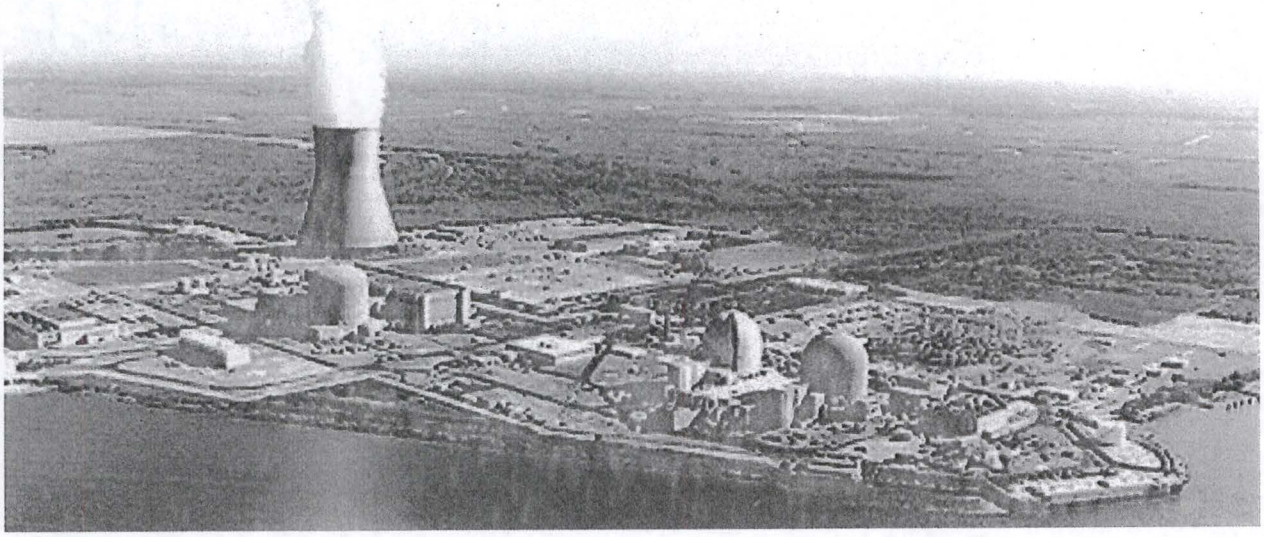

Salem and Hope Creek Nuclear Generating Stations After Action Report

Exercise Date – May 22, 2018

Radiological Emergency Preparedness (REP) Program

FEMA

Published July 24, 2018

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Salem and Hope Creek Nuclear Generating Stations
After Action Report

Published July 24, 2018

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EXECUTIVE SUMMARY

On May 22, 2018, a full-scale Plume Exposure Pathway exercise was demonstrated and evaluated for the Delaware portion of the 10 Mile Emergency Planning Zone (EPZ) around the Salem and Hope Creek Generating Stations (SHCNGS) by the Federal Emergency Management Agency (FEMA), Region III. The station is located in New Jersey, FEMA Region 2 evaluated the portion of the exercise conducted in New Jersey. The previous full-scale exercise at this site was evaluated on May 17, 2016.

This report includes the Out-of-Sequence demonstrations that were conducted on May 11, May 23, and May 24, 2018. The purpose of the Exercise and Out-of-Sequence demonstrations was to assess the capabilities of the State, counties, and local jurisdictions to implement Radiological Emergency Plans and Procedures to protect the property and lives of residents and transients in the event of an emergency at SHCNGS. The findings in this report are based on the evaluations of the Federal evaluation team, with final determinations made by the FEMA, Region III Regional Assistance Committee (RAC) Chairperson, and approved by FEMA Headquarters. These reports are provided to the Nuclear Regulatory Commission (NRC) and participating States. State and local governments utilize the findings contained in these reports for the purposes of planning, training, and improving emergency preparedness.

The evaluation of this exercise determined that there were no Level 1 Finding identified during the exercise. There was one Level 2 Finding identified, which was corrected on June 5, 2018. In addition, there were no Planning Issues identified.

A Level 1 Finding is defined by the FEMA Radiological Emergency Preparedness Program Manual as follows: "An observed or identified inadequacy of organizational performance in an exercise that could cause a determination 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." A Level 2 Finding 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." Finally, a Planning Issue is: "An observed or identified inadequacy in the ORO's emergency plan/implementing procedures, rather than that of the ORO's performance."

FEMA wishes to acknowledge the efforts of many individuals in the State of Delaware and the risk jurisdictions of Kent County and New Castle County. 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 was evident during the exercise.

SECTION 1: EXERCISE OVERVIEW

1.1 Exercise Details

Exercise Name
Salem/Hope Creek Nuclear Generating Stations Plume Excise

Type of Exercise
Plume

Exercise Date
May 22, 2018

Program
Department of Homeland Security/FEMA Radiological Emergency Preparedness Program

Scenario Type
Plume Exposure Pathway

1.2 Exercise Planning Team Leadership

FEDERAL POC(s):

Federal POC(s):

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1.3 Participating Organizations

Agencies and organizations of the following jurisdictions participated in the Salem and Hope Creek Nuclear Generating Stations exercise:

State Jurisdictions

1.3.1 State of Delaware

1.3.1.1 State EOC

- Delaware Emergency Management Agency (DEMA)
- Delaware National Guard (DNG)
- Delaware Department of Agriculture (DDA)
- Delaware Department of Transportation (DelDOT)
- Delaware Department of Education (DOE)
- Delaware Department of Corrections (DOC)
- Delaware Division of Energy
- Delaware Department of Health and Social Services (DHSS)
- Delaware Division of Public Health (DPH)
- Delaware Department of Natural Resources and Environmental Control (DNREC)
- Delaware Transit Corporation (DTC)
- Delaware Volunteer Organizations Active in Disasters (DEVOAD)
- Delaware State Police (DSP)
- Delaware Division of Government Support Services (GSS)
- U.S. Army Corps of Engineers (USACE)
- U.S. Coast Guard (USCG)
- Radio Amateur Civil Emergency Services (RACES)
- DELMARVA Power
- American Red Cross (ARC)
- Delaware Division of Alcohol and Tobacco Enforcement (DATE)
- Delaware Fire School (DFS)

1.3.1.2 Emergency New Center (Woodstown, NJ)

- Delaware Emergency Management Agency Public Information Staff
- Delaware National Guard

1.3.1.3 State Technical Assessment Center (TAC)

- Delaware Division of Public Health (DPH)
- Delaware Department of Natural Resources and Environmental Control (DNREC)
- Delaware Emergency Management Agency (DEMA)
- Delaware National Guard (DNG)
- Public Services Electric and Gas (PSE&G)

1.3.1.4 State Field Monitoring Team 1

- Delaware National Guard

1.3.1.5 State Field Monitoring Team 2

- Delaware National Guard

1.3.1.6 Traffic and Access Control Points (SEOC and parking lot)

- Delaware State Police
- Delaware Department of Transportation

1.3.2 Risk Jurisdictions

1.3.2.1 Kent County EOC

- Kent County Department of Public Safety, Division of Emergency Management

1.3.2.2 New Castle County EOC

- New Castle County Office of Emergency Management
- New Castle County Division of Special Services
- New Castle County Division of Community Services
- Delaware Division of Public Health
- New Castle County Police Department
- New Castle County Department of Emergency Communications
- Christiana Area Radio Emergency Services/RACES
- New Castle County Emergency Medical Services

1.3.3.3 Transportation Dependent Evaluation (Blackbird Weigh Station)

- Delaware Emergency Management Agency (DEMA)
- Delaware Department of Transportation (DelDOT)
- Delaware Transit Corporation (DTC)
- New Castle County Emergency Management Agency

1.3.5 Out of Sequence Exercise May 11, 2018 Medical Services (MS-1) Drill

Private Organizations

- Christiana Hospital
- New Castle County Paramedics
- Odessa Fire Company
- New Castle County Emergency Management Agency

SECTION 2: EXERCISE DESIGN SUMMARY

2.1 Exercise Purpose and Design

On December 7, 1979, the President directed the Federal Emergency Management Agency (FEMA) to assume the lead responsibility for all off-site nuclear planning and response. FEMA's activities were 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.

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 government participation in joint exercises with licensees. FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

A. Taking the lead in offsite emergency planning and in the review and evaluation of Radiological Emergency Response Plans (RERPs) and procedures developed by State and local governments;

B. Determining whether such plans and procedures can be implemented on the basis of observation and evaluation of exercises conducted by State and local governments;

C. Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated December 7, 2015 (Federal Register, Vol. 81, No. 57, March 24, 2016) and;

D. 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. Department of Transportation,
- U.S. Department of Agriculture,
- U.S. Department of the Interior, and
- U.S. Food and Drug Administration

Representatives of these agencies serve on the Region III Regional Assistance Committee (RAC), which is chaired by FEMA. A REP Plume Exposure Pathway Exercise was conducted

on May 22, 2018, to assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving Salem and Hope Creek Nuclear Generating Stations (SHCNGS). The purpose of this exercise report is to present the exercise results and findings on the performance of the off-site response organizations (OROs) during a simulated radiological emergency. The findings presented in this report are based on the evaluations of the Federal evaluation team, with final determinations made by the FEMA Region III RAC Chairperson and approved by FEMA Headquarters.

These reports are provided to the NRC and participating States. State and local governments utilize the findings contained in these reports for the purposes of planning, training, and improving emergency response capabilities.

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

- 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;

- Radiological Emergency Preparedness Program Manual, January 2016;

Section 1, of this report, entitled "Exercise Overview," presents the "Exercise Planning Team" and the "Participating Organizations."

Section 2, of this report, entitled "Exercise Design Summary", and includes the "Exercise Purpose and Design", "Exercise Objectives, Capabilities, and Activities", and the "Scenario Summary".

Section 3, of this report, entitled "Analysis of Capabilities", presents detailed "Exercise Evaluation and Results" information on the demonstration for each jurisdiction or functional entity evaluated in a jurisdiction-based, issue-only format (Criteria Evaluation Summaries).

Section 4, of this report, entitled "Demonstrated Strengths", presents an observed action, behavior, procedure, and/or practice that is worthy of special notice and positive recognition.

Section 5, of this report, entitled "Conclusion" of the exercise demonstration Exercise Evaluation and Results.

The appendices, present supplementary information:

Appendix A – Exercise Timeline. A table that depicts the times when an event or notifications were noted at participating agencies and locations.

Appendix B – Exercise Evaluators and Team leaders. A table listing the evaluator names, organizations, and responsibilities of the evaluators and management.

Appendix C – Acronyms and Abbreviations. An alphabetized table defining the formal names used in this report.

Appendix D – Method of Operation and Extent of Play. The purpose of this appendix is to establish those exercise evaluation areas and corresponding Extent-of-Play parameters expected to be demonstrated during the SHCNGS 2018 Exercise to be conducted on May 22, 2018.

Emergency Planning Zone Description:

The SHCNGS site is located on the east bank of the Delaware River in Lower Alloways Creek Township, Salem County, New Jersey, about 20 miles south of Wilmington, Delaware. The 700 acre site is on the southern end of Artificial Island, a 3-mile-long, 1-mile-wide, man-made peninsula. The peninsula is connected to the mainland by a strip of tideland formed by hydraulic fill from dredging operations on the Delaware River. The tideland was constructed by the U.S. Army Corps of Engineers. The coordinates of the site are latitude 39°27'46" north and longitude 75°32'08" west. Two pressurized water reactors (Salem) and one boiling water reactor (Hope Creek) are located on the island. Each Salem unit generates a maximum output of 1,106 megawatts (MW); Unit 1 commenced commercial operations in June 1977 and Unit 2 in October 1981. The Hope Creek Unit, which generates a maximum output of 1,031 MW, became operational in December 1986.

The site lies on the low coastal plain of New Jersey, surrounded by extensive marshlands and meadowlands. The land within the two Delaware counties (New Castle and Kent) near the site is either undeveloped (48 percent) or used for agricultural purposes (42 percent). Major farm products within a 25-mile radius of the site include vegetables, poultry, dairy products, and indigenous field crops.

The nearest major population center (more than 25,000 people) is Wilmington, Delaware, which has a population of 71,529 and lies 20 miles north of SHCNGS. The maximum population distribution in Delaware, including residents and transients, is 0 within the 2-mile EPZ, 850 within the 5-mile EPZ, and 24,976 within the 10-mile EPZ. There are 37 early warning sirens in the Delaware portion of the EPZ.

The Ingestion Planning Zone (IPZ) is approximately 7,850 square miles in area, which is equivalent to a 50-mile radius around the plant site. The States of Delaware, Maryland, and New Jersey, and the Commonwealth of Pennsylvania have jurisdictions within the IPZ. The largest city within the IPZ is Philadelphia, Pennsylvania, with a population of 1,526,006, about 46 miles from the plant site.

2.2 Exercise Objectives, Capabilities and Activities

The objective of the 2018 Salem and Hope Creek Nuclear Generating Stations (SHCNGS) Plume Exercise was to demonstrate the capabilities of State and local emergency management agencies to mobilize emergency management and emergency response personnel, to activate emergency operations centers and support facilities, and to protect the health, lives, and property of the citizens residing within the 10 mile Emergency Planning Zone (EPZ).

To demonstrate the ability to communicate between multiple levels of government and provide timely, accurate, and sufficiently detailed information to the public, the emergency management agencies use a variety of resources, including radios, telephones, the Internet, the media, the Emergency Alert System (EAS), and the utility Alert and Notification System (ANS) Sirens. All of these communication resources were employed and evaluated. The EAS and ANS were simulated and media information was prepared but not actually released.

An essential capability of the Radiological Emergency Preparedness Program (REPP) is to evacuate, monitor and decontaminate, if necessary, and provide temporary care and shelter to displaced residents from the EPZ. The ability of the risk/support counties to mobilize personnel and resources to establish reception, monitoring and decontamination, and mass care centers was demonstrated.

The protection of school children is also a vital mission of the REPP. School districts and selected schools demonstrated the capability to communicate and coordinate the collection, evacuation, transportation and shelter of students attending schools within the EPZ.

2.3 Scenario Summary

DHS/FEMA Region III, SALEM AND HOPE CREEK 2018 PLUME EXPOSURE PATHWAY EXERCISE- May 22, 2018

The exercise begins at 1545 with Salem Units 1 & 2 and Hope Creek operating at 100% power. An earthquake is felt by operators in the control room and an Alert Emergency Classification Level (ECL) is declared. (Although this event would result in Hope Creek and Salem Unit 1 also declaring an Alert, for exercise demonstration, only Salem Unit 2 is considered). Current wind direction is impacting Delaware. Notifications are made to State and County officials in Delaware and New Jersey.

Officials decide to shutdown Salem Unit 2. A fire ignites in the Turbine Building. While efforts are underway to extinguish the fire, an earthquake aftershock occurs that causes a Reactor Coolant System (RCS) leak. There is a measureable radioactive release. Plant officials declare a Site Area Emergency and notify officials in Delaware and New Jersey. State emergency management officials take appropriate actions in response to the incident.

A short time later, another aftershock occurs that causes more damage and the RCS leak increases. The loss of coolant will damage fuel rods and radiation levels in containment increase sharply above normal levels. Conditions are met for a General Emergency. Notifications are made to Delaware and New Jersey and protective actions are made for the public and emergency workers. Later, a wind shift occurs which impacts the State of New Jersey,

At 2300 the exercise is terminated.

SECTION 3: ANALYSIS OF CAPABILITIES

3.1 Exercise Evaluation and Results

Contained in this section are the results and findings of the evaluations of all locations that participated in the May 22, 2018, biennial Plume Exposure Pathway Emergency Planning Zone Radiological Emergency Preparedness (REP) Exercise. This report also includes the Out-of-Sequence demonstrations that were conducted on May 11, May 23, and May 24, 2018. The exercise was conducted to demonstrate the ability of the Offsite Response Organizations of State and local government to protect the health and safety of the public in the 10 mile Emergency Planning Zone surrounding the Salem and Hope Creek Nuclear Generating Stations.

There were no Level 1 Findings identified during the exercise. There was one Level 2 Finding identified, which was corrected on June 5, 2018. In addition, there were no Planning Issues identified.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of the Exercise Evaluation Area Criteria contained in the REP Exercise Evaluation Methodology. Detailed information on the exercise evaluation area criteria is contained in this report.

3.2 Summary Results of Exercise Evaluation

The matrix presented in Table 3.1, on the following pages, presents the status of the exercise evaluation area criteria from the REP Program Manual that were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. All evaluated criteria met the required demonstration(s) with the exception of one Level 2 Finding that was subsequently re-demonstrated. Exercise evaluation area criteria are listed by number and the demonstration status of the criteria is indicated by the use of the following letters:

(D) Demonstrated Strength: an observed action, behavior, procedure, and/or practice that is worthy of special notice and positive recognition, Note: this is already a common practice that many Regions employ when identifying demonstrated strengths.

(L1) Level 1 Finding: an observed or identified inadequacy or organizational performance in an exercise that could cause a determination that offsite emergency preparedness is not adequate to provide reasonable assurance that appropriate protective measures can be taken in event of a radiological emergency to protect the health and safety of the public living in the vicinity of a Nuclear Power Plant (NPP).

(L2) Level 2 Finding: an observed or identified inadequacy of organizational performance in an exercise that is not considered, by itself, to adversely impact public health and safety.

(P) Plan Issue: an observed or identified inadequacy of organizational in the offsite response organizations' (OROs) emergency plan/implementation procedures, rather than that of the ORO"s performance.

(N) Not Demonstrated: term applied to the status of a REP exercise Evaluation Area Criterion indicating that the ORO, for a justifiable reason, did not demonstrate the Evaluation Area Criterion, as required in the extent-of-play agreement or at the two-year or eight-year interval required in the FEMA REP Program Manual.

(M) Met: status of a REP exercise Evaluation Area Criterion indicating that the participating ORO demonstrated all demonstration criteria for the Evaluation Area Criterion to the level required in the extent-of-play agreement with no Findings assessed in the current exercise and no unresolved prior Findings.

Tables 3.1 - Summary of Exercise Evaluation

Table 3.1 – Exercise Evaluation – Criteria Met

Date: 5/22/2018 Site: Salem and Hope Creek Nuclear Generating Stations		
Location	Criteria Title	Criteria
DEMAEOC	Mobilization	1a1
DEMAEOC	Direction and Control	1c1
DEMAEOC	Communications	1d1
DEMAEOC	Equipment and Supplies to Support Operations	1e1
DEMAEOC	PAD decision-making process and coordination for the General Public	2b2
DEMAEOC	PADs for disabilities & access/functional needs people	2c1
DEMAEOC	Implementation of PADs for disabilities & access/functional needs people	3c1
DEMAEOC	Implementation of Emergency Worker Exposure Control	3a1
DEMAEOC	Implementation of KI Decision for Institutionalized Individuals and the General Public	3b1
DEMAEOC	Implementation of PADs for Schools	3c2
DEMAEOC	Impediments to Evacuation	3d2
DEMAEOC	Activation of the Prompt Alert & Notification System	5a1
DEMAEOC	Emergency Information & Instructions for the Public/Media	5b1
SHCENC(NJ)	Mobilization	1a1
SHCENC(NJ)	Communications	1d1
SHCENC(NJ)	Equipment and Supplies to Support Operations	1e1
SHCENC(NJ)	Emergency Information & Instructions for the Public/Media	5b1
DE EOC TAC	Mobilization	1a1
DE EOC TAC	Direction and Control 1	1c1
DE EOC TAC	Communications	1d1
DE EOC TAC	Equipment and Supplies to Support Operations	1e1
DE EOC TAC	Emergency Worker Exposure Control Decisions	2a1
DE EOC TAC	Accident Assessment and PARs for the Emergency Event	2b1
DE EOC TAC	Field Team Management	4a2
SFMT # 1	Mobilization	1a1
SFMT # 1	Communications	1d1
SFMT # 1	Equipment and Supplies to Support Operations	1e1
SFMT # 1	Implementation of Emergency Worker Exposure Control	3a1
SFMT # 1	Plume Phase Field Measurement, Handling, & Analyses	4a3
SFMT # 2	Mobilization	1a1
SFMT # 2	Communications	1d1
SFMT # 2	Equipment and Supplies to Support Operations	1e1
SFMT # 2	Implementation of Emergency Worker Exposure Control	3a1
SFMT # 2	Plume Phase Field Measurement, Handling, & Analyses	4a3
STAC/DELDOT/DSP	Communications	1d1
STAC/DELDOT/DSP	Equipment and Supplies to Support Operations	1e1
STAC/DELDOT/DSP	Implementation of Emergency Worker Exposure Control	3a1
STAC/DELDOT/DSP	Implementation of Traffic & Access Control	3d1
KCoEOC	Mobilization	1a1
KCoEOC	Direction and Control	1c1
KCoEOC	Communications	1d1
KCoEOC	Equipment and Supplies to Support Operations	1e1

KCoEOC	Implementation of Emergency Worker Exposure Control	3a1
KCoEOC	Implementation of KI Decision for Institutionalized Individuals and the General Public	3b1
KCoEOC	Implementation of PADs for disabilities & access/functional needs people	3c1
KCoEOC	Implementation of Traffic and Access Control	3d1
NCCEOC	Mobilization	1a1
NCCEOC	Direction and Control	1c1
NCCEOC	Communications	1d1
NCCEOC	Equipment and Supplies to Support Operations	1e1
NCCEOC	Implementation of Emergency Worker Exposure Control	3a1
NCCEOC	Implementation of KI Decision for Institutionalized Individuals and the General Public	3b1
NCCEOC	Implementation of PADs for disabilities & access/functional needs people	3c1
NCCEOC	Implementation of Traffic and Access Control	3d1
Locations evaluated Out of Sequence on May 23, 2018		
NCTDBTWS	Communications	1d1
NCTDBTWS	Equipment and Supplies to Support Operations	1e1
NCTDBTWS	Implementation of Emergency Worker Exposure Control	3a1
NCTDBTWS	Implementation of PADs for disabilities & access/functional needs people	3c1
Locations evaluated Out of Sequence on May 24, 2018		
NCSRCRCGPMD	Facilities	1b1
NCSRCRCGPMD	Equipment and Supplies to Support Operations	1e1
NCSRCRCGPMD	Implementation of Emergency Worker Exposure Control	3a1
NCSRCRCGPMD	Implementation of KI PAD for Institutionalized Individuals/Public	3b1
NCSRCRCGPMD	Reception Center Operations	6a1
Locations evaluated Out of Sequence on May 11, 2018 (MS-1) Drill		
Christiana Hospital	Equipment and Supplies to Support Operations	1e1
Christiana Hospital	Implementation of Emergency Worker Exposure Control	3a1
Christiana Hospital	Transportation/Treatment of Contaminated Injured Individuals	6d1
NCOFC EMS	Equipment and Supplies to Support Operations	1e1
NCOFC EMS	Implementation of Emergency Worker Exposure Control	3a1
NCOFC EMS	Transportation/Treatment of Contaminated Injured Individuals	6d1

3.3 Criteria Evaluation Summaries

3.3.1 State Jurisdictions

3.3.1.1 State of Delaware Emergency Operations Center

In summary, the status of DHS/FEMA criteria for the State jurisdiction is as follows:

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.b.2, 2.c.1, 3.a.1, 3.b.1, 3.c.1, 3.c.2, 3.d.2, 5.a.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.1.2 Emergency News Center (Woodstown, NJ)

In summary, the status of DHS/FEMA criteria for the Delaware staff at this jurisdiction is as follows:

a. MET: 1.a.1, 1.d.1, 1.e.1, 5.b.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.1.3 Technical Assessment Center

In summary, the status of DHS/FEMA criteria for the State jurisdiction is as follows:

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 2.a.1, 2.b.1, 4.a.2

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.1.4 State Field Monitoring Team 1

In summary, the status of DHS/FEMA criteria for the State jurisdiction is as follows:
a. MET: 1.a.1, 1.d.1, 3.a.1, 4.a.3

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: ONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

ISSUE FOR CRITERION: 1.e.1

CONDITION: An Inventory of silver zeolite cartridges identified that the silver zeolite cartridges were RADeCO silver zeolite cartridges with an expiration date of May 2016. There was no documentation available from the manufacturer verifying the efficiency of the expired silver zeolite cartridges.

POSSIBLE CAUSE: Due to an oversight during inventory control, there were no RADeCO silver zeolite cartridges available with a valid expiration date.

REFERENCE: (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) and Standard Operating Procedure (SOP) 306.

EFFECT: Inaccurate determination of iodine concentration from the air sample due to a potential lower efficiency for the silver zeolite cartridge to absorb radioactive iodine.

RECOMMENDATION: Replace the expired silver zeolite cartridges with silver zeolite cartridges that are not expired or provide documentation available from the manufacturer (RADeCO) verifying the efficiency of the expired silver zeolite cartridges.

CORRECTED ACTION: On June 5, 2018, the Delaware Emergency Management Agency e-mailed a picture of recently purchased silver zeolite cartridges for the Air Team Filters and a copy of the invoice that documents their purchase, to the FEMA Region RAC Chair. Upon receipt of these pictures and invoice this finding has been

closed. Also, DEMA added the filters to the equipment database and the filters will be listed under the equipment items as part of the Annual Letter of Certification. The filters have a shelf life of ten-years.

3.3.1.5 State Field Monitoring Team 2

In summary, the status of DHS/FEMA criteria for the State jurisdiction is as follows:

a. MET: 1.a.1, 1.d.1, 1.e.1, 3.a.1, 4.a.3

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES – RESOLVED: NONE

f. PRIOR ISSUES – UNRESOLVED: NONE

3.3.1.6 Traffic and Access Control (SEOC and parking lot)

In summary, the status of DHS/FEMA criteria for the State jurisdiction is as follows:

a. MET: 1.d.1, 1.e.1, 3.a.1, 3.d.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES – RESOLVED: NONE

f. PRIOR ISSUES – UNRESOLVED: NONE

3.3.2 Risk Jurisdictions

3.3.2.1 Kent County Emergency Operations Center

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

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.2.2 New Castle County Emergency Operations Center

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

a. MET: 1.a.1, 1.c.1, 1.d.1, 1.e.1, 3.a.1, 3.b.1, 3.c.1, 3.d.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.2.5 Transportation Dependent evaluation at Blackbird Truck Weigh Station - New Castle County

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

a. MET: 1.d.1, 1.e.1, 3.a.1, 3.c.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.2.6 New Castle County Smyrna Readiness Center/Reception Center and General Public Monitoring Decontamination

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

a. MET: 1.b.1, 1.e.1, 3.a.1, 3.b.1, 6.a.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.2.7 New Castle County, Odessa EMS, Medical Services (MS-1) Drill

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

a. MET: 1.e.1, 3.a.1, 6.d.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

3.3.3 Private Jurisdictions

3.3.3.1 Christiana Hospital MS-1

In summary, the status of DHS/FEMA criteria for the Private jurisdiction is as follows:

a. MET: 1.e.1, 3.a.1, 6.d.1

b. LEVEL 1 FINDINGS: NONE

c. LEVEL 2 FINDINGS: NONE

d. PLAN ISSUES: NONE

e. PRIOR ISSUES: RESOLVED: NONE

f. PRIOR ISSUES: UNRESOLVED: NONE

SECTION 4: DEMONSTRATED STRENGTHS

State EOC

To utilize the opportunity for training, the role of the Emergency Management Director (EMD) during the exercise was taken on by the Deputy EMD. The Deputy EMD did an outstanding job, was very thorough and extremely knowledgeable.

Technical Assessment Center

Flexible monitor display capabilities and the arrangement of the Technical Assessment Center facilitated collaborative effort.

Kent County EOC

The Kent County EOC has a small operations area where staff sit close together. Because most EOC staff have multiple devices as a method of communication and there is limited work space, they have installed a Multi-Device Charge Station with eight various connections. This not only frees up desk space but eliminates multiple devices linked to each computer used by the EOC staff during an event.

Through DEMA, Kent County Department of Public Safety has issued all Kent County Paramedics and Delaware State Police Troopers a radiological emergency worker self-protection kit. This kit contains all the required items to ensure the safety of emergency workers without having to recall units from the field and individually instructing them on the spot. This provides the emergency worker with the confidence needed to perform their jobs while confident they have the ability to detect when radiation is present. Each Kent County paramedic and Delaware State Police Trooper receive training annually on radiological safety during an event at Salem/Hope Creek Nuclear Generating Stations and specific training annually on the special equipment utilized during a radiological event where radiation might be present. This training was in verified with the Annual Letter of Certification from DEMA.

Transportation Dependent - Blackbird Truck Weigh Station

The Delaware Department of Transportation (DelDOT)/Transit Corp (DART) personnel located at the Blackbird Truck Weigh Station Transportation Dependent Staging Area provided an exceptional demonstration of their procedures for safely transporting access/functional needs and other transportation dependent citizens from a potentially dangerous area within the Emergency Planning Zone (EPZ) to a designated Reception Center. The organized process of preparing and

protecting bus drivers, communicating emergency information to transportation dependent citizens, and providing the necessary functional needs equipment and personnel to safety and comfortably move citizens to safety is a best practice for other jurisdictions to emulate.

SECTION 5: CONCLUSION

The State of Delaware and local jurisdictions, except where noted in this report demonstrated knowledge of their Radiological Emergency Response Plans (RERP) and procedures were adequately implemented during the Salem and Hope Creek Nuclear Generating Stations Plume Exercise evaluated on May 22, 2018.

There were no Level 1 Findings identified during the exercise. There was one Level 2 Finding identified, which was corrected on June 5, 2018. In addition, there were no Planning Issues identified.

"Based on the results of the exercise and a review of the offsite radiological emergency response plans and procedures submitted, FEMA Region III has determined they are adequate (meet the planning and preparedness standards of NUREG-0654/FEMA-REP-1, Revision 1, November 1980, as referenced in 44 CFR 350.5) and there is reasonable assurance they can be implemented, as demonstrated during this exercise."

An After Action Implementation Plan (IP) will not be developed as part of this report.

APPENDIX A: EXERCISE TIMELINE

This section contains the Exercise Timeline. A table that depicts the times when an event or notifications were noted at participating agencies and locations.

ECL Timeline Table: May 22, 2018 Salem and Hope Creek Nuclear Generating Stations

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received at the Listed Location			
		Delaware SEOC	Emergency News Center Woodstown, NJ	Kent County	New Castle County
NOUE					
Alert	1617	1644	1715	1708	1650
SAE	1813	1827	1841	1833	1834
GE	2005	2017	2013	2028	2030
Start of Simulated Radiation Release	1813	1827	1841	1833	1850
Termination of Simulated Radiation Release	2030	2030	2030	2030	2030
Facility Declared Operational		1710	1730	1727	1710
Governor's Declaration of State of Emergency		2025	2034	1848	1940
Exercise Terminated		2230		2159	2210
First Precautionary Actions Describe: Evacuate DAFM All after schools activities cancelled All livestock water and stored feed River Alerting and clearing Monitor and prepare all ERPAs		1859	1926	1859	1859

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received at the Listed Location			
		Delaware SEOC	Emergency News Center Woodstown, NJ	Kent County	New Castle County
Siren Sounding		1914	1914	1914	1914
EAS Broadcast time		1919	1919	1919	1919
Additional Precautionary Actions : Describe Evacuate St. Andrews private school		N/A	1926	N/A	1914
Second Protective Action Decision: Describe: Evacuate ERPA A and 0-5mi Monitor and prepare ERPA B+C		2102	2120	2102	2102
Siren Sounding		2117	2117	2117	2117
EAS Message Broadcast		2122	2122	2122	2122
KI Decision: Emergency Workers		2049	2049	2049	2049
KI Decision: General Public		2049	2049	2049	2049

APPENDIX B: EXERCISE EVALUATORS AND TEAM LEADERS

EXERCISE EVALUATORS AND TEAM LEADERS
2018 Salem/Hope Creek Exercise

The following is a list of the personnel and criteria for the Salem/Hope Creek Nuclear Generating Stations REP Plume exercise to be conducted on May 22, 2018.

Out-of-Sequence demonstrations will be conducted on May 11, May 22, May 23, and May 24, 2018, and evaluated by FEMA staff. Evaluator Team Leader (TL) and Technical Team Leader (TTL) are indicated by the letters before their name. The organization each evaluator represents is indicated by the following abbreviations:

FEMA	Federal Emergency Management Agency
EPA	Environmental Protection Agency

OBSERVERS-AT-LARGE	NAME	AGENCY
RAC Chairman	Thomas Scardino	FEMA R3
Project Officer	Tina Thomas/ Nick Buls*	FEMA R3

1. Biennial Plume Exercise – May 22, 2018

EVALUATION SITE	EVALUATOR	CRITERIA	AGENCY
A. STATE OF DELAWARE			
State Emergency Operations Center	**Lee Torres (TL)**	1c1	FEMA R3
	David Ortman	2b2,2c1,3a1,3b1	FEMA R5
	Kim Alahmadi	3c1,3c2,3d2,5a1	FEMA R5
	Kerry Holmes	1a1,1d1,1e1,5b1	FEMA R3
	Hana Beckerle (OJT)	2b2,2c1,3a1,3b1	VAEMA
Emergency News Center (Woodstown, NJ)	**Chris Nemcheck**	1a1, 1d1, 1e1, 5b1	FEMA R3

EVALUATION SITE	EVALUATOR	CRITERIA	AGENCY
	(1 of 2)		
Technical Assessment Center (TAC-EOC)	**Mike Howe (Technical TL)**	1a1,1c1,1d1,1e1,	FEMA HQ
	Cristina Schulingkamp	2a1,2b1,4a2	EPA
State Field Monitoring Team 1	**Ken Wierman (1 of 2)**	1a1,1d1,1e1,3a1,4a3	FEMA HQ
State Field Monitoring Team 2	**Michael Shuler**	1a1,1d1,1e1,3a1,4a3	FEMA R3
Traffic and Access Control Points DE State Police and DE Dept of Transportation (State EOC & Parking Lot)	**Bill McDougall**	1.d.1, 1.e.1, 3.a.1, 3.d.1	FEMA R3

I. **Biennial Plume Exercise – May 22, 2018 (cont.)**

EVALUATION SITE	EVALUATOR	CRITERIA	AGENCY
B. RISK JURISDICTIONS			
Kent County Emergency Operations Center	**Patti Gardner (TL)**	1c1,1d1,3a1,3b1	FEMA R3
	Kathy Duran	1a1,1e1,3c1,3d1	FEMA R3
New Castle County Emergency Operations Center	**Joe Suders (TL) (1 of 2)**	1c1, 1d1,3a,3b1	FEMA R3
	Alonzo McSwain	1a1,1e1,3c1,3d1	FEMA HQ

II. **OOS May 23, 2018 Time-1300**

EVALUATION SITE	EVALUATOR	CRITERIA	AGENCY
Transportation Dependent: Blackbird Truck Weigh Station	**Joe Suders (2 of 2)**	1d1,1e1,3a1,3c1	FEMA R3

OOS May 24, 2018 Time-0900

EVALUATION SITE 0900	EVALUATOR	CRITERIA	AGENCY
Smyrna Readiness Center/Reception Center and General Public Mon/Decon	**Chris Nemcheck (2 of 2)**	1b1, 1e1, 6a1	FEMA R3
	Ken Wierman (2 of 2)	3a1, 3b1	FEMA HQ

OOS May 11, 2018

EVALUATION SITE	EVALUATOR	CRITERIA	AGENCY
Christiana Hospital	Patti Gardner	1e1,3a1,6d1	FEMA R3

Odessa Main Fire Station	Kathy Duran	1e1,3a1,6d1	FEMA R3

APPENDIX C: ACRONYMS AND ABBREVIATIONS

Acronym	Description
ACP	Access Control Point
ALARA	As Low As Reasonably Achievable
ARC	American Red Cross
ARES	Amateur Radio Emergency Services
ASD	Appoquinimink School District
BURA	Back Up Route Alerting
CAD	Computer Aided Display
CDE	Committed Dose Equivalent
CERC	Corporate Emergency Response Center
CERT	Community Emergency Response Team
CO	Communication Officer
CPM	Counts Per Minute
CST	Civil Support Team
DAC	Dose Assessment Coordinator
DAD	Digital Alarming Dosimetry
DARTWHRF	Delaware Area Rapid Transit Wrangle Hill Road Facility
DAS	Director of Auxiliary Services
DDHS	Department of Health and Human Services
DE EOC TAC	Technical Assessment Center at State EOC
DEMAEOC	Delaware Emergency Management Agency EOC
DOT	Department of Transportation
DRF	Dosimetry Record Form
EAL	Emergency Action Level
EARA	Exception Area Route Alerting
EAS	Emergency Alert System
EC	Emergency Coordinator
ECL	Emergency Classification Level
ECO	Exposure Control Officer
EMC	Emergency Management Coordinator
EMD	Emergency Management Director
EMnet	Emergency Management Network
EMS	Emergency Medical Services

EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Extent-of-Play
EPA	Environmental Protection Agency
EPT	Exercise Planning Team
EPZ	Emergency Planning Zone
ER	Emergency Room
ERM	Emergency Response Manager
ERV	Emergency Response Vehicle
ESC	Emergency Services Coordinator
ESF	Emergency Support Function
ETA	Estimated Time of Arrival
EW	Emergency Workers
FD	Fire Department
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
FRMAC	Federal Radiological Monitoring Assessment Center
FSE	Full Scale Exercise
FTC	Field Team Coordinator
GE	General Emergency
GIS	Geographic Information Systems
GPS	Global Positioning System
HAN	Health Alert Network
HazMat	Hazardous Materials
HF	High Frequency
HSEEP	Homeland Security Exercise and Evaluation Program
IPZ	Ingestion Pathway Zone
IWP	Initial Warning Point
JIC	Joint Information Center
KCoEOC	Kent County EOC
KI	Potassium Iodide
LCD	Liquid Crystal Display
LHD	Local Health Department
MDDT	Mobile Data Display Terminal
MDT	Mobile Data Terminals
MHz	Megahertz
MIDAS	Meteorological Information Dose Assessment System
MS-1	Medical Services Hospital
MSEL	Master Scenario Events List
NCCASDAGWMS	New Castle County ASD Alfred G. Waters Middle School
NCCEOC	New Castle County EOC

OSD	Optically Stimulated Dosimeter
PA	Public Affairs
PAD	Protective Action Decision
PAG	Protective Action Guidelines
PAR	Protective Action Recommendation
PARA	Primary Area Route Alerting
PAZ	Protective Action Zone
PD	Police Department
PDAFN	Persons with Disabilities/Access and Functional Needs
PED	Personal Electronic Dosimeter
PIO	Public Information Officer
PPE	Personal Protective Equipment
PRA	Primary Route Alerting
PRD	Permanent Record Dosimeter
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Services
RAO	Radiation Assessment Officer
RDO	Radiation Defense Officer
REA	Radiation Emergency Area
REC	Radiation Exposure Control
REP	Radiological Emergency Plan
RERP	Radiological Emergency Response Plan
RHP	Radiological Health Program
RML	Radiological Mobile Laboratory
RO	Radiological Officer
ROO	Radiological Operations Officer
RTF	Radiological Task Force
SA	Staging Area
SAC	Staging Area Coordinator
SAE	Site Area Emergency
SAIC	Science Applications International Corporation
SAM	Staging Area Manager
SCBA	Self-Contained Breathing Apparatus
SEOC	State Emergency Operations Center
SERS	State Emergency Radio System
SFMT	State Field Monitoring Team
SHCENC(NJ)	Salem Hope Creek Emergency News Center (NJ)
STAC/DELDOT/DSP	State Traffic and Access Control, Delaware Dept. of Transportation, Delaware State Police
SO	State Official
SOP	Standard Operating Procedure
SRO	School Resources Officer
SSO	Social Services Officer
TAC	Technical Assessment Center

TCP	Traffic Control Point
TEDE	Total Effective Dose Equivalent
TO	Transportation Officer
UEM	Utility Emergency Manager
VHF	Very High Frequency
VMS	Variable Message Sign
VOIP	Voice Over Internet Protocol

APPENDIX D: METHOD OF OPERATION AND EXTENT-OF-PLAY AGREEMENT

The 2018 Salem and Hope Creek Nuclear Generating Stations Plume Exercise Extent-of-Play was negotiated and agreed upon by FEMA Region III, Delaware Emergency Management Agency (DEMA), and the Emergency Management Agencies of the Risk Counties.

Extent-of-Play

INTRODUCTION

The purpose of this appendix is to establish those exercise evaluation areas and corresponding Extent-of-Play parameters expected to be demonstrated during the SHCNGS 2018 Exercise to be conducted on May 22, 2018.

This exercise is being conducted in close cooperation with the State of New Jersey. The New Jersey Office of Emergency Management (NJOEM) will submit a separate Exercise Plan and Extent-of-Play to FEMA Region II.

These evaluation areas have been developed through reviews of past exercises, associated plans and procedures, the proposed exercise scenario, applicable FEMA guidance documents, and extensive discussions with FEMA representatives

All demonstrations will be conducted in accordance with established plans and procedures, except as indicated for specific exercise evaluation areas described herein.

There were no previous exercise issues that will require corrective action by the State of Delaware during this exercise.

Extent-of-Play by Evaluation Area

Extent-of-Play by Evaluation Area

The following evaluation areas, sub-elements and evaluation criterion are consistent with FEMA's exercise evaluation methods. Extent-of-play text from the REP Manual is quoted verbatim for each evaluation criterion. All activities will be demonstrated in accordance with established plans and procedures, except as indicated in the negotiated extent-of-play for each evaluation criterion.

ASSESSMENT 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; G.3.a; H.3, 4)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

Responsible OROs must demonstrate the capability to receive notification of an incident from the licensee; verify the notification; and contact, alert, and mobilize key emergency personnel in a timely manner and demonstrate the ability to maintain and staff 24-hour operations. Twenty-four-hour operations can be demonstrated during the exercise via rosters or shift changes or otherwise in an actual activation. Local responders must demonstrate the ability to receive and/or initiate notification to the licensees or other respective emergency management organizations of an incident in a timely manner, when they receive information from the licensee or alternate sources. Responsible OROs must demonstrate the activation of facilities for immediate use by mobilized personnel upon their arrival. Activation of facilities and staff, including those associated with the Incident Command System, must be completed in accordance with ORO plans/procedures. The location and contact information for facilities included in the incident command must be available to all appropriate responding agencies and the NPP after these facilities have been activated.

The REP program does not evaluate Incident Command System tactical operations, only coordination among the incident command, the utility, and all appropriate OROs, pursuant to plans/procedures.

Pre-positioning of emergency personnel is appropriate, in accordance with the Extent-of-Play Agreement, at those facilities located beyond a normal commuting distance from the individual's duty location or residence. This includes the staggered release of resources from an assembly area. Additionally, pre-positioning of staff for out-of-sequence demonstrations may be used in accordance with the Extent-of-Play Agreement.

Initial law enforcement, fire service, HAZMAT, and emergency medical response to the NPP site may impact the ability to staff REP functions. The ability to identify and request additional resources or identify compensatory measures must be demonstrated. Exercises must also address the role of mutual aid in the incident, as appropriate. An integral part of the response to an HAB scenario at an NPP may also be within the auspices of the Federal Government (e.g., FBI, NRC, or DHS). Protocols for requesting Federal, state, local, and tribal law enforcement support must be demonstrated, as appropriate. Any resources identified through LOA/MOUs must be on the ORO's mobilization list so they can be contacted during an incident, if needed. All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

Mobilization will be simulated, and responders will pre-position at the following facilities:

- State EOC, Kent County EOC and New Castle County EOC
- Emergency Operating Facility (EOF), Salem, NJ
- Emergency News Center (ENC) – Woodstown, NJ
- Field Monitoring Teams – Delaware National Guard Headquarters

Rosters for 24-hour coverage will be available for key players at each EOC.

Outstanding Issues: None

Sub-element 1.b – Facilities

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have facilities to support the emergency response.

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

Assessment/Extent-of-Play

Facilities will only be specifically evaluated for this criterion if they are new or have substantial changes in structure or mission. Responsible OROs should demonstrate the availability of facilities that support the accomplishment of emergency operations. Some of the areas to be considered are: adequate space, furnishings, lighting, restrooms, ventilation, backup power and/or alternate facility (if required to support operations).

Facilities must be set up based on the ORO's plans and procedures and demonstrated as they would be used in an actual emergency, unless noted above or otherwise indicated in the extent-of-play agreement.

Negotiated Extent-of-Play:

This criterion will be evaluated out of sequence on May 24, 2018 at 9 am at the Delaware National Guard Smyrna Readiness Center.

Outstanding Issues: None

Sub-element 1.c – Direction and Control

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished in a full scale, functional, or tabletop exercise.

Leadership personnel must demonstrate the ability to carry out the essential management functions of the response effort (e.g., keeping staff informed through periodic briefings and/or other means, coordinating with other OROs, and ensuring completion of requirements and requests.) Leadership must demonstrate the ability to prioritize resource tasking and replace/supplement resources (e.g., through MOUs or other agreements) when faced with competing demands for finite resources. Any resources identified through LOA/MOUs must be on the ORO's mobilization list so they may be contacted during an incident, if needed.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

All activities will be performed in accordance with the ORO's plans/procedures and completed as they would be in an actual emergency.

Outstanding Issues: 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion is accomplished initially in a baseline evaluation and subsequently in periodic testing and drills. System familiarity and use must be demonstrated as applicable in full scale, functional and tabletop exercises, or if their use would be required, during an actual event.

OROs must demonstrate that a primary system, and at least one backup system for fixed facilities, is fully functional at all times. Communications systems are maintained and tested on a recurring basis throughout the assessment period and system status is available to all operators. Periodic test results and corrective actions are maintained on a real-time basis. If a communications system or systems are not functional, but exercise performance is not affected, no exercise issue will be assessed.

Communications equipment and procedures for facilities and field units are used as needed for transmission and receipt of exercise messages. All facilities, FMTs, and incident command must have the capability to access at least one communication system that is independent of the commercial telephone system. Responsible OROs must demonstrate the capability to manage the communication systems and ensure that all message traffic is handled without delays that might disrupt emergency operations. OROs must ensure that a coordinated communication link for fixed and mobile medical support facilities exists. Exercise scenarios may require the failure of a communication system and use of an alternate system, as negotiated in the Extent-of-Play Agreement. All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play: All activities will be performed in accordance with the ORO's plans/procedures and completed as they would be in an actual emergency.

Outstanding Issues: None

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

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion is accomplished primarily through a baseline evaluation and subsequent periodic inspections.

A particular facility's equipment and supplies must be sufficient and consistent with that facility's assigned role in the ORO's emergency operations plans. Use of maps and other displays is encouraged. For non-facility-based operations, the equipment and supplies must be sufficient and consistent with the assigned operational role. At locations where traffic and access control personnel are deployed, appropriate equipment (e.g., vehicles, barriers, traffic cones, and signs) must be available, or their availability described.

Specific equipment and supplies that must be demonstrated under this criterion include KI inventories, dosimetry, and monitoring equipment, as follows:

KI: Responsible OROs must demonstrate the capability to maintain inventories of KI sufficient for use by: (1) emergency workers; (2) institutionalized individuals, as indicated in capacity lists for facilities; and (3) where stipulated by the plans/procedures, members of the general public (including transients) within the plume pathway EPZ. In addition, OROs must demonstrate provisions to make KI available to specialized response teams (e.g., civil support team, Special Weapons and Tactics Teams, urban search and rescue, bomb squads, HAZMAT, or other ancillary groups) as identified in plans/procedures). The plans/procedures must include the forms to be used for documenting emergency worker ingestion of KI, as well as a mechanism for identifying emergency workers that have declined KI in advance. Consider carefully the placement of emergency workers that have declined KI in advance.

ORO quantities of dosimetry and KI available and storage locations(s) will be confirmed by physical inspection at the storage location(s) or through documentation of current inventory submitted during the exercise, provided in the ALC submission, and/or verified during an SAV. Available supplies of KI must be within the expiration date indicated on KI bottles or blister packs. As an alternative, the ORO may produce a letter from a certified private or state laboratory indicating that the KI supply remains potent, in accordance with U.S. Pharmacopoeia standards.

Dosimetry: Sufficient quantities of appropriate direct-reading and permanent record dosimetry and dosimeter chargers must be available for issuance to all emergency workers who will be dispatched to perform an ORO mission. In addition, OROs must demonstrate provisions to make dosimetry available to specialized response teams (e.g., civil support team, Special Weapons and Tactics Teams, urban search and rescue, bomb squads, HAZMAT, or other ancillary groups) as identified in plans/procedures).

Appropriate direct-reading dosimetry must allow an individual(s) to read the administrative reporting limits and maximum exposure limits contained in the ORO's plans/procedures. Direct-reading dosimeters must be zeroed or operationally checked prior to issuance. The dosimeters must be inspected for electrical leakage at least annually and replaced when necessary. Civil Defense Victoreen Model 138s (CD V-138s) (0-200 mR), due to their documented history of electrical leakage problems, must be inspected for electrical leakage at least quarterly and replaced when necessary. This leakage testing will be verified during the exercise, through documentation submitted in the ALC and/or through an SAV.

Operational checks and testing of electronic dosimeters must be in accordance with the manufacturer's instructions and be verified during the exercise, through documentation submitted in the ALC and/or through an SAV.

Mutual Aid Resources: If the incoming resources arrive with their own equipment (i.e., monitors and/or dosimetry), they will be evaluated by REP Program standards. FEMA will not inventory equipment that is not part of the REP Program. If an agency has a defined role in the REP Plan, they are subject to the planning process and standards, as well as the guidance of this Manual.

Monitoring Instruments: All instruments must be inspected, inventoried, and operationally checked before each use. Instruments must be calibrated in accordance with the manufacturer's recommendations. Unmodified CDV-700 series instruments and other instruments without a manufacturer's recommendation must be calibrated annually. Modified CDV-700 instruments must be calibrated in accordance with the recommendation of the modification manufacturer. A label indicating such calibration must be on each instrument or calibrated frequency can be verified by other means. In addition, instruments being used to measure activity must have a sticker-affixed to their sides indicating the effective range of the readings. The range of readings documentation specifies the acceptable range of readings that the meter should indicate when it is response-checked using a standard test source.

For FMTs, the instruments must be capable of measuring gamma exposure rates and detecting beta radiation. These instruments must be capable of measuring a range of activity and exposure, including radiological protection/exposure control of team members and detection of activity on air sample collection media, consistent with the intended use of the instrument and the ORO's plans/procedures. An appropriate radioactive check source must be used to verify proper operational response for each low-range radiation measurement instrument (less than 1R/hr) and for high-range instruments when available. If a source is not available for a high-range instrument, a procedure must exist to operationally test the instrument before entering an area where only a high-range instrument can make useful readings.
In areas where portal monitors are used, the OROs must set up and operationally check the monitor(s). The monitor(s) must conform to the standards set forth in the *Contamination*

Monitoring Standard for a Portal Monitor Used for Emergency Response, FEMA-REP-21 (March 1995) or in accordance with the manufacturer's recommendations.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:
The evaluators will meet the Field Monitoring Teams at 3 pm on May 22th at the DNG Headquarters to observe equipment operability checks.

Outstanding Issues: None

ASSESSMENT 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.

Radiation exposure limits for emergency workers are the recommended accumulated dose limits or exposure rates that emergency workers may be permitted to incur during an emergency. These limits include any pre-established administrative reporting limits (that take into consideration TEDE or organ-specific limits) identified in the ORO's plans/procedures.

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.3.a; K.4)

Assessment/Extent of Play

Assessment of this Demonstration Criterion must be assessed concurrently with a licensee exercise and may be demonstrated in a biennial or tabletop exercise.

OROs authorized to send emergency workers into the plume exposure pathway EPZ must demonstrate a capability to comply with emergency worker exposure limits based on their emergency plans/procedures.

Participating OROs must also demonstrate the capability to make decisions concerning authorization of exposure levels in excess of pre-authorized levels and the number of emergency workers receiving radiation doses above pre-authorized levels. This would include providing KI and dosimetry in a timely manner to emergency workers dispatched onsite to support plant incident assessment and mitigating actions, in accordance with respective plans/procedures.

As appropriate, OROs must demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure for emergency workers, based on their plans/procedures or projected thyroid dose compared with the established PAGs for KI administration.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:
All activities will be performed in accordance with the ORO's plans/procedures and completed as they would be in an actual emergency.

Outstanding Issues: 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion must be accomplished concurrently with a licensee exercise and may be demonstrated in a biennial or tabletop exercise.

During the initial stage of the emergency response, following notification of plant conditions that may warrant offsite protective actions, the ORO must demonstrate the capability to use appropriate means, described in the plans/procedures, to develop PARs for decision-makers based on available information and recommendations provided by the licensee as well as field monitoring data, if available. The ORO must also consider any release and meteorological data provided by the licensee.

The ORO must demonstrate a reliable capability to independently validate dose projections. The types of calculations to be demonstrated depend on the data available and the need for assessments to support the PARs must be appropriate to the scenario. In all cases, calculation of projected dose must be demonstrated. Projected doses must be related to quantities and units of the PAG to which they will be compared. PARs must be promptly transmitted to decision-makers in a pre-arranged format.

When the licensee and ORO projected doses differ by more than a factor of 10, the ORO and licensee must determine the source of the difference by discussing input data and assumptions, using different models, or exploring possible reasons. Resolution of these differences must be

incorporated into the PARs if timely and appropriate. The ORO must demonstrate the capability to use any additional data to refine projected doses and exposure rates and revise the associated PARs.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

All activities will be performed in accordance with the ORO's plans/procedures and completed as they would be in an actual emergency.

Outstanding Issues: None

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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion must be accomplished concurrently with a licensee exercise and may be demonstrated in a full-scale, functional or tabletop exercise.

OROs must have the capability to make both initial and subsequent PADs. OROs must demonstrate the capability to make initial PADs in a timely manner appropriate to the incident, based on information from the licensee, assessment of plant status and potential or actual releases, other available information related to the incident, input from appropriate ORO authorities (e.g., incident command), and PARs from the utility and ORO staff. In addition, a subsequent or alternate PAD may be appropriate if various conditions (e.g., an HAB incident, weather, release timing and magnitude) pose undue risk to an evacuation, or if evacuation may disrupt the efforts to respond to a hostile action.

OROs must demonstrate the ability to obtain supplemental resources (e.g., mutual aid) necessary to implement a Precautionary and/or Protective Action Decision if local law enforcement, fire service, HAZMAT, and emergency medical resources are used to augment response to the NPP site or other key infrastructure.

Dose assessment personnel may provide additional PARs based on the subsequent dose projections, field monitoring data, or information on plant conditions. In addition, incident command must provide input regarding considerations for subsequent PARs based on the magnitude of the ongoing threat, the response, and/or site conditions. The decision-makers must demonstrate the capability to change protective actions based on the combination of all these factors.

If the ORO has determined that KI will be used as a protective measure for the general public under offsite plans/procedures, then it must demonstrate the capability to make decisions on the distribution and administration of KI to supplement sheltering and evacuation. This decision must be based on the ORO's plans/procedures or projected thyroid dose compared with the established PAG for KI administration. The KI decision-making process must involve close coordination with appropriate assessment and decision-making staff.

If more than one ORO is involved in decision making, all appropriate OROs must communicate and coordinate PADs with each other. In addition, decisions must be coordinated/communicated with incident command. OROs must demonstrate the capability to communicate the results of decisions to all the affected locations.

The OROs must demonstrate how the decision-making process takes those with disabilities and access/functional needs (e.g., nursing homes, correctional facilities, licensed day cares, mobility-impaired individuals, and transportation-dependent individuals) into account.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

All activities will be performed in accordance with the ORO's plans/procedures and completed as they would be in an actual emergency.

Outstanding Issues:

None

Sub-element 2.c – Precautionary and/or Protective Action Decisions 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 Precautionary and/or Protective Action Decisions 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: Precautionary and/or 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)

Assessment/Extent of Play

Assessment of this Demonstration Criterion must be accomplished concurrently with a licensee exercise and may be demonstrated in a full-scale, functional or tabletop exercise that would include the use of plant conditions transmitted from the licensee.

Usually it is appropriate to implement evacuation in areas where doses are projected to exceed the lower end of the range of PAGs, except for incidents where there is a high-risk environmental condition or where high-risk groups (e.g., the immobile or infirm) are involved. In these cases, factors that must be considered include weather conditions, shelter availability, availability of transportation assets, risk of evacuation versus risk from the avoided dose, and precautionary school evacuations. In addition, decisions must be coordinated/communicated with the incident command. In situations where an institutionalized population cannot be evacuated, the ORO must consider use of KI.

Applicable OROs must demonstrate the capability to alert and notify all public school systems/districts of emergency conditions that are expected to or may necessitate protective actions for students. Demonstration requires that the OROs actually contact public school systems/districts during the exercise.

In accordance with plans/procedures, OROs and/or officials of public school systems/districts must demonstrate the capability to make prompt decisions on protective actions for students. The decision-making process, including any preplanned strategies for protective actions for that ECL, must consider the location of students at the time (e.g., whether the students are still at home, en route to school, or at school).

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

There will be no actual notification of Persons with Disabilities and Access/Functional Needs.

List of Persons with Disabilities and Access/Functional Needs will be available at the State EOC, Kent County EOC, and the New Castle EOC for the Evaluators during the exercise on May 22, 2018. Lists may be examined by evaluators during the exercise but copies of the lists or the information contained within them will not be taken by the evaluators.

Outstanding Issues: None

Sub-element 2.d. – Radiological Assessment and Decision Making for the Ingestion Exposure Pathway

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the means to assess the radiological consequences for the ingestion exposure pathway, relate them to the appropriate PAGs, and make timely, appropriate PADs to mitigate exposure from the pathway.

During an incident at an NPP, a release of radioactive material may contaminate water supplies and agricultural products in the surrounding areas. Any such contamination would likely occur during the plume phase of the incident and, depending on the nature of the release, could impact the ingestion pathway for weeks or years.

Criterion 2.d.1: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO's planning criteria. (NUREG-0654/FEMA-REP-1, A.3; C.1, 4; D.4; J.9, 11)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion must be accomplished concurrently with a licensee exercise and may be demonstrated in a full-scale, functional or tabletop exercise that would include the use of plant conditions transmitted from the licensee.

OROs are expected to take precautionary actions to protect food and water supplies, or to minimize exposure to potentially contaminated water and food, in accordance with their respective plans/procedures. Often OROs initiate such actions based on criteria related to the facility's ECLs. Such actions may include recommendations to place milk animals on stored feed and use protected water supplies.

The ORO must use its procedures to assess the radiological consequences of a release on the food and water supplies, such as the development of a sampling plan. The ORO's assessment must include evaluation of the radiological analyses of representative samples of water, food, and other ingestible substances of local interest from potentially impacted areas; characterization of the releases from the facility; and the extent of areas potentially impacted by the release. During this assessment, OROs must consider use of agricultural and watershed data within the 50-mile EPZ. The radiological impacts on the food and water must then be compared to the appropriate ingestion PAGs contained in the ORO's plans/procedures. The plans/procedures contain PAGs based on specific dose commitment criteria or on criteria as recommended by current Food and Drug Administration (FDA) guidance. Timely and appropriate recommendations must be provided to the ORO decision-makers group for implementation decisions. OROs may also include a comparison of taking or not taking a given action on the resultant ingestion pathway dose commitments.

The ORO must demonstrate timely decisions to minimize radiological impacts from the ingestion pathway, based on the given assessments and other information. Any such decisions must be

communicated and, to the extent practical, coordinated with neighboring OROs. These decisions include tracking agricultural products entering and leaving the EPZ. Demonstration of plans and procedures which use traffic access control points to track agricultural products entering and leaving the EPZ may be conducted through interview.

OROs will use Federal resources, as identified in the Nuclear/Radiological Incident Annex of the NRF and other resources (e.g., compacts or nuclear insurers). Evaluation of this criterion will take into consideration the level of Federal and other participating resources.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will not be evaluated for this exercise. Note: this criterion was demonstrated at the 2017 Calvert Cliffs Post Plume Exercise.

Outstanding Issues:

None

Sub-element 2.e. – Radiological Assessment and Decision Making Concerning Post-Plume Phase Relocation, Reentry, and Return

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to make decisions on post-plume phase *relocation*, *reentry*, and *return* of the general public. These decisions are essential for protection of the public from direct long-term exposure to deposited radioactive materials from a severe incident at an NPP.

Criterion 2.e.1: Timely post-plume phase relocation, reentry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plan and/or procedures. (NUREG-0654/FEMA-REP-1, I.10; J.9; K.3.a; M.1)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion must be accomplished concurrently with a licensee exercise and may be demonstrated in a full-scale, functional or tabletop exercise that would include the use of plant conditions transmitted from the licensee.

Relocation: OROs must demonstrate the capability to estimate integrated dose in contaminated areas and compare these estimates with PAGs; apply decision criteria for relocation of those individuals in the general public who have not been evacuated, but where actual or projected doses are in excess of relocation PAGs; and control access to evacuated and restricted areas. OROs will make decisions for relocating members of the evacuated public who lived in areas that now have residual radiation levels in excess of the PAGs. Determination of areas to be restricted must be based on factors such as the mix of radionuclides in deposited materials, calculated exposure rates versus the PAGs, and analyses of vegetation and soil field samples.

Reentry: Decisions must be made on location of control points and policies regarding access and exposure control for emergency workers and members of the general public who need to temporarily enter the evacuated area to perform specific tasks or missions.

Examples of control procedures are the assignment of, or checking for, direct-reading and permanent record dosimetry for emergency workers; questions regarding an individual's objectives, locations expected to be visited, and associated timeframes; availability of maps and plots of radiation exposure rates; and advice on areas to avoid. Control procedures also include monitoring of individuals, vehicles, and equipment; the implementation of decision criteria regarding decontamination; and proper disposition of emergency worker dosimetry and maintenance of emergency worker radiation exposure records.

Responsible OROs must demonstrate the capability to develop a strategy for authorized reentry of individuals into the restricted zone(s), based on established decision criteria. OROs must demonstrate the capability to modify those policies for security purposes (e.g., police patrols), maintenance of essential services (e.g., fire protection and utilities), and other critical functions.

They must demonstrate the capability to use decision-making criteria in allowing access to the restricted zone by the public for various reasons, such as to maintain property (e.g., to care for farm animals or secure machinery for storage) or retrieve important possessions. Coordinated policies for access and exposure control must be developed among all agencies with roles to perform in the restricted zone(s). OROs must demonstrate the capability to establish policies for provision of dosimetry to all individuals allowed to reenter the restricted zone(s). The extent to which OROs need to develop policies on reentry will be determined by scenario events.

Return: OROs must demonstrate the capability to implement policies concerning return of members of the public to areas that were evacuated during the plume phase (i.e., permitting populations that were previously evacuated to reoccupy their homes and businesses on an unrestricted basis). OROs must base decisions on environmental data and political boundaries or physical/ geological features, which allow identification of the boundaries of areas to which members of the general public may return. Return is permitted to the boundary of the restricted area(s) that is based on the relocation PAG.

Other factors that the ORO must consider in decision-making include conditions that permit cancellation of the ECL and relaxation of associated restrictive measures. OROs must base return recommendations on measurements of radiation from ground deposition. OROs must have the capability to identify services and facilities that require restoration within a few days and to identify the procedures and resources for their restoration. Examples of these services and facilities are medical and social services, utilities, roads, schools, and intermediate-term housing for relocated persons.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will not be evaluated for this exercise. Note: this criterion was demonstrated at the 2017 Calvert Cliffs Post Plume Exercise.

Outstanding Issues:

None

ASSESSMENT 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale, functional or tabletop exercise. Other means may include drills, seminars or training activities that would fully demonstrate technical proficiency.

OROs must demonstrate the capability to provide emergency workers (including supplemental resources) with the appropriate direct-reading and permanent record dosimetry, dosimeter chargers, KI, and instructions on the use of these items. For evaluation purposes, appropriate direct-reading dosimetry is defined as dosimetry that allows an individual(s) to read the administrative reporting limits that are pre-established at a level low enough to consider subsequent calculation of TEDE and maximum exposure limits, for those emergency workers involved in lifesaving activities, contained in the ORO's plans/procedures.

Each emergency worker must have basic knowledge of radiation exposure limits as specified in the ORO's plans/procedures. If supplemental resources are used, they must be provided with just-in-time training to ensure basic knowledge of radiation exposure control. Emergency workers must demonstrate procedures to monitor and record dosimeter readings and manage radiological exposure control.

During a plume phase exercise, emergency workers must demonstrate the procedures to be followed when administrative exposure limits and turn-back values are reached. The emergency worker must report accumulated exposures during the exercise as indicated in the plans/procedures. OROs must demonstrate the actions described in the plans/procedures by determining whether to replace the worker, authorize the worker to incur additional exposures, or

take other actions. If exercise play does not require emergency workers to seek authorizations for additional exposure, evaluators must interview at least two workers to determine their knowledge of whom to contact in case authorization is needed, and at what exposure levels. Workers may use any available resources (e.g., written procedures and/or coworkers) in providing responses.

Although it is desirable for all emergency workers to each have a direct-reading dosimeter, there may be situations where team members will be in close proximity to each other during the entire mission. In such cases, adequate control of exposure can be achieved for all team members using one direct-reading dosimeter worn by the team leader. Emergency workers assigned to low-exposure rate fixed facilities (e.g., EOCs and communications center within the EPZ, reception centers, and counting laboratories) may have individual direct-reading dosimeters or they may be monitored using group dosimetry (i.e., direct-reading dosimeters strategically placed in the work area). Each team member must still have his or her own permanent record dosimetry. Individuals authorized by the ORO to reenter an evacuated area during the plume (emergency) phase, must be limited to the lowest radiological exposure commensurate with completing their missions.

OROs may have administrative limits lower than EPA-400-R-92-001 dose limits for emergency workers performing various services (e.g., lifesaving, protection of valuable property, all activities). OROs must ensure that the process used to seek authorization for exceeding dose limits does not negatively impact the capability to respond to an incident where lifesaving and/or protection of valuable property may require an urgent response.

OROs must demonstrate the capability to accomplish distribution of KI to emergency workers consistent with decisions made. OROs must have the capability to develop and maintain lists of emergency workers who have ingested KI, including documentation of the date(s) and time(s) they did so. Ingestion of KI recommended by the designated ORO health official is voluntary. For evaluation purposes, the actual ingestion of KI shall not be performed. OROs must demonstrate the capability to formulate and disseminate instructions on using KI for those advised to take it. Emergency workers must demonstrate basic knowledge of procedures for using KI whether or not the scenario drives the implementation of KI use. This can be accomplished by an interview with the evaluator.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

All activities will be performed in accordance with the ORO's plans/procedures and completed as they would be in an actual emergency. If participants are directed to take KI the actual taking of pills will be simulated. Participants will be prepared to discuss the process with the evaluator.

Outstanding Issues: None

Sub-element 3.b – Implementation of KI Decision for Institutionalized 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale, functional or tabletop exercise. Other means may include drills, seminars or training activities that would fully demonstrate technical proficiency.

OROs must demonstrate the capability to make KI available to institutionalized individuals, and, where provided for in their plans/procedures, to members of the general public. OROs must demonstrate the capability to accomplish distribution of KI consistent with decisions made. OROs must have the capability to develop and maintain lists of institutionalized individuals who have ingested KI, including documentation of the date(s) and time(s) they were instructed to ingest KI. Ingestion of KI recommended by the designated ORO health official is voluntary. For evaluation purposes, the actual ingestion of KI shall not be performed. OROs must demonstrate the capability to formulate and disseminate instructions on using KI for those advised to take it.

If a recommendation is made for the general public to take KI, appropriate information must be provided to the public by the means of notification specified in the ORO's plans/procedures.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play: If directed, ingestion of KI will be simulated.

Outstanding Issues: None

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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

Applicable OROs must demonstrate the capability to alert and notify (i.e., provide PARs and emergency information and instructions to) persons with disabilities and access/functional needs, including hospitals/medical facilities, nursing homes, correctional facilities, and mobility-impaired and transportation-dependent individuals. OROs must demonstrate the capability to provide for persons with disabilities and access/functional needs in accordance with plans/procedures.

Contact with persons with disabilities and access/functional needs and reception facilities may be actual or simulated, as agreed to in the extent of play. Some contacts with transportation providers must be actual, as negotiated in the extent of play. All actual and simulated contacts must be logged.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

There will be no actual notification of Persons with Disabilities and Access/Functional Needs. List of Persons with Disabilities and Access/Functional Needs will be available at the State EOC, Kent County EOC, and the New Castle EOC for the Evaluators during the exercise on May 22, 2018. Lists may be examined by evaluators during the exercise but copies of the lists or the information contained within them will not be taken by the evaluators.

Demonstration of transportation dependent procedures will occur on May 23, 2018 at 1:00 pm. Demonstration will be by interview at the staging area: Blackbird Truck Weigh Station on US Highway 13.

Outstanding Issues: None

Criterion 3.c.2: OROs/School officials implement protective actions for schools. (NUREG-0654/FEMA-REP-1, J.10.c, d, e, g)

Assessment/Extent of Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

Public school systems/districts must demonstrate the ability to implement PADs for students. The demonstration must be made as follows: Each school system/district within the 10 mile EPZ must demonstrate implementation of protective actions. At least one school per affected system/district must participate in the demonstration. Canceling the school day, dismissing early, or sheltering in place must be simulated by describing to evaluators the procedures that would be followed. If evacuation is the implemented protective action, all activities to coordinate and complete the evacuation of students to reception centers, congregate care centers, or host schools may actually be demonstrated or accomplished through an interview process.

If accomplished through an interview, appropriate school personnel including decision-making officials (e.g., schools' superintendent/principals and transportation director/bus dispatchers), and at least one bus driver (and the bus driver's escort, if applicable) must be available to demonstrate knowledge of their role(s) in the evacuation of school children. Communications capabilities between school officials and the buses, if required by the plans/procedures, must be verified.

Officials of the school system(s) must demonstrate the capability to develop and provide timely information to OROs for use in messages to parents, the general public, and the media on the status of protective actions for schools.

If a school facility has emergency plans as a condition of licensing, those plans may be submitted to FEMA review in place of demonstration or interview pursuant to the ORO's plans/procedures as negotiated in the Extent-of-Play Agreement.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will be evaluated by interview with the schools/educational services coordinator at the State EOC during the exercise on May 22, 2018.

Outstanding Issues: None

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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

OROs must demonstrate the capability to select, establish, and staff appropriate traffic and access control points consistent with current conditions and PADs (e.g., evacuating, sheltering, and relocation) in a timely manner. OROs must demonstrate the capability to provide instructions to traffic and access control staff on actions to take when modifications in protective action strategies necessitate changes in evacuation patterns or in the area(s) where access is controlled.

Traffic and access control staff must demonstrate accurate knowledge of their roles and responsibilities, including verifying emergency worker identification and access authorization to the affected areas, as per the Extent-of-Play Agreement. These capabilities may be demonstrated by actual deployment or by interview, in accordance with the Extent-of-Play Agreement.

In instances where OROs lack authority necessary to control access by certain types of traffic (e.g., rail, water, and air traffic), they must demonstrate the capability to contact the State or Federal agencies that have the needed authority, as agreed upon in the Extent-of-Play Agreement.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

Evaluation of this criterion and related criteria (1.d.1, 1.e.1, 3.a.1) will occur out of sequence on May 22, 2018. Demonstration will be by interview at the State EOC at a time arranged between the FEMA Evaluator(s) and the State Controller. There will be no actual deployment of Access Control and Traffic Control Points.

A list of equipment that would be used will be available for the evaluator. A Radiological Emergency Worker kit (dosimeters and anti-contamination suit) will be available at the State EOC for inspection.

Delaware State Police and Delaware Department of Transportation personnel will be interviewed on Traffic and Access Control procedures and exposure control procedures. An emergency worker exposure briefing will be provided.

If directed, suiting in anti-contamination clothing and the ingestion of KI will be simulated.

Outstanding Issues: None

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

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

OROs must demonstrate the capability to identify and take appropriate actions concerning impediments to evacuations. In demonstrating this capability, the impediment must remain in place during the evacuation long enough that re-routing of traffic is required and must also result in demonstration of decision-making and coordination with the JIC to communicate the alternate route to evacuees. When, due to specifics of the scenario or jurisdiction, the impediment cannot be located on an evacuation route, it must be located so as to impact the evacuation. When not possible, actual dispatch of resources need not be physically demonstrated; however, all contacts, actual or simulated, must be logged."

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

An exercise inject will be provided by controllers regarding a road impediment or impediments.

If an evacuation is not part of the protective actions for this exercise, the demonstration will be done via interview.

Outstanding Issues: None

Sub-element 3.e – Implementation of Ingestion Pathway Decisions

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to implement protective actions, based on criteria recommended by current FDA guidance, for the ingestion exposure pathway EPZ (i.e., the area within an approximate 50-mile radius of the NPP). This Sub-element focuses on those actions required for implementation of protective actions.

Criterion 3.e.1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. NUREG-0654/FEMA-REP-1, A.3; C.1, 4; J.11)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

Applicable OROs must demonstrate the capability to secure and use current information on the locations of dairy farms, meat and poultry producers, fisheries, fruit growers, vegetable growers, grain producers, food processing plants, and water supply intake points to implement protective actions within the EPZ. OROs use Federal resources as identified in the NRF Nuclear/Radiological Incident Annex, and other resources (e.g., compacts, nuclear insurers), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will not be evaluated for this exercise. Note: this criterion was demonstrated at the 2017 Calvert Cliffs Post Plume Exercise.

Outstanding Issues:

None

Criterion 3.e.2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production. (NUREG-0654/FEMA-REP-1, G.1, J.9, 11)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

OROs must demonstrate the development of measures and strategies for implementation of ingestion exposure pathway EPZ protective actions by formulating protective action information for the general public and food producers and processors. Demonstration of this criterion includes either pre-distributed public information material in the ingestion exposure pathway EPZ or the capability for rapid reproduction and distribution of appropriate reproduction-ready information and instructions to pre-determined individuals and businesses.

OROs must also demonstrate the capability to control, restrict, or prevent distribution of contaminated food by commercial sectors. Exercise play must include demonstration of communications and coordination among organizations to implement protective actions. Field play of implementation activities may be simulated. For example, communications and coordination with agencies responsible for enforcing food controls within the ingestion exposure pathway EPZ must be demonstrated, but actual communications with food producers and processors may be simulated.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will not be evaluated for this exercise. Note: this criterion was demonstrated at the 2017 Calvert Cliffs Post Plume Exercise.

Outstanding Issues:

None

Sub-element 3.f – Implementation of Post-Plume Phase Relocation, Reentry, and Return Decisions

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to implement plans, procedures, and decisions for post-plume phase *relocation*, *reentry*, and *return*. Implementation of these decisions is essential for protecting the public from direct long-term exposure to deposited radioactive materials from a severe incident at a commercial NPP.

Criterion 3.f.1: Decisions regarding controlled reentry, relocation, and return of both emergency workers and the public during the post-plume phase are coordinated with appropriate organizations and implemented. (NUREG-0654/FEMA-REP-1, E.7; J.10.j; J.12; K.5.b; M.1, 3)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, an actual event, or by means of drills conducted at any time.

Relocation: OROs must demonstrate the capability to coordinate and implement decisions concerning relocation of individuals located in radiologically contaminated areas who were not previously evacuated. Such individuals must be relocated to an area(s) where radiological contamination will not expose the general public to doses that exceed the relocation PAGs. OROs must also demonstrate the capability to provide for short- or long-term relocation of evacuees who lived in an area(s) that has residual radiation levels above the (first-, second-, and 50-year) PAGs.

Areas of consideration must include the capability of OROs to communicate with other OROs regarding timing of actions, notification of the population of procedures for relocation, and notification of, and advice for, evacuated individuals who will be converted to relocation status in situations where they will not be able to return to their homes due to high levels of contamination. OROs must also demonstrate the capability to communicate instructions to the public regarding relocation decisions and intermediate-term housing for relocated persons.

Reentry: OROs must demonstrate the capability to control reentry and exit of individuals who are authorized by the ORO to temporarily reenter the restricted area during the post-plume (i.e., intermediate or late) phase to protect them from unnecessary radiation exposure. OROs must also demonstrate the capability to control exit of vehicles and other equipment to control the spread of contamination outside the restricted area(s). Individuals without specific radiological response missions, such as farmers for animal care, essential utility service personnel, or other members of the public who must reenter an evacuated area during the post-emergency phase must be limited to the lowest radiological exposure commensurate with completing their missions. Monitoring and decontamination facilities will be established as appropriate.

Examples of control procedures are: (1) assignment of, or checking for, direct-reading and permanent record dosimetry for emergency workers; (2) questions regarding the individuals'

objective(s), location(s) expected to be visited, and associated timeframes; (3) maps and plots of radiation exposure rates; (4) advice on areas to avoid; (5) procedures for exit, including monitoring of individuals, vehicles, and equipment; (6) decision criteria regarding contamination; (7) proper disposition of emergency worker dosimetry, and (8) maintenance of emergency worker radiation exposure records.

Return: OROs must demonstrate the capability to implement policies concerning return of members of the public to areas that were evacuated during the plume phase. OROs must demonstrate the capability to identify and prioritize services and facilities that require restoration within a few days, and to identify procedures and resources for their restoration. Examples of these services and facilities are medical and social services, utilities, roads, and schools.

Communication among OROs for relocation, reentry, and return may be simulated. All simulated or actual contacts must be documented. These discussions may be accomplished in a group setting.

OROs must use Federal resources as identified in the NRF Nuclear/Radiological Incident Annex, and other resources (e.g., compacts or nuclear insurers), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will not be evaluated for this exercise. Note: this criterion was demonstrated at the 2017 Calvert Cliffs Post Plume Exercise.

Outstanding Issues: None

ASSESSMENT AREA 4: FIELD MEASUREMENTS 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.

Criterion 4.a.1: [RESERVED]

Criterion 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale, functional, or tabletop exercise. Other means may include drills, seminars or training activities that would fully demonstrate technical proficiency.

Responsible OROs must demonstrate the capability to brief FMTs on predicted plume location and direction, plume travel speed, and exposure control procedures before deployment. During an HAB incident, the Field Team management must keep the incident command informed of field monitoring teams' activities and location. Coordination with FMTs and field monitoring may be demonstrated as out-of-sequence demonstrations, as negotiated in the Extent-of-Play Agreement.

Field measurements are needed to help characterize the release and support the adequacy of implemented protective actions, or to be a factor in modifying protective actions. Teams must be directed to take measurements at such locations and times as necessary to provide sufficient information to characterize the plume and its impacts.

If the responsibility for obtaining peak measurements in the plume has been accepted by licensee field monitoring teams, with concurrence from OROs, there is no requirement for these measurements to be repeated by ORO monitoring teams. If the licensee FMTs do not obtain peak measurements in the plume, it is the ORO's decision as to whether peak measurements are necessary to sufficiently characterize the

plume. The sharing and coordination of plume measurement information among all FMTs (licensee, Federal, and ORO) is essential.

OROs will use Federal resources as identified in the NRF Nuclear/Radiological Incident Annex and other resources (e.g., compacts or the licensee), as necessary. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

All activities will be performed in accordance with the ORO's plans/procedures and completed as they would be in an actual emergency.

Outstanding Issues: 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale, functional, or tabletop exercise. Other means may include drills, seminars or training activities that would fully demonstrate technical proficiency.

Two or more FMTs must demonstrate the capability to make and report measurements of ambient radiation to the field team coordinator, dose assessment team, or other appropriate authority. FMTs must also demonstrate the capability to obtain an air sample for measurement of airborne radioiodine and particulates, and to provide the appropriate authority with field data pertaining to measurement. If samples have radioactivity significantly above background, the authority must consider the need for expedited laboratory analyses of these samples. Coordination concerning transfer of samples, including a chain-of-custody form(s), to a radiological laboratory (ies) must be demonstrated.

OROs must share data in a timely manner with all other appropriate OROs. All methodology, including contamination control, instrumentation, preparation of samples, and a chain-of-custody form(s) for transfer to a laboratory (ies), will be in accordance with the ORO's plans/procedures.

OROs will use Federal resources as identified in the NRF Nuclear/Radiological Incident Annex and other resources (e.g., compacts or the licensee), as needed. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

Two (2) DNG Field Monitoring Teams (FMTs) will be evaluated.

Teams will demonstrate communication systems checks, equipment operability checks, inventory, and one member of one of the teams will demonstrate don/doff procedures with anti-contamination clothing at DNG HQ on May 22, 2018 at 3 pm.

The DNG Field Teams will remain at the DNG Headquarters until activated. They will not be required to perform a second instrument checkout when notified to deploy.

If directed, suiting in anti-contamination clothing and taking of KI in the field will be simulated. DNG Field Monitoring Teams will simulate reporting to the Emergency Worker Decontamination Center in Middletown following completion of their assignment.

Each team will be directed to take an air sample in the plume, then analyze and report the results during the exercise as per REP Plan and procedures. The sampling media used during the air sampling demonstration may not be the actual material required in the SOP's but may be a marked substitute.

Delivery of samples for additional analysis will not be demonstrated. Chain of custody procedures will be described to the evaluator.

Outstanding Issues: None

Sub-element 4.b – Post-Plume Phase Field Measurements and Sampling

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to assess the actual or potential magnitude and locations of radiological hazards to determine the ingestion exposure pathway EPZ and to support relocation, reentry, and return decisions. This Sub-element focuses on collecting environmental samples for laboratory analyses that are essential for decisions on protecting the public from contaminated food and water and direct radiation from deposited materials.

Criterion 4.b.1: The field teams (2 or more) demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision making. (NUREG-0654/FEMA-REP-1, C.1; I.8; J.11)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a biennial or tabletop exercise. Other means may include drills, seminars or training activities that would fully demonstrate technical proficiency.

The ORO's FMTs must demonstrate the capability to take measurements and samples, at such times and locations as directed, to enable an adequate assessment of the ingestion pathway and to support reentry, relocation, and return decisions. When resources are available, use of aerial surveys and in-situ gamma measurement is appropriate. All methodology, including contamination control, instrumentation, preparation of samples, and chain-of-custody form(s) for transfer to a laboratory (ies), will be in accordance with the ORO's plans/procedures.

The FMTs and/or other sampling personnel must secure ingestion pathway samples from agricultural products and water. Samples in support of relocation and return must be secured from soil, vegetation, and other surfaces in areas that received radioactive ground deposition.

OROs will use Federal resources as identified in the NRF Nuclear/Radiological Incident Annex and other resources (e.g., compacts, the licensee, or nuclear insurers), as needed. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play: This criterion will not be evaluated for this exercise.
Note: this criterion was demonstrated at the 2017 Calvert Cliffs Post Plume Exercise.

Outstanding Issues: None

Sub-element 4.c – Laboratory Operations

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to perform laboratory analyses of radioactivity in air, liquid, and environmental samples to support protective action decision making.

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

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a biennial, tabletop exercise, or an actual event. Other means may include drills, seminars or training activities that would fully demonstrate technical proficiency.

The laboratory staff must demonstrate the capability to follow appropriate procedures for receiving samples, including logging information, preventing contamination of the laboratory(ies), preventing buildup of background radiation due to stored samples, preventing cross contamination of samples, preserving samples that may spoil (e.g., milk), and keeping track of sample identity. In addition, the laboratory staff must demonstrate the capability to prepare samples for conducting measurements.

The laboratory (ies) must be appropriately equipped to provide, upon request, timely analyses of media of sufficient quality and sensitivity to support assessments and decisions anticipated in the ORO's plans/procedures. The laboratory instrument calibrations must be traceable to standards provided by the National Institute of Standards and Technology. Laboratory methods used to analyze typical radionuclides released in a reactor incident must be as described in the plans/procedures. New or revised methods may be used to analyze atypical radionuclide releases (e.g., transuranic or as a result of a terrorist incident) or if warranted by incident circumstances. Analysis may require resources beyond those of the ORO.

The laboratory staff must be qualified in radioanalytical techniques and contamination control procedures. OROs will use Federal resources as identified in the NRF Nuclear/Radiological Incident Annex and other resources (e.g., compacts, the licensee, or nuclear insurers), as needed. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play: This criterion will not be evaluated for this exercise. Note: this criterion was demonstrated at the 2017 Calvert Cliffs Post Plume Exercise.
Outstanding Issues: None

ASSESSMENT 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).

Demonstration Criterion:	In a Timely Manner	Within 45 minutes	Within a Reasonable Time
Primary Alert and Notification			
5.a.1 … covering essentially 100% of 10 mile EPZ	X		
5.a.4 … for FEMA-approved exception areas			X
Backup Alert and Notification for All Incidents			
5.a.3 … covering the 10-mile EPZ		X	

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)

Assessment/Extent-of-Play
Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, drills, or operational testing of equipment that would fully demonstrate capability.

Responsible OROs must demonstrate the capability to sequentially provide an alert signal followed by an initial instructional message to populated areas (permanent resident and transient) throughout the 10-mile plume EPZ. Following the decision to activate the alert and notification system, OROs must complete system activation for primary alert/notification and disseminate the information/instructions in a timely manner. For exercise purposes, timely is defined as "with a sense of urgency and without undue delay." If message dissemination is identified as not having been accomplished in a timely manner, the evaluator(s) will document a specific delay or cause as to why a message was not considered timely.

Procedures to broadcast the message must be fully demonstrated as they would in an actual emergency up to the point of transmission. Broadcast of the message(s) or test message(s) is not required. The procedures must be demonstrated up to the point of actual activation. The alert signal activation should be simulated, not performed. Evaluations of EAS broadcast station may also be accomplished through SAVs.

The capability of the primary notification system to broadcast an instructional message on a 24-hour basis must be verified during an interview with appropriate personnel from the primary notification system, including verification of provisions for backup power or an alternate station.

The initial message must include at a minimum the following elements:

- Identification of the ORO responsible and the official with authority for providing the alert signal and instructional message;
- Identification of the commercial NPP and a statement that an emergency exists there;
- Reference to REP-specific emergency information (e.g., brochures, calendars, and/or information in telephone books) for use by the general public during an emergency; and
- A closing statement asking that the affected and potentially affected population stay tuned for additional information, or that the population tune to another station for additional information.

If route alerting is demonstrated as a primary method of alert and notification, it must be done in accordance with the ORO's plans/procedures and the Extent-of-Play Agreement. OROs must demonstrate the capability to accomplish the primary route alerting in a timely manner (not subject to specific time requirements). At least one route needs to be demonstrated and evaluated. The selected route(s) must vary from exercise to exercise. However, the most difficult route(s) must be demonstrated no less than once every 8 years. All alert and notification activities along the route(s) must be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcast) as negotiated in the extent of play. Actual testing of the mobile public address system will be conducted at an agreed-upon location.

OROs may demonstrate any means of primary alert and notification included in their plans/procedures as negotiated in the Extent-of-Play Agreement.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

The process for Alert and Notification will be demonstrated during the exercise as outlined in the plans/procedures. Siren activation and broadcast of the EAS message will be simulated. Alert and notification of the Delaware River area will be simulated. If necessary, simulated activities will be described by interview.

Outstanding Issues: None

Criterion 5.a.3: Backup alert and notification of the public is completed within a reasonable time following the detection by the ORO of a failure of the primary alert and notification system. (NUREG-0654/FEMA-REP-1, E.6, Appendix 3.B.2.c)

Assessment/Extent of Play

Assessment of this Demonstration Criterion may be accomplished during a biennial exercise, drills, or operational testing of equipment that would fully demonstrate capability.

If the exercise scenario calls for failure of any portion of the primary system(s) or if any portion of the primary system(s) actually fails to function during the exercise, OROs must demonstrate backup means of alert and notification. Backup means of alert and notification will differ from facility to facility.

Backup alert and notification procedures that would be implemented in multiple stages must be structured such that the population closest to the plant (e.g., within 2 miles) is alerted and notified first. The populations farther away and downwind of any potential radiological release would be covered sequentially (e.g., 2 to 5 miles, followed by downwind 5 to 10 miles, and finally the remaining population as directed by authorities). Topography, population density, existing ORO resources, and timing will be considered in judging the acceptability of backup means of alert and notification.

Although circumstances may not allow this for all situations, FEMA and the NRC recommend that OROs and operators attempt to establish backup means that will reach those in the plume exposure EPZ within a reasonable time of failure of the primary alert and notification system, with a recommended goal of 45 minutes. The backup alert message must, at a minimum, include (1) a statement that an emergency exists at the plant and (2) instructions regarding where to obtain additional information.

If backup route alerting is demonstrated, **only one route needs to be selected and demonstrated**. All alert and notification activities along the route(s) must be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcast), as negotiated in the extent of play. Actual testing of the mobile public address system will be conducted at an agreed-upon location.

OROs may demonstrate any means of backup alert and notification included in their plans/procedures as negotiated in the Extent-of-Play Agreement.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play: This criterion will not be evaluated for this exercise. Note: This criterion was evaluated during the 2014 FEMA Evaluated HAB Exercise.

Outstanding Issues: None

Criterion 5.a.4: 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. (NUREG-0654/FEMA-REP-1, E.6; Appendix 3.B.2.c

Assessment/Extent of Play

Assessment of this Demonstration Criterion may be accomplished during a biennial exercise, drills, or operational testing of equipment that would fully demonstrate capability.

OROs with FEMA-approved exception areas (identified in the approved *Alert and Notification System Design Report*), 5 to 10 miles from the NPP, must demonstrate the capability to accomplish primary alerting and notification of the exception area(s). FEMA and the NRC recommend that OROs and operators establish means that will reach those in approved exception areas within 45 minutes once the initial decision is made by authorized offsite emergency officials to notify the public of an incident. The exception area alert message must, at a minimum, include (1) a statement that an emergency exists at the plant and (2) instructions regarding where to obtain additional information.

For exception area alerting, at least one route must be demonstrated and evaluated. The selected route(s) must vary from exercise to exercise. However, the most difficult route(s) must be demonstrated no less than once every 8 years. All alert and notification activities along the route(s) must be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcasted) as negotiated in the extent of play. Actual testing of the mobile public address system will be conducted at an agreed-upon location. For exception areas alerted by air/water craft, actual routes will be negotiated in the extent of play, but must be demonstrated no less than once every 8 years.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

Criterion does not apply - there are no exception areas in the State of Delaware

Sub-element 5.b – Subsequent 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)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a full-scale or functional exercise, or drills.

The emergency information must be all-inclusive by including the four items specified under exercise Demonstration Criterion 5.a.1 and previously identified protective action areas that are still valid, as well as new areas. Information about any rerouting of evacuation routes due to impediments should also be included. The OROs must demonstrate the capability to ensure that emergency information that is no longer valid is rescinded and not repeated by broadcast media.

Message elements: The ORO must ensure that emergency information and instructions are consistent with PADs made by appropriate officials. The emergency information must contain all necessary and applicable instructions (e.g., evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, shelter-in-place instructions, information concerning protective actions for schools and persons with disabilities and access/functional needs, and public inquiry hotline telephone number) to assist the public in carrying out the PADs provided. The ORO must also be prepared to disclose and explain the ECL of the incident. At a minimum, this information must be included in media briefings and/or media releases. OROs must demonstrate the capability to use language that is clear and understandable to the public within both the plume and ingestion exposure pathway EPZs. This includes demonstration of the capability to use familiar landmarks and boundaries to describe protective action areas.

The emergency information must be all-inclusive by including the four items specified under exercise Demonstration Criterion 5.a.1 and previously identified protective action areas that are still valid, as well as new areas. The OROs must demonstrate the capability to ensure that emergency information that is no longer valid is rescinded and not repeated by broadcast media. In addition, the OROs must demonstrate the capability to ensure that current emergency

information is repeated at pre-established intervals in accordance with the plans/procedures. OROs must demonstrate the capability to develop emergency information in a non-English language when required by the plans/procedures.

If ingestion pathway measures are exercised, OROs must demonstrate that a system exists for rapid dissemination of ingestion pathway information to pre-determined individuals and businesses in accordance with the ORO's plans/procedures.

Media information: OROs must demonstrate the capability to provide timely, accurate, concise, and coordinated information to the news media for subsequent dissemination to the public. This would include demonstration of the capability to conduct timely and pertinent media briefings and distribute media releases as the incident warrants. The OROs must demonstrate the capability to respond appropriately to inquiries from the news media. All information presented in media briefings and releases must be consistent with PADs and other emergency information provided to the public. Copies of pertinent emergency information (e.g., EAS messages and media releases) and media information kits must be available for dissemination to the media.

Public inquiry: OROs must demonstrate that an effective system is in place for dealing with calls received via the public inquiry hotline. Hotline staff must demonstrate the capability to provide or obtain accurate information for callers or refer them to an appropriate information source. Information from the hotline staff, including information that corrects false or inaccurate information when trends are noted, must be included, as appropriate, in emergency information provided to the public, media briefings, and/or media releases.

HAB considerations: The dissemination of information dealing with specific aspects of NPP security capabilities, actual or perceived adversarial (terrorist) force or threat, and tactical law enforcement response must be coordinated/communicated with appropriate security authorities, e.g., law enforcement and NPP security agencies, in accordance with ORO plans/procedures.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

Press releases and EAS messages are written and approved at the State EOC. Actual broadcast of EAS messages will be simulated. The Emergency News Center (ENC) lead, Woodstown, NJ disseminates this information at the ENC. At least one media briefing will be conducted. Public inquiry calls will be initiated. Public inquiry at the State EOC will be staffed with two operators and will receive at least six calls to include at least two (2) identifiable trends.

Outstanding Issues: None

ASSESSMENT AREA 6: SUPPORT OPERATIONS/FACILITIES
Sub-element 6.a – Monitoring, Decontamination, and Registration of Evacuees

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to implement radiological monitoring and decontamination of evacuees, while minimizing contamination of the facility. OROs must also have the capability to identify and register evacuees at reception centers.

Criterion 6.a.1: The reception center facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees. (NUREG-0654/FEMA-REP-1, A.3; C.4; J.10.h; J.12)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a biennial exercise, an actual event, drills, or SAV.

Radiological monitoring, decontamination, and registration facilities for evacuees must be set up and demonstrated as they would be in an actual emergency or as indicated in the Extent-of-Play Agreement. OROs conducting this demonstration must have one-third of the resources (e.g., monitoring teams/instrumentation/portal monitors) available at the facility (ies) as necessary to monitor 20 percent of the population within a 12-hour period. This would include adequate space for evacuees' vehicles. Availability of resources can be demonstrated with valid documentation (e.g., MOU/LOA, etc.) reflecting how necessary equipment would be procured for the location. Plans/procedures must indicate provisions for service animals.

Before using monitoring instrument(s), the monitor(s) must demonstrate the process of checking the instrument(s) for proper operation. Staff responsible for the radiological monitoring of evacuees must demonstrate the capability to attain and sustain, within about 12 hours, a monitoring productivity rate per hour needed to monitor the 20 percent EPZ population planning base. The monitoring productivity rate per hour is the number of evacuees that can be monitored, per hour, by the total complement of monitors using an appropriate procedure. For demonstration of monitoring, decontamination, and registration capabilities, a minimum of six evacuees must be monitored per station using equipment and procedures specified in the plans/procedures. The monitoring sequences for the first six simulated evacuees per monitoring team will be timed by the evaluators to determine whether the 12-hour requirement can be met.

OROs must demonstrate the capability to register evacuees upon completion of the monitoring and decontamination activities. The activities for recording radiological monitoring and, if necessary, decontamination must include establishing a registration record consisting of the evacuee's name, address, results of monitoring, and time of decontamination (if any), or as otherwise designated in the plan and/or procedures. Audio recorders, camcorders, or written records are all acceptable means for registration.

Monitoring activities shall not be simulated. Monitoring personnel must explain use of trigger/action levels for determining the need for decontamination. They must also explain the procedures for referring any evacuees who cannot be adequately decontaminated for assessment and follow-up in accordance with the ORO's plans/procedures. All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Decontamination of evacuees may be simulated and conducted by interview. Provisions for separate showering and same-sex monitoring must be demonstrated or explained. The staff must demonstrate provisions for limiting the spread of contamination. Provisions could include floor coverings, signs, and appropriate means (e.g., partitions, roped-off areas) to separate uncontaminated from potentially contaminated areas. Provisions must also exist to separate contaminated and uncontaminated evacuees, provide changes of clothing for those with contaminated clothing; and store contaminated clothing and personal belongings to prevent further contamination of evacuees or facilities. In addition, for any evacuee found to be contaminated, procedures must be discussed concerning handling of potential contamination of vehicles and personal belongings. Waste water from decontamination operations does not need to be collected.

Individuals who have completed monitoring (and decontamination, if needed) must have means (e.g., hand stamp, sticker, bracelet, form, etc.) indicating that they, and their service animals and vehicles, where applicable, have been monitored, cleared, and found to have no contamination or contamination below the trigger/action level or have been placed in a secure area until they can be monitored and decontaminated, if necessary.

In accordance with plans/procedures, individuals found to be clean after monitoring do not need to have their vehicle monitored. These individuals do not require confirmation that their vehicle is free from contamination prior to entering the congregate care areas.

However, those individuals who are found to be contaminated and are then decontaminated will have their vehicles held in a secure area or monitored and decontaminated (if applicable) and do require confirmation that their vehicle is being held in a secure area or free from contamination prior to entering the congregate care areas.

Negotiated Extent-of-Play:

Evaluation of this criteria will occur on May 24, 2018 at 9:00 am at the Smyrna Readiness Center.

Outstanding Issues: None

Sub-element 6.b – Monitoring and Decontamination of Emergency Workers and their Equipment and Vehicles

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to implement radiological monitoring and decontamination of emergency workers and their equipment, inclusive of vehicles.

Criterion 6.b.1: The facility/ORO has adequate procedures and resources to accomplish monitoring and decontamination of emergency workers and their equipment and vehicles. (NUREG-0654/FEMA-REP-1, K.5.a, b)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a biennial exercise, drills, an actual event, or SAV.

The monitoring staff must demonstrate the capability to monitor emergency worker personnel and their equipment and vehicles for contamination in accordance with the ORO's plans/procedures.

Specific attention must be given to equipment, including any vehicles that were in contact with contamination. The monitoring staff must demonstrate the capability to make decisions on the need for decontamination of personnel, equipment, and vehicles based on trigger/action levels and procedures stated in the ORO plans/procedures. Monitoring of emergency workers does not have to meet the 12-hour requirement. However, appropriate monitoring procedures must be demonstrated for a minimum of two emergency workers and their equipment and vehicles. Before using monitoring instrument(s), the monitor(s) must demonstrate the process of checking the instrument(s) for proper operation.

The area to be used for monitoring and decontamination must be set up as it would be in an actual emergency, with all route markings, instrumentation, record keeping, and contamination control measures in place. Monitoring procedures must be demonstrated for a minimum of one vehicle. It is generally not necessary to monitor the entire surface of vehicles. However, the capability to monitor areas such as radiator grills, bumpers, wheel wells, tires, and door handles must be demonstrated. Interior surfaces of vehicles that were in contact with contaminated individuals must also be checked.

Decontamination of emergency workers may be simulated and conducted via interview. Provisions for separate showering and same-sex monitoring must be demonstrated or explained. The staff must demonstrate provisions for limiting the spread of contamination. Provisions could include floor coverings, signs, and appropriate means (e.g., partitions, roped-off areas) to separate uncontaminated from potentially contaminated areas. Provisions must also exist to separate contaminated and uncontaminated individuals where applicable; provide changes of

clothing for those with contaminated clothing; and store contaminated clothing and personal belongings to prevent further contamination of emergency workers or facilities.

Monitoring activities shall not be simulated. Monitoring personnel must explain use of trigger/action levels for determining the need for decontamination. They must also explain the procedures for referring any emergency workers who cannot be adequately decontaminated for assessment and follow-up in accordance with the ORO's plans/procedures.

Decontamination capabilities and provisions for vehicles and equipment that cannot be successfully decontaminated may be simulated and conducted by interview. Waste water from decontamination operations does not need to be collected.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will not be evaluated for this exercise. Note: This criterion was evaluated during the 2014 FEMA Evaluated HAB Exercise.

Outstanding Issues: None

Sub-element 6.c – Temporary Care of Evacuees

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires OROs to have the capability to establish relocation centers in host/support jurisdictions. The American Red Cross normally provides congregate care in support of OROs under existing letters of agreement.

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. 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/FEMA-REP-1, J.10.h, J.12)

Assessment/Extent-of-Play

Assessment of this Demonstration Criterion may be accomplished during a biennial exercise, drills, an actual event, or SAV.

The evaluator must conduct a walk-through of the center to determine, through observation and inquiries, that the services and accommodations are consistent with applicable guidance.

For planning purposes, OROs must plan for a sufficient number of congregate care centers in host/support jurisdictions based on their all-hazard sheltering experience and what is historically relevant for that particular area. In this simulation, it is not necessary to set up operations as they would be in an actual emergency. Alternatively, capabilities may be demonstrated by setting up station for various services and providing those services to simulated evacuees. Given the substantial differences between demonstration and simulation of this criterion, exercise demonstration expectations must be clearly specified in Extent of-Play Agreements.

Congregate care staff must also demonstrate the capability to ensure that evacuees, service animals, and vehicles have been monitored for contamination, decontaminated as appropriate, and registered before entering the facility.

Individuals arriving at congregate care facilities must have means (e.g., hand stamp, sticker, bracelet, form, etc.) indicating that they, and their service animals and vehicles, where applicable, have been placed in a secured area or monitored, cleared, and found to have no contamination or contamination below the trigger/action level.

In accordance with plans/procedures, individuals found to be clean after monitoring do not need to have their vehicle monitored. These individuals do not need confirmation that their vehicle is free from contamination prior to entering the congregate care areas.

However, those individuals who are found to be contaminated and are then decontaminated will have their vehicles held in a secure area until they can be monitored and decontaminated (if

applicable) and do need confirmation that their vehicle is being held in a secure area or free from contamination prior to entering the congregate care areas. This capability may be determined through an interview process.

If operations at the center are demonstrated, material that would be difficult or expensive to transport (e.g., cots, blankets, sundries, and large-scale food supplies) need not be physically available at the facility (ies). However, availability of such items must be verified by providing the evaluator a list of sources with locations and estimates of quantities.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

Negotiated Extent-of-Play:

This criterion will not be evaluated for this exercise. Note: This criterion was evaluated during the 2014 FEMA Evaluated HAB Exercise.

Outstanding Issues: None

Sub-element 6.d – Transportation and Treatment of Contaminated Injured Individuals

Intent

This Sub-element is derived from NUREG-0654/FEMA-REP-1, which requires that OROs have the capability to transport contaminated injured individuals to medical facilities with the capability to provide medical services.

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/FEMA-REP-1, F.2; H.10; K.5.a, b; L.1, 4)

Assessment/Extent of Play

Assessment of this Demonstration Criterion may be accomplished during a biennial exercise, an actual event or drills. FEMA has determined that these capabilities have been enhanced and consistently demonstrated as adequate; therefore, offsite medical services drills need only be evaluated biennially. FEMA will, at the request of the involved ORO, continue to evaluate the drills on an annual basis. All hospitals listed in the plan as medical services hospitals must be evaluated, with a transportation provider, every 2 years. Additional transportation providers will be rotated through the drills in the 8-year exercise cycle. For ambulance providers who do not participate in an evaluated drill during the two year cycle, training will be provided. This training will be documented in the ALC."

Monitoring, decontamination, and contamination control efforts must not delay urgent medical care for the victim.

OROs must demonstrate the capability to transport contaminated injured individuals to medical facilities.

An ambulance must be used for response to the victim. However, to avoid taking an ambulance out of service for an extended time, OROs may use any vehicle (e.g., car, truck, or van) to transport the victim to the medical facility. It is allowable for an ambulance to demonstrate up to the point of departure for the medical facility and then have a non-specialized vehicle transport the "victim(s)" to the medical facility. This option is used in areas where removing an ambulance from service to drive a great distance (over an hour) for a drill would not be in the best interests of the community.

Normal communications between the ambulance/dispatcher and the receiving medical facility must be demonstrated. If a substitute vehicle is used for transport to the medical facility, this communication must occur before releasing the ambulance from the drill. This communication would include reporting radiation monitoring results, if available. In addition, the ambulance crew must demonstrate, by interview, knowledge of where the ambulance and crew would be monitored and decontaminated, if required, or whom to contact for such information.

Monitoring of the victim may be performed before transport or en route, or may be deferred to the medical facility. Contaminated injured individuals transported to medical facilities are monitored as soon as possible to assure that everyone (ambulance and medical facility) is aware of the medical and radiological status of the individual(s). However, if an ambulance defers monitoring to the medical facility, then the ambulance crew presumes that the patient(s) is contaminated and demonstrate appropriate contamination controls until the patient(s) is monitored. Before using monitoring instruments, the monitor(s) must demonstrate the process of checking the instrument(s) for proper operation. All monitoring activities must be completed as they would be in an actual emergency. Appropriate contamination control measures must be demonstrated before and during transport and at the receiving medical facility.

The medical facility must demonstrate the capability to activate and set up a radiological emergency area for treatment. Medical facilities are expected to have at least one trained physician and one trained nurse to perform and supervise treatment of contaminated injured individuals. Equipment and supplies must be available for treatment of contaminated injured individuals.

The medical facility must demonstrate the capability to make decisions on the need for decontamination of the individual, follow appropriate decontamination procedures, and maintain records of all survey measurements and samples taken. All procedures for collection and analysis of samples and decontamination of the individual must be demonstrated or described to the evaluator. Waste water from decontamination operations must be handled according to facility plans/procedures.

All activities must be based on the ORO's plans/procedures and completed as they would be in an actual emergency, unless noted above or otherwise specified in the Extent-of-Play Agreement.

State Negotiated Extent-of-Play:

Evaluation of these criteria will occur on May 11, 2018 at 9:00 am at Christiana Hospital, with Odessa Fire Company EMS providing patient transport from the incident site. Odessa EMS will be staged at the Odessa Sub Station (1324 Pole Bridge Road, Middletown) and will be called to the incident site at the start of the demonstration.

Incident site: Odessa Fire Company (304 Main St., Odessa)

Outstanding Issues: None

REP MANUAL DEMONSTRATION CRITERIA FREQUENCY MATRIX (7/2015)[1]

Assessment Area and Sub-elements	NUREG 0654/ FEMA REP-1 Criteria	Minimum Evaluation Frequency[1]	Out-of-Sequence Evaluation	Actual Incident Credit	SAV
1. EMERGENCY OPERATIONS MANAGEMENT					
a. Mobilization					
1.a.1: OROs use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner.	A.1.a, e; A.3, 4; C.1, 4, 6; D.4; E.1, 2; H.3, 4	At least biennially	YES	YES	NO
b. Facilities					
1.b.1: Facilities are sufficient to support the emergency response.	G.3.a; H.3; J.10.h, J.12; K.5.b	No less than once every 8 years[2]	YES	YES	YES
c. Direction and Control					
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.	A.1.d; A.2.a, b; A.3; C.4, 6	At least biennially	NO	NO	NO
d. Communications Equipment					
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	F.1, 2	At least biennially	YES[3]	NO	NO

[1] See NUREG-0654/FEMA-REP-1 Criteria N.1.b and N.1.d for additional details

[2] Facilities evaluated once when they are new and once every 8 years thereafter. Facilities are re-evaluated for this criterion if, in the interim since the last evaluation, they have substantial changes in structure, equipment, or mission that affect key capabilities, as outlined in emergency plans/procedures.

[3] Communications equipment can be demonstrated in an out-of-sequence scenario during medical services and reception/relocation center drills as negotiated in the extent of play.

capabilities are managed in support of emergency operations.					
e. Equipment and Supplies to Support Operations					
1.e.1: Equipment, maps, displays, dosimetry, KI, and other supplies are sufficient to support emergency operations.	H.7, 10; I.7, 8, 9; J.10.a, b, e; J.11, 12; K.3.a; K.5.b	At least biennially	YES	NO	YES
2. PROTECTIVE ACTION DECISION MAKING					
a. Emergency Worker Exposure Control					
2.a.1: OROs use a decision-making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including use of KI, is in place for emergency workers, including provisions to authorize radiation exposure in excess of administrative limits or PAGs.	C.6; J.10.e, f; K.3.a; K.4	At least biennially	NO	NO	NO

Assessment Area and Sub-elements	NUREG-0654/ FEMA-REP-1 Criteria	Minimum Evaluation Frequency	Sort-of-Sequence Evaluation	Actual Incident Credit
b. Dose Assessment & PARs & PADs for the Emergency Event				
2.b.1: Appropriate PARs are based on available information on plant condition, field monitoring data, and licensee and ORO dose projections, as well as knowledge of onsite and offsite environmental conditions.	I.10; Supp. 3	At least biennially	NO	NO	NO
2.b.2: A decision-making process involving consideration of appropriate factors and necessary	A.3; C.4, 6; D.4; J.9; J.10.f, m	At least biennially	NO	NO	NO

coordination is used to make PADs for the general public (including the recommendation for use of KI, if ORO policy).					
c. PADs for the Protection of Persons with Disabilities and Access/Functional Needs					
2.c.1: PADs are made, as appropriate, for groups of people with disabilities and those with access/ functional needs.	D.4; J.9; J.10.d, e	At least biennially	NO	NO	NO
d. Radiological Assessment and Decision-making for the Ingestion Exposure Pathway[4]					
2.d.1: Radiological consequences for the ingestion pathway are assessed and appropriate PADs are made based on the ORO planning criteria.	A.3; C.1, 4; D.4; J.9, 11	Every ingestion exercise	NO	NO	NO
e. Radiological Assessment & Decision-making Concerning Post-Plume Phase Relocation, Re-entry, and Return					
2.e.1: Timely post-plume phase relocation, re-entry, and return decisions are made and coordinated as appropriate, based on assessments of radiological conditions and criteria in the ORO's plan and/or procedures.	I.10; J.9; K.3.a; M.1	No less than once every 8 years	NO	NO	NO
3. PROTECTIVE ACTION IMPLEMENTATION					
a. Implementation of Emergency Worker Exposure Control					
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.	J.10.e; K.3.a, b; K.4	At least biennially	YES	NO	NO

[4] The post-plume phase (ingestion, relocation, re-entry, and return) may be demonstrated separately from the plume phase.

Appropriate record-keeping of the administration of KI for emergency workers is maintained.					

Assessment Area and Sub-elements	NUREG-0654/FEMA-REP-1 Criteria	Minimum Evaluation Frequency	Out-of-Sequence Evaluation	Actual Incident Credit	SAV
b. Implementation of KI Decision for Institutionalized Individuals and the Public					
3.b.1: KI and appropriate instructions are made available in case 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.	J.10.e, f	At least biennially[5]	YES	NO	NO
c. Implementation of Protective Actions for Persons with Disabilities and Access/Functional Needs					
3.c.1: PADs are implemented for people with disabilities and those with access/functional needs other than schools within areas subject to protective actions.	J.10.c, d, e, g	No less than once every 8 years	YES	YES	YES
3.c.2: OROs/school officials implement protective actions for schools.	J.10.c, d. e. g	No less than once every 8 years[6]	YES	YES	YES
d. Implementation of Traffic and Access Control[7]					
3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel.	A.3; C.1, 4; J.10.g, j	At least biennially	YES	YES	YES
3.d.2: Impediments to evacuation are identified and resolved.	J.10.k	At least biennially	YES	YES	YES
e. Implementation of Ingestion Pathway Decisions					

[5] Demonstrated in every biennial exercise. Participation may be rotated among facilities, but each individual distribution facility must be evaluated no less than once every 8 years.

[6] Participation may be rotated among school districts, but each school system/district in the EPZ and at least one of its schools must be evaluated no less than once every 8 years. It is not required that every school within the school system/district be evaluated.

[7] Physical deployment of resources is not necessary except in a full-scale exercise

3.e.1: The ORO demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions.	A.3; C.1, 4; J.11	Every ingestion exercise	YES	NO	NO
3.e.2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing PADs for contaminated water, food products, milk, and agricultural production.	G.1, J.9, 11	Every ingestion exercise	YES	NO	NO
f. Implementation of Post-Plume Phase Relocation, Re-entry, and Return Decisions					
3.f.1: Decisions regarding controlled re-entry, relocation, and return of individuals during the post-plume phase are coordinated with appropriate organizations and implemented.	E.7; J.10.j; J.12; K.5.b; M.1, 3	No less than once every 8 years	YES	NO	NO

Assessment Areas and Sub-elements	NUREG-0654/ FEMA-REP-1 Criteria	Minimum Evaluation Frequency	Out-of-Sequence Evaluation	Actual Incident Credit	SAW
4. FIELD MEASUREMENTS AND ANALYSES					
a. Plume Phase Field Measurement and Analyses					
4.a.1: (RESERVED)					
4.a.2: Field teams (two or more) are managed to obtain sufficient information to help characterize the release and to control radiation exposure.	C.1; H.12; I.7, 8, 11; J.10.a	Every full participation exercise[8]	YES	NO	NO
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.	C.1; I.8, 9; H.12; J.10.a	Every full participation exercise	YES	NO	NO
b. Post Plume Phase Field Measurements and Sampling					
4.b.1: The field teams (two or more) demonstrate the capability to make appropriate measurements and collect samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making.	C.1; I.8; J.11	Every ingestion exercise	YES	NO	NO

[8] Each state within the 10-mile EPZ of a commercial nuclear power site shall fully participate in an exercise jointly with the licensee and appropriate OROs at least every 2 years (44 CFR Part 350.9 (c)(1)). Each state with multiple sites within its boundaries shall fully participate in a joint exercise at some site on a rotational basis at least every 2 years (44 CFR Part 350.9 (c) (2)). When not fully participating in an exercise at a site, the state shall partially participate at the site to support full participation of the OROs. See NUREG-0654/FEMA-REP-1 Criterion N.1.b for clarification of full participation.

c. Laboratory Operations					
4.c.1: The laboratory is capable of performing required radiological analyses to support PADs.	C.1, 3; J.11	No less than once every 8 years	YES	YES	NO
5. EMERGENCY NOTIFICATION AND PUBLIC INFORMATION					
a. Activation of the Prompt Alert and Notification System					
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.	E.5, 6, 7	At least biennially	YES	NO	NO
5.a.2: (RESERVED)					
5.a.3: Backup alert and notification of the public is completed within a reasonable time following detection by the ORO of a failure of the primary alert and notification system.	E.6; Appendix 3.B.2.c	No less than once every 8 years	YES	NO	NO

Assessment Area and Sub-elements	NUREG-0654/ FEMA-REP-1 Criteria	Minimum Evaluation Frequency	Out of Sequence Evaluation	Actual Incident Credit	SAVE
5.a.4: Activities associated with FEMA approved exception areas (where applicable) are completed within 45 minutes of the initial decision by authorized offsite emergency officials to notify the public of an emergency situation.	E.6; Appendix 3.B.2.c	At least biennially	YES	NO	NO
b. Emergency Information and Instructions for the Public and the Media					
5.b.1: OROs provide accurate emergency information and instructions to the public and news media in a timely manner.	E.5, 7; G.3.a; G.4.a, c	At least biennially	YES	NO	NO
6. SUPPORT OPERATION/FACILITIES					
a. Monitoring, Decontamination, and Registration of Evacuees					
6.a.1: The reception center facility has appropriate space, adequate resources, and trained personnel to provide monitoring, decontamination, and registration of evacuees.	A.3; C.4; J.10.h; J.12	No less than once every 8 years[9]	YES	YES	NO
b. Monitoring and Decontamination of Emergency Workers and their Equipment and Vehicles					
6.b.1: The facility/ORO has adequate procedures and resources to accomplish monitoring and decontamination of emergency	K.5.a, b	No less than once every 8 years	YES	YES	NO

[9] Participating may be rotated among facilities, but each facility must be evaluated no less than once every 8 years.

workers and their equipment and vehicles.					
c. Temporary Care of Evacuees					
6.c.1: Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with planning guidelines. Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate before entering congregate care facilities.	J.10.h; J.12	No less than once every 8 years[10]	YES	YES	YES
d. Transportation and Treatment of Contaminated Injured Individuals					
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.	F.2; H.10; K.5.a, b; L.1, 4	At least biennially	YES	YES	NO

[10] Facilities managed by the American Red Cross under the American Red Cross/FEMA MOU will be evaluated once when designated or when substantial changes occur; all other facilities not managed by the American Red Cross must be evaluated no less than once every 8 years.

Appendix C: Addresses of Locations to be evaluated

State

State Emergency Operations Center (EOC)
State Technical Assessment Center (TAC)
165 Brick Store Landing Rd
Smyrna, DE 19977

Emergency News Center/Joint Information Center (ENC/JIC)
135 Cemetery Rd
Woodstown, NJ 08098

Delaware National Guard (DNG) Field Teams – DNG HQ
1 Regiment Rd
Wilmington, DE 19808

Counties

New Castle County EOC
3601 N Dupont Hwy
New Castle, DE 19720

Kent County EOC
911 Public Safety Blvd
Dover, DE 19901

Appendix C: Addresses of Locations to be evaluated

(CONTINUED)

Out of Sequence Demonstrations

Transportation Dependent

Staging Area:

DSP Truck Enforcement / Blackbird Truck Weigh Station
4580 North Dupont Hwy (US 13)
Townsend, DE 19734

Reception Center

Smyrna Readiness Center
103 Artisan Drive, Smyrna

MS-1

Transportation: Odessa Fire Company
Hospital: Christiana Hospital

Odessa Sub Station
1324 Pole Bridge Road, Middletown, Delaware

Incident site: Odessa Fire Company, 304 Main Street, Odessa, Delaware

Appendix D: Open Issues

None