Calvert Cliffs
Nuclear Power Plant Exercise
September 27, 2005

Final Report

Radiological Emergency Preparedness Program

December 20, 2005

FEMA

FEMA Region III

Final Exercise Report

Calvert Cliffs Nuclear Power Plant

Licensee:	**Constellation Energy Group**
Exercise Date:	**September 27, 2005**
Report Date:	**December 20, 2005**

U.S. DEPARTMENT OF HOMELAND SECURITY
FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION III

ONE INDEPENDENCE MALL, 6TH FLOOR
615 CHESTNUT STREET
PHILADELPHIA, PENNSYLVANIA 19106-4404

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I. Executive Summary

On September 27, 2005, an exercise was conducted in the 10-mile plume exposure pathway emergency planning zone (EPZ) around the Calvert Cliffs Nuclear Power Plant (CCNPP) by the Department of Homeland Security Federal Emergency Management Agency (FEMA), Region III. Out-of-sequence demonstrations of reception center—monitoring, decontamination, and registration, congregate care, and emergency worker, equipment and vehicle—monitoring and decontamination activities, as well as the implementation of school protective actions, were also conducted on September 27, 2005 and September 28, 2005. The purpose of the exercise was to assess the level of State and local preparedness in responding to a radiological emergency. The exercise and out-of-sequence demonstrations were 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 prior full-scale exercise at this site was conducted on April 13, 2004. A post-plume phase exercise was conducted in the ingestion pathway EPZ on October 22-24, 2003 and October 28-30, 2004. The qualifying emergency preparedness exercise was conducted on October 30, 1981.

FEMA wishes to acknowledge the efforts of the many individuals in Calvert County, St. Mary's County, and Dorchester County who participated in this exercise.

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 biennial exercise and the evaluation of the following out-of-sequence activities:

- *Reception Center – Monitoring, Decontamination, and Registration*: Conducted between 1700 and 1930 on September 27, 2005, in St. Mary's and Dorchester counties.

- *Congregate Care*: Conducted between 1700 and 1930 on September 27, 2005, in Calvert, St. Mary's and Dorchester counties.

- *Emergency Workers, Equipment, and Vehicles – Monitoring and Decontamination*: Conducted on between 1700 and 1930 on September 27, 2005, in Calvert, St. Mary's, and Dorchester counties.

- *School Interviews*: Conducted between 0900 and 1100 on September 28, 2005 in Calvert and St. Mary's counties.

The local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and adequately implemented them. One Deficiency, four Areas

Requiring Corrective Action (ARCAs), and nine planning issues were identified as a result of this exercise; the Deficiency and one of the ARCAs identified were successfully resolved through re-demonstration. In addition, one prior issue and four prior planning issues were evaluated and successfully resolved during this exercise.

II. Introduction

On December 7, 1979, the President directed 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 that was established following the Three Mile Island Nuclear Station accident in March 1979.

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

- The review and evaluation of Radiological Emergency Response Plans (RERPs) developed by State and local governments;

- The evaluation of exercises conducted by State and local governments to determine whether such plans can be implemented;

- 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);

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

    - U.S. Department of Agriculture
    - U.S. Department of Commerce
    - U.S. Department of Defense
    - U.S. Department of Energy
    - U.S. Department of Health and Human Services
        - Food and Drug Administration
        - Center for Disease Control
    - U.S. Department of Housing and Urban Development
    - U.S. Department of the Interior
    - U.S. Department of Justice
    - U.S. Department of State
    - U.S. Department of Transportation
    - U.S. Department of Veterans Affairs
    - U.S. Environmental Protection Agency
    - General Services Administration

- National Aeronautics and Space Administration
- Nuclear Regulatory Commission

- Chairing the Federal Radiological Preparedness Coordinating Committee and the Regional Assistance Committees; and

- Providing regulatory oversight, rule-making and guidance, as necessary.

The State of Maryland formally submitted their RERPs for CCNPP to FEMA Region III and were granted formal approval on August 8, 1985, under 44 CFR 350.

A REP exercise was conducted on September 27, 2005, by FEMA Region III to assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the CCNPP. The purpose of this exercise report is to present the exercise results and findings on the performance of the off-site response organizations (OROs) during a simulated radiological emergency.

The findings presented in this report are based on the evaluations of the Federal evaluator 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 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 ARCA 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.

III. Exercise Overview

This section of the exercise report contains data and basic information relevant to the September 27, 2005 biennial exercise to test the offsite emergency response capabilities in area surrounding CCNPP. This section includes a description of the plume exposure pathway EPZ, a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

A. Plume Exposure Pathway EPZ 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. Participants

The following agencies, organizations, and units of government participated in the CCNPP exercise on September 27, 2005, and related out-of-sequence demonstrations.

FEDERAL AGENCIES
Nuclear Regulatory Commission

STATE OF MARYLAND
Maryland Defense Force
Maryland Department of Agriculture
Maryland Department of the Environment
Maryland Department of Health and Mental Hygiene
Maryland Department of Health, Division of Environmental Health
Maryland Department of Natural Resources
Maryland Department of Social Services
Maryland Department of State Highway Administration
Maryland Department of Transportation
Maryland Emergency Management Agency
Maryland Fire and Rescue Institute
Maryland Institute for Emergency Medical Services
Maryland National Guard
Maryland State Police
American Red Cross
Calvert Cliffs Nuclear Power Plant Representative

RISK JURISDICTIONS

CALVERT COUNTY
Calvert County Agriculture
Calvert County Board of County Commissioners
Calvert County Department of Education
Calvert County Department of Public Health
Calvert County Department of Transportation
Calvert County Division of Emergency Management
Calvert County Division of Solid Waste
Calvert County Fire and Rescue Services
Calvert County General Services
Calvert County Health Department
Calvert County Parks and Recreation Department
Calvert County Public Facilities
Calvert County Public Schools
Calvert County Public Transportation
Calvert County Public Works Department
Calvert County Radiological Officer
Calvert County Roads
Calvert County Sheriff's Office

Calvert County Social Services
Maryland Department of Public Safety
Maryland Emergency Management Agency
Maryland Highway Maintenance
Maryland State Police
American Red Cross
Calvert Cliffs Nuclear Power Plant Representative
Calvert County Memorial Hospital
Calvert County Radio Emergency Associate Communicator Team
Dominion Cove Point LNP

DORCHESTER COUNTY
City of Cambridge Police Department
Dorchester County Board of Education
Dorchester County Department of Environmental Health
Dorchester County Department of Health
Dorchester County Department of Public Works
Dorchester County Department of Social Services
Dorchester County Emergency Management Agency
Dorchester County Fire and Rescue
Dorchester County Highway Department
Dorchester County Public Schools
Dorchester County Roads Department
Dorchester County Sheriff's Department
Maryland Department of Natural Resources Police
Maryland Emergency Management Agency
Maryland State Police
US Department of Agriculture
American Red Cross
Dorchester General Hospital (Shores Hospital System)

ST. MARY'S COUNTY
Leonardtown Commissioners
Maryland Emergency Management Agency
Maryland State Highway Administration
Maryland State Police
Patuxent River Naval Air Station
St. Mary's County Administrator
St. Mary's County Attorney's Office
St. Mary's County Board of Education
St. Mary's County Department of Agriculture
St. Mary's County Department of Parks and Recreation
St. Mary's County Department of Public Safety
St. Mary's County Department of Public Works and Transportation
St. Mary's County Department of Social Services
St. Mary's County Emergency Management Agency

St. Mary's County Fire Department
St. Mary's County Health Department
St. Mary's County Metropolitan Commissioner
St. Mary's County Public Information
St. Mary's County Public Schools
St. Mary's County Public Schools, Transportation Services
St. Mary's County Rescue Squad
St. Mary's County Sheriff's Office
American Red Cross
Calvert Cliffs Nuclear Power Plant Representative
Civil Air Patrol
Leonardtown Volunteer Fire Department
Lexington Park Rescue Squad
St. Mary's Hospital
St. Mary's Radio Emergency Associate Communicator Team
Town of Leonardtown

C. Exercise Timeline

Table 1, on the following page, presents the time at which key events and activities occurred during the CCNPP exercise on September 27, 2005. Also included are times that notifications were made to the participating jurisdictions/ functional entities.

TABLE 1. EXERCISE TIMELINE

DATE AND SITE: *September 27, 2005, Calvert Cliffs Nuclear Power Station*

Emergency Classification Level or Event	Time Utility Declared	Time Notification Was Received or Action Was Taken							
		Maryland State EOC	Maryland State AAC - Baltimore	Maryland State AAC/EOF - Barstow	(D) Maryland State MDE/EOF - Barstow	Joint Public Information Center - Prince Frederick	(A) Calvert County	(A) St. Mary's County	(A) Dorchester County
Unusual Event	0809	N/A	0814	N/A	N/A	0809	0815	0815	0814
Alert	0820	0827	0825	N/A	N/A	0825	0825	0826	0826
Site Area Emergency	0956	1000	1000	1025	1014	1000	1000	1007	1000
General Emergency	1031	1039	1040	1031	1035	1040	1038	1049	1039
Simulated Radiation Release Started	1300	1311	N/A	1308	1300	1313	1310	1315	1310
Simulated Radiation Release Terminated	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Facility Declared Operational		0940	0905	1110	1110	0920	0900	0915	0900
Declaration of State of Emergency		1205	N/A	N/A	1208	1206	1224	1206	Local 1215 State 1206
Exercise Terminated		1441	1110	1450	1445	1443	1440	1440	1442
Precautionary Actions: **Place livestock on stored feed & covered water w/in the 10-mile EPZ**		1015	1032	N/A	1025	1108	1035	1045	1035
Restrict waterways		1122	N/A	1124	1124	1211	1124	1126	1124
Place animals on stored feed & water out to 50 miles		1145	N/A	1135	1135	1157	1145	1145	1218
1st A&N Decision (State [made]; local [received]) Evacuate: 1,2,3,7 ; KI to General Public; Shelter 4,5,6		1108*	1040	1108	1108	N/A	1108	1108	1108
1st Siren Activation		1118 *	//////	//////	*	N/A	*	*	*
1st EAS or EBS Message		1121 *	//////	//////	*	N/A	*	*	*
2nd A&N Decision (State [made]; local [received]) Evacuate: 1,2,3,7, & KI to General Public; Shelter: 4,5,6		1158	N/A	1158	1158	1205	1158	1158	1158
2nd Siren Activation		1208	//////	//////	1208	//////	1208	1208	1208
2nd EAS or EBS Message		1211	//////	//////	1211	//////	1211	1211	1211
3rd A&N Decision (State [made]; local [received]) Evacuate 1,2,3,6,7 & KI to General Public; Shelter: 4,5		1410	N/A	N/A	1410	1425	1410	1408	1410
3rd Siren Activation		1420	//////	//////	1420	//////	1420	1420	1420
3rd EAS or EBS Message		1423	//////	//////	1423	//////	1423	1423	1423
KI Administration Decision: Emergency workers		1035	1032	1028	1031	1055	1035	1048	1047
General Public: Zones 1,2,3,7		1108	1054	1108	1108	1110	1108	1108 (1,2,3) 1109 (7)	N/A
General Public: Zone 6		1410	N/A	N/A	1410	1410	1410	1410	1410

Legend: D – Decision-Making Jurisdiction A – Activating Jurisdiction N/A – Not Applicable

* - Counties were inadvertently dropped off the conference call

IV. Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and locations that participated in the September 27, 2005, biennial REP exercise. The exercise was held to test the offsite emergency response capabilities of local governments in the 10-mile EPZ surrounding the CCNPP.

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

A. Summary Results of Exercise Evaluation

The matrix presented in Table 2, on the following 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 ARCAs assessed and no unresolved ARCAs from prior exercises)
D	Deficiency
D^1	Deficiency assessed, but successfully re-demonstrated
A	ARCA(s) assessed
A^1	ARCA(s) assessed, but successfully re-demonstrated
R	Resolved ARCA(s) or Planning Issue(s) from prior exercises
U	Unresolved ARCA(s) from prior exercises
N	Not Demonstrated (Reason explained in Section IV.B)

TABLE 2. SUMMARY RESULTS OF EXERCISE EVALUATION
DATE AND SITE: September 26-30, 2005, 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
STATE OF MARYLAND																																	
STATE EMERGENCY OPERATIONS CENTER	M		M	M	M			D[1]								M																	
ACCIDENT ASSESSMENT CENTER – BALTIMORE	M		M	M	M	M	M	M																									
ACCIDENT ASSESSMENT CENTER (EOF) - BARSTOW	M		M	M	M	M	M	M														M											
MDE@EOF - BARSTOW	M		M	M	M	M	M	M																									
JOINT INFORMATION CENTER – PRINCE FREDERICK	M			M																					M			M				
STATE FIELD MONITORING TEAM A	M			M	M							M	M								M	M	M									
STATE FIELD MONITORING TEAM B	M			M	M							M	M								M	M	M									
RISK JURISDICTIONS																																	
CALVERT COUNTY																																	
COUNTY EMERGENCY OPERATIONS CENTER	M		M	M	M	M		M	M			M	M	M	R	M	M					M			M		M	M				
FIELD MONITORING TEAM				M	M							M	M								M		M									
ROUTE ALERTING TEAM				M	M							M	M														A[1]					
TRAFFIC AND ACCESS CONTROL					M							M	M			M	M															
CONGREGATE CARE (Northern High and Middle School)																															M	
EMERGENCY WORKER DECON. STATION (Stafford Landfill)					M							M																	A	A		
ST. MARY'S COUNTY																																	
COUNTY EMERGENCY OPERATIONS CENTER	M		R	M	A	M		M	M			M	M	M	R	M	M					M			M		M	M				
FIELD MONITORING TEAM				M	M							M	M								A		M									
ROUTE ALERTING TEAM				M	M							M	M														M					
TRAFFIC AND ACCESS CONTROL					M							M	M			M	M															
RECEPTION CENTER (Leonardtown H.S. / M.S.)					M							M																	M			
CONGREGATE CARE CENTER (Leonardtown H.S. / M.S.)																															M		

LEGEND: M = Met (no Deficiency or ARCA(s) assessed)
A = ARCA(s) assessed
U = Unresolved ARCA(s) from prior exercises
D = Deficiency assessed
A[1] = ARCA(s) assessed, but successfully re-demonstrated
Blank = Not scheduled for demonstration
D[1]=Deficiency assessed, but successfully re-demonstrated
R = Resolved ARCA(s) or Planning Issue(s) from prior exercises
N = Not demonstrated as scheduled (reason explained in Section IV.B.)

TABLE 2. SUMMARY RESULTS OF EXERCISE EVALUATION
DATE AND SITE: September 26-30, 2005, 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
EMERGENCY WORKER DECON. STATION (Leonardtown H.S. / M.S.)					M							M																		M	M		
DORCHESTER COUNTY																																	
COUNTY EMERGENCY OPERATIONS CENTER	M		M	M	M	M		M	M			M	M	M	M	M	M					M				M		M	M				
FIELD MONITORING TEAM				M	M							M	M								M		M										
ROUTE ALERTING TEAM				M	M							M	M															M					
TRAFFIC AND ACCESS CONTROL					M							M	M			M	M																
RECEPTION CENTER (Maple Elementary School)					M							M																		M			
CONGREGATE CARE CENTER (South Cambridge High School)		M																													M		
EMERGENCY WORKER DECON. STATION (Maple Elementary School)					M							M																		M	M		
SCHOOLS																																	
CALVERT COUNTY																																	
PATUXENT HIGH SCHOOL															M																		
ST. LEONARD MIDDLE SCHOOL															M																		
SOUTHERN MIDDLE SCHOOL															M																		
ST. MARY'S COUNTY																																	
HOLLYWOOD ELEMENTARY SCHOOL															M																		
TOWN CREEK ELEMENTARY SCHOOL															M																		

LEGEND: M = Met (no Deficiency or ARCA(s) assessed)
A = ARCA(s) assessed
U = Unresolved ARCA(s) from prior exercises
D = Deficiency assessed
A^1 = ARCA(s) assessed, but successfully re-demonstrated
Blank = Not scheduled for demonstration
D^1=Deficiency assessed, but successfully re-demonstrated
R = Resolved ARCA(s) or Planning Issue(s) from prior exercises
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 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 scheduled to be demonstrated during this exercise, but were not demonstrated 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.

1.0 STATE OF MARYLAND

1.1 Maryland State EOC – Reisterstown

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

b. DEFICIENCY: 2.b.2

Issue No.: 11-05-2.b.2-D-01 (Re-demonstrated)

CONDITION: The Protective Action Decision (PAD) to evacuate Protective Action Zones (PAZs) 1, 2, 3, and 7 at 1108 hours, was not implemented by the Offsite Response Organizations (OROs) until 1208 hours.

POSSIBLE CAUSE: The Risk Counties were inadvertently dropped from the conference call and did not get the message from the State Emergency Operations Center (SEOC) to sound the sirens and broadcast the Emergency Alert System (EAS) message after the PAD was made.

REFERENCE: NUREG-0654, J.9; 10.f, m

EFFECT: Since the PAD was not issued to the public in a timely manner, this may have delayed the evacuation and adversely affected the health and safety of the public.

RECOMMENDATION: Coordination between the OROs needs to be improved to ensure that the Alert and Notification (A&N) sequence is implemented in a timely manner.

CORRECTIVE ACTION DEMONSTRATED: At 1410 hours, a PAD was made to evacuate the public in PAZs 1, 2, 3, 6, and 7 and for the public in those PAZs to take potassium iodide (KI) and for the public in PAZs 4 and 5 to shelter in place. The A&N sequence for this PAD was implemented in a timely manner with sirens activating at 1420 and the EAS message broadcast at 1423 hours.

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs – RESOLVED: N/A

f. PRIOR ARCAs – UNRESOLVED: N/A

1.2 Maryland State Accident Assessment Center (AAC) – Baltimore

a. MET: 1.a.1 2.a.1
1.c.1 2.b.1
1.d.1 2.b.2
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

1.3 Maryland State AAC and Maryland Department of the Environment (MDE) – Emergency Operations Facility (EOF) Barstow

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

1.4 Joint Information Center – Prince Frederick

a. MET: 1.a.1 5.a.1
1.d.1 5.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 Field Monitoring Team A

a. MET:

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

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

1.6 State Field Monitoring Team B

a. MET:

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

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

2.0 RISK JURISDICTIONS

2.1 Calvert County

2.1.1 Calvert County Emergency Operations Center

a. MET:

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

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs (and Planning Issues) – RESOLVED: 3.c.2

Issue No.: 11-04-3.c.2-P-01

CONDITION: The bus driver was not briefed, or issued potassium iodide (KI) or dosimetry in accordance with the Calvert County Public Schools – Bus Routes Standard Operating Procedures (SOPs).

POSSIBLE CAUSE: The Calvert County Transportation Department was not familiar with the requirement listed in the Bus Routes SOP.

REFERENCE:

- NUREG-0654, J.10.c, d, g
- Calvert County Radiological Emergency Plan and Standard Operating Procedure Attachment #9, Board of Education Standard Operating Procedure, 5.0 Protective Actions
- Calvert County School Services, Tabs A and E
- Calvert County School Plan – Revision 1, Response Action – School Bus Driver

EFFECT: Bus drivers required to enter the 10-mile Emergency Planning Zone to evacuate children to the relocation site may not have the tools to determine their radiological exposure. Therefore, the bus drivers' exposure could go unrecorded.

RECOMMENDATION: Review and make changes, as necessary, to the basic County Plan and County Public School Plan to delineate the role of the school bus drivers.

CORRECTIVE ACTION DEMONSTRATED: The driver was briefed, provided zone maps, bus route assignments with written instructions, white card for placement in the bus window with route information and list of Mass Care Centers. The addendum to the Calvert County Board of Education Superintendent's Manual states that: "Bus drivers will not be required to re-enter the [Emergency Planning Zone] (EPZ) once students have been transported to their host schools. The drivers are not considered emergency workers". If the drivers re-enter the EPZ they will be briefed and issued the appropriate dosimeters and KI.

Issue No.: 11-04-3.c.2-P-02

CONDITION: Patuxent High School students who are attending the Calvert Center Technical School are not accounted for during a radiological incident.

POSSIBLE CAUSE: There are no specific instructions for implementing protective actions for the students who attend the Career Center Technical School.

REFERENCE: NUREG-0654, J.10.c, d, g

EFFECT: The health and safety of the Patuxent High School students who are attending classes at the Career Center Technical School could be compromised during a radiological emergency.

RECOMMENDATION: Develop a plan/procedure to address students with a split roster.

CORRECTIVE ACTION DEMONSTRATED: The Calvert County Board of Education Standard Operating Procedure, Attachment #9, p. 9-7 and 9-8 states: "Schools outside the Emergency Planning Zone (EPZ) but having students who reside in the EPZ will retain the students." The Superintendent of the Calvert County Schools has the responsibility for the safety and welfare of school children that are attending schools outside the EPZ and live inside the EPZ.

Issue No.: 11-04-3.c.2-P-03

CONDITION: There may not be adequate space at the Northern High School to accommodate school children evacuees and congregate care general population evacuees.

POSSIBLE CAUSE: Northern High School, with a congregate care capacity of 900 persons, has been designated to serve both as school reception center (host school) and congregate care center for general population. However, school children and general population assigned to this facility far exceeds its capacity (900 persons). Populations assigned are listed below:

Patuxent High School	1,800 students and staff
Southern Middle School	1,000 students and staff
St. Leonard Elementary School	700 students and staff
Total School Population	3,500 students and staff

REFERENCE:

- NUREG-0654, J.10.c, d, g
- Calvert County Radiological Emergency Plan & Standard Operating Procedures
- Calvert County Public Schools Plan
- Patuxent High School Crisis Plan, November 2001 Risk/Host School for CCNPP Incidents

EFFECT: There is a potential for congestion and overcrowding at Northern High School.

RECOMMENDATION: Verify the capacity for Northern High School (host school) to function properly as both a Host and Mass Care Facility and adjust all plans, accordingly.

CORRECTIVE ACTION DEMONSTRATED: The Addendum to the Calvert County Board of Education Superintendent's Manual states that: "Northern High and Northern Middle Schools will not be used as shelters until their students have been transported home."

f. PRIOR ARCAs – UNRESOLVED: N/A

2.1.2 Field Monitoring Team

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

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 Route Alerting Team

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

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: 5.a.3

Issue No.: 11-05-5.a.3-A-01 (Re-demonstrated)

CONDITION: Backup alert and notification of the public in Calvert County was not completed on the assigned route within the required 45 minutes.

POSSIBLE CAUSE: The individual assigned for the route alerting did not correctly identify the proper route for the required notification. He combined two routes resulting in 1 hour and 48 minutes from actual dispatch time to completion of notification.

REFERENCE: NUREG-0654, E.6; Appendix 3.B.2.c

EFFECT: In the event of a real emergency, the public on the assigned route would not have received timely notification of an accident and directions for receiving emergency information.

RECOMMENDATION: Re-demonstrate the appropriate route to verify that it can be completed within the 45-minute requirement.

CORRECTIVE ACTION DEMONSTRATED: A re-demonstration of the assigned route was executed. The route was implemented from the initiating point to the end point of the route within 41 minutes.

b. NOT DEMONSTRATED: None

c. PRIOR ARCAs – RESOLVED: N/A

d. PRIOR ARCAs – UNRESOLVED: N/A

2.1.4 Traffic Control Point/Access Control Point

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

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 Congregate Care Center (Northern High and Middle Schools)

a. MET: 6.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

2.1.6 Emergency Worker Decontamination Station (Stafford Road Landfill)

a. MET: 1.e.1 3.a.1

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: 6.a.1, 6.b.1

Issue No.: 11-05-6.a.1, 6.b.1-A-02

CONDITION: A radioactive source appropriate for performing an operation response check was not available at the Radiation

Worker Monitoring and Decontamination station at the Stafford Landfill in Calvert County to perform an operational check of monitoring instruments.

POSSIBLE CAUSE: Procedures state personnel performing radiological monitoring of people should perform a source check to verify instruments respond to a radioactive source. However, an appropriate radioactive source was not available at the monitoring and decontamination station. Additionally, procedure forms do not provide for the documentation of response check results and instrument calibration labels do not identity a check source to be used or an expected response value.

REFERENCE:

- NUREG-0654, J.10.h; J.12; K.5.a, b
- Calvert County, Agency Standard Operating Procedures, Attachment 4 - Radiation Exposure Control

EFFECT: If the instrument were not performing properly, the results of radiological monitoring would be erroneously low or high. This could result in decontamination activities not being performed when needed or unnecessary decontamination being performed.

RECOMMENDATION: Provide procedural guidance that ensures an appropriate radioactive source is available to workers for operationally checking instruments prior to use. Provide a form on which the results of the source check can be documented and linked to the type and serial number of the instrument being used. The instrument calibration labels should provide information on the check source to be used and the expected response check value.

SCHEDULE FOR CORRECTIVE ACTION: Procedures will be revised, as necessary, to include appropriate source checking of instruments. The procedure (not a calibration label) will include instructions on the source type, strength, and expected response.

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs – RESOLVED: N/A

f. PRIOR ARCAs – UNRESOLVED: N/A

2.2 St. Mary's County

2.2.1 Emergency Operations Center

a. MET:

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

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: 1.e.1

Issue No.: 11-05-1.e.1-A-03

CONDITION: St. Mary's Emergency Operations Center (EOC) did not have thermoluminescent dosimeters (TLDs) available for issuance to emergency workers.

POSSIBLE CAUSE: The inventory list indicates that there were to be 92 TLDs available for emergency workers. It was not discovered that they were missing until the Health Department Radiological Officer prepared to issue dosimetry to emergency workers and could not find the TLDs.

REFERENCE: NUREG-0654, H.7, 10; J.10.a, b, e; J.11; K.3.a

EFFECT: Emergency workers deployed to the field had no TLD for recording total dose accumulated while in the field.

RECOMMENDATION: Locate TLDs and store in a specific location in the EOC equipment room.

SCHEDULE FOR CORRECTIVE ACTION: The TLDs were located and are in a dedicated, labeled location in the EOC equipment room. This information will be included in the 2005 Annual Letter of Certification and can be shown as corrected with the publication of a final report.

FEMA RESPONSE: This does not rectify this issue; therefore, the issue will be re-evaluated during the next scheduled exercise.

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs (and Planning Issues) – RESOLVED: 1.c.1, 3.c.2

Issue No.: 11-04-1.c.1-A-01

CONDITION: The school districts within St. Mary's County were not provided with timely information concerning the emergency classification level (ECL). The Alert ECL was received at 0817 hours at the Emergency Operations Center (EOC) and not transmitted to the school district until 1010 hours.

POSSIBLE CAUSE: Due to the late arrival of the School Coordinator at the EOC, the schools within St. Mary's County were not provided with timely information.

REFERENCE: NUREG-0654, A.1.d; A.2.a, b

EFFECT: The late arrival of essential information could have affected the health and safety of the school children and staff of the St. Mary's Public Schools.

RECOMMENDATION: Should an individual be tardy, a replacement should fulfill his duties and responsibilities.

CORRECTIVE ACTION DEMONSTRATED: Board of Education representatives successfully demonstrated the ability to notify school and transportation officials of an Alert ECL. This allowed for subsequent timely implementation of the St. Mary's County School Services Plan.

Issue No.: 11-04-3.c.2-P-04

CONDITION: The bus driver was not briefed, or issued potassium iodide (KI) or dosimetry in accordance with the St. Mary's Public Schools – Bus Routes Standard Operating Procedures (SOPs).

POSSIBLE CAUSE: The St. Mary's County Transportation Department was not familiar with the requirement listed in the Bus Routes SOP.

REFERENCE:

- NUREG-0654, J.10.c, d, g
- St. Mary's County Plan, Tab D, Exhibit 1, Bus Drivers Action Checklist, February 2004

EFFECT: Bus drivers required to enter the 10-mile Emergency Planning Zone to evacuate children to the relocation site may not have the tools to

determine their radiological exposure. Therefore, the bus drivers' exposure could go unrecorded.

RECOMMENDATION: Review and make changes, as necessary, to the basic County Plan and the County Public School Plan to delineate the role of the school bus drivers.

CORRECTIVE ACTION DEMONSTRATED: The School Services Coordinator Response Action Checklist was revised to include a note that bus drivers from risk schools are not emergency workers and will not be required to use dosimetry.

f. PRIOR ARCAs – UNRESOLVED: N/A

2.2.2 Field Monitoring Team

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

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: 4.a.1

Issue No: 11-05-4.a.1-A-04

CONDITION: The proper operational response check for the Eberline 520 Geiger Counter with the HP-240 probe was not demonstrated by the St. Mary's Field Monitoring Team.

POSSIBLE CAUSE: The check source could not be located in the general storage area.

REFERENCE:

- NUREG-0654, H.10; I.7, 8, 9
- St. Mary's County Emergency Plan, Attachment #3- Accident Assessment (Field Monitoring) Standard Operating Procedure, Tab D- Field Monitoring Procedures
- 67 FR 20580, FEMA REP, Exercise Evaluation Methodology, Evaluation Area 4- Field Measurements and Analysis, Sub-element 4.a- Plume Phase Field Measurements and Analyses, Criterion 4.a.1, Extent of Play

EFFECT: Survey results may not be credible.

RECOMMENDATION: Obtain an appropriate source and organize a secure storage area for the field team emergency equipment.

SCHEDULE FOR CORRECTIVE ACTION: The source has been located and will be placed in a dedicated labeled location. This information will be included in the 2005 Annual Letter of Certification and can be shown as corrected with the publication of a final report. Additional check sources may be purchased to prevent this issue from recurring.

FEMA RESPONSE: This does not rectify this issue; therefore, the issue will be re-evaluated during the next scheduled exercise.

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs – RESOLVED: N/A

f. PRIOR ARCAs – UNRESOLVED: N/A

2.2.3 Route Alerting Team

a. MET: 1.d.1 3.a.1 5.a.3
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

2.2.4 Traffic Control Point/Access Control Point

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

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 Reception Center (Leonardtown High School/Middle School)

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

2.2.6 Congregate Care Center (Leonardtown High School/Middle School)

a. MET: 6.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

2.2.7 Emergency Worker Decontamination Station (Leonardtown High School/Middle School)

a. MET: 1.e.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

2.3 Dorchester County

2.3.1 Emergency Operations Center

a. MET:

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

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 Field Monitoring Team

a. MET:

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

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 Route Alerting Team

a. MET:

1.d.1	3.a.1	5.a.3
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

2.3.4 Traffic Control Point/Access Control Point

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

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 Reception Center (Maple Elementary School)

a. MET: 1.e.1 3.a.1 6.a.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 Congregate Care Center (South Cambridge High School)

a. MET: 1.b.1 6.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

2.3.7 Emergency Worker Decontamination Station (Maple Elementary School)

a. MET: 1.e.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

3.0 SCHOOLS

3.1 Calvert County

3.1.1 Patuxent High School

a. MET: 3.c.2

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

3.1.2 St. Leonard Middle School

a. MET: 3.c.2

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

3.1.3 Southern Middle School

a. MET: 3.c.2

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

3.2 St. Mary's County

3.2.1 Hollywood Elementary School

a. MET: 3.c.2

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

3.2.2 Town Creek Elementary School

a. MET: 3.c.2

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

APPENDIX 1
ACRONYMS AND ABBREVIATIONS

A&N	Alert and Notification
AAC	Accident Assessment Center
ACP	Access Control Point
ALARA	As Low As is Reasonably Achievable
ALC	Annual Letter of Certification
ARC	American Red Cross
ARCA	Area Requiring Corrective Action
BOE	Board of Education
CCNPP	Calvert Cliffs Nuclear Power Plant
CFR	Code of Federal Regulations
DECON.	Decontamination
DRD	Direct Reading Dosimeter
EAS	Emergency Alert System
EBS	Emergency Broadcast System
ECL	Emergency Classification Level
EMS	Emergency Medical Service
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Extent of Play
EP	Environmental Procedure
EPZ	Emergency Planning Zone
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FR	Federal Register
FRERP	Federal Radiological Emergency Response Plan
FMT	Field Monitoring Team
HS	High School
IAW	In accordance with
IPZ	Ingestion Pathway Emergency Planning Zone
JIC	Joint Information Center

KI	Potassium Iodide
kV	kilovolt
MDE	Maryland Department of the Environment
mph	Miles Per Hour
MOU	Memorandum of Understanding
mR/hr	milli-Roentgen(s)/hr
MS	Middle School
N/A	Not Applicable
NOUE	Notice of Unusual Event
NRC	U.S. Nuclear Regulatory Commission
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 Guide
PAR	Protective Action Recommendation
PAZ	Protective Action Zone
PIC	Pressurized Ion Chamber Detector
R	Roentgen(s)
R/hr	Roentgen(s) per hour
RAC	Regional Assistance Committee
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
SEOC	State Emergency Operations Center
SOP	Standard Operating Procedure
SRD	Self-Reading Dosimeter
TCP	Traffic Control Point
TL	Team Leader
TLD	Thermoluminescent Dosimeter

APPENDIX 2
EXERCISE EVALUATORS AND TEAM LEADERS

The following is a list of the personnel who evaluated the Calvert Cliffs Nuclear Power Station Out-of-Sequence activities on September 27 & 28, and exercise on September 27, 2005. Evaluator Team Leaders are indicated by the letters "(TL)" after the organization name. The organization each evaluator represents is indicated by the following abbreviations:

FEMA	Federal Emergency Management Agency
NRC	U.S. Nuclear Regulatory Commission
ICF	ICF Consulting

POSITION	NAME	ORGANIZATION
RAC Chairperson	Darrell Hammons	FEMA
Project Officer	John Price	FEMA
ICF Coordinator	Roger B. Kowieski	ICF

I. BIENNIAL PLUME EXERCISE – September 27, 2005

EVALUATION SITE	EVALUATOR	ORGANIZATION
State of Maryland		
State Emergency Operations Center	Al Henryson	FEMA (TL)
	Dave Goldbloom-Helzner	ICF
	Larry Visniesky	ICF
Accident Assessment – Baltimore	James Hickey	ICF
Accident Assessment – EOF	Melody Geer	ICF (Tech TL)
	Robert Bores	NRC
Joint Public Information	PJ Neid	ICF
State Field Monitoring Team A	Richard Grundstrom	ICF
State Field Monitoring Team B	Pat Taylor	ICF
RISK JURISDICTIONS		
Calvert County		
County Emergency Operations Center	Angela Hough	FEMA (TL)
	Wayne Shych	FEMA
	Dennis Wilford	ICF
	Rosemary Samsel	ICF
Field Monitoring Team	Lyle Slagle	ICF
Route Alerting	Steve Denson	ICF
TCP/ACP	Tracey Green	ICF

EVALUATION SITE	EVALUATOR	ORGANIZATION
St. Mary's County		
County Emergency Operations Center	Marcy Campbell	ICF (TL)
	Bud Iannazzo	ICF
	Ernest Boaze	ICF
Field Monitoring Team	Stan Maingi	ICF
Route Alerting	Richard Wessman	ICF
TCP/ACP	Bill Wark	ICF
Dorchester County		
County Emergency Operations Center	Al Lookabough	ICF (TL)
	Ken Lott	ICF
	Jon Christiansen	ICF
Field Monitoring Team	Savery Stuckey	ICF
Route Alerting	Robert Duggleby	ICF
TCP/ACP	Robert Duggleby	ICF

II. ACTIVITIES OCCURRING OUT-OF-SEQUENCE – September 27, 2005 (1700-1930)

EVALUATION SITE	EVALUATOR	ORGANIZATION
Calvert County		
Emergency Worker Monitoring and Decontamination (Stafford Landfill)	David Seebart	ICF
Congregate Care (Northern High/Middle School)	Herbert Boedecker	Monroe County, NY
St. Mary's County		
Reception Center / Emergency Worker Monitoring and Decontamination; Congregate Care (Leonardtown High/Middle School)	Ed Wojnas	ICF
Dorchester County		
Reception Center / Emergency Worker Monitoring and Decontamination (Maple Elementary)	Bart Ray	ICF
Congregate Care (South Cambridge High School)	Tom McCance	ICF

III. ACTIVITIES OCCURRING OUT-OF-SEQUENCE – September 28, 2005 (0930-1130)

EVALUATION SITE	EVALUATOR	ORGANIZATION
Calvert County		
Patuxent Elementary School	Steve Denson	ICF
St. Leonard Elementary School	Tracey Green	ICF
Southern Middle School	Robert Duggleby	ICF
St. Mary's County		
Town Creek Elementary School	Bill Wark	ICF
Hollywood Elementary School	Richard Wessmann	ICF
Dorchester County		
There were no schools evaluated in Dorchester County. Procedures were explained to FEMA Evaluator at EOC.	N/A	N/A

APPENDIX 3

EXERCISE EVALUATION AREA CRITERIA AND EXTENT-OF-PLAY AGREEMENT

Extent-of-Play Agreement

This appendix contains the extent-of-play agreements (EOPs) approved by FEMA Region III for the exercise activities and out-of-sequence demonstrations related to the 10-mile EPZ surrounding CCNPP. The exercise was conducted on September 27, 2005. Out-of-sequence demonstrations were conducted on September 27, 2005 and September 28, 2005. The EOPs are arranged according to the exercise evaluation area criteria.

The exercise evaluation area criteria, contained in the "Radiological Emergency Preparedness Exercise New Methodology" 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 off-site 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. Exercise Evaluation Area Criteria

Listed below are the specific radiological emergency preparedness evaluation area criteria scheduled for demonstration during this exercise.

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)

Sub-element 1.b – Facilities

Criterion 1.b.1: Facilities are sufficient to support the emergency response. (NUREG-0654, H.3)

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)

Sub-element 1.d – Communications Equipment

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

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

Criterion 1.e.1: Equipment, maps, displays, dosimetry, KI, and other supplies are sufficient to support emergency operations. (NUREG-0654, H.7, 10; J.10.a, b, e; J.11; K.3.a)

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, J.10.e, f; K.4)

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; Supplement 3)

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

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

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

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.a, b)

Sub-element 3.b – Implementation of KI Decision

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

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, J.10.c, d, g)

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

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)

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

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

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

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.7, 8, 9)

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; H.12)

Criterion 4.a.3: Ambient radiation measurements are made and recorded at appropriate locations, and radioiodine and particulate samples are collected. Teams will move to an appropriate low background location to determine whether any significant (as specified in the

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

EVALUATION AREA 5: EMERGENCY NOTIFICATION AND PUBLIC INFORMATION

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

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

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

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.c)

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; J.12; K.5.a)

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)

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 American Red Cross planning guidelines. (Found in MASS CARE – Preparedness Operations, ARC 3031) Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and

have been decontaminated as appropriate before entering congregate care facilities. (NUREG-0654, J.10.h, J.12)

B. Extent-of-Play Agreement

The extent-of-play agreement on the following pages was submitted by the State of Maryland and was approved by FEMA Region III in preparation for the CCNPP REP exercise on September 27, 2005. The extent-of-play agreement includes any significant modification or change in the level of demonstration of each exercise evaluation area criterion.

CALVEX '05
Plume 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

Calvert Cliffs Nuclear Power Plant
CALVEX 05

Revision 1

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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 Pathway graded exercise to be conducted on September 27, 2005.

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 26, 2005 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

The full-scale graded plume phase exercise will be conducted on September 27th, 2005, involving the Calvert Cliffs risk jurisdictions and selected State agencies in Maryland. Demonstration activities will be initiated following a simulated accident at the plant.

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 – Reisterstown
State AAC
Baltimore
EOF - Barstow
Joint Information Center – Prince Frederick

Plume Zone Local Jurisdictions

Calvert County
Stafford Road Landfill (Emergency Worker Station)
Southern High School – AA Co (Reception Center)
Northern High and Middle School (Congregate Care)
Patuxent Elementary School (Risk School)
St. Leonard Elementary School (Risk School)
Southern Middle School (Risk School)

St. Mary's County
- Leonardtown High and Middle School (Reception, Emergency Worker, Mass Care)
- Town Creek Elementary School (Risk School)
- Hollywood Elementary School (Risk School)

Dorchester County
- Maple Elementary (Reception, Emergency Worker)
- South Cambridge High School (Congregate Care)

Support Jurisdictions

Anne Arundel County
Charles County

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. Out-of-sequence locations will not demonstrate mobilization. Twenty-four hour rosters will be available for key players at each EOC.

Locations Evaluated:

State EOC, AAC, and JIC
Local Plume Zone 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.3)

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. Reception/Monitoring and Decontamination Centers will only demonstrate set up of initial monitoring point and decontamination monitoring area. Entire set up of facility will not be demonstrated. Diagrams and/or schematics will be available at each location to describe complete facility layout.

Locations Evaluated:
Reception/Mass Care Centers, Emergency Worker Decontamination Centers

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; 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
Local Plume Zone Jurisdictions

Outstanding Issues:

Issue No.: 11-04-1.c.1-A-01

Condition: The school districts within St. Mary's County were not provided with timely information concerning the emergency classification level (ECL). The Alert ECL was received at 0817 hours at the Emergency Operations Center (EOC) and not transmitted to the school district until 1010 hours.

Possible Cause: Due to the late arrival of the School Coordinator at the EOC, the schools within St. Mary's County were not provided with timely information.

Reference: NUREG-0654, A.1.d; .2.a, b

Effect: The late arrival of essential information could have affected the health and safety of the school children and staff of the St. Mary's Public Schools.

Recommendation: Should an individual be tardy, a replacement should fulfill his duties and responsibilities.

Corrective Action Demonstrated: Board of education representatives successfully demonstrated the ability to notify school and transportation officials of an Alert ECL. This Allowed for subsequent timely implementation of the St. Mary's County School Services Plan. This demonstration closes prior issue #11-04-1.c.1-A-01.

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

Sub-element 1.d – Communications Equipment

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

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 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 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. Equipment failures will not be injected into the exercise scenario. Actual failures will require back-up communication demonstration.

Locations Evaluated:

State EOC, AAC, Field Teams (plume)
Local Plume Zone Jurisdictions

Outstanding Issues:

None

EVALUATION AREA 1: EMERGENCY OPERATIONS MANAGEMENT

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.7, 10; J.10.a, b, e; 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, Field Teams (plume)
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 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, J.10.e, f; 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)
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 on-site and off-site environmental conditions. (NUREG-0654, I.8, 10; 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, 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:
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.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions (PADs) for the general public (including the recommendation for the use of KI, if ORO policy). (NUREG-0654, J.9; J.10.f, 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 off-site 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 out-of-sequence evaluations)

Locations Evaluated:	**KI Storage Locations:**
State EOC, AAC	
Calvert County	Calvert County Health Dept.
St. Mary's County	St. Mary's County EOC.
Dorchester County	Dorchester County EOC & Health Dept.

Outstanding Issues:
None

EVALUATION AREA 2: PROTECTIVE ACTION DECISION-MAKING

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

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

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. School protective actions will be demonstrated as an out-of-sequence activity. Private schools, private kindergartens and day care centers will not participate in the exercise. However, OROs will have lists of any facilities located within the jurisdiction available for review.

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 planning criteria. (NUREG-0654, J.9, 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:
Not applicable for this evaluation.

Locations Evaluated:
None

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, I.10; J.9; M.1)

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:
Not applicable for this evaluation.

Locations Evaluated:
None

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.a, 3.b)

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 affected 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)
Local Plume Zone Jurisdictions
- TCP/ACP
- Reception Centers (Monitoring and Decontamination)
- Emergency Worker Monitoring and Decontamination
- Field Teams

Outstanding Issues:
None

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 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, J.10.e)

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)
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.1: Protective action decisions are implemented for special populations other than schools within areas subject to protective actions. (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 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. At least 1/3 of transportation providers (including special resources for disabled individuals) must be actually contacted during each exercise. All actual and simulated contacts should be logged.

All implementing activities associated with protective actions for special populations must be based on the ORO's plans and procedures and completed as they would in an actual emergency, unless otherwise indicated in the extent of play agreement.

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. Some facilities (~ 10%) will actually be contacted.

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. There are no risk schools in Dorchester County. Protective actions for school children that live inside the 10-mile EPZ but attend school outside the 10-mile EPZ will be demonstrated by actions taken in the EOC during the actual exercise. Private schools, private kindergartens and day care centers will not participate in the exercise. However, OROs will have lists of any facilities located within the jurisdiction available for review. **This element will be evaluated as an out-of-sequence activity**

Locations Evaluated:
Calvert County (*)
St. Mary's County (*)
(see page 3 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)

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:

Traffic and Access control points will be established administratively in the EOC based on scenario conditions. Access control points will be established in the vicinity of the EOC (parking lot) and not at an actual field location. Communications with the TCP/ACP will occur as they would in an actual emergency. Air and water controls will be coordinated (simulated) from the SEOC.

Locations Evaluated:

State EOC
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. Actual equipment will not be dispatched.

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 emergency 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:
Not applicable for this evaluation.

Locations Evaluated:
None

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, 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:
Not applicable for this evaluation.

Locations Evaluated:
None

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:
Not applicable for this evaluation.

Locations Evaluated:
None

Outstanding Issues:
None

EVALUATION AREA 4: FIELD MEASUREMENT AND ANALYSIS

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

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)
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; H.12)

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 three survey point locations. IAW agreements with Constellation Energy and State and Local organizations, State and local teams will not measure plume centerline radiation levels. 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 and/or procedures) amount of radioactivity has been collected on the sampling media. (NUREG-0654, I.9)

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 ambient background radiation levels (plume edge) if applicable. Scenario data / location may not result in access to plume dose. 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:
Not applicable for this evaluation.

Locations Evaluated:
None

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; 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 radio-analytical 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:
Not applicable for this evaluation

Locations Evaluated:
None

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 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.IV.D; NUREG-0654, E.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. Contact with one EAS station for each responsible ORO will be demonstrated. Actual siren sounding and EAS demonstration will be simulated.

-Note-
Calvert and St. Mary's County coordinate activation with the same EAS station. One county (Calvert) will make contact with the EAS station with a message for both counties

Locations Evaluated:
Local Plume Zone Jurisdictions

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

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. Siren activation (simulated) is coordinated so that one county activates sirens for the other two risk jurisdictions. One back-up route alerting route will be demonstrated in each risk county.

Locations Evaluated:
Local Plume Zone Jurisdictions

Outstanding Issues:
None

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.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:
JIC (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; J.12; K.5.a)

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 met. 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. At least 6 evacuees will be monitored with one simulated contaminated. One vehicle will be monitored. Estimated monitoring rates and teams required for demonstration are listed below. The number of teams is based on 10% of the population arriving at the reception center with some contamination.

- Portal monitors can process (4 persons/min.) 240 persons/hr.
- Hand-held monitors process 12 persons/hr.

	Calvert (AACo)	**St. Mary's**	**Dorchester**
Total Population Est.	35,000	15,000	300
Est. @ Reception	7,000	3,000	60
Time to monitor population (no contaminations) using 1 portal monitor	29 hrs	12.5 hrs	15 minutes
Time to monitor population (10% contaminations) using hand-held instruments	58 hrs/team	25 hrs/team	30 minutes/team
Teams required for hand-held monitoring in 24 hours	5	2	1
Teams required for exercise demonstration (1/3)	2	1	1

This element will be evaluated as an out-of-sequence activity.

Locations evaluated:
Calvert County - Stafford Landfill (emergency worker) (*)
Calvert County – Southern High School AA Co (evacuees) (*)
St. Mary's County – Leonardtown Middle School / High School (co-located) (*)
Dorchester County – Maple Elementary (co-located) (*)

Outstanding Issues:
None

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.

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 – Leonardtown Middle and High School (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 American Red Cross planning guidelines (found in MASS CARE-Preparedness Operations, ARC 3031). Managers demonstrate the procedures to assure that evacuees have been monitored for contamination and have been decontaminated as appropriate prior to entering congregate care facilities. (NUREG-0654, J.10.h; 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 and schematics will be provided during an interview at the designated location.

Locations Evaluated:

Calvert –Northern Middle School and High School
St. Mary's – Leonardtown High School and Middle School
Dorchester – South Dorchester High School - Cambridge

Outstanding Issues:
None

APPENDIX 4
EXERCISE SCENARIO

Constellation Energy Group Emergency Scenario Summary
Calvert Cliffs Nuclear Power Plant
September 27, 2005

0800 – exercise begins with a barge crash into the Intake Structure Baffle Wall that results in a NOUE

0817 – a Jersey barrier that is being replaced falls off a forklift onto the Ammonia Storage Tank Outlet Valve (causing an ammonia leak of 8500 gallons in 10 minutes and resulting in a declaration of an ALERT by 0832 due to toxic gas within or contiguous to any safe shutdown area in a concentration that is immediately life threatening to plan personnel).

0838 – 25 gallons per minute, Letdown Line leak occurs resulting in Main Vent Gaseous

Radiation Monitor readings increase, Waste Processing Ventilation Radiation Monitor alarms and West Penetration Room pressure high alarms

0920 – ammonia has dissipated and the areas affected are now accessible

0930 – 6000 gallons per minute Loss of Coolant Accident begins; Pressurizer level low alarm, Containment sump level high alarm, manual reactor trip initiated (or automatic trip on Thermal Margin Low Pressure), Safety Injection Actuation Signal – results in a declaration of Site Area Emergency by 0945 for loss or potential loss of any two fission product barriers

1045 – continued degradation of ability to cool core and potential loss of containment barrier results in a declaration of a General Emergency

EXPECTED PAR – evacuate PAZ 1 and 3 (No release in progress at this time)

1215 – core collapse occurs (major fuel pellet overheating damage category)

1245 – hydrogen burn; containment letdown line pipe penetration begins leaking

1300 – Dose Assessment Office performs a forecast calculation for current release rate and 2 hour default projected duration and determines current PAR does not need to be upgraded; however, if the State does not upgrade the PAR, an inject for St. Mary's County will include part of St. Mary's County in the evacuation

1330 – 14 4 kV bus restored allowing pumps to be restarted so that "core damage is arrested"

1400 – termination of exercise

Wind speed ~ 7 mph during release period, wind direction from 28^0 (toward the South/Southeast), Stability Class E

APPENDIX 5
PLANNING ISSUES

This appendix contains the Planning Issues assessed during the September 27, 2005, exercise at CCNPP. Planning Issues are issues identified in an exercise or drill that do not involve participant performance, but rather involve inadequacies in the plan or procedures. Planning Issues are required to be corrected through the revision and update of the appropriate State and local RERPs and/or procedures in accordance with the following schedule:

- Within 120 days of the date of the exercise/drill: when the Planning Issue is directly related to protection of the public health and safety.

- During the annual plan review and update (reported in the Annual Letter of Certification): when the Planning Issue does not directly affect the public health and safety. However, when the date for the annual plan review and update is imminent and the responsible organization does not have sufficient time to make the necessary revisions in the plans and/or procedures, the revised portion of the plans and/or procedures should be submitted in the subsequent annual plan review and update and reported in the Annual Letter of Certification.

Any requirement for additional training of responders to radiological emergencies necessitated by the revision and update of the plans and/or procedures must be completed within the timeframes described above in order for the Planning Issue to be considered resolved.

Maryland AAC/Baltimore and EOF - Barstow

Issue No: 11-05-2.b.1-P-01

CONDITION: Field team sample data (I-131 and radioactive particulates in units of microCuries/cc) were not used in the assessment process by the Accident Assessment Center (AAC).

POSSIBLE CAUSE: The Maryland Department of the Environment (MDE) procedures and guidance for the AAC do not describe the process of assessment and utilization of these data.

REFERENCE:
- NUREG-0654, I.10
- MDE EP-301, Revision 8, November 2002 (Offsite Dose Projections – Plume Phase)

EFFECT: The lack of specific procedural guidance resulted in the failure to relate airborne radioiodine concentrations to a radiological consequence in terms of thyroid dose or other organ dose. Such assessment is needed to verify the adequacy of protective

measures relative to airborne radioactive iodines and particulates, and to control and to assess organ doses to emergency workers and others who were exposed to the plume.

RECOMMENDATION: Specific procedural guidance should be developed to assure that the results of field sampling (radioiodines and particulates) are appropriately assessed and used in exposure control and protective action considerations.

SCHEDULE OF CORRECTIVE ACTIONS: The MDE procedures EP-301, Offsite Dose Projections for Plume Phase, Attachment 2, Thyroid Dose Projection Base on Field Sample, provides instructions for relating airborne radioiodine concentrations to a radiological consequence in terms of thyroid dose. Procedures will be assessed and revised, as necessary, to ensure this information is properly used during an exercise or event.

Issue No: 11-05-2.b.1, 4.a.2-P-02

CONDITION: While the State Field Monitoring Team Leader and Accident Assessment Center (AAC) coordinated with the licensee and the county monitoring teams the placement and movement of the field teams to avoid duplication of effort and more effective use of field team resources, the various organizations did not effectively share monitoring results.

POSSIBLE CAUSE: The State and county plans and procedures did not provide specific guidance as to how and with whom to share/coordinate field monitoring or sampling results.

REFERENCE:
- NUREG – 0654, I.9, 10
- State/MDE EP-300 Series (Dose Assessment and Protective Actions)
- Attachment 3 to all risk county plans (Accident Assessment (Field Monitoring) Standard Operating Procedure)

EFFECT: The function of the field monitoring teams is to provide data to help in characterizing the plume (location, edges, centerline values, plume content, etc.). The data from a major portion of the monitoring (that of the county and licensee teams) were not provided to the Maryland Department of the Environment (MDE) AAC to fully characterize the plume. Each organization got only a portion of the available data and none had the complete available information for plume characterization. This resulted in incomplete plume assessment.

RECOMMENDATION: The State and county plans and procedures should be revised to specifically require the sharing of field team data with the MDE AAC and licensee at the EOF to ensure availability of all collected data with those organizational groups responsible for assessing the plume and radiological impact.

SCHEDULE OF CORRECTIVE ACTIONS: State and county procedures or processes will be revised to enhance the sharing of field team data.

Maryland State Field Monitoring Teams

Issue No: 11-05-4.a.3-P-03

CONDITION: The Maryland Department of the Environment (MDE) Ambient Radiation Monitoring and Air Sampling procedure, EP-302, Revision 9, dated July 2005 mixes, interchanges, and misuses the terms and units of exposure and dose, and units expressed in the procedure are not consistent with the units of the instruments. Exposure is expressed in units of Roentgens (R) and dose is expressed in terms of Rem.

Examples:

- Activity A. 2 – indicates the Direct Reading Dosimeter (DRD) range readings are in "mrem." This is a unit of dose. The DRDs measure exposure in R, not dose in rem. The correct units of DRDs are R or mR.

- Activity A.12 – "Do not enter areas where exposure rates exceed 100 mrem/hour." Exposure rate units and units of the instrument are R/hr or mR/hr, not mrem/hour.

- Activity G.1.3 – The PIC 6 measure exposure rates in units of mR/hr, not a dose rate in mrem/hour.

There are several other instances throughout the procedure.

POSSIBLE CAUSE: Inattention to detail.

REFERENCE: MDE EP-302, Revision 9, July 2005 (Ambient Radiation Monitoring and Air Sampling)

EFFECT: The misused and interchanged units cause confusion and difficultly understanding what is meant.

RECOMMENDATION: Revise the procedure to use the terms dose and exposure correctly, use the correct units for the terms, and to use terms and units consistent with instruments as appropriate.

SCHEDULE OF CORRECTIVE ACTIONS: The discrepancy between these terms is of minor consequence in the State or county procedures. Radiological training sessions include instructions for emergency workers to consider rem and roentgen as interchangeable. Procedure changes will not be scheduled to correct these terms. As procedures are revised for other reasons, terms will be changed to become more consistent. No additional actions are scheduled.

FEMA RESPONSE: Concur. However, if this condition resurfaces in a future exercise, if may warrant a more serious issue.

All Risk and Host Counties

Issue No.: 11-05-4.a.2-P-04

CONDITION: Calvert County field teams were not updated on plant conditions, current Emergency Classification Level (ECL), escalation of ECLs, wind direction and speed, and when a radiological release was in progress.

POSSIBLE CAUSE: None of the risk counties have procedures that detail the information that should be provided to the field monitoring teams to keep them updated on the current emergency situation.

REFERENCE:
- NUREG-0654, I.8, 11; J.10.a; H.12
- Attachment 3 to all risk county plans (Accident Assessment (Field Monitoring) Standard Operating Procedure)

EFFECT: Field teams may not have taken proper actions to avoid receiving unnecessary exposure.

RECOMMENDATION: Develop a procedure or checklist to keep field teams informed of all pertinent emergency information.

SCHEDULE FOR CORRECTIVE ACTION: The county checklist for the Radiological Officer includes specific steps to inform the Field Teams of any changes in emergency classification or protective action decision. No changes to the existing procedures are scheduled for this condition.

FEMA RESPONSE: Concur. However, if this condition resurfaces in a future exercise, if may warrant a more serious issue.

Issue No: 11-05-4.a.1, 6.a.1, 6.b.1-P-05

CONDITION: Risk and support county plans/procedures for radiation survey and monitoring equipment do not include adequate instructions on the proper method for checking the equipment for response to a radiation source. This includes all survey instruments used by field monitoring teams and all monitoring equipment (both portable instruments and portal monitors) used to determine contamination levels on people and equipment.

Procedure forms are inconsistent or lack detail. Changes in equipment are not reflected in procedures.

POSSIBLE CAUSE: Procedures lack detail.

REFERENCE:
- NUREG-0654, H.10
- 67 FR 20580, FEMA REP, Exercise Evaluation Methodology; Evaluation Area 4 – Field Measurements and Analysis; Sub-element 4.a – Plume Phase Field Measurements and Analyses; Criterion 4.a.1, Extent of Play
- FEMA REP-21, March 1995: Contamination Monitoring Standard for a Portal Monitor Used for Radiological Emergency Response
- FEMA REP-22, October 2002: Contamination Monitoring Guidance for Portable Instruments Used for Radiological Emergency Response to Nuclear Power Plant Accidents
- ANSI N323A-1997: American National Standard Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments

EFFECT: Radiation detection instruments not checked for current response to a radioactive check source may give inaccurate readings in the field. Inaccurate readings may lead to erroneous determinations of plume characteristics or release of contaminated persons or equipment to a "clean" environment thereby spreading radioactive contamination.

RECOMMENDATION: Coordinate revisions of all plans/procedures to include specific instructions on how to perform assigned tasks.

Verify internal consistency in the plans/procedures.

SCHEDULE OF CORRECTIVE ACTIONS: County plans/procedures for radiation survey and monitoring equipment will be revised to include adequate instructions for checking radiological monitoring equipment for response to a radiation source.

Calvert County Route Alerting

Issue No.: 11-05-5.a.3-P-06

CONDITION: Backup alert and notification of the public in Calvert County was not completed on the assigned route in the required 45 minutes.

POSSIBLE CAUSE: The plans and procedures do not clearly identify the routes.

REFERENCE: NUREG-0654, E.6; Appendix 3: B.2.c

EFFECT: In the event of a real emergency, the public on this route would not have received timely notification of an accident and directions for receiving emergency information.

RECOMMENDATION: The Calvert County plan needs to be revised to clearly identify that all routes can be completed within the 45-minute requirement. Also, the routes need to be identified clearly in the plan (i.e., Route No. 1) from start point to end point, indicating any deviations, and labeled to indicate which siren failure the route covers.

SCHEDULE OF CORRECTIVE ACTIONS: County plans will be reviewed and revised to associate and identify routes associated within the 45-minute requirement. Also, the routes need to be identified clearly in the plan (i.e., Route No. 1) from start point to end point, indicating any deviations, and labeled to indicate which siren failure the route covers.

Calvert County Congregate Care Center

Issue No.: 11-05-6.c.1-P-07

CONDITION: The Northern High School and the Middle School have Memorandum of Understanding (MOU) agreements with the Calvert County Chapter of the Red Cross. The Red Cross stated that capacity of the Northern High School is about 600 and the capacity of the Northern Middle School is about 400 evacuees. This is in conflict with the Radiological Emergency Preparedness Plan which stated that Northern High School has a capacity of 900 persons and the Northern Middle School has a capacity of 450 persons.

POSSIBLE CAUSE: The capacities may have been calculated differently (i.e., one may have used 40 square feet per person while the other used 60 square feet per person).

REFERENCE: Calvert County Radiological Preparedness Plan, Attachment 9, Tab C.

EFFECT: The need for additional shelters may not be realized.

RECOMMENDATION: The Calvert County Emergency Management Agency and Calvert County Chapter of the Red Cross need to clarify the capacity and verify the assumptions for calculation of these capacity figures. This conflicting information should be resolved or clarified with the next revision of the Radiological Plan.

SCHEDULE OF CORRECTIVE ACTIONS: The Calvert County Emergency Management Agency and Calvert County Chapter of the Red Cross will clarify the capacities at Northern High School and the Middle School and verify the assumptions for calculation of these capacity figures. Corrected information will be included the next revision for the Radiological Plan.

St. Mary's County EOC

Issue No.: 11-05-1.a.1-P-08

CONDITION: St. Mary's County Board of Education representatives are required to begin making preparations for relocation of students at the Alert Emergency Classification Level (ECL); however, mobilization procedures for the County Emergency Operations Center do not require that Board of Education representatives be notified until the Site Area Emergency ECL.

POSSIBLE CAUSE: The St. Mary's County Emergency Notification master call down list includes a phased notification of emergency responders. The Board of Education (BOE) representative is not contacted until the Site Area Emergency. The BOE has actions, per Attachment 8, that need to be performed at the Alert ECL.

REFERENCE:
- NUREG-0654, A.4; D.3, 4; E.1.2; H.4
- St. Mary's County Radiological Emergency Plan and Standard Operating Procedures, Attachment 8, 3.0 Implementation
- St. Mary's County Emergency Notification Master Call Down List

EFFECT: Late notification of schools could result in delaying preparations for the relocation of the school children to safer environs in the event of a radioactive release during an accident at the Calvert Cliffs Nuclear Power Plant.

RECOMMENDATION: Change the mobilization procedures to have the Board of Education representatives report to the EOC at the ALERT ECL.

SCHEDULE OF CORRECTIVE ACTIONS: The St. Mary's County mobilization procedures have been revised to have the Board of Education representatives report to the EOC at the ALERT ELC.

St. Mary's County Route Alerting

Issue No: 11-05-5.a.3-P-09

CONDITION: Individual preparation for back up alerting was not sufficient to assure that notification of the public could be completed within 45 minutes following the decision by the St. Mary's County Emergency Operations Center (County EOC) to conduct backup alert and notification.

POSSIBLE CAUSE: The St. Mary's County EOC personnel were not prepared to demonstrate route alerting in accordance with the extent of play agreement. The Sheriff's Deputy was not briefed in advance on the route alerting process, provided dosimetry, potassium iodide (KI) and reference material such that he could immediately depart when the route alerting decision was made in the County EOC. From the time that the individual who was assigned to route alerting was issued dosimetry, KI and briefed, 20 minutes elapsed. The St. Mary's County Plan does not require route alerting teams to be briefed, issued dosimetry and be placed on standby should a decision to conduct route alerting be made. When dispatched, the deputy completed the required route alerting task in 25 minutes (assigned route specified in the Plan was short). Had the assigned route been one of the longer routes, the Deputy may not have been able to complete the entire task within the required 45-minute time limit.

REFERENCE:
- NUREG-0654, E.6; Appendix 3: B.2.c
- St. Mary's County Radiological Emergency Plan

EFFECT: Notification of the public may not have been completed in a timely manner.

RECOMMENDATION: The St. Mary's County Plan should be revised to specify that designated route alerting individuals receive instructions, dosimetry, and KI in a timely manner. The designated individuals should be briefed and placed on standby so that they can promptly proceed to a route-alerting task in the event of a siren failure or a decision to conduct route alerting.

SCHEDULE OF CORRECTIVE ACTIONS: The St. Mary's County Plan will be reviewed and revised, as necessary, and proper training will be conducted, to ensure that route alerting individuals receive instructions, dosimetry, and KI in a timely manner. The designated individuals will be briefed and placed on standby so that they can promptly proceed to a route-alerting task in the event of a siren failure or a decision to conduct route alerting.

APPENDIX 6
PRIOR ISSUES NOT SCHEDULED TO BE DEMONSTRATED

This appendix contains the description and status of ARCAs that were assessed during prior exercises at CCNPP. They were assessed either at jurisdiction or functional entities exempt from demonstration at this exercise or for ingestion exposure pathway objectives not scheduled for demonstration during this exercise.

Queen Anne's County Emergency Operations Center

Issue No.: 11-04-3.e.1-A-01

Description: Queen Anne's County personnel were unable to provide information detailing the locations of food supplies, milk, and agricultural products. (NUREG-0654, H.7, 10; J.10.a, b, e; J.11; K.3.a; Queen Anne's County EOP dated September 2003))

Reason ARCA Unresolved: The County was not scheduled to demonstrate during the 2005 plume-phase exercise.

Recommendation: The County should demonstrate its capabilities during the next ingestion exercise.

Issue No.: 11-04-3.e.2-A-02

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

Reason ARCA Unresolved: The County was not scheduled to demonstrate during the 2005 plume-phase exercise.

Recommendation: The County should demonstrate its capabilities during the next ingestion exercise.

Issue No.: 11-04-3.f.1-A-03

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

Reason ARCA Unresolved: The County was not scheduled to demonstrate during the 2005 plume-phase exercise.

Recommendation: The County should demonstrate its capabilities during the next ingestion exercise.

Washington, DC Emergency Operations Center

Issue No.: 11-04-1.c.1-A-04

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

Reason ARCA Unresolved: The Washington D.C. EOC was not scheduled to participate during the 2005 plume-phase exercise.

Recommendation: The Washington D.C. EOC should demonstrate their capabilities during the next ingestion exposure pathway exercise.

Issue No.: 11-04-2.a.1-A-05

Description: No decision-making took place regarding the potential for emergency worker radiation exposure. (NUREG-0654, K.4; FRMAC Radiological Emergency Response Health and Safety Manual, Section 2.4)

Reason ARCA Unresolved: The Washington D.C. EOC was not scheduled to participate during the 2005 plume-phase exercise.

Recommendation: The Washington D.C. EOC should demonstrate their capabilities during the next ingestion exposure pathway exercise.

Issue No.: 11-04-3.e.2-A-06

Description: 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. (NUREG-0654, E.5, 7; J.9, 11)

Reason ARCA Unresolved: The Washington D.C. EOC was not scheduled to participate during the 2005 plume-phase exercise.

Recommendation: The Washington D.C. EOC should demonstrate their capabilities during the next ingestion exposure pathway exercise.

Issue No.: 11-04-3.f.1-A-07

Description: Specific response actions associated with the relocation of the public and the re-entry of emergency workers into potentially contaminated areas were not addressed. (NUREG-0654, M.1, 3)

Reason ARCA Unresolved: The Washington D.C. EOC was not scheduled to participate during the 2005 plume-phase exercise.

Recommendation: The Washington D.C. EOC should demonstrate their capabilities during the next ingestion exposure pathway exercise.