



Final Exercise Report Cooper Nuclear Station

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**DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION VII**

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I. Executive Summary

On September 21, 2004, the Federal Emergency Management Agency (FEMA), Region VII, evaluated an exercise in the plume exposure pathway emergency planning zone (EPZ) around the Cooper Nuclear Station. In addition, out-of-sequence drills were conducted on August 23-24, 2004. The purpose of the exercise and drills 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 August 27-28, 2002. The qualifying emergency preparedness exercise was conducted on April 6, 1983.

FEMA wishes to acknowledge the efforts of the many individuals who participated in this exercise. In the State of Missouri, the risk county of Atchison participated along with the State government. In the State of Nebraska, the risk counties of Nemaha and Richardson participated along with the State government.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additional 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.

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 five Areas Requiring Corrective Action (ARCAs) identified during this exercise. Two of these ARCAs were corrected during the exercise.

This report contains the evaluation of the biennial Full-Scale Exercise conducted on September 21, 2004. Medical Drills were conducted on August 23, 2004, for the Fairfax Community Hospital and on August 24, 2004 for the Nemaha County Hospital. Other out of sequence Drills were conducted as follows: Atchison-Holt Ambulance, August 23, 2004; Nemaha County Ambulance, August 24, 2004; Rock Port School System, August 24, 2004; and the Richardson County Reception and Care Center, August 24, 2004.

There were two ARCAs identified during the previous Ft. Calhoun Nuclear Station exercise conducted November 18, 2003, and one ARCA identified during the previous Callaway Nuclear Power Plant exercise conducted April 15-16, 2003, scheduled to be corrected during this exercise. The two Ft. Calhoun ARCAs were adequately demonstrated and are considered closed. The Callaway Nuclear Power Plant ARCA was closed administratively.

The final Protective Action Decision (PAD) in Nebraska during the emergency phase was evacuation of Sub areas 11, 12, 13E, 13W, and 14 and emergency workers ingest KI. The evacuated areas included the towns of Brownville, Nemaha, and Shubert. The evacuation also included the public areas of, Brownville State Recreation Area, Steamboat Trace Trail, and the Indian Cave State Park. Approximately 1,293 residents and transients in Nebraska were affected by the evacuation.

The final Protective Action Decision (PAD) in Missouri during the emergency phase was evacuation of Sub areas 1 and 4. The evacuated area included the towns of Phelps City, Langdon and Nishnabotna. Approximately 333 Missouri residents and transients 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); and
- * 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, and
- U.S. Department of the Interior.

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

Formal submission of the RERPs for the Cooper Nuclear Station to FEMA Region VII occurred on May 11, 1983, for the State of Nebraska and on May 26, 1983, for the State of Missouri. Formal approval of these RERPs for both States was granted by FEMA on July 2, 1984, under 44 CFR 350. The alert and notification system was approved by FEMA on May 26, 1987.

A joint REP exercise was evaluated on September 21, 2004, 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 during a radiological emergency involving the Cooper Nuclear Station. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite response organizations (ORO) 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 Exercise Evaluation Areas and Criteria, as published in the Federal Register, September 12, 2001 and April 25, 2002.

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 that 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 evaluation criteria 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 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 September 21, 2004, exercise to test the offsite emergency response capabilities in the area surrounding the Cooper Nuclear Station. This section of the exercise report includes a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of the actual occurrence of key exercise events and activities.

A. Plume EPZ Description

The Cooper Nuclear Station is located on the Missouri River approximately 3 miles south of Brownville, in Nemaha County, Nebraska. The major north-south highway, U.S. Highway 75, lies just outside of the EPZ to the west. State Highway 67 is a hard surface road, which enters the area from the south and connects Nemaha, Brownville, and Peru before joining U.S. Highway 75 to the west of Peru. U.S. Highway 136 crosses the Missouri River at Brownville and proceeds west through Auburn, which is located just outside the 10 mile EPZ. Highway 136 provides the only exit from the area across the Missouri River into Missouri. Except for this one crossing point, the Missouri River serves as an effective natural barrier to movement east.

The topography of the 10-mile EPZ varies from relatively flat east and north of the site, to rolling hills to the west and south of the site.

The 10-mile EPZ contains a total population of 5,200 within three counties; Atchison County in Missouri, and Nemaha and Richardson Counties in Nebraska. The land use within the EPZ is predominantly diversified agricultural production. There are four state recreational areas in the EPZ; Brownville State Recreation Area, Steamboat Trace Trail, and Indian Cave State Park in Nebraska, and Brickyard Hill State Wildlife Area in Missouri. The area is served by various forms of transportation. U.S. Highway 136 passes within three miles to the north of the site and Interstate Highway 29 passes within five miles to the northeast. The Burlington Northern Railroad and the Union Pacific Railroad both transect the EPZ.

There is seasonal boat traffic on the Missouri River. It consists mainly of barges and tugs transporting commodities, and very few pleasure craft. The Missouri River within the 10-mile EPZ does not represent a major recreational area. The U.S. Army Corps of Engineers reduces the flow of water in the Missouri River during the winter months. The

U. S. Coast Guard removes the navigational buoys from the river during these months and thus renders the river essentially closed to commercial navigation from December to March each year. There are only two commercial users of the river within the EPZ, those being the Kentopp Grain Elevator and the Continental Grain Terminal in Brownville, Nebraska approximately 2 miles from the plant site. Other users of the Missouri River include local commercial fishermen, tour groups, and one passenger boat - the "Spirit of Brownville."

B. Exercise Participants

The following agencies, organizations, and units of government participated in the Cooper Nuclear Station exercise on September 21, 2004.

STATE OF MISSOURI

State Emergency Management Agency
Department of Health and Senior Services
Department of Transportation

MISSOURI RISK JURISDICTION

Atchison County

County Commissioners
Emergency Management Director
Operations Officer
Public Information Officer
Communications Officer
County Nurse
Rock Port Police Department
Road & Bridge Staff
Sheriff's Department
Transportation Officer
General Field Assignment Coordinator
Fairfax Community Hospital
Atchison-Holt Ambulance
Rock Port School System

STATE OF NEBRASKA

Governor's Office
Emergency Management Agency
National Guard
Department of Agriculture
Health and Human Services Regulation and Licensure

State Highway Patrol
Department of Roads
Department of Game & Parks
University of Nebraska Medical Center
Cooper Nuclear Station (NPPD)

NEBRASKA RISK JURISDICTIONS

Nemaha County

Executive Board
Emergency Management Director
Sheriff's Department/Law Enforcement
Extension Service
Southeast District Health Department
Radiological Officer
Public Information Officer
Communications Officer
Hospital
Ambulance

Richardson County

Board Chairman
Emergency Management Director
Sheriff's Department
Public Information Officer
Communications Officer
Radiological Officer
Reception and Care Center
American Red Cross
Radiological Monitoring Cadre

FEDERAL PARTICIPANTS

National Weather Service
Federal Emergency Management Agency
Nuclear Regulatory Commission

OTHER PARTICIPANTS

KFEQ Radio Station
KFAB Radio Station
Ft. Calhoun Nuclear Station (OPPD)
Cooper Nuclear Station (NPPD)

C. Exercise Timeline

Table 1, on the following page, presents the time at which key events and activities occurred during the Cooper Nuclear Station exercise held on September 21, 2004.

Activity	10:00	10:15	10:30	10:45	11:00	11:15	11:30	11:45	12:00	12:15	12:30	12:45	1:00	1:15	1:30	1:45	2:00
10:00 - 10:15																	
10:15 - 10:30																	
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9:00 - 9:15																	
9:15 - 9:30																	
9:30 - 9:45																	
9:45 - 10:00																	

EXERCISE TIMELINE

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken													
		Nebraska EOC	Dose Assessment & FTC	Field Monitoring Teams	JIC/MRC	FCP/EOF (GAR)	EAS Station KFAB	NWS (MO/NE)	Nemaha County EOC	Richardson County EOC					
Unusual Event	0749	0749	N/A	N/A	0800	0749	N/A	N/A	0800	N/A	N/A	0800	0903		
Alert	0823	0823	N/A	0823	0834	0823	N/A	N/A	0831	N/A	N/A	0831	0903		
Site Area Emergency	1005	1005	1023	1050	1015	1005	1029	N/A	1014	N/A	N/A	1014	1026		
General Emergency	1225	1225	1227	1228	1230	1225	1237	N/A	1236	N/A	N/A	1236	1245		
Rad. Release Started	1225	1230	1227	1232	1230	1225	N/A	N/A	1230	N/A	N/A	1230	1245		
Rad. Release Terminated	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
Facility Declared Operational		0930	1028	N/A	0858	1051	N/A	N/A	0908	N/A	N/A	0908	1030		
Governor Declared State of Emergency		0932	N/A	N/A	0932	0932	N/A	N/A	0932	N/A	N/A	0932	0932		
Exercise Terminated ¹		1436	1429	1425	1436	1435	1441	N/A	1436	N/A	N/A	1436	1437		
1st Protective Action Decision - Dairy, stored feed and water		N/A	N/A	N/A	N/A	N/A	N/A	N/A	1015	N/A	N/A	1015	N/A		
1 st Siren Activation		N/A	N/A	N/A	N/A	N/A	N/A	N/A	1019	N/A	N/A	1019	N/A		
1 st EAS Message		N/A	N/A	N/A	N/A	N/A	N/A	N/A	1022	N/A	1019	1022	N/A		
2nd Protective Action Decision - Evac 11,12, 13E, 13W, & 14		N/A	N/A	N/A	N/A	1229	N/A	N/A	1236	N/A	N/A	1236	1303		
2 nd Siren Activation		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
2 nd EAS Message		1236	N/A	N/A	N/A	N/A	1239	N/A	1238	N/A	N/A	1238	N/A		
KI for Emergency Workers		N/A	1235	1236	1245	1235	N/A	N/A	1236	N/A	N/A	1236	1325		
Food Embargo		N/A	N/A	N/A	N/A	1250	N/A	N/A	1340	N/A	N/A	1340	1340		

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken											
		Missouri EOC	Dose Assessment FTC	Field Monitoring Teams	MRC/JPIC	FCP/EOF	EAS Station KFEQ	Atchison County EOC					
Unusual Event	0749	0800	0812	0812	0800	N/A	N/A	0800	N/A	0800			
Alert	0823	0834	0845	0846	0834	0834	0846	0834	0834	0846			
Site Area Emergency	1005	1015	1012	1005	1015	1006	1022	1015	1006	1022			
General Emergency	1225	1235	1227	1225	1230	1228	1251	1230	1228	1251			
Rad. Release Started	1225	1238	1234	1225	1230	1231	N/A	1230	1231	N/A			
Rad. Release Terminated	N/A	1429	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Facility Declared Operational		0800	0955	N/A	0858	0848	N/A	0850	0848	N/A			
Governor Declared State of Emergency		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
Exercise Terminated		1436	1435	N/A	1436	1435	1439	1436	1435	1439			
1st Protective Action Decision - Dairy		1022	N/A	N/A	N/A	1015	N/A	1015	1015	N/A			
1st Siren Activation		N/A	N/A	N/A	N/A	N/A	N/A	1022	N/A	N/A			
1st EAS Message		N/A	N/A	N/A	N/A	N/A	1028	1022	N/A	1028			
2nd Protective Action Decision - shelter 0-10 all, evac 2-5, K, L, & M		N/A	N/A	N/A	N/A	N/A	N/A	1300	N/A	N/A			
2nd Siren Activation		N/A	N/A	N/A	N/A	N/A	N/A	1302	N/A	N/A			
2nd EAS Message		N/A	N/A	N/A	N/A	N/A	1309	1306	N/A	1309			
3rd Protective Action Decision - shelter 0-10 all, evac 2-5, F, G, H, J, K, L, & M		1337	N/A	N/A	1335	1335	N/A	1335	1335	N/A			
3rd Siren Activation		N/A	N/A	N/A	N/A	N/A	N/A	1340	N/A	N/A			
3rd EAS Message		N/A	N/A	N/A	N/A	N/A	1344	1340	N/A	1344			
KI for Emergency Workers		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			

IV. 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 September 21, 2004, exercise and all of the out-of-sequence drills to test the offsite emergency response capabilities of State and local governments in the 10-mile EPZ surrounding the Cooper Nuclear Station.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of the exercise evaluation criteria published in the Federal Register, September 12, 2001 and April 25, 2002. Detailed information on the exercise evaluation criteria and the extent-of-play agreement for this exercise is 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 evaluation criteria that were scheduled for demonstration during this exercise, at all participating jurisdictions and functional entities. The exercise evaluation criteria are identified by number and the demonstration status of each criterion 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 (ARCA) assessed or unresolved ARCA(s) from prior exercises |
| N | - | Not Demonstrated (Reason explained in subsection B) |

TABLE 2

	MOBILIZATION		FACILITIES		DIRECTION & CONTROL		COMMUNICATIONS EQUIPMENT		EQUIPMENT & SUPPLIES TO SUPPORT OPERATIONS		EMERGENCY OPNS MANAGEMENT				PROTECTIVE ACTION DECISION-MAKING				PROTECTIVE ACTION IMPLEMENTATION				FIELD MEASUREMENT & ANALYSIS				EMERG NOTIF & PUBLIC INFO				SUPPORT OPN/FACILITIES					
	1a1	1b1	1c1	1d1	1e1	2a1	2b1	2b2	2c1	2d1	2e1	3a1	3b1	3c1	3d1	3d2	3e1	3e2	3f1	4a1	4a2	4a3	4b1	4c1	5a1	5a2	5a3	5b1	6a1	6b1	6c1	6d1				
	Mobilization	Facilities	Direction & Control	Communications Equipment	Equipment & Supplies to Support Operations	Emergency Worker Exposure Control	Rad Assmt PARs Based on Avail Information	Rad Assmt PADs for General Public	Prot Action Decisions for Special Populations	Rad Assmt & Decision Making for Ingest Exposure	Rad Assmt & Dec Making for Relo/Re-entry/& Return	Implementation of Emergency Wkr Exposure Control	Implementation of KI Decision	Implementation of PADs for Special Populations	Implementation of Traffic Access & Control	Impediments to Evac & Tra are Identified & Resolved	Implementation of Ingestion Pathway Decisions	Impl of IP Decisions Show Strat & Instr Material	Impl of Relocation/Re-entry/Return Decisions	Plume Phase Measurement & Analysis Equip	Plume Phase Field Measurement & Analysis Mgmt	Plume Phase Fld Measurements & Analysis Proceed	Post Plume Phase Field Measurements & Sampling	Laboratory Operations	Activation of Prompt Alert & Notification	Activation Prompt Alert & Notif 15 Min (Fast Breaker	Activation Prompt Alert & Notif in Exception Areas	Emerg Info & Instructions for the Public & Media	Monitoring/Decon/Registration of Evacuees & EWS	Monitoring & Decon of Emerg Worker Equipment	Temporary Care of Evacuees	Trans & Treatment of Contam Injured Individuals				
NEBRASKA STATE OPERATIONS																																				
State EOC	M		M	M	M																															
Dose Assessment & FTC	M		M	M	M	M	M				M	M								M																
Nebr. Field Monitoring Teams	M		M	M	M						M	M								M																
Cooper NS Field Team					M															M																
EAS Station - KFAB																																				
Media Release Center/JPIC	M			M	M																															
Forward Command Post/EOF	M		M	M	M	M	M				M																									
National Weather Service																																				
NEBRASKA COUNTY OPERATIONS																																				
Nemaha County EOC	M		M	M	M	M	M	M	M		M	M	M	M	M																					
Nemaha County Hospital				M							M																									
Nemaha County Ambulance				M							M																									
Richardson County EOC	M		M	M	M	M	M	M	A	M		M	M	M	M																					
Richardson County RCC	M		M	M	M	M	M	M		M	M	M	M	M	M																					

M - Met (No Deficiency or ARCA(s) Assessed and no Unresolved ARCA(s) from Prior Exercises
N - Not Demonstrated as Scheduled (Reason Explained in Section IV.B)
Blank - Not Scheduled for Demonstration

A - ARCA(s) Assessed or Unresolved ARCA(s) from Prior Exercises
D - Deficiency

TABLE 2

COOPER NUCLEAR STATION	September 21, 2004		EMERGENCY OPS MANAGEMENT												PROTECTIVE ACTION DECISION-MAKING							PROTECTIVE ACTION IMPLEMENTATION							FIELD MEASUREMENT & ANALYSIS				EMERG NOTIF & PUBLIC INFO				SUPPORT																																														
			Direction & Control			Equipment & Supplies to Support Operations			Emergency Worker Exposure Control			Rad Assmt PARS Based on Avail Information			Rad Assmt PADS for General Public			Prot Action Decisions for Special Population's			Rad Assmt & Decision Making for Ingest Exposure			Rad Assmt & Dec Making for Rele/Re-entry/& Return			Implementation of KI Decision			Implementation of PADS for Special Population's			Implementation of Traffic Access & Control			Impediments to Evac & Traf are Identified & Resolved			Implementation of Ingestion Pathway Decisions			Impl of IP Decisions Show Strat & Instr Material			Impl of Relocation/Re-entry/Return Decisions			Plume Phase Measurement & Analysis Equip			Plume Phase Field Measurement & Analysis Mgmt			Plume Phase Fid Measurements & Analysis Proced			Post Plume Phase Field Measurements & Sampling			Laboratory Operations			Activation of Prompt Alert & Notification			Activation Prompt Alert & Notif in Exception Areas			Emerg Info & Instructions for the Public & Media			Monitoring/Decon/Registration of Evacuees & EVs			Monitoring & Decon of Emerg Worker Equipment			Temporary Care of Evacuees			Trans & Treatment of Contam Injured Individuals		
			1a1	1b1	1c1	1d1	1e1	2a1	2b1	2c1	2d1	2e1	2e1	2a1	2b1	2c1	3a1	3b1	3c1	3c2	3d1	3d2	3e1	3e2	3f1	3f2	3f3	4a1	4a2	4a3	4b1	4c1	5a1	5a2	5a3	5b1	6a1	6b1	6c1	6d1																																											
MISSOURI STATE OPERATIONS																																																																																			
			M	M	M	M																																																																													
Emergency Operations Center																																																																																			
Dose Assessment & FTC								M	M	M	M																																																																								
Radiological Field Monitoring Teams								M	M	M	M																																																																								
Media Release Center/JPIC																																																																																			
Forward Command Post/EOF																																																																																			
EAS Station - KFEQ																																																																																			
MU Research Reactor Laboratory																																																																																			
MISSOURI COUNTY OPERATIONS																																																																																			
Atchison County EOC																																																																																			
Fairfax Community Hospital																																																																																			
Atchison-Holt Ambulance																																																																																			
Rock Port School System																																																																																			

M - Met (No Deficiency or ARCA(s) Assessed and no Unresolved ARCA(s) from Prior Exercises
N - Not Demonstrated as Scheduled (Reason Explained in Section IV.B)
Blank - Not Scheduled for Demonstration

A - ARCA(s) Assessed or Unresolved ARCA(s) from Prior Exercises
A¹ - ARCA(s) Assessed & Corrected Immediately
D - Deficiency

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 criteria demonstration status:

Met - Listing of the demonstrated exercise evaluation criteria under which no Deficiencies or ARCAs were assessed during this exercise, and under which no ARCAs assessed during prior exercise(s) remain unresolved.

Deficiency - Listing of the demonstrated exercise evaluation 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 (ARCA) - Listing of the demonstrated exercise evaluation criteria under which one or more ARCAs were assessed during the current exercise. Included is a description of the 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 the exercise evaluation criteria which were not demonstrated as scheduled during this exercise, and the reason they were not demonstrated.

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

Prior Issues - Unresolved - Descriptions 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 that are discussed in this report.

- * A **Deficiency** is defined 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 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 among 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 four digits of the year the exercise was conducted.
- * **Evaluation Criteria Number** - A three-digit number corresponding to the criteria in the FEMA Exercise Evaluation Areas.
- * **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. STATE OF NEBRASKA

1.1. State Emergency Operations Center

The State Emergency Operations Center (EOC) is located in the Nebraska Military Department complex in Lincoln, Nebraska. The EOC staff worked very well together despite a computer server problem early in the exercise.

It is recommended that staff be trained and reminded that real world information, such as weather data, should not be requested and used unless it has been agreed upon in the extent of play and written into the scenario. The use of real world data will not correspond to conditions created in a simulated exercise scenario.

- a. **MET:** Criteria 1a1, 1c1, 1d1, and 1e1
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** 5b1

Issue No.: 16-2004-5b1-A-01

Description: Notification of the public for the closing of the Locust Grove School was not accomplished in a timely manner. At 0943 the decision was made by Nemaha County to evacuate the Locust Grove School District #32. However, the Locust Grove School closing was not included in the 1036 News Release. The first mention of the Locust Grove School closure was in the 1225 News Release nearly two hours later. In addition, the closing of the Peru State College was never included in a press release. (NUREG-0654, E.4.1.)

Recommendation: Additional training should be provided to Public Information Officer staff responsible for ensuring appropriate information is included in news releases. Quick reference guides should be developed; listing what items must be included in news releases. When the PIO identifies that some critical information is missing, he\she should take appropriate steps to obtain the information.

Schedule of Corrective Actions: The Nebraska Emergency Management Agency has had a turnover in personnel and duties within the agency, and the pre-written "Alert" press release did not contain information regarding the schools. This issue will be resolved with additional REP training to the State staff, a change in procedures to check for school information before the press release is released, and the pre-written "Alert" press release will include school closure/evacuation information. This ARCA will be corrected during the Fort Calhoun Evaluated Exercise scheduled for 2005.

- d. **NOT DEMONSTRATED:** None

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

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

1.2. Dose Assessment and Field Team Coordination (FTC)

This function is located in the Nebraska Public Power District (NPPD) Emergency Operations Facility (EOF) at the Cooper Nuclear Station (CNS). The staff showed excellent coordination with the State of Missouri and the CNS staffs. This team was very proactive in problem solving and maximized the utilization of Field Team Resources.

a. **MET:** Criteria 1a1, 1d1, 1e1, 2a1, 2b1, 2b2, 3a1, 3b1, and 4a2

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

1.3. Radiological Field Monitoring Teams

1.3.1. Nebraska State Field Monitoring Teams.

The field teams were dispatched from the parking lot of the Nemaha County EOC in Auburn, Nebraska. The field teams worked very well together, knew their procedures, and played the exercise as if it were a real event.

a. **MET:** Criteria 1a1, 1d1, 1e1, 3a1, 3b1, 4a1, and 4a3

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

1.3.2. Cooper Nuclear Station (CNS) Radiological Field Monitoring Team

The CNS Field Monitoring Team was evaluated in the parking lot of the Cooper EOF. This evaluation was for the purpose of closing previous ARCAs assessed during the last Fort Calhoun Nuclear Station (FCNS) exercise.

- a. **MET:** Criteria 1e1 and 4a1
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** 1e1 and 4a1

Issue No.: 25-2004-1e1-A-03

Description: The maps supplied to the CNS field monitoring team were inadequate for locating pre-designated monitoring locations. The maps were outdated and did not reflect current county road number designations. In addition, the maps did not include roads completed since the maps were made. The field team was unable to locate two out of four monitoring locations. (NUREG-0654, J.10a.)

Corrective Action Demonstrated: During this evaluation, both CNS field-monitoring teams had available new maps of the Fort Calhoun EPZ that had the pre-selected sampling locations identified. Each of the CNS vans used by their field monitoring teams had a copy of these new maps. The vans are dedicated vehicles for use by the CNS offsite monitoring teams and have the supplies necessary for field monitoring team activities in the vehicles at all times. Based on interviews with the van drivers, the new maps have been available for approximately one month. This ARCA is closed.

Issue No.: 25-2004-4a1-A-04

Description: An appropriate radiological check source, to verify proper operational response for each low range radiation measurement instrument (less than 1 R/hr), was not available in the field team kit. The Cooper EOF was not operational at the time the field team departed to the FCNS EOF; therefore the field team did not secure the check source prior to departure from the Cooper EOF, as required by their procedures. In addition, although a Nebraska State field team was present at the FCNS EOF during this time, there was no discussion between the Cooper and State teams regarding using the State team's check source to verify proper operation of the Cooper team's low range gamma

instrument. If the low range measurement operational response was not verified, it could have resulted in the field monitoring measurements being questionable or inaccurate (NUREG-0654, H.10, I.8., 9., 11.)

Corrective Action Demonstrated: During the mobilization phase of the exercise, two CNS field monitoring teams deployed from the EOF. They reported to the EOF and obtained their sampling instruments from a storage location. The instruments were taken to the parking lot and both the RO2-A high range ion chamber and the GM count rate meter with a pancake probe were checked for a response to a Cs-137 source. In accordance with the utility procedure, there is no requirement to verify that the instruments respond with a specific response, only that there is a response. The Extent-of-Play agreement indicates that the utility teams would follow their own procedures rather than procedures that the State teams use to meet FEMA policy requirements. This ARCA is closed.

f. PRIOR ARCAs - UNRESOLVED: None

1.4. EAS Station – KFAB

This facility is located in Omaha, Nebraska. The very professional staff acted swiftly to broadcast messages received from the Nebraska Emergency Management Agency.

a. MET: Criteria 5a1 and 5b1

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs - RESOLVED: None

f. PRIOR ARCAs - UNRESOLVED: None

1.5. Media Release Center\Joint Public Information Center (JPIC)

This function is located in the Nebraska Public Power District Building in Columbus, Nebraska. The Nebraska Public Information Officer (PIO) staff demonstrated good coordination with the Missouri and NPPD staffs. The spokesperson provided excellent media briefings, provided details, and answered questions correctly.

a. MET: Criteria 1a1, 1d1, 1e1, and 5b1

b. DEFICIENCY: None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

1.6. Forward Command Post\EOF

The Nebraska Forward Command Post functions from the Cooper Nuclear Station (CNS) EOF near Brownville, Nebraska. All staff demonstrated excellent coordination between the utility, Nuclear Regulatory Commission (NRC), Governors Authorized Representatives (GAR), and the Health Departments.

a. **MET:** Criteria 1a1, 1c1, 1d1, 1e1, 2a1, 2b1, 2b2, 3a1, 3b1, and 5b1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

1.7. National Weather Service (NWS)

This facility is located in Valley, Nebraska. The NWS has a very dedicated staff that is very knowledgeable of their equipment. They demonstrated a cooperative attitude and attempted to clarify and resolve inconsistencies between some of the EAS messages they received from multiple jurisdictions.

a. **MET:** 5a1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

2. NEBRASKA RISK JURISDICTIONS

2.1. Nemaha County

2.1.1. Emergency Operations Center

This facility is located in the Community Center in Auburn, Nebraska. The Emergency Management Coordinator was well organized and followed his written procedures well. The entire staff maintained a proactive posture, anticipated potential problems, and communicated well.

During the exercise, the information for the evacuation of the Locust Grove School was sent to the State EOC and to the NWS. As per the plans, this information should not have been sent to the NWS. We recommend that the Nemaha County PIO get additional training to correct this problem.

- a. **MET:** Criteria 1a1, 1c1, 1d1, 1e1, 2a1, 2b2, 2c1, 3a1, 3b1, 3c1, 3c2, 3d1, 3d2, 5a1, 5a3, and 5b1
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

2.1.2. Nemaha County Hospital

On August 24, 2004, the Nemaha County Hospital was evaluated out-of-sequence from the full-scale exercise. The Hospital is located in Auburn, Nebraska. The facility staff was very knowledgeable, professional, and has developed excellent local procedures. The new reception bay and Radiological Emergency Area (REA) is an outstanding addition to the hospital.

- a. **MET:** Criteria 1e1, 3a1, and 6d1
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None

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

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

2.1.3. Nemaha County Ambulance

On August 24, 2004, the Nemaha County Ambulance was evaluated out-of-sequence from the full-scale exercise. The Ambulance is located in Auburn, Nebraska. The ambulance staff has a great facility to work with and was very dedicated towards their performance. They demonstrated effective contamination control.

a. **MET:** Criteria 1e1, 3a1, 3b1, and 6d1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

2.2. Richardson County

2.2.1. Emergency Operations Center

This function is located in the Richardson County Courthouse in Falls City, Nebraska. The County Radiological Officer gave a very effective briefing. The EOC staff had a good awareness of available resources.

a. **MET:** Criteria 1a1, 1c1, 1d1, 1e1, 2a1, 2c1, 3a1, 3b1, 3c1, 3c2, 3d1, 3d2, 5a1, 5a3, and 5b1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** 2b2

Issue No.: 16-2004-2b2-A-02

Description: Richardson County did not make a timely decision concerning the evacuation of sub areas 13E and 13W. The NEMA liaison in the county EOC notified the county EMD at 1228 that a General Emergency had been declared at the plant and that a recommendation to evacuate sub areas 13E and 13W was being discussed. The county received a faxed hard copy of the recommendation

from the Governor's Authorized Representative (GAR) to evacuate sub areas 13E and 13W at 1240. The EMD initially mistakenly indicated to the EOC staff that the GAR's recommendation did not include the Richardson County sub areas 13E and 13W. Once the mistake was realized and it became clear that 13E and 13W were in the GAR's recommendation, the EOC staff still deliberated at some length about whether to evacuate those sub areas. Much of the discussion centered on concerns that the evacuation decision was being dictated by other jurisdictions. The county did not make a decision to concur on the evacuation recommendation until 1303. The fact that the state proceeded on with issuing an EAS message that included the evacuation of sub areas 13E and 13W, to the public at 1237, prevented the untimely county concurrence from affecting public health and safety. However, the County's delay in concurring delayed their efforts to begin the evacuation process including establishing traffic and access control points. (NUREG-0654, J.9, 10.f.,m.)

Recommendation: It is strongly recommended that the telephone device employed by the state liaison be used as a speakerphone for the conference established between the two counties, the State EOC, the Field Command Post, and the Media Center. That would allow the counties and the State to talk directly with each other concerning critical protective actions instead of having to go through the liaisons. Use of this method should allow the State and the two risk counties to rapidly discuss and reach concurrence on protective action decisions. The county's ability to coordinate protective action recommendations and reach a timely decision must be demonstrated during the next biennial exercise.

Schedule of Corrective Actions: The State of Nebraska concurs with the contents of the report. During annual EOC training with Richardson County, emphasis will be put on timely decision-making and the importance of the responsibility for the health and safety of the public. This criterion will be re-demonstrated at the 2006 Cooper Nuclear Station Exercise.

d. **NOT DEMONSTRATED:** None

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

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

2.2.2. Richardson County Reception and Care Center (RCC)

This function is located in the Falls City, Nebraska, Middle School. The facility was well equipped and it was apparent the staff had received effective training.

The following recommendations would help this facility operate more smoothly: Written procedures for each section of the facility should be created to help volunteer workers. These procedures could also be used as a quick reference guide. Step off pads and floor wipes should be used at the front door to help

eliminate and check for possible cross-contamination. A detailed layout for all function areas should be developed to ease set-up. An appropriate holding area other than the contaminated zone should be established in the back area of the “clean” zone to minimize cross-contamination. A method should be established to ensure that escorts for contaminated persons do not cause cross-contamination.

- a. **MET:** Criteria 1a1, 1c1, 1d1, 1e1, 3a1, 6a1, 6b1, and 6c1
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

3. STATE OF MISSOURI

3.1. State Emergency Operations Center

This function is located in the Missouri National Guard Headquarters in Jefferson City, Missouri. The staff of the EOC was knowledgeable, professional, and showed good teamwork with the State of Nebraska and the Cooper Nuclear Station (CNS) staff.

- a. **MET:** Criteria 1a1, 1c1, 1d1, and 1e1
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

3.2. Dose Assessment and Field Team Coordination

This function is located in the NPPD EOF at the CNS. The staff was knowledgeable, professional, and responsive and informative to the evaluator. The staff showed good teamwork with the Nebraska and CNS staffs.

- a. **MET:** Criteria 1a1, 1d1, 1e1, 2a1, 2b1, 2b2, 3a1, 3b1, and 4a2
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

3.3. Radiological Field Monitoring Teams

The field teams are dispatched from the Atchison County EOC in Rock Port, Missouri. The teams were professional, very familiar with the area, and utilized their GPS very effectively. One evaluator noted, "One of the best briefings I've ever observed..."

One recommendation was noted; the field teams should remove from their inventory the 1980s vintage charcoal cartridges, which have the potential to cause higher than normal background readings. The team procedures should also be modified to remind staff of the potential problem area.

- a. **MET:** Criteria 1a1, 1d1, 1e1, 3a1, 3b1, 4a1, and 4a3
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

3.4. Media Release Center\Joint Public Information Center (JPIC)

This function is located in the Nebraska Public Power District (NPPD) Building in Columbus, Nebraska. The JPIC staff provided excellent media briefings and demonstrated effective communications and coordination with the other PIO staff members.

- a. **MET:** Criteria 1a1, 1d1, 1e1, 5b1
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ARCAs - RESOLVED:** None
- f. **PRIOR ARCAs - UNRESOLVED:** None

3.5. Forward Command Post\EOF

This function is located in the NPPD EOF at the Cooper Nuclear Station. The Governor's Authorized Representative (GAR) demonstrated exceptional direction and control. The team demonstrated outstanding teamwork, great communication, and good use of the new computer system.

- a. **MET:** Criteria 1a1, 1c1, 1d1, 1e1, 2a1, 2b2, 3a1, and 3b1
- b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

3.6. EAS Station - KFEQ

The primary Emergency Alert System (EAS) station for Atchison County, Missouri is radio station KFEQ, located in St. Joseph, Missouri. KFEQ is a 24-hour station and is responsible for activation of local EAS stations after normal working hours. The Station Operations Manager and staff were very professional. The staff is familiar and proficient in EAS procedures.

a. **MET:** Criteria 5a1 and 5b1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

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

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

3.7. University of Missouri Research Reactor Laboratory

The University of Missouri Research Reactor Laboratory is located in Columbia, Missouri

a. **MET:** Criteria 4c1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

e. PRIOR ARCAs - RESOLVED: 4c1

Issue No.: 10-2003-4c1-A-01

Description: The capability to perform required radiological analyses to support protective action decisions was not adequately demonstrated. The following specific concerns were identified:

The University of Missouri Research Reactor (MURR) is not set up to handle a large volume of various type samples generated as a result of a significant radiological release:

1. MURR lab does not have a formal logging process to receive samples, track results, ensure results are sent to the Department of Health (DOH) and track final disposition of sample (return to Callaway, disposal, etc).
2. The MURR lab does not have procedures to preserve samples that could spoil (e.g. milk) and has minimal refrigeration capacity.
3. The MURR lab does not have procedural guidance for final sample disposition and do not have storage capacity at the facility for large numbers of radioactive samples.
4. The MURR lab does not have procedural guidance for gamma spectroscopy sample count times to ensure minimum sensitivities are met for Derived Intervention Limits. This could result in longer than necessary count times (delaying results) or count times that are too short and do not meet the minimum required sensitivity.
5. The MURR lab does not report sample results in units needed by DOH for completing relocation worksheets.

The procedure used by the MURR is out of date and there has been turnover of personnel at the lab that resulted in the loss of sample handling knowledge. (NUREG-0654, C.3, I.8, I.9, J.11)

Corrective Action Demonstrated: The Missouri Nuclear Accident Plan and Letter of Agreement between the University of Missouri Research Reactor (MURR) and the Missouri Department of Health has been revised to include what is required by each party to the agreement, i.e., size, specific counting statistics, disposition, and how to provide analysis of samples received. The MURR lab procedures have been modified to include the elements identified as missing in the above ARCA description. This ARCA is closed.

f. PRIOR ARCAs - UNRESOLVED: None

4. MISSOURI RISK JURISDICTION

4.1. Atchison County

4.1.1. Emergency Operations Center

This function is located within the 10-mile Emergency Planning Zone (EPZ) in Rock Port, Missouri. All staff demonstrated a highly professional and motivated attitude. Cross training of staff was effective and commendable.

A couple of recommendations were made to this facility; the EOC should be equipped with maps containing 911 addresses and the transportation staff supporting the facility requested that they receive additional training.

a. **MET:** Criteria 1a1, 1c1, 1d1, 1e1, 2a1, 2b2, 2c1, 3a1, 3b1, 3c1, 3c2, 3d1, 3d2, 5a1, 5a3, and 5b1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** 5a1 and 5b1

Issue No.: 16-2004-5a1-A-03

Description: Part of the message provided to the National Weather Service (NWS) contained conflicting information concerning the placing of dairy animals on stored feed and water and sheltering them. The PIO, while preparing to fax the message to the NWS, discovered the pre-scripted message indicated the entire 10-mile EPZ for the dairy animals although the recommendation from the state was only for 0-2 miles. She brought this to the attention of the County Operations Officer, who informed her to publish the pre-scripted message as it read without making a change to the 0-2 miles versus the message's 0-10 mile dairy animal PAD. The message containing the incorrect information was provided to the NWS and was broadcast. (NUREG-0654, E.5.)

Corrective Action Demonstrated: To correct this situation, the evaluator and the state liaison informed the Operations Officer and the PIO and provided training on how the message should have been worded. A corrected message was provided to the NWS. This corrected the ARCA "on the spot" in accordance with the Extent of Play Agreement. This ARCA is closed.

Issue No.: 16-2004-5b1-A-04

Description: The staff of the Atchison County EOC sent multiple emergency information and instructional messages for the public and the news media to the National Weather Service before the Site Area Emergency was declared. Although all the information apparently made it to the proper locations, the

confusion caused the NWS to react in ways that conflict with their normal operations. According to the Plan and the Extent of Play agreement, only the initial EAS message is sent to the NWS. All other informational and news release messages should have been sent to KFEQ Radio Station. (NUREG-0654, E.5.)

Recommendation: An EAS\Public Information message flow chart should be developed and incorporated into the Plan. Extensive training should be accomplished for the EOC staff with emphasis on the flow of information to the NWS and the Radio Station. Also the FAX machine in the Atchison County EOC should be reprogrammed to omit the NWS from any information distribution except the initial EAS message.

Schedule of Corrective Actions: Missouri staff has initiated the flow diagram. It will be incorporated into the Missouri Nuclear Accident Plan and the Atchison County Radiological Emergency Response Plan upon approval by FEMA. A training session with the Atchison County PIO has already been held and an additional training session will be held once the flow diagram has been approved. The Atchison County Emergency Management Director has already reprogrammed the facsimile machine to exclude NWS from messages that they do not need to receive. All training will be completed by December 31, 2004. This criterion will be redemonstrated during the 2006 Cooper Nuclear Station exercise.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

4.1.2. **Fairfax Community Hospital**

The Fairfax Community Hospital is located in Fairfax, Missouri. The staff worked very well as a team at this facility. This evaluation was conducted out-of-sequence on August 23, 2004.

a. **MET:** Criteria 1e1, 3a1, and 6d1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** None

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs RESOLVED:** None

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

4.1.3. Atchison-Holt Ambulance

This function is located in Tarkio, Missouri. This demonstration was conducted out-of-sequence on August 23, 2004. During this evaluation the ambulance crew demonstrated a dedicated and professional attitude.

a. **MET:** Criteria 1e1, 3a1, 3b1, and 6d1

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** 6d1

Issue No.: 16-2004-6d1-A-05

Description: The head, face, and feet of the contaminated patient were not cocooned in a sheet or other covering. This could have caused cross-contamination as the ambulance crew had been informed that all exposed areas of the patient had been contaminated. The crewmembers cocooned the patient, but the sheets used did not cover the head, face, or feet. (NUREG-0654, F.2, H.10., K.5.a.b., L.1., 4.)

Corrective Action Demonstrated: The identified areas that were not cocooned were identified to the ambulance crew. They agreed that those areas should be cocooned; however, there was a lack of sheeting as all had been used in the contaminated area. A towel was used to simulate covering the head and face and the feet were simulated to be wrapped. Based on the discussion and re-demonstration, this issue is closed. However, procedures should be reviewed and revised to thoroughly cover this process and ensure that sufficient sheets\blankets are available if needed.

d. **NOT DEMONSTRATED:** None

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

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

4.1.4. Rock Port School System

This function is located in Rock Port, Missouri. This demonstration was conducted out-of-sequence on August 24, 2004. During this evaluation the School Staff demonstrated solid knowledge of their procedures.

a. **MET:** Criteria 1e1, 3a1, 3b1, and 3c2

b. **DEFICIENCY:** None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs - RESOLVED: None

f. PRIOR ARCAs - UNRESOLVED: None

V. Appendices

Appendix 1 - Acronyms and Abbreviations

ARCA	Area Requiring Corrective Action
ARM	Area Radiation Monitor
ATWS	Anticipated Transit without SCRAM
CFR	Code of Federal Regulations
CNS	Cooper Nuclear Station
CS	Core Spray
CS-137	Cesium 137
DOH	Department of Health
DOT	U.S. Department of Transportation
DW	Drywell
EAL	Emergency Action Level
EAS	Emergency Alert System
ECL	Emergency Classification Level
ED	Emergency Declaration
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPA	U.S. Environmental Protection Agency
EPIP	Emergency Plan Implementing Procedure
EPZ	Emergency Planning Zone
ERO	Emergency Response Organization
EW	Emergency Worker

FCP	Field\Forward Command Post
FEMA	Federal Emergency Management Agency
FTC	Field Team Coordination
GAR	Governor's Authorized Representative
GPS	Global Positioning System
ICF	FEMA Contractor
JPIC\MRC	Joint Public Information Center\Media Release Center
KI	Potassium Iodide
LCO	Limiting Condition of Operation
LPCI	Low Pressure Coolant Injection
mR	Milliroentgen
MURR	University of Missouri Research Reactor
NOUE	Notice of Unusual Event
NPPD	Nebraska Public Power District
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).
NWS	National Weather Service
ODAM	Offsite Dose Assessment Manual
OOS	Out of Service
OPPD	Omaha Public Power District
ORO	Offsite Response Organization
PAD	Protective Action Decision

PAR	Protective Action Recommendation
PIO	Public Information Officer
R	Roentgen
RAC	Regional Assistance Committee
RCC	Reception and Care Center
RCIC	Reactor Core Isolation Cooling
RCS	Reactor Coolant System
REA	Radiological Emergency Area
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RPV	Reactor Pressure Vessel
SM	Site Manager
TL	Team Leader

Appendix 2 - Exercise Evaluators and Team Leaders

Twelve federal agency personnel, one state agency representative, and nine ICF FEMA contract staff evaluated the Cooper Nuclear Station exercise on September 21, 2004. Events marked with an asterisk were evaluated out-of-sequence on August 23-24, 2004. Evaluator Team Leaders are indicated by the letters 'TL' after their names. The organization which each evaluator represents is indicated by the following abbreviations:

EPA - U. S. Environmental Protection Agency
 FEMA - Federal Emergency Management Agency

NCHP – North Carolina Highway Patrol
 ICF - FEMA Contractor

EVALUATION SITE	EVALUATOR	ORGANIZATION
STATE OF NEBRASKA		
State EOC	Joe Chandler	FEMA
Dose Assessment FTC	Joe Keller	ICF
Field Monitoring Teams	Frank Bold - TL Stan Maingi	ICF ICF
Cooper Field Monitoring	Joe Keller	ICF
EAS Station – KFAB	Dan Feighert	FEMA
Media Release Center\JPIC	Al Lookabaugh	ICF
Forward Cmd. Post\EOF	Rex Jennings	FEMA
National Weather Service	Steve Tillman	FEMA
Nemaha County EOC	Dave Smith – TL Roy Smith	FEMA ICF
*Nemaha County Hospital	Al Lookabaugh	ICF
*Nemaha Co. Ambulance	Norm Valentine	FEMA
Richardson County EOC	Norm Valentine Judy Dodgen Debi Reed	FEMA FEMA FEMA
*Richardson County RCC	Dave Smith – TL Hollis Berry Frank Bold Ed Wojnas Stan Maingi	FEMA ICF ICF ICF ICF

EVALUATION SITE	EVALUATOR	ORGANIZATION
STATE OF MISSOURI		
State EOC	Bob Dye	EPA
Dose Assessment & FTC	Hollis Berry	ICF
Field Monitoring Teams	Ed Wojnas - TL Rowena Argall	ICF ICF
Media Release Ctr.\JPIC	Sharron McDuffie	FEMA
Forward Command Post	Jane Young	FEMA
EAS Station – KFEQ	Jim McClanahan	ICF
Univ. Missouri Research Reactor Laboratory	Not Applicable	Not Applicable
Atchison County EOC	Joe Schulte – TL Mark Dalton	FEMA NCHP
*Fairfax Community Hospital	Al Lookabaugh	ICF
*Atchison-Holt Ambulance	Jane Young	FEMA
*Rock Port School System	Joe Schulte	FEMA

Appendix 3 - Exercise Criteria and Extent of Play Agreement

This appendix lists the exercise criteria, which were scheduled for demonstration during the Cooper Nuclear Station plume exercise on September 21, 2004, and out-of-sequence drills on August 23-24, 2004.

Site-specific information was negotiated in the extent-of-play agreements approved by FEMA Region VII for the States of Nebraska and Missouri on March 31, 2004.

The exercise criterion, contained in FEMA Exercise Evaluation Areas and Criterion as published in the Federal Register September 12, 2001 and April 25, 2002, represent a functional translation of 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 offsite plans and procedures, an extent-of-play agreement was prepared by FEMA Region VII and provided to the States of Nebraska and Missouri for further clarification of expected demonstration of the criteria.

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

EXERCISE CRITERION and EXTENT-OF-PLAY

State of Nebraska

Criterion 1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654, A.4, D.3, 4, E.1, 2, H.4)

All telephone calls to mobilize personnel or place them on standby must actually be made. A copy of who was notified will be provided to the evaluator. Pre-positioning 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 pre-positioned and which facility (ies) will be affected.

The demonstrations at the Richardson County Reception Center, Nemaha County Hospital, and the Nemaha County Ambulance will occur out of sequence. Therefore, all personnel at these facilities may be pre-positioned. The issuance of radiological instrumentation 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 (all shifts) at all evaluated facilities.

Criterion 1.c.1: 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. (NUREG-0654, A.1.d., 2.a., b.)

No Modifications

Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654, F.1., 2.)

All facilities, including field teams that are evaluated must demonstrate communications capability. The evaluators will request copies of all messages and logs of message traffic at each site.

Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654, H., J.10.a.b.e.f.j.k., 11, K.3.a.)

Verification of dosimetry and KI supplies, as applicable, will occur at the Nemaha and Richardson County EOCs, Richardson County Reception Center, Nemaha County Ambulance and the Nemaha County Hospital, and all other facilities that maintain dosimetry and/or KI supplies in accordance with the plans.

Nebraska State Field teams equipment checks will be conducted at 7:00am, on September 21, 2004, at the Health and Human Services' office at 301 Centennial Mall South, Lincoln, Nebraska

The Cooper Field Team equipment checks will be conducted at 0700 hrs. on September 21, 2004, at the Cooper EOF parking lot.

Criterion 2.a.1: ORO(s) use a decision-making process, considering relevant factors and appropriate coordination, to insure 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. (NUREG-0654, K.4.)

No Modifications

Criterion 2.b.1: Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of on-site and off-site environmental conditions. (NUREG-0654, I.8., 10., 11. and Supplement 3.)

No Modifications

Criterion 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PADs) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9., 10.m.)

No Modifications

Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups. (NUREG-0654, J.9., 10.c.d.e.g.)

During the emergency phase of the actual exercise, all appropriate actions (e.g., notifications, EAS messages, etc.) must be demonstrated for any public or private schools or day care facilities affected by protective action recommendations. All notification to public school districts must be demonstrated. Simulation of this notification is not allowed.

Criterion 3.a.1: The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans 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. (NUREG-0654, K.3.)

Out-of-Sequence

On August 24, 2004, at 1500 hrs. for the medical drill, the responding Nemaha County Ambulance and the Nemaha County receiving Hospital must have dosimeters and a dosimeter charger available for this demonstration and be knowledgeable of procedures for their use and of their exposure limits.

On August 24, 2004, at 1900 hrs. for the Richardson County Reception Center, emergency workers must demonstrate their knowledge of emergency worker exposure control. Workers must have dosimeters and a dosimeter charger available for this demonstration and be knowledgeable of procedures for their use and of their exposure limits.

In the event of extreme weather, the lead onsite evaluator may allow one person from each facility to demonstrate the use of protective clothing.

Criterion 3.b.1: 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. (NUREG-0654, E. 7., J. 10. e., f.)

Out-of-Sequence

On August 24, 2004, at 1500 hrs. during the medical drill, the responding ambulance crew must have KI available and be knowledgeable of procedures for the authorization and use of KI.

Criterion 3.c.1: Protective action decisions are implemented for special populations other than schools within areas subject to protective actions. (NUREG-0654, E.7., J.9., 10.c.d.e.g.)

Telephone calls to special facilities, individuals with special needs, and transportation providers may be actually made or simulated. Actual telephone calls must be made to at least 1/3 of the transportation providers, including special resources for disabled individuals. However, all facilities, individuals with special needs, and transportation providers that are required to be notified must be clearly identified and the actual or simulated contacts appropriately documented. Telecommunications Device for the Deaf (TDD) calls to the hearing impaired population will be simulated and appropriately documented

Criterion 3.c.2: OROs/School officials decide upon and implement protective actions for schools. (NUREG-0654, J.10.c., d., g.)

No Modifications

Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654, J.10.g., j., k.)

Deployment of traffic and access control personnel to assigned locations will be simulated. However, the locations where traffic and access control would be established must be appropriately documented. Staffing of traffic and access control points must be appropriately coordinated with all involved jurisdictions.

At least two individuals, who would normally perform traffic and access control, must be available at the Nemaha and Richardson County EOCs for interviews to demonstrate knowledge of their roles and responsibilities concerning traffic and access control, as well as appropriate knowledge concerning dosimetry and KI. We recommend that this demonstration take place early in the exercise.

Criterion 3.d.2: Impediments to evacuation are identified and resolved. (NUREG-0654, J.10., k.)

No Modifications

Criterion 4.a.1: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates. (NUREG-0654, H.10, I.8., 9., 11.)

Radiological detection instruments, equipment, and protective clothing as annotated in the Nebraska Emergency Response Plan for the Nebraska Health and Human Services, Department of Regulation and Licensure, should be available for the demonstration.

Because the Cooper Nuclear Station Field Team is a utility operated and maintained function, their radiological detection instruments, equipment, and protective clothing will be in accordance with their plans and procedures.

Criterion 4.a.2: Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654, I.8., 11., J.10.a).

No Modifications

Criterion 4.a.3: 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. (NUREG-0654, I.8., 9., 11.)

Each of the deployed field monitoring teams must take sufficient radiation measurements to identify the plume. Activities related to the use of equipment and procedures for the collection and transport of samples from areas that received deposition from the airborne plume may be explained by interview to the evaluator.

Criterion 5.a.1: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by current FEMA REP guidance. (10 CFR Part 50, Appendix E & NUREG-0654, E. 1., 4., 5., 6., 7.)

An evaluator will be assigned at the National Weather Service office in Valley, Nebraska for the initial EAS message and to KFAB EAS radio station to observe the procedures for broadcasting all exercise related messages. We expect to see the actual receipt of the messages from the State or Nemaha County EOC. Following receipt at the station, procedures to broadcast the message must be fully demonstrated up to the point of transmission. Actual broadcasts of the messages or EAS test messages are not required. 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 messages and Public Information messages will be requested from the facility. The appropriate facility sending messages to the radio station

must demonstrate the capability to verify receipt of messages at the radio station. The procedures for siren activation must be demonstrated up to the point of actual activation. Actual siren activation may be simulated. In addition, tone alert radio and/or weather radio activation may be simulated.

The following basic criteria should be included in the initial EAS announcements.

1. Identification of the State or local government organization and the official with authority for providing the alert signal and instructional message.
2. Identification of the commercial nuclear power plant and a statement that an emergency exists at the plant.
3. Reference to Radiological Emergency Preparedness specific emergency information (e.g. brochures and phone book information) for use by the general public during an emergency.
4. A closing statement asking that the affected and potentially affected populations stay tuned for additional information.

Criterion 5.a.2: RESERVED

Not to be demonstrated at this exercise.

Criterion 5.a.3: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654, E. 6., Appendix 3.B.2.c)

To be demonstrated only if there is a default in the primary alert and notification sequence. By interview, the evaluator will ask questions regarding policy and procedures for backup alerting and notifications.

Criterion 5.b.1: OROs provide accurate emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654, E. 5.,7., G.3.a., G.4,a.,b.,c.)

All subsequent protective action instruction provided to the public after the initial notification should be disseminated in a timely manner. Messages should be all inclusive by including previously identified protective action areas as well as new areas. Procedures must be demonstrated, if appropriate, to ensure that EAS messages and Public Information messages containing Protective Action Recommendation(s) (PARs) that have been changed are rescinded and not repeated by the EAS station. In addition, procedures must be demonstrated to ensure that EAS messages and Public Information messages containing current PARs are repeated at pre-established intervals.

Media briefings, public information, and the public inquiry hotline (rumor control) will be coordinated at the Joint Public Information Center/Media Release Center (JPIC/MRC) in Columbus, Nebraska. Sufficient and timely media briefings should be conducted from this location.

Each public inquiry hotline staff member must demonstrate the capability to respond to an average of at least six calls per hour throughout the emergency phase. Any trends in rumors identified by public inquiry hotline staff must be addressed by the JPIC/MRC in news releases and/or media briefings. At least one message should address a false or misleading rumor for which measures should be taken.

Criterion 6.a.1: The reception center/emergency worker facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees and/or emergency workers. (NUREG-0654, J.10.h.; K.5.b.)

Out-of-Sequence

On August 24, 2004, at 1900 hrs. the number of evacuees that must be monitored within twelve hours at the Richardson County reception center is 259 (20% of the evacuees assigned to the center). Based on this total a minimum of 2 qualified initial monitoring teams will be required to monitor this number of evacuees within twelve hours. An additional two backup teams are required to re-monitor possibly contaminated persons. Two additional monitoring teams must be available for evacuee (male/female) decontamination. Therefore, at least six teams must be available for demonstration. According to the plan, the Richardson County monitoring cadre provides the monitors for this facility. Therefore, the monitoring resources should be from their cadre.

The facilities at the Falls City Middle School utilized for monitoring and decontamination of evacuees must be set up for evaluation. This will require full staffing of personnel required to accomplish monitoring and decontamination of evacuees. At least six evacuees per monitoring station must be processed to demonstrate registration (same persons can rotate through multiple times), monitoring, and decontamination capabilities. Monitoring and decontamination procedures should be initiated for at least one male and one female evacuee. Decontamination may be simulated (explained through an interview process). In accordance with the plan, the use of protective clothing must be demonstrated. At least one person must demonstrate the use and wear of protective clothing.

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.

All organizations that, per the plans, provide support of registration center activities must be present for evaluation at the Richardson County Reception Center. This would include The American Red Cross, Richardson County Emergency Management, and members of the monitoring cadre.

Criterion 6.b.1: The facility/ORO has adequate procedures and resources for the accomplishment of monitoring and decontamination of emergency worker equipment including vehicles. (NUREG-0654, K.5.b)

Out-of-Sequence

On August 24, 2004, at 1900 hrs. this criterion must be demonstrated by the Richardson County RCC. Monitoring of at least one emergency worker vehicle must be demonstrated. Decontamination may be conducted by interview.

Criterion 6.c.1: Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with American Red Cross planning guidelines (found in MASS CARE-Preparedness Operations, ARC 3031). Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities. (NUREG-0654, J.10.h., 12.)

Out-of-Sequence

On August 24, 2004, at 1900 hrs. according to the plans, the American Red Cross will provide resources and support for congregate care centers. Therefore, a representative from this organization must be present during the evaluation to demonstrate the reception and handling of persons.

Criterion 6.d.1: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2, H.10., K.5.a.b., L.1., 4.)

Out-of-Sequence

The Nemaha County Ambulance and Hospital will demonstrate this August 24, 2004, at 1500 hrs. Communications between the ambulance and hospital must be observed.

State of Missouri

Criterion 1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654, A.4, D.3, 4, E.1, 2, H.4)

All telephone calls to mobilize personnel or place them on standby must actually be made. A copy of who was notified will be provided to the evaluator. Prepositioning of staff is not authorized except as noted below.

The demonstrations at the Rock Port School, Fairfax Community Hospital, and the Atchison-Holt Ambulance will occur out of sequence. Therefore, all personnel at these facilities may be pre-positioned. The issuance of radiological instrumentation and operability checks, where applicable, must not be accomplished prior to evaluator arrival.

The Missouri SEMA and Missouri Department of Health and Senior Services personnel that will be assigned to the EOF and Radiological sampling teams are allowed to preposition to St. Joseph, Missouri. Both agencies are not to report to their duty locations prior to one hour after the Alert Level is declared.

Current rosters must be presented to the evaluator identifying the individuals who will maintain around the clock operation (all shifts) at all evaluated facilities.

Criterion 1.c.1: 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. (NUREG-0654, A.1.d., 2.a., b.)

No Modifications

Criterion 1.d.1: At least two communication systems are available, at least one operates properly, and communication links are established and maintained with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654, F.1., 2.)

All facilities and field teams that are evaluated must demonstrate communications capability. The evaluators will request copies of all messages and logs of message traffic at each site.

Criterion 1.e.1: Equipment, maps, displays, dosimetry, potassium iodide (KI), and other supplies are sufficient to support emergency operations. (NUREG-0654, H., J.10.a.b.e.f.j.k., 11, K.3.a.)

Verification of dosimetry and KI supplies, as applicable, will occur at the Atchison County EOC, Atchison-Holt Ambulance, Fairfax Community Hospital, and all other facilities that maintain dosimetry and/or KI supplies in accordance with the plans.

Field team equipment checks will be conducted approximately one hour after the Alert condition is received at the Atchison County Emergency Operations Center parking lot.

Criterion 2.a.1: ORO(s) use a decision-making process, considering relevant factors and appropriate coordination, to insure 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. (NUREG-0654, K.4.)

No Modifications

Criterion 2.b.1: Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of on-site and off-site environmental conditions. (NUREG-0654, I.8., 10., 11. and Supplement 3.)

No Modifications

Criterion 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PADs) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9., 10.m.)

No Modifications

Criterion 2.c.1: Protective action decisions are made, as appropriate, for special population groups. (NUREG-0654, J.9., 10.c.d.e.g.)

During the emergency phase of the actual exercise, all appropriate actions (e.g., notifications, EAS messages, etc.) must be demonstrated for any public or private schools or day care facilities affected by protective action recommendations. All notification to public school districts must be demonstrated. Simulation of this notification is not allowed.

Criterion 3.a.1: The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans 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. (NUREG-0654, K.3.)

Out-of-sequence

On August 24, 2004, at 0900 hrs. the Rock Port School District must provide a minimum of one bus driver to be interviewed concerning the above. In addition, the individual who issues the dosimetry to the bus drivers must be available. The driver must have

appropriate dosimeters, per the plan, and a dosimeter charger and be knowledgeable of their use and of their exposure limits.

On August 23, 2004, at 1300 hrs., during the medical drill, the responding Atchison-Holt Ambulance must have dosimeters and a dosimeter charger available for this demonstration and be knowledgeable of procedures for their use and of their exposure limits.

Criterion 3.b.1: 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. (NUREG-0654, E. 7., J. 10. e., f.)

Out-of-sequence

On August 24, 2004, at 0900 hrs. during the school evaluation, the bus driver and whoever is responsible for issuing KI, must have KI available and be knowledgeable of procedures for the authorization and use of KI.

On August 23, 2004, at 1300 hrs. during the medical drill, the responding ambulance crew must have KI available and be knowledgeable of procedures for the authorization and use of KI.

Criterion 3.c.1: Protective action decisions are implemented for special populations other than schools within areas subject to protective actions. (NUREG-0654, E.7., J.9., 10.c.d.e.g.)

Telephone calls to special facilities, individuals with special needs, and transportation providers may be actually made or simulated. Actual telephone calls must be made to at least 1/3 of the transportation providers, including special resources for disabled individuals. However, all facilities, individuals with special needs, and transportation providers that are required to be notified must be clearly identified and the actual or simulated contacts appropriately documented. Telecommunications Device for the Deaf (TDD) calls to the hearing impaired population will be simulated and appropriately documented.

Criterion 3.c.2: OROs/School officials decide upon and implement protective actions for schools. (NUREG-0654, J.10.c., d., g.)

Out-of-sequence

On August 24, 2004 at 0900 hrs. we will expect the capability to take appropriate protective actions for schools to be demonstrated by the Rock Port School System being evaluated. 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 their awareness of and preparedness for the evacuation of school children.

Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654, J.10.g., j., k.)

Deployment of traffic and access control personnel to assigned locations will be simulated. However, the locations where traffic and access control would be established must be appropriately documented. Staffing of traffic and access control points must be appropriately coordinated with all involved jurisdictions.

At least two individuals, who would normally perform traffic and access control, must be available at the Atchison County EOC for interviews to demonstrate knowledge of their roles and responsibilities concerning traffic and access control, as well as appropriate knowledge concerning dosimetry and KI. We recommend that this demonstration take place early in the exercise.

Criterion 3.d.2: Impediments to evacuation are identified and resolved. (NUREG-0654, J.10., k.)

No Modifications

Criterion 4.a.1: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates. (NUREG-0654, H.10, I.8., 9., 11.)

Radiological detection instruments, equipment, and protective clothing as annotated in the Missouri Nuclear Accident Plan for the Missouri Department of Health and Senior Services should be available for the demonstration.

During initial equipment check or when time permits; at least one person will demonstrate donning of protective clothing (protective clothing will be removed after demonstration).

Criterion 4.a.2: Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654, I.8., 11., J.10.a).

No Modifications

Criterion 4.a.3: 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. (NUREG-0654, I.8., 9., 11.)

Each of the deployed field monitoring teams must take sufficient radiation measurements to identify the plume. Activities related to the use of equipment and procedures for the collection and transport of samples from areas that received deposition from the airborne plume may be explained by interview to the evaluator during the plume phase.

Criterion 4.c.1: The laboratory is capable of performing required radiological analyses to support protective action decisions. (NUREG-0654, C.3., I.8., 9., J.11)

Out-of-Sequence

On September 20, 2004, at 1400 hrs. the Radiological Laboratory will be demonstrated out-of-sequence for the Cooper exercise.

Criterion 5.a.1: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by current FEMA REP guidance. (10 CFR Part 50, Appendix E & NUREG-0654, E. 1., 4., 5., 6., 7.)

An evaluator will be assigned at the National Weather Service office in Valley, Nebraska for the initial EAS message to KFEQ EAS radio station to observe the procedures for broadcasting all exercise related messages. We expect to see the actual receipt of the messages from the State or the Atchison County EOC. Following receipt at the station, procedures to broadcast the message must be fully demonstrated up to the point of transmission. Actual broadcasts of the messages or EAS test messages are not required. 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 messages and Public Information messages will be requested from the facility. The appropriate facility sending messages to the radio station must demonstrate the capability to verify receipt of messages at the radio station. The procedures for siren activation must be demonstrated up to the point of actual activation. Actual siren activation may be simulated. In addition, tone alert radio and/or weather radio activation may be simulated.

The following basic criteria should be included in the initial EAS announcements.

1. Identification of the State or local government organization and the official with authority for providing the alert signal and instructional message.

2. Identification of the commercial nuclear power plant and a statement that an emergency exists at the plant.
3. Reference to Radiological Emergency Preparedness specific emergency information (e.g. brochures and phone book information) for use by the general public during an emergency.
4. A closing statement asking that the affected and potentially affected populations stay tuned for additional information.

Criterion 5.a.2: RESERVED

Not to be demonstrated at this exercise.

Criterion 5.a.3: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. Backup alert and notification of the public is completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654, E. 6., Appendix 3.B.2.c)

To be demonstrated only if there is a default in the primary alert and notification sequence. By interview, the evaluator will ask questions regarding policy and procedures for backup alerting and notifications.

Criterion 5.b.1: OROs provide accurate emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654, E. 5.,7., G.3.a., G.4,a.,b.,c.)

All subsequent protective action instruction provided to the public after the initial notification should be disseminated in a timely manner. Messages should be all inclusive by including previously identified protective action areas as well as new areas. Procedures must be demonstrated, if appropriate, to ensure that EAS messages and Public Information messages containing Protective Action Recommendation(s) (PARs) that have been changed are rescinded and not repeated by the EAS station. In addition, procedures must be demonstrated to ensure that EAS messages and Public Information messages containing current PARs are repeated at pre-established intervals.

Media briefings, public information, and the public inquiry hotline (rumor control) will be coordinated at the Joint Public Information Center/Media Release Center (JPIC/MRC) in Columbus, Nebraska. Sufficient and timely media briefings should be conducted from this location.

Each public inquiry hotline staff member must demonstrate the capability to respond to an average of at least six calls per hour throughout the emergency phase. Any trends in rumors identified by public inquiry hotline staff must be addressed by the JPIC/MRC in news releases and/or media briefings. At least one message should address a false or misleading rumor for which measures should be taken.

Evaluators will be assigned to the JPIC/MRC to monitor public information and public inquiry hotline activities. Copies of all messages, message logs, news releases, and public information statements will be provided to the evaluators at each site.

Criterion 6.d.1: The facility/ORO has the appropriate space, adequate resources, and trained personnel to provide transport, monitoring, decontamination, and medical services to contaminated injured individuals. (NUREG-0654, F.2, H.10., K.5.a.b., L.1., 4.)

Out-of-sequence

On August 23, 2004 at 1300 hrs. the Atchison-Holt Ambulance and the Fairfax Community Hospital will be demonstrated. Communication must be established with the hospital that would receive the patient. The Ambulance demonstration will be terminated once the patient is unloaded and the Ambulance is checked for contamination. To satisfy evaluation of protective clothing, only one person from the Ambulance crew must dress out.

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 OROs during the Cooper Nuclear Station full-scale exercise conducted on September 21, 2004.

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 initially submitted by Cooper Nuclear Station on July 20, 2004, and, following some modifications, was approved by FEMA on August 18, 2004.

The scenario was based on a loss of containment accident resulting in a direct release to the environment.

SCENARIO SUMMARY

The drill will commence at 0730 on September 21, 2004. The plant simulator will be in an interactive mode with communications and data display systems cross-tied to the EOF and TSC.

INITIAL PLANT CONDITIONS

CNS is mode 1 at end of cycle (EOC) day 230 of continuous operation. High Pressure Core Injection (HPCI) is OOS for repairs to the turbine rotor. In day 6 of 14 on LCO 3.5.1, condition C.2. RCIC has been verified to be OPERABLE. DW Fan Coil Unit “B” tripped last shift due to apparent ground.

Radioactive Material is being moved in the Reactor Building. Fall weather conditions with wind from 45 deg, at 5-mph. Weather forecast calls for winds 5-10 mph from the NNE. High-pressure front expected to pass through the area in the afternoon. No rain is predicted.

0730

Start of drill announcement. Announcement will include instructions that Assembly and Accountability will NOT be simulated.

0733

Coolant leakage increases >5 gpm. Crew will determine that LCO. 3.4.4 “RCS OPERATIONAL LEAKAGE” is not met and enters condition “A”. If not restored within 4 hours will enter condition “C”. This will require them to be in Mode 2 within 12 hours and Mode 3 within 36 hours. Crew is expected to commence reactor shutdown and enter 2.1.4 “Normal Shutdown” or 2.1.4.1 “Rapid Shutdown”. (Crew will not be allowed to scram the reactor).

0740

T=0 for declaration of NOUE EAL 2.1.3 will be based on time the crew quantifies the increase in DW leakage.

0745

SM declares NOUE EAL 2.1.2 and makes initial notifications to off-site agencies. NRC Operations Center is notified immediately following notifications to State/Local Agencies. Emergency Planning Coordinator (EPC) will report to the Control Room and Public Affairs Duty Officer (PADO) will be notified. It is not expected that the ERO will be activated. SM will enter EPIP 5.7.2-NOUE. Pagers will be set off with "100 code".

0815

Radioactive Material (Sludge from "E" sump) being moved on the Reactor Building 903' elevation is simulated spilled. Due to the spill, area dose rates will increase to over 2 Rem/hr. This is an increase of 1000X normal dose rates. Spill will be reported to the Control Room and area dose rates given. Crew is expected to enter 5.1RAD and stop all radioactive material movement and close barrier doors as needed.

T=0 for Alert EAL 1.2.1 will be when dose rate information is provided to the Control Room. (Note: ARM in area will be off-scale high but does not have range for crew to determine >1000X normal without field readings and report).

0820

(Time approximate) ED upgrades to Alert EAL 1.2.1. Enter EPIP 5.7.2-ALERT and initiates Initial Notifications to State/Local Agencies and NRC. ERO will be activated ("222 code"). ED is expected to instruct personnel to stay clear of the RB 903' due to spill.

0845

(Time approximate) Initial accountability will be completed. ERO will take action to locate any missing individuals. (No missing personnel are being simulated). Following completion of initial accountability, site personnel will be allowed to return to their job assignments.

0850

(Time approximate) ERO activated and ED function transferred to EOF.

0900

(Time approximate) ED may choose to dismiss non-essential personnel. Release rates will be <ODAM and therefore monitoring will not be required. When ERO has demonstrated Assembly and Accountability, non-essential personnel will be dismissed and allowed to return to work.

0910

State officials arrive in EOF and JIC following JIC activation. (This action has been time compressed).

1000

Group 1 isolation due to Main Steam Line (MSL) break in the steam tunnel. Reactor fails to scram due to RPS scram group channel A1 failing to de-energize. This will result in approximately ¼ of control rods failing to insert. Alternate Rod Insertion (ARI) will vent the scram air header but the other rod drives will have filled the Scram Discharge Volume creating a hydraulic lock. This will prevent the insertion of this scram group. This Anticipated Transient Without Scram (ATWS) will be classified as a Site Area Emergency (SAE) EAL 3.3.4.

T=0 for upgrade to SAE will be when RPV pressure reaches the ARI set point or attempted manually.

1002

Pressure transient from ATWS results in increasing DW leakage. Crew will enter EOP-1A and transition to EOP-6A and 7A (ATWS Flowcharts). Crew will insert control rods using EOP support procedures and may inject boron via the Standby Liquid Control (SLC) system. Crew will enter EOP-3A when Suppression Pool temperature reaches 95 deg. F.

1005

(Time approximate) ED upgrades to SAE EAL 3.3.4.

1015

Initial Notification for SAE made to State/Local Agencies and the NRC Operations Center.

1018

If non-essential personnel have not been evacuated, ED will direct Site Evacuation per EPIP 5.7.2 and 5.7.11. (Actual evacuation will be simulated)

1030

(Time approximate) NRC site team arrives in EOF. (This action is time compressed to allow NRC participation within the constraints of the time allotted for the Exercise). NRC site team will be pre-staged in the Licensing Department conference room in the West Warehouse.

1035

(Time approximate) Reactor is brought shutdown under all conditions by repeated manual scrams/driving control rods or SLC injection. Condensate flow is lost, resulting in a lower trend in RPV water level. Crew re-enters EOP-1A and continues to take actions per EOP-3A. This is when dose assessment personnel should begin to track time after shutdown for dose assessment.

1040

Condensate pumps trip due to hotwell low level. (Non-recoverable).

1115

Stability class changes from "E" to "D" due to outside air temperature rising during the morning.

1145

RPV level reaches Top of Active Fuel (TAF). Degraded core source term will be used by ERO for offsite dose projections. Crew will emergency depressurize the reactor when level cannot be restored and maintained greater than -25 " (FZ). LPCI and CS injection valves will fail to open due to pressure switch failure. Crew/ERO will take action to open injection valves. This delay in coolant injection will result in fuel cladding damage. The ERO should recognize this condition as a SAE EAL 2.3.3 but not declare the event.

1155

RCIC steam line break in steam tunnel. RCIC isolation valves will fail to close due to failure of the isolation logic. When the control switch is taken to close the switch will fail.

T=0 for General Emergency EAL 2.4.1 is when isolation attempt from Control Room fails.

Release (>ODAM) commences from Turbine Building (Steam Tunnel to Turbine Building Heater Bay to Turbine Building.)

1200

ED declares General Emergency on EAL 2.4.1. It is possible that the GE could be declared sooner on EAL 8.4.1 (Judgment) or 3.4.2 when it is reported that the LPCI and CS injection valves have failed to open.

1210

Initial notification for General Emergency completed (Including PAR).

1220

Release rates exceed General Emergency threshold based on CNS/Missouri and Nebraska dose models.

1225

Release rates peak at approximately 2.0E6 Ci/sec following isolation of the RCIC Steam Supply valve(s).

1240-1245

Wind shifts from 45 Deg. to 315 deg. over 5 minutes. This will change the PAR.

1430

Drill terminated. CNS/State Officials conduct critique of the Exercise.