



FEMA

APR 22 2008

Mr. Jim Caldwell
Regional Administrator
U.S. Nuclear Regulatory Commission
Region III
2443 Warrenville Road
Lisle, Illinois 60542-4351

Dear Mr. Caldwell:

Enclosed is one copy of the Final Report, including narratives, for the March 11, 2008, Remedial Radiological Emergency Preparedness Partial Participation Plume Pathway Exercise for the Kewaunee Power Station. Under separate cover, three copies of this report are being sent to the Planning Section Supervisor, Wisconsin Emergency Management, for the State's use and for distribution to the counties of Kewaunee and Manitowoc. The State of Wisconsin, Kewaunee and Manitowoc Counties, and the utility owner/operator, Dominion Energy Kewaunee, Incorporated, participated in this exercise. The Final Report was prepared by the Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA) Region V, Radiological Emergency Preparedness Program.

The Deficiency (Issue Number 33-07-2a1-D-01) that was identified for the State of Wisconsin during the previous exercise was resolved. This Deficiency was identified under Criterion 2.a.1 – Emergency Worker Exposure Control – whereby the health and safety of State Field Team members would have been compromised because they were dispatched without proper regard to administrative exposure control limits, the field team members did not recognize the limits, and they did not act upon them when observed. On February 19-21, 2008, the State of Wisconsin provided extensive retraining to FOC/MRL/MCC and field team personnel regarding all aspects of exposure control, dose limits, turn-back values and the proper use of dosimetry and KI. The State also developed checklists to aid personnel in monitoring and reporting exposure/dose rate information. During the Remedial Exercise on March 11, 2008, the FTC was aware of administrative exposure and dose limits and considered exposure rates when directing field teams. State Field Teams properly monitored and reported exposure information to the FTC so as to avoid unnecessary exposures. These actions, in association with the correction of the six related ARCAs, resolve this Deficiency.

Six ARCAs associated with the Deficiency were also resolved by the State of Wisconsin. They include:

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1. ARCA 33-07-1c1-A-01, identified under Criterion 1.c.1 – Direction and Control – whereby the Forward Operations Center did not provide adequate direction and control to State Field Teams concerning KPS Declarations and radiological release status. During the March 11, 2008, remedial exercise, the Field Team Coordinator (FTC) informed the field teams in a timely manner of all Emergency Classification Level changes, known or potential releases, and other changes in condition at the KPS.

2. ARCA 33-07-3a1-A-04, identified under Criterion 3.a.1 – Implementation of Emergency Worker Exposure Control – whereby State Field Team #1 was not briefed on radiological exposure limits and did not adequately manage radiological exposure. Field Monitoring Teams received intensive retraining on February 19-21, 2007, concerning the proper use of survey instruments, use of personal dosimetry, completion of reporting forms, and exposure rate limits and turn-back values. During the March 11, 2008, remedial exercise, State Field Teams demonstrated a comprehensive understanding of these matters.

3. ARCA 33-07-3b1-A-02, identified under Criterion 3.b.1 – Implementation of KI Decisions – whereby the Field Operations Center did not brief State Field Teams on the proper use of potassium iodide (KI) in accordance with procedures prior to dispatch to their field assignments. The State of Wisconsin developed KI-acknowledgment forms and written instructions to inform emergency workers about the proper use of KI. Intensive training was provided to field operations personnel on February 19-21, 2008, regarding the use of KI. During the March 11, 2008, remedial exercise, the FTC used comprehensive briefings and checklists to ensure that field team personnel understood the proper use of KI.

4. ARCA 33-07-4a1-A-05, identified under Criterion 4.a.1 – Plume Phase Field Measurements (Instrumentation) – whereby State Field Teams were not adequately equipped to perform field measurements and did not understand the limitations of the instruments issued. During the March 11, 2008, remedial exercise, the SFTs were adequately equipped to perform field measurements and understood the measurement range limitations of their survey instruments. All instruments were checked and used in accordance with the plan and procedures.

5. ARCA 33-07-4a2-A-03, identified under Criterion 4.a.2 – Plume Phase Field Measurements (Release Characterization and Exposure Control) – whereby the State Field Teams were not familiar with and incorrectly reported radiation instrument units of measure. State Field Teams (SFTs) and other field operations staff received intensive training on February 19-21, 2008, concerning units of measure. During the remedial exercise, SFTs reported exposure rates, dose rates and exposures using correct units and terminology, and the FTC correctly recorded and reported the data to the SRC. Sufficient information was collected, and field teams were effectively managed to help characterize the release and control radiation exposure by field personnel.

6. ARCA 33-07-4a3-A-06, identified under Criterion 4.a.3 – Plume Phase Field Measurements (Plume Identification) – whereby State Field Teams did not make and record ambient radiation measurements at appropriate locations before, during or after the collection of radioiodine and particulate air samples and did not collect appropriate low-background measurements on sample media. State Field Teams received intensive training concerning the taking of ambient field

measurements, including the collection of appropriate low-background measurements on sample media. During the March 11, 2008, remedial exercise, State Field Team #1 appropriately obtained ambient radiation level measurements to ensure the sample was taken within the plume and counted, the sample using appropriate geometry in a low background area using appropriate equipment.

One new ARCA was identified during the March 11, 2008, remedial exercise for the State of Wisconsin under Criterion 3.a.1 – Implementation of Emergency Worker Exposure Control – whereby the FOC staff and Sample Courier were not issued Direct-Reading Dosimeters. On April 18, 2008, the State of Wisconsin submitted a Schedule of Corrective Actions (SCAs) to address this ARCA. The State's proposed SCAs included Field Team training and a remedial demonstration scheduled to take place on July 22, 2008, during the forthcoming Prairie Island REP Exercise. The DHS/FEMA Region V has received and approved the State's SCAs and will prepare a follow-up report upon completion of the evaluated re-demonstration.

Based on the results of the March 11, 2008, exercise, the offsite radiological emergency response plans and preparedness for the State of Wisconsin and the affected local jurisdictions, site-specific to the Kewaunee Power Station, can be implemented and are adequate to provide reasonable assurance that appropriate measures can be taken offsite to protect the health and safety of the public in the event of a radiological emergency at the site. Therefore, Title 44 CFR, Part 350, approval of the offsite radiological emergency response plans and preparedness for the State of Wisconsin site-specific to the Kewaunee Power Station, granted on June 14, 1985, remains in effect.

If you should have any questions, please contact William E. King, Chairman, Regional Assistance Committee, DHS/FEMA Region V, at (312) 408-5575.

Sincerely,



Edward G. Buikema
Regional Administrator

Enclosure (1)

cc: William Clare (WEM) w/enclosures (3)

Kewaunee Power Station

Exercise Report - 2008-03-11

Final Report - Radiological Emergency

Preparedness (REP) Program

2008-04-22



FEMA





FEMA

Exercise Report

Kewaunee Power Station

Exercise Date: 2008-03-11

Report Date: 2008-04-22

U.S. DEPARTMENT OF HOMELAND SECURITY

Federal Emergency Management Agency

REP Program

536 S. Clark St. 6th floor

Chicago, IL 60605

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1. Executive Summary

1. Executive Summary

On March 11, 2008, a Remedial Radiological Emergency Preparedness (REP) Partial Participation Plume Exposure Pathway Exercise was conducted commensurate with the Deficiency and six associated Areas Requiring Corrective Action (ARCAs) concerning State Field Team operations that were assessed against the State of Wisconsin during the previous Kewaunee Power Station (KPS) exercise conducted on December 4, 2007.

The remedial exercise was conducted for the 10-mile Emergency Planning Zone (EPZ) around the Kewaunee Power Station (KPS) by the U.S. Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA), Region V. The purpose of the exercise was to assess the level of State preparedness in responding to a radiological emergency. This exercise was held in accordance with DHS/FEMA's policies and guidance concerning the exercise of State and local Radiological Emergency Response Plans (RERPs) and procedures.

The most recent exercise at this site was conducted on December 4, 2007. The qualifying emergency preparedness exercise was conducted on January 21, 1981.

DHS/FEMA wishes to acknowledge the efforts of the many individuals in the State of Wisconsin who participated in this exercise. Protecting the public health and safety is the full-time job of the exercise participants. Cooperation and teamwork on the part of all the participants was evident during this exercise.

This Final Report contains the evaluation of the remedial exercise. Evaluated off-site response functions included the State Radiological Coordinator (SRC) Room, Field Operations Center/Mobile Communications Center (FOC/MCC) and State Field Teams. Although the SRC staff were not formally evaluated, as they had met all of the Criteria for which they were responsible during the December 4, 2007, biennial exercise, observations concerning their participation during the March 11, 2008, remedial exercise are included in this report in order to help clarify actions taken by the field operations staff at the FOC/MCC and by the State Field Teams.

State functions, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them.

The Deficiency (Issue Number 33-07-2a1-D-01) that was identified for the State of Wisconsin during the previous exercise was resolved. This Deficiency was identified under Criterion 2.a.1 – Emergency Worker Exposure Control – whereby the health and safety of State Field Team members would have been compromised because they were dispatched without proper regard to administrative exposure control limits, the field team members did not recognize the limits, and they did not act upon them when observed. On February 19-21, 2008, the State of Wisconsin provided extensive retraining to FOC/MRL/MCC and field team personnel regarding all aspects of exposure control, dose limits, turn-back values and the proper use of dosimetry and KI. The State also developed checklists to aid personnel in monitoring and reporting exposure/dose rate information. During the Remedial Exercise on March 11, 2008, the FTC was aware of administrative exposure and dose limits and considered exposure rates when directing field teams. State Field Teams properly monitored and reported exposure information to the FTC so as to avoid unnecessary exposures. These actions, in association with the correction of the six related ARCAs, resolve this Deficiency.

Six ARCAs associated with the Deficiency were also resolved by the State of Wisconsin. They include:

1. ARCA 33-07-1c1-A-01, identified under Criterion 1.c.1 – Direction and Control – whereby the Forward Operations Center did not provide adequate direction and control to State Field Teams concerning KPS Declarations and radiological release status. During the March 11, 2008, remedial exercise, the Field Team Coordinator (FTC) informed the field teams in a timely manner of all Emergency Classification Level changes, known or potential releases, and other changes in condition at the KPS.
2. ARCA 33-07-3a1-A-04, identified under Criterion 3.a.1 – Implementation of Emergency Worker Exposure Control – whereby State Field Team #1 was not briefed on radiological exposure limits and did not adequately manage radiological exposure. Field Monitoring Teams received intensive retraining on February 19-21, 2007, concerning the proper use of survey instruments, use of personal dosimetry, completion of reporting forms, and exposure rate limits and turn-back values. During the March 11, 2008, remedial exercise, State Field Teams demonstrated a comprehensive understanding of these matters.
3. ARCA 33-07-3b1-A-02, identified under Criterion 3.b.1 – Implementation of KI Decisions – whereby the Field Operations Center did not brief State Field Teams on the

proper use of potassium iodide (KI) in accordance with procedures prior to dispatch to their field assignments. The State of Wisconsin developed KI-acknowledgment forms and written instructions to inform emergency workers about the proper use of KI. Intensive training was provided to field operations personnel on February 19-21, 2008, regarding the use of KI. During the March 11, 2008, remedial exercise, the FTC used comprehensive briefings and checklists to ensure that field team personnel understood the proper use of KI.

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One new ARCA was identified during the March 11, 2008, remedial exercise for the State of Wisconsin under Criterion 3.a.1 – Implementation of Emergency Worker Exposure Control – whereby the FOC staff and Sample Courier were not issued Direct-Reading Dosimeters.

There were no new Areas Requiring Corrective Action (ARCAs) identified for the State of Wisconsin that were successfully redemonstrated during the exercise.

A detailed discussion of these issues can be found in Part IV of this Report.

2. Introduction

On December 7, 1979, the President directed FEMA to assume the lead responsibility for all off-site nuclear planning and response. DHS/FEMA's activities are conducted pursuant to 44 Code of Federal Regulations (CFR) Parts 350, 351, and 352. These regulations are a key element in the Radiological Emergency Preparedness (REP) Program that was established following the Three Mile Island Nuclear Station accident in March 1979.

FEMA Rule 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of State and local governments' radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local governments' participation in joint exercises with licensees.

DHS/FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in off-site emergency planning and in the review and evaluation of RERPs and procedures developed by State and local governments;
- Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises of the plans and procedures conducted by State and local governments;
- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (Federal Register, Vol. 58, No. 176, dated September 14, 1993); and
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
 - U.S. Department of Agriculture;
 - U.S. Department of Commerce;
 - U.S. Department of Energy;
 - U.S. Department of Health and Human Services;
 - U.S. Department of the Interior;

- U.S. Department of Transportation;
- U.S. Environmental Protection Agency;
- U.S. Food and Drug Administration; and
- U.S. Nuclear Regulatory Commission.

Representatives of these agencies serve on the DHS/FEMA Region V Regional Assistance Committee (RAC), which is chaired by DHS/FEMA.

Formal submission of the RERPs for the Kewaunee Power Station to FEMA Region V by the State of Wisconsin and involved local jurisdictions occurred on April 4, 1984. Formal approval of these RERPs was granted by FEMA to the State of Wisconsin during June 14, 1985, under 44 CFR 350.

A Remedial REP Partial Participation Plume Exposure Pathway Exercise was conducted on March 11, 2008, by DHS/FEMA Region V to assess the capabilities of State emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the Kewaunee Power Station. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite response organizations (OROs) during a simulated radiological emergency.

The findings presented in this report are based on the evaluations of the Federal evaluator team, with final determinations made by the DHS/FEMA Region V RAC Chairperson, and approved by the DHS/FEMA Headquarters.

The criteria utilized in the FEMA evaluation process are contained in:

- NUREG-0654/FEMA-REP-1, Rev. 1, Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, November 1980;
- FEMA-REP-14, Radiological Emergency Preparedness Exercise Manual, September 1991; and
- FEMA "Radiological Emergency Preparedness: Exercise Evaluation Methodology; Notice" as published in the Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002.

Section 3 of this report, entitled "Exercise Overview," presents basic information and data relevant to the exercise. This section of the report contains a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities which were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

Section 4 of this report, entitled "Exercise Evaluation and Results," presents detailed information on the demonstration of applicable exercise criteria at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains: descriptions of all Deficiencies and ARCAs assessed during this exercise, recommended corrective actions and descriptions of unresolved ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

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3. Exercise Overview

Contained in this section are data and basic information relevant to the March 11, 2008, Remedial REP Partial Participation Plume Exposure Pathway Exercise to test the offsite emergency response capabilities in the area surrounding the Kewaunee Power Station. This section of the exercise report includes a description of the 10-mile Emergency Planning Zone and a listing of all participating jurisdictions and functional entities that were evaluated.

3.1. EPZ Description

The Kewaunee Power Station occupies a 900-acre site that is located on the Lake Michigan shore, in the town of Carlton, nine miles south of Kewaunee, Wisconsin, and 35 miles southeast of Green Bay, Wisconsin. The plant began commercial operation on June 16, 1974.

The Kewaunee Power Station, which is owned and operated by Dominion Energy Kewaunee, Inc., has one Westinghouse Electric pressurized water nuclear reactor that generates about 560 megawatts of electrical power. In an average year, the plant generates about 2.26 billion kilowatt-hours of electricity, which is sufficient to supply the yearly energy needs of the Green Bay metropolitan area plus the remaining homes and farms in Brown, Kewaunee, Door, Marinette, Oconto, and Winnebago Counties. These counties have a population of about one-half million people.

The nearest population centers of 25,000 people or more are, according to the 2000 census, Manitowoc 13 miles south-southwest of the site, with 32,547 people; Green Bay 35 mile northwest of the site, with 87,899 people; Appleton 43 miles west of the site, with 59,032 people; and Sheboygan 36 miles southwest of the site, with 48,085 people. There are no other population centers with populations greater than 25,000 people that lie within 50-miles of the site. The town of Two Rivers, which is located 10 miles south of the site, had a 2000 census population of 13,354. The total population located within the 10-mile plume pathway EPZ was 22,700.

The following radiological emergency planning Sub-areas are included within the 10-mile EPZ: 5, 10N, 10NW, 10W, 10SW and 10S.

3.2. Exercise Participants

Agencies and organizations of the following jurisdictions participated in the Kewaunee Power Station exercise:

State Jurisdictions

- Wisconsin Emergency Management

- Wisconsin Department of Health and Family Services - Radiation Protection Section

- Wisconsin Department of Health and Family Services - Public Health

Private Jurisdictions

- Dominion Energy Kewaunee, Inc.

Federal Jurisdictions

- Federal Emergency Management Agency - Region V

3.3. Exercise Timeline

A precise timeline of key events and activities is not instrumental to the main purpose of this exercise, which was to remediate the Deficiency and six associated ARCAs identified as a result of the December 4, 2007, REP Full Participation Plume Exposure Pathway Exercise. The Scenario Timeline presented in Appendix 4 of this remedial exercise report provides a close approximation of the actual times that key events occurred.

4. Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities that participated in the March 11, 2008, Remedial REP Partial Participation Plume Exposure Pathway Exercise to test the off-site emergency response capabilities of State government in the 10-mile EPZ surrounding the Kewaunee Power Station and to remediate the Deficiency and six associated ARCAs identified during the December 4, 2007, REP Full Participation Plume Exposure Pathway Exercise.

Each jurisdiction and functional entity was evaluated based on its demonstration of exercise criteria delineated in Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002. Detailed information on the exercise criteria and the extent-of-play agreement used in this exercise are found in Appendix 3 of this report.

4.1. Summary Results of Exercise Evaluation

The matrix presented in Table 2, on the following page(s), presents the status of all exercise criteria from Federal Register Notice/Vol. 67, No. 80, dated April 25, 2002, which were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise criteria are listed by number and the demonstration status of those criteria are indicated by the use of the following letters:

M – Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)

D – Deficiency/(ies) assessed

A – ARCA(s) assessed or unresolved ARCA(s) from prior exercise(s)

N – Not Demonstrated (reason explained in Section 4.2)

Blank – Not scheduled for demonstration

Table 2 - Summary of Exercise Evaluation

DATE: 2008-03-11 SITE: Kewaunee Power Station, WI A: ARCA, D: Deficiency, M: Met					
		Wisconsin - SRC Room	Wisconsin - FOC/MRL/MCOM	Wisconsin - State FMT #1	Wisconsin - State FMT #2
Emergency Operations Management					
Mobilization	1a1				
Facilities	1b1				
Direction and Control	1c1	M	M		
Communications Equipment	1d1				
Equip & Supplies to support operations	1e1				
Protective Action Decision Making					
Emergency Worker Exposure Control	2a1	M	M		
Radiological Assessment and PARs	2b1	M			
Decisions for the Plume Phase -PADs	2b2				
PADs for protection of special populations	2c1				
Rad Assessment and Decision making for the Ingestion Exposure Pathway	2d1				
Rad Assessment and Decision making concerning Relocation, Reentry, and Return	2e1				
Protective Action Implementation					
Implementation of emergency worker exposure control	3a1		A	M	M
Implementation of KI decision	3b1		M	M	M
Implementation of protective actions for special populations - EOCs	3c1				
Implementation of protective actions for Schools	3c2				
Implementation of traffic and access control	3d1				
Impediments to evacuation are identified and resolved	3d2				
Implementation of ingestion pathway decisions - availability/use of info	3e1				
Materials for Ingestion Pathway PADs are available	3e2				
Implementation of relocation, re-entry, and return decisions.	3f1				
Field Measurement and Analysis					
Adequate Equipment for Plume Phase Field Measurements	4a1			M	M
Field Teams obtain sufficient information	4a2		M		
Field Teams Manage Sample Collection Appropriately	4a3			M	M
Post plume phase field measurements and sampling	4b1				
Laboratory operations	4c1				
Activation of the prompt alert and notification system	5a1				
Activation of the prompt alert and notification system - Fast Breaker	5a2				
Activation of the prompt alert and notification system - Exception areas	5a3				
Emergency information and instructions for the public and the media	5b1				
Mon / decon of evacuees and emergency workers, and registration of evacuees	6a1				
Mon / decon of emergency worker equipment	6b1				
Temporary care of evacuees	6c1				
Transportation and treatment of contaminated injured individuals	6d1				

4.2. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity in a jurisdiction-based, issues-only format. Presented below are definitions of the terms used in this subsection relative to criteria demonstration status.

- **Met** – Listing of the demonstrated exercise criteria under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.
- **Deficiency** – Listing of the demonstrated exercise criteria under which one or more Deficiencies were assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.
- **Area Requiring Corrective Actions** – Listing of the demonstrated exercise criteria under which one or more ARCAs was assessed during the current exercise or ARCAs assessed during prior exercises remain unresolved. Included is a description of the ARCAs assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.
- **Not Demonstrated** – Listing of the exercise criteria that were not demonstrated as scheduled during this exercise and the reason(s) they were not demonstrated.
- **Prior Issues – Resolved** – Descriptions of ARCAs assessed during previous exercises that were resolved in this exercise and the corrective actions demonstrated.
- **Prior Issues – Unresolved** – Descriptions of ARCAs assessed during prior exercises that were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues that are discussed in this report.

- A Deficiency is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that could cause a finding that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in the event of a radiological emergency

to protect the health and safety of the public living in the vicinity of a nuclear power plant."

- An ARCA is defined in FEMA-REP-14 as "...an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety."

DHS/FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues among DHS/FEMA Regions and site-specific exercise reports within each Region. It is also used to expedite tracking of exercise issues on a nationwide basis.

The identifying number of Deficiencies and ARCAs includes the following elements, with each element separated by a hyphen (-).

- Plant Site Identifier – A two-digit number, corresponding to the Utility Billable Plant Site Code.
- Exercise Year – The last two digits of the year the exercise was conducted.

4.2.1. State Jurisdictions

4.2.1.1. Wisconsin - State Radiological Coordinator Room

- a. MET: 1.c.1, 2.a.1, 2.b.1.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

4.2.1.2. Wisconsin - State Forward Operations Center/Mobile Radiological Laboratory/Mobile

Communications Center

- a. MET: 1.c.1, 2.a.1, 3.b.1, 4.a.2.
- b. AREAS REQUIRING CORRECTIVE ACTION: 3.a.1.

ISSUE NO.: 33-08-3a1-A-01

ISSUE: OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers IAW plans and procedures. Emergency workers periodically and at the end of each mission read and record dosimeter reading. (NUREG-0654, K.3)

CONDITION: The FTC and the FOC Communications Coordinator, along with other personnel in the MCC, wore the permanent record dosimeters they wear each day as part of their normal job function, but did not wear a DRD, as required by Part 1, Section II.A, page 15, of the Department of Health & Family Services Radiation Protection Section Radiological Incident Response Plan. According the FTC and FOC Communicator, the Sample Courier also did not have a DRD.

POSSIBLE CAUSE: The FTC was not aware that all emergency workers were required to wear both a permanent record dosimeter and direct-reading dosimeter.

REFERENCE: NUREG-0654, K.3.a; Department of Health & Family Services - Radiation Protection Section Radiological Incident Response Plan, Part 1, Section II.A.

EFFECT: Personnel at the FOC would be unaware of any exposures they were receiving and would be less likely to take steps to avoid unnecessary external dose. In cases where exposure rates at the FOC were sufficiently high, personnel could have received a dose greater than the 3 REM whole body dose limit.

RECOMMENDATION: The FOC briefing checklists and standard operating procedures should be modified to clarify that all emergency workers, including personnel at the FOC/MRL and the Sample Courier, should wear both a direct-reading dosimeter, as well as a permanent record dosimeter.

SCHEDULE OF CORRECTIVE ACTIONS:

A three-day training session for State EOC decision-makers and field personnel involved in field activities, has been scheduled as part of the pre-exercise training for the July 22, 2008, Prairie Island REP exercise. The importance of following radiological dose control procedures to ensure safe field operations will be emphasized during this training. This training will be held June 9-11, 2008. The criterion will be redemonstrated as part of the Prairie Island Full Participation Pume Exposure Pathway Exercise on July 22, 2008.

- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: 1.c.1, 2.a.1, 3.b.1, 4.a.2.

ISSUE NO.: 33-07-1c1-A-01

ISSUE: The FTC failed to give the appropriate information to the field teams including the declaration of the Site Area Emergency at 1015 hours, the declaration of the General Emergency, that there "might be a release" at 1124 hours and when the release increased due to fuel damage at 1234 hours.

CORRECTIVE ACTION DEMONSTRATED: The FTC informed the field teams in a timely manner of all changes in the Emergency Classification Level, known or potential releases, and other changes in condition at the KPS.

ISSUE NO.: 33-07-2a1-D-01

ISSUE: This deficiency is the result of seven different but related aspects of exposure control. These aspects have exacerbated the concern for the health and safety of the Emergency Responders comprising the State Field Team.

Field Teams were dispatched to sample points without proper regard for administrative exposure control limits nor were these limits recognized and acted on by field team members when observed.

Field Team #1 was sent without SRC concurrence to take an air sample in a location known to have a dose rate > 200 mR/hr.

Field Team #2 was sent to a sample point of unknown radiation levels and the team did not properly respond when (simulated) dose rate levels of 400 mR/hr and 2,000 mR/hr were observed.

Field Team members did not call in their DRD readings every thirty minutes.

CORRECTIVE ACTION DEMONSTRATED: On February 19-21, 2008, the State of Wisconsin provided extensive retraining to FOC/MRL/MCC and field team personnel regarding all aspects of exposure control, dose limits, turn-back values and the proper use of dosimetry and KI. The State also developed checklists to aid personnel in monitoring and reporting exposure/dose rate information. During the Remedial Exercise on March 11, 2008, the FTC was aware of administrative exposure and dose limits and considered exposure rates when directing field teams. State Field Teams properly monitored and reported exposure information to the FTC so as to avoid unnecessary exposures. These actions, in association with the correction of the six related ARCA's, resolve this Deficiency.

ISSUE NO.: 33-07-3b1-A-02

ISSUE: Field Team #1 did not receive a KI briefing during the pre-deployment briefing on any aspects concerning the ingestion of KI, including possible medical side effects and the dosage to be taken, and its members were not trained in the proper use and precautions associated with taking KI.

When Field Team #1 was directed to ingest KI, no instructions or precautions were discussed or provided by the Field Team Coordinator or the FOC/MRL Communicator, nor did the team members review the information cards provided in their supply kits.

Field Team #1 did not understand that they should not ingest KI if they were allergic to it.

CORRECTIVE ACTION DEMONSTRATED: The State of Wisconsin developed and implemented KI Acknowledgment forms that discuss the potential health risk associated with KI use and require a signature by each of the field personnel. The State also provided information about the reasons for taking KI, possible side effects and dosage. The FTC collected signed forms from all of the of the field team staff. The FTC also briefed the field teams that they should take KI when instructed to do so, and that persons allergic to iodine should not take KI. The acknowledgment forms, written instructions, briefing and training of field team staff resolve this ARCA.

ISSUE NO.: 33-07-4a2-A-03

ISSUE: Field Teams were not familiar with radiation instrument unit; they confused exposure with dose rate units and used milliroentgen per hour (mR/hr), microroentgen per hour (uR/hr) and millirem per hour (mRem/hr) inappropriately. Direct-Reading Dosimeter readings were reported in mR/hr rather than mR.

CORRECTIVE ACTION DEMONSTRATED: State Field Teams reported exposure rates, dose rates and exposures using correct units and terminology, and the FTC correctly recorded and reported the data to the SRC. Sufficient information was collected, and field teams were effectively managed to help characterize the release and control radiation exposure.

f. PRIOR ISSUES - UNRESOLVED: None

4.2.1.3. Wisconsin - State Field Monitoring Team #1

- a. MET: 3.a.1, 3.b.1, 4.a.1, 4.a.3.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: 3.a.1, 4.a.1, 4.a.3.

ISSUE NO.: 33-07-3a1-A-04

ISSUE: Prior to being dispatched from the FOC, State Field Teams were not briefed on their exposure limits and turnback value.

There are no administrative exposure limits based upon DRD readings specified in the plans and procedures, and emergency workers, including Field Teams, have no means by which to measure dose rates in excess of 200 mR/hr or to compare DRD readings to the 5 REM dose limit.

Field Team #1 lingered in areas having exposure rates greater than the 100 mR/hr reporting value with an action indicated to not linger in the area. The Field Teams entered into areas having exposure rates greater than the 200 mR/hr turnback value with an action to not proceed into those areas.

Field Team #2 members did not understand the measurement limitations of the instruments assigned to them.

Field Team # 2 members did not have a working knowledge of administrative dose rate limits requiring reporting or immediate action in the field.

CORRECTIVE ACTION DEMONSTRATED: Field Monitoring Teams received a radiological briefing prior to being dispatched. The briefing included discussion of: high range survey instruments, instrument checks on all equipment, use of personnel dosimetry, zeroing DRDs, completion of the Personnel Exposure Monitoring Forms, recording initial and periodic DRD readings, a review of the "do not linger" 100 mR/hr exposure rate and turn-back 200 mR/hr exposure rate, and a reminder to check dosimetry at least every thirty minutes.

Written instructions now indicate that 3R, as read on DRDs, is not to be exceeded (in order to ensure that the 5 REM dose limit is not exceeded). State Field Team #1 was very knowledgeable and aware of the 100 mR/hr "do not linger" and 200 mR/hr turn back exposure rates. The team continuously monitored exposure rates to ensure they did not linger or proceed into areas above the specified limits. An Eberline ASP1 exposure rate meter was available and was used to measure exposure rates above the maximum reading of 200 mREM/hr on the Bicron micro Rem dose rate meter used by the teams.

ISSUE NO.: 33-07-4a1-A-05

ISSUE: Field Team #1

Response ranges are not provided for the Bicron Dose Rate Meter or the Ludlum Count Rate meter to check operability of the instruments.

No high range instrument was provided to measure exposure rates over 200 mR/hr.

Field Team #2

There is no response range on instrument calibration labels.

Members did not understand the measurement range of the Bicron instrument.

CORRECTIVE ACTION DEMONSTRATED: An Eberline Model ASP1 was provided and used to measure exposure rates when the Bicron maximum range of 200 micro REM/hr was exceeded. The SFTs understood the measurement range limitations of the Bicron instrument. All instruments were checked and used in accordance with the plan and procedures.

ISSUE NO.: 33-07-4a3-A-06

ISSUE: Several problems were noted regarding Field Team management and sample collection:

Field Team #1

Ambient radiation levels or "Gamma in air" measurements were not taken before, during or after the collection of the air sample for the collection of radioiodine and particulates.

The cartridge and particulate filter were counted holding the sample approximately a half-inch from the probe instead of against the probe as indicated in procedures.

Based upon instrumentation, the Field team could not find the centerline of the plume, because the Bicron Dose Rate meter had a maximum reading of 200 mREM/hr.

The Field Team inconsistently reported the Bicron measurements in units of REM, R, REM/hr and/or R/hr.

Contact exposure rate readings were not obtained on sample bags prior to, during or after sample transfer to the carrier.

Field Team #2

Ambient radiation readings were not taken at the beginning and end of the ten minute air pump run time for gathering a particulate and iodine sample.

CORRECTIVE ACTION DEMONSTRATED: State Field Team #1 obtained ambient radiation level measurements at the beginning of the air sampling time, mid sample time, and at the end of the sample time to ensure the sample was taken within the plume. The cartridge was then counted in a low background area using a Ludlum count rate meter with a pancake probe. The cartridge was held against the probe with the input side facing the probe to ensure proper and consistent geometry. The Courier took a dose rate reading on the sample bag. Once the dose rate was measured, the Courier accepted the samples. These actions resolved Prior Issue Number 33-07-4a3-A-06.

- f. PRIOR ISSUES - UNRESOLVED: None

4.2.1.4. Wisconsin - State Field Monitoring Team #2

- a. MET: 3.a.1, 3.b.1, 4.a.1, 4.a.3.
- b. AREAS REQUIRING CORRECTIVE ACTION: None
- c. DEFICIENCY: None
- d. NOT DEMONSTRATED: None
- e. PRIOR ISSUES - RESOLVED: None
- f. PRIOR ISSUES - UNRESOLVED: None

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APPENDIX 1

ACRONYMS AND ABBREVIATIONS

The following is a list of the acronyms and abbreviations used in this report.

CDE	Committed Dose Equivalent
DRD	Direct-Reading Dosimeter
ECL	Emergency Classification Level
EOC	Emergency Operations Center
EPZ	Emergency Planning Zone
FOC	Field Operations Center
FTC	Field Team Coordinator
GE	General Emergency
KPS	Kewaunee Power Station
MCC	Mobile Communications Center
NARS	Nuclear Accident Reporting System
OSL	Optically Stimulated Luminescent
PAD	Protective Action Decision
PAR	Protection Action Recommendations
REP	Radiological Emergency Preparedness
RO	Radiological Officer
RPS	Radiation Protection Section
SAE	Site Area Emergency
SEOC	State Emergency Operations Center
SFT	State Field Team
SRC	State Radiological Coordinator
TEDE	Total Effective Dose Equivalent
TLD	Thermo Luminescent Dosimeter
WEM	Wisconsin Emergency Management

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APPENDIX 2

EXERCISE EVALUATORS AND TEAM LEAERS

The following is a list of the personnel who evaluated the Kewaunee Power Station Remedial REP Partial Participation Plume Exposure Pathway Exercise on March 11, 2008. "*" indicates that the evaluator was also a Team Leader. The organization each evaluator represents is indicated by the following abbreviations:

DHS/FEMA U.S. Department of Homeland Security /
 Federal Emergency Management Agency
ICF ICF Consulting, Inc.

TITLE	NAME	AGENCY
Regional Assistance Committee Chairman	William King	DHS/FEMA
Exercise Director	Dwaine Warren	DHS/FEMA
Site Specialist	Carl Bebrich	DHS/FEMA

LOCATION	EVALUATOR	AGENCY
Wisconsin - State Radiological Coordinator Room	Richard Watts	ICF
Wisconsin - State Forward Operations Center/Mobile Radiological Laboratory/Mobile Communications Center	David Steunkel	ICF
Wisconsin - State Field Monitoring Team #1	Richard Grundstrom	ICF
Wisconsin - State Field Monitoring Team #2	David Seebart	ICF
* Team Leader		

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APPENDIX 3

EXERCISE CRITERIA AND EXTENT OF PLAY AGREEMENT

This appendix lists the exercise criteria that were scheduled for demonstration in the Kewaunee Power Station Remedial REP Partial Participation Plume Exposure Pathway Exercise that was conducted on March 11, 2008, and the off-site extent-of-play agreement and scenario approved by DHS/FEMA Region V on February 15, 2008.

The exercise criteria, contained in FEMA-REP-15, Radiological Emergency Preparedness Exercise Evaluation Methodology, September 1991, represent a functional translation of the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, Criteria for the Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, November 1980.

Because the exercise criteria are intended for use at all nuclear power plant sites, and because of variations among off-site plans and procedures, an extent-of-play agreement is prepared by the State and approved by DHS/FEMA to provide evaluators with guidance on expected actual demonstration of the criteria.

A. Exercise Criteria and Extent-of-Play

Listed below are the specific REP criteria scheduled for demonstration during this exercise.

Kewaunee Power Station Exercise Extent of Play Agreement State of Wisconsin

Remedial Exercise Date: March 11, 2008

Locations: The State of Wisconsin Emergency Operation Center in Madison and State field operations in Kewaunee and Manitowoc Counties.

This one day demonstration is a remedial plume exposure pathway exercise, with partial participation by the State of Wisconsin. The State of Wisconsin is the Off-site Response Organization (ORO). State Emergency Operations Center (SEOC) staff will be pre-positioned at the SEOC in Room 105 at 2400 Wright Street, Madison, Wisconsin. Field staff will be pre-positioned at the Two Rivers National Guard Armory, at 2225 Sandy Bay Road, Two Rivers, Wisconsin.

Criteria that can be re-demonstrated immediately for credit, at the decision of the federal evaluator include the following: 3.a.1. Criteria that may be re-demonstrated, as approved on a case-by-case basis by the Chairperson of the Regional Assistance Committee include the following: 2.a.1.

EVALUATION AREA 1 – EMERGENCY OPERATIONS MANAGEMENT

Criterion 1.c.1 Direction and Control: *Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible.*

State of Wisconsin

The State will demonstrate direction and control capabilities in the SEOC in the State Radiological Coordinator (SRC) office, located at 2400 Wright Street, Room 105, Madison, Wisconsin, and from the Mobile Communications Center (MCC), located at the National Guard Two Rivers Armory, 2225 Sandy Bay Road, Two Rivers, Wisconsin. The State will demonstrate coordination between the SRC, field team coordinator, and the state field personnel.

Forward Operations Centers (FOC) activities at the Two Rivers Armory will be conducted out of the Wisconsin Emergency Management Mobile Communications Center (MCC) vehicle in lieu of the RPS Forward Operations Center/Mobile Radiological Laboratory (FOC/MRL) vehicle. No laboratory analysis will be demonstrated.

EVALUATION AREA 2 – PROTECTIVE ACTION DECISION MAKING

Criterion 2.a.1: Emergency Work Exposure Control: *OROs use a decision-making process, considering relevant factors and appropriate coordination to ensure that an exposure control system, including the use of KI is in place for emergency workers, including provisions to authorize radiation exposure in excess of administrative limits or*

protective action guides.

State of Wisconsin

The SRC, based on his or her technical evaluation of the available data, will provide direction to field personnel for emergency worker exposure control. This includes direction for the ingestion of KI and adherence to relevant exposure limits, and, as appropriate, authorization to exceed plan-specified exposure limits. Radiological field data will be provided to field team personnel by controller inject. Plant condition information will be provided to participants by controller inject from Utility Controller located at the SEOC.

EVALUATION AREA 3 – PROTECTIVE ACTION IMPLEMENTATION

Criterion 3.a.1 Implementation of Emergency Worker Exposure Control: *The OROs issue appropriate dosimetry and procedures and manage radiological exposure to emergency workers in accordance with the plan and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart.*

State of Wisconsin

This criterion will be demonstrated at the MCC and in the field by the state field monitoring teams. Field team members will demonstrate the proper use of direct-reading and thermoluminescent dosimeters (DRDs and TLDs) to monitor and control their radiation exposure. Field staff will be thoroughly briefed on use of dosimetry, "do not linger" exposure rates, and "turnback" exposure rates. Revised briefing procedures and KI information sheets will be validated during this exercise.

Criterion 3.b.1 Implementation of KI Decision: *KI and appropriate instructions are available should a decision to recommend use of KI be made. Appropriate record keeping of the administration of KI for emergency workers and institutionalized individuals (not the general public) is maintained.*

State of Wisconsin

State field monitoring teams and the MCC will demonstrate the availability of KI, appropriate instructions concerning the proper use and potential adverse side effects of KI, and KI record-keeping. The SRC, through the Field Team Coordinator, will instruct field teams when to simulate taking KI.

EVALUATION AREA 4 – FIELD MEASUREMENT AND ANALYSIS

Criterion 4.a.1 Plume Phase Field Measurements and Analyses: *The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates.*

State of Wisconsin

Two State Field Teams will participate in the field monitoring portion of the exercise. The pre-deployment briefing, equipment inventory, and operational checks will be evaluated for all teams present at the MCC.

State Field Teams will have available both a count rate meter and an exposure rate meter. State Field Team instruments cannot perform open/closed window readings and do not use calibrated check sources.

State Field Teams will demonstrate the capability to measure ambient radiation exposure levels, perform field iodine cartridge measurements, and take gas, iodine, and particulate samples.

Criterion 4.a.2 Plume Phase Field Measurements & Analysis

Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure.

State of Wisconsin

State Field Teams are directed by the SRC, through the Field Team Coordinator in the MCC. The Field Team Coordinator will provide monitoring/sampling direction, status updates on prevailing field radiological conditions, as well as protective action and exposure control information, directly to the teams.

Criterion 4.a.3 Plume Phase Field Measurements & Analysis *Ambient radiation measurements are made and recorded at appropriate locations and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the plan and/or procedures) amount of radioactivity has been collected on the sampling media.*

State of Wisconsin

Two State Field Teams will demonstrate approved field team procedures. The teams will demonstrate the capability to measure ambient radiation exposure levels, do field iodine cartridge measurements, and take gas, iodine and particulate samples. Once collected, the samples will be delivered to the MCC.

The following criteria will not be demonstrated this exercise:

Criterion 1.a.1 Mobilization

Criterion 1.b.1 Facilities

Criterion 1.d.1 Communications Equipment

Criterion 1.e.1 Equipment and Supplies to Support Operations

Criterion 2.b.1 Radiological Assessment & Protective Action Recommendations

Criterion 2.b.2 Decisions for the Plume Phase of the Emergency

Criterion 2.c.1 Protective Action Decisions for Protection of Special Populations

Criterion 2.d.1 Radiological Assessment and Decision Making for the Ingestion Exposure Pathway

Criterion 2.e.1 Radiological Assessment and Decision Making Concerning Relocation, Re-entry, and Return

Criterion 3.c.1 Implementation of Protective Action for Special Populations:

Criterion 3.c.2 Implementation of Protective Action for Schools

Criterion 3.d.1 Implementation/Establishment of Traffic & Access Control

Criterion 3.d.2 Impediments to Evacuation are Identified and Resolved

Criterion 3.e.1 Implementation of Ingestion Pathway Decisions

Criterion 3.e.2 Materials for Ingestion Pathways PADs Available

- Criterion 3.f.1 Implementation of Relocation, Re-entry and Return Decisions**
- Criterion 4.b.1 Post Plume Phase Field Measurements and Sampling**
- Criterion 4.c.1 Laboratory Operations**
- Criterion 5.a.1 Activation of the Prompt Alert and Notification System**
- Criterion 5.a.2 Activation of the Prompt Alert and Notification System (Fast Breaking)**
- Criterion 5.a.3 Activation of the Prompt Alert and Notification System (Exception Areas)**
- Criterion 5.b.1 Emergency Information and Instructions for Public and the Media**
- Criterion 6.a.1 Monitoring and Decontamination of Evacuees and Emergency Workers and Registration of Evacuees**
- Criterion 6.b.1 Monitoring and Decontamination of Emergency Worker Equipment**
- Criterion 6.c.1 Temporary Care of Evacuees**
- Criterion 6.d.1 Transportation and Treatment of Contaminated Injured Individuals**

APPENDIX 4

EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events – Exercise Scenario – that was used as the basis for invoking emergency response actions by the OROs in the Kewaunee Power Station Remedial REP Partial Participation Plume Exposure Pathway Exercise that was conducted on March 11, 2008.

This plume exercise scenario was submitted by the State of Wisconsin and Dominion Energy Kewaunee, Inc., and approved by DHS/FEMA Region V on January 25, 2008.

During the exercise, Controllers from the State of Wisconsin and a Utility Liaison gave "inject messages" containing scenario events and/or relevant data to those persons or locations who would normally receive notification of such events. These inject messages were the method used for invoking response actions by OROs.

The following is the Scenario and Timeline for the March 11, 2008, KPS remedial exercise for the State of Wisconsin. All time intervals are approximate.

**State of Wisconsin
Kewaunee Power Station
Remedial Exercise**

Timeline

Events held on March 11, 2008

Following is the timeline for the Kewaunee Power Station (KPS) Remedial Exercise for State of Wisconsin that was conducted on the March 11, 2008. **Times listed are approximate.**

Player Expectations:

- Safety #1
 - Do not perform any actions which are unsafe
 - If an unsafe condition exists, notify a Controller immediately
- Log keeping – document times and actions
- Verbalize actions to Controllers
- Kewaunee Power Station (KPS) ERO facilities and County EOCs will be simulated and use exercise phone lists for control cell phone numbers
- KPS simulated plant data will be provided on hardcopy PPCS screens at the KPS Control Cell
- Use “This is a drill” when communication is not face-to-face.
- Do not contact any additional personnel outside of the Players or Controllers during the exercise

Initiating Conditions:

Kewaunee Power Station was at 50% power when indications of an RCS leak developed. Procedure A-RC-36D: Reactor Coolant Leak was entered. With Letdown manually isolated (per A-RC-36D step 4.1.3), the unidentified RCS leak was determined to be approximately 12 gpm.

An Unusual Event was declared per SU5.1, Unidentified RCS leakage greater than 10 gpm. Shift Manager decided to activate the ERO at the Unusual Event.

Protected Train is A.

Equipment out of service:

B Feedwater Pump due to seal leakage – scheduled to be returned to service in 8 hours. B ICS Pump is out of service for seal repair – scheduled to be returned to service in 12 hours.

Meteorological Conditions:

Wind is from 69 degrees at approximately 7 miles an hour.

Shift Turn-Over Briefing:

At _____, during preparations for a controlled plant shutdown due to exceeding the Tech Spec limit of 10 gpm unidentified leakage, the leak rate raised to ~45 gpm. The Control Room has manually tripped the reactor per E-0: Reactor Trip or Safety Injection. Safety Injection has not been actuated.

The Operating crew has not identified the source of the leakage but per A-RC-36D has eliminated the following possibilities:

- Leak from the CVC System
- Leak from the PRZ Safeties, PORV or letdown on PORV MOV
- RCS #2 Seal
- Leakage into Component Cooling System
- Reactor Vessel Leakage
- Leak into SI Accumulator
- Primary-to-Secondary

R-11 and R-12 are lined up to recirculation back to Containment.

Approximate Time	Indication	To which ERO	Response
T = 0800	<p>RCS leakage has rapidly increased. Safety Injection manually actuated due to Pressurizer pressure approaching 1815 psig.</p> <p>Currently, SI flow is ~200 gpm.</p> <p>Pressurizer pressure and Pressurizer level continues to decrease.</p> <p>Containment pressure is slowly increasing, currently at 3 psig.</p> <p>RCS Subcooling is indicating 29.5F.</p> <p>Operations has exited E-0 and IPEOP E-1: Loss of Reactor or Secondary Coolant is in effect.</p> <p><i>KPS declares Alert based upon FA1 RCS Barrier Loss #2 – RCS leakage greater than makeup capability:</i></p> <ul style="list-style-type: none"> • Alert NARS form communicated to Offsite Agencies • NARS form faxed to Offsite Agencies <p><u>Radiological / Meteorological Data:</u></p> <p>Issue Rad/Met PPCS T=0</p> <p><i>RASCAL Data, if requested</i></p>		<p>EOC:</p> <p>State Activates SRC and State Field Teams.</p> <p>Communications:</p> <p>SRC / KPS LIAISON (SRC):</p> <ul style="list-style-type: none"> • Weather Conditions • Plant Conditions • Release or No Release • Dose Assessments <p>SRC / FT Coordinator</p> <p>[State / KPS State Liaison]</p>

Approximate Time	Indication	To which ERO	Response
T = 0900	<p><u>Emergency Director:</u></p> <p>Note: Containment pressure has been increasing throughout the event.</p> <p>Train A ICS Pump did not start at 23 psig in containment. Additional attempts to manually start the Containment Spray Pump have failed. Therefore, both ICS Pumps are not operating.</p> <p>RCS Pressure continues to decrease and is currently at 1005 psig.</p> <p>Containment Pressure has increased to 24.5 psig.</p> <p>All 4 Containment Fan Coil Units continue to run.</p> <p>IPEOP E-1: Loss of Reactor or Secondary Coolant remains in effect.</p> <p><i>KPS declares Site Area Emergency (SAE) based upon FS1:</i></p> <ul style="list-style-type: none"> • RCS Barrier Loss #2 - RCS leakage greater than makeup capability. <p><i>AND</i></p> <ul style="list-style-type: none"> • Containment Barrier Potential Loss #2 – Containment Pressure greater than 23 psig, with less than one full train of depressurization equipment available. <p>SAE NARS form communicated to Offsite Agencies.</p> <p>NARS form faxed to Offsite Agencies.</p> <p><u>Radiological / Meteorological Data:</u></p> <p>Issue Rad/Met PPCS based on 5 minute intervals.</p> <p><i>RASCAL Data, if requested.</i></p>		<p>EOC:</p> <p>State SRC and State Field Teams Mobilized.</p> <p>Communications:</p> <p>SRC / KPS LIAISON (SRC):</p> <ul style="list-style-type: none"> • Weather Conditions • Plant Condition • Release or No Release • Dose Assessments <p>SRC / FOC Communicator</p> <p>[State / KPS State Liaison]</p>

<p>T = 1010</p>	<p><u>Ops Data:</u></p> <p>Containment High Range Monitors R-40 and R-41 are reading 1004 R/hr.</p> <p>IPEOP E-1: Loss of Reactor or Secondary Coolant remains in effect.</p> <p>The Control Room suspects a penetration has been breached, because of a change in the rate of containment depressurization.</p> <p>Currently, Containment Pressure is ~21 psig and decreasing.</p> <p><i>KPS declares General Emergency based upon FG1:</i></p> <ul style="list-style-type: none"> • RCS Barrier Loss #2 - RCS leakage greater than makeup capability. • Containment Barrier <ul style="list-style-type: none"> ○ Loss #2 – Rapid unexplained decrease in containment pressure following initial rise ○ Potential Loss #2 – Containment Pressure greater than 23 psig with less than one full train of depressurization equipment available • Fuel Cladding Barrier Loss #5 – R-40/41 greater than 1000R/hr <p>Indication that a Release is occurring on NARs form.</p> <p>GE NARS form communicated to Offsite Agencies.</p> <p>NARS form faxed to Offsite Agencies.</p> <p><u>Radiological / Meteorological Data:</u></p> <p>Issue Rad/Met PPCS based on 5 minute intervals.</p> <p><i>RASCAL Data, if requested.</i></p>		<p>EOC:</p> <p>State: SRC and State Field Teams Mobilized.</p> <p>Communications:</p> <p>SRC / KPS LIAISON (SRC):</p> <ul style="list-style-type: none"> • Weather Conditions • Plant Condition • Release or No Release • Dose Assessments <p>SRC / FOC Communicator</p> <p>[State / KPS State Liaison]</p> <p>Utility Recommends:</p> <p>Evacuation 0-2 mi - all Sectors and 0-5 mi in Sectors L,M,N</p>
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<p>T = 1115 After GE NARS notification-communication is completed</p>	<p>Meteorological conditions change: Wind is From 77 degrees at approx. 7 miles an hour.</p> <p>An expanded PAR is developed due to wind shift.</p> <p>GE NARS form communicated to Offsite Agencies.</p> <p><i>NARS form faxed to Offsite Agencies</i></p> <p><u>Radiological / Meteorological Data:</u></p> <p><i>Issue Rad/Met PPCS based on 5 minute intervals</i></p> <p><i>RASCAL Data, if requested.</i></p>	<p>EOC:</p> <p>State SRC and State Field Teams Mobilized.</p> <p>Field Teams are notified of wind change and directed to new areas affected.</p> <p>Communications:</p> <p>SRC / KPS LIAISON (SRC):</p> <ul style="list-style-type: none"> • Weather Conditions • Plant Condition • Release or No Release • Dose Assessments <p>State / FOC Communicator [State / KPS State Liaison]</p> <p>Utility Recommends: Evacuation 0-2 mi all Sectors and 0-5 mi in Sectors M,N,P</p>
<p>T = 1230</p>		<p>Termination</p>