U.S. Department of Homeland Security
Region III
One Independence Mall, Sixth Floor
615 Chestnut Street
Philadelphia, PA 19106-4404

FEMA

MAY 17 2004

Mr. Tim McGinty, Chief
Inspection and Communications Section (EPPO-A)
Emergency Preparedness Project Office
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. McGinty:

Enclosed is the final report for the Calvert Cliffs Nuclear Power Radiological Emergency Preparedness post plume phase exercise conducted on October 22-24, 2003 and October 28-30, 2004.

If you have any questions, do not hesitate to contact me at (215) 931-5546 or Yvette Porter at (215) 931-5584.

Sincerely,

Darrell Hammons
Regional Assistance Committee
Chairman

Enclosure

FEMA

FINAL EXERCISE REPORT

CALVERT CLIFFS NUCLEAR POWER PLANT
POST-PLUME PHASE EXERCISE

Licensee:	Constellation Energy Group
Exercise Dates:	October 22-24, 2003 October 28-30, 2003
Report Date:	April 27, 2003

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION III
ONE INDEPENDENCE MALL, 6TH FLOOR
615 CHESTNUT STREET
PHILADELPHIA, PENNSYLVANIA 19106-4404

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY

On October 22-24, 2003 and October 28-30, 2003, the Federal Emergency Management Agency (FEMA), Region III, conducted a post-plume phase exercise in the ingestion exposure pathway emergency planning zones (EPZs) around the Calvert Cliffs Nuclear Power Plant (CCNPP). The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans (RERPs) and procedures.

The most recent exercise at this site was conducted on September 9, 2002. The qualifying emergency preparedness exercise was conducted on October 30, 1981.

FEMA wishes to acknowledge the efforts of the many individuals in the State of Maryland who participated in this exercise. In addition the following ingestion jurisdictions also participated: Anne Arundel County, Maryland, Calvert County, Maryland, Caroline County, Maryland, Charles County, Maryland, Dorchester County, Maryland, Kent County, Maryland, Prince George's County, Maryland, Queen Anne's County, Maryland, Somerset County, Maryland, St. Mary's County, Maryland, Talbot County, Maryland, Wicomico County, Maryland, Worcester County, Maryland, the State of Delaware, Kent County, Delaware, Sussex County, Delaware, Arlington County, Virginia, Caroline County, Virginia, Essex County, Virginia, Fairfax County, Virginia, Prince William County, Virginia, Stafford County, Virginia, Westmoreland County, Virginia, the City of Falls Church, Virginia, the City of Alexandria, Virginia, and the District of Columbia.

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 volunteered to provide vital emergency services to their communities. Cooperation and teamwork of all the participants were evident during this exercise.

This report contains the final evaluation of the post-plume phase exercise and out-of-sequence activities. The following out-of-sequence activities were evaluated after the exercise. On October 28, 2003, FEMA conducted out-of-sequence evaluations at 10 ingestion jurisdictions, including ingestion interviews of eight County EOCs and evaluation of the District of Columbia's EOC and radiological monitoring and decontamination capabilities for both evacuees and emergency workers. On October 29, 2003, FEMA conducted two additional County EOC ingestion interviews, and on October 30, 2003, FEMA conducted 11 more County EOC ingestion interviews. All other evaluations were conducted during the ingestion exercise conducted October 22-24, 2003.

The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and adequately implemented them. No Deficiencies and seven Areas Requiring Corrective Action (ARCAs) were identified as a result of this exercise. Six prior issues were evaluated during this exercise; all were resolved.

This page has been intentionally left blank.

II. INTRODUCTION

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

FEMA Rule 44 CFR 350 establishes the policies and procedures for FEMA's initial and continued approval of tribal, 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:

- 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;

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

- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (44 CFR Part 354, Appendix A, September 14, 1993); and

- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:

  - U.S. Department of Agriculture,
  - U.S. Department of Commerce,
  - U.S. Department of Energy,
  - U.S. Department of Health and Human Services,
  - U.S. Department of the Interior,
  - U.S. Department of Transportation,
  - U.S. Environmental Protection Agency,
  - U.S. Food and Drug Administration, and
  - U.S. Nuclear Regulatory Commission.

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

The State of Maryland formally submitted their RERPs for the Calvert Cliffs Nuclear Power Plant (CCNPP) to FEMA Region III. Formal FEMA approval, under 44 CFR 350, was granted on August 8, 1985.

FEMA Region III conducted a joint REP post-plume phase exercise on October 22-24, 2003, to assess the capabilities of State and local offsite emergency preparedness organizations in the ingestion exposure pathway emergency planning zones (EPZs) in implementing their RERPs and procedures to protect public health and safety during a radiological emergency involving CCNPP. Out-of sequence demonstrations of ingestion jurisdiction's response capabilities were conducted on October 28-30, 2003. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite response organizations (OROs) during a simulated radiological emergency.

The findings presented in this report are based on the observations of the Federal evaluation team, with final determinations made by the FEMA Region III RAC Chairperson and approved by the Regional Director.

Exercise reports are provided to the NRC, participating States, and FEMA Headquarters. State and local governments use the findings contained in the reports to plan, train, and improve 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;

- FEMA Guidance Memoranda MS-1, "Medical Services," November 1986;

- FEMA-REP-14, "Radiological Emergency Preparedness Exercise Manual," September 1991;

- 66 FR 47546, "FEMA Radiological Emergency Preparedness: Alert and Notification," September 12, 2001; and

- 67 FR 20580, "FEMA Radiological Emergency Preparedness: Exercise Evaluation Methodology," April 25, 2002.

Section III of this report, "Exercise Overview," presents basic information and data relevant to the exercise. The section contains a description of the plume exposure pathway EPZ and the ingestion exposure pathway EPZ, and a listing of all participating jurisdictions and functional entities evaluated.

Section IV of this report, "Exercise Evaluation and Results," presents detailed information on the demonstration of applicable exercise evaluation areas at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains (1) descriptions

of all Deficiencies and Areas Requiring Corrective Action (ARCAs) assessed during this exercise, recommended corrective actions, and the State and local governments' response or schedule of corrective actions for each identified exercise issue, and (2) descriptions of ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

This page has been intentionally left blank.

III. EXERCISE OVERVIEW

This section of the exercise report contains data and basic information relevant to the 2003 post-plume phase exercise to test the offsite emergency response capabilities in the ingestion exposure pathway emergency planning zones (EPZs) around the Calvert Cliffs Nuclear Power Plant (CCNPP). This section includes a description of the plume exposure pathway EPZ and the ingestion exposure pathway EPZ, and a listing of all participating jurisdictions and functional entities evaluated.

A. Plume/Ingestion Exposure Pathway Emergency Planning Zone Description

CCNPP is located near Maryland Highway 2-4 in Calvert County, Maryland, on the west bank of the Chesapeake Bay near Lusby, Maryland. The coordinates of the site are 38°25"39.7' North and 76°26"45' West. The site is owned and operated by Constellation Energy Group and covers an area of approximately 2,108 acres. Seventy percent of the area remains forested and relatively undisturbed by CCNPP activities. There are several endangered plant and insect species within the boundaries of the site. Two pressurized water reactors each generate an electrical output of 825 MW units that provide power to around 400,000 residential customers. Unit 1 began commercial operation during May 1975 and Unit 2 in April 1977. On March 23, 2002, the license was renewed, thereby extending the life of the plant by 20 years.

Nearby communities include: Calvert Beach and Long Beach, approximately 3 miles to the northwest; Cove Point, approximately 4 1/2 miles to the southeast; Chesapeake Ranch Estates, approximately 6 miles to the south-southwest; and the Patuxent Naval Air Test Center, approximately 10 miles to the south. Camp Bay Breeze, a summer camp, is located 2 miles southeast of the site.

The topography of the vicinity around the plant defines several small watersheds. The watershed containing the plant and auxiliary structures drains into the Chesapeake Bay. Chesapeake Bay has an average depth of 30 feet and receives the majority of its fresh water, sediment, and nutrients from the Susquehanna River.

A majority fraction of the land in the area surrounding the site is devoted to agricultural and forest use, such as farming of tobacco, corn, soybeans, and hay. Dairy farming is of minor importance. The waters adjacent to the site are used for commercial fishing, primarily for shellfish such as clams, oysters, and crabs.

There are approximately 50,058 people in the 10-mile EPZ, 13,307 in the 5-mile EPZ, and 2,329 in the 2-mile EPZ. There are approximately 9,563 transients within the EPZ during peak seasonal activities, e.g., daytime, during the summer. No major populated cities (greater than 25,000) exist within the 10-mile EPZ.

B. Exercise Participants

The following agencies, organizations, and units of government participated in the CCNPP exercise on October 22-24, 2002, and related out-of-sequence demonstrations.

Federal Agencies

Center for Disease Control
Farm Service Agency
U.S. Army Corp of Engineers
U.S. Department of Agriculture
U.S. Department of Agriculture (NRCS)
U.S. Department of Energy
U.S. Department of Energy (FRMAC)
U.S. Environmental Protection Agency
U.S. Food and Drug Administration
U.S. Nuclear Regulatory Commission

State of Maryland

Maryland Cooperative Agency
Maryland Department of Agriculture
Maryland Department of Environmental Health
Maryland Department of Health and Mental Hygiene
Maryland Department of Natural Resources
Maryland Department of the Environment
Maryland Emergency Management Agency
Maryland Department of State
Maryland Department of State Highway Administration
Maryland Energy Administration
Maryland Farm Service Agency
Maryland Fire Chiefs Association
Maryland Institute for Emergency Medical Services System
Maryland Insurance Administration
Maryland State Department of Agriculture
Maryland State Department of Budget and Management
Maryland State Department of the Energy
Maryland State Department of the Environment
Maryland State Department of General Services
Maryland State Department of Health and Mental Hygiene
Maryland State Department of Housing and Community Development
Maryland State Department of Human Resources
Maryland State Department of Labor, Licensing and Regulation
Maryland State Department of Planning
Maryland State Department of Public Safety and Correctional Services
Maryland State Department of Transportation
Maryland State Police

Ingestion Jurisdictions

State of Maryland

Anne Arundel County, Maryland

Anne Arundel County Board of Education
Anne Arundel County Department of Central Services
Anne Arundel County Department of Public Works
Anne Arundel County Department of Public Works, Bureau of Utility Operations
Anne Arundel County Department of Social Services
Anne Arundel County Emergency Management Agency
Anne Arundel County Fire Department
Anne Arundel County Fire Department, EMS Division
Anne Arundel County Health Department
Anne Arundel County Police Department

Calvert County, Maryland

Calvert County Emergency Management Agency
Calvert County Health Department

Caroline County, Maryland

Caroline County Emergency Management Agency
Caroline County Extension Agent (Farm Service Agent)
Caroline County Health Department

Charles County, Maryland

Charles County Emergency Services
Charles County Emergency Services, Animal Control

Dorchester County, Maryland

Dorchester County Department of Health
Dorchester County Emergency Management Agency

Kent County, Maryland

Kent County Department of Agriculture
Kent County Department of Health
Kent County Emergency Management Agency

Prince George's County, Maryland

Prince George's County Agricultural Extension Agent
Prince George's County Emergency Management
Prince George's County Health Department
Prince George's County Water Company

Queen Anne's County, Maryland

Queen Anne's County Board of County Commissioners
Queen Anne's County Department of Emergency Services

Somerset County, Maryland

Somerset County Department of Emergency Services

St. Mary's County, Maryland

St. Mary's County Department of Emergency Communications/Management
St. Mary's County Environmental Health
St. Mary's County Health Department

Talbot County, Maryland

Talbot County Deputy Emergency Management Director
Talbot County EMS/Fire Department
Talbot County Farm Service Agency
Talbot County Health Department
Talbot County Police, Law Enforcement Department
Talbot County Emergency Management

Wicomico County, Maryland

Wicomico County Administrator's Office
Wicomico County Cooperative Extension
Wicomico County Emergency Services
Wicomico County Health Department

Worchester County, Maryland

Worcester County Department of Emergency Services

State of Delaware

Delaware Department of Agriculture
Delaware Department of Agriculture, Farm Service Agency
Delaware Department of Administrative Services, Division of Support Services
Delaware Department of Administrative Services, Facilities Management
Delaware Department of Health and Social Services, Division of Public Health
Delaware Department of Health and Social Services, Division of Social Services
Delaware Department of Health and Social Services, Office of Drinking Water/Public Health
Delaware Department of Natural Resources and Environmental Control, Division of Fish & Wildlife
Delaware Department of Natural Resources and Environmental Control, Division of Parks and Recreation
Delaware Department of Natural Resources and Environmental Control, Division of Water Resources
Delaware Department of Revenue
Delaware Department of Safety and Homeland Security
Delaware Department of Technology Information
Delaware Department of Transportation
Delaware Department of Transportation, Division of Highways
Delaware Department of Veterans Affairs
Delaware Division of Communications
Delaware Economic Development Office
Delaware Emergency Management Agency
Delaware Fire School
Delaware National Guard
Delaware Office of Insurance Commissioner
Delaware Public Service Commission
Delaware River & Bay Authority
Delaware State Housing Authority
Delaware State Police
Delaware State Police Troop 3 and 4
Delaware State Police Communications
Kent County Delaware
New Castle County Delaware
Sussex County Delaware

Kent County, Delaware

Kent County Emergency Management Agency

Sussex County, Delaware

Sussex County Emergency Management Agency

Commonwealth of Virginia

Arlington County, Virginia

Arlington County Department of Environmental Health
Arlington County Department of Parks and Natural Resources
Arlington County Department of Public Works
Arlington County Director of Communications
Arlington County Office of Emergency Management
Arlington County Public Health

Caroline County, Virginia

Caroline County Health Department
Caroline County Office of Emergency Management
Virginia Department of Emergency Management

City of Alexandria, Virginia

City of Alexandria Emergency Management Agency
City of Alexandria Health Department
Virginia Cooperative Extension Service

City of Falls Church, Virginia

City of Falls Church Communications Office
City of Falls Church Police Department
City of Falls Church Department of Public Works

Essex County, Virginia

Essex County Communications Center
Essex County Health Department
Essex County Office of Emergency Management
Essex County Rescue Squads
Essex County Schools
Essex County Sheriff's Department
Essex County Volunteer Fire Department
Tappahannock Public Works/Utilities Department
Tappahannock Town Police Department
Virginia Cooperative Extension Service
Virginia Department of Emergency Management

Fairfax County, Virginia

Fairfax County Emergency Communications Center
Fairfax County Emergency Management Agency
Fairfax County Fire & Rescue
Fairfax County Health Department
Fairfax County Public Information Office
Fairfax County Water Utility

Prince William County, Virginia

Prince William County Office of Emergency Management
Prince William County Office of Public Safety
Prince William County Service Authority

Stafford County, Virginia

Stafford County Emergency Management Agency

Westmoreland County, Virginia

Westmoreland County Administrator Office
Westmoreland County Sheriff's Department
Virginia Department of Emergency Management

District of Columbia

District of Columbia Board of Education
District of Columbia Child Welfare Agency
District of Columbia Department of Health Services
District of Columbia Department of Human Services
District of Columbia Department of Public Works
District of Columbia Department of Transportation
District of Columbia Emergency Management Agency
District of Columbia Fire Department
District of Columbia Mayor's Office of Communications
District of Columbia Mayor's Office for Volunteers
St. Elizabeth's Hospital Security Department

Private/Volunteer Organizations

American Red Cross
Amateur Radio Emergency Services (ARES)
Blood Bank of Delaware
Blood Bank of Delaware/Eastern Shore

Christiania Care
Civil Air Patrol
Delaware Electric Cooperative Inc.
H. W. Cook & Sons Farm
JMTAWS Technology and Career Center
Ministry of Caring
Public Service Electric and Gas
Radio Amateur Civil Emergency Services (RACES)
Riverside Tappahannock Hospital
Salvation Army
Teledyne Brown Engineering
University of Delaware
Verizon

IV. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and locations that participated in the October 22-24 and October 28-30, 2003, post-plume phase exercise. The exercise was held to test the offsite emergency response capabilities of State and local governments in the 50-mile ingestion exposure pathway emergency planning zone (EPZ) surrounding the Calvert Cliffs Nuclear Power Plant (CCNPP).

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of the exercise evaluation area criteria contained in the FEMA Radiological Emergency Preparedness (REP) Exercise Evaluation Methodology. Detailed information on the exercise evaluation area criteria and the extent-of-play agreement used in this exercise is found in Appendix 3 of this report.

A. Summary Results of Exercise Evaluation

The matrix presented in Table 1, on the following pages, presents the status of the exercise evaluation area criteria from the FEMA REP Exercise Evaluation Methodology that were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise evaluation area criteria are listed by number and the demonstration status of the criteria is indicated by the use of the following letters:

M — Met (No Deficiency or Areas Requiring Corrective Action (ARCAs) assessed and no unresolved ARCAs from prior exercises)

A — ARCA(s) assessed

A^1 — ARCA(s) assessed, but successfully redemonstrated

R — Resolved ARCA(s) from prior exercise(s) not scheduled to be demonstrated during this exercise (used at observed locations only)

N — Not demonstrated (Reason explained in Section IV.B)

This page has been intentionally left blank.

TABLE 1. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: October 22-24, 2003, and October 28-30, 2003, Calvert Cliffs Nuclear Power Plant

JURISDICTIONS/LOCATION	1. a. 1	1. b. 1	1. c. 1	1. d. 1	1. e. 1	2. a. 1	2. b. 1	2. b. 2	2. c. 1	2. d. 1	2. e. 1	3. a. 1	3. b. 1	3. c. 1	3. c. 2	3. d. 1	3. d. 2	3. e. 1	3. e. 2	3. f. 1	4. a. 1	4. a. 2	4. a. 3	4. b. 1	4. c. 1	5. a. 1	5. a. 2	5. a. 3	5. b. 1	6. a. 1	6. b. 1	6. c. 1	6. d. 1
1. STATE OF MARYLAND																																
1.1 STATE EMERGENCY OPERATIONS CENTER																		M	M	M												
1.2 ACCIDENT ASSESSMENT (MDE)						M				M	M		M																			
ACCIDENT ASSESSMENT (EOF)																																
JOINT INFORMATION CENTER																																
STATE FIELD MONITORING TEAM A																																
STATE FIELD MONITORING TEAM B																																
1.3 STATE SAMPLING TEAM A				M	M							M	M										M								
1.4 STATE SAMPLING TEAM B				M	M							M	M										M								
1.5 STATE LABORATORY				M								M												M							
RISK JURISDICTIONS																																
CALVERT COUNTY																																
COUNTY EMERGENCY OPERATIONS CENTER																																
FIELD MONITORING TEAM																																
RECEPTION CENTER (Calvert High School)																																
MASS CARE CENTER (Calvert High School)																																
EMERGENCY WORKER DECON. STATON (Stafford Landfill)																																
ROUTE ALERTING TEAM																																
TRAFFIC AND ACCESS CONTROL (Stafford Landfill)																																
JOINT INFORMATION CENTER																																
SCHOOL DISTRICT (Patuxent High School)																																
SCHOOL DISTRICT (Howell Elementary School)																																
SCHOOL DISTRICT (Mutual Elementary School)																																

LEGEND:

M = Met (no Deficiency or ARCA(s) assessed)
D = Deficiency assessed
A = ARCA(s) assessed (not affecting health and safety of public)
U = Unresolved ARCA(s) from prior exercises
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (reason explained in Section IV.B.)

TABLE 1. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: October 22-24, 2003, and October 28-30, 2003, Calvert Cliffs Nuclear Power Plant

JURISDICTIONS/LOCATION	1. a. 1	1. b. 1	1. c. 1	1. d. 1	1. e. 1	2. a. 1	2. b. 1	2. b. 2	2. c. 1	2. d. 1	2. e. 1	3. a. 1	3. b. 1	3. c. 1	3. c. 2	3. d. 1	3. d. 2	3. e. 1	3. e. 2	3. f. 1	4. a. 1	4. a. 2	4. a. 3	4. b. 1	4. c. 1	5. a. 1	5. a. 2	5. a. 3	5. b. 1	6. a. 1	6. b. 1	6. c. 1	6. d. 1
ST. MARY'S COUNTY																																
COUNTY EMERGENCY OPERATIONS CENTER																																
FIELD MONITORING TEAM																																
RECEPTION CENTER (Leonard Hall Drill Hall)																																
MASS CARE CENTER (Leonard Hall Drill Hall)																																
EMERGENCY WORKER DECON. STATON (Leonard Hall Drill Hall)																																
ROUTE ALERTING TEAM																																
TRAFFIC AND ACCESS CONTROL(Leonard Hall Drill Hall)																																
SCHOOL DISTRICT (Esperanza Middle School)																																
SCHOOL DISTRICT (Green Holy School, '01)																																
DORCHESTER COUNTY																																
COUNTY EMERGENCY OPERATIONS CENTER																																
FIELD MONITORING TEAM																																
RECEPTION CENTER (Maple Elementary School)																																
MASS CARE CENTER (Maple Elementary School)																																
EMERGENCY WORKER DECON. STATON (Maple Elem. Schl)																																
ROUTE ALERTING TEAM																																
TRAFFIC AND ACCESS CONTROL																																
2. INGESTION EXPOSURE PATHWAY JURISDICTIONS																																
2. 1 STATE OF MARYLAND																																
2.1.1 ANNE ARUNDELCOUNTY EOC		M		M	M													M	M	M								M			
2.1.2 CALVERT COUNTY EOC		M		M	M													M	M	M								M			
2.1.3 CAROLINE COUNTY EOC		M		M	M													M	M	M								M			
2.1.4 CHARLES COUNTY EOC		M		M	M													M	M	M								M			
2.1.5 DORCHESTER COUNTY EOC		M		M	M													M	M	M								M			

LEGEND:

M = Met (no Deficiency or ARCA(s) assessed)
D = Deficiency assessed
A = ARCA(s) assessed (not affecting health and safety of public)
U = Unresolved ARCA(s) from prior exercises
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (reason explained in Section IV.B.)

TABLE 1. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: October 22-24, 2003, and October 28-30, 2003, Calvert Cliffs Nuclear Power Plant

JURISDICTIONS/LOCATION	1. a. 1	1. b. 1	1. c. 1	1. d. 1	1. e. 1	2. a. 1	2. b. 1	2. b. 2	2. c. 1	2. d. 1	2. e. 1	3. a. 1	3. b. 1	3. c. 1	3. c. 2	3. d. 1	3. d. 2	3. e. 1	3. e. 2	3. f. 1	4. a. 1	4. a. 2	4. a. 3	4. b. 1	4. c. 1	5. a. 1	5. a. 2	5. a. 3	5. b. 1	6. a. 1	6. b. 1	6. c. 1	6. d. 1
2.1.6 KENT COUNTY EOC		M		M	M													M	M	M								M				
2.1.7 PRINCE GEORGES COUNTY EOC		M		M	M													M	M	M								M				
2.1.8 QUEEN ANNE'S COUNTY EOC		M		M	M													A	A	A								M				
2.1.9 SOMERSET COUNTY EOC		M		M	M													M	M	M								M				
2.1.10 ST. MARY'S COUNTY EOC		M		M	M													M	M	M								M				
2.1.11 TALBOT COUNTY EOC		M		M	M													M	M	M								M				
2.1.12 WICOMICO COUNTY EOC		M		M	M													M	M	M								M				
2.1.13 WORCESTER COUNTY EOC		M		M	M													M	M	M								M				
2.2 STATE OF DELAWARE																																
2.2.1 STATE EMERGENCY OPERATIONS CENTER)		M	M	M	M	M				M	M	M	M					M	M	M								M				
2.2.2 STATE SAMPLING TEAM				M	M							M												M								
2.2.3 STATE LABORATORY (Knoxville, Tennessee)				M								M													M							
2.2.4 KENT COUNTY EOC		M		M	M													M	M	M								M				
2.2.5 SUSSEX COUNTY EOC		M		M	M													M	M	M								M				
2.3 COMMONWEALTH OF VIRGINIA																																
2.3.1 ARLINGTON COUNTY EOC		M		M	M													M	M	M								M				
2.3.2 CAROLINE COUNTY EOC		M		M	M													M	M	M								M				
2.3.3 ESSEX COUNTY EOC		M		M	M													M	M	M								M				
2.3.4 FAIRFAX COUNTY EOC		M		M	M													M	M	M								M				
2.3.5 KING GEORGE COUNTY EOC		N		N	N													N	N	N								N				
2.3.6 PRINCE WILLIAM COUNTY EOC		M		M	M													M	M	M								M				
2.3.7 STAFFORD COUNTY EOC		M		M	M													M	M	M								M				
2.3.8 WESTMORELAND COUNTY EOC		M		M	M													M	M	M								M				
2.3.9 CITY OF FALLS CHURCH EOC		M		M	M													M	M	M								M				
2.3.10 CITY OF ALEXANDRIA EOC		M		M	M													M	M	M								M				

LEGEND:

M = Met (no Deficiency or ARCA(s) assessed)
D = Deficiency assessed
A = ARCA(s) assessed (not affecting health and safety of public)
U = Unresolved ARCA(s) from prior exercises
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (reason explained in Section IV.B.)

TABLE 1. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: October 22-24, 2003, and October 28-30, 2003, Calvert Cliffs Nuclear Power Plant

JURISDICTIONS/LOCATION	1. a. 1	1. b. 1	1. c. 1	1. d. 1	1. e. 1	2. a. 1	2. b. 1	2. b. 2	2. c. 1	2. d. 1	2. e. 1	3. a. 1	3. b. 1	3. c. 1	3. c. 2	3. d. 1	3. d. 2	3. e. 1	3. e. 2	3. f. 1	4. a. 1	4. a. 2	4. a. 3	4. b. 1	4. c. 1	5. a. 1	5. a. 2	5. a. 3	5. b. 1	6. a. 1	6. b. 1	6. c. 1	6. d. 1
2.4 DISTRICT OF COLUMBIA																																
2.4.1 WASHINGTON EOC	M	M	A	M	M	A				M	M	M						M	A	A				M	M				M			
2.4.2 EMERGENCY WORKER MONITORING AND DECONTAMINATION (St. Elizabeth's Hospital)					M	M						M																		M	M		

LEGEND:

M = Met (no Deficiency or ARCA(s) assessed)
D = Deficiency assessed
A = ARCA(s) assessed (not affecting health and safety of public)
U = Unresolved ARCA(s) from prior exercises
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (reason explained in Section IV.B.)

B. Status of Jurisdictions Evaluated

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

- **Met** – Listing of the demonstrated exercise evaluation area criteria under which no Deficiencies or ARCAs were assessed during this exercise and under which no ARCAs assessed during prior exercises remain unresolved.

- **Deficiency** – Listing of the demonstrated exercise evaluation area criteria under which one or more Deficiencies were assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.

- **Area Requiring Corrective Action** – Listing of the demonstrated exercise evaluation area criteria under which one or more ARCAs were assessed during the current exercise. Included is a description of the ARCAs assessed during this exercise and the recommended corrective actions to be demonstrated before or during the next biennial exercise.

- **Not Demonstrated** – Listing of the exercise evaluation area criteria that were not scheduled to be demonstrated during this exercise and the reason they were not demonstrated.

- **Prior ARCAs – Resolved** – Descriptions of ARCAs assessed during previous exercises that were resolved in this exercise and the corrective actions demonstrated.

- **Prior ARCAs – Unresolved** – Descriptions of ARCAs assessed during prior exercises that were not resolved in this exercise. Included are the reasons the ARCAs remain unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

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

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

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

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

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

- **Plant Site Identifier** – A two-digit number corresponding to the Utility Billable Plant Site Codes.
- **Exercise Year** – The last two digits of the year the exercise was conducted.
- **Evaluation Area Criterion** – A letter and number corresponding to the criteria in the FEMA REP Exercise Evaluation Methodology.
- **Issue Classification Identifier** – (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.
- **Exercise Issue Identification Number** – A separate two digit indexing number assigned to each issue identified in the exercise.

1. State of Maryland

1.1 Emergency Operations Center

a. **MET:** 3.e.1
3.e.2
3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

1.2 Accident Assessment (MDE)

a. **MET:** 2.a.1 3.b.1
2.d.1
2.e.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

1.3 State Field Sampling Team A

a. **MET:** 1.d.1 3.a.1 4.b.1
1.e.1 3.b.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** 3

ISSUE NO. 11-97-05-A-02 (3.a.1)

Description: Dosimetry devices were issued to emergency workers in accordance with the plan and procedures. The high-range dosimeters had a range of either 0-100 R or 0-200 R. Therefore, individuals could not read the 1 R exposure limit at the following locations:

- Calvert County Reception Center
- Emergency Worker Decontamination Center
- Traffic and Access Control Points (TCP/ACP)
- St. Mary's Field Monitoring Team (FMT)
- State FMT and Sampling Team A (NUREG-0654, K.3.b and K.4)

Corrective Action Demonstrated: State Field Teams were issued Electronic Personal Dosimeters (EPDs) that could read the lower range administrative limits. The EPDs, Rados Rad-60, have the capability to read the lower administrative limits given to ingestion teams. The Rad-60 has a range of .1 mR to 999 R.

ISSUE NO. 11-97-24-A-07 (3.a.1)

Description: Sampling Team A did not demonstrate good contamination control procedures, as they occasionally placed their survey meter and sampling tools on potentially contaminated ground while samples were being taken. (NUREG-0654, I.8 and J.11)

Corrective Action Demonstrated: Field Team A followed good contamination control procedures. Trash bags were laid on the ground when appropriate to prevent clean tools and supplies from becoming contaminated.

ISSUE NO. CCX91-35R (4.b.1)

Description: A soil sample was collected from an area covered with soybean debris that was first removed before IPS Team A acquired the sample. (Objective 24; NUREG-0654, I.8)

Corrective Action Demonstrated: In accordance with EP-306, Revision 4, the forage or debris was collected and bagged separately when taking a soil sample. The bagged forage and soil were labeled with the same location and placed in the same second bag.

f. PRIOR ARCAs – UNRESOLVED: N/A

1.4 State Field Sampling Team B

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

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs – RESOLVED: N/A

f. PRIOR ARCAs – UNRESOLVED: N/A

1.5 State Mobile Laboratory

a. MET: 1.d.1 3.a.1 4.c.1

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs – RESOLVED: N/A

f. PRIOR ARCAs – UNRESOLVED: N/A

2. Ingestion Jurisdictions

2.1 State of Maryland

2.1.1 Anne Arundel County Emergency Operations Center

a. MET: 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.2 Calvert County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.3 Caroline County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.4 Charles County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.5 Dorchester County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.6 Kent County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.7 Prince George's County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.8 Queen Anne's County Emergency Operations Center

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

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION: 3**

ISSUE NO. 11-04-3.e.1-A-01

Condition: Queen Anne's County personnel were unable to provide information detailing the locations of food supplies, milk, and agricultural products.

Possible Cause: The Plan on file at the EOC was outdated (and was not used during the interview). Additionally, the latest Queen Anne's County Emergency Operations Plan (EOP), dated September 2003, also does not address specific procedures to be used to implement Ingestion Pathway Decisions.

References:

- NUREG-0654, H.7, 10; J.10.a, b, e; J.11; K.3.a
- Queen Anne's County EOP dated September 2003

Effect: Queen Anne's County residents are faced with potential radiation exposure and contamination.

Recommendation: EOP revision/development, which incorporates specific procedures for the implementation of Ingestion Pathway Decisions. Additional training is recommended for the entire EOC staff on procedures in the EOP.

State Response: EOP revision/development, which incorporates specific procedures for the implementation of Ingestion Pathway Decisions will be

reviewed and revised as appropriate. Information detailing the locations of food supplies, milk, and agricultural products is supplied by State resources. County procedures will be revised to ensure this information is accurately referenced. Additional training will be conducted for the EOC staff on post plume procedures and protocols.

ISSUE NO. 11-04-3.e.2-A-02

Condition: The Queen Anne's County Offsite Response Organization (ORO) did not have any pre-printed instructional material on hand, which would provide information to individuals and businesses, and aid in the protective action measures used for dealing with contamination of food, water supply, and agricultural products.

The County Emergency Operations Plan (EOP) does not include specific guidance for the application of appropriate measures, strategies, and pre-printed material developed for implementing protective action decisions. Officials from Queen Anne's County were did not know if the procedures/ actions taken by Emergency Operations Center (EOC) personnel were in accordance with those mentioned in the County plan.

Possible Cause: Inadequate emergency planning and preparation, and unfamiliarity with emergency plans and procedures are the principal reason for this shortcoming. Lack of an organized, comprehensive EOP also contributed.

References:

- NUREG-0654, J.9, 11
- Queen Anne's County EOP (dated September 2003)

Effect: Residents from Queen Anne's County run the risk of potential exposure or contamination stemming from a radiological event.

Recommendation: Revise/develop a comprehensive County EOP to include specific procedures addressing the application of appropriate measures, strategies, and pre-printed material developed for implementing protective action measures for contaminated water, food products, milk, and agricultural production. Provide training for EOC staff to acclimate personnel with proper procedures.

State Response: EOP revision/development, which incorporates specific procedures for the implementation of Ingestion Pathway Decisions will be reviewed and revised as appropriate. Additional training will be conducted for the EOC staff on post plume procedures and protocols.

ISSUE NO. 11-04-3.f.1-A-03

Condition: Queen Anne's County officials did not adequately demonstrate the ability to effectively render protective action decision regarding re-entry of emergency workers, and the return and relocation of the public.

Possible Cause: There is insufficient amount of specific guidance in the Queen Anne's County Emergency Operations Plan (EOP) pertaining to making and implementing decisions regarding controlled re-entry of emergency workers and the relocation and return of the public.

References:

- NUREG-0654, M.1, 3
- Queen Anne's County EOP (dated September 2003)

Effect: Queen Anne's County Emergency residents/citizens and emergency workers, who are seeking to relocate, re-enter, or return to an impacted area, are at risk for possible exposure or contamination, if they are not given proper guidance.

Recommendation: EOP revision/development to include specific procedures for re-entry of emergency workers and relocation and return of the public. Additional training is recommended for EOC staff members.

State Response: County procedures do not require re-entry of emergency workers. Re-entry is a state function and was adequately demonstrated during the IPCC demonstration. Protective actions for relocation and return of the general public are developed at the State IPCC and were adequately demonstrated during the October exercise. The county procedures that support implementation of Ingestion Pathway Decisions will be reviewed and revised as appropriate. Additional training will be conducted for the EOC staff on post plume procedures and protocols.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.9 St. Mary's County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.10 Somerset County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.11 Talbot County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.12 Wicomico County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.1.13 Worchester County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.2 State of Delaware

2.2.1 State of Delaware Emergency Operations Center

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.2.2 **State Sampling Team**

a. **MET:** 1.d.1 3.a.1 4.b.1
1.e.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.2.3 **State Laboratory**

a. **MET:** 1.d.1 3.a.1 4.c.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.2.4 **Kent County Emergency Operations Center**

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.2.5 **Sussex County Emergency Operations Center**

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3 **Commonwealth of Virginia**

2.3.1 **Arlington County Emergency Operations Center**

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.2 **Caroline County Emergency Operations Center**

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.3 **Essex County Emergency Operations Center**

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** 2

ISSUE NO. 62-03-3.e.1-A-06

Description: At the Essex County Emergency Operations Center (EOC), there was no information available nor did any of the staff have knowledge of the locations of the pig farms and grain producers within the ingestion jurisdiction for implementation of projective actions. (NUREG-0654, J.9, 11)

Corrective Action Demonstrated: Key staff members were available to provide locations and information of 2 hog farms, 13 beef producers, 3 greenhouse/ nurseries, 4 vegetable producers, 3 vineyards, and 60 grain/soybean producers within the ingestion jurisdiction for implementation of any necessary protective actions.

ISSUE NO. 62-03-3.e.2-A-07

Description: At the Essex County Emergency Operations Center (EOC), the Chief of Emergency Services, Public Information Officer (PIO), and Sheriff's Supervisor were not able to address any of the measures, strategies, and existence of pre-printed instructional material for implementing protective action decision for the general pubic and food producers. (NUREG-0654, J.9,11)

Corrective Action Demonstrated: The chief of Emergency Services, along with key emergency staff members, was able to adequately address measures, strategies and provide pre-printed instructional materials for implementing protective action decisions for the general public, food producers, contaminated water, milk, and

agricultural production. This was done by discussing what the affected area would be by sector; whether samples were necessary, and whether or not the State would augment monitoring and recovery efforts. The printed materials, such as the *Ten Rules of Action when Dealing with a Radiological Event*, would be distributed as well as special news releases/advisories through the Emergency Alert System.

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.4 Fairfax County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.5 Prince William County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.6 King George County Emergency Operations Center

a. **MET:** N/A

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** Rescheduled during the next ingestion exposure pathway exercise scheduled to take place in 2008.

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.7 Stafford County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.8 Westmoreland County Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.9 City of Falls Church Emergency Operations Center

a. **MET:** 1.b.1 3.e.1 5.b.1
1.d.1 3.e.2
1.e.1 3.f.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.3.10 City of Alexandria County Emergency Operations Center

a. **MET:**

1.b.1	3.e.1	5.b.1	
1.d.1	3.e.2		
1.e.1	3.f.1		

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

2.4 District of Columbia

2.4.1 Washington, DC Emergency Operations Center

a. **MET:**

1.a.1	2.d.1	3.a.1	4.b.1	5.b.1
1.b.1	2.e.1	3.e.1	4.c.1	
1.d.1				
1.e.1				

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** 4

ISSUE NO. 11-04-1.c.1-A-04

Condition: The Emergency Management Director or his designee was not present to perform leadership responsibilities. For example, no decision was reached regarding the timing for the relocation of residents in contaminated areas or the cancellation of the precautionary shelter-in-place order.

Possible Cause: The senior official designated in the District Response Plan (DRP) did not assume control of the response.

References:

- NUREG-0654, A.1.d, A.2.a, b

Effect: In the absence of a leader exercising decision-making authority to select and approve specific response actions, the activities identified by individual Emergency Support Functions (ESFs) could have failed to support the efforts of other ESFs or could actually have hindered, delayed, or prevented their implementation.

Recommendation: The senior leadership personnel in the EOC and exercise decision-making authority during the response should be designated.

District of Columbia Response: The process for implementing protective actions during the exercise was discussed by the EOC staff during the exercise. The decisions developed during the exercise were not presented to a decision maker or designee because the intent of the objective was demonstrated. The District of Columbia Plan contains a chain of command authority process. At times, government elected officials, department directors, or administrators may not be available to perform their duties. Elected and appointed officials will identify the lines of succession for key positions in their respective areas of responsibilities.

The decisions developed during the exercise could have been implemented by the available staff. This process will be re-demonstrated more clearly during the next ingestion exercise or at an appropriate interview.

FEMA Response: Based upon the approved District of Columbia's Extent of Play, Revision 4, direction and control would be performed based on the ORO's plans and procedures and completed, as they would be in an actual emergency. Therefore, according to the District's Response Plan, dated 4 April 2002, page 20, a Consequence Management Team Director/Director of Emergency Management Agency or designee should have participated in the exercise. The intent of the criterion was to demonstrate the decision-making process rather the implementation process.

ISSUE NO. 11-04-2.a.1-A-05

Condition: No decision-making took place regarding the potential for emergency worker radiation exposure.

Possible Cause: The ESFs are not familiar with the relevant procedures that the District of Columbia has adopted from the Federal Radiological Monitoring and Assessment Center's (FRMAC's) *Radiological Emergency Response Health and Safety Manual.*

References:

- NUREG-0654, K.4
- FRMAC *Radiological Emergency Response Health and Safety Manual,* Section 2.4

Effect: The lack of attention to protective actions for emergency workers could have resulted in the exposure of responders to radiation in excess of approved levels.

Recommendation: The DRP should incorporate a summary of the purpose and general requirements of the FRMAC *Radiological Emergency Response Health and Safety Manual* associated with emergency worker exposure control. Training should be provided to all appropriate ESFs.

District of Columbia Response: This objective was demonstrated at the emergency worker decontamination station and by the field teams. All appropriate precautions regarding radiological exposure were either demonstrated or discussed. Decisions regarding exposure controls were made by appropriate level administrators in the field. The Federal teams did not participate in the demonstration and were not available to communicate their administrative controls. The District used their internal procedures for this objective. No additional demonstrations are required. This issue should not be included in the report.

FEMA Response: This issue remains. Based upon the approved District of Columbia's Extent of Play, Revision 4, the procedures to exceed any emergency worker exposure limits would be discussed administratively at the EOC. The District's Fire and Emergency Medical Services Department, First Responder Radiological Guidance, March 2003, F.D. Bulletin No. 70 and Hazardous Material and Technical Rescue Standard Operating Guides, Updated 9-1-03, do not address decision making concerning the authorization of exposure levels in excess of pre-authorized levels and to the number of emergency workers receiving radiation dose above pre-authorized levels.

ISSUE NO. 11-04-3.e.2-A-06

Condition: The capability to control, restrict or prevent distribution of contaminated food by commercial sectors and for enforcing food controls within the Ingestion Pathway Zone (IPZ) was not addressed. This includes rapid reproduction and distribution of information and instructions to pre-

determined individuals and businesses. Coordination with agencies responsible for enforcing food controls within the IPZ was not demonstrated and communications with food producers and processors was not demonstrated or simulated.

Possible Cause: The District of Columbia District Response Plan (DRP) does not address a strategy to control, restrict or prevent distribution of contaminated food by commercial sectors.

Radiological Emergency Preparedness (REP) assessment objectives were not communicated to participants prior to the exercise. Exercise participants were not provided with copies of the Exercise Extent of Play and had not seen the exercise criteria.

The time frame allotted for the tabletop exercise, 2 hours, may not have been adequate for addressing this issue.

References:

- NUREG-0654, E.5, 7; J.9, 11

Effect: Potential inability to rapidly coordinate protective measures to reproduce and distribute information and instructions to pre-determined individuals and businesses to control, restrict, or prevent distribution of contaminated food by commercial sectors and for enforcing food controls within the IPZ.

Recommendation: Consider including specific strategies and procedures for control, restriction, or preventing distribution of contaminated food by commercial sectors and for enforcing food controls within the IPZ in a Radiological Emergency Annex to the District Response Plan.

Communicate REP assessment objectives clearly to participants using the Extent-of-Play Agreements provided by FEMA as a "read ahead" document. Understanding the exercise criterion in advance will better prepare participants to demonstrate critical decision-making and implementation processes.

Allow sufficient time in the exercise to demonstrate REP exercise objectives. Then specifically target REP exercise elements during exercise play.

District of Columbia Response: The restriction of contaminated foods was discussed during the exercise; however, no formal document was produced that described the restrictions. The brochure for farmers and food processors provided by Constellation Energy was available, but was not used during the exercise. Restriction of foods is adequately addressed

in the District response plan. Participants are expected to respond during an exercise as they would in an actual emergency. Additional training will be provided to the responsible agencies to ensure that the appropriate food restriction actions taken by the District are clearly documented. This information would be available to food processors and distributors in the affected area. This process will be demonstrated during the next scheduled interview or exercise.

FEMA Response: Based upon the approved District of Columbia's Extent of Play, Revision 4, the District would discuss the implementation of Ingestion Pathway decisions based on scenario messages or events. The intent of the exercise was to evaluate the District 's EOC staff's ability to implement their radiological emergency response plans and procedures. Discussions did not occur to adequately address the scenario events regarding implementation of ingestion pathway decisions.

ISSUE NO. 11-04-3.f.1-A-07

Condition: Specific response actions associated with the relocation of the public and the re-entry of emergency workers into potentially contaminated areas were not addressed.

Possible Cause: The Emergency Support Functions (ESFs) are not familiar with a process for relocation of the public and controlled re-entry of emergency workers during a radiological incident because there are no such procedures in the District Response Plan (DRP).

References:

- NUREG-0654, M.1, 3

Effect: The lack of focus on the specific actions associated with relocation of the public and the re-entry of emergency workers into potentially contaminated areas could have resulted in the exposure of individuals to higher levels of radiation.

Recommendation: The DRP should be supplemented with procedures for managing relocation of the public and re-entry for emergency workers, including coordination of the decision-making and implementation process. Training should be provided to all appropriate ESFs.

District of Columbia Response: The specific actions for response to a radiological hazardous material incident are described in the District Response Plan under ESF 10, Hazardous Materials. This section distinctly describes the responsibilities for controlling areas that are potentially contaminated and makes specific reference to the incident command system as the controlling procedures to be employed. Re-entry of

emergency workers was adequately addressed by administrators in the field. Since this was performed as an out-of-sequence activity, this information was simulated as communicated to the EOC. Relocation of the public was discussed at the EOC; however, a formal order was never initiated. This activity would also be conducted in co-operation with the Federal FRMAC teams. The FRMAC teams did not participate in this portion of the exercise. This issue should not be included in the report.

FEMA Response: Based upon the approved District of Columbia's Extent of Play, Revision 4, implementation of relocation and re-entry decision would be discussed based on scenario messages or events at the District's EOC. The intent of the exercise was to evaluate the District 's EOC staff's ability to implement their radiological emergency response plans and procedures.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** 1

ISSUE NO. CCX91-36R (5.b.1)

Description: The Emergency Broadcast System (EBS) message referenced that the exercise was a test for the city's agencies to practice their skills at responding to "hazardous chemicals" rather than to a "General Emergency" at CCNPP. (Objective 11; NUREG-0654, E.5; G.4.b)

Corrective Action Demonstrated: Administratively resolved by the Regional Assistance Committee (RAC) Chair during this exercise.

f. **PRIOR ARCAs – UNRESOLVED:** None

2.4.2 Emergency Worker Monitoring and Decontamination (St. Elizabeth's Hospital)

a. **MET:** 1.e.1 2.a.1 3.a.1 6.a.1 6.b.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** N/A

f. **PRIOR ARCAs – UNRESOLVED:** N/A

This page has been intentionally left blank.

APPENDIX 1
ACRONYMS AND ABBREVIATIONS

ACP	Access Control Point
ALARA	As Low As is Reasonably Achievable
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
ARES	Amateur Radio Emergency Services
ATL	Assistant Team Leader
CCNPP	Calvert Cliffs Nuclear Power Plant
CDC	Centers for Disease Control and Prevention
CFR	Code of Federal Regulations
DEMA	Delaware Emergency Management Agency
DHSS	(Delaware) Department of Health and Social Services
DNREC	Delaware Department of Natural Resources and Environmental Control
DOT	Department of Transportation
DRP	District Response Plan
EAS	Emergency Alert System
EBS	Emergency Broadcast System
ECL	Emergency Classification Level
EMS	Emergency Medical Service
EPA	U.S. Environmental Protection Agency
EPD	Electronic Personal Dosimeter
EOC	Emergency Operations Center
EOP	Extent-of-Play
ESF	Emergency Support Function
EPZ	Emergency Planning Zone
FDA	U.S. Food and Drug Administration
FEMA	Federal Emergency Management Agency
FRERP	Federal Radiological Emergency Response Plan
FRMAC	Federal Radiological Monitoring and Assessment Center
FMT	Field Monitoring Team
GIS	Geographic Information System
HPSI	High Pressure Safety Injection
IPZ	Ingestion Pathway Zone
KI	Potassium Iodide

LOCA	Loss-of-Coolant Accident
LPSI	Low Pressure Safety Injection
mR	MilliRoentgen(s)
mR/hr	MilliRoentgen(s) per Hour
μR/hr	MicroRoentgen(s) per Hour
MEMA	Maryland Emergency Management Agency
MDE	Maryland Department of the Environment
NAS	National Academy of Science
NRC	U.S. Nuclear Regulatory Commission
NRCS	Natural Resource Conservation Service
NUREG-0654	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
ORO	Offsite Response Organization
PAD	Protective Action Decision
PAG	Protective Action Guidance
PAR	Protective Action Recommendation
PAZ	Protective Action Zone
PIO	Public Information Officer
R	Roentgen(s)
R/hr	Roentgen(s) per hour
RAC	Regional Assistance Committee
RACES	Radio Amateur Civil Emergency Services
RCS	Reactor Coolant System
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
SRD	Self-Reading Dosimeter
SLAS	Safety Injection Actuation Signal
TAC	Technical Assessment Center
TCP	Traffic Control Point
TL	Team Leader

APPENDIX 2
EXERCISE EVALUATORS AND TEAM LEADERS

The following is a list of the personnel who evaluated the Calvert Cliffs Nuclear Power Station Post-Plume Phase Exercise on October 22-24, 2003. The "TL" indicates evaluator Team Leaders after their names and the "ATL" indicates the evaluator Assistant Team Leaders. The organization each evaluator represents is indicated by the following abbreviations:

FEMA	Federal Emergency Management Agency
ICF	ICF Consulting

POSITION	NAME	ORGANIZATION
RAC Chairman	Darrell Hammons	FEMA
Project Officer	Yvette Porter	FEMA

POST-PLUME PHASE EXERCISE – October 22-24, 2003

EVALUATION SITE	EVALUATOR	ORGANIZATION
STATE OF MARYLAND		
State EOC	John Price	FEMA (TL)
	Angela Hough	FEMA
Accident Assessment (MDE)	Harry Harrison	ICF
State Field Sampling Team 1	Terry Blackmon	ICF
State Field Sampling Team 2	Tommy Brown	ICF
State Laboratory	Jerry Staroba	ICF
INGESTION JURISDICTIONS		
STATE OF DELAWARE		
State EOC	Al Henryson	FEMA (TL)
	Ken Wierman	FEMA
	Roman Helo	FEMA
State Sampling Team	Art Ball	ICF
State Laboratory	Carol Herzenberg	ICF
Kent County EOC	Craig Fiore	FEMA
Sussex County EOC	Marty Garshak	FEMA

OUT-OF-SEQUENCE EXERCISE – October 28-30, 2003

EVALUATION SITE	EVALUATOR	ORGANIZATION
INGESTION JURISDICTIONS		
STATE OF MARYLAND		
Anne Arundel County EOC	Patrick Twiss	FEMA
Calvert County EOC	Laurel Ryan	FEMA
Caroline County EOC	Al Henryson	FEMA
Charles County EOC	Robert Shapiro	FEMA
Dorchester County EOC	Al Henryson	FEMA
Kent County EOC	Laurel Ryan	FEMA
Prince George's County EOC	Patrick Twiss	FEMA
Queen Anne's County EOC	Landton Malone	FEMA
Somerset County EOC	David Gilder	FEMA
St. Mary's County EOC	Cedric Cherry	FEMA
Talbot County EOC	Landton Malone	FEMA
Wicomico County EOC	Cedric Cherry	FEMA
Worchester County EOC	David Gilder	FEMA
COMMONWEALTH OF VIRGINIA		
Arlington County EOC	Bart Freeman	FEMA
Caroline County EOC	Patrick Twiss	FEMA
Essex County EOC	Roman Helo	FEMA
Fairfax County EOC	Tom Blosser	FEMA
Prince William County EOC	Al Henryson	FEMA
Stafford County EOC	Robert Shapiro	FEMA
Westmoreland County EOC	Tom Blosser	FEMA
City of Falls Church EOC	Bart Freeman	FEMA
City of Alexandria EOC	Bart Freeman	FEMA
DISTRICT OF COLUMBIA		
Washington, DC EOC	Patrick Twiss and David Gilder	FEMA
Emergency Worker Monitoring and Decontamination-St. Elizabeth's Hospital	Roman Helo	FEMA

APPENDIX 3
EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY AGREEMENTS

This appendix contains the extent-of-play agreements (EOPs) approved by FEMA Region III for the plume and post-plume exercise activities and out-of-sequence demonstrations related to the ingestion exposure pathway emergency planning zone (EPZ) around the Calvert Cliffs Nuclear Power Plant (CCNPP). The post-plume exercise was conducted on October 22-24, 2003. Out-of-sequence demonstrations were conducted on October 28-30, 2003. Demonstrations related to the plume exercise were postponed until 2004. The EOPs are arranged by State, according to the exercise evaluation area criteria.

The exercise evaluation area criteria, contained in the "FEMA Radiological Emergency Preparedness Exercise Evaluation Methodology," 67 FR 20580, April 25, 2002, represent a functional translation of the planning standards and evaluation criteria of NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for the Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980.

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

A. Extent-of-Play Agreements

For the purpose of this exercise, the State of Maryland, in cooperation with the Commonwealth of Virginia, developed and submitted an extent-of-play agreement to FEMA Region III for approval. In addition, the State of Delaware and the District of Columbia developed separate extent-of-play agreements for FEMA Region III approval. Below are the dates on which the extent-of-play agreements were approved by FEMA Region III:

- State of Maryland (and the Commonwealth of Virginia)—August 26, 2003
- State of Delaware—September 4, 2003
- District of Columbia—September 10, 2003

This page has been intentionally left blank.

CALVEX '03
Ingestion Pathway Exercise

STATE OF MARYLAND

EXERCISE CRITERIA
AND
EXTENT OF PLAY

Approved Director, Maryland Emergency Management Agency / Date

CALVERT CLIFFS NUCLEAR POWER PLANT
Maryland Jurisdictions

REVISION 1

This page has been intentionally left blank.

Calvert Cliffs Nuclear Power Plant
CALVEX 03

Revision 1

TABLE OF CONTENTS

This page has been intentionally left blank.

INTRODUCTION

The purpose of this document is to establish those exercise evaluation areas and corresponding extent of play parameters expected to be demonstrated during the Calvert Cliffs Nuclear Power Plant Plume and Ingestion Pathway graded exercise to be conducted on October 21 through 24, 2003.

This exercise is being conducted in close cooperation with the State of Delaware. The Delaware Emergency Management Agency (DEMA) will submit a separate set of evaluation objectives to FEMA Region III for consideration. References to "Ingestion Jurisdictions" will apply to all ingestion zone counties in the State of Maryland and the Commonwealth of Virginia.

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 noted for specific exercise evaluation areas described herein.

Out-of-sequence evaluations for plume phase activities will be conducted during the week of September 22, 2003 involving the three Calvert Cliffs risk jurisdictions in Maryland. These locations will be designated with an (*) with the associated objective. The activities to be demonstrated are:

- Special Facilities – Schools
- Reception Center Monitoring and Decontamination
- Emergency Worker, Equipment and Vehicles Monitoring and Decontamination
- Congregate Care
- Traffic and Access Control

Out-of-sequence evaluations for the ingestion phase activities will be conducted during the week of September 22, 2003 involving the thirteen Calvert Cliffs risk jurisdictions in Maryland, ten ingestion jurisdictions in Virginia and the District of Columbia. A separate document has been submitted to delineate the extent of play for these jurisdictions.

The full-scale graded plume phase exercise will be conducted on October 21st, 2003 involving all the Calvert Cliffs risk jurisdictions and selected State agencies in Maryland. Demonstration activities will be initiated following a simulated accident at the plant. The graded ingestion pathway activities will be conducted on October 22nd, 23rd and 24th, 2003.

Actions will be taken in accordance with each jurisdiction's county emergency plan and procedures unless specified under the specific extent of play.

State Locations

State EOC
State AAC
State IPCC
News Media Center
State Laboratory
State Field Teams (plume)
State Field Teams (ingestion)

Plume Zone Local Jurisdictions

Calvert County
- Stafford Road Landfill (emergency worker station)
- Calvert High School (reception Center)
- Plume Point Middle (congregate care)
- Patuxent High School (risk school)
- Dowell Elementary School (risk school)
- Mutual Elementary School (risk school)

St. Mary's County
- Leonard Hall (reception, emergency worker, mass care)
- Esperanza Middle School (risk school)
- Green Holly Elementary School (risk school)

Dorchester County
- Maple Elementary (reception, emergency worker)
- South Cambridge High School (congregate care)

Ingestion Zone Local Jurisdictions

Maryland Ingestion Jurisdictions
Anne Arundel County
Calvert County
Caroline County
Charles County
Dorchester County
Kent County
Prince Georges County
Queen Anne's County
Somerset County
St. Mary's County
Talbot County
Wicomico County
Worchester County

Washington DC

Virginia Ingestion Jurisdictions
Arlington County
Fairfax County
Prince William County
King George County
Caroline County
Westmoreland County
Essex County
Stafford County
City of Alexandria
City of Falls Church

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.a – Mobilization

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to alert, notify, and mobilize emergency personnel and to activate and staff emergency facilities.

EXTENT OF PLAY

Responsible OROs should demonstrate the capability to receive notification of an emergency situation from the licensee, verify the notification, and contact, alert, and mobilize key emergency personnel in a timely manner. Responsible OROs should demonstrate the activation of facilities for immediate use by mobilized personnel when they arrive to begin emergency operations. Activation of facilities should be completed in accordance with the plan and/or 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. Further, pre-positioning of staff for out-of-sequence demonstrations is appropriate in accordance with the extent of play agreement.

State of Maryland Extent of Play:
All activities must be based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Locations Evaluated:
State EOC, AAC, and NMC
Local plume jurisdictions

Outstanding Issues:
None

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.b – Facilities

Criterion 1.b.1 – Facilities are sufficient to support the emergency response. (NUREG-0654, H)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have facilities to support the emergency response.

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).

State of Maryland Extent of Play:
Facilities will be set up based on the ORO's plans and procedures and demonstrated, as they would be in an actual emergency.

Locations Evaluated:
State IPCC, NMC, Local Plume EOC's, Reception/Mass Care Centers, Emergency Worker Decontamination Centers. Reception Centers will only demonstrate set up of initial monitoring point and decontamination monitoring area. Entire set up of facility will not be demonstrated.

Outstanding Issues:
None

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.c – Direction and Control

Criterion 1.c.1 – Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654, A.1.d, A.2.a, b)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to control their overall response to an emergency.

EXTENT OF PLAY

Leadership personnel should demonstrate the ability to carry out essential functions of the response effort, for example: keeping the staff informed through periodic briefings and/or other means, coordinating with other appropriate OROs, and ensuring completion of requirements and requests.

State of Maryland Extent of Play:
All activities associated with direction and control will be performed based on the ORO's plans and procedures and completed, as they would be in an actual emergency.

Locations Evaluated:
State EOC, AAC, IPCC
Local Plume Zone Jurisdictions

Outstanding Issues:
State AAC—11-99-03-02 (corrected during the Nov. 19, 2002 PBAPS exercise)

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.d – Communications Equipment

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should establish reliable primary and backup communication systems to ensure communications with key emergency personnel at locations such as the following: appropriate contiguous governments within the emergency planning zone (EPZ), Federal emergency response organizations, the licensee and its facilities, emergency operations centers (EOC), and field teams.

EXTENT OF PLAY

OROs will demonstrate that a primary and at least one backup system are fully functional at the beginning of an exercise. If a communications system or system are not functional, but exercise performance is not affected, no exercise issue will be assessed. Communications equipment and procedures for facilities and field units should be used as needed for the transmission and receipt of exercise messages. All facilities and field teams should have the capability to access at least one communication system that is independent of the commercial telephone system. Responsible OROs should demonstrate the capability to manage the communication systems and ensure that all message traffic is handled without delays that might disrupt the conduct of emergency operations. OROs should ensure that a coordinated communication link for fixed and mobile medical support facilities exist.

The specific communications capabilities of OROs should be commensurate with that specified in the response plan and/or procedures. Exercise scenarios could require the failure of a communications system and the use of an alternate system.

State of Maryland Extent of Play:

All activities associated with the management of communications capabilities will be demonstrated based on the ORO's plans and procedures and completed as they would be in an actual emergency. Communications with the Ingestion Jurisdictions will be validated during the Oct 21 plume phase exercise during notification of the site area and general emergency classifications. Receipt of the call will be verified by facsimile or e-mail.

Locations Evaluated:
State EOC, AAC, Field Teams (plume), Field Teams (ingestion), Laboratory
Local Plume Zone Jurisdictions (*), Ingestion Jurisdictions.

Outstanding Issues:
None

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have emergency equipment and supplies adequate to support the emergency response.

EXTENT OF PLAY

Equipment within the facility(ies) should be sufficient and consistent with the role assigned to that facility in the ORO's plans and/or procedures in support of emergency operations. Use of maps and displays is encouraged.

All instruments, including air sampling flow meters (field teams only), should be inspected, inventoried, and operationally checked before each use. They should be calibrated in accordance with the manufacturer's recommendations (or at least annually for the unmodified CDV-700 series or if there are no manufacturer's recommendations for a specific instrument; modified CDV-700 instruments should be calibrated in accordance with the recommendation of the modification manufacturer.). A label indicating such calibration should be on each instrument or verifiable by other means. Note: Field team equipment is evaluated under 4.a.1; radiological laboratory equipment under 4.c.1; reception center and emergency worker facilities' equipment is evaluated under 6.a.1; and ambulance and medical facilities' equipment is evaluated under 6.d.1.

Sufficient quantities of appropriate direct-reading and permanent record dosimetry and dosimeter chargers should be available for issuance to all categories of emergency workers that could be deployed from that facility. Appropriate direct-reading dosimeters should allow individual(s) to read the administrative reporting limits and maximum exposure limits contained in the ORO's plans and procedures.

Dosimeters should be inspected for electrical leakage at least annually and replaced, if necessary. CDV-138s, due to their documented history of electrical leakage problems, should be inspected for electrical leakage at least quarterly and replaced if necessary. This leakage testing will be verified during the exercise, through documentation submitted in the Annual Letter of Certification, and/or through a staff assistance visit.

Responsible OROs should demonstrate the capability to maintain inventories of KI sufficient for use by emergency workers, as indicated on rosters; institutionalized individuals, as indicated in capacity lists for facilities; and, where stipulated by the plan and/or procedures, members of the general public (including transients) within the plume pathway EPZ.

Quantities of dosimetry and KI available and storage locations(s) will be confirmed by physical inspection at storage location(s) or through documentation of current inventory submitted during the exercise, provided in the Annual Letter of Certification submission, and/or verified during a Staff Assistance Visit. Available supplies of KI should be within the expiration date indicated on KI bottles or blister packs. As an alternative, the ORO may produce a letter from FEMA indicating that the KI supply remains potent, in accordance with Food and Drug Administration (FDA) guidance. FEMA issues these letters based upon the findings of the certified independent laboratory that performed the analysis at the ORO's request and expense.

At locations where traffic and access control personnel are deployed, appropriate equipment (e.g., vehicles, barriers, traffic cones and signs, etc.) should be available or their availability described.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. Electrical leakage information is included with the Annual Letter of certification. Electronic dosimetry used at some locations does not require electrical leakage testing.

Locations Evaluated:
State EOC, AAC, IPCC, Field Teams (plume), Field Teams (ingestion), Laboratory
Local Plume Zone Jurisdictions (*)

Outstanding Issues:
None

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.a – Emergency Worker Exposure Control

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, K.4)

INTENT

This sub-element is derived from NUREG-0654, which provides that an ORO 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 and 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 Total Effective Dose Equivalent or organ-specific limits) identified in the ORO's plans and procedures.

EXTENT OF PLAY

OROs authorized to send emergency workers into the plume exposure pathway EPZ should demonstrate a capability to meet the criterion based on their emergency plans and procedures.

Responsible OROs should demonstrate the capability to make decisions concerning the authorization of exposure levels in excess of pre-authorized levels and to the number of emergency workers receiving radiation dose above pre-authorized levels.

As appropriate, OROs should demonstrate the capability to make decisions on the distribution and administration of KI, as a protective measure, based on the ORO's plan and/or procedures or projected thyroid dose compared with the established protective action guides (PAGs) for KI administration.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. KI tablets for emergency workers will be simulated. Actual distribution of KI will not be demonstrated.

Locations Evaluated:
State Field Teams (plume), State Field Teams (ingestion), Laboratory
Local Plume Zone Jurisdictions (*)

Outstanding Issues:
None

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

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

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

INTENT

This sub-element is derived from NUREG-0654, which indicates that OROs have the capability to independently project integrated dose from exposure rates or other information and compare the estimated dose savings with the protective action guides. OROs have the capability to choose, among a range of protective actions, those most appropriate in a given emergency situation. OROs base these choices on protective action guides (PAGs) from the ORO's plans and procedures, or EPA 400-R-92-001 and other criteria, such as, plant conditions, licensee protective action recommendations, coordination of protective action decisions with other political jurisdictions (e.g. other affected OROs), availability of appropriate in-place shelter, weather conditions, evacuation time estimates, and situations that create higher than normal risk from evacuation.

EXTENT OF PLAY

During the initial stage of the emergency response, following notification of plant conditions that may warrant offsite protective actions, the ORO should demonstrate the capability to use appropriate means, described in the plan and/or procedures, to develop protective action recommendations (PARs) for decision-makers based on available information and recommendations from the licensee and field monitoring data, if available.

When release and meteorological data are provided by the licensee, the ORO also considers these data. The ORO should 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 appropriate to the scenario. In all cases, calculation of projected dose should be demonstrated. Projected doses should be related to quantities and units of the PAGs to which they will be compared. PARs should be promptly transmitted to decision-makers in a prearranged format.

Differences greater than a factor of 10 between projected doses by the licensee and the ORO should be discussed with the licensee with respect to the input data and assumptions used, the use of different models, or other possible reasons. Resolution of these differences should be incorporated into the PAR if timely and appropriate. The ORO should demonstrate the capability to use any additional data to refine projected doses and exposure rates and revise the associated PARs.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Locations Evaluated:
State AAC

Outstanding Issues:
State AAC—11-99-07-03 (corrected during the Nov. 19, 2002 PBAPS exercise)

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

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

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

INTENT

This sub-element is derived from NUREG-0654, which indicates that OROs have the capability to independently project integrated dose from exposure rates or other information and compare the estimated dose savings with the protective action guides. OROs have the capability to choose, among a range of protective actions, those most appropriate in a given emergency situation and base these choices on protective action guides (PAGs) from the ORO's plans and procedures, FRC Reports Numbers 5 and 7 or EPA 400-R-92-001 and other criteria, such as, plant conditions, licensee protective action recommendations, coordination of protective action decisions with other political jurisdictions (e.g. other affected OROs), availability of appropriate in-place shelter, weather conditions, evacuation time estimates, and situations that create higher than normal risk from evacuation.

EXTENT OF PLAY

OROs should have the capability to make both initial and subsequent PADs. They should demonstrate the capability to make initial PADs in a timely manner appropriate to the situation, based on notification from the licensee, assessment of plant status and releases, and PARs from the utility and ORO staff.

The dose assessment personnel may provide additional PARs based on the subsequent dose projections, field monitoring data, or information on plant conditions. The decision-makers should demonstrate the capability to change protective actions as appropriate based on these projections.

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

If more than one ORO is involved in decision-making, OROs should communicate and coordinate PADs with affected OROs. OROs should demonstrate the capability to communicate the contents of decisions to the affected jurisdictions.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. The process for making KI for the general public available at reception centers will be described to the evaluator at the appropriate centers. Actual KI will not be transported. KI will be available for inspection at the respective storage location. (note – this may be demonstrated during the Sept 22 out-of-sequence evaluations)

Locations Evaluated:
State EOC, AAC
Calvert County
St. Mary's County
Dorchester County

Outstanding Issues:
None

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.c – Protective Action Decisions for the Protective of Special Populations

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to determine protective action recommendations, including evacuation, sheltering and use of potassium iodide (KI), if applicable, for special population groups (e.g., hospitals, nursing homes, correctional facilities, schools, licensed day care centers, mobility impaired individuals, and transportation dependent individuals). Focus is on those special population groups that are (or potentially will be) affected by a radiological release from a nuclear power plant.

EXTENT OF PLAY

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 situations where there is a high-risk environment or where high-risk groups (e.g., the immobile or infirm) are involved: In these cases, examples of factors that should be considered are weather conditions, shelter availability, Evacuation Time Estimates, availability of transportation assets, risk of evacuation vs. risk from the avoided dose, and precautionary school evacuations. In situations were an institutionalized population cannot be evacuated, the administration of KI should be considered by the OROs.

State of Maryland Extent of Play:
All decision-making activities associated with protective actions, including consideration of available resources, for special population groups will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency.

Locations Evaluated:
Calvert County
St. Mary's County
Dorchester County

Outstanding Issues:
None

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

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

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, I.8; J.11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the means to assess the radiological consequences for the ingestion exposure pathway, relate them to the appropriate protective action guides (PAGs), and make timely, appropriate protective action decisions to mitigate exposure from the ingestion pathway.

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

EXTENT OF PLAY

It is expected that the ORO will 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 and procedures. Often such precautionary actions are initiated by the OROs based on criteria related to the facility's emergency classification levels (ECL). Such action may include recommendations to place milk animals on stored feed and to use protected water supplies.

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

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

such decisions should be communicated and to the extent practical, coordinated with neighboring and local OROs.

OROs should use Federal resources, as identified in the Federal Radiological Emergency Response Plan (FRERP), and other resources (e.g., compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. The IPCC and federal counterparts will establish a sample plan based on scenario information presented during the advanced party meetings and fly-over data presented by the FRMAC. The IPCC in coordination with the federal participants will determine Ingestion Pathway Protective Actions based on the sampling plan results.

Locations Evaluated:
State IPCC

Outstanding Issues:
None

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.e – Radiological Assessment and Decision-Making Concerning Relocation, Re-entry and Return

Criterion 2.e.1 – Timely, relocation, re-entry, 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, A.1.b; I.10; M)

INTENT

The sub-element is derived from NUREG-0654, which provides that OROs have the capability to make decisions on relocation, re-entry, and return of the general public. These decisions are essential for the protection of the public from the direct long-term exposure to deposited radioactive materials from a severe accident at a commercial nuclear power plant.

EXTENT OF PLAY

Relocation: OROs should demonstrate the capability to estimate integrated dose in contaminated areas and to compare these estimates with PAGs, apply decision criteria for relocation of those individuals in the general public who have not been evacuated but where projected doses are in excess of relocation PAGs and control access to evacuated and restricted areas. Decisions are made 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 should be based on factors such as the mix of radionuclides in deposited materials, calculated exposure rates vs. the PAGs and field samples of vegetation and soil analyses.

Re-entry: Decisions should be made regarding the 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 non direct-reading dosimeters for emergency workers; questions regarding the individual's objectives and locations expected to be visited and associated time frames; availability of maps and plots of radiation exposure rates; advice on areas to avoid; and procedures for exit including: monitoring of individuals, vehicles, and equipment, decision criteria regarding decontamination; and proper disposition of emergency worker dosimeters and maintenance of emergency worker radiation exposure records.

Responsible OROs should demonstrate the capability to develop a strategy for authorized re-entry of individuals into the restricted zone, based on established decision criteria. OROs should demonstrate the capability to modify those policies for security purposes

(e.g., police patrols), for maintenance of essential services (e.g., fire protection and utilities), and for other critical functions. They should 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 the farm animals or secure machinery for storage), or to retrieve important possessions. Coordinated policies for access and exposure control should be developed among all agencies with roles to perform in the restricted zone. OROs should demonstrate the capability to establish polices for provision of dosimetry to all individuals allowed to re-enter the restricted zone. The extent that OROs need to develop policies on re-entry will be determined by scenario events.

Return: Decisions are to be based 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 that is based on the relocation PAG.

Other factors that the ORO should consider are, for example: conditions that permit the cancellation of the emergency classification level and the relaxation of associated restrictive measures, basing return recommendations (i.e., permitting populations that were previously evacuated to reoccupy their homes and businesses on an unrestricted basis) on measurements of radiation from ground deposition; and 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.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. Decisions on Relocation, Re-entry and Return will be made by the IPCC on Oct 22 based on scenario data supplied by sample teams or controller information.

Locations Evaluated:
State IPCC

Outstanding Issues:
None

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

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

Criterion 3.a.1 – The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to provide for the following: distribution, use, collection, and processing of direct-reading dosimeters and permanent record dosimeters; provide for direct-reading dosimeters to be read at appropriate frequencies by emergency workers; maintain a radiation dose record for each emergency worker; and provide for establishing a decision chain or authorization procedure for emergency workers to incur radiation exposures in excess of protective action guides, always applying the ALARA (As Low As is Reasonably Achievable) principle as appropriate.

EXTENT OF PLAY

OROs should demonstrate the capability to provide appropriate direct-reading and permanent record dosimetry, dosimetry chargers, and instructions on the use of dosimetry to emergency workers. For evaluation purposes, appropriate direct-reading dosimetry is defined as dosimetry that allows individual(s) to read the administrative reporting limits (that are pre-established at a level low enough to consider subsequent calculation of Total Effective Dose Equivalent) and maximum exposure limits (for those emergency workers involved in life saving activities) contained in the OROs plans and procedures.

Each emergency worker should have the basic knowledge of radiation exposure limits as specified in the ORO's plan and/or procedures. Procedures to monitor and record dosimeter readings and to manage radiological exposure control should be demonstrated.

During a plume phase exercise, emergency workers should demonstrate the procedures to be followed when administrative exposure limits and turn-back values are reached. The emergency worker should report accumulated exposures during the exercise as indicated in the plans and procedures. OROs should demonstrate the actions described in the plan and/or procedures by determining whether to replace the worker, to authorize the worker to incur additional exposures or to take other actions. If scenario events do not require emergency workers to seek authorizations for additional exposure, evaluators should interview at least two emergency workers, to determine their knowledge of whom to contact in the event authorization is needed and at what exposure levels. Emergency workers may use any available resources (e.g. written procedures and/or co-workers) 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 and adequate control of exposure can be effected for all members of the team by one dosimeter worn by the team leader. Emergency workers who are assigned to low exposure rate areas, e.g., at reception centers, counting laboratories, emergency operations centers, and communications centers, may have individual direct-reading dosimeters or they may be monitored by dosimeters strategically placed in the work area. It should be noted that, even in these situations, each team member must still have their own permanent record dosimeter.

Individuals without specific radiological response missions, such as farmers for animal care, essential utility service personnel, or other members of the public who must re-enter an evacuated area following or during the plume passage, should be limited to the lowest radiological exposure commensurate with completing their missions.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. Dosimetry electrical leakage checks will be submitted with the ALC. Electronic dosimetry may be substituted for SRD's at some State or local jurisdictions.

Locations Evaluated:
State Field Teams (plume), Field Teams (ingestion), Laboratory
Local Plume Zone Jurisdictions

Outstanding Issues:

11-97-24-A-07	State Sample Team "A" did not demonstrate good contamination control procedures, as they occasionally placed survey instruments and sample tools on potentially contaminated ground while samples were being taken.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.b – Implementation of KI Decision

Criterion 3.b.1 – KI and appropriate instructions are available should a decision to recommend for the use of KI be made. Appropriate record keeping of the administration of KI for emergency workers and institutionalized individuals (not the general public) is maintained. (NUREG-0654, E.7.; J.10.e, f)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to provide radioprotective drugs for emergency workers, institutionalized individuals, and, if in the plan and/or 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 emergency workers and institutionalized individuals, the provision of KI to the general public is an ORO option, reflected in ORO's plans and procedures. Provisions should include the availability of adequate quantities, storage, and means of the distribution of radioprotective drugs.

EXTENT OF PLAY

OROs should demonstrate the capability to make KI available to emergency workers, institutionalized individuals, and, where provided for in the ORO plan and/or procedures, to members of the general public. OROs should demonstrate the capability to accomplish distribution of KI consistent with decisions made. Organizations should have the capability to develop and maintain lists of emergency workers and institutionalized individuals who have ingested KI, including documentation of the date(s) and time(s) they were instructed to ingest KI. The ingestion of KI recommended by the designated ORO health official is voluntary. For evaluation purposes, the actual ingestion of KI is not necessary. OROs should demonstrate the capability to formulate and disseminate appropriate instructions on the use of KI for those advised to take it. If a recommendation is made for the general public to take KI, appropriate information should be provided to the public by the means of notification specified in the ORO's plan and/or procedures.

Emergency workers should demonstrate the basic knowledge of procedures for the use of KI whether or not the scenario drives the use of KI. This can be accomplished by an interview with the evaluator.

State of Maryland Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Locations Evaluated:

State Field Teams (plume), Field Teams (ingestion), Laboratory
Local Plume Zone Jurisdictions

Outstanding Issues:

Calvert County—11-02-14-A-01	Field Monitoring Teams did not receive instructions to take KI in accordance with the Director of the County Health Officer.

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.c – Implementation of Protective Actions for Special Populations

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to implement protective action decisions, including evacuation and/or sheltering, for all special populations. Focus is on those special populations that are (or potentially will be) affected by a radiological release from a nuclear power plant.

EXTENT OF PLAY

Applicable OROs should demonstrate the capability to alert and notify (e.g., provide protective action recommendations and emergency information and instructions) special populations (hospitals, nursing homes, correctional facilities, mobility impaired individuals, transportation dependent, etc). OROs should demonstrate the capability to provide for the needs of special populations in accordance with the ORO's plans and procedures.

Contact with special populations and reception facilities may be actual or simulated, as agreed to in the Extent of Play. Some contacts with transportation providers should be actual, as negotiated in the extent of play. All actual and simulated contacts should be logged.

State of Maryland Extent of Play:

Lists of any special populations will be verified at the EOC. Contact with any facility will be simulated or discussed at the EOC.

Locations Evaluated:

Local Plume Zone Jurisdictions

Outstanding Issues:

None

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.c. – Implementation of Protective Actions for Special Populations

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to implement protective action decisions, including evacuation and/or sheltering, for all special populations. Focus is on those special population groups that are (or potentially will be) affected by a radiological release from a nuclear power plant.

EXTENT OF PLAY

Applicable OROs should demonstrate the capability to alert and notify all public school systems/districts, licensed day care centers, and participating private schools within the emergency planning zone of emergency conditions that are expected to or may necessitate protective actions for students.

In accordance with plans and/or procedures, OROs and/or officials of participating public and private schools and licensed day care centers should demonstrate the capability to make and implement prompt decisions on protective actions for students. Officials should demonstrate that the decision making process for protective actions considers (e.g., either accepts automatically or gives heavy weight to) protective action recommendations made by ORO personnel, the ECL at which these recommendations are received, preplanned strategies for protective actions for that ECL, and the location of students at the time (e.g., whether the students are still at home, en route to the school, or at the school).

Implementation of protective actions should be completed subject to the following provisions: At least one school in each affected school system or district, as appropriate, needs to demonstrate the implementation of protective actions. The implementation of canceling the school day, dismissing early, or sheltering should 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 process, appropriate school personnel including decision making officials (e.g., superintendent/principal, transportation director/bus dispatcher), and at least one bus driver (and the bus driver's escort, if applicable) should 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 plan and/or procedures, should be verified.

Officials of the participating school(s) or school system(s) should 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.

State of Maryland Extent of Play:
Calvert and St. Mary's county will demonstrate protective actions for schools as an out-of-sequence activity during the week of September 22, 2003. There are no risk schools in Dorchester County. **This element will be evaluated as an out-of-sequence activity.**

Locations Evaluated:
Calvert County (*)
St. Mary's County (*)
(see page 4 for list)

Outstanding Issues:
None

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to implement protective action plans, 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.

EXTENT OF PLAY

OROs should demonstrate the capability to select, establish, and staff appropriate traffic and access control points consistent with protective action decisions (for example, evacuating, sheltering, and relocation), in a timely manner. OROs should 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 should demonstrate accurate knowledge of their roles and responsibilities. This capability 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 (rail, water, and air traffic), they should demonstrate the capability to contact the State or Federal agencies with authority to control access.

State of Maryland Extent of Play:
All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. **This element will be evaluated as an out-of-sequence activity at the respective County EOC's.**

Locations Evaluated:
Calvert County (*)
St. Mary's County (*)
Dorchester County (*)

Outstanding Issues:
None

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to implement protective action plans, 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.

EXTENT OF PLAY

OROs should demonstrate the capability, as required by the scenario, to identify and take appropriate actions concerning impediments to evacuation. Actual dispatch of resources to deal with impediments, such as wreckers, need not be demonstrated; however, all contacts, actual or simulated should be logged.

State of Maryland Extent of Play:
All activities must be based on the ORO's plans and procedures and completed, as they would be in an actual emergency, unless specified above or indicated in the extent of play agreement. **This element will be evaluated as an out-of-sequence activity at the respective County EOC's.**

Locations Evaluated:
Calvert County
St. Mary's County
Dorchester County (*)

Outstanding Issues:
None

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

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

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 planning zone for implementation of protective actions. (NUREG-0654, J.9, 11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to implement protective actions, based on criteria recommended by current Food and Drug Administration guidance, for the ingestion pathway emergency planning zone (IPZ), the area within an approximate 50-mile radius of the nuclear power plant. This sub-element focuses on those actions required for implementation of protective actions.

EXTENT OF PLAY

Applicable OROs should demonstrate the capability to secure and utilize 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 ingestion pathway EPZ.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Maryland Extent of Play:
This activity will be demonstrated at the State EOC on Oct. 24th. Ingestion Pathway Protective Action Decisions developed by the State IPCC and FRMAC will be presented to the EOC representatives. The EOC will discuss and simulate initiation of the respective decisions. Contact with affected local jurisdictions will be demonstrated.

Locations Evaluated:
State EOC

Outstanding Issues:
None

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

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

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, E.5, 7; J.9, 11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to implement protective actions, based on criteria recommended by current Food and Drug Administration guidance, for the ingestion pathway emergency planning zone (IPZ), the area within an approximate 50-mile radius of the nuclear power plant. This sub-element focuses on those actions required for implementation of protective actions.

EXTENT OF PLAY

Development of measures and strategies for implementation of ingestion pathway zone (IPZ) protective actions should be demonstrated by formulation of protective action information for the general public and food producers and processors. This includes the capability for the rapid reproduction and distribution of appropriate reproduction-ready information and instructions to pre-determined individuals and businesses. OROs should demonstrate the capability to control, restrict or prevent distribution of contaminated food by commercial sectors. Exercise play should include demonstration of communications and coordination between organizations to implement protective actions. However, actual field play of implementation activities may be simulated. For example, communications and coordination with agencies responsible for enforcing food controls within the IPZ should be demonstrated, but actual communications with food producers and processors may be simulated.

State of Maryland Extent of Play:
This activity will be demonstrated at the State EOC on Oct. 24th. Ingestion Pathway Decisions developed by the State IPCC and FRMAC will be presented to the EOC representatives. The EOC will discuss and simulate initiation of the respective decisions. Contact with affected local jurisdictions will be demonstrated. News release pertinent to the decisions will be developed at the EOC.

Locations Evaluated:
State EOC

Outstanding Issues:
None

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.f – Implementation of Relocation, Re-entry, and Return Decisions

Criterion 3.f.1 – Decisions regarding controlled re-entry of emergency workers and relocation and return of the public are coordinated with appropriate organizations and implemented. (NUREG-0654, M.1, 3)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should demonstrate the capability to implement plans, procedures, and decisions for relocation, re-entry, and return. Implementation of these decisions is essential for the protection of the public from the direct long-term exposure to deposited radioactive materials from a severe accident at a commercial nuclear power plant.

EXTENT OF PLAY

Relocation: OROs should demonstrate the capability to coordinate and implement decisions concerning relocation of individuals, not previously evacuated, to an area where radiological contamination will not expose the general public to doses that exceed the relocation PAGs. OROs should also demonstrate the capability to provide for short-term or long-term relocation of evacuees who lived in areas that have residual radiation levels above the PAGs.

Areas of consideration should include the capability to communicate with OROs regarding timing of actions, notification of the population of the procedures for relocation, and the 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 should also demonstrate the capability to communicate instructions to the public regarding relocation decisions.

Re-entry: OROs should demonstrate the capability to control re-entry and exit of individuals who need to temporarily re-enter the restricted area, to protect them from unnecessary radiation exposure and for exit of vehicles and other equipment to control the spread of contamination outside the restricted area. Monitoring and decontamination facilities will be established as appropriate.

Examples of control procedure subjects are: (1) the assignment of, or checking for, direct-reading and non-direct-reading dosimeters for emergency workers; (2) questions regarding the individuals' objectives and locations expected to be visited and associated timeframes; (3) maps and plots of radiation exposure rates; (4) advice on areas to avoid; and procedures for exit, including monitoring of individuals, vehicles, and equipment, decision criteria regarding contamination, proper disposition of emergency worker dosimeters, and maintenance of emergency worker radiation exposure records.

Return: OROs should demonstrate the capability to implement policies concerning return of members of the public to areas that were evacuated during the plume phase. OROs should demonstrate the capability to identify and prioritize 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.

Communications among OROs for relocation, re-entry, and return may be simulated; however all simulated or actual contacts should be documented. These discussions may be accomplished in a group setting.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Maryland Extent of Play:
This activity will be demonstrated at the State EOC on Oct. 24th. Relocation, Re-entry and Return Decisions developed by the State IPCC and FRMAC will be presented to the EOC representatives. The EOC will discuss and simulate initiation of the respective decisions. Contact with affected local jurisdictions will be demonstrated.

Locations Evaluated:
State EOC

Outstanding Issues:
None

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.a – Plume Phase Field Measurements and Analysis

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to deploy field teams 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 indicates that OROs should have the capability to use field teams within the plume emergency planning zone to measure airborne radioiodine in the presence of noble gases and to measure radioactive particulate material in the airborne plume.

In the event of an accident at a nuclear power plant, the possible release of radioactive material may pose a risk to the nearby population and environment. Although accident assessment methods are available to project the extent and magnitude of a release, these methods are subject to large uncertainties. During an accident, it is important to collect field radiological data in order to help characterize any radiological release. This does not imply that plume exposure projections should be made from the field data. Adequate equipment and procedures are essential to such field measurement efforts.

EXTENT OF PLAY

Field teams should be equipped with all instruments and supplies necessary to accomplish their mission. This should include instruments capable of measuring gamma exposure rates and detecting the presence of beta radiation. These instruments should be capable of measuring a range of activity and exposure, including radiological protection/exposure control of team members and detection of activity on the air sample collection media, consistent with the intended use of the instrument and the ORO's plans and procedures. An appropriate radioactive check source should be used to verify proper operational response for each low range radiation measurement instrument (less than 1 R/hr) and for high range instruments when available. If a source is not available for a high range instrument, a procedure should exist to operationally test the instrument before entering an area where only a high range instrument can make useful readings.

State of Maryland Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. Plume zone field teams use equipment to measure ambient radiation levels only.

Locations Evaluated:
State Field Teams (plume and Ingestion)
Local Plume Zone Field Teams

Outstanding Issues:
None

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.a – Plume Phase Field Measurements and Analyses

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to deploy field teams 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 indicates that OROs should have the capability to use field teams within the plume emergency planning zone to measure airborne radioiodine in the presence of noble gases and to measure radioactive particulate material in the airborne plume.

In the event of an accident at a nuclear power plant, the possible release of radioactive material may pose a risk to the nearby population and environment. Although accident assessment methods are available to project the extent and magnitude of a release, these methods are subject to large uncertainties. During an accident, it is important to collect field radiological data in order to help characterize any radiological release. This does not imply that plume exposure projections should be made from the field data. Adequate equipment and procedures are essential to such field measurement efforts.

EXTENT OF PLAY

Responsible OROs should demonstrate the capability to brief teams on predicted plume location and direction, travel speed, and exposure control procedures before deployment.

Field measurements are needed to help characterize the release and to support the adequacy of implemented protective actions or to be a factor in modifying protective actions. Teams should be directed to take measurements in such locations, at such times to provide information sufficient to characterize the plume and impacts.
If the responsibility to obtain peak measurements in the plume has been accepted by license field monitoring teams, with concurrence from OROs, there is no requirement for these measurements to be repeated by State and local monitoring teams. If the license teams 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 field teams (licensee, federal, and ORO) is essential. Coordination concerning transfer of samples, including a chain-of-custody form, to a radiological laboratory should be demonstrated.

OROs should use Federal resources as identified in the Federal Radiological Emergency Response Plan (FRERP), and other resources (e.g., compacts, etc), if available. Evaluation

of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. State and local teams will not measure plume centerline. At least six readings will be obtained at a minimum of one survey point location. Airborne radioactivity samples will be counted in the field. Chain of custody procedures to deliver samples for additional analysis will be described to the evaluator.

Locations Evaluated:
State Field Teams (2) (plume)
Local Plume Zone Jurisdictions (1 each)

Outstanding Issues:
None

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.a – Plume Phase Field Measurements and Analyses

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/procedures) amount of radioactivity has been collected on the sampling media. (NUREG-0654, I.8, 9, 11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to deploy field teams 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 indicates that OROs should have the capability to use field teams within the plume emergency planning zone to measure airborne radioiodine in the presence of noble gases and to measure radioactive particulate material in the airborne plume.

In the event of an accident at a nuclear power plant, the possible release of radioactive material may pose a risk to the nearby population and environment. Although accident assessment methods are available to project the extent and magnitude of a release, these methods are subject to large uncertainties. During an accident, it is important to collect field radiological data in order to help characterize any radiological release. This does not imply that plume exposure projections should be made from the field data. Adequate equipment and procedures are essential to such field measurement efforts.

EXTENT OF PLAY

Field teams should demonstrate the capability to report measurements and field data pertaining to the measurement of airborne radioiodine and particulates to the field team coordinator, dose assessment, or other appropriate authority. If samples have radioactivity significantly above background, the appropriate authority should consider the need for expedited laboratory analyses of these samples. OROs should share data in a timely manner with all appropriate OROs. The methodology, including contamination control, instrumentation, preparation of samples, and a chain-of-custody form for transfer to a laboratory, will be in accordance with the ORO plan and/or procedures.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g., compacts, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. Only the State teams will demonstrate this objective. One sample will be obtained in an area that exhibits above background ambient. Delivery of samples for additional analysis will not be demonstrated. Chain of custody procedures will be described to the evaluator.

Locations Evaluated:
State Field Teams (plume)

Outstanding Issues:
None

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

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

Criterion 4.b.1 – The Field teams 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, I.8; J.11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to assess the actual or potential magnitude and locations of radiological hazards in the ingestion emergency planning zone (IPZ) and for relocation, re-entry and return measures.

This sub-element focuses on the collection of environmental samples for laboratory analyses that are essential for decisions on protection of the public from contaminated food and water and direct radiation from deposited materials.

EXTENT OF PLAY

The ORO field teams should 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 re-entry, relocation, and return decisions. When resources are available, the use of aerial surveys and in-situ gamma measurement is appropriate. All methodology, including contamination control, instrumentation, preparation of samples, and a chain-of-custody form for transfer to a laboratory, will be in accordance with the ORO's plan and/or procedures.

Ingestion pathway samples should be secured from agricultural products and water. Samples in support of relocation and return should be secured from soil, vegetation, and other surfaces in areas that received radioactive ground deposition.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. Sample teams will obtain samples from pre-designated areas that may not be actually impacted by scenario events. Chain of custody procedures will be described to the evaluator.

Locations Evaluated:
State Field Teams (ingestion)

Outstanding Issues:
None

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.c – Laboratory Operations

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to perform laboratory analyses of radioactivity in air, liquid, and environmental samples to support protective action decision-making.

EXTENT OF PLAY

The laboratory staff should demonstrate the capability to follow appropriate procedures for receiving samples, including logging of information, preventing contamination of the laboratory, 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 should demonstrate the capability to prepare samples for conducting measurements.

The laboratory should be appropriately equipped to provide analyses of media, as requested, on a timely basis, of sufficient quality and sensitivity to support assessments and decisions as anticipated by the ORO's plans and procedures. The laboratory instrument calibrations should 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 should be as described in the plans and procedures. New or revised methods may be used to analyze atypical radionuclide releases (e.g. transuranics or as a result of a terrorist event) or if warranted by circumstances of the event. Analysis may require resources beyond those of the ORO.

The laboratory staff is qualified in radioanalytical techniques and contamination control procedures.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Maryland Extent of Play:

These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. Analysis of atypical radionuclides will not be demonstrated. Samples containing transuranics or that exceed the measuring capability of the State Laboratory will be analyzed at a federal facility.

Locations Evaluated:
State Laboratory

Outstanding Issues:
None

EVALUATION AREA 5: EMERGENCY NOTIFICATION & PUBLIC INFORMATION

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to provide prompt instructions to the public within the plume pathway EPZ. Specific provisions addressed in this sub-element are derived from the Nuclear Regulatory Commission (NRC) regulations (10 CFR Part 50, Appendix E.IV.D.), and FEMA-REP-10, "Guide for the Evaluation of Alert and Notification systems for Nuclear Power Plants."

EXTENT OF PLAY

Responsible OROs should 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 pathway EPZ. Following the decision to activate the alert and notification system, in accordance with the ORO's plan and/or procedures, completion of system activation should be accomplished in a timely manner **(will not be subject to specific time requirements)** for primary alerting/notification. The initial message should include the elements required by current FEMA REP guidance.

For exercise purposes, timely is defined as "the responsible ORO personnel/ representatives demonstrate actions to disseminate the appropriate information/ instructions with a sense of urgency and without undue delay." If message dissemination is to be 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 should be fully demonstrated as they would in an actual emergency up to the point of transmission. Broadcast of the message(s) or test messages is not required. The alert signal activation may be simulated. However, the procedures should be demonstrated up to the point of actual activation.

The capability of the primary notification system to broadcast an instructional message on a 24-hour basis should be verified during an interview with appropriate personnel from the primary notification system.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. Actual siren sounding and EAS demonstration will be simulated.

Locations Evaluated:
Local Plume Zone Jurisdictions

Outstanding Issues:

EVALUATION AREA 5: EMERGENCY NOTIFICATION & PUBLIC INFORMATION

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to provide prompt instructions to the public within the plume pathway EPZ. Specific provisions addressed in this sub-element are derived from the Nuclear Regulatory Commission (NRC) regulations (10 CFR Part 50, Appendix E.IV.D.) and FEMA-REP-10, "Guide for the Evaluation of Alert and Notification systems for Nuclear Power Plants."

EXTENT OF PLAY

OROs with FEMA-approved exception areas (identified in the approved Alert and Notification System Design Report) 5-10 miles from the nuclear power plant should demonstrate the capability to accomplish primary alerting and notification of the exception area(s) within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The 45-minute clock will begin when the OROs make the decision to activate the alert and notification system for the first time for a specific emergency situation. The initial message should, at a minimum, include: a statement that an emergency exists at the plant and where to obtain additional information.

For exception area alerting, at least one route needs to be demonstrated and evaluated. The selected routes should vary from exercise to exercise. However, the most difficult route should be demonstrated at least once every six years. All alert and notification activities along the route should be simulated (e.g., the message that would actually be used is read for the evaluator, but not actually broadcast) as agreed upon in the extent of play. Actual testing of the mobile public address system will be conducted at some agreed upon location.

Backup alert and notification of the public should be completed within 45 minutes following the detection by the ORO of a failure of the primary alert and notification system. Backup route alerting needs only be demonstrated and evaluated, in accordance with the ORO's plan and/or procedures and the extent of play agreement, 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. If demonstrated, only one route needs to be

selected and demonstrated. All alert and notification activities along the route should be simulated (e.g., the message that would actually be used is read for the evaluator, but not actually broadcast) as agreed upon in the extent of play. Actual testing of the Public Address system will be conducted at some agreed upon location.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. One back-up route alerting route will be demonstrated in each risk county.

Locations Evaluated:
Local Plume Zone Jurisdictions

Outstanding Issues:

EVALUATION AREA 5: EMERGENCY NOTIFICATION & PUBLIC INFORMATION

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to disseminate to the public appropriate emergency information and instructions including any recommended protective actions. In addition, NUREG-0654 provides that OROs should ensure 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 also provides that a system be available for dealing with rumors. This system will hereafter be known as the public inquiry hotline.

EXTENT OF PLAY

Subsequent emergency information and instructions should be provided to the public and the media in a timely manner **(will not be subject to specific time requirements)**. For exercise purposes, timely is defined as "the responsible ORO personnel/representatives demonstrate actions to disseminate the appropriate information/instructions with a sense of urgency and without undue delay." If message dissemination is to be 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.

The OROs should ensure that emergency information and instructions are consistent with protective action decisions made by appropriate officials. The emergency information should contain all necessary and applicable instructions (e.g., evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, information concerning pets, shelter-in-place instructions, information concerning protective actions for schools and special populations, public inquiry telephone number, etc.) to assist the public in carrying out protective action decisions provided to them. OROs should demonstrate the capability to use language that is clear and understandable to the public within both the plume and ingestion pathway EPZs. This includes demonstration of the capability to use familiar landmarks and boundaries to describe protective action areas.

The emergency information should be all-inclusive by including previously identified protective action areas that are still valid as well as new areas. The OROs should 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 should

demonstrate the capability to ensure that current emergency information is repeated at pre-established intervals in accordance with the plan and/or procedures.

OROs should demonstrate the capability to develop emergency information in a non-English language when required by the plan and/or procedures.

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

OROs should 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 situation warrants. The OROs should demonstrate the capability to respond appropriately to inquiries from the news media. All information presented in media briefings and media releases should be consistent with protective action decisions and other emergency information provided to the public. Copies of pertinent emergency information (e.g., EAS messages and media releases) and media information kits should be available for dissemination to the media.

OROs should demonstrate that an effective system is in place for dealing with calls to the public inquiry hotline. Hotline staff should 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, should be included, as appropriate, in emergency information provided to the public, media briefings, and/or media releases.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. At least one media briefing will be conducted. Public inquiry calls will be initiated at a site emergency classification. Each location will receive at least six calls. Special News Broadcasts will be developed at appropriate centers but actual broadcast of these messages will not take place.

Locations Evaluated:
NMC (State and Calvert County)
Local Plume Zone Jurisdictions (St. Mary's and Dorchester County)

Outstanding Issues:
None

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.a. – Monitoring and Decontamination of Evacuees and Emergency Workers, and Registration of Evacuees

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to implement radiological monitoring and decontamination of evacuees and emergency workers, while minimizing contamination of the facility, and registration of evacuees at reception centers.

EXTENT OF PLAY

Radiological monitoring, decontamination, and registration facilities for evacuees/ emergency workers should be set up and demonstrated as they would be in an actual emergency or as indicated in the extent of play agreement. This would include adequate space for evacuees' vehicles. Expected demonstration should include 1/3 of the monitoring teams/portal monitors required to monitor 20% of the population allocated to the facility within 12 hours. Prior to using a monitoring instrument(s), the monitor(s) should demonstrate the process of checking the instrument(s) for proper operation.

Staff responsible for the radiological monitoring of evacuees should demonstrate the capability to attain and sustain a monitoring productivity rate per hour needed to monitor the 20% emergency planning zone (EPZ) population planning base within about 12 hours. This 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 monitoring procedure. A minimum of six individuals per monitoring station should be monitored, using equipment and procedures specified in the plan and/or procedures, to allow demonstration of monitoring, decontamination, and registration capabilities. The monitoring sequences for the first six simulated evacuees per monitoring team will be timed by the evaluators in order to determine whether the twelve-hour requirement can be meet. Monitoring of emergency workers does not have to meet the twelve-hour requirement. However, appropriate monitoring procedures should be demonstrated for a minimum of two emergency workers.

Decontamination of evacuees/emergency workers may be simulated and conducted by interview. The availability of provisions for separately showering should be demonstrated or explained. The staff should 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 clean from potentially contaminated areas. Provisions should also exist to separate contaminated and uncontaminated individuals,

provide changes of clothing for individuals whose clothing is contaminated, and store contaminated clothing and personal belongings to prevent further contamination of evacuees or facilities. In addition, for any individual found to be contaminated, procedures should be discussed concerning the handling of potential contamination of vehicles and personal belongings.

Monitoring personnel should explain the use of action levels for determining the need for decontamination. They should also explain the procedures for referring evacuees who cannot be adequately decontaminated for assessment and follow up in accordance with the ORO's plans and procedures. Contamination of the individual will be determined by controller inject and not simulated with any low-level radiation source.

The capability to register individuals upon completion of the monitoring and decontamination activities should be demonstrated. The registration activities demonstrated should include the establishment of a registration record for each individual, consisting of the individual's name, address, results of monitoring, and time of decontamination, if any, or as otherwise designated in the plan. Audio recorders, camcorders, or written records are all acceptable means for registration.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. **This element will be evaluated as an out-of-sequence activity.**

Locations Evaluated:
Calvert County - Stafford Landfill (emergency worker)
Calvert County – Calvert High School (evacuees)
St. Mary's County – Leonard Hall Drill Hall (co-located)
Dorchester County – Maple Elementary (co-located)(*)

Outstanding Issues:
None

Sub-element 6.b – Monitoring and Decontamination of Emergency Worker Equipment

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to implement radiological monitoring and decontamination of emergency worker equipment, including vehicles.

EXTENT OF PLAY

The monitoring staff should demonstrate the capability to monitor equipment, including vehicles, for contamination in accordance with the ORO's plans and procedures. Specific attention should be given to equipment, including vehicles, that was in contact with individuals found to be contaminated. The monitoring staff should demonstrate the capability to make decisions on the need for decontamination of equipment including vehicles based on guidance levels and procedures stated in the plan and/or procedures.

The area to be used for monitoring and decontamination should 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 should 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 air intake systems, radiator grills, bumpers, wheel wells, tires, and door handles should be demonstrated. Interior surfaces of vehicles that were in contact with individuals found to be contaminated should also be checked.

Decontamination capabilities, and provisions for vehicles and equipment that cannot be decontaminated, may be simulated and conducted by interview.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency. **This element will be evaluated as an out-of-sequence activity.**

Locations Evaluated:
Calvert County - Stafford Landfill
St. Mary's County – Leonard Hall Drill Hall (co-located)
Dorchester County – Maple Elementary (co-located)(*)

Outstanding Issues:
None

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.c – Temporary Care of Evacuees

Criterion 6.c.1 – Managers of congregate care facilities demonstrate that the centers have resources to provide services and accommodations consistent with the 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, J.10.h, J.12)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs demonstrate the capability to establish relocation centers in host areas. Congregate care is normally provided in support of OROs by the American Red Cross under existing letters of agreement.

EXTENT OF PLAY

Under this criterion, demonstration of congregate care centers may be conducted out of sequence with the exercise scenario. The evaluator should conduct a walk-through of the center to determine, through observation and inquiries, that the services and accommodations are consistent with ARC 3031 **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 stations for various services and providing those services to simulated evacuees. Given the substantial differences between demonstration and simulation of this criteria, exercise demonstration expectations should be clearly specified in extent-of-play agreements.

Congregate care staff should also demonstrate the capability to ensure that evacuees have been monitored for contamination, have been decontaminated as appropriate, and have been registered before entering the facility. 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 should be verified by providing the evaluator a list of sources with locations and estimates of quantities.

State of Maryland Extent of Play:
These activities will be based on the ORO's plans and procedures and completed, as they would be in an actual emergency.

This element will be evaluated as an out-of-sequence activity. Actual set up of the center will not be demonstrated. Processes will be described to the evaluator during an interview at the designated location.

Locations Evaluated:

Calvert – Plum Point Middle School
St. Mary's – Leonard Hall
Dorchester – South Dorchester High School - Cambridge (*)

Outstanding Issues:

Calvert County—11-02-19-P-01	The Calvert County Plan does not include Plum Point Middle or Windy Hill Elementary School.

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

The State of Delaware will participate in an evaluated full-scale post plume (ingestion exposure pathway) exercise on October 22nd, 23rd and 24th, 2003. This exercise will be held in cooperation with the State of Maryland. It will simulate a radiological emergency at the Calvert Cliffs Nuclear Power Plant that impacts both states. The State of Delaware will also participate in the plume phase activities of the exercise on October 21st. Plume phase activities will not be evaluated for the State of Delaware.

The following extent of play outlines the Evaluation Areas and the expected activities for each area. All activities will be performed as they would be in an actual response, except as noted in this extent of play agreement.

The last ingestion pathway exercise that the State of Delaware participated in was in conjunction with the Salem/Hope Creek site in October of 1996. There were no exercise issues noted during that exercise that will require corrective action by the State of Delaware during the CALVEX 2003 exercise.

In the event of an actual emergency requiring State EOC activation, the exercise will be terminated, following consultation with the FEMA team leader.

Approved Director, Washington DC Emergency Management Agency/Date

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

Locations

State of Delaware

- Emergency Operations Center (Smyrna)
  - Delaware Emergency Management Agency
    - Command and Control
    - Operations
    - Public information
    - Technical Assessment Center (TAC)

Delaware National Guard

- Field Monitoring Teams

Kent County Emergency Operations Center

Sussex County Emergency Operations Center

Teledyne-Brown (laboratory analysis) – Knoxville, TN

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

Extent of Play by Evaluation Area

All activities will be demonstrated in accordance with established plans and procedures, except where noted in this extent of play. The following evaluation areas and sub-criteria are consistent with the recent changes to FEMA's exercise evaluation methods as reflected in the Interim REP Program Manual dated August 2002. Generic extent of play text from the REP Manual is quoted verbatim for each evaluation criterion and has been placed in italics. Deviations from the generic extent of play are noted at the end of this text.

Evaluation Area 1 - EMERGENCY OPERATIONS MANAGEMENT

1.b – Facilities

Criterion 1.b.1

Facilities are sufficient to support the Emergency Response. (NUREG-0654, H)

Locations Evaluated: State EOC, Sussex County EOC, Kent County EOC

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).

State of Delaware Extent of Play:

Facilities will be set up based on the ORO's plans and procedures and demonstrated as they would be used in an actual emergency.

1.c – Direction and Control

Criterion 1.c.1

Key personnel with leadership roles for the ORO provide Direction and Control to that part of the overall response effort for which they are responsible. (NUREG-0654, A.1.d,2.a,b)

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

Locations Evaluated: State EOC, Sussex County EOC, Kent County EOC

EXTENT OF PLAY:

Leadership personnel should demonstrate the ability to carry out essential functions of the response effort, for example: keeping the staff informed through periodic briefings and/or other means, coordinating with other appropriate ORO's, and ensuring completion of requirements and requests.

All activities associated with direction and control must be performed based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless otherwise noted above or indicated in the extent-of-play agreement.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

1.d – Communications Equipment

Criterion 1.d.1

> *At least two communication systems are available and operate properly, and communication links are established with appropriate locations. Communications capabilities are managed in support of emergency operations. (NUREG-0654, F.1,2)*

Locations Evaluated: State EOC, Sussex County EOC, Kent County EOC, State Ingestion Sampling Teams

EXTENT OF PLAY:

ORO's will demonstrate that a primary and at least one backup system are fully functional at the beginning of an exercise. 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 should be used as needed for the transmission and receipt of exercise messages. All facilities and field teams should have the capability to access at least one communication system that is independent of the commercial telephone system. Responsible OROs should demonstrate the capability to manage the communication systems and ensure that all message traffic is handled without delays that might disrupt the conduct of emergency operations. OROs should

ensure that a coordinated communication link for fixed and mobile medical support facilities exists. The specific communications capabilities of ORO's should be commensurate with that specified in the response plan and/or procedures. Exercise scenarios could require the failure of a communications system and the use of an alternate system, as negotiated in the extent-of-play agreement.

All activities associated with the management of communications capabilities must be demonstrated based on the ORO's plans and procedures and completed as they would be in an actual emergency, unless otherwise noted above or in the extent-of-play agreement.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

1.e – Equipment and Supplies to Support Operation

Criterion 1.e.1

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

Locations Evaluated: State EOC, Sussex County EOC, Kent County EOC, State Ingestion Sampling Teams

EXTENT OF PLAY:

Equipment within the facility (facilities) should be sufficient and consistent with the role assigned to that facility in the ORO's plans and/or procedures in support of emergency operations. Use of maps and displays is encouraged.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

Evaluation Area 2 - PROTECTIVE ACTION DECISION MAKING

2.a – Emergency Worker Exposure Control

Criterion 2.a.1

ORO's use a decision making process, considering relevant factors and appropriate coordination, to insure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654, K.4)

Location Evaluated: Technical Assessment Center

EXTENT OF PLAY:

ORO's authorized to send emergency workers into the plume exposure pathway EPZ should demonstrate a capability to meet the criterion based on their emergency plans and procedures. Responsible ORO's should demonstrate the capability to make decisions concerning the authorization of exposure levels in excess of preauthorized levels and to the number of emergency workers receiving radiation dose above pre-authorized levels. As appropriate, ORO's should demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure, based on the ORO's plan and/or procedures or projected thyroid dose compared with the established Protective Action Guides (PAGs) for KI administration.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

2.d – Radiological Assessment & Decision Making for Ingestion Exposure

Criterion 2.d.1

Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the ORO planning criteria. (NUREG-0645 I.8; J.11)

Location Evaluated: State EOC, Technical Assessment Center

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

EXTENT OF PLAY:

It is expected that the Offsite Response Organizations (ORO's) will 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 and procedures. Often such precautionary actions are initiated by the ORO's based on criteria related to the facility's Emergency Classification Levels (ECL). Such actions may include recommendations to place milk animals on stored feed and to use protected water supplies.

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

The ORO should demonstrate timely decisions to minimize radiological impacts from the ingestion pathway, based on the given assessments and other information available. Any such decisions should be communicated and, to the extent practical, coordinated with neighboring and local OROs. OROs should use Federal resources, as identified in the Federal Radiological Emergency Response Plan (FRERP), and other resources (e.g., compacts, nuclear insurers, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

2.e – Radiological Assessment & Decision Making for Radiological Assessment and Decision Making for Relocation, Return, & Re-entry

Criterion 2.e.1

> *Timely relocation, re-entry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the ORO's plans and procedures. (NUREG-0654, A.1.b; I.10; M)*

Locations Evaluated: State EOC, Technical Assessment Center

EXTENT OF PLAY:

Relocation: OROs should demonstrate the capability to estimate integrated dose in contaminated areas and to compare these estimates with PAGs, apply decision criteria for relocation of those individuals in the general public who have not been evacuated but where projected doses are in excess of relocation PAGs, and control access to evacuated and restricted areas. Decisions are made 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 should be based on factors such as the mix of radionuclides in deposited materials, calculated exposure rates vs. the PAGs, and field samples of vegetation and soil analyses.

Reentry: Decisions should be made regarding the 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 non-direct-reading dosimetry for emergency workers; questions regarding the individual's objectives and locations expected to be visited and associated time frames; availability of maps and plots of radiation exposure rates; advice on areas to avoid; and procedures for exit including: monitoring of individuals, vehicles, and equipment; decision criteria regarding decontamination; and proper disposition of emergency worker dosimetry and maintenance of emergency worker radiation exposure records. Responsible ORO's should demonstrate the capability to develop a strategy for authorized Reentry of individuals into the restricted zone, based on established decision criteria.

ORO's should demonstrate the capability to modify those policies for security purposes (e.g., police patrols), for maintenance of essential services (e.g., fire protection and utilities), and for other critical functions. They should 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 to retrieve important possessions. Coordinated policies for access and exposure control should be developed among all agencies with roles to perform in the restricted zone. OROs should demonstrate the capability to establish policies for provision of dosimetry to all individuals allowed to re-enter the restricted zone. The extent that ORO's need to develop policies on Reentry will be determined by scenario events.

Return: Decisions are to be based 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 that is based on the relocation PAG. Other factors that the ORO should consider are, for example: conditions that permit the cancellation of the Emergency Classification Level and the relaxation of associated restrictive measures; basing return recommendations (i.e., permitting populations that were previously evacuated to reoccupy their homes and businesses on an unrestricted basis) on measurements of radiation from ground deposition; and 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.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Evaluation Area 3 - PROTECTIVE ACTION IMPLEMENTATION

3.a – Implementation of Emergency Worker Exposure Control

Criterion 3.a.1

The ORO's issue appropriate dosimeters and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3)

Locations Evaluated: Technical Assessment Center, State EOC, Sussex County EOC, Kent County EOC

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

EXTENT OF PLAY:

ORO's should demonstrate the capability to provide appropriate direct-reading and permanent record dosimetry, dosimeter chargers, and instructions on the use of dosimetry to emergency workers. For evaluation purposes, appropriate direct-reading dosimetry is defined as dosimetry that allows individual(s) to read the administrative reporting limits (that are pre-established at a level low enough to consider subsequent calculation of Total Effective Dose Equivalent) and maximum exposure limits (for those emergency workers involved in life saving activities) contained in the ORO's plans and procedures. Each emergency worker should have the basic knowledge of radiation exposure limits as specified in the ORO's plan and/or procedures. Procedures to monitor and record dosimeter readings and to manage radiological exposure control should be demonstrated. During a plume phase exercise, emergency workers should demonstrate the procedures to be followed when administrative exposure limits and turn-back values are reached. The emergency worker should report accumulated exposures during the exercise as indicated in the plans and procedures. OROs should demonstrate the actions described in the plan and/or procedures by determining whether to replace the worker, to authorize the worker to incur additional exposures or to take other actions. If scenario events do not require emergency workers to seek authorizations for additional exposure, evaluators should interview at least two emergency workers, to determine their knowledge of whom to contact in the event authorization is needed and at what exposure levels. Emergency 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 and adequate control of exposure can be effected for all members of the team by one dosimeter worn by the team leader. Emergency workers who are assigned to low exposure rate areas, e.g., at reception centers, counting laboratories, emergency operations centers, and communications centers, may have individual direct-reading dosimeters or they may be monitored by dosimeters strategically placed in the work area. It should be noted that, even in these situations, each team member must still have their own permanent record dosimetry. Individuals without specific radiological response missions, such as farmers for animal care, essential utility service personnel, or other members of the public who must re-enter an evacuated area following or during the plume passage, should be limited to the lowest radiological exposure commensurate with completing their missions.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

3.e – Implementation of Ingestion Pathway Decisions

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.

Locations Evaluated: Technical Assessment Center, State EOC, Sussex County EOC, Kent County EOC

EXTENT OF PLAY:

Applicable ORO's should demonstrate the capability to secure and utilize 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 ingestion pathway EPZ. OROs should use Federal resources as identified in the FRERP, and other resources (e.g., compacts, nuclear insurers, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency. Criteria will be based on FDA and EPA document recommendations.

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.

Locations Evaluated: State EOC, Sussex County EOC, Kent County EOC

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

EXTENT OF PLAY:

Development of measures and strategies for implementation of IPZ protective actions should be demonstrated by formulation of protective action information for the general public and food producers and processors. This includes either pre-distributed public information material in the IPZ or the capability for the rapid reproduction and distribution of appropriate reproduction-ready information and instructions to pre-determined individuals and businesses. ORO's should demonstrate the capability to control, restrict or prevent distribution of contaminated food by commercial sectors.

Exercise play should include demonstration of communications and coordination between organizations to implement protective actions. Actual field play of implementation activities may be simulated. For example, communications and coordination with agencies responsible for enforcing food controls within the IPZ should be demonstrated, but actual communications with food producers and processors may be simulated.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Criterion 3.f.1

> *Decisions regarding controlled re-entry of emergency workers and relocation and return of the public are coordinated with appropriate organizations and implemented.*

Locations Evaluated: State EOC, Technical Assessment Center, Sussex County EOC, Kent County EOC

EXTENT OF PLAY:

Relocation: OROs should demonstrate the capability to coordinate and implement decisions concerning relocation of individuals, not previously evacuated, to an area where radiological contamination will not expose the general public to doses that exceed the relocation PAGs. OROs should also demonstrate the capability to provide for short-term or long-term relocation of evacuees who lived in areas that have residual radiation levels above the (first-, second-, and fifty-year) PAGs.

Areas of consideration should include the capability to communicate with ORO's regarding timing of actions, notification of the population of the procedures for relocation, and the 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 should also demonstrate the capability to communicate instructions to the public regarding relocation decisions.

Reentry: OROs should demonstrate the capability to control Reentry and exit of individuals who need to temporarily re-enter the restricted area, to protect them from unnecessary radiation exposure and for exit of vehicles and other equipment to control the spread of contamination outside the restricted area. Monitoring and decontamination facilities will be established as appropriate. Examples of control procedure subjects are: (1) The assignment of, or checking for, direct-reading and non-direct-reading dosimetry for emergency workers; (2) questions regarding the individuals' objectives and locations expected to be visited and associated timeframes; (3) maps and plots of radiation exposure rates; (4) advice on areas to avoid; and procedures for exit, including monitoring of individuals, vehicles, and equipment, decision criteria regarding contamination, proper disposition of emergency worker dosimetry, and maintenance of emergency worker radiation exposure records.

Return: OROs should demonstrate the capability to implement policies concerning return of members of the public to areas that were evacuated during the plume phase. OROs should demonstrate the capability to identify and prioritize 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.

Communications among OROs for relocation, reentry, and return may be simulated; however, all simulated or actual contacts should be documented. These discussions may be accomplished in a group setting. OROs should use Federal resources as identified in the FRERP, and other resources (e.g., compacts, nuclear insurers, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

Evaluation Area 4 - FIELD MEASUREMENT AND ANALYSIS

4.b – Post Plume Phase, Field Measurements & Sampling

Criterion 4.b.1

The field teams 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.

Locations Evaluated: State Ingestion Sampling Team

EXTENT OF PLAY:

The ORO's field team should 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, the use of aerial surveys and in-situ gamma measurement is appropriate. All methodology, including contamination control, instrumentation, preparation of samples, and a chain-of-custody form for transfer to a laboratory, will be in accordance with the ORO's plan and/or procedures.

Ingestion pathway samples should be secured from agricultural products and water. Samples in support of relocation and return should be secured from soil, vegetation, and other surfaces in areas that received radioactive ground deposition. ORO's should use Federal resources as identified in the FRERP, and other resources (for example, compacts, utility, nuclear insurers, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

A single sampling team will be evaluated by FEMA.

Communications from the EOC to the sampling team will be simulated. Directions to a predetermined sampling location(s) will be provided by a State controller. These location(s) may or may not coincide with the footprint of the plume. The team will collect one or more samples based on the crops in the field

at the time [soil, water, milk, leafy vegetation, crops]. Sample transport to the analysis lab will be simulated.

If required sampling team will demonstrate donning anti-contamination equipment, but will not wear them during sample collection.

4.c – Laboratory Operations

Criterion 4.c.1

The laboratory is capable of performing required radiological analyses to support protective action decisions.

Location Evaluated: Teledyne-Brown

EXTENT OF PLAY:

The laboratory staff should demonstrate the capability to follow appropriate procedures for receiving samples, including logging of information, preventing contamination of the laboratory, preventing buildup of background radiation due to stored samples, preventing cross contamination of samples, preserving samples that may spoil (for example, milk), and keeping track of sample identity. In addition, the laboratory staff should demonstrate the capability to prepare samples for conducting measurements. The laboratory should be appropriately equipped to provide analyses of media, as requested, on a timely basis, of sufficient quality and sensitivity to support assessments and decisions as anticipated by the ORO's plans and procedures. The laboratory (laboratories) instrument calibrations should 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 should be as described in the plans and procedures. New or revised methods may be used to analyze atypical radionuclide releases (for example, transuranics or as a result of a terrorist event) or if warranted by circumstances of the event. Analysis may require resources beyond those of the ORO. The laboratory staff should be qualified in radioanalytical techniques and contamination control procedures.

ORO's should use Federal resources as identified in the FRERP, and other resources (for example, compacts, utility, nuclear insurers, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

Extent of Play Agreement for the State of Delaware
CALVEX 2003 Post Plume Exercise

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

Evaluation Area 5 - EMERGENCY INFORMATION AND PUBLIC NOTIFICATION

5.b – Emergency Information and Instructions for the Public and the Media

Criterion 5.b.1

ORO's provide accurate emergency information and instructions to the public and the news media in a timely manner. (NUREG-0654, E.5.7, G.3.a, G.4.a,b,c)

Location Evaluated: State EOC

EXTENT OF PLAY:

Subsequent emergency information and instructions should be provided to the public and the media in a timely manner (will not be subject to specific time requirements). For exercise purposes, timely is defined as "the responsible ORO personnel/representatives demonstrate actions to disseminate the appropriate information/instructions with a sense of urgency and without undue delay." If message dissemination is to be 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.

The ORO should ensure that emergency information and instructions are consistent with protective action decisions made by appropriate officials. The emergency information should contain all necessary and applicable instructions (for example, evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, information concerning pets, shelter-in-place instructions, information concerning protective actions for schools and special populations, public inquiry telephone number, etc.) to assist the public in carrying out protective action decisions provided to them. The ORO should also be prepared to disclose and explain the Emergency Classification Level (ECL) of the incident. At a minimum, this information must be included in media briefings and/or media releases. OROs should demonstrate the capability to use language that is clear and understandable to the public within both the plume and ingestion pathway EPZs. This includes demonstration of the capability to use familiar landmarks and boundaries to describe protective action areas.

The emergency information should be all-inclusive by including previously identified protective action areas that are still valid, as well as new areas. The OROs should 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 should demonstrate the capability to ensure that current emergency information is repeated at pre-established intervals in accordance with the plan and/or procedures. OROs should demonstrate the capability to develop emergency information in a non-English language when required by the plan and/or procedures.

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

ORO's should 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 situation warrants. The OROs should demonstrate the capability to respond appropriately to inquiries from the news media. All information presented in media briefings and media releases should be consistent with protective action decisions and other emergency information provided to the public. Copies of pertinent emergency information (for example, Emergency Alert System [EAS] messages and media releases) and media information kits should be available for dissemination to the media. OROs should demonstrate that an effective system is in place for dealing with calls to the public inquiry hotline. Hotline staff should 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, should be included, as appropriate, in emergency information provided to the public, media briefings, and/or media releases.

State of Delaware Extent of Play:

All activities will be based on the ORO's plans and procedures and completed as they would be in an actual emergency.

This page has been intentionally left blank.

CALVEX '03
Ingestion Pathway Exercise

WASHINGTON D.C.

EXERCISE CRITERIA
AND
EXTENT OF PLAY

Approved Director, Maryland Emergency Management Agency / Date

CALVERT CLIFFS NUCLEAR POWER PLANT
Maryland Jurisdictions

REVISION 2

This page has been intentionally left blank.

Calvert Cliffs Nuclear Power Plant
CALVEX 03

TABLE OF CONTENTS

This page has been intentionally left blank.

INTRODUCTION

The purpose of this document is to establish those exercise evaluation areas and corresponding extent of play parameters expected to be demonstrated by the District of Columbia during the Calvert Cliffs Nuclear Power Plant Post Plume graded (out-of-sequence) exercise to be conducted on September 25, 2003.

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 noted for specific exercise evaluation areas described herein.

Out-of-sequence evaluations for the ingestion phase activities will be conducted during the week of September 22, 2003 involving the thirteen Calvert Cliffs risk jurisdictions in Maryland, ten ingestion jurisdictions in Virginia and the District of Columbia. The objectives listed below pertain only to the District of Columbia. The remaining ingestion pathway jurisdiction evaluation criteria will be submitted in a separate document. The activities to be demonstrated by the District are:

- Mobilization (1.a.1)
- Facilities (1.b.1) (except plume jurisdictions)
- Direction and Control (1.c.1)
- Communications (1.d.1)
- Equipment and Supplies to Support Operations (1.e.1)
- Emergency Worker Exposure Control (2.a.1)
- Radiological Assessment & Decision Making for Ingestion Exposure (2.d.1)
- Radiological Assessment & Decision Making for Relocation, Re-entry & Return (2.e.1)
- Implementation of Emergency Worker Control (3.a.1)
- Implementation of Ingestion Decisions Using Adequate Information (3.e.1)
- Implementation of Ingestion Decisions Showing Strategies and Instructional Materials (3.e.2)
- Implementation of Relocation, Re-entry and Return Decisions (3.f.1)
- Emergency Information and Instructions for the Public and Media (5.b.1)

For most evaluation areas relating to radiological monitoring assessment, the District of Columbia will rely on the federal resources supplied by the FRMAC. Evaluation of these criteria will be based on the knowledge of these resources and capabilities.

The full-scale graded plume phase exercise will be conducted on October 21st, 2003 involving all the Calvert Cliffs risk jurisdictions and selected State agencies in Maryland. Demonstration activities will be initiated following a simulated accident at the plant. The graded ingestion pathway activities will be conducted on October 22nd, 23rd and 24th, 2003.

Actions will be taken in accordance with the Districts Emergency Plan and procedures unless specified under the specific extent of play.

Locations

District of Columbia EOC

Monitoring and Decontamination Area (TBD)
- Field Teams (ingestion)
- Emergency Workers

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.a – Mobilization

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to alert, notify, and mobilize emergency personnel and to activate and staff emergency facilities.

EXTENT OF PLAY

Responsible OROs should demonstrate the capability to receive notification of an emergency situation from the licensee, verify the notification, and contact, alert, and mobilize key emergency personnel in a timely manner. Responsible OROs should demonstrate the activation of facilities for immediate use by mobilized personnel when they arrive to begin emergency operations. Activation of facilities should be completed in accordance with the plan and/or 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. Further, pre-positioning of staff for out-of-sequence demonstrations is appropriate in accordance with the extent of play agreement.

District of Columbia Extent of Play:
Activation of the EOC will be initiated for declaration of a Site Emergency. EOC reps involved in assessment and decision making will be present.

Locations Evaluated:
District of Columbia EOC

Outstanding Issues:

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.b – Facilities

Criterion 1.b.1 – Facilities are sufficient to support the emergency response. (NUREG-0654, H)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have facilities to support the emergency response.

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, and ventilation backup power and/or alternate facility (if required to support operations).

District of Columbia Extent of Play:
Facilities will be set up based on the ORO's plans and procedures and demonstrated, as they would be in an actual emergency.

Locations Evaluated:
District of Columbia EOC
Monitoring and Decontamination Facility

Outstanding Issues:

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.c – Direction and Control

Criterion 1.c.1 – Key personnel with leadership roles for the ORO provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654, A.1.d, A.2.a, b)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to control their overall response to an emergency.

EXTENT OF PLAY

Leadership personnel should demonstrate the ability to carry out essential functions of the response effort, for example: keeping the staff informed through periodic briefings and/or other means, coordinating with other appropriate OROs, and ensuring completion of requirements and requests.

District of Columbia Extent of Play:

All activities associated with direction and control will be performed based on the ORO's plans and procedures and completed, as they would be in an actual emergency.

Locations Evaluated:

District of Columbia EOC

Outstanding Issues:

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.d – Communications Equipment

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should establish reliable primary and backup communication systems to ensure communications with key emergency personnel at locations such as the following: appropriate contiguous governments within the emergency planning zone (EPZ), Federal emergency response organizations, the licensee and its facilities, emergency operations centers (EOC), and field teams.

EXTENT OF PLAY

OROs will demonstrate that a primary and at least one backup system are fully functional at the beginning of an exercise. If a communications system or system are not functional, but exercise performance is not affected, no exercise issue will be assessed. Communications equipment and procedures for facilities and field units should be used as needed for the transmission and receipt of exercise messages. All facilities and field teams should have the capability to access at least one communication system that is independent of the commercial telephone system. Responsible OROs should demonstrate the capability to manage the communication systems and ensure that all message traffic is handled without delays that might disrupt the conduct of emergency operations. OROs should ensure that a coordinated communication link for fixed and mobile medical support facilities exist.

The specific communications capabilities of OROs should be commensurate with that specified in the response plan and/or procedures. Exercise scenarios could require the failure of a communications system and the use of an alternate system.

District of Columbia Extent of Play:
Communication into the EOC to demonstrate exercise play for the September activities will be by controller inject. Equipment will be evaluated through discussion with the evaluator. Actual communications will be demonstrated in October and will be evaluated from the point of origin (i.e. MEMA).

Locations Evaluated:
District of Columbia EOC

Outstanding Issues:

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have emergency equipment and supplies adequate to support the emergency response.

EXTENT OF PLAY

Equipment within the facility(ies) should be sufficient and consistent with the role assigned to that facility in the ORO's plans and/or procedures in support of emergency operations. Use of maps and displays is encouraged.

All instruments, including air sampling flow meters (field teams only), should be inspected, inventoried, and operationally checked before each use. They should be calibrated in accordance with the manufacturer's recommendations (or at least annually for the unmodified CDV-700 series or if there are no manufacturer's recommendations for a specific instrument; modified CDV-700 instruments should be calibrated in accordance with the recommendation of the modification manufacturer.). A label indicating such calibration should be on each instrument or verifiable by other means. Note: Field team equipment is evaluated under 4.a.1; radiological laboratory equipment under 4.c.1; reception center and emergency worker facilities' equipment is evaluated under 6.a.1; and ambulance and medical facilities' equipment is evaluated under 6.d.1.

Sufficient quantities of appropriate direct-reading and permanent record dosimetry and dosimeter chargers should be available for issuance to all categories of emergency workers that could be deployed from that facility. Appropriate direct-reading dosimeters should allow individual(s) to read the administrative reporting limits and maximum exposure limits contained in the ORO's plans and procedures.

Dosimeters should be inspected for electrical leakage at least annually and replaced, if necessary. CDV-138s, due to their documented history of electrical leakage problems, should be inspected for electrical leakage at least quarterly and replaced if necessary. This leakage testing will be verified during the exercise, through documentation submitted in the Annual Letter of Certification, and/or through a staff assistance visit.

Responsible OROs should demonstrate the capability to maintain inventories of KI sufficient for use by emergency workers, as indicated on rosters; institutionalized individuals, as indicated in capacity lists for facilities; and, where stipulated by the plan and/or procedures, members of the general public (including transients) within the plume pathway EPZ.

Quantities of dosimetry and KI available and storage locations(s) will be confirmed by physical inspection at storage location(s) or through documentation of current inventory submitted during the exercise, provided in the Annual Letter of Certification submission, and/or verified during a Staff Assistance Visit. Available supplies of KI should be within the expiration date indicated on KI bottles or blister packs. As an alternative, the ORO may produce a letter from FEMA indicating that the KI supply remains potent, in accordance with Food and Drug Administration (FDA) guidance. FEMA issues these letters based upon the findings of the certified independent laboratory that performed the analysis at the ORO's request and expense.

At locations where traffic and access control personnel are deployed, appropriate equipment (e.g., vehicles, barriers, traffic cones and signs, etc.) should be available or their availability described.

District of Columbia Extent of Play:
The District will not perform air sampling. Emergency worker demonstrations will include field team personnel that perform ambient radiation monitoring and emergency workers that assist in monitoring and decontamination of emergency workers and equipment. Emergency workers are issued electronic self-reading dosimetry. Electrical leakage tests for this dosimetry does not apply. The District of Columbia does not maintain permanent dosimetry. The FRMAC teams upon arrival will issue permanent dosimetry. Issuance of KI to emergency workers will not be demonstrated for participants beyond the 10-mile emergency planning zone and is not required for the District's emergency workers

Locations Evaluated:
District of Columbia EOC
Field Teams (ingestion)

Outstanding Issues:

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.a – Emergency Worker Exposure Control

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, K.4)

INTENT

This sub-element is derived from NUREG-0654, which provides that an ORO 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 and 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 Total Effective Dose Equivalent or organ-specific limits) identified in the ORO's plans and procedures.

EXTENT OF PLAY

Responsible OROs should demonstrate the capability to make decisions concerning the authorization of exposure levels in excess of pre-authorized levels and to the number of emergency workers receiving radiation dose above pre-authorized levels.

District of Columbia Extent of Play:

The District of Colombia emergency workers assist the FRMAC teams and use the procedures and guidance supplied by the FRMAC including the "Radiological Emergency Response Health and Safety Manual" (DOE/NV/11718--440). Emergency workers will be aware of their administrative emergency worker dose limits. Administration of potassium iodide it emergency workers is not warranted outside the 10-mile emergency planning zone.

Locations Evaluated:

Field Teams (ingestion) (monitoring and decontamination)

Outstanding Issues:

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

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

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, I.8; J.11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the means to assess the radiological consequences for the ingestion exposure pathway, relate them to the appropriate protective action guides (PAGs), and make timely, appropriate protective action decisions to mitigate exposure from the ingestion pathway.
During an accident at a nuclear power plant, a release of radioactive material may contaminate water supplies and agricultural products in the surround areas. Any such contamination would likely occur during the plume phase of the accident, and depending on the nature of the release could impact the ingestion pathway for weeks or years.

EXTENT OF PLAY
It is expected that the ORO will 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 and procedures. Often such precautionary actions are initiated by the OROs based on criteria related to the facility's emergency classification levels (ECL). Such action may include recommendations to place milk animals on stored feed and to use protected water supplies.

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

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

such decisions should be communicated and to the extent practical, coordinated with neighboring and local OROs.

OROs should use Federal resources, as identified in the Federal Radiological Emergency Response Plan (FRERP), and other resources (e.g., compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating.

District of Columbia Extent of Play:
Precautionary protective actions may be taken based on plant conditions via controller inject. The District of Columbia will, in coordination with the FRMAC resources, will develop a sample plan to determine the impact on affected areas. The District of Columbia will make appropriate Protective Action Decisions (PADs) based on recommendations from the FRMAC assessment and sampling teams.

Locations Evaluated:
District of Columbia EOC

Outstanding Issues:

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

Sub-element 2.e – Radiological Assessment and Decision-Making Concerning Relocation, Re-entry and Return

Criterion 2.e.1 – Timely, relocation, re-entry, 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, A.1.b; I.10; M)

INTENT

The sub-element is derived from NUREG-0654, which provides that OROs have the capability to make decisions on relocation, re-entry, and return of the general public. These decisions are essential for the protection of the public from the direct long-term exposure to deposited radioactive materials from a severe accident at a commercial nuclear power plant.

EXTENT OF PLAY

Relocation: OROs should demonstrate the capability to estimate integrated dose in contaminated areas and to compare these estimates with PAGs, apply decision criteria for relocation of those individuals in the general public who have not been evacuated but where projected doses are in excess of relocation PAGs and control access to evacuated and restricted areas. Decisions are made 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 should be based on factors such as the mix of radionuclides in deposited materials, calculated exposure rates vs. the PAGs and field samples of vegetation and soil analyses.

Re-entry: Decisions should be made regarding the 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 non direct-reading dosimeters for emergency workers; questions regarding the individual's objectives and locations expected to be visited and associated time frames; availability of maps and plots of radiation exposure rates; advice on areas to avoid; and procedures for exit including: monitoring of individuals, vehicles, and equipment, decision criteria regarding decontamination; and proper disposition of emergency worker dosimeters and maintenance of emergency worker radiation exposure records.

Responsible OROs should demonstrate the capability to develop a strategy for authorized re-entry of individuals into the restricted zone, based on established decision criteria. OROs should demonstrate the capability to modify those policies for security purposes (e.g., police patrols), for maintenance of essential services (e.g., fire protection and

utilities), and for other critical functions. They should 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 the farm animals or secure machinery for storage), or to retrieve important possessions. Coordinated policies for access and exposure control should be developed among all agencies with roles to perform in the restricted zone. OROs should demonstrate the capability to establish polices for provision of dosimetry to all individuals allowed to re-enter the restricted zone. The extent that OROs need to develop policies on re-entry will be determined by scenario events.,

Return: Decisions are to be based 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 that is based on the relocation PAG.

Other factors that the ORO should consider are, for example: conditions that permit the cancellation of the emergency classification level and the relaxation of associated restrictive measures, basing return recommendations (i.e., permitting populations that were previously evacuated to reoccupy their homes and businesses on an unrestricted basis) on measurements of radiation from ground deposition; and 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.

District of Columbia Extent of Play:
The District of Columbia will make Relocation and Re-entry decisions based on recommendations from the FRMAC assessment and sampling teams. Return decisions do not apply to the District.

Locations Evaluated:
District of Columbia EOC

Outstanding Issues:

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

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

Criterion 3.a.1 – The OROs issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to provide for the following: distribution, use, collection, and processing of direct-reading dosimeters and permanent record dosimeters; provide for direct-reading dosimeters to be read at appropriate frequencies by emergency workers; maintain a radiation dose record for each emergency worker; and provide for establishing a decision chain or authorization procedure for emergency workers to incur radiation exposures in excess of protective action guides, always applying the ALARA (As Low As is Reasonably Achievable) principle as appropriate.

EXTENT OF PLAY

OROs should demonstrate the capability to provide appropriate direct-reading and permanent record dosimetry, dosimetry chargers, and instructions on the use of dosimetry to emergency workers. **For evaluation purposes, appropriate direct-reading dosimetry is defined as dosimetry that allows individual(s) to read the administrative reporting limits (that are pre-established at a level low enough to consider subsequent calculation of Total Effective Dose Equivalent) and maximum exposure limits (for those emergency workers involved in life saving activities) contained in the OROs plans and procedures.**

Each emergency worker should have the basic knowledge of radiation exposure limits as specified in the ORO's plan and/or procedures. Procedures to monitor and record dosimeter readings and to manage radiological exposure control should be demonstrated.

During a plume phase exercise, emergency workers should demonstrate the procedures to be followed when administrative exposure limits and turn-back values are reached. The emergency worker should report accumulated exposures during the exercise as indicated in the plans and procedures. OROs should demonstrate the actions described in the plan and/or procedures by determining whether to replace the worker, to authorize the worker to incur additional exposures or to take other actions. If scenario events do not require emergency workers to seek authorizations for additional exposure, evaluators should interview at least two emergency workers, to determine their knowledge of whom to contact in the event authorization is needed and at what exposure levels. Emergency workers may use any available resources (e.g. written procedures and/or co-workers) 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 and adequate control of exposure can be effected for all members of the team by one dosimeter worn by the team leader. Emergency workers who are assigned to low exposure rate areas, e.g., at reception centers, counting laboratories, emergency operations centers, and communications centers, may have individual direct-reading dosimeters or they may be monitored by dosimeters strategically placed in the work area. It should be noted that, even in these situations, each team member must still have their own permanent record dosimeter.

Individuals without specific radiological response missions, such as farmers for animal care, essential utility service personnel, or other members of the public who must re-enter an evacuated area following or during the plume passage, should be limited to the lowest radiological exposure commensurate with completing their missions.

District of Columbia Extent of Play:
Emergency worker exposures are monitored via electronic dosimetry. Any permanent dosimetry requirements (i.e. TLDs) will be provided when the DOE arrives to coordinate federal assistance. The District of Columbia assets will be coordinated with the FRMAC teams.

Locations Evaluated:
Field Teams
Monitoring and Decontamination Teams

Outstanding Issues:

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

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

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, E.5, 7; J.9, 11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to implement protective actions, based on criteria recommended by current Food and Drug Administration guidance, for the ingestion pathway emergency planning zone (IPZ), the area within an approximate 50-mile radius of the nuclear power plant. This sub-element focuses on those actions required for implementation of protective actions.

EXTENT OF PLAY

Development of measures and strategies for implementation of ingestion pathway zone (IPZ) protective actions should be demonstrated by formulation of protective action information for the general public and food producers and processors. This includes the capability for the rapid reproduction and distribution of appropriate reproduction-ready information and instructions to pre-determined individuals and businesses. OROs should demonstrate the capability to control, restrict or prevent distribution of contaminated food by commercial sectors. Exercise play should include demonstration of communications and coordination between organizations to implement protective actions. However, actual field play of implementation activities may be simulated. For example, communications and coordination with agencies responsible for enforcing food controls within the IPZ should be demonstrated, but actual communications with food producers and processors may be simulated.

District of Columbia Extent of Play:

The District of Columbia will discuss implementation of Ingestion Pathway decisions based on controller injects or evaluator questions. Actual field play of implementation activities will be simulated.

Locations Evaluated:

District of Columbia EOC

Outstanding Issues:

EVALUATION AREA 3: PROTECTIVE ACTION IMPLEMENTATION

Sub-element 3.f – Implementation of Relocation, Re-entry, and Return Decisions

Criterion 3.f.1 – Decisions regarding controlled re-entry of emergency workers and relocation and return of the public are coordinated with appropriate organizations and implemented. (NUREG-0654, M.1, 3)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should demonstrate the capability to implement plans, procedures, and decisions for relocation, re-entry, and return. Implementation of these decisions is essential for the protection of the public from the direct long-term exposure to deposited radioactive materials from a severe accident at a commercial nuclear power plant.

EXTENT OF PLAY

Relocation: OROs should demonstrate the capability to coordinate and implement decisions concerning relocation of individuals, not previously evacuated, to an area where radiological contamination will not expose the general public to doses that exceed the relocation PAGs. OROs should also demonstrate the capability to provide for short-term or long-term relocation of evacuees who lived in areas that have residual radiation levels above the PAGs.

Areas of consideration should include the capability to communicate with OROs regarding timing of actions, notification of the population of the procedures for relocation, and the 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 should also demonstrate the capability to communicate instructions to the public regarding relocation decisions.

Re-entry: OROs should demonstrate the capability to control re-entry and exit of individuals who need to temporarily re-enter the restricted area, to protect them from unnecessary radiation exposure and for exit of vehicles and other equipment to control the spread of contamination outside the restricted area. Monitoring and decontamination facilities will be established as appropriate.

Examples of control procedure subjects are: (1) the assignment of, or checking for, direct-reading and non-direct-reading dosimeters for emergency workers; (2) questions regarding the individuals' objectives and locations expected to be visited and associated timeframes; (3) maps and plots of radiation exposure rates; (4) advice on areas to avoid; and procedures for exit, including monitoring of individuals, vehicles, and equipment, decision criteria regarding contamination, proper disposition of emergency worker dosimeters, and maintenance of emergency worker radiation exposure records.

Return: OROs should demonstrate the capability to implement policies concerning return of members of the public to areas that were evacuated during the plume phase. OROs should demonstrate the capability to identify and prioritize 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.

Communications among OROs for relocation, re-entry, and return may be simulated; however all simulated or actual contacts should be documented. These discussions may be accomplished in a group setting.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

District of Columbia Extent of Play:
Implementation of Relocation and Re-entry decisions will be discussed based on controller injects or evaluator questions. Implementation of Return decisions do not apply to the District.

Locations Evaluated:
District of Columbia EOC

Outstanding Issues:

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

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

Criterion 4.b.1 – The Field teams 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, I.8; J.11)

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to assess the actual or potential magnitude and locations of radiological hazards in the ingestion emergency planning zone (IPZ) and for relocation, re-entry and return measures.

This sub-element focuses on the collection of environmental samples for laboratory analyses that are essential for decisions on protection of the public from contaminated food and water and direct radiation from deposited materials.

EXTENT OF PLAY

The ORO field teams should 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 re-entry, relocation, and return decisions. When resources are available, the use of aerial surveys and in-situ gamma measurement is appropriate. All methodology, including contamination control, instrumentation, preparation of samples, and a chain-of-custody form for transfer to a laboratory, will be in accordance with the ORO's plan and/or procedures.

Ingestion pathway samples should be secured from agricultural products and water. Samples in support of relocation and return should be secured from soil, vegetation, and other surfaces in areas that received radioactive ground deposition.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

District of Columbia Extent of Play:

Post plume measurement and analysis activities will be demonstrated by review of aerial surveys and measurements supplied by the FRMAC (simulated) and ambient radiation measurements supplied by the District field teams that are paired with the FRMAC teams. The District of Columbia will direct the federal resources to appropriate areas to sample agriculture products, water, soil and vegetation. The District will not perform transport or analysis of these samples.

Locations Evaluated:
District of Columbia EOC
Field Teams (ingestion)

Outstanding Issues:

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

Sub-element 4.c – Laboratory Operations

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to perform laboratory analyses of radioactivity in air, liquid, and environmental samples to support protective action decision-making.

EXTENT OF PLAY

The laboratory staff should demonstrate the capability to follow appropriate procedures for receiving samples, including logging of information, preventing contamination of the laboratory, 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 should demonstrate the capability to prepare samples for conducting measurements.

The laboratory should be appropriately equipped to provide analyses of media, as requested, on a timely basis, of sufficient quality and sensitivity to support assessments and decisions as anticipated by the ORO's plans and procedures. The laboratory instrument calibrations should 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 should be as described in the plans and procedures. New or revised methods may be used to analyze atypical radionuclide releases (e.g. transuranics or as a result of a terrorist event) or if warranted by circumstances of the event. Analysis may require resources beyond those of the ORO.

The laboratory staff is qualified in radioanalytical techniques and contamination control procedures.

OROs should use Federal resources as identified in the FRERP, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise.

District of Columbia Extent of Play:

The District of Columbia will rely on the Federal Resources for laboratory analysis of any field samples. Actual Lab demonstration will not be evaluated during this exercise. Samples will be analyzed by the FRMAC. The District of Columbia in making Protective Action Decisions will use information and recommendations from the sample analysis. This process will be evaluated through discussion or controller injects at the EOC.

Locations Evaluated:
District of Columbia EOC

Outstanding Issues:

EVALUATION AREA 5: EMERGENCY NOTIFICATION & PUBLIC INFORMATION

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

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs should have the capability to disseminate to the public appropriate emergency information and instructions including any recommended protective actions. In addition, NUREG-0654 provides that OROs should ensure 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 also provides that a system be available for dealing with rumors. This system will hereafter be known as the public inquiry hotline.

EXTENT OF PLAY

Subsequent emergency information and instructions should be provided to the public and the media in a timely manner (will not be subject to specific time requirements). For exercise purposes, timely is defined as "the responsible ORO personnel/representatives demonstrate actions to disseminate the appropriate information/instructions with a sense of urgency and without undue delay." If message dissemination is to be 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.

The OROs should ensure that emergency information and instructions are consistent with protective action decisions made by appropriate officials. The emergency information should contain all necessary and applicable instructions (e.g., evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, information concerning pets, shelter-in-place instructions, information concerning protective actions for schools and special populations, public inquiry telephone number, etc.) to assist the public in carrying out protective action decisions provided to them. OROs should demonstrate the capability to use language that is clear and understandable to the public within both the plume and ingestion pathway EPZs. This includes demonstration of the capability to use familiar landmarks and boundaries to describe protective action areas.

The emergency information should be all-inclusive by including previously identified protective action areas that are still valid as well as new areas. The OROs should 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 should demonstrate the capability to ensure that current emergency information is repeated at pre-established intervals in accordance with the plan and/or procedures.

OROs should demonstrate the capability to develop emergency information in a non-English language when required by the plan and/or procedures.

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

OROs should 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 situation warrants. The OROs should demonstrate the capability to respond appropriately to inquiries from the news media. All information presented in media briefings and media releases should be consistent with protective action decisions and other emergency information provided to the public. Copies of pertinent emergency information (e.g., EAS messages and media releases) and media information kits should be available for dissemination to the media.

OROs should demonstrate that an effective system is in place for dealing with calls to the public inquiry hotline. Hotline staff should 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, should be included, as appropriate, in emergency information provided to the public, media briefings, and/or media releases.

District of Columbia Extent of Play:
This evaluation area is limited to public information and information instructions regarding post plume activities. One media briefing will be presented / discussed at the EOC. Procedures for handling public inquiries will be discussed by appropriate personnel at the EOC. Actual rumor calls will not be made.

Locations Evaluated:
District of Columbia EOC

Outstanding Issues:
Issue No.: CCX91-36R

Description: The Emergency Broadcast System (EBS) message referenced that the exercise was a test for the city's agencies to practice their skills at responding to "hazardous chemicals" rather than to a "General Emergency" at CCNPP. (Objective 11; NUREG-0654, E.5, G.4.b)

Reason ARCA Unresolved: The Washington D.C. EOC was not scheduled to demonstrate Objective 11 during the 1997 exercise.

Recommendation: The Washington D.C. EOC should demonstrate Objective 11 during the next ingestion exposure pathway exercise. Correct information will be disseminated via a media briefing or news release. Use of the EAS will not be demonstrated.

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.a. – Monitoring and Decontamination of Evacuees and Emergency Workers, and Registration of Evacuees

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to implement radiological monitoring and decontamination of evacuees and emergency workers, while minimizing contamination of the facility, and registration of evacuees at reception centers.

EXTENT OF PLAY

Radiological monitoring, decontamination, and registration facilities for evacuees/ emergency workers should be set up and demonstrated as they would be in an actual emergency or as indicated in the extent of play agreement. This would include adequate space for evacuees' vehicles. Expected demonstration should include 1/3 of the monitoring teams/portal monitors required to monitor 20% of the population allocated to the facility within 12 hours. Prior to using a monitoring instrument(s), the monitor(s) should demonstrate the process of checking the instrument(s) for proper operation.

Staff responsible for the radiological monitoring of evacuees should demonstrate the capability to attain and sustain a monitoring productivity rate per hour needed to monitor the 20% emergency planning zone (EPZ) population planning base within about 12 hours. This 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 monitoring procedure. A minimum of six individuals per monitoring station should be monitored, using equipment and procedures specified in the plan and/or procedures, to allow demonstration of monitoring, decontamination, and registration capabilities. The monitoring sequences for the first six simulated evacuees per monitoring team will be timed by the evaluators in order to determine whether the twelve-hour requirement can be meet. Monitoring of emergency workers does not have to meet the twelve-hour requirement. However, appropriate monitoring procedures should be demonstrated for a minimum of two emergency workers.

Decontamination of evacuees/emergency workers may be simulated and conducted by interview. The availability of provisions for separately showering should be demonstrated or explained. The staff should 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 clean from potentially contaminated areas. Provisions should also exist to separate contaminated and uncontaminated

individuals, provide changes of clothing for individuals whose clothing is contaminated, and store contaminated clothing and personal belongings to prevent further contamination of evacuees or facilities. In addition, for any individual found to be contaminated, procedures should be discussed concerning the handling of potential contamination of vehicles and personal belongings.

Monitoring personnel should explain the use of action levels for determining the need for decontamination. They should also explain the procedures for referring evacuees who cannot be adequately decontaminated for assessment and follow up in accordance with the ORO's plans and procedures. Contamination of the individual will be determined by controller inject and not simulated with any low-level radiation source.

The capability to register individuals upon completion of the monitoring and decontamination activities should be demonstrated. The registration activities demonstrated should include the establishment of a registration record for each individual, consisting of the individual's name, address, results of monitoring, and time of decontamination, if any, or as otherwise designated in the plan. Audio recorders, camcorders, or written records are all acceptable means for registration.

District of Columbia Extent of Play:
This activity will be performed in coordination with the FRMAC (simulated) support teams. Procedures and documents supplied by ht e FRMAC will be used by the District to demonstrate this activity. Monitoring and decontamination of the general public will not be demonstrated by the District of Columbia. Procedures for monitoring and decontamination of emergency workers will be demonstrated at a field location. At least 2 emergency workers will be monitored. One worker will be simulated contaminated. Procedures for decontamination will be described to the evaluator

Locations Evaluated:
Field Teams

Outstanding Issues:

EVALUATION AREA 6: SUPPORT OPERATION/FACILITIES

Sub-element 6.b – Monitoring and Decontamination of Emergency Worker Equipment

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

INTENT

This sub-element is derived from NUREG-0654, which provides that OROs have the capability to implement radiological monitoring and decontamination of emergency worker equipment, including vehicles.

EXTENT OF PLAY

The monitoring staff should demonstrate the capability to monitor equipment, including vehicles, for contamination in accordance with the ORO's plans and procedures. Specific attention should be given to equipment, including vehicles, that was in contact with individuals found to be contaminated. The monitoring staff should demonstrate the capability to make decisions on the need for decontamination of equipment including vehicles based on guidance levels and procedures stated in the plan and/or procedures.

The area to be used for monitoring and decontamination should 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 should 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 air intake systems, radiator grills, bumpers, wheel wells, tires, and door handles should be demonstrated. Interior surfaces of vehicles that were in contact with individuals found to be contaminated should also be checked.

Decontamination capabilities, and provisions for vehicles and equipment that cannot be decontaminated, may be simulated and conducted by interview.

District of Columbia Extent of Play:
Procedures for monitoring emergency workers, equipment and vehicles will be demonstrated. This activity will be conducted in conjunction with the FRMAC teams (simulated) using procedures described in the Radiological Emergency Response Heath and Safety Manual.

Locations Evaluated:
Field Teams (*)

Outstanding Issues:

APPENDIX 4
EXERCISE SCENARIO

CONSTELLATION ENERGY GROUP

CALVERT CLIFFS NUCLEAR POWER PLANT
OCTOBER 24, 2003 EMERGENCY EXERCISE

SP-3A GENERAL DESCRIPTION

The scenario begins with Unit 1 at 100% power, Unit 1 has been at full power for 210 days. Unit 2 is in mode 6, day 20 of a 35 day refueling outage. 13 High Pressure Safety Injection (HPSI) pump and 13 Charging pump are tagged out of service for breaker maintenance and scheme checks by the Electrical Shop and Engineering. A wiring error was discovered during 23 Auxiliary Feedwater pump breaker maintenance from a recent modification that prevents breaker operation. 23 Auxiliary Feedwater pump is tagged out of service for breaker repairs. The breaker wiring error will cause failure of all breakers to close on 11 and 12 HPSI pumps, 11 and 12 Containment Spray pumps, 11 and 14 Containment Air Coolers and 11 and 12 Low Pressure Safety Injection (LPSI) pumps. Also the Safety Injection Tank relief valves will fail and depressurize the tanks.

The Department of Homeland Security has upgraded the national threat level to Orange. The NRC has notified all East Coast U.S. Nuclear Power Plant licensees that a general threat exists due to a missing commercial aircraft. The Department of Defense has notified all East Coast licensees of routine precautionary air patrols. Patuxent River Naval Air Station is providing the patrol for Calvert Cliffs.

At scenario time 00:00, Patuxent River Naval Air Station will call the Calvert Control Center and Calvert Cliffs Security. The NAS reports that an F-18 on patrol has gone off RADAR. The NAS reports the fighter jet might have crashed on Calvert Cliffs property as a result of engine trouble.

At scenario time 00:05, a Security patrol will observe the jet crashing into the ISFSI Protected Area doing severe damage to the ISFSI Protected Area fence and ISFSI surveillance equipment. The downed jet catches on fire in the ISFSI Protected Area. The pilot has bailed out and no one is hurt. Damage to Horizontal Storage Modules is consistent with the EPRI Aircraft Crash Study.

At scenario 00:12, the Shift Manager will declare an Unusual Event for an aircraft crash into the ISFSI Protected Area and will call for fire fighting assistance from Calvert Control Center.

At scenario time 00:15, Patuxent River Naval Air Station will call Calvert Control Center and CCNPPI Security to report the crash. The NAS will call Calvert Cliffs Security for access to the site. Maryland Emergency Management Agency and Maryland Department of the Environment will call Calvert Cliffs Security for access to the site.

Security will establish a guard at the ISFI. Engineering and Maintenance will develop a clean up and repair plan for the ISFSI Protected Area. Coordination between CCNPPI, DOD, MEMA and MDE will be required in response to the crash and the ISFSI damage. Coordination between CCNPPI and Calvert County volunteer fire fighters will be required.

At Scenario time 00:33, an acetylene welding rig will catch fire and explode in the Unit 1, 45-foot elevation, East Electrical Penetration Room. The explosion will destroy the wiring of 11 and 13 Containment Air Cooler starters. The fire brigade will be called out for the explosion. The Control Room will send a plant operator to investigate the electrical penetrations and the Containment Air Cooler starters and will review AOP-9P, Safe Shutdown due to severe fire in Room 429 and will secure the ventilation.

Promptly, after scenario time 00:33, the Shift Manager will declare an Alert for an explosion in the Electrical Penetration Room and assemble the Emergency Response Organization.

By scenario time 01:00, the Emergency Response Organization staffing will be completed and the Site Emergency Coordinator will relieve the Control Room and Technical Support Center of interim ERPIP duties. The Operational Support Center will assemble and dispatch repair teams to organize the clean up and repair of the ISFSI protected area and the Electrical Penetration room.

At scenario time 01:17, the NRC will notify Security of a site specific credible insider threat. The Site Emergency Coordinator will implement the two-person line of sight rule. CCNPPI will notify Calvert Control Center and will begin investigation of the threat.

At scenario time 02:00, a Loss of Coolant Accident (LOCA) will occur on Unit 1. The Pressurizer will empty and pressurizer pressure will decrease. The reactor and main turbine will be manually or automatically tripped and the Control Room will implement EOP-0, Reactor Trip immediate Actions. A Safety Injection Actuation Signal (SLAS) will be generated on low RCS pressure, 11 and 12 HPSI pumps will not run due to the failure of the 4 Kv breakers. There will be concurrent mechanical damage to the 12 HPSI pump shaft. 12 Charging pump will not produce flow due to a coupling failure. The common mode failure, the wiring error which prevents breaker operation of the 13 HPSI pump, and the 23 Auxiliary Feedwater pump, will case the 12 and 14 Containment Air Cooler, and 11 and 12 Containment Spray pumps to fail to run when they receive start signals.

At scenario time 02:15, the Site Emergency Coordinator will declare a Site Emergency for potential loss of two fission product barriers. EOP-0 safety function, RCS pressure and inventory control, will not be met due to pressurizer level, pressurizer pressure, and subcooling. Containment environment will not be met due to containment pressure and temperature. The Control Room will implement EOP-8, Functional Recovery Procedure

after EOP-5, LOCA, due to no available HPSI pumps or directly implement EOP-8, functional Recovery Procedure.

By scenario time 02:20, two intermediate safety functions will not met in EOP-5 and the Control Room will implement EOP-8, Functional Recovery Procedure.

By scenario time 02:30, Core and RCS heat removal acceptance criteria will not be met in EOP-8. At this time the Containment Equipment Hatch and Personnel Air Lock seals degrade due to high containment temperature creating a leak path directly to the environment. Steam is visible inside the Unit-1 Butler Building. High airborne radioactivity can be measured inside the Unit-1 Butler Building.

A combination of RCS leakage and failure of high-pressure safety injection will take the plant into a severe accident sequence.

By scenario time 03:00, the Technical Support center will implement the Severe Accident Management ERPIPs when the core exit thermocouples reach 1200 degrees.

By scenario time 03:20, when the core exit thermocouples have reached 1300 degrees, the Site Emergency Coordinator will declare a General Emergency for fission barrier degradation based on the loss of two barriers and a potential loss of a third barrier. The Site Emergency Coordinator will recommend evacuation of PAZ 1.

After scenario time 03:30, the Onsite Monitoring Team confirms high airborne activity down wind of the plant East Road.

After scenario time 04:15, the Onsite Monitoring Team and Offsite Monitoring Team Confirms loss of Containment integrity based on field samples. The Dose Assessment Office may recommend evacuation of PAZ 8.

By scenario time 04:30, the Operational Support Center will complete repair of the Containment Spray pumps and Containment Air Coolers.

By 05:00, Operations will initiate Containment Spray and Containment Air cooling in accordance with recommendations based on Severe Accident Management ERPIPS.

At scenario time 05:15, a vessel melt through will occur without a hydrogen burn and the Containment will heat momentarily to 1149 degrees at the time of a pressure spike to 107 pounds.

By scenario time 05:30, a success path to establish Containment spray and cooling will be established. Data will indicate a reduction in the radioactivity release rate. The Containment can be cooled to ambient temperature and pressure and the release will be brought under control.

The radioactivity in this scenario will be transported down wind using controlled meteorological data. The two-mile dose will exceed EPA protective action guides as calculated with the RADDOSE dose modeling software for thyroid. Radiation levels will be elevated out to and beyond 10 miles, but will not reach EPA protective action guides at 10 miles as calculated with the RADDOSE dose modeling software.

CCNPPI will recommend protective actions of the public. The State and Counties will implement protective actions to reduce the exposure of the public to the accidental release of radioactive materials.

CCNPPI will determine the magnitude of the release and estimate the location of the offsite impact. CCNPPI will monitor the release with the Containment High Range Radiation Monitor and the Wide Range Noble Gas Monitor and dispatch field-monitoring teams to obtain downwind samples to define the plume.

The State and Counties will perform an independent assessment of the consequences of the accidental release of radioactive materials.

Onsite, the exercise will terminate on or before scenario time 06:00. Offsite, State and County participants will continue specific activities as needed until offsite objectives are met.