

Arkansas Nuclear One

# After Action Report/ Improvement Plan

Exercise Date - August 17, 2016

Radiological Emergency Preparedness (REP) Program



**FEMA**

*Published October 13, 2016*

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## Arkansas Nuclear One

# After Action Report/Improvement Plan

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## EXECUTIVE SUMMARY

On August 17, 2016, a biennial Radiological Emergency Preparedness (REP) exercise was conducted in the plume exposure pathway emergency planning zone (EPZ) around Arkansas Nuclear One (ANO) located near Russellville, Pope County, Arkansas. The U.S. Department of Homeland Security/Federal Emergency Management Agency (DHS/FEMA) Region VI evaluated the exercise. The purpose was to assess the level of preparedness of state and local responders to react to a simulated radiological emergency at ANO. This exercise was held in accordance with DHS/FEMA policies and guidance concerning the implementation of state and local radiological emergency preparedness plans and procedures.

The previous exercise at this site was a Hostile Action Based Exercise conducted on September 17, 2014. The qualifying emergency preparedness exercise was conducted on October 1, 1980. There have been twenty-four evaluated exercises, including the exercise on August 17, 2016, plus numerous drills conducted since 1980.

DHS/FEMA Region VI wishes to acknowledge the efforts of the many individuals in the State of Arkansas, Pope, Yell, Logan, Johnson, and Conway Counties, National Oceanic and Atmospheric Administration (NOAA) Forecast Office, KXRJ Radio Station, and surrounding jurisdictions who participated in this exercise. Protecting the public health and safety is the fulltime job of some of the exercise participants and an additional assigned responsibility for others. Still they have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants was evident during this exercise.

This report contains the final written evaluation of the biennial exercise. The state and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Level 1 Finding (formally Deficiency) or Level 2 (formally Area Requiring Corrective Action) Finding identified, and there was one Plan Issue identified during the exercise.

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## SECTION 1: EXERCISE OVERVIEW

### 1.1 Exercise Details

**Exercise Name**

Arkansas Nuclear One

**Type of Exercise**

Plume

**Exercise Date**

August 17, 2016

**Program**

Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

**Scenario Type**

Radiological Emergency

### 1.2 Exercise Planning Team Leadership

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## 1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the ANO exercise:

### Risk Jurisdictions

- Arkansas Department of Emergency Management
- Arkansas Department of Health Emergency Communications Center
- City of Russellville
- Dardanelle Police Department
- Johnson County Clerk's Office
- Johnson County Office of Emergency Management
- Johnson County Arkansas Housing Authority
- Johnson County Sheriff's Office
- Logan County Emergency Medical Services
- Logan County Office of Emergency Management
- Logan County Sheriff's Office
- Nuclear Planning & Response Program
- Pope County Emergency Medical Services
- Pope County Health Department
- Pope County Office of Emergency Management
- Pope County Sheriff's Office
- Russellville Fire Department
- Russellville Police Department
- Yell County Emergency Medical Services
- Yell County Fire Control
- Yell County Office of Emergency Management
- Yell County Sheriff's Office

### Support Jurisdictions

- City of Paris Police Department
- Clarksville Police Department
- Danville Police Department

**Private Organizations**

American Red Cross

Arkansas Nuclear One Nuclear Power Plant

KXRJ ENS Radio Station

Radio Amateur Civil Emergency Services

**Federal Jurisdictions**

NOAA/National Weather Service - North Little Rock

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## SECTION 2: EXERCISE DESIGN SUMMARY

### 2.1 Exercise Purpose and Design

The DHS/FEMA Region VI Office evaluated the exercise on August 17, 2016 to assess the capabilities of local emergency preparedness organizations in implementing their Radiological Emergency Response Plans and Procedures to protect the public health and safety during a radiological emergency involving Arkansas Nuclear One (ANO). The purpose of this report is to represent the results and findings on the performance of the offsite response organizations during a simulated radiological emergency.

### 2.2 Exercise Objectives, Capabilities and Activities

Exercise objectives and identified Capabilities/REP Criteria selected to be exercised are discussed in the Exercise Plan (EXPLAN), Appendix E.

### 2.3 Scenario Summary

The exercise scenario was developed to evaluate the response of exercise participants to an incident requiring evacuation of the public from the 10-mile Emergency Planning Zone surrounding Arkansas Nuclear One (ANO). The exercise scenario provided for the evaluation of the Arkansas Department of Emergency Management (ADEM), Arkansas Department of Health (ADH), Johnson, Logan, Pope, and Yell Counties, and Local Emergency Services to manage emergency operations, provide and implement protective action decisions, provide field measurement and analysis, and alert and notify the public.

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## SECTION 3: ANALYSIS OF CAPABILITIES

### 3.1 Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities, which participated in the Arkansas Nuclear One (ANO) exercise to test the off-site emergency response capabilities of State and local governments in the 10-mile Emergency Planning Zone (EPZ) surrounding ANO.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria delineated in the exercise evaluation areas as outlined in the REP Program Manual, dated January 2016. Detailed information on the exercise evaluation area criteria and the extent of play agreement used in this exercise are found in Appendix E of this report.

### 3.2 Summary Results of Exercise Evaluation

The matrix presented in Table 3.1, on the following page(s), presents the status of all exercise evaluation area criteria from the REP Program Manual that were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise evaluation area criteria are listed by number and the demonstration status of those evaluation area criteria is indicated by the use of the following letters or numbers:

**M** - Met (No Findings assessed and no unresolved ARCAs from prior exercises)

**1** - Level 1 Finding (formerly Deficiency) Assessed

**2** - Level 2 Finding (formerly Area Requiring Corrective Action) Assessed or previous unresolved Areas Requiring Corrective Action

**P** - Plan Issue

**N** - Not Demonstrated



Table 3.1 - Summary of Exercise Evaluation (2 pages)

DATE: 2016-08-17 SITE: Arkansas Nuclear One, AR M: Met, 1: Level 1 Finding, 2: Level 2 Finding, P: Plan Issue, N: Not Demonstrated		State EOC	ADH ECC	ADH/SEOF	AR FRMT 1	AR FRMT 2	ADH ENC	Alt. JIC	Johnson County	Logan County	Pope County
Emergency Operations Management											
Mobilization	1a1	M	M	M				M	M	M	M
Facilities	1b1	M		M				M	M	M	M
Direction and Control	1c1	M		M					M	M	M
Communications Equipment	1d1	M	M	M	M	M		M	M	M	M
Equipment and Supplies	1e1	M	M	M	M	M		M	M	M	M
Protective Action Decision Making											
EW Exp. Control Decisions	2a1			M					M	M	M
PARs	2b1			M							
PADs	2b2								M	M	M
PADs for Disabled/Functional Needs	2c1								M	M	M
Ingestion PADs	2d1										
RRR Decisions	2e1										
Protective Action Implementation											
EW Exp. Control Implementation	3a1			M	M	M			M	M	M
KI Public/Institutionalized	3b1								M	M	M
PAD Imp. Disabled/Functional Needs	3c1								M	M	M
PAD Imp. Schools	3c2										
TACP Establishment	3d1								M	M	M
Impediments to Evacuation	3d2								M	M	M
Implementation of Ingestion PADs	3e1										
Ingestion Strategies and Information	3e2										
Imp. of RRR Decisions	3f1										
Field Measurement and Analysis											
RESERVED	4a1										
Field Team Management	4a2			M							
Field Team Operations	4a3				M	M					
Field Team Sampling	4b1										
Laboratory Operations	4c1										
Emergency Notification and Public Info											
Initial Alert & Notification	5a1						M				
Backup Alert & Notification	5a3										
Exception Area Alerting	5a4										
Subsequent Public Information	5b1						M	M			
Support Operations/Facilities											
Reception Center Operations	6a1										
EW Monitoring & Decon	6b1										
Congregate Care	6c1										
Contaminated Injured Transport & Care	6d1										



Table 3.1 - Summary of Exercise Evaluation (Continued. page 2/2)

DATE: 2016-08-17 SITE: Arkansas Nuclear One, AR M: Met, 1: Level 1 Finding, 2: Level 2 Finding, P: Plan Issue, N: Not Demonstrated		Yell County	KXRJ ENS	NOAA NLR			
Emergency Operations Management							
Mobilization	1a1	M					
Facilities	1b1	M					
Direction and Control	1c1	M					
Communications Equipment	1d1	M					
Equipment and Supplies	1e1	M					
Protective Action Decision Making							
EW Exp. Control Decisions	2a1	M					
PARs	2b1						
PADs	2b2	M					
PADs for Disabled/Functional Needs	2c1	M					
Ingestion PADs	2d1						
RRR Decisions	2e1						
Protective Action Implementation							
EW Exp. Control Implementation	3a1	P					
KI Public/Institutionalized	3b1	M					
PAD Imp. Disabled/Functional Needs	3c1	M					
PAD Imp. Schools	3c2						
TACP Establishment	3d1	M					
Impediments to Evacuation	3d2	M					
Implementation of Ingestion PADs	3e1						
Ingestion Strategies and Information	3e2						
Imp. of RRR Decisions	3f1						
Field Measurement and Analysis							
RESERVED	4a1						
Field Team Management	4a2						
Field Team Operations	4a3						
Field Team Sampling	4b1						
Laboratory Operations	4c1						
Emergency Notification and Public Info							
Initial Alert & Notification	5a1		M	M			
Backup Alert & Notification	5a3						
Exception Area Alerting	5a4						
Subsequent Public Information	5b1						
Support Operations/Facilities							
Reception Center Operations	6a1						
EW Monitoring & Decontamination	6b1						
Congregate Care	6c1						
Contaminated Injured Transport & Care	6d1						



### 3.3 Criteria Evaluation Summaries

#### 3.3.1 Arkansas Jurisdictions

##### 3.3.1.1 Arkansas State Emergency Operations Center

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

##### 3.3.1.2 Arkansas Department of Health, Little Rock Emergency Communications Center

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.d.1, 1.e.1.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

##### 3.3.1.3 Arkansas Department of Health and Emergency News Center at the State Emergency Operations Facility

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 3.a.1, 4.a.2, 5.a.1, 5.b.1
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None



- 
- f. PRIOR ISSUES - RESOLVED: None
  - g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.4 Arkansas Field Radiological Monitoring Team One**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.d.1, 1.e.1, 3.a.1, 4.a.3.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES RESOLVED - None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.5 Arkansas Field Radiological Monitoring Team Two**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.d.1, 1.e.1, 3.a.1, 4.a.3.
- b. Level 2 Finding: None
- c. Level 1 Finding: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.1.6 Alternate Joint Information Center**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.b.1, 1.d.1, 1.e.1, 5.b.1.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None



### **3.3.2 Risk Jurisdictions**

#### **3.3.2.1 Johnson County Emergency Operations Center and Traffic/Access Control Point**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.2.2 Logan County Emergency Operations Center and Traffic/Access Control Point**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

#### **3.3.2.3 Pope County Emergency Operations Center and Traffic/Access Control Point**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None



### 3.3.2.4 Yell County Emergency Operations Center and Traffic/Access Control Point

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 1.a.1, 1.b.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.2, 2.c.1, 3.b.1, 3.c.1, 3.d.1, 3.d.2.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: 3.a.1

ISSUE NO.: 01-16-3a1-P-01

CONDITION: The Radiological Officer provided a radiological briefing for the Traffic/Access Control Point Officer; however, the briefing did not include instructions on how to wear dosimetry. In addition, both the Radiological Officer and TACP Officer were unsure of use and how to wear the dosimetry issued.

POSSIBLE CAUSE: Insufficient training and incomplete procedures.

REFERENCE: Yell County Radiological Response Plan Rev 5.1, NUREG-0654, K.3.a.1.

EFFECT: If emergency workers were not wearing dosimetry and were exposed to radiation they would not be able to track or report accurate readings.

RECOMMENDATION: Provide additional training and revise County Emergency Radiological Response Plans/Procedures to include information on the use and wearing of dosimetry.

- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

### 3.3.4 Private Organizations

#### 3.3.4.1 ENS Radio Station KXRJ

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 5.a.1.
- b. LEVEL 2 FINDING: None
- c. LEVEL 2 FINDING: None



- 
- d. PLAN ISSUES: None
  - e. NOT DEMONSTRATED: None
  - f. PRIOR ISSUES - RESOLVED: None
  - g. PRIOR ISSUES - UNRESOLVED: None

### **3.3.5 Federal Jurisdictions**

#### **3.3.5.1 NOAA North Little Rock**

In summary, the status of DHS/FEMA criteria for this location is as follows:

- a. MET: 5.a.1.
- b. LEVEL 2 FINDING: None
- c. LEVEL 1 FINDING: None
- d. PLAN ISSUES: None
- e. NOT DEMONSTRATED: None
- f. PRIOR ISSUES - RESOLVED: None
- g. PRIOR ISSUES - UNRESOLVED: None

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## SECTION 4: CONCLUSION

Based on the results of the exercise, the offsite radiological emergency response plans and preparedness for the State of Arkansas and the affected local jurisdictions are deemed adequate to provide reasonable assurance that appropriate measures can be taken to protect the health and safety of the public in the event of a radiological emergency. Therefore, 44 CFR Part 350 approval of the offsite radiological emergency response plans and preparedness for the State of Arkansas site-specific to Arkansas Nuclear One will remain in effect.



## APPENDIX A: IMPROVEMENT PLAN

**Issue Number: 01-16-3a1-P-01****Criterion: 3a1**

**ISSUE:** The Radiological Officer provided a radiological briefing for the Traffic/Access Control Point Officer; however, the briefing did not include instructions on how to wear dosimetry. In addition, both the Radiological Officer and TACP Officer were unsure of use and how to wear the dosimetry issued.

**RECOMMENDATION:** Provide additional training and revise County Emergency Radiological Response Plans/Procedures to include information on the use and wearing of dosimetry.

**CORRECTIVE ACTION DESCRIPTION:**

**CAPABILITY:****PRIMARY RESPONSIBLE AGENCY:****CAPABILITY ELEMENT:****START DATE:****AGENCY POC:****ESTIMATED COMPLETION DATE:**



## APPENDIX B: EXERCISE TIMELINE

Table 1 presents the times at which key events and activities occurred during the ANO Plume Exercise held on August 17, 2016.

Table 1 - Exercise Timeline DATE: 2016-08-17, SITE:  
Arkansas Nuclear One, AR

Emergency Classification Level or Event	Time Utility Declared	State EOC	ADH ECC	ADH/SEOF	NOAA	Alt. JIC	Johnson County EOC & T/ACP
Unusual Event	N/A						
Alert	0746	0756	0756	0802		0810	0758
Site Area Emergency	0850	0902		0906		0850	0900
General Emergency	1038	1050		1038	1102	1042	1052
Simulated Rad. Release Started	1038	1050		1038		1042	1052
Simulated Rad. Release Ended							
Facility Declared Operational		0846		0919		0920	0812
Declaration of State of Emergency		0936					
Exercise Terminated:	1235	1245		1235		1235	1240
<b>Early Precautionary Action Decisions:</b>							
PAA#1: Alert & call in School Bus Drivers				0810		0815	
PAA#2: Activate Reception Centers				0822		0828	0824
PAA#3: Evacuate Schools				0927			0934
Shutdown Rail & River Traffic							
<b>Protective Action Decisions (PADs):</b>							
PAA#4: Evacuations (Subzones: G, H, K, N, O, P, Q, R & U). Shelter (Subzones: I, J, L, M, S & T) and KI for EWs & Institutionalized.		1045		1049		1102	1053
PAA#5: AG & Livestock-impound/quarantine		1230		1225		1229	1230
<b>EAS Messages and Times:</b>							
#1 Msg#: "E" and Time:					1109		
#2 Msg#: "S" and Time:					1112		
#3 Msg#: _____							
Traffic Detour Advisory: Yell County						1121	
Traffic Detour Cleared: Yell County						1144	
KI Administration Decision:				1049			1053



Table 1 - Exercise Timeline DATE: 2016-08-17, SITE:  
Arkansas Nuclear One, AR

Emergency Classification Level or Event	Time Utility Declared	Logan County EOC & T/ACP	Pope County EOC & T/ACP	Yell County EOC & T/ACP	KXRJ ENS (SAV)
Unusual Event	N/A				
Alert	0746	0756	0756	0756	
Site Area Emergency	0850	0859	0854	0856	
General Emergency	1038	1059	1052	1053	
Simulated Rad. Release Started	1038	1048		1053	
Simulated Rad. Release Ended					
Facility Declared Operational		0826	0823	0845	
Declaration of State of Emergency		0840	0819		
Exercise Terminated:	1235	1241	1241	1242	
<b>Early Precautionary Action Decisions:</b>					
PAA#1: Alert & call in School Bus Drivers		0812		0810	
PAA#2: Activate Reception Centers		0828			
PAA#3: Evacuate Schools		0932	0930		
Shutdown Rail & River Traffic			0947		
<b>Protective Action Decisions (PADs):</b>					
PAA#4: Evacuations (Subzones: G, H, K, N, O, P, Q, R & U). Shelter (Subzones: I, J, L, M, S & T) and KI for EWs & Institutionalized.		1056	1053	1053	
PAA#5: AG & Livestock-impound & quarantine		1235	1230	1235	
EBS Messages and Times:					
#1 Msg#: "E"(Evacuation) and Time:					
#2 Msg#: "S" (Shelter in Place) and Time:					
#3 Msg#: _____					
Traffic Detour Advisory: Yell County					
Traffic Detour Cleared: Yell County					
KI Administration Decision:		1112	1103	1053	



## APPENDIX C: EXERCISE EVALUATORS AND TEAM LEADERS

DATE: 2016-08-17, SITE: Arkansas Nuclear One, AR

LOCATION	EVALUATOR	AGENCY
Arkansas State Emergency Operations Center	*Norm Valentine	FEMA R7
Arkansas Department of Health, Little Rock Emergency Communications Center	*Andy Chancellor	FEMA R7
Arkansas Department of Health at the State Emergency Operations Facility	*Nan Williams Jeff Clark	FEMA R6 FEMA R7
Arkansas Field Radiological Monitoring Team One	*Scott Flowerday	FEMA R6
Arkansas Field Radiological Monitoring Team Two	*George Brozowski	EPA
Arkansas Nuclear One Emergency News Center	*Cara Christianson-Riley	FEMA R7
Alternate Joint Information Center Little Rock	*Sharron McDuffie Matthew Celia	FEMA RVI FEMA HQ
Johnson County Emergency Operations Center and Traffic/Access Control Point	*Brad DeKorte Dulcie Allen	FEMA R6 FEMA R9
Logan County Emergency Operations Center and Traffic/Access Control Point	*LaShawn Halsey Darren Bates	FEMA HQ FEMA HQ
Pope County Emergency Operations Center and Traffic/Access Control Point	*Timothy Pflieger Pat Tenorio	FEMA R6 FEMA HQ
Yell County Emergency Operations Center and Traffic/Access Control Point	*Linda Gee Clark Galloway	FEMA R6 FEMA HQ
ENS Radio Station KXRJ	*Elsa Lopez	FEMA RVI
NOAA North Little Rock	*Andy Chancellor	FEMA R7
* Team Leader		



## APPENDIX D: ACRONYMS AND ABBREVIATIONS

Acronym	Meaning
ADEM	Arkansas Department of Emergency Management
ADH	Arkansas Department of Health
AJIC	Alternate Joint Information Center
ANO	Arkansas Nuclear One
ARES	Amateur Radio Emergency Services
AWIN	Arkansas Wireless Information Network
CAD	Computer Aided Dispatch
CFM	Cubic Feet Per Minute
DHS/FEMA	Department of Homeland Security/Federal Emergency Management Agency
DEF/VS	Dedicated Emergency Facsimile/Voice System
DRD	Direct Reading Dosimeter
EAS	Emergency Alert System
EBS	Emergency Broadcast System
ECC	Emergency Communications Center
ECL	Emergency Classification Level
EMD	Emergency Management Director
EMS	Emergency Medical Services
ENC	Emergency News Center
ENS	Emergency News Station
EOC	Emergency Operations Center
EOP	Extent of Play
EPA	Environmental Protection Agency
EPD	Electronic Personal Dosimeter
EPZ	Emergency Planning Zone
EW	Emergency Worker
FMT	Field Monitoring Team
FMTC	Field Monitoring Team Coordinator
FTC	Field Team Control
GE	General Emergency
GIS	Geographic Information Systems
HP	Health Physicist
JIC	Joint Information Center
KI	Potassium Iodide

Unclassified  
Radiological Emergency Preparedness Program (REP)

After Action Report/Improvement Plan

Arkansas Nuclear One

LGL	Local Government Liaison
MHz	Megahertz
NAWAS	National Warning System
NOAA	National Oceanic and Atmospheric Administration
NERN	Nuclear Emergency Radio Network
NP&RP	Nuclear Planning & Response Program
NWS	National Weather Service
OEM	Office of Emergency Management
ORO	Offsite Response Organization
OSL	Optically Stimulated Luminescent
PAA	Protective Action Advisory
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PDAFN	Persons with Disabilities and Access/Functional Needs
PIB	Public Information Bulletin
PIT	Public Information Team
PRD	Permanent Record Dosimeters
RACES	Radio Amateur Civil Emergency Service
RASCAL	Radiological Assessment Systems for Consequence Analysis
RDAC	Radiological Assessment Display and Control Systems
REP	Radiological Emergency Preparedness
RO	Radiological Officer
RRTL	Radiological Response Team Leader
SAE	Site Area Emergency
SDO	Staff Duty Officer
SEOF	State Emergency Operations Facility
SOP	Standard Operations Plan
TACP	Traffic and Access Control Point
TEDE	Total Effective Dose Equivalent
TLD	Thermoluminescent Dosimeter
TOCD	Technical Operations Control Director
URI	Unified RASCAL Interface

## APPENDIX E: EXERCISE PLAN

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**Arkansas Nuclear One 2016 Biennial Exercise**

**August 17, 2016**

**Extent-of-Play (EOP) Agreement**

**Between**

**The Arkansas Department of Health, representing the Off-Site Response Organizations, and FEMA  
Region VI**

**EVALUATION AREA 1**

**Emergency Operations Management**

**Sub-element 1.a – Mobilization**

**INTENT**

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to alert, notify, and mobilize emergency personnel, and activate and staff emergency facilities.

***Criterion 1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654/ FEMA-REP-1, A.1.a, e; A.3, 4; C.1,4, 6; D.4; E.1, 2; H.3, 4)***

**Locations:** State EOC ADEM, Camp Robinson; ADH Emergency Communications Center (ECC), Little Rock; ADH State Emergency Operations Facility (SEOF), Russellville; Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville. Alternate Joint Information Center (AJIC), Little Rock.

- EOP**
- 1. ANO will notify the ADH ECC per established procedures. The ECC will follow the instructions of the RSDO and/or the TOCD**
  - 2. Direction and Control will remain with the TOCD who will be pre-deployed to the NP&RP office in Russellville. Alternate JIC Radiation Control staff will pre-deploy to Freeway Medical Center to demonstrate direction and control when the TOCD is in route to the SEOF. When SEOF is operational, this staff will pre-deploy to the AJIC. Other alternate JIC PIO staff will pre-deploy directly to the AJIC**
  - 3. The FRMTs will be pre-deployed at the NP&RP office in Russellville. After activation, teams will stage at the ANG Armory, Russellville. Two teams will go into the field. FRMTs will be directed from the SEOF.**
  - 4. ADH, Little Rock will only be evaluated at the ECC.**
  - 5. No shift change will be performed. A list of second shift Key Personnel will be available for review. A shift change briefing will either be demonstrated by the OROs or the evaluator will interview the ORO to determine the content of the briefing.**
  - 6. The 1<sup>st</sup> shift may be over staffed for training purposes. Some staff identified on the 2<sup>nd</sup> shift roster will play with the 1<sup>st</sup> team. In an actual emergency this over staffing would not be used.**

**7. Protocols for requesting Federal Support will be demonstrated through interview at the ADH SEOF.**

**8. The following locations will pre-stage:**

- a. Radiological Response Team at the NP&RP Office in Russellville.
- b. Field Teams at the NP&RP Office and then to the Armory in Russellville.
- c. Alternate JIC in Little Rock.

ARCA: NONE

**Sub-element 1.b. Facilities**

**INTENT**

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (ORO) have facilities to support the emergency response.

**Criterion 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654/FEMA-REP-1, H.3; G.3.a; J.10.h; J.12; K.5.b)**

**Locations:** State EOC ADEM, Camp Robinson; ADH State Emergency Operations Facility (SEOF), Russellville; Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville; Joint Information Center (Emergency News Center), Russellville; Alternate Joint Information Center (AJIC), Little Rock.

EOP: First time in new 8-year cycle.

ARCA: None

**Sub-element 1.c - Direction and Control****INTENT**

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (ORO) have the capability to control their overall response to an emergency.

**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/FEMA-REP-1, A.1.d; A.2.a, b; A.3; C.4, 6)**

**Locations:** State EOC ADEM, Camp Robinson; SEOF, Russellville; Pope County EOC, Russellville; Logan County EOC, Paris; Yell County EOC, Danville; Johnson County EOC, Clarksville.

- EOP:**
1. ANO will notify the ADH ECC per established procedures. The ECC will follow the instructions of the RSDO and/or the TOCD.
  2. Direction and Control will remain with the TOCD who will be pre-deployed to the NP&RP office in Russellville. The ADH will be evaluated at this location and the SEOF.
  3. When the team deploys from the staging area to the SEOF, Direction and Control will be given to the TOCD located in Little Rock until the SEOF is operational.

**ARCA:** None

**Sub-element 1.d – Communications Equipment****INTENT**

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs establish and operate reliable primary and backup communication systems to ensure communications with key emergency personnel at locations such as contiguous governments within the EPZ, Federal emergency response organizations, the licensee and its facilities, EOCs, Incident Command Posts, and FMTs.

**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/FEMA-REP-1, F.1, 2)**

**Locations:** State EOC ADEM, Camp Robinson; ADH ECC, Little Rock; ADH SEOF, Russellville; Alternate Joint Information Center, Little Rock; Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville; State FRMT 1, Russellville; State FRMT 2, Russellville

**EOP:** Each location will demonstrate the use of one primary and one backup communications system and be prepared to discuss backup alternate communication systems. Each location will identify a communications system that is independent of the commercial telephone system.

**ARCA:** None



## Sub-element 1.e – Equipment and Supplies to Support Operations

### INTENT

This sub-element is derived from NUREG-0654, which provides that Offsite Response Organizations (ORO) have emergency equipment and supplies adequate to support the emergency response.

**Criterion 1.e.1: Equipment, maps, displays, monitoring instruments, dosimetry, potassium iodide (KI) and other supplies are sufficient to support emergency operations (NUREG-0654/FEMA-REP-1, H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b)**

**Locations:** State EOC ADEM, Camp Robinson; ADH ECC, Little Rock; ADH SEOF, Russellville; Emergency News Center Russellville; Alternate Joint Information Center, Little Rock; Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville; State FRMT 1, Russellville; State FRMT 2, Russellville.

**EOP:** 1. ADH Russellville will only be evaluated at the SEOF

2. ADH Little Rock will only be evaluated at the ECC

3. Meters or DRDs that have "bar code" labels can have their calibration and quarterly operational check dates verified with the master database maintained by the NP&RP HP. Operational checks of meters will be performed before use, using range of readings stickers on the meters.

4. The quantities of Dosimetry and the quantities and expiration of KI will be confirmed by evaluators at locations identified in plans.

5. The availability of TACP equipment will be described through interview at the Counties. TACP personnel will not go TACP locations.

6. Exposure control and monitoring will be under the control of ANO at the SEOF, the Russellville ENC, and Russellville Rumor Control. ANO will perform habitability determination using meters and area monitoring.

7. It is Arkansas policy to issue KI only to Emergency Workers (EW) and institutionalized individuals. KI is not issued to the general public.

8. Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.

**ARCA:** None

## EVALUATION AREA 2

### Protective Action Decision-Making

#### Sub-element 2.a - Emergency Worker Exposure Control

##### INTENT

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to assess and control the radiation exposure received by emergency workers and have a decision chain in place, as specified in the ORO's plans/procedures, to authorize emergency worker exposure limits to be exceeded for specific missions.

**Criterion 2.a.1: OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers, including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654/FEMA-REP-1, C.6; J.10. e, f; K.4)**

**Locations:** ADH/SEOF, Russellville; Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville.

- EOP:**
1. Exposure control and monitoring will be under the control of ANO at SEOF. ANO will perform habitability determination using meters and area monitoring.
  2. State FRMTs will use gloves as necessary. Access to "anti-C's" will be demonstrated; however, they will not be worn. After the termination of the exercise FMRT members will be prepared to demonstrate the donning and removal of "anti-C's". Respiratory protection will NOT be used.
  3. At the County EOCs, the RO will demonstrate the EW briefing, record keeping, and procedures for issuing and returning dosimetry and KI.
  4. If the plume does not require a KI decision, the County EOCs can satisfy this EA by interview.
  5. It is Arkansas policy to issue KI only to Emergency Workers (EW) and institutionalized individuals. EWs who decline to take KI may not be identified in advance. If they decline to take KI at their duty stations, they will not be placed in positions that would expose them to radiation. KI is not issued to the general public.
  6. The State of Arkansas may not consider the termination of Emergency Worker exposure control to be at the end of the "plume phase".

**ARCA:** None

#### Sub-element 2.b. - Radiological Assessment and Protective Action Recommendations and Decisions for the Plume Phase of the Emergency

##### INTENT

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to independently project integrated dose from projected or actual dose rates and compare these



estimates to the PAGs. OROs must have the capability to choose, among a range of protective actions, those most appropriate in a given emergency. OROs base these choices on PAGs from their plans/procedures or EPA's *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents* and other criteria, such as plant conditions, licensee PARs, coordination of PADs with other political jurisdictions (e.g., other affected OROs and incident command), availability of in-place shelter, weather conditions, and situations, to include HAB incidents, the threat posed by the specific hostile action, the affiliated response, and the effect of an evacuation on the threat response effort, that create higher than normal risk from general population evacuation.

**Criterion 2.b.1: Appropriate protective action recommendations (PARs) are based on available information on plant conditions, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654/FEMA-REP-1, I.10 and Supplement 3)**

**Locations:** ADH SEOF, Russellville.

**EOP:**

1. Dose Projections will be made per procedures using a combination of RASCAL and RDACS. RASCAL will be the primary model used to make projections based on "plant conditions". Once RDACS outputs are determined to adequately represent the plume, it will be used as the primary model.
2. Protective Action Advisories issued by the State may differ from the ANO Protective Action Recommendations and may not reflect the logic identified in NUREG-0654/FEMA-REP-1, Revision 1, Supplement 3, *Guidance for Protective Action Strategies (October 2011)*

**ARCA:** None

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**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/FEMA-REP-1, A.3; C.4, 6; D.4; J.9; J.10.f, m)**

**Locations:** Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County, EOC, Danville.

**EOP:**

1. It is Arkansas policy to issue KI only to Emergency Workers (EW) and institutionalized individuals. KI is not issued to the general public.
2. The State issues Protective Action Advisories (PAAs) and ANO issues Protective Action Recommendations (PARs). A PAA and/or PAR become a PAD when all County Judges concur.
3. If the plume does not require a KI decision, the county EOCs can satisfy this EA by interview.

**ARCA:** None

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**Sub-element 2.c - PAD Consideration for the Protection of Persons with Disabilities and Access/Functional Needs****INTENT**

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to determine PADs, including evacuation, sheltering, and use of KI, if applicable, for groups of persons with disabilities and access/functional needs (e.g., hospitals, nursing homes, correctional facilities, schools, licensed daycare centers, mobility-impaired individuals, and transportation-dependent individuals). The focus is on those groups of persons with disabilities and access/functional needs that are, or potentially will be, affected by a radiological release from an NPP.

**Criterion 2.c.1: Protective action decisions are made, as appropriate, for groups of persons with disabilities and access/functional needs. (NUREG-0654/FEMA-REP-1,D.4; J.9; J.10.d, e)**

**Locations:** Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville.

- EOP:**
1. Lists and procedures will be demonstrated for supporting "groups of persons with disabilities and access/functional needs". These lists will be reviewed by evaluators but will not be given to evaluators because of HIPAA requirements. Actions will be simulated.
  2. County EOCs will actually notify all public school systems/districts one time during the drill IAW with their procedures, if the systems/districts are in session.
  3. If the systems/districts are not in session, the EOCs will provide evaluators the contact information for the schools and will satisfy this criterion via interview.

**ARCA:** None

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## EVALUATION AREA 3

### Protective Action Implementation

#### Sub-element 3.a – Implementation of Emergency Worker Exposure Control

##### INTENT

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to provide for the following: distribution, use, collection, and processing of direct-reading dosimetry and permanent record dosimetry; reading of direct-reading dosimetry by emergency workers at appropriate frequencies; maintaining a radiation dose record for each emergency worker; establishing a decision chain or authorization procedure for emergency workers to incur radiation exposures in excess of the PAGs, and the capability to provide KI for emergency workers, always applying the —as low as is reasonably achievable— principle as appropriate.

**Criterion 3.a.1: The OROs issue appropriate dosimetry, KI, and procedures, and manage radiological exposure to emergency workers in accordance with the plans/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. OROs maintain appropriate record-keeping of the administration of KI to emergency workers. (NUREG-0654/FEMA-REP-1, J.10.e; K.3.a, b; K.4)**

**Locations:** ADH/SEOF, Russellville; State Field Radiological Monitoring Teams (FRMT) 1 and (FRMT) 2, Russellville; Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville.

##### EOP

1. Exposure control and monitoring will be under the control of ANO at SEOF. Dosimetry will be available to deploying personnel when appropriate.
2. State FRMTs will use gloves as necessary. Access to "anti-C's" will be demonstrated; however, they will not be worn. After the termination of the exercise FRMT members will be prepared to demonstrate the donning and removal of "anti-C's". Respiratory protection will NOT be used.
2. County ROs will demonstrate the EW briefing, record keeping, and procedures for issuing and returning dosimetry and KI.
4. It is Arkansas policy to issue KI only to Emergency Workers (EW) and institutionalized individuals. KI is not issued to the general public.
5. If the scenario does not require a KI decision, OROs can satisfy this EA by interview.
6. The State of Arkansas may not consider the termination of Emergency Worker exposure control to be at the end of the "plume phase".
7. The listing of EWs who have ingested KI would be developed after the exposure forms are turned in. Because of the length of this exercise, this requirement will not be demonstrated. Each EW who simulates taking KI will have a form documenting when it was taken. These forms would be the basis for developing this list. Forms will be available for evaluator review.

8. Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.
9. It is Arkansas policy to issue KI only to Emergency Workers (EW) and institutionalized individuals. EWs who decline to take KI may not be identified in advance. If they decline to take KI at their duty stations, they will not be placed in positions that would expose them to radiation.

ARCA: None

**Sub-element 3.b – Implementation of KI Decision for Institutional individuals and the General Public**

**INTENT**

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to provide KI for institutionalized individuals, and, if in the plans/procedures, to the general public for whom immediate evacuation may not be feasible, very difficult, or significantly delayed. While it is necessary for OROs to have the capability to provide KI to institutionalized individuals, providing KI to the general public is an ORO option and must be reflected as such in ORO plans/procedures. Provisions must include the availability of adequate quantities, storage, and means of distributing KI.

**Criterion 3.b.1: KI and appropriate instructions are available if a decision to recommend use of KI is made. Appropriate record-keeping of the administration of KI for institutionalized individuals and the general public is maintained. (NUREG-0654/FEMA-REP-1, J.10.e,f)**

**Locations:** Pope County EOC, Russellville; Logan County EOC, Paris; Yell County EOC, Danville; Johnson County EOC, Clarksville.

- EOP:**
1. It is Arkansas policy to issue KI only to Emergency Workers (EW) and institutionalized individuals. KI is not issued to the general public.
  2. If the scenario does not require a KI decision, the County EOCs can satisfy this EA by interview.
  3. Use of KI by EWs will be simulated.
  4. Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.

ARCA: None

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**Sub-element 3.c – Implementation of Protective Actions for Persons with Disabilities and Access/Functional Needs.**

**INTENT**

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to implement PADs, including evacuation and/or sheltering, for all persons with disabilities and access/functional needs. The focus is on those persons with disabilities and access/functional needs that are (or potentially will be) affected by a radiological release from an NPP.

**Criterion 3.c.1: Protective action decisions are implemented for persons with disabilities and access/functional needs other than schools within areas subject to protective actions. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)**

**Locations:** Pope County EOC, Russellville; Johnson County EOC, Clarksville; Logan County EOC, Paris; Yell County EOC, Danville.

- EOP:**
1. Lists and procedures will be demonstrated for supporting "groups of persons with disabilities and access/functional needs", if required by the scenario. Actions will be simulated.
  2. If contacting a transportation provider is not demonstrated, a controller inject will be provided. Only one provider will be actually contacted at each EOC.

**ARCA:** None

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**Sub-element 3.d. – Implementation of Traffic and Access Control**

**INTENT**

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to implement protective action plans/procedures, including relocation and restriction of access to evacuated/sheltered areas. This Sub-element focuses on selecting, establishing, and staffing of traffic and access control points, and removal of impediments to the flow of evacuation traffic.

**Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654/FEMA-REP-1, A.3; C.1,4; J.10.g, j)**

**Locations:** Pope County EOC, Russellville; Logan County EOC, Paris; Yell County EOC, Danville; Johnson County EOC, Clarksville.

- EOP:**
1. The RO will issue Dosimetry, KI and brief the Deputy assigned to the T/ACP as appropriate. The Deputy will not drive to the location. The Deputy will talk through the T/ACP, monitoring, and EW exposure control procedures.
  2. Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.

**ARCA:** None

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**Criterion 3.d.2: Impediments to evacuation are identified and resolved. (NUREG-0654/FEMA-REP-1, J.10.k)**

**Locations:** Pope County EOC, Russellville; Logan County EOC, Paris; Yell County EOC, Danville; Johnson County EOC, Clarksville.

- EOP:**
1. The EOC representative will talk through the procedures that demonstrate the capability to identify and take appropriate actions concerning impediments to evacuation.
  2. An inject will be inserted after the evacuation has started. The inject will require the re-routing of traffic.
  3. If a GE has not been declared and evacuations have not been ordered, this inject will be inserted out of sequence.
  4. All EOCs will discuss how this road closing information and re-routing information will get to the public. One County EOC will contact the SEOF with the re-routing information. The LGL will prepare a Public Notification Message and provide the re-routing information to the ENC. The LGL will not transmit the PNM but will explain the distribution. The ENC will prepare a News Release and will provide the Release to the AJIC for briefing to the media. The other Counties will simulate providing the information to the LGL.
  5. Actual dispatch of resources will not take place.

**ARCA:** None

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**EVALUATION AREA 4:****Field Measurement and Analysis****Sub-element 4.a – Plume Phase Field Measurements and Analyses****INTENT**

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to deploy FMTs with the equipment, methods, and expertise necessary to determine the location of airborne radiation and particulate deposition on the ground from an airborne plume. In addition, NUREG-0654/FEMA-REP-1 indicates that OROs must have the capability to use FMTs within the plume exposure pathway EPZ to detect airborne radioiodine in the presence of noble gases and radioactive particulate material in the airborne plume. In an incident at an NPP, the possible release of radioactive material may pose a risk to the nearby population and environment. Although incident assessment methods are available to project the extent and magnitude of a release, these methods are subject to large uncertainties. During an incident, it is important to collect field radiological data to help characterize any radiological release. Adequate equipment and procedures are essential to such field measurement efforts.

**4.a.2: Field teams (2 or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654/FEMA-REP-1, C.1; H.12; I.7, 8, 11; J.10.a)**

**Locations:** SEOF, Russellville

- EOP:**
1. **State FRMTs will follow the ALARA Policy of the Arkansas Department of Health. Teams will not routinely traverse a plume. State Teams will define the edge of the plume. Air samples will be taken in areas reading near 20 mR/hr or as directed.**
  2. **Air samples will not be transported. The team member will discuss the process for transferring samples.**
  3. **Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.**

**ARCA:** None

**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/FEMA-REP-1, C.1; H.12: I.8; 9; J.10.a)**

**Locations:** State FRMT 1, Russellville; State FRMT 2, Russellville

- EOP:**
1. State FRMTs will follow the ALARA Policy of the Arkansas Department of Health. Teams will not routinely traverse a plume. State Teams will define the edge of the plume. Air samples will be taken in areas reading near 20 mR/hr or as directed.
  2. Air samples will not be transported. The team member will discuss the process for transferring samples
  3. Correction-on-the-spot will be considered at these locations at the discretion of and concurrence between the evaluator and the controller. Caution should be exercised to ensure that exercise play is not interrupted.
  4. Air samplers will not be purged.
  5. FRMTs may be asked to describe all procedures not demonstrated.
  6. Charcoal canisters will be used instead of Silver Zeolite. Silver Zeolite canisters will be available for evaluator review.
  7. Sealed kits do not have to be inventoried. However, FRMTs can inventory them if they want.
  8. Two teams will be deployed to the field
  9. State FRMTs will use gloves as necessary. Access to "anti-C's" will be demonstrated; however, they will not be worn. After the termination of the exercise FRMT members will be prepared to demonstrate the donning and removal of "anti-C's" at the Armory. Respiratory protection will NOT be used.

**ARCA:** None

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## EVALUATION AREA 5

### Emergency Notification and Public Information

#### Sub-element 5.a - Activation of the Prompt Alert and Notification System

##### INTENT

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to provide prompt instructions to the public within the plume exposure pathway EPZ. Specific provisions addressed in this Sub-element are derived from the *Guide for the Evaluation of Alert and Notification Systems for Nuclear Power Plants*, FEMA-REP-10 (November 1985).

**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 REP guidance. (NUREG-0654/FEMA-REP-1, E.5, 6, 7)**

##### Locations:

SEOF, Russellville; NOAA, North Little Rock; Station KXRJ, Russellville.

##### EOP:

1. The EAS is not used for ANO alert and notification. The alerting is accomplished by the activation of the siren system and the tone on the NOAA radio. The notification will be demonstrated by the simulated broadcast of the message on NOAA radio and simulated, remote takeover of KXRJ's transmitter and the re-broadcast of the NOAA message.

- a. If the Local Government Liaison (LGL) position is staffed at the SEOF when the first PAD is issued requiring activation of the ANS:

- 1) The activation of the siren system will be demonstrated at the SEOF.
- 2) Emergency Messages will be completed by the LGL and provided to NOAA for broadcast.

- b. If the LGL position is staffed at the NP&RP offices when the first PAD is issued requiring activation of the ANS:

- 1) The activation of the siren system will be demonstrated at the NP&RP offices.
- 2) Emergency Messages will be completed by the LGL and provided to NOAA for broadcast

2. No sirens will sound and local radio messages and National Oceanic and Atmospheric Administration (NOAA) messages will NOT BE BROADCAST. *The siren activation will be simulated. However, the procedures should be demonstrated up to the point of actual activation.* In Arkansas the County Judge is the decision maker for protective actions. The TOCD only recommends actions. Since the State does the "alert and notification", the State must wait until the final Judge makes a decision to agree with the recommendation before the "alert and notification" begins.
3. Local radio message simulation will be demonstrated at radio station KXRJ in Russellville. A site visit will be made to check equipment. The remote takeover of the KXRJ will be simulated at either the NP&RP office or the SEOF.
4. NOAA message simulation will be demonstrated at the National Weather Service Forecast Office, North Little Rock. Any real emergency will take precedence. Procedures to broadcast the message will be fully demonstrated as they would in an actual emergency up to the point of transmission. Broadcast of the message(s) or test messages is not required.
5. Route Alerting is not a Primary ANS method. It will not be demonstrated.

ARCA: None

#### Sub-element 5.b – Emergency Information and Instructions for the Public and the Media

##### INTENT

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to disseminate appropriate emergency information and instructions, including any recommended protective actions, to the public. In addition, NUREG-0654/FEMA-REP-1 requires OROs to ensure that the capability exists for providing information to the media. This includes the availability of a physical location for use by the media during an emergency. NUREG-0654/FEMA-REP-1 also provides that a system must be available for dealing with rumors. This system will hereafter be known as the —public inquiry hotline.]]

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

**Locations:** Emergency News Center, Russellville; Alternate Joint Information Center, Little Rock.

##### EOP:

1. Media kits will be provided by Entergy at the AJIC.
2. Rumor Control activity is staffed by ANO employees IAW Entergy plans and procedures.
3. The JIC and Rumor Control will be in Little Rock. They will pre-stage!
4. County representation at the JIC will be through the ENC Liaison position. County personnel will not be at the JIC.
5. State News Release will be written at the ENC.

ARCA: None

## Emergency Planning

### Exercise Package Review

**Exercise Date: August 17, 2016**

Signature

*Robert Carey*

Date

6-16-16

Robert Carey, Manager, Emergency Preparedness

Signature

*Terry Evans*

Date

6/16/16

Terry Evans, General Manager Plant Operations

Unclassified

Radiological Emergency Preparedness Program (REP)

After Action Report/Improvement Plan

Arkansas Nuclear One



Entergy Operations, Inc.  
1449 S.R. 388  
Russellville, AR 72802  
Tel: 479-828-4704

Stephenie L. Pyle  
Manager, Regulatory Assurance  
Arkansas Nuclear One

10 CFR 2.390 Enclosure Withheld

OCAN061601

June 17, 2016

U.S. Nuclear Regulatory Commission  
Attn: Document Control Desk  
Washington, DC 20555-0001

SUBJECT: Emergency Plan Full Participation  
Exercise Drill Scenario  
Arkansas Nuclear One – Units 1 and 2  
Docket Nos. 50-313 and 50-388  
License Nos. DPR-51 and NPF-6

Dear Sir or Madam:

In accordance with the provisions of 10 CFR 50, Appendix E Section IV.F.2.b, Entergy Operations, Inc. is providing the full participation exercise scenario pursuant to 10 CFR 50.4 at least 60 days prior to the drill at Arkansas Nuclear One. Enclosed please find the drill scenario for the full participation exercise which is currently scheduled for August 17, 2016. Minor changes may be made prior to drill performance based on comments received from external agencies.

Entergy requests that the enclosure which contains confidential information be withheld from public disclosure in accordance with 10 CFR 2.390.

There are no new commitments contained in this submittal. If you need any additional information, please contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "SLP", is written over the typed name.

SLP/nbm

Enclosure: Full Participation Exercise Drill Scenario

This letter contains confidential information – The enclosure is withheld from public disclosure per 10 CFR 2.390.

OCAN061601  
Page 2 of 2

This letter contains confidential information – The enclosure is withheld from public disclosure per 10 CFR 2.390.

cc: (with enclosure)

Mr. Paul Elkmann  
U. S. Nuclear Regulatory Commission, Region IV  
1600 East Lamar Boulevard  
Arlington, TX 76011-4511

(without enclosure)

Mr. Marc Dapas  
Regional Administrator  
U. S. Nuclear Regulatory Commission, Region IV  
1600 East Lamar Boulevard  
Arlington, TX 76011-4511

NRC Senior Resident Inspector  
Arkansas Nuclear One  
P.O. Box 310  
London, AR 72847

U. S. Nuclear Regulatory Commission  
Attn: Mr. Stephen Koenick  
MS 08 B1A  
One White Flint North  
11555 Rockville Pike

This letter contains confidential information – The enclosure is withheld from public disclosure per 10 CFR 2.390.

Unclassified

Radiological Emergency Preparedness Program (REP)

After Action Report/Improvement Plan

Arkansas Nuclear One

Enclosure to

OCAN061601

Full Participation Exercise Drill Scenario

This letter contains confidential information - The enclosure is withheld from public disclosure per 10 CFR 2.390.

**NRC EXERCISE**  
**AUGUST 17, 2016**

**DETAILED**

**SCENARIO**

## 2016 Emergency Preparedness Exercise (REX-16)

### Initial Conditions

- The plant has been operating for the past 260 days at 100% power and is at the middle of core life.
- The 2P-36B charging pump is out of service for an oil baffle repack. Work began at 06:00 this morning. The estimated completion of the PM is 10:30 today. The oil has been drained and the crew is exiting the plant with the drained oil.

### Scenario Event Sequence

- 07:25 A NOAA radio broadcast for a Severe Thunderstorm Warning for Pope and Yell Counties occurs in the Control Room.
- 07:33 A NOAA radio broadcast for a Tornado Warning for Pope and Yell Counties occurs in the Control Room.
- 07:38 ANO Site Security reports to the Control Room that a heavy rain is occurring and that a tornado has been spotted on the ground south of the firing range moving toward the north. Trees and debris are flying around in the air at this time near the firing range and debris has been thrown over the roadway leading from ANO to Flatwood Drive. No damage has occurred in the Protected Area of the plant at this time.
- 07:40 Due to water ingress into the motor terminal connection box, the A Circ Water Pump (2P-3A) will trip.
- 07:41 As the tornado moves to the north/northwest, trees and other debris are thrown into the air with significant debris falling into the Emergency Cooling Pond (ECP). The ECP instrumentation panel at the ECP fenced area will be damaged when a large tree was thrown into the area. There is a vehicle turned upside-down and driven nose-down into the suction valve of the ECP. The tornado, moving toward the northwest, lifts into the clouds and dissipates before crossing Hwy. 333.

With the damage report from the tornado, the Unit 2 Shift Manager will classify an Alert emergency class based upon the following EAL:

#### **EAL HA6 - Natural or destructive phenomena affecting VITAL AREAS:**

**2. Tornado striking or winds > 67 mph (2 minute average) resulting in VISIBLE DAMAGE to the Ultimate Heat Sink (Emergency Cooling Pond).**

The Emergency Response Organization (ERO) will be notified of the ALERT declaration via the ERO Notification System (ERON) and will be instructed to report to their assigned Emergency Response Facilities. Offsite notifications to Local, State and Federal agencies will be performed by the Control Room for the ALERT emergency classification in accordance with Procedure 1903.011, "Emergency Response/Notifications".



## 2016 Emergency Preparedness Exercise (REX-16)

08:45

A vibration alarm is received in the U-2 Control Room for Reactor Coolant Pump 2P-32D. Immediately after the vibration alarm, the 2P-32D shaft shears. An automatic reactor trip signal is received, but the reactor does not trip. The RPS manual trip of the reactor does not function, DSS does not function and the reactor trip will have to be performed in the Control Room by de-energizing 480v buses 2B-7 and 2B-8. A Site Area Emergency (SAE) emergency classification based upon the following EAL:

**EAL SS3: 1.a - An automatic trip failed to shutdown the reactor AND 1.b - Manual actions taken at panel C03 (Unit 1) or panels 2C03/2C14 (Unit 2) do not shutdown the reactor as indicated by reactor power > 5%.**

Offsite authorities will be notified of the SAE classification in accordance with Procedure 1903.011, "Emergency Response/Notifications".

Within 30 minutes of the SAE declaration, all required procedure actions will have been performed for the evacuation of non-essential personnel from the Protected Area and Site Security will have provided the Initial Accountability Report to the TSC Emergency Plant Manager (SM if TSC EPM is not available). **Note:** Non-essential personnel will be evacuated to the parking lot only until personnel accountability has been completed.

-0900

The Technical Support Center (TSC), Operational Support Center (OSC) and the Emergency Operations Facility (EOF) emergency response facilities should be staffed and "Operational". The EOF Emergency Director will have assumed or be in the process of assuming Emergency Direction & Control (ED&C) from the Unit 2 Control Room Shift Manager.

0915

The Failed Fuel Iodine Radiation Monitor 2RITS-4806B in the U-2 Control Room will indicate 1.3E5 counts per minute (cpm). This value will indicate that fuel clad degradation is greater than Technical Specification allowable limits. If not already requested, the U-2 Control Room will request that Chemistry perform RCS sampling to determine RCS activity levels.

09:30

The 2P-36A charging pump trips due to a failed under-voltage relay. An NLO and/or an OSC repair team will be dispatched to evaluate the pump. An assessment of the pump will indicate that the relay must be replaced to restore the remote start capability of the pump. An NLO could be directed by the control room to locally start the pump.

10:15

A 2000 GPM Loss of Coolant Accident (LOCA) will occur on the RCS "D" Cold Leg releasing radioactive primary coolant into the Containment. As a result of the LOCA, fuel cladding failure will increase to approximately 3% as indicated by both the Containment High Range Monitors and the RCS Sample Line 2TCD-19 (if Chemistry has aligned the RCS for sampling).

When the Containment Spray Actuation signal occurs, the "B" Containment Spray Pump will run for 5 minutes then fail. An electrical (and possibly mechanical) maintenance team will be dispatched by the OSC to investigate the problem and will determine that the motor needs to be replaced due to shorted motor windings. Expected time required to replace the motor is 8 hours.

## 2016 Emergency Preparedness Exercise (REX-16)

The "A" Containment Spray Pump will fail to start on the SIAS. An OSC repair team will be dispatched to evaluate the "A" Containment Spray Pump and will determine that the supply breaker for the pump has failed due to the breaker cam roller failing and the breaker should be able to be repaired within 2-4 hours.

With the LOCA occurring in the Containment Building and the failure of the Containment Spray pumps, pressure inside Containment will be increasing significantly.

When SIAS actuates, 2CV-3850-2 receives a closed signal and the cabling for 2CV-3850-2 faults in the CNTMT penetration (2WR-40-2). The 480V MCC breakers (2B-63E1 and 2B-63F2) do not open as designed. The 2B-63 bus will lock out as a result of the breakers not opening. The CNTMT penetration is damaged and is now releasing radiation in the Upper North Electrical Penetration Room.

Other impacts from the loss of 2B-63 bus are the loss of power to the service water valves for the green train containment coolers and the loss of power to the CNTMT coolers 2VSF-1C/D.

Area Radiation Monitors will begin to indicate increased radiation levels in the Auxiliary Building and the Penetration Room. The Super Particulate Iodine Noble Gas (SPING) Monitor 2RX-9835 on Unit 2 will begin to indicate a radiological release via the penetration ventilation system. The increased radiation levels in the plant and the start of a radiological release via SPING 2RX-9835 will be noted and evaluated by both Radiation Protection and Dose Assessment personnel and will be communicated to the Emergency Director in the EOF.

10:30 Based upon the RCS leakage, clad failure and radiological release in progress, the Emergency Director should declare a General Emergency classification in accordance with the following EAL:

**EAL FG1: Loss of ANY two barriers AND loss or potential loss of third barrier.**

The EOF will perform offsite notifications to Local, State and Federal agencies for the GENERAL EMERGENCY classification which will include specific Protective Action Recommendations (PARs) for the general public within the 10-mile Emergency Planning Zone (EPZ) as follows:

## PAR NO. 1

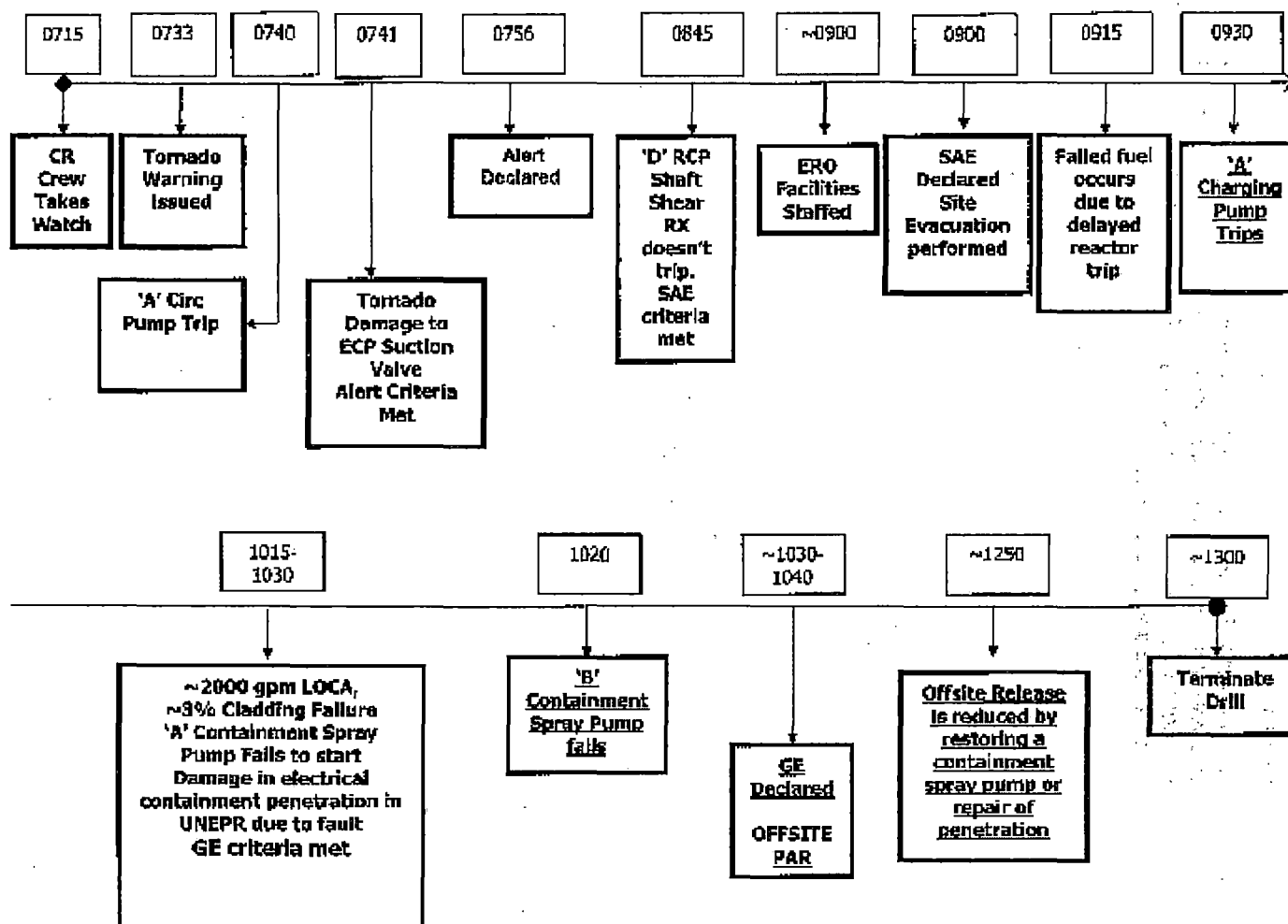
- Evacuate 2-mile radius and 2-5 miles downwind
- Remainder of the EPZ population to remain indoors

11:00 The Dose Assessment Team (DAT) in the EOF and the RP Offsite Monitoring Teams dispatched from the EOF will continue to monitor the radiological release and track the projected pathway of the radiological plume and will monitor and report offsite radiation levels back to the Offsite Team Coordinator (OTC) in the EOF. The Radiological Assessment Coordinator (RAC) in the EOF will maintain an update of offsite radiological conditions and continue to communicate this information to the Emergency Director and

## 2016 Emergency Preparedness Exercise (REX-16)

the Arkansas Department of Health staff personnel who will be collocated with ANO in the EOF.

12:30-13:15 After the Spray Pump is restarted or the containment penetration is repaired, termination/minimization will occur. Dose Assessment and Offsite Monitoring Teams will report that a reduction in dose readings offsite is occurring, the Lead Drill Controller will terminate the exercise (~ 1330).

**2016 NRC Exercise - Scenario Timeline**

### **DETAILED DESCRIPTION OF EVENTS**

This section contains a chronological listing of major scenario events and anticipated responses and is intended for the effective placement of controllers, evaluators, and observers. The anticipated responses listed in this section do not necessarily include all of the acceptable actions by players and should not be used as a basis for performance evaluations. Evaluations of player decisions should be based on appropriate implementation of the Emergency Plan and procedures.

#### **Initial Conditions**

- Unit 1
  - 100% power, no apparent problems
- Unit 2
  - The plant has been operating for the past 260 days at 100% power and is at the middle of core life.
  - The 2P-36B charging pump is out of service for an oil baffle repack. Work began at 06:00 this morning. The estimated completion of the PM is 10:30 today. The oil has been drained and the crew is exiting the plant with the drained oil.

## DETAILED SCENARIO

Note: All scenario times are approximate.

TIME	MESSAGE #			Comments
0645 - 0715	1	From	Simulator Booth Operator	<u>Turnover</u> The crew receives a shift turnover from the Simulator staff (Initial Conditions).
	2			
	3	To	Control Room Staff	The crew will assume the watch at ~0715.
0725	4	From	Simulator Booth Operator	NOAA Weather Radio broadcasts message for <b>Severe Thunderstorm Warning</b> for Pope County.
		To	Control Room Staff	Control Room announces Thunderstorm Warning to Plant Personnel and Training Center over the PA system. COPD-24, "Risk Assessment Guidelines" and 1203.025, "Natural Emergencies" will be reviewed for actions associated with a Severe Thunderstorm Warning.
0733	5	From	Simulator Booth Operator	NOAA Weather Radio broadcasts message for <b>Tornado Warning</b> for Pope County.
		To	Control Room Staff	Crew will take actions IAW OP-1203.025, "Natural Emergencies"
0738		From	Simulator Booth Operator	Security report that a tornado is south of the firing range with flying debris and that access to Flatwood drive is blocked. No damage to the Protected Area
		To	Control Room Staff	Acknowledge message

TIME	MESSAGE #		Comments	
0740	From		Event	A Circ Water Pump will trip due to water ingress into the motor terminal box.
	To		Expected Response	Crew will enter Loss of Condenser Vacuum AOP
0741	From	Simulator Booth Operator	Event	Security report of damage to the ECP suction valve and instrument panel and that the tornado is gone and the storm is dissipating (Alert Criteria met)
	To	Control Room Staff	Expected Response	Crew should assess EAL call criteria.
~0741	From	NLO Controller	Event	NLO investigation of 2-P3A, Circ Pump, breaker
	To	NLO	Expected Response	NLO responds to breaker deck and delivers the following information to the CR. "A" Circ Pump breaker is tripped. The Motor differential relay has dropped for "A" Circ. Pump."
~0741	From		Event	NLO / Electrician 2P-3A, Circ Pump Investigation
	To		Expected Response	NLO responds to breaker deck and delivers the following information to the CR. "There are black flash marks on the motor termination connections box on the side of the motor."

TIME	MESSAGE #		Comments		
~0745	11	From	NLO Controller	Event	NLO performs Standard Attachment 47
		To	NLO	Expected Response	Perform SA 47 and report results to the control room.
0758		From		Event	Alert Declaration.
		To		Expected Response	<p>The Shift Manager will declare an <b>Alert</b> based on the following Emergency Action Level (EAL):</p> <p><u>EAL HA6 – Natural or destructive phenomena affecting VITAL AREAS:</u></p> <p>2. Tornado striking or winds &gt; 67 mph (2 minute average) resulting in VISIBLE DAMAGE to the Ultimate Heat Sink (Emergency Cooling Pond).</p> <p>The Shift Manager will direct the Control Room Communicator to notify the ERO and Plant Management of the Alert classification event.</p> <p>The Shift Manager will direct the Control Room Communicator to notify offsite authorities of the Alert declaration.</p> <p>State and local authorities will be advised that there are no protective actions recommended for the general public at this time.</p>
Variable	1C	From	Lead Drill Controller	Event	<p><u>Contingency Message</u></p> <p>If the Shift Manager has not yet declared the <b>Alert</b> within 15 minutes of the EAL criteria being met, issue this message.</p>
		To	Shift Manager	Expected Response	Declare an Alert emergency classification.



TIME	MESSAGE #		Comments	
-0750	12	From I&C Controller	Event	I&C Investigation of ECP damage
		To I&C Tech	Expected Response	Report findings
	14	From NLO Controller	Event	NLO investigation of ECP suction valve area
		To NLO	Expected Response	Report findings
Variable After ERO activation	13	From Dose Assessment Controller	Event	Dose Assessment Team obtains current weather forecast.
		To Dose Assessment Team	Expected Response	Controller provides the drill weather forecast to the Dose Assessment Team when an actual forecast has been obtained using Procedure 1904.002, "Offsite Dose Projections".
0845	15	From	Event	Vibration alarm received on D Reactor Coolant Pump. Vibrations increase rapidly and result in a 2P-32D shaft shear (coupling failure)  The automatic trip of the reactor does not actuate. The RPS manual trip of the reactor does not function, DSS does not function and the reactor trip will have to be performed in the Control Room by de-energizing 480v buses 2B-7 and 2B-8. (SAE criteria met)
		To	Expected Response	Crew will open the feeder breakers for 2B-7 and 2B-8 to trip the reactor.

TIME	MESSAGE #		Comments	
0900	From	EOF/TSC/ Communicator Controller	Event	<b>SAE Declaration.</b>
	To	ED EOF Offsite Communicator EPM	Expected Response	<p>The Shift Manager will declare an SAE based on the following Emergency Action Level (EAL):</p> <p><u>EAL 553: 1.a</u> - An automatic trip failed to shutdown the reactor <u>AND</u> <u>1.b</u> - Manual actions taken at panel C03 (Unit 1) or panels 2C03/2C14 (Unit 2) do not shutdown the reactor as indicated by reactor power &gt; 5%.</p> <p>The Shift Manager will direct the Control Room Communicator to notify the ERO and Plant Management of the SAE classification event.</p> <p>The Shift Manager will direct the Control Room Communicator to notify offsite authorities of the SAE declaration.</p> <p>State and local authorities will be advised that there are no protective actions recommended for the general public at this time.</p>
0900	From	Lead Drill Controller	Event	<b>Contingency Message</b>
	To	Shift Manager	Expected Response	<p>If the Shift Manager has not yet declared the SAE within 15 minutes of the EAL criteria being met, Issue this message.</p> <p>Declare an SAE emergency classification.</p>

TIME	MESSAGE #			Comments	
0900	16	From	TSC Lead Controller / Security Controller	Event	Initial Accountability
		To	EPM / Security Officer	Expected Response	Ensure EPM has mocked up forms. When initial accountability report is obtained, controller will remove those names that are exempt.
0900		From		Event	<b>Emergency Response Facilities Staffed</b> The TSC, OSC, and EOF should be staffed and operational with the EOF ED assuming ED&C from the U2 Shift Manager. The EOF, TSC and OSC are required to be staffed / operational within 60-90 minutes of the declaration of the ALERT emergency class. The JIC must be staffed / operational within 120 minutes of the Alert emergency class.
		To		Expected Response	
0915		From		Event	The Failed Fuel Iodine Radiation Monitor 2RITS-4806B in the U-2 Control Room will indicate 1.3E5 counts per minute (cpm). This value will indicate that fuel clad degradation is greater than Technical Specification allowable limits. If not already requested, the U-2 Control Room will request that Chemistry perform RCS sampling to determine RCS activity levels.
		To		Expected Response	
Variable	18	From	Evacuation Controller	Event	Release of evacuees back to normal work duties
		To	Drill Evacuees	Expected Response	Site personnel will evacuate to the west parking lot outside of the MACB. After accountability is completed, they can be released back into the plant

TIME	MESSAGE #			Comments	
~0930	17	From	TSC Lead Controller	Event	Initial Accountability complete
		To	Evacuation Controller	Expected Response	Inform the Evacuation Controller when accountability is complete and that evacuated personnel can return to their normal duties.
0930		From		Event	2P-36A charging pump trips due to a failed under-voltage relay.
		To		Expected Response	
Variable ~0930	20	From	NLO Controller	Event	'A' CHARGING PUMP breaker investigation
		To	NLO	Expected Response	If Control Room contacts an NLO to investigate A Charging Pump breaker report the following: "The breaker is closed and has local light indication, I see nothing wrong with the breaker" Pump is capable of remote start.

TIME	MESSAGE #			Comments	
Variable	22	From	I&C Controller	Event	I&C Investigation of A CHARGING PUMP
		To	I&C Tech	Expected Response	Implement corrective actions
Variable	21	From	Electrical Controller	Event	Electrical Repair team at 'A' Charging Pump Breaker
		To	Relay /Electrician	Expected Response	An assessment of the pump breaker will indicate that the relay must be replaced to restore the remote start capability of the pump. Pump is capable of remote start at the breaker
1015		From		Event	2000 gpm LOCA on D RCS Cold Leg
		To		Expected Response	Containment Hi Range Rad Monitors will trend up and Fuel Clad Failure will rise to 3%
~1015	23 50	From	Chemistry / RP Controller	Event	2TCD-19 rises to 1700 mR/hr
		To	Chemist / HP	Expected Response	Report this reading to the CR and ED
~1018	28	From	Maintenance Controller	Event	'A' Containment Spray Pump will fail to start on the SIAS actuation
		To	Repair team	Expected Response	Control Room will attempt to restart after 'B' spray pump fails. Pump will fail to start. Investigation will reveal that the breaker cam roller has failed and will need to be adjusted. Repair teams will be dispatched



TIME	MESSAGE #		Comments	
~1018	From		Event	During SIAS actuation, 2CV-3850-2 receives a closed signal and the cabling for 2CV-3850-2 faults in the CNTMT penetration (2WR-40-2). The 480V MCC breakers (2B-63E1 and 2B-63F2) do not open as designed. The 2B-63 bus will lock out as a result of the breakers not opening. The CNTMT penetration is damaged and is now releasing radiation in the Upper North Electrical Penetration Room. As a result of 2B-63 locking out, the service water valves for the green train containment coolers and the CNTMT coolers 2VSF-1C/D will lose power.
	To		Expected Response	Corrective actions developed/prioritized
~1020	From		Event	After SIAS actuation, the 'B' Spray pump will run for 5 minutes and then fail. An electrical (and possibly mechanical) maintenance team will be dispatched by the OSC to investigate the problem and will determine that the motor needs to be replaced due to shorted motor windings.
	To		Expected Response	Corrective actions developed/implemented.

Time	Message #		Comments	
	From	EOF Lead Controller	Event	GE Declaration
	To	Emergency Director	Expected Response	The ED will declare a GE based on the following EAL:  <b>EAL FG1 - Loss of ANY Two Barriers AND Loss or Potential Loss of Third Barrier</b>  The EOF ED will direct the EOF Communicator to notify offsite authorities. State and local authorities are advised of the following Protective Action Recommendation (PAR): <b>PAR NO. 1</b>  <ul style="list-style-type: none"> <li>• Evacuate 2-mile radius and 2-5 miles downwind</li> <li>• Remainder of the EPZ population to remain indoors</li> </ul>
~1030-1040	24			
	25			
Variable	From	Controller	Event	2B-63 investigation
	To	NLO/ Repair Team	Expected Response	Investigate and report findings to CR.
Variable	26			
	27			
Variable	From	Controller	Event	Investigation of UNEPR
	To	NLO/ Repair Team	Expected Response	Report findings
Variable	27			
	28			
Variable	From	Maintenance Controller	Event	OSC Repair team arrives at UNEPR
	To	Repair Team	Expected Response	Investigate the containment breach. Ensure that radiological controls for drill conditions are followed. Determine if patching the breach is feasible and report findings of investigation
Variable	From	NLO Controller	Event	NLO racking up 4160v breaker in breaker lab after repair of cam roller to simulate repair of Spray pump breaker and its return to service
	To	NLO	Expected Response	

TIME	MESSAGE #			Comments
~1045-1055	3C	From	EOF Lead Controller	<u>Contingency Message</u> If the EOF ED has not yet declared the GE classification within 15 minutes of meeting the EAL criteria, issue this message.
		To	ED	Expected Response Declare a <b>GENERAL EMERGENCY</b> classification.
Variable	3D	From	NLO Controllers	Event Investigation of 'B' Containment Spray Pump
		To	NLOs	Expected Response Testing of motor with required equipment.
Variable	31	From	Electrical Controller	Event 2B-63 repair
		To	Electrical Repair Team	Expected Response Develop and implement corrective actions.
1000-1400	2B	From	Field Team Controllers	Event Field Team Controllers will provide offsite radiological data to the Offsite Monitoring Teams per Scenario Book, Appendix E data.
		To	Offsite Monitoring Team Personnel	Expected Response Offsite Monitoring Teams will begin to detect radiological measurements offsite and will provide radiological information to the Offsite Team Coordinator (OTC) located in the EOF. The OTC will communicate field team radiological data to the Dose Assessment Team in the EOF.

TIME	MESSAGE #			Comments	
Variable	4C	From	Lead Drill Controller	Event	Crew attempting to perform a 1 hour shutdown
		To	Control Room Staff	Expected Response	Direct the crew to perform a 2 hour shutdown
1300 - 1315	32	From	Drill Lead Controller	Event	"The drill is terminated".
		To	All Facilities	Expected Response	After a short break, facility critiques will begin in each of the Emergency Response Facilities (ERFs).

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