the CAP, nor had it been evaluated for its impact on the operability of DG2. In response to the inspector's concerns, the licensee conducted an additional ultrasonic survey of the DG2 piping and discovered that the area in question was worn to between 0.06 and 0.08 inch remaining wall thickness, approximately half of minimum wall thickness. Based upon this information, the licensee elected to tag out DG2 again and perform a more extensive internal repair of the eroded service water piping. This repair was completed and service water loop B was declared operable at 2021 on August 17, 2007. DG2 was subsequently declared operable at 2104 on August 17, 2007.

The through-wall leak was assumed to be a contemporary manifestation of the previously-observed flow erosion in this section of the service water piping caused by high flow velocity. As a result of the historical erosion at this location, the licensee's preventative maintenance program requires an ultrasonic inspection of the piping each operating cycle. The inspectors reviewed the results of the most recent inspection of this location, performed September 17, 2006. The inspectors noted that the ultrasonic test did not reveal the fact that either of the areas that required repair in August 2007 were showing signs of wall thinning in September 2006.

The inspectors noted that in response to this event, the licensee has initiated corrective actions to improve the preventative maintenance tasks for inspecting this section of piping and evaluate the service water system for other areas vulnerable to flow induced erosion. In addition, new materials are being considered for improved resistance to flow induced erosion in this section of piping.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to promptly identify and correct a condition adverse to quality. The finding is more than minor because if left uncorrected, the flow erosion of the DG2 service water supply piping could have become a more significant safety concern. Using Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," the finding was determined to be

of very low safety significance because it did not represent an actual loss of safety function of the diesel generator for greater than its technical specification allowed outage time.

The cause of this finding is related to the problem identification and resolution cross-cutting component of CAP in that the licensee did not identify and correct the degraded condition of the DG2 service water piping in a timely manner (P.1(a)).

Enforcement. 10 CFR 50, Appendix B, Criterion XVI, "Corrective Action," requires, in part, that measures be established to assure that conditions adverse to quality are promptly identified and corrected. Contrary to this, a degraded condition was discovered in the service water supply piping to DG2 on August 16, 2007, but was not corrected until the licensee was prompted by inspectors on August 17, 2007. As a result, additional unavailability time was necessary to repair the degraded condition. Because the finding is of very low safety significance and has been entered into the licensee's CAP as Condition Report CR-CNS-2007-05590, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000298/2007004-002, "Failure to Promptly Identify and Correct Flow Erosion in Service Water Piping".

#### 4OA3 Event Follow-up (71153)

##### .1 Failure to Follow Requirements of Industrial Safety Procedures

###### a. Inspection Scope

The inspectors reviewed the licensee's response to a toxic gas release on site on July 27, 2007. The inspectors reviewed the licensee's control of the evolution through work control documents, established procedures and operating logs. The followup inspection also reviewed the cause of the release and the licensee's corrective actions.

Documents reviewed by inspectors included:

- Administrative Procedure 0.36, "Industrial Safety Procedure," Revision 28
- Administrative Procedure 0.36.6, "Monitoring for Industrial Gases," Revision 4
- WO 4559451
- CR-CNS-2007-05169
- CR-CNS-2007-06241

###### b. Findings

Introduction. The inspectors identified a Green finding regarding the licensee's failure to follow the requirements of industrial safety procedures. Specifically, licensee personnel violated the requirements of Administrative Procedure 0.36, "Industrial Safety Procedure," and Administrative Procedure 0.36.6, "Monitoring for Industrial Gases," during a chemical injection treatment in the service water system.

Description. On July 27, 2007, the licensee commenced a chemical treatment procedure per WO 4559451 in an effort to mitigate previously identified macro-fouling in

the safety-related service water system. The chemical treatment was being performed by a contractor overseen by station personnel, using a temporary system designed to inject high concentrations of chlorine and chlorine dioxide into the service water system. The temporary system included several gaseous concentration monitors designed to warn personnel if potentially dangerous chemical leaks were present.

In preparation for this procedure, the supervising engineer prepared a hazardous work permit (HWP) as required by Administrative Procedure 0.36, "Industrial Safety Procedure," Revision 28. Step 3.33.1 states that:

"In order to establish these controls, the HWP should be used to control conditions, specify necessary engineering controls, compensatory measures, or Personal Protective Equipment (PPE) to be used, ...."

In addition, step 3.33.4 states that:

"The Hazardous Work Permit Supplementary Time Report Form (Attachment 2) serves as the record (i.e. sign in log) for personnel entering an HWP controlled area, provides special instructions, and provides a record..."

Contrary to these requirements, the HWP generated for WO 4559451 did not list all chemicals to which maintenance personnel would be exposed. Specifically, the process generated chlorine gas, which was not listed in the HWP, and as such personnel were not briefed on the hazards, exposure limits or appropriate PPE. Additionally, the HWP was not maintained at the job site and was not reviewed and signed by the personnel doing the work in the field. As a result, those personnel did not get the full benefit of the safety information and instructions written on the form.

In addition, station personnel failed to follow the requirements of Procedure 0.36.6, "Monitoring for Industrial Gases," Revision 4, following receipt of a valid toxic gas alarm in the intake structure on July 29, 2007. During the chemical treatment process, a leak developed in the temporary chlorination piping, resulting in an airborne release of chlorine and chlorine dioxide gases. The locally installed multi-gas alarm went off and indicated a general area chlorine dioxide concentration at the short term exposure limit of 0.3 ppm for chlorine dioxide. Procedure 0.36.6 provides a warning in section 4 prohibiting entry into a work space if a hazardous atmosphere is indicated. In addition, step 4.5 requires that "if at any time while working within the confined space the monitor alarms, evacuate the work space immediately." Contrary to these requirements, the maintenance personnel did not exit the space in light of the chlorine dioxide gas alarm. Instead, they used the alarming instrument to walk down the piping and look for the leak without donning any PPE, putting themselves at risk of significant personal injury. In addition, had the maintenance personnel become incapacitated, station operators could have been exposed to a toxic gas environment during the conduct of their normal duties or during event response. The failure to follow the station's industrial safety procedures could have affected the availability of systems necessary to mitigate the consequences of an accident, specifically the safety-related portions of the service water system located within the intake structure.

In response to these concerns from the inspectors, the licensee initiated CR-CNS-2007-05169, which resulted in creating a more thorough HWP to be used in future chemical injection efforts. In addition, the licensee initiated CR-CNS-2007-06241 to address the improper response of maintenance personnel to the receipt of toxic gas alarms in the intake structure.

Analysis. The performance deficiency associated with this finding involved the licensee's failure follow the requirements of Procedure 0.36, "Industrial Safety Procedure," and Procedure 0.36.6, "Monitoring for Industrial Gases." The finding is more than minor because if left uncorrected, it could become a more significant safety concern if not corrected in that failure to follow industrial safety procedures during chlorine dioxide injections could put personnel at significant risk of injury and could have resulted in a larger toxic gas release in the intake structure, inhibiting operators' ability to access safety related equipment to mitigate the consequences of an accident. Using Inspection Manual Chapter 0609, Appendix A, "Determining the Significance of Reactor Inspection Findings for At-Power Situations," the finding was determined to be of very low safety significance because it did not result in a loss of safety function for any mitigating system.

The cause of this finding is related to the human performance cross cutting component of work practices in that licensee personnel did not follow the requirements of industrial safety procedures as required (H.4(b)).

Enforcement. No violation of NRC requirements was identified. This finding is identified as FIN 05000298/2007004-003, "Failure to Follow Requirements of Industrial Safety Procedures."

## .2 Inadequate Procedural Guidance to Implement Emergency Plan

### a. Inspection Scope

The inspectors reviewed the licensee's response to a toxic gas release on site on July 27, 2007. The inspectors reviewed the licensee's control of the evolution through work control documents, established procedures and operating logs. In addition, the inspectors reviewed the event for compliance with the station Emergency Plan. The followup inspection also reviewed the cause of the release and the licensee's corrective actions.

Documents reviewed by inspectors included:

- Emergency Plan Implementing Procedure 5.7.1.7, "Classification," Revision 35
- CR-CNS-2007-05135

### b. Findings

Introduction. The inspectors identified a Green NCV regarding the licensee's failure to establish adequate procedural guidance to implement the emergency plan.

Description. On July 27, 2007, the licensee commenced a chemical treatment procedure in an effort to mitigate previously identified macro-fouling in the safety-related service water system. The chemical treatment was being performed by a contractor using a temporary system designed to inject high concentrations of chlorine and chlorine dioxide into the service water system. The temporary system included several gaseous concentration monitors designed to warn personnel if potentially dangerous chemical leaks were present.

During the treatment on July 29, 2007, a local gaseous concentration alarm went off, warning personnel that chlorine and chlorine dioxide gas were leaking into the intake structure. The maximum general area concentrations recorded by the instrument were 0.3 ppm chlorine dioxide and 0.3 ppm chlorine. The temporary system was immediately secured and the source of the leak was found. This information was reported to control room operators, who determined that the gaseous leak did not meet the entry criteria for any emergency action levels (EALs) listed in Emergency Plan Implementing Procedure 5.7.1, "Emergency Classification." (EPIP 5.7.1). EPIP 5.7.1, Revision 35, Attachment 2 provided the following guidance for classifying toxic gas release events:

<u>EAL</u>	<u>Classification</u>	<u>Text</u>
5.1.2	NOUE	Report or detection of toxic or flammable gas that could enter the Protected Area in amounts that will affect the health of plant personnel or can affect normal plant operations.
5.2.2	ALERT	Report or detection of toxic or flammable gas within a Vital Area in concentrations that will be life threatening to plant personnel or will affect the safe operation of the plant.

The inspectors noted that additional information was provided in EPIP 5.7.1 to clarify the entry criterion for EAL 5.2.2. Specifically, the EPIP page for EAL 5.2.2 contained the following additional guidance: "IDLH atmospheres (for Toxic gases)...in Vital Areas should be considered as meeting this condition." The inspectors noted that no such clarifying guidance was provided for EAL 5.1.2.

The inspectors reviewed the operating logs and discussed the event with operations and emergency planning staff to gain an understanding of the information available to the operators and the rationale used in implementing the emergency plan. The inspectors noted that the operators justified not declaring an event by comparing the immediately dangerous to life or health (IDLH) limits for the toxic gases to the highest concentrations seen in the field. The inspectors determined that this was an appropriate threshold for EAL 5.2.2, but challenged the licensee's treatment of EAL 5.1.2 given the lower threshold described in the EAL 5.1.2 text.

Concentrations limits below IDLH have been defined by the Occupational Safety and Health Administration (OSHA) and National Institute for Occupational Safety and Health (NIOSH). OSHA and NIOSH define the short-term exposure limits (STEL) of 0.3 ppm for chlorine dioxide and 0.5 ppm for chlorine (for comparison, the IDLH concentrations for these gases are 5 ppm for chlorine dioxide and for 10 ppm chlorine). The NIOSH

standard states that exposures above the STEL concentrations should not exceed fifteen minutes based on the risk of severe respiratory and eye irritation.

The inspectors determined that this represented a technical inadequacy in EPIP 5.7.1, in that no specific entry criteria were defined in the EPIP to allow the Emergency Director to determine whether or not toxic gas concentrations were present in "amounts that will affect the health of plant personnel" as described in the EAL 5.1.2 text. This procedural weakness was demonstrated on July 29, 2007, when the concentration of chlorine and chlorine dioxide gas were compared only to IDLH limits during the event classification process. In response to this issue, on August 30, 2007, the licensee revised EPIP 5.7.1 to provide clarification on the entry criteria for EALs 5.1.2 and 5.2.2. In addition, the licensee created a required reading task for all control room operators to ensure they understood the technical issue and the new guidance.

Based on a review of information collected by the licensee and interviews with personnel who were present at the time of the chemical leak, the inspectors concluded that on July 29, 2007, the gas monitor being used to detect toxic gas conditions alarmed and indicated that the concentration of chlorine dioxide gas in the intake structure had reached the STEL limit of 0.3 ppm. The leak was immediately secured, after which the monitor was used to locate the specific source of the leak. Chlorine dioxide levels as high as 1.0 ppm were identified during the search for the leak. The licensee has determined that using the new guidance in EPIP 5.7.1, this event would not have resulted in an entry into EAL 5.1.2 due to the fact that the gas monitor was taking a suction approximately eight inches above the floor level and was not representative of the breathing zone to which personnel were exposed.

The inspectors reviewed the revision history for EPIP 5.7.1, and noted that periodic review conducted as required by Administrative Procedure 0.4A, "Procedure Change Process Supplement", Revision 14, did not identify this error. Specifically, the person completing the required periodic review on November 14, 2005, errantly determined that a review of the entire EPIP was not required, and as such missed an opportunity to identify this procedural shortcoming.

Analysis. The performance deficiency associated with this finding involved the licensee's failure to maintain adequate procedural guidance to implement the emergency plan. The finding is more than minor because it is associated with the Emergency Preparedness cornerstone attribute of procedural quality and affects the associated cornerstone objective to ensure that the licensee is capable of implementing adequate measures to protect the health and safety of the public in the event of a radiological emergency. Using Inspection Manual Chapter 0609, Appendix B, "Emergency Preparedness Significance Determination Process," the finding was determined to be of very low safety significance since the EAL classification process that was in place prior to August 30, 2007, could have resulted in a failure to declare a Notification of Unusual Event when it should have been declared.

The cause of this finding is related to the human performance cross cutting component of resources in that complete and accurate procedures were not adequately maintained to support the emergency plan (H.2(c)).

Enforcement. 10 CFR 50.47 (b)(4) requires, in part, that a standard emergency classification and action level scheme is in use by the nuclear facility licensee. Contrary to this, Emergency Plan Implementing Procedure 5.7.1, "Emergency Classification", Revision 35, contained inadequate procedural guidance in that it did not identify any specific entry criteria for Emergency Action Level 5.1.2. As a result, the conditions requiring entry into Emergency Action Level 5.1.2 could have existed without the proper event classification being made. Because the finding is of very low safety significance and has been entered into the licensee's CAP as Condition Report CR-CNS-2007-05135, this violation is being treated as an NCV consistent with Section VI.A of the Enforcement Policy: NCV 05000298/2007004-004, "Inadequate Procedural Guidance to Implement the Emergency Plan".

.3 (Closed) LER 50-298/2007-004: Manual Reactor Trip due to Hydraulic Control Unit Valve Bonnet Leak into Reactor Building

On May 19, 2007, during disassembly of a directional control valve on a control rod drive system hydraulic control unit, a water leak developed. Control room operators inserted a manual reactor scram when the leak changed from water to steam and was unable to be isolated. The cause of the leak was a combination of a degraded condition in an upstream isolation valve and a failure by the licensee to implement vendor guidance in isolating the hydraulic control unit for maintenance. This event and the ensuing violation of NRC requirements are discussed in detail in NRC Integrated Inspection Report 05000298/2007003. This LER is closed.

40A6 Meetings, Including Exit

On July 26, 2007, a regional inspector conducted an exit meeting to present the results of the emergency preparedness program inspection to Mr. M. Colomb, General Manager, Plant Operations. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On August 24, 2007, a regional inspector presented the occupational radiation safety inspection results to Mr. M. Colomb, General Manager, Plant Operations and other members of his staff who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

On October 4, 2007, the resident inspectors conducted an exit meeting to present the results of the emergency preparedness program inspection to Mr. M. Colomb, General Manager, Plant Operations and other members of his staff who acknowledged the findings. The inspector confirmed that proprietary information was not provided or examined during the inspection.

ATTACHMENT: SUPPLEMENTAL INFORMATION

## SUPPLEMENTAL INFORMATION

### KEY POINTS OF CONTACT

#### Licensee Personnel

A. Alexander, Emergency Planning Specialist  
T. Bahensky, System Engineer  
J. Bebb, Security Manager  
J. Bednar, Staff Health Physicist, Radiation Protection  
R. Beilke, Chemistry Manager  
V. Bhardwaj, Engineering Support Manager  
D. Buman, Systems Engineering Manager  
T. Carson, Maintenance Manager  
J. Christensen, Support General Manager  
M. Colomb, Plant Operations General Manager  
R. Dyer, Heat Exchanger Program Engineer  
J. Dykstra, Electrical Engineering Program Supervisor  
T. Erickson, System Engineering Supervisor  
R. Estrada, Corrective Action Program Manager  
K. Fike, Plant Chemist, Chemistry  
J. Flaherty, Senior Licensing Engineer  
P. Fleming, Nuclear Safety Assurance Director  
K. Garner, Radiological Operations Supervisor, Radiation Protection  
T. Haynes, Emergency Planning Specialist  
T. Hottovy, Equipment Reliability Supervisor  
T. Hough, Maintenance Rule Coordinator  
J. Kelsay, Emergency Planning Specialist  
G. Kline, Engineering Director  
D. Madsen, Licensing Specialist  
M. McCormack, Electrical Systems/I&C System Engineering Supervisor  
E. McCutchen, Regulatory Affairs Senior Licensing Engineer  
M. Metzger, System Engineer  
S. Minahan, Vice President - Nuclear & Chief Nuclear Officer  
B. Murphy, Emergency Planning Manager  
R. Noon, Root Cause Team Leader, Corrective Actions  
D. Oshlo, Radiation Protection Manager  
S. Rezab, Emergency Planning Specialist  
T. Rients, Emergency Planning Specialist  
A. Sarver, Balance of Plant Engineering Supervisor  
T. Shudak, Fire Protection Program Engineer  
T. Stevens, Design Engineering Manager  
K. Thomas, Mechanical Programs Supervisor  
J. Waid, Training Manager  
D. Willis, Operations Manager

## LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

### Opened and Closed

05000298/2007-001	NCV	Failure to Survey Radioactive Effluents
05000298/2007-002	NCV	Failure to Promptly Identify and Correct Flow Erosion in Service Water Piping
05000298/2007-003	FIN	Failure to Follow Requirements of Industrial Safety Procedures
05000298/2007-004	NCV	Inadequate Procedural Guidance to Implement the Emergency Plan

### Closed

05000298/2007-004	LER	Manual Reactor Trip due to Hydraulic Control Unit Valve Bonnet Leak into Reactor Building
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## LIST OF DOCUMENTS REVIEWED

### Section 1R04 Equipment Alignments (71111.04)

#### Procedures:

<u>Number</u>	<u>Description</u>	<u>Revision</u>
Procedure 5.8.8	Alternate Boron Injection with RCIC	7
System Operating Procedure 2.2.67	Reactor Core Isolation Cooling System	57
System Operating Procedure 2.2.67A	Reactor Core Isolation Cooling System Component Checklist	19
System Operating Procedure 2.2.67B	Reactor Core Isolation Cooling System Instrument Valve Checklist	1
CNS System Health Report	Reactor Core Isolation Cooling System June 2007	June 2007
System Operating Procedure 2.2.47A	HVAC Reactor Building Component Checklist	14

System Operating Procedure 2.2.47	HVAC Reactor Building	41
System Operating Procedure 2.2.47B	HVAC Reactor Building Instrument Valve Checklist	4

FSAR/USAR

USAR, Volume II, Section IV - 7; Reactor Core Isolation Cooling System  
 USAR, Volume IV, Section X-10, Heating, Ventilation and Air Conditioning Systems  
 CNS System Health Report; Heating and Ventilation reactor Building; June 2007

Drawings and Diagrams

BR 2043; Reactor Core Isolation Cooling and Reactor Feed System; Revision N49  
 BR 2020; Reactor Building Heating and Ventilation; Revision N56

Corrective Action Documents

CR-CNS-2007-06443

**Section 1R19 Postmaintenance Testing (71111.19)**

Procedures:

<u>Number</u>	<u>Description</u>	<u>Revision</u>
Maintenance Procedure 7.0.8.1	System Leakage Testing	21
Chemistry Procedure 8.4.1.1	Post-Accident Sampling System	16
Chemistry Procedure 8.PAA.4	Semi-Annual QC and training for Post-Accident Sampling System	6
Surveillance Procedure 6.1RHR.201	RHR Power Operated Valve Operability Test (IST) (DIV I)	20
Surveillance Procedure 6.MISC.401	Position Indicator Inservice training (IST)	13
Maintenance Procedure 7.2.30	Service Water Zurn Strainer Maintenance	9

WORK ORDERS:

4457952	4499597	4535990
4499595	4499598	4501093
4499596	4457953	4583607
		4585698

CONDITION REPORTS:

CR-CNS-2007-5915                      SP 6.1 DG.401 completed 8/30/2007  
CR-CNS-2007-5916                      SP 6.1 DG.301 completed 8/31/2007  
CR-CNS-2007-5923  
CR-CNS-2007-5929

**Section 1R22 Surveillance Testing (71111.22)**

Procedures:

<u>Number</u>	<u>Description</u>	<u>Revision</u>
Surveillance Procedure 6.SLC.601	SLC Tank Sampling	7
Chemistry Procedure 8.7.1.4	Boron Potentiometric Analysis (High Range)	11
Surveillance Procedure 6.DG.601	DG Fuel Oil Availability	14
NEDC 97-012	Emergency Diesel Generator Fuel Oil On-Site Storage Technical Specification Requirements	2
Surveillance Procedure 6.1RHR.201	RHR Power Operated Valve Operability test (IST) (DIV 1)	20
Surveillance Procedure 6.MISC.401	Position Indicator Inservice Testing (IST)	13

Work Orders: 4555054, 4535900

**Section 1EP2 Alert Notification System Testing (711114.02)**

Emergency Plan Implementing Procedures (EPIP)

5.7.21, "Maintaining Emergency Preparedness -Emergency Exercise, Drills, Tests, and Evaluations," Revision 35  
5.7.21.1, "NOAA/EAS Radio Malfunction," Revision 9  
5.7.27, "Alert and Notification System," Revision 17

Administrative Procedure O-EP-02, "Configuration Control of the Automated Notification System (ANS)," Revision 4

Alert and Notification System Design Report, Revision 12, May 2004

**Section 1EP3 (Emergency Response Organization Augmentation Testing (711114.03))**

Results of bi-monthly off-hours ERO call-in drills from 3rd quarter 2005 through 2nd quarter 2007, and call-out drill conducted on August 22, 2006.

Emergency Plan Implementing Procedures (EPIP)

5.7, "Communications," Revision 8

5.7.2, "Emergency Director Emergency Plan Implementing Procedure," Revision 25

5.7.25, "Recovery Operations," Revision 16

Preventive Measure Test Procedure, "Windows XP Communicator/ Version 9.3 System Upgrade," December 27, 2006

**Section 1EP5 Correction of Emergency Preparedness Weaknesses and Deficiencies (71114.05)**

Snapshot Assessment/Benchmark on the Entergy Emergency Preparedness Department Duties and Responsibilities, November 21, 2006.

Emergency Planning Department On-going Quarterly Assessment Reports, third quarter 2005 through first quarter 2007

Quality Assurance Audit Report 06-03, "Emergency Planning," March 13-20, 2006

Quality Assurance Audit Report 07-03, "Emergency Planning," March 12-29, 2007

Apparent Cause Evaluation CR-CNS-2006-10569

Root Cause Report, "NOUE Declared in Response to Unverified Fire Alarm," August 24, 2006

Operating Experience Report 23107, "March 1, 2006, Susquehanna Alert, Halon in Vital Area"

Operating Procedure 5.4, "Fire," Revisions 13, 14

Administrative Procedure O.39, "Fire Watches," Revision 34

**Section 2OS1: Access Controls to Radiologically Significant Areas (71121.01)**

Corrective Action Documents

2007-04340, 2007-4933, 2007-05172, 2007-05201, 2007-05297

### Audits and Self-Assessments

QAD 20070051      Quality Assurance Surveillance Report, "Control of Radiological Work"  
QAD 20070053      Quality Assurance Surveillance Report, "Source Term Reduction and Control"

Radiological Department On-Going Assessment Report 1Q2007

Radiation Work Permits (or Radiation exposure permit)

### Procedures

9.RADOP.3    Area Posting and Access Control, Revision 25

### Survey Records

CNS RP-121    Reactor Building - 881' Quads - 6/16/07, 3/06/07, 12/27/06, 9/23/06

### Miscellaneous

CNS RP-11    High Radiation Area Gate Key Inventory - 6/29/07, 3/29/07  
CNS RP-39    Alarming Dosimeter Set Point Form

### **Section 40A1 Performance Indicator Verification (71151)**

Semi-monthly siren test results from July 2006 through June 2007

Current training records for 10 designated ERO members

List of qualified ERO members and positions assigned

Critique Reports for Drills and Exercises:

    Team Evaluated Exercises, July 19 and December 20, 2006  
    Team Evaluated Exercises, March 18, May 16, and July 19, 2007  
    Operations Crew Simulator Drills, January through June 2007

Critique Reports for Declared Events:

    Notice of Unusual Event, July 25, 2006 and Event Report 42728  
    Notice of Unusual Event, November 11, 2006 and Event Report 42985

Emergency Plan Implementing Procedures (EPIP)

    5.7.1, "Emergency Classification," Revision 35  
    5.7.6, "Notification," Revision 43

5.7.20, "Protective Action Recommendations," Revision 18

Emergency Planning Department Guides

#2, Attachment G-1, "Emergency Planning Performance Indicator Guide," Revision 12  
H1, "CNS Drill and Exercise Manual"

**Section 40A2 Problem Identification and Resolution (71152)**

Cooper Nuclear Station Emergency Plan, Revisions 30, 52

Cooper Nuclear Station Emergency Action Levels, Revisions 21, 35

Condition Reports: CR-CNS-

2006-2416, 2437, 2439, 4508, 5167, 5302, 5303, 5685, 5686, 5722, 5934, 7168, 7222, 7523,  
10569. 2007- 0071, 0993, 1041, 1886, 2142, 2150, 2237, 2352, 2353, 3562, 4398

## LIST OF ACRONYMS

ALARA	as low as reasonably achievable
CAP	corrective action program
CFR	Code of Federal Regulations
DG	diesel generator
EAL	emergency action level
EPIP	emergency plan implementing procedure
ERO	emergency response organization
FEMA	Federal Emergency Management Agency
FIN	finding
HWP	hazardous work permit
IDLH	immediately dangerous to life or health
IST	inservice test
LER	licensee event report
NCV	non-cited violation
NEI	Nuclear Energy Institute
NIOSH	National Institute of Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
PPE	personnel protective equipment
RCIC	reactor core isolation cooling
RHR	residual heat removal
SSC	structure, system, and component
STEL	short term exposure limit
TS	technical specification
UFSAR	updated final safety analysis report
WO	work order