



FINAL EXERCISE REPORT

WOLF CREEK GENERATING STATION

Licensee: Wolf Creek Nuclear Operating Corporation
Exercise Date: November 17, 1999
Report Date: January 4, 2000

**Federal Emergency Management Agency
Region VII
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I. EXECUTIVE SUMMARY

On November 17, 1999, an exercise was conducted in the plume exposure pathway emergency planning zone (EPZ) around the Wolf Creek Generating Station by the Federal Emergency Management Agency (FEMA), Region VII. The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans and procedures.

The previous exercise at this site was conducted on February 25, 1997. The qualifying emergency preparedness exercise was conducted on November 7, 1984.

FEMA wishes to acknowledge the efforts of the many individuals who participated in this exercise. In the State of Kansas, the risk county of Coffey and the host county of Anderson participated along with various organizations of the State government. The efforts of the utility should also be commended for their work on the scenario development and exercise preparation.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additionally assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants were evident during this exercise. However, in the interest of brevity, only inadequacies are discussed in this report.

This report contains the DRAFT evaluation of the biennial exercise.

The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Deficiencies; however, there were two Areas Requiring Corrective Action (ARCAs) identified as a result of this exercise, one of which was corrected on the spot by additional training.

There were five ARCAs identified during the previous exercise conducted February 25, 1997. All five were corrected during this exercise and the out of sequence demonstration at the Anderson County Reception Center and Congregate Care.

The final protective action decision (PAD) during the emergency phase was an evacuation of the north, northeast, northwest, center, and west subzones of the 10-mile EPZ and included the towns of Waverly and New Strawn. Approximately 1,867 residents were affected by the evacuation.

II. INTRODUCTION

On December 7, 1979, the President directed FEMA to assume lead responsibility for all offsite nuclear planning and response. 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.

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

- * Taking the lead in offsite emergency planning and in the review and evaluation of radiological emergency response plans (RERP) and procedures developed by State and local governments.
- * Determining whether such plans and procedures can be implemented on the basis of 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 (Federal Register, Vol. 58, No. 176, September 14, 1993).
- * Coordinating the activities of the following federal agencies with responsibilities in the radiological emergency planning process:
 - U.S. Department of Commerce
 - U.S. Nuclear Regulatory Commission
 - U.S. Environmental Protection Agency
 - U.S. Department of Energy
 - U.S. Department of Health and Human Services
 - U.S. Food and Drug Administration
 - U.S. Public Health Service
 - U.S. Department of Transportation
 - U.S. Department of Agriculture
 - U.S. Department of the Interior

Representatives of these agencies serve as members of the FEMA Region VII Regional Assistance Committee (RAC) which is chaired by FEMA.

Formal submission of the RERPs for the Wolf Creek Generating Station to the RAC by the State of Kansas and involved local jurisdictions, was followed by a critique and evaluation of

these plans. Formal approval of the plans and the Alert and Notification System was granted by FEMA on April 4, 1989.

A REP exercise was evaluated on November 17, 1999, by FEMA Region VII to assess the capabilities of State and local offsite emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the Wolf Creek Generating 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 FEMA Region VII RAC Chairperson and approved by the Regional Director.

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.
- * FEMA-REP-15, "Radiological Emergency Preparedness Exercise Evaluation Methodology," September 1991.

Section III 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 IV of this report, entitled "Exercise Evaluation and Results," presents basic information on the demonstration of applicable exercise objectives at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues only format. This section also contains: (1) descriptions of all Deficiencies and ARCAs (if any), assessed during this exercise, recommended corrective actions, and the State and local governments' schedule of corrective actions for each identified exercise issue and (2) descriptions of ARCAs assessed during previous exercises and the status of the OROs efforts to resolve them.

III. EXERCISE OVERVIEW

Contained in this section are data and basic information relevant to the November 17, 1999, exercise to test the offsite emergency response capabilities in the area surrounding the Wolf Creek Generating Station. This section of the exercise report includes a description of the plume EPZ, a listing of all participating jurisdictions and functional entities which were evaluated, and a tabular presentation of the time of the actual occurrence of key exercise events and activities.

A. PLUME EPZ DESCRIPTION

The Wolf Creek Generating Station is located in the State of Kansas in Coffey County, about four miles northeast of Burlington, Kansas.

The topography of the 10-mile EPZ is relatively flat.

The EPZ is divided in twenty-one subzones. The 10-mile EPZ contains a total population of 6,099 all within Coffey County, Kansas. With the exception of Burlington (population 2,812) and seven other population clusters, the population density of the effective 10-mile EPZ is quite low - approximately 4.4 persons per square mile. Most of the seasonal or daily shifts in population are associated with recreational areas around John Redmond Reservoir and Coffey County Lake. Approximately 70% of the annual visitors to the John Redmond Reservoir and Coffey County Lake come to the area during the summer months. Sparsely populated farmland comprises the majority of the effective 10-mile EPZ. Other than the Wolf Creek Generating Station, there are not any large industries in the area.

B. EXERCISE PARTICIPANTS

Indicated below is a list of organizations/functions which participated in the November 17, 1999.

State of Kansas

1. Department of Emergency Management
2. Department of Health and Environment
3. National Guard
4. Highway Patrol
5. Adjutant General
6. Department of Transportation
7. Board of Agriculture
8. Department of Wildlife and Parks
9. WIBW FM Radio Station

Coffey County

1. County Commissioners
2. Emergency Preparedness Coordinator
3. County Sheriff's Department
4. County Engineer (Road & Bridge Dept.)
5. County Health Department
6. Public Information Officer
7. Fire Leader
8. County Appraiser
9. Radiological Officer
10. Waverly School District
11. Coffey County Hospital and Ambulance

Anderson County

1. Emergency Management Coordinator
2. Radiological Officer
3. County Social Services
4. County Sheriff's Office
5. County Health/EMS
6. American Red Cross
7. Salvation Army
8. County Public Works Department

C. EXERCISE TIMELINE

Table 1, on the following page, presents the time at which key exercise events and activities occurred during the Wolf Creek Generating Station exercise held on November 17, 1999. Also included are times that notifications were made to the participating jurisdictions/functional entities.

TABLE 1. EXERCISE TIMELINE

DATE AND SITE: NOVEMBER 17, 1999 WOLF CREEK GENERATING STATION

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken						
		KS SEOC (A)	DA/FTC	IC/MC	FSA	EOF	CCEOC (D & A)	CCR&B
Unusual Event	0819	0824	0835	0823	0828	0825	0828	N/A
Alert	0835	0839	0845	0840	0838	0842	0841	0849
Site Area Emergency	0900	0903	0908	0904	0902	0903	0908	0914
General Emergency	0930	0937	0934	0937	0935	0938	0934	0947
Rad. Rel Started	0838	0910	0903	0944	0848	0928	0908	0849
Rad. Rel Terminated	1318	1318	1324	1336	1330	1318	1318	1318
Facility Declared Operational		0930	1030	1054	1020	0901	0934	0911
Exercise Terminated		1400	1400	1400	1401	1400	1402	1402
KI Recommendation		1018	1018	N/A	1018	1018	1018	N/A
1st Protective Action Decision Initial SAE Notification - No PARs		N/A	N/A	N/A	N/A	N/A	0920	N/A
Siren Activation		N/A	N/A	N/A	N/A	N/A	0925	N/A
1st EAS Message		0928	N/A	N/A	N/A	N/A	N/A	N/A
2nd Protective Action Decision Evacuate: JRR & CCL		N/A	N/A	N/A	N/A	N/A	0933	N/A
2nd EAS Message		0938	N/A	N/A	N/A	N/A	N/A	N/A
3rd Protective Action Decision Evacuate JRR, CCL, CTR		N/A	N/A	N/A	N/A	N/A	0950	N/A
3rd EAS Message		0955	N/A	N/A	N/A	N/A	N/A	N/A
4th Protective Action Decision Evacuate JRR, CCL, CTR, N1, NW1, N2, NW2, W1		N/A	N/A	N/A	N/A	N/A	1018	N/A
4th EAS Message		1022	N/A	N/A	N/A	N/A	N/A	N/A
5th Protective Action Decision Evacuate JRR, CCL, CTR, N1, N2, NW1, NW2, W1, NE1, NE2, NE3		N/A	N/A	N/A	N/A	N/A	1044	N/A
5th EAS Message		1053	N/A	N/A	N/A	N/A	N/A	N/A

LEGEND: D - Decision Making Jurisdiction A - Activating Jurisdiction N/A - Not Applicable N/O - Not Observed

IV EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of evaluation of all jurisdictions and functional entities which participated in the November 17, 1999, exercise to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the Wolf Creek Generating Station.

Each jurisdiction and functional entity was evaluated on its demonstration of criteria contained in exercise objectives delineated in FEMA-REP-14, REP Exercise Manual, September 1991. Detailed information on the exercise objectives and the extent-of-play agreement for this exercise are found in Appendix 3 of this report.

A. SUMMARY RESULTS OF EXERCISE EVALUATION

The matrix presented in Table 2, on the following page, presents the status of all exercise objectives from FEMA-REP-14 which were scheduled for demonstration during this exercise, at all participating jurisdictions and functional entities. Exercise objectives are listed by number and the demonstration status of those objectives is indicated by the use of the following letters:

- M - Met (No Deficiency or ARCAs assessed and no unresolved ARCAs from prior exercises)**
- D - Deficiency assessed**
- A - Area(s) Requiring Corrective Action assessed or unresolved ARCA(s) from prior exercise(s)**
- N - Not Demonstrated (Reason explained in subsection B)**

TABLE 2. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: NOVEMBER 17, 1999, WOLF CREEK GENERATING STATION

JURISDICTION/LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
KANSAS STATE OPERATIONS																																
State Emergency Operations Center	M	M	M	M						M	M	M						M														
Forward Staging Area	M			M	M									M			M														M	
Dose Assessment/Field Team Coordination	M	M	M	M	M		M		M					M																		
Radiological Field Monitoring Teams	M			M	M	M		M						M																		
Information Clearinghouse/Media Center	M	M		M									A	M																	M	
Emergency Operations Facility	M	M		M	M									M																		
COFFEY COUNTY OPERATIONS																																
Coffey County Emergency Operations Center	M	M	M	M	M					M	M			M	M	M	M														M	
Coffey County Road & Bridge Department	M	M	M	M	M									M	M		M															
USD #243, Waverly Schools				M	M									M		M																
Coffey County Hospital					M									M									M									
Coffey County Ambulance					M									M									M									
ANDERSON COUNTY OPERATIONS																																
Anderson County Reception and Care Center	M		M	M	M																	A	M		M					M		
Garnett Elementary School																							M									

LEGEND:

M = Met (No Deficiency or ARCAe assessed)

D = Deficiency(ies) assessed

A = ARCA(s) assessed (Not affecting health and safety of public)

**N = Not Demonstrated as scheduled
(Reason explained in Section IV.)**

Blank = Not Scheduled For Demonstration

B. 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 is a definition of the terms used in this subsection relative to objective demonstration status.

Met - Listing of the demonstrated exercise objectives under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercise remain unresolved.

Deficiency - Listing of the demonstrated exercise objectives 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 (ARCA) - Listing of the demonstrated exercise objectives under which one or more ARCAs were assessed during the current exercise. Included is a description of ARCA(s) assessed during this exercise and the recommended corrective action(s) to be demonstrated before or during the next biennial exercise.

Not Demonstrated - Listing of exercise objectives which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.

Prior ARCAs - Resolved - Description of ARCAs assessed during previous exercises which were resolved in this exercise and the corrective actions demonstrated.

Prior ARCAs - Unresolved - Description of ARCAs assessed during prior exercises which were not resolved in this exercise. Included is the reason the ARCAs remain 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 which 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."

FEMA has developed a standardized system for numbering exercise issues (Deficiencies and ARCAs). This system is used to achieve consistency in numbering exercise issues between 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 for 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 Codes.
- * **Exercise Year** - The last two digits of the year the exercise was conducted.
- * **Objective Number** - A two-digit number corresponding to the objective numbers in FEMA-REP-14.
- * **Issue Classification Identifier** - (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.
- * **Exercise Issue Identification Number** - A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

1. KANSAS STATE OPERATIONS

1.1 State Emergency Operations Center and WIBW FM Radio

The State Emergency Operations Center (SEOC) is located in the State Defense Building in Topeka, Kansas. The Emergency Alert System (EAS), formerly known as Emergency Broadcast System (EBS) Station, (WIBW Radio) is located in Topeka, Kansas.

- a. **MET:** Objectives 1, 2, 3, 4, 9, 10, 11, and 17
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

1.2. Emergency Operations Facility

This facility is located at the Dwight D. Eisenhower Training Center within the 10-mile EPZ near the Wolf Creek Generating Station.

- a. **MET:** Objectives 1, 2, 4, 5, and 14
- b. **DEFICIENCY:** None

- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

1.3 Dose Assessment/Field Team Coordination

This function is located at the utility EOF at the Wolf Creek Generating Station.

- a. **MET:** Objectives 1, 2, 3, 4, 5, 7, 9, and 14
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

1.4 Radiological Field Monitoring Teams

The Field Teams are deployed from the utility EOF at the Wolf Creek Generating Station.

- a. **MET:** Objectives 1, 4, 5, 6, 8 and 14
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

1.5 Information Clearinghouse/Media Center

These functions are located in the State Defense Building at the Nickell Memorial Armory in Topeka, Kansas.

- a. **MET:** Objectives 1, 2, 4, 13, and 30

- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** Objective 12

Issue No.: 72-99-12-A-01

Description: A News Statement contained confusing information for the public. Specifically, News Statement Number 12 provided shelter-in-place instructions to persons in subzones CCL, CTR, JRR, N-1, N-2, NE-1, NE-2, NE-3, NW-1, NW-2, and W-1. The public in all of those subzones had previously been instructed to evacuate. Therefore, News Statement Number 12 could have caused confusion as to what actions should be taken. (NUREG-0654, E.7.)

Recommendation: Procedures should be revised to include the originator of information (in this case, KDHE) in the approval signature block for all News Statements. This objective must be demonstrated using the revised procedures during the next biennial exercise.

Schedule of Corrective Actions: The Division of Emergency Management has instigated the following corrective actions: a) add a signature block on all press releases for the Action Officer to sign prior to any press release to the public; b) conduct mandatory training for all PIO and KDEM Action Officers regarding news releases; and c) the administrator to conduct a back-up review on all protective action recommendations.

- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

1.6 State Forward Staging Area

The Forward Staging Area is located in a park at the intersection of Highway 75 and Old Highway 50, approximately 10.5 miles north of the plant site.

- a. **MET:** Objectives 1, 4, 5, 14, 17, and 30
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

2. COFFEY COUNTY OPERATIONS

2.1 Coffey County Emergency Operations Center

The Coffey County Emergency Operations Center is located within the 10-mile emergency planning zone at the Coffey County Courthouse in Burlington, Kansas.

- a. **MET:** Objectives 1, 2, 3, 4, 5, 10, 11, 14, 15, 16, 17, and 31
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 72-97-15-A-01

Description: The County Engineer, following a protective action decision to expand the evacuated subzones to include W-1, W-2, SW-1, and SW-2, failed to notify the County Road and Bridge Department to provide transportation assistance to those individuals requiring this assistance in the additional subzones pursuant to the plan. However, the EAS message contained a phone number to call if individuals required transportation assistance. (NUREG-0654, J.10.d.,g., N.1.a.)

Corrective Action Demonstrated: The County Engineer appropriately contacted the County Road and Bridge Department after a change in the ECL to remind them to check their transportation assistance list for individuals requiring assistance.

- f. **PRIOR ARCAs - UNRESOLVED:** None

2.2 Coffey County Road and Bridge Department

This function is performed in the "County Shop" located in Burlington, Kansas.

- a. **MET:** Objectives 1, 2, 3, 4, 5, 14, 15, and 17
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None

- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

2.3 Unified School District #243, Waverly Schools

This facility is located in Waverly, Kansas. An interview was conducted out of sequence of the exercise with the District Superintendent, High School and Elementary School Principals, and Transportation Director/Bus Driver. The school district consists of two schools with a total population of 295 students and 47 faculty and staff members.

- a. **MET:** Objectives 4, 5, 14, and 16
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

2.4 Coffey County Ambulance

The Coffey County Ambulance is located in Burlington, Kansas, which is within the EPZ. This is the primary ambulance service for treating and transporting contaminated injured individuals. The demonstration was out of sequence from the exercise pursuant to the extent of play agreement.

- a. **MET:** Objectives 5, 14, and 20
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

2.5 Coffey County Hospital

The Coffey County Hospital is located in Burlington, Kansas, which is within the EPZ. This is the primary hospital for treating contaminated injured individuals. The demonstration was out of

sequence from the exercise pursuant to the extent of play agreement.

- a. **MET:** Objectives 5, 14, and 21
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

3. ANDERSON COUNTY OPERATIONS

3.1 Anderson County Reception Center and Congregate Care

This facility, located at the Anderson County Junior/Senior High School and the Garnett Elementary School located in Garnett, Kansas, participated out of sequence of the exercise as agreed in the extent of play agreement.

- a. **MET:** Objectives 1, 3, 4, 5, 19, 22, and 30
- b. **DEFICIENCY:** None
- c. **AREA REQUIRING CORRECTIVE ACTION:** Objective 18

Issue No.: 72-99-18-A-02

Description: In the Men's Decontamination Area, the monitor had difficulty in correctly completing the instrument source check and background determinations. In addition, the monitor initially was moving the detector at a rate that was too fast for detector response capability. The initial rate of detector movement would have missed spot contamination. (NUREG-0654, H.10, J.12.)

Corrective Action Demonstrated: The controller conducted some on the spot training with respect to monitoring techniques and instrument source checks and background determination. The decontamination area monitor then successfully demonstrated the appropriate techniques for determining background, completed a source check to determine that the instrument was operating correctly, and demonstrated better monitoring techniques. This issue is closed

- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:**

Issue No.: 72-97-01-A-02

Description: Several agencies with responsibilities for the operation of this facility did not mobilize pursuant to the Anderson County Plan and the extent of play agreement. These agencies included the Anderson County Public Works Department, County Social Services, County School District, and Mental Health personnel. (NUREG-0654, A.4., D.3.,4., E.1.2.)

Corrective Action Demonstrated: All agencies with responsibilities for the operation of this facility mobilized in accordance with the plans.

Issue No.: 72-97-18-A-03

Description: The vehicle monitoring area was not setup or demonstrated pursuant to the extent of play agreement. (NUREG-0654, H.10., I.8., J.9., J.12.j)

Corrective Action Demonstrated: The vehicle monitoring area was setup and successfully demonstrated pursuant to the extent of play agreement.

Issue No.: 72-97-22-A-04

Description: Due to the inadequacy identified for Issue No. 72-97-18-A-03 above, this objective was not adequately demonstrated as it would also apply to the monitoring of emergency worker vehicles. (NUREG-0654, H.10., I.8., J.9., J.12.j)

Corrective Action Demonstrated: The vehicle monitoring area was setup and successfully demonstrated pursuant to the extent of play agreement.

Issue No.: 72-97-30-A-05

Description: The Radiological Officer did not perform a shift change pursuant to the extent of play agreement. (NUREG-0654, A.4., N.1.a.)

Corrective Action Demonstrated: A successful shift change was conducted between the first and second shift Radiological Officers.

f. **PRIOR ARCA_s - UNRESOLVED:** None

Appendix 1 - Acronyms and Abbreviations

ARCA	Area Requiring Corrective Action
CFR	Code of Federal Regulations
DOT	U.S. Department of Transportation
EAS	Emergency Alert System
ECL	Emergency Classification Level
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	U. S. Environmental Protection Agency
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
FEMA-REP-14	FEMA Radiological Emergency Preparedness Exercise Manual
FEMA-REP-15	FEMA Radiological Emergency Preparedness Exercise Evaluation Methodology
INEEL	Idaho National Engineering & Environmental Laboratory
KDHE	Kansas Department of Health & Environment
KI	Potassium Iodide
mR	Milliroentgen
NRC	U.S. Nuclear Regulatory Commission
NUREG-0654	Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants (NUREG-0654/FEMA-REP-1, Rev. 1).
ORO	Offsite Response Organization
PAR	Protective Action Recommendation
R	Roentgen

RAC	Regional Assistance Committee
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
SEOC	State Emergency Operations Center
TLD	Thermoluminescent Dosimeter
WCGS	Wolf Creek Generating Station

Appendix 2 - Exercise Evaluators and Team Leaders

Eleven federal agency personnel and three FEMA contract staff evaluated the offsite emergency response functions for the Wolf Creek Generating Station exercise on November 17, 1999. Evaluator Team Leaders are indicated by the letters "(TL)" after their names. The organization which each evaluator represents is indicated by the following abbreviations:

DOT U.S. Department of Transportation
 EPA U.S. Environmental Protection Agency
 FEMA Federal Emergency Management Agency
 INEEL Idaho National Engineering and Environmental Laboratory
 USDA U.S. Department of Agriculture

* Indicates locations evaluated out-of-sequence during the November 1999 exercise.

EVALUATION SITE	EVALUATOR	ORGANIZATION
State Emergency Operations Center & WIBW FM Radio - EAS	Jane Young - TL Robert Conley Debbie Waggoner Dianne Harrell	FEMA USDA DOT FEMA
Dose Assessment/Field Team Coord.	Brad Salmonson	INEEL
Radiological Field Monitoring Teams	Garianne Howard Ben Sanford	EPA INEEL
Information Clearinghouse & Media Center	Norm Valentine	FEMA
Forward Staging Area	Tonya Leibold	FEMA
Emergency Operations Facility	Joe Chandler	FEMA
Coffey County Emergency Operations Center	Connie Wisniewski - TL O.C. Payne	FEMA FEMA
Coffey County Road & Bridge Dept.	Sy Versage	INEEL
USD 243 Waverly School District*	Joe Schulte	FEMA
Coffey County Hospital* & Coffey County Ambulance*	Brad Salmonson Joe Schulte	INEEL FEMA
Anderson County Reception & Congregate Care Center* including Garnett Elementary School Congregate Care*	Brad Salmonson - TL Garianne Howard Ben Sanford Connie Wisniewski Tonya Leibold	INEEL EPA INEEL FEMA FEMA

Appendix 3 - Exercise Objectives and Extent of Play Agreement

This appendix lists the exercise objectives which were scheduled for demonstration during the Wolf Creek Generating Station exercise on November 17, 1999. The Kansas Department of Emergency Management submitted offsite objectives for this exercise. The extent of play meeting on March 23, 1999, which were subsequently approved by FEMA Region VII on April 1, 1999.

The exercise objectives, 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 objectives are intended for use at all nuclear power plant sites and because of variations among offsite plans and procedures, an extent-of-play agreement dated April 1, 1999, was prepared by FEMA Region VII and provided to the State of Kansas for further clarification of expected demonstration of the objectives.

Listed below are the specific REP objectives scheduled for demonstration during this exercise and the extent of play agreement, if applicable.

OBJECTIVE 1: MOBILIZATION OF EMERGENCY PERSONNEL

Demonstrate the capability to alert and fully mobilize personnel for both emergency facilities and field operations and to activate and staff emergency facilities for emergency operations.

Expected Demonstration: All telephone calls to mobilize personnel or place them on standby must be actually made. Prepositioning of staff is not authorized, except by written approval from this office prior to the exercise. Your request must include which staff positions will be prepositioned and which facility(ies) will be affected. Double staffing for training purposes will be allowed. However, only the primary individual can participate during the exercise. Double staffed individuals in training may only observe.

The demonstrations at the Anderson County Reception and Care Center including the Garnett elementary School, Waverly School district, and Coffey County Hospital and Ambulance will occur out of sequence and all personnel at these facilities may be prepositioned. The issuance of radiological instrumentation (including dosimetry) and operability checks, where applicable, must not be accomplished prior to evaluator arrival.

Current rosters must be presented identifying the individuals who will maintain around the clock operation at all evaluated facilities.

OBJECTIVE 2: FACILITIES - EQUIPMENT, DISPLAYS, AND WORK ENVIRONMENT

Demonstrate the adequacy of facilities, equipment, displays, and other materials to support emergency operations.

Expected Demonstration: All facilities must be fully set up as they would be to support an actual emergency. This would include the availability of operational telephones and other equipment as required for response to an emergency.

OBJECTIVE 3: DIRECTION AND CONTROL

Demonstrate the capability to direct and control emergency operations.

OBJECTIVE 4: COMMUNICATIONS

Demonstrate the capability to communicate with all appropriate emergency personnel at facilities and in the field.

Expected Demonstration: We will expect demonstration of the primary and at least one backup communication link identified in the plans for full demonstration of this objective. This must be demonstrated at all facilities evaluated. All evaluated facilities and field teams are required to demonstrate the capability to access at least one communication system that is independent of the commercial telephone system. We will request copies of all messages and logs of message traffic at each facility.

OBJECTIVE 5: EMERGENCY WORKER EXPOSURE CONTROL

Demonstrate the capability to continuously monitor and control radiation exposure to emergency workers.

Expected Demonstration: Emergency workers must wear appropriate direct-reading and permanent record dosimetry and have access to a dosimetry charger in accordance with the current state and local plans and procedures. In addition, they must be able to demonstrate basic knowledge of dosimetry, radiation exposure limits, and turn back exposure limits through an interview process. Procedures to monitor and record dosimeter readings and to manage radiological exposure control must be demonstrated.

OBJECTIVE 6: FIELD RADIOLOGICAL MONITORING - AMBIENT RADIATION MONITORING

Demonstrate the appropriate use of equipment and procedures for determining field radiation measurements.

Expected Demonstration: Each of the deployed field monitoring teams must take radiation measurements at a minimum of six locations to identify the plume. A demonstration of an operational check of the instruments utilizing a check source is required. Information on the proper reading or range of readings should be attached to or accompany each instrument.

Radiological detection instruments, equipment, and protective clothing as annotated in the Standard Operating procedures for the Kansas Department of Health and Environment, should be available for the demonstration.

OBJECTIVE 7: PLUME DOSE PROJECTION

Demonstrate the capability to develop dose projections and protective action recommendations regarding evacuation and sheltering.

OBJECTIVE 8: FIELD RADIOLOGICAL MONITORING - AIRBORNE RADIOIODINE AND PARTICULATE ACTIVITY MONITORING

Demonstrate the appropriate use of equipment and procedures for the measurement of airborne radioiodine concentrations as low as 10^{-7} (0.0000001) microcuries per cubic centimeter in the presence of noble gases and obtain samples of particulate activity in the airborne plume.

OBJECTIVE 9: PLUME PROTECTIVE ACTION DECISION MAKING

Demonstrate the capability to make timely and appropriate protective action decisions (PAD).

OBJECTIVE 10: ALERT AND NOTIFICATION

Demonstrate the capability to promptly alert and notify the public within the 10-mile plume pathway emergency planning zone and disseminate instructional messages to the public on the basis of decisions by appropriate State or local officials.

Expected Demonstration: The 15-minute clock will begin when the offsite authorities make the decision to notify the public of a Site Area Emergency. When that occurs, the offsite organization will have 15 minutes to activate the alert system and disseminate an initial Emergency Alert System (EAS) message.

The initial EAS message needs simply to identify the emergency classification level and include instructions to stay tuned to the radio station. Within the aforementioned 15 minutes, actual contact with the EAS station and dissemination of the initial message to the radio station must be demonstrated.

An evaluator will be assigned at the EAS station (WIBW) to observe the stations' procedures for broadcasting the messages. We expect to see actual receipt of the messages from the Coffey County EOC or the State EOC. Following receipt at the station, procedures to broadcast the message must be fully demonstrated up to the point of transmission. Actual broadcast of the message or EAS test messages are not required. The 15-minute clock stops when the broadcast (simulated) of the EAS message by the radio station is initiated. The FEMA evaluator will remain at the EAS station until the termination of the exercise to observe receipt and broadcast procedures for all EAS messages and Public Information messages. Copies of all EAS and Public Information messages will be requested from the facility.

The procedures for siren activation must be demonstrated up to the point of actual activation and must be completed within the 15-minute time frame. Actual siren activation may be simulated. In addition, tone alert radio and weather radio activation may be simulated.

OBJECTIVE 11: PUBLIC INSTRUCTIONS AND EMERGENCY INFORMATION

Demonstrate the capability to coordinate the formulation and dissemination of accurate information and instructions to the public.

Expected Demonstration: The 15-minute requirement will not be applied to subsequent protective action instructions provided to the public after the initial notification. However, subsequent messages should be disseminated in a timely manner. Also, the procedures for providing the messages to the radio station remain the same as indicated for objective number 10. Messages should be all inclusive by including previously identified areas as well as new areas. Procedures must be demonstrated, if appropriate, that ensure that EAS messages containing PARs that have been changed are rescinded and not repeated by the EAS station. In addition, procedures must be demonstrated to ensure that EAS and Public Information messages containing current PARs are repeated at pre-established intervals.

OBJECTIVE 12: EMERGENCY INFORMATION - MEDIA

Demonstrate the capability to coordinate the development and dissemination of clear, accurate, and timely information to the news media.

Expected Demonstration: Sufficient, timely, and accurate media briefings will be conducted, at the Media Center located at the EOF in Coffey County or at the alternate site at the Nickell Memorial Armory in Topeka, to provide adequate information to the public.

OBJECTIVE 13: EMERGENCY INFORMATION - RUMOR CONTROL

Demonstrate the capability to establish and operate rumor control in a coordinated and timely manner.

Expected Demonstration: Rumor control staff at the Information Clearinghouse/Media Center must demonstrate the capability to respond to an average of at least six calls per hour per operator throughout the emergency phase. The staff should demonstrate the capability to monitor the contents of broadcast media coverage of the emergency situation. Any trends in rumors must be addressed in news releases or media briefings. At least one message or briefing should address a false or misleading rumor for which measures should be taken.

OBJECTIVE 14: IMPLEMENTATION OF PROTECTIVE ACTIONS - USE OF POTASSIUM IODIDE FOR EMERGENCY WORKERS, INSTITUTIONALIZED INDIVIDUALS, AND THE GENERAL PUBLIC

Demonstrate the capability and resources to implement potassium iodide (KI) protective actions for emergency workers and institutionalized individuals.

Expected Demonstration: Although the decision to recommend the use of KI is not due for demonstration during this exercise, it is possible that the scenario could require it. If the decision to use KI is made, the instructions must be appropriately disseminated to all personnel including those deployed (simulated) for traffic and access control and other missions. However, as this is a group B objective, if the decision to use KI is not required by the scenario, all emergency workers, at all facilities, will be expected to demonstrate this objective through appropriate knowledge of the procedures for the use of KI. Actual administration of KI will be simulated. Verification of KI supplies at the State Forward Staging Area, Wolf Creek Emergency Operations Facility, and Coffey County EOC will be accomplished during the exercise.

OBJECTIVE 15: IMPLEMENTATION OF PROTECTIVE ACTIONS - SPECIAL POPULATIONS

Demonstrate the capability and resources necessary to implement appropriate protective actions for special populations.

Expected Demonstration: Telephone calls to special facilities and transportation providers may be simulated. However, all facilities and transportation providers which are required to be notified must be clearly identified and the simulated contacts appropriately documented. Telecommunications Device for the Deaf (TDD) calls to the hearing impaired population will be simulated and appropriately documented.

OBJECTIVE 16: IMPLEMENTATION OF PROTECTIVE ACTIONS - SCHOOLS

Demonstrate the capability and resources necessary to implement protective actions for school children within the plume pathway emergency planning zone (EPZ).

Expected Demonstration: We will expect the capability to evacuate schools to be demonstrated by USD #245 - Waverly. An exercise evaluator will be assigned to interview the district superintendent (or other designated school official) and principal.

In addition, at least one school bus driver must be available for an interview to determine awareness of and preparedness for the evacuation of school children. This will include demonstration of objectives number 4, 5, and 14: communications, emergency worker exposure, and use of KI, respectively. The bus drivers must have dosimetry and KI available for this demonstration. The interviews described above will be conducted out of sequence from the exercise.

During the emergency phase of the actual exercise, all appropriate actions (e.g., notifications, EAS messages, etc.) must be taken (simulated) by the EOC staffs for any schools affected by protective action recommendations. Actual telephone calls do not need to be made; however, all contacts which would be required should be appropriately documented.

OBJECTIVE 17: TRAFFIC AND ACCESS CONTROL

Demonstrate the organizational capability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas.

Expected Demonstration: Deployment of traffic and access control personnel to assigned locations will be simulated. At least two individuals, who would perform traffic and access control, must be available for an interview to demonstrate knowledge of their roles and responsibilities concerning traffic and access control, as well as appropriate knowledge concerning dosimetry and potassium iodide procedures. These individuals should be one individual from the Coffey County Road and Bridge Shop and one Kansas Highway Patrol trooper at the Forward Staging Area. We recommend that this be accomplished early in the exercise.

OBJECTIVE 18: RECEPTION CENTER - MONITORING, DECONTAMINATION AND REGISTRATION

Demonstrate the adequacy of procedures, facilities, equipment, and personnel for the radiological monitoring, decontamination, and registration of evacuees.

Expected Demonstration: At the Anderson County Reception Center the number of evacuees required to be monitored within twelve hours is 391 (20% of evacuees assigned to the center). The plan indicates that monitoring will be performed by the Anderson County Fire Department. A minimum of 3 monitoring team, based on monitoring times indicated in the Anderson County plan, are required to monitor 20% of the evacuees within 12 hours. Therefore, 1 monitoring team (1/3 of total required) must demonstrate monitoring at this facility, to ensure that all evacuees assigned to this center could be monitored within 12 hours. In addition, two monitoring teams (one male and one female) must be available for evacuee remonitoring following decontamination. Based upon the above a total of 3 monitoring teams will be required for this demonstration of evacuee monitoring. At least six simulated evacuees must be available to allow the initial monitoring team to demonstrate their capability. The monitoring sequences for each simulated evacuee will be timed by the evaluators to determine whether the reception center can adequately meet the twelve-hour requirement referenced above. Issuance of dosimetry and operability checks of survey instruments will be observed by the evaluators.

The facilities at Anderson County Junior/Senior High School, utilized for monitoring and decontamination of evacuees must be fully activated and set up to receive evacuees for evaluation. Decontamination and remonitoring procedures must be initiated for at least one male and one female evacuee. Decontamination procedures may be simulated.

The individuals who perform monitoring must demonstrate an operational check of the instruments, utilizing a check source, prior to monitoring. Information on the proper reading or range of readings should be attached to or accompany the instrument.

Vehicle monitoring and vehicle decontamination teams must be present. The vehicle monitoring area must be setup and vehicle monitoring must be demonstrated. This will include monitoring of both the interior and exterior of at least two vehicles. Monitoring of the air filter will not be required. Actual decontamination of vehicles will not be required. This may be accomplished by interview including demonstration of appropriate knowledge of decontamination action levels.

Successful demonstration of vehicle monitoring will close the ARCA identified for objectives 18 and 22 during the February 1997 exercise.

All organizations, per the plans, who provide resources in support of registration center activities,

must be present for evaluation at the Anderson County Registration Center. This would include the Anderson County Emergency Management, Anderson County Fire Department, Anderson County Sheriff's Department, and the American Red Cross.

In the event that, during the reception center demonstration an evaluator identifies an exercise issue, the evaluator will discuss it with the Team Leader, Controller, and Trainer (State representative). If possible, the trainer will provide immediate instruction and a re-demonstration will occur to correct the issue. The exercise report will reflect the exercise issue and that it has been corrected.

OBJECTIVE 19: CONGREGATE CARE

Demonstrate the adequacy of facilities, equipment, supplies, personnel, and procedures for congregate care of evacuees.

Expected Demonstration: In order to demonstrate this objective, the Garnett Elementary School will be evaluated on the adequacy of facilities for providing congregate care. These facilities will be required to be open to allow a review by the evaluator. The evaluator will conduct a walk-through of this facility to determine, through observation and inquiries, the adequacy of the physical facilities, equipment, personnel, supplies, and procedures. It is not necessary to set up operations as they would be in an actual emergency. Congregate care staff should demonstrate the capability to ensure that evacuees have been monitored for contamination and are uncontaminated before entering the facility. According to the plans, the Anderson County Emergency Management and the American Red Cross provide resources and support for congregate care centers. Therefore, a representative from each of these organizations, must be present during the evaluation.

OBJECTIVE 20: MEDICAL SERVICES - TRANSPORTATION

Demonstrate the adequacy of vehicles, equipment, procedures, and personnel for transporting contaminated, injured, or exposed individuals.

Expected Demonstration: This objective is to be demonstrated by the Coffey County Ambulance on November 16, 1999. A non-specialized vehicle (e.g., car or truck) may be utilized to transport the simulated victim to the medical facility. However, prior to transport, communications between the ambulance and the receiving medical facility must be demonstrated. This would include providing information and data on the individual's condition, radiation monitoring results (if performed by the ambulance crew), and estimated time of arrival. Additionally, the ambulance crew must demonstrate, by interview, knowledge of where the ambulance and crew would be monitored and decontaminated, if required. The responding ambulance crew must have dosimetry and KI available and be knowledgeable of procedures for their use and of their exposure limits.

Monitoring of the simulated victim may be performed by the ambulance crew or deferred to the medical facility. The individual(s) who perform monitoring must demonstrate an operational check of the instruments utilizing a check source, prior to monitoring. Information on the proper reading or range of reading should be attached to or accompany the instrument. If monitoring is

deferred to the medical facility, appropriate contamination control measures must be demonstrated by the ambulance crew.

OBJECTIVE 21: MEDICAL SERVICES - FACILITIES

Demonstrate the adequacy of the equipment, procedures, supplies, and personnel of medical facilities responsible for treatment of contaminated, injured, or exposed individuals.

Expected Demonstration: This objective will be demonstrated by the Coffey County Hospital on November 16, 1999. The hospital must demonstrate the capability to activate and set up a radiological emergency area for treatment. Equipment and supplies must be available for the treatment of contaminated, injured, or exposed individuals. Appropriate contamination control procedures must be demonstrated.

The hospital must demonstrate the capability to monitor the individual for external contamination, to make decisions on the need for decontamination of the individual, to follow appropriate decontamination procedures, and to maintain records of all survey measurements and samples taken. All procedures for the collection and analysis of samples and the decontamination of the individual must be demonstrated or described to the evaluator. All monitoring activities must be completed as they would be in an actual emergency. Contamination of the individual will not be simulated with any low-level radiation source. The individual(s) who perform monitoring must demonstrate an operational check of the instruments, utilizing a check source prior to monitoring. Information on the proper reading or range of readings should be attached to or accompany the instrument.

OBJECTIVE 22: EMERGENCY WORKERS, EQUIPMENT, AND VEHICLES - MONITORING AND DECONTAMINATION

Demonstrate the adequacy of procedures for the monitoring and decontamination of emergency workers, equipment, and vehicles.

Expected Demonstration: Full credit for emergency worker monitoring and decontamination will be granted upon the successful demonstration of objective number 18 at the Anderson County Reception Center.

OBJECTIVE 30: CONTINUOUS 24-HOUR STAFFING

Demonstrate the capability to maintain staffing on a continuous 24-hour basis through an actual shift change.

Expected Demonstration: Twenty-four (24) hour staffing must be demonstrated by an actual shift change of all key staff. Double staffing will not be allowed as an acceptable demonstration of this objective. The shift change must occur to allow the second shift individual to demonstrate the capability to perform the appropriate responsibilities required of the position. Therefore, the time for the shift change will be suggested by controller input. Incoming personnel must receive an adequate turnover briefing before relieving outgoing personnel. A shift change is required only for the Information Clearing House/Media Center, Forward Staging Area, Emergency Operations Facility, and Anderson County Reception Center.

This objective will be demonstrated by interview at the Anderson County Reception Center with both shifts of the Radiological Officer and Shelter Manager. Successful demonstration of this objective will close the ARCA identified during the February 1997 exercise.

Appendix 4 - Exercise Scenario

This appendix contains a summary of the simulated sequence of events -- Exercise Scenario -- which was used as the basis for invoking emergency response actions by OROs during the Wolf Creek Generating Station exercise on November 17, 1999.

The times listed below are those contained in the scenario. Actual times of key events are documented in Table 1 of the Exercise Timeline.

The exercise scenario was submitted by the Wolf Creek Nuclear Operating Corporation on September 13, 1999, and approved by FEMA Region VII on October 6, 1999.

The scenario was based on a reactor coolant pump seal failure. There was an filtered and monitored release.

SCENARIO SUMMARY

- 0730 Initial conditions established the plant operating normally at 100% full power.
- 0800 Drill activities begin.
- 0800 A hydrogen leak in the turbine building generates a fire. Based on the fire, an Alert should be declared. Due to the fire, debris passes through the reactor coolant system (RCS) and causes a reactor coolant pump seal to fail.
- 0845 RCS leakage increases to a noticeable point.
- 0900 A Site Area Emergency should be declared when leakage increases to 480 gallons per minute. At this time containment high range area monitors (CHARMS) begin to noticeably increase. An in-progress containment mini-purge fails to isolate. The down stream dampers leak by, providing a release path to the environment.
- 0930 CHARMS exceeds 2800 R/Hr. This will result in the declaration of a General Emergency. Conditions should warrant evacuation of down wind sectors out to ten miles..
- 1000 A filtered and monitored fission product release begins
- 1015 A major wind shift occurs. Should result in PAR changes
- 1400 Exercise Terminates.