



UNITED STATES
NUCLEAR REGULATORY COMMISSION

WASHINGTON, D.C. 20555-0001

May 2, 2000

MEMORANDUM TO: Richard J. Conte, Chief
Human Performance &
Emergency Preparedness Branch
Division of Reactor Safety
Region I

FROM: Edwin F. Fox Jr., Acting Section Chief
Emergency Preparedness &
Health Physics Section
Operator Licensing, Human Performance,
and Plant Support Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

SUBJECT: FEMA FINAL REPORT ON THE OCTOBER 21 AND 26, 1999, FULL
PARTICIPATION EXERCISE AT CALVERT CLIFFS NUCLEAR POWER
PLANT

Attached is a letter from Rita A. Calvan, Regional Director, Region III, of the Federal Emergency Management Agency (FEMA), dated March 27, 2000, transmitting the final exercise report on the October 21 and 26, 1999, full-participation exercise at the Calvert Cliffs Nuclear Power Plant. The State of Maryland and the risk counties of Calvert, Dorchester, and St. Mary's participated in the exercise.

Two Deficiencies and 20 Areas Requiring Corrective Action (ARCAs) were identified during this exercise. The two Deficiencies have been resolved.

Please forward a copy of the enclosed letter and report to the licensee and request that the licensee provide support to offsite authorities, as appropriate, to correct the ARCAs.

Docket No. 50-317
50-318

Attachment: FEMA letter dated 03/27/00

CONTACT: Daniel M. Barss, IOLB/DIPM
415-2922

May 2, 2000

MEMORANDUM TO: Richard J. Conte, Chief
Human Performance &
Emergency Preparedness Branch
Division of Reactor Safety
Region I

FROM: Edwin F. Fox Jr., Acting Section Chief /RA/
Emergency Preparedness &
Health Physics Section
Operator Licensing, Human Performance,
and Plant Support Branch
Division of Inspection Program Management
Office of Nuclear Reactor Regulation

SUBJECT: FEMA FINAL REPORT ON THE OCTOBER 21 AND 26, 1999, FULL
PARTICIPATION EXERCISE AT CALVERT CLIFFS NUCLEAR POWER
PLANT

Attached is a letter from Rita A. Calvan, Regional Director, Region III, of the Federal Emergency Management Agency (FEMA), dated March 27, 2000, transmitting the final exercise report on the October 21 and 26, 1999, full-participation exercise at the Calvert Cliffs Nuclear Power Plant. The State of Maryland and the risk counties of Calvert, Dorchester, and St. Mary's participated in the exercise.

Two Deficiencies and 20 Areas Requiring Corrective Action (ARCAs) were identified during this exercise. The two Deficiencies have been resolved.

Please forward a copy of the enclosed letter and report to the licensee and request that the licensee provide support to offsite authorities, as appropriate, to correct the ARCAs.

Docket No. 50-317
50-318

Attachment: FEMA letter dated 03/27/00

CONTACT: Daniel M. Barss, IOLB/DIPM
415-2922

DISTRIBUTION

Docket File

IOLB R/F

FKantor

AWDromerick

DOCUMENT NAME:G:\EP&HP SECTION\BARSS\memo frwd Calvert Cliffs FEMA Ex Rpt.
3-27-00.wpd

OFFICE:	IOLB/DIPM	IOLB/DIPM
NAME:	DBARSS <i>DM Barss</i>	EFOX <i>E. Fox</i>
DATE:	5/ 2 /2000	5/ 2 /200

Official Record Coy



Federal Emergency Management Agency

Region III
One Independence Mall, Sixth Floor
615 Chestnut Street
Philadelphia, PA 19106-4404

MAR 27 2000

PT

Acting Chief
Emergency Preparedness and Health Physics Section
Operator Licensing, Human Performance and Plant Support
Division of Inspection Program Management
Office of Nuclear Regulatory Commission
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Dear Sir:

Enclosed is a copy of the final report for the Calvert Cliffs Nuclear Power Plant, full participation plume exposure pathway exercise of the offsite radiological emergency response plan site-specific to the Calvert Cliffs Nuclear Power Plant. The State of Maryland and the risk counties of Calvert, Dorchester, and St. Mary's participated in the exercise. The Federal Emergency Management Agency Region III staff prepared the final exercise report. A copy of this report will be provided to the State of Maryland.

Two Deficiencies and 20 Areas Requiring Corrective Action were identified during this exercise. The description of the Deficiencies follows:

1. The Dorchester County Public Information Officer waited for a previous fax to finish before faxing the first Emergency Alert System message, and faxed the Emergency Alert System message to several other locations before faxing them to the designated Emergency Alert System station. As a result, the Emergency Alert System station identified in public information materials did not receive the first Emergency Alert System message until minutes after the first protection action decision. (NUREG 0654, E.6.) It was corrected during the second and third Alert & Notification sequences. All Emergency Alert System messages were received by the station within 15 minutes of the respective protective action decision.

2. During the exercise, the Dorchester County Emergency Operations Center staff generated three Emergency Alert System messages. The staff followed up with the required Special News Broadcast/News Release attachment for only the last Emergency Alert System message. A Special News Broadcast/News Release is required for each Emergency Alert System message generated that exceeds a two-minute broadcast time. The purpose of the attachment is to provide critically important information that is not contained in the cryptic Emergency Alert System message. In addition, Emergency Alert System messages written in English were the only type of messages sent by the county. Dorchester County's Standard Operating Procedures, Attachment 5, contains prescribed Emergency Alert System messages for both English and Spanish speaking members of the affected public. Emergency Alert System messages written in Spanish should have been issued in addition to those written in English.

The Dorchester County Public Information Officer did not contact the Emergency Alert System station(s) or other broadcast outlets by telephone, as required by the Dorchester County Standard Operating Procedures, Attachment 5, Section 3.2. Therefore, there was no assurance that the Emergency Alert System station(s) or other broadcast outlets actually received the faxed messages, verified their authenticity, or understood that they were to be issued immediately. The Public Information Officer also did not detect and correct an error in a Maryland Emergency Management Agency news release related to instructions for reporting to a reception center. Specifically, the news release issued referred to "evacuees from Dorchester County" although no evacuation had been ordered for the county. This oversight occurred despite the fact that the county and other jurisdictions had exchanged copies of news releases.

The Dorchester County news releases were unclear and constructed in such a way ("The public is advised to evacuate Zone 1 & 2 [and] shelter 10-mile radius") that both the news media and the public could have taken them to be protective action decisions instead of protective action recommendations. Finally, News Releases generated by the county did not provide landmark boundaries of the zones affected by protective actions. (NUREG-0654, E.5. and E.7.)

On February 17, 2000, a remedial exercise was conducted to specifically address all elements for the second deficiency cited during the October 26, 1999 exercise. Participants in the remedial exercise demonstrated their abilities and successfully resolved the Deficiency.

Based on the results of the October 26, 1999, and the remedial exercise of February 17, 2000, the offsite radiological emergency response plans and preparedness for the State of Maryland and the affected local jurisdictions, site specific to Calvert Cliffs Nuclear Power Plant, can be implemented and are adequate. The plans provide reasonable assurance that appropriate measures can be taken in the event of a radiological emergency at the site.

If you have any questions, please contact Kevin Koob, Regional Assistance Committee Chairman, at (215) 931-5576.

Sincerely,



Rita A. Calvan
Regional Director

Enclosure



Final Exercise Report

Calvert Cliffs Nuclear Power Plant

Licensee: Baltimore Gas and Electric Company

Exercise Dates: October 21 and 26, 1999

Report Date: March 14, 2000

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

TABLE OF CONTENTS

I.	Executive Summary	1
II.	Introduction.....	2
III.	Exercise Overview.....	4
	A. Plume Emergency Planning Zone Description	4
	B. Exercise Participants	5
	C. Exercise Time Line	7
IV.	Exercise Evaluation and Results.....	9
	A. Summary Results of Exercise Evaluation	9
	B. Status of Jurisdictions Evaluated	13
	1. STATE OF MARYLAND	15
	1.1 State Emergency Operations Center.....	15
	1.2 Accident Assessment – Dundalk.....	18
	1.3 Accident Assessment – Emergency Operations Facility	19
	1.4 News Media Center	20
	1.5 State Monitoring Team A.....	21
	1.6 State Monitoring Team B	22
	2. RISK JURISDICTIONS	23
	2.1 CALVERT COUNTY	23
	2.1.1 County Emergency Operations Center	23
	2.1.2 Field Monitoring Team	27
	2.1.3 Reception Center	28
	2.1.4 Emergency Worker Decontamination Station.....	29
	2.1.5 Route Alerting Team.....	30
	2.1.6 Traffic and Access Control.....	30
	2.1.7 School District (Dowell School)	30
	2.1.8 School District (Patuxent High School)	31
	2.2 ST. MARY'S COUNTY.....	31
	2.2.1 County Emergency Operations Center	31
	2.2.2 Field Monitoring Team	36

2.2.3	Reception Center and Emergency Worker Decontamination Station	38
2.2.4	Route Alerting Team	39
2.2.5	Traffic and Access Control.....	40
2.2.6	School District (Hollywood Elementary School).....	40
2.2.7	School District (St. John’s Elementary School).....	41
2.3	DORCHESTER COUNTY	41
2.3.1	County Emergency Operations Center	41
2.3.2	Field Monitoring Team	45
2.3.3	Reception Center and Emergency Worker Decontamination Station	45
2.3.4	Route Alerting Team	46
2.3.5	Traffic and Access Control.....	46
2.3.6	School District (Cambridge South Dorchester High School)	46

Appendices

APPENDIX 1 - Acronyms and Abbreviations	48
APPENDIX 2 - Exercise Evaluators and Team Leaders	50
APPENDIX 3 - Exercise Objectives and Extent-of-Play Agreement.....	52
APPENDIX 4 - Exercise Scenario.....	63
APPENDIX 5 - Planning Issues	67
APPENDIX 6 - Additional Prior Issues	68

List of Tables

Table 1 - Exercise Time Line	8
Table 2 - Summary Results of Exercise Evaluation	10

I. EXECUTIVE SUMMARY

On October 26, 1999, the Federal Emergency Management Agency (FEMA), Region III, conducted an unannounced exercise in the plume exposure pathway emergency planning zone (EPZ) around the Calvert Cliffs Nuclear Power Plant (CCNPP). The purpose of the exercise was to assess the level of state and local preparedness in responding to a radiological emergency. This exercise was held in accordance with FEMA's policies and guidance concerning the exercise of state and local radiological emergency response plans (RERP).

The most recent previous exercise at this site was conducted on September 16-18, 1997, and November 18-20, 1997. The qualifying emergency preparedness exercise was conducted on September 19, 1985.

FEMA wishes to acknowledge the efforts of the many individuals in the State of Maryland and in Calvert, Dorchester, and St. Mary's counties who participated in this exercise. Protecting the public health and safety is the full-time job for some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants were evident during this exercise.

This report contains the final evaluation of the biennial exercise held on October 26, 1999, and the out-of-sequence school drills conducted on October 21, 1999, including the capabilities of risk jurisdictions to coordinate and provide reception and radiological monitoring and decontamination for both evacuees and emergency workers.

This report also identifies exercise issues and recommendations for corrective action. The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and adequately implemented them. Two Deficiencies and 19 Areas Requiring Corrective Action (ARCA) were identified as a result of this exercise and the remedial drill conducted on February 17, 2000. There were 35 prior issues; 30 were resolved during this exercise. In addition, two Planning Issues were identified 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) 350, 351, and 352. These regulations are a key element in the Radiological Emergency Preparedness (REP) program established after the Three Mile Island Nuclear Power Plant accident in March 1979.

The FEMA rule, 44 CFR 350, establishes the policies and procedures for FEMA's initial and continued approval of State and local governments' radiological emergency planning and preparedness for commercial nuclear power plants. This approval is contingent, in part, on State and local government participation in joint exercises with licensees.

FEMA's responsibilities in radiological emergency planning for fixed nuclear facilities include the following:

- Taking the lead in offsite emergency planning and the review and evaluation of radiological RERPs developed by State and local governments;
- Determining whether such plans can be implemented on the basis of observation and evaluation of exercises of the plans conducted by State and local governments;
- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA (*Federal Register*, Vol. 58, No. 176, September 14, 1993); and
- Coordinating the activities of Federal agencies with responsibilities in the radiological emergency planning process:
 - U.S. Department of Agriculture,
 - U.S. Department of Commerce,
 - U.S. Department of Energy,
 - U.S. Department of Health and Human Services,
 - U.S. Department of the Interior,
 - U.S. Department of Transportation,
 - U.S. Environmental Protection Agency,
 - U.S. Food and Drug Administration, and
 - U.S. Nuclear Regulatory Commission.

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

Formal submission of the RERPs to FEMA Region III by the State of Maryland and involved local jurisdictions was followed closely by the critique and evaluation of these plans. The plans were formally approved on August 8, 1985.

FEMA Region III conducted a joint REP exercise on October 26, 1999, and the out-of-sequence activities on October 21, 1999, to assess the capabilities of State and local offsite emergency preparedness organizations in implementing their RERPs and procedures to protect public health and safety in 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 offsite response organizations during a simulated radiological emergency.

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

Exercise reports are provided to the NRC, participating States, and FEMA Headquarters. State and local governments use the findings contained in these reports for planning, training, and improving emergency response capabilities.

The criteria used 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-REP-14, *Radiological Emergency Preparedness Exercise Manual* (September 1991); and
- FEMA-REP-15, *Radiological Emergency Preparedness Exercise Evaluation Methodology* (September 1991).

Section III of this report, entitled "Exercise Overview," presents basic information and data relevant to the exercise. This section of the report contains a description of the EPZ, a listing of all participating jurisdictions and functional entities evaluated, and a tabular presentation of the times of actual occurrence of key exercise events and activities.

Section IV of this report, entitled "Exercise Evaluation and Results," presents detailed information on the demonstration of applicable exercise objectives at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains (1) descriptions of all Deficiencies and ARCAs assessed during this exercise, recommended corrective actions, and the State of Maryland's response and (2) descriptions of ARCAs assessed during previous exercises and the status of the jurisdiction's efforts to resolve them.

III. EXERCISE OVERVIEW

This section contains data and basic information relevant to the October 26, 1999, exercise and the out-of-sequence activities on October 21, 1999, to test offsite emergency response capabilities in the area surrounding the CCNPP. This section of the exercise report includes a description of the EPZ, a listing of all participating jurisdictions and functional entities evaluated, and a tabular presentation of the times of actual occurrence of key exercise events and activities.

A. Plume Emergency Planning Zone Description

CCNPP is located near Maryland Highway 2-4 in Calvert County, Maryland, on the west bank of the Chesapeake Bay near Lusby, Maryland. The coordinates of the site are 38°25'39.7" North and 76°26'45" West. The site is owned and operated by Baltimore Gas and Electric Company (BG&E) and covers an area of approximately 2,108 acres. Seventy percent of the area remains forested and relatively undisturbed by CCNP 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.

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 36,357 people in the 10-mile EPZ, 8,836 in the 5-mile EPZ and 1,754 in the 2-mile EPZ. There are approximately 35,300 transients within the EPZ during peak seasonal activities at 5 major parks and museums. No major populated cities (greater than 25,000) exist within the 10-mile EPZ. There are 3,085,823 residents within the 50-mile EPZ.

B. Exercise Participants

Agencies and organizations of the following jurisdictions participated in the CCNPP exercise on October 26, 1999, and the out-of-sequence activities on October 21, 1999:

STATE OF MARYLAND

Maryland Attorney General's Office
Maryland Department of Agriculture
Maryland Department of Budget and Management
Maryland Department of Environment
Maryland Department of Health and Mental Hygiene
Maryland Department of Housing and Community Development
Maryland Department of Natural Resources
Maryland Department of Public Safety and Correctional Services
Maryland Department of State
Maryland Department of Transportation
Maryland Emergency Management Agency
 Technical Advisory Group
Maryland Governor's Office
Maryland Institute for Emergency Medical Services System
Maryland Military Department/National Guard
Maryland National Guard
Maryland Office of Aging
Maryland State Department of Education
Maryland State Highway Administration
Maryland State Police
State Fire Marshall
United States Coast Guard

RISK JURISDICTIONS

CALVERT COUNTY

Calvert County Administrative and Financial Department
Calvert County Advanced Life Support
Calvert County Board of County Commissioners
Calvert County Board of Education
Calvert County Bureau of Solid Waste
Calvert County Department of Environmental Health
Calvert County Department of General Services
Calvert County Department of Natural Resources
 Natural Resources Police
Calvert County Department of Public Safety
Calvert County Department of Public Works
 Calvert County Roads
Calvert County Department of Social Services

City of Cambridge Police
Dorchester County Board of Country Commissioners
Dorchester County Board of Education
Dorchester County Department of Natural Resources Police
Dorchester County Department of Social Services
Dorchester County Emergency Management Agency
Dorchester County Emergency Management and Civil Defense Agency
Dorchester County Fire and Rescue
Dorchester County Health Department
Dorchester County Highway Department
Dorchester County School System
Dorchester County Sheriff's Office
Maryland Department of Environment
Maryland Natural Resources Police
Maryland State Police
United States Department of Agriculture

PRIVATE/VOLUNTEER ORGANIZATIONS

The following private and volunteer organizations participated in the CCNPP exercise at many different locations throughout the area. We thank them and all those who volunteer their services to State and county during emergencies.

Amateur Radio Emergency Services
American Red Cross, Chapter of
 Calvert County
 Central Maryland
 Dorchester County
 St. Mary's County
Baltimore Gas and Electric Company
 Employee's Wives
Bishop Bus Service
Burns Security
Calvert Memorial Hospital
Calvert Independent Newspaper
Jefferson Bus Company
Prince Frederick Volunteer Fire Department
Radio Amateur Civil Emergency Service
Recorder Newspaper
Ridge Volunteer Fire Department
St. Leonard Volunteer Fire Department
St. Mary's Hospital

C. Exercise Time Line

Table 1, on the following page, presents the times at which key events and activities occurred during the CCNPP exercise held on October 26, 1999.

TABLE 1. EXERCISE TIMELINE

DATE AND SITE: *October 26, 1999, Calvert Cliffs Nuclear Power Plant*

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received or Action Was Taken										
		Maryland State EOC	Accident Assessment Dundalk	Accident Assessment EOF	Joint Information Center	Calvert County EOC	St. Mary's County EOC	Dorchester County EOC				
Unusual Event	0810	0814	0815			0813	0816	0815				
Alert	0830	0835	0835			0834	0835	0834				
Site Area Emergency	1032	1035	1037	1032	1037	1036	1036	1035				
General Emergency	1120	1125	1125	1122	1125	1125	1131	1125				
Simulated Radiation Release Started	1350	1355		1335	1352	1346	1415					
Simulated Radiation Release Terminated												
Facility Declared Operational		0900	0851	1114	1030	0850	0845	0920				
Declaration of State of Emergency		1146		1146	1150	1223	1221	1212				
Exercise Terminated		1535	1130	1534	1545	1534	1535	1534				
1st A&N Decision at SAE Shelter animals, place on stored feed and covered water		1058		1058		1058	1058	1058				
1st Siren Activation		1108		1108		1108	1108	1108				
1st EAS or EBS Message		1111		1111		1111	1111	1132				
2nd A&N Decision Shelter: Zones 5, 7, and 8 Evacuate: Zones 1, 2, 3, 4, 8, and 6. Restrict airways of 10-mile EPZ.		1201		1201	1252	1201	1201	1201				
2nd Siren Activation		1211		1211		1211	1211	1211				
2nd EAS or EBS Message		1214		1214		1214	1214	1214				
3rd A&N Decision: Evacuate: Zones 1, 2, 3, 4, 5, 6, 7, and 8. Evacuate remainder of Calvert County, St. Mary's County north of intersection of Rtes. 4 & 5, Prince George County south of Rte. 4, and Charles County east of Rte. 301. Shelter-in-place south of intersection of Rtes. 4 & 5.		1523		1523	1523	1523	1523	1523				
3rd Siren Activation		1533		1533	1533	1533	1533	1533				
3rd EAS or EBS Message		1536		1536	1536	1536	1536	1537				
KI Administration Decision: Emergency Workers Advised <u>not</u> to Take						N/A	N/A	N/A				
KI Administration Decision: Emergency Workers Advised <u>to</u> Take		1235		1235	1235	1235	1235	1235				

LEGEND: S - Support Jurisdiction D - Decision Making Jurisdiction A - Activating Jurisdiction N/A - Not Applicable

IV. EXERCISE EVALUATION AND RESULTS

This section contains the results of the evaluation of all jurisdictions and locations that participated in the October 26, 1999, exercise and the out-of-sequence activities on October 21, 1999, to test the offsite emergency response capabilities of state and local governments in the 10-mile EPZ surrounding the CCNPP.

Each jurisdiction and functional entity was evaluated on the basis of its demonstration of criteria contained in exercise objectives in FEMA-REP-14, *REP Exercise Manual*, dated September 1991. Detailed information on the exercise objectives and the extent-of-play agreement used in this exercise is found in Appendix 3 of this report.

A. Summary Results of Exercise Evaluation

The matrix presented in table 2, on the following pages, presents the status of all exercise objectives from FEMA-REP-14 scheduled for demonstration during this exercise at all participating jurisdictions and functional entities. Exercise objectives are listed by number, and their demonstration status is indicated by the following letters:

- M – Met (no Deficiency or ARCA assessed)
- D – Deficiency(ies) assessed
- A – ARCA(s) assessed (not affecting health and safety of the public)
- N – Not demonstrated as scheduled (reason explained in Section IV.B.)
- U – Unresolved ARCA(s) from prior exercise(s)
- C – Credit granted for 1999 hurricane response
- Blank – Not scheduled for demonstration

TABLE 2. SUMMARY RESULTS OF 1999 EXERCISE EVALUATION

DATE AND SITE: *October 21 and 26, 1999 and February 17, 2000, Calvert Cliffs Nuclear Power Plant*

JURISDICTIONS/LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33		
MARYLAND																																			
STATE EMERGENCY OPERATIONS CENTER	M	M	M	M	U				M	M		A	U	M									M							M		M			
ACCIDENT ASSESSMENT (State - Dundalk)	M	M		M																															
ACCIDENT ASSESSMENT (State - EOF)	M	M	A	M			A		M																										
NEWS MEDIA CENTER	M	M		M								M																							
STATE FIELD MONITORING TEAM A				M	M	M		A						M																					
STATE FIELD MONITORING TEAM B				M	M	A		A						M																					
STATE SAMPLING TEAM A					M																				M										
STATE SAMPLING TEAM B																									M										
STATE LABORATORY																																			
RISK JURISDICTIONS																																			
CALVERT COUNTY																																			
COUNTY EMERGENCY OPERATIONS CENTER	M	M	A	M	M				M	M	M	M	M	M	M	M															M	M	M		
FIELD MONITORING TEAM				M	M	M								M																					
TRAFFIC AND ACCESS CONTROL				M	M									M				M																	
ROUTE ALERTING TEAM				M	M				A					M																					
RECEPTION CENTER (Calvert High School '97 & '99)					M															M															
MASS CARE CENTER (Plum Point Middle School '95)																																			
MASS CARE CENTER (Northern Middle School '95 & '97)																																			
EMERGENCY WORKER DECON. CENTER (Old Barstow Landfill '95)																																			
EMERGENCY WORKER DECON. CENTER (Calvert Co. Landfill '97 & '99)					M																														
TRAFFIC AND ACCESS CONTROL				M	M									M				M																	
SCHOOL DISTRICT (St. Leonard Elementary School '97)																																			
SCHOOL DISTRICT (Southern Middle School '97)																																			
SCHOOL DISTRICT (Our Lady Star of the Sea School)																																			
SCHOOL DISTRICT (Patuxent High School)																																			
SCHOOL DISTRICT (Lusby Christian School)																																			
SCHOOL DISTRICT (St. Paul's Day Care School)																																			

LEGEND: M = Met (no Deficiency or ARCA(s) assessed)
 D = Deficiency assessed
 C = Credit granted for 1999 hurricane response

A = ARCA(s) assessed (not affecting health and safety of public)
 U = Unresolved ARCA(s) from prior exercises

Blank = Not scheduled for demonstration
 N = Not demonstrated as scheduled (reason explained in Section IV.B.)

TABLE 2. SUMMARY RESULTS OF 1999 EXERCISE EVALUATION

DATE AND SITE: *October 21 and 26, 1999 and February 17, 2000, Calvert Cliffs Nuclear Power Plant*

JURISDICTIONS/LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33		
CALVERT COUNTY (Cont'd)																																			
SCHOOL DISTRICT (Dowell Elementary School '99)																	M																		
SCHOOL DISTRICT (Patuxent Elementary School '99)																	M																		
SCHOOL DISTRICT (Mutual Elementary School)																																			
SCHOOL DISTRICT (Appeal Elementary School)																																			
ST. MARY'S COUNTY																																			
COUNTY EMERGENCY OPERATIONS CENTER	M	M	A	M	M				M	A	A	A	M	A	M	M															M		M		
FIELD MONITORING TEAM				M	M	A								M																					
TRAFFIC AND ACCESS CONTROL				M	U									U			M																		
ROUTE ALERTING TEAM				M	M				M					M																					
RECEP./EMER. WORKER/MASS CARE CENTER (Leonard Hall Drill Hall '97 & '99)					M														M	C			M												
TRAFFIC AND ACCESS CONTROL				M	M									M			M																		
SCHOOL DISTRICT (Hollywood Elementary School '97 & '99)																	M																		
SCHOOL DISTRICT (St. John's Elementary School '97 & '99)																	M																		
SCHOOL DISTRICT (Town Creek Elementary School)																																			
SCHOOL DISTRICT (Esperanza Middle School)																																			
SCHOOL DISTRICT (Green Holy School)																																			
DORCHESTER COUNTY																																			
COUNTY EMERGENCY OPERATIONS CENTER	M	M	M	M	M				M	D	D	D	M	M	M																M		M		
FIELD MONITORING TEAM				M	M	M									M																				
TRAFFIC AND ACCESS CONTROL				M	M										M			M																	
ROUTE ALERTING TEAM				M	M				M						M																				

LEGEND: M = Met (no Deficiency or ARCA(s) assessed) A = ARCA(s) assessed (not affecting health and safety of public) Blank = Not scheduled for demonstration
D = Deficiency assessed U = Unresolved ARCA(s) from prior exercises N = Not demonstrated as scheduled (reason explained in Section IV.B.)
C = Credit granted for 1999 hurricane response

TABLE 2. SUMMARY RESULTS OF 1999 EXERCISE EVALUATION

DATE AND SITE: *October 21 and 26, 1999 and February 17, 2000, Calvert Cliffs Nuclear Power Plant*

JURISDICTIONS/LOCATION	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	
DORCHESTER COUNTY (Cont'd)																																		
RECEPEPTION/EMERGENCY WORKER CENTER (Maple Elementary School '97 & '99)					M													M			M													
MASS CARE CENTER (Cambridge/S. Dorchester High School '93 & '97)																				C														
TRAFFIC AND ACCESS CONTROL				M	M									M			M																	
SCHOOL DISTRICT (Cambridge South High School '99)																M																		
SCHOOL DISTRICT (Dorchester High School)																																		
SCHOOL DISTRICT (Dorchester Middle/Elementary School)																																		
INGESTION JURISDICTIONS																																		
STATE OF MARYLAND																																		
ANN ARUNDEL COUNTY EOC																																		
CALVERT COUNTY EOC																																		
CAROLINE COUNTY EOC																																		
CHARLES COUNTY EOC																																		
DORCHESTER COUNTY EOC																																		
KENT COUNTY EOC																																		
QUEEN ANNE'S COUNTY EOC																																		
SOMERSET COUNTY EOC																																		
ST. MARY'S COUNTY EOC																																		
TALBOT COUNTY EOC																																		
WICOMICO COUNTY EOC																																		
WORCHESTER COUNTY EOC																																		
COMMONWEALTH OF VIRGINIA																																		
LANCASTER COUNTY EOC																																		
MIDDLESEX COUNTY EOC																																		
NORTHUMBERLAND COUNTY EOC																																		
DISTRICT OF COLUMBIA																																		
WASHINGTON EOC																																		

LEGEND: M = Met (no Deficiency or ARCA(s) assessed)
D = Deficiency assessed

A = ARCA(s) assessed (not affecting health and safety of public)
U = Unresolved ARCA(s) from prior exercises

Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (reason explained in Section IV.B.)

B. Status of Jurisdictions Evaluated

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

- **Met** – Listing of the demonstrated exercise objectives 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 objectives under which a Deficiency was assessed during this exercise. Included is a description of each Deficiency and recommended corrective actions.
- **Area Requiring Corrective Actions** – Listing of the demonstrated exercise objectives under which one or more ARCAs were assessed during the current exercise or under which ARCAs assessed during prior exercises remain unresolved. Included is a description of the ARCA(s) assessed during this exercise and the recommended corrective action(s) to be demonstrated before or during the next biennial exercise.
- **Not Demonstrated** – Listing of the exercise objectives not demonstrated as scheduled during this exercise and the reason they were not demonstrated.
- **Prior Issues - Resolved** – Descriptions of ARCAs assessed during prior exercises that were resolved in this exercise and the corrective action demonstrated.
- **Prior Issues - Unresolved** – Descriptions of ARCAs assessed during prior exercises that were not resolved in this exercise. Included are the reason the ARCA remains unresolved and the recommended corrective actions to be demonstrated before or during the next biennial exercise.

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

- A **Deficiency** is defined in 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 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 numbers for deficiencies and ARCAs include the following elements, each 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.
- **Objective Number** – A two-digit number corresponding to the objective number in FEMA-REP-14.
- **Issue Classification Identifier** – (D = Deficiency, A = ARCA) Only deficiencies and ARCAs are included in exercise reports.
- **Exercise Identification Number** – A two- or three-digit indexing number assigned to each issue identified in the exercise.

1. STATE OF MARYLAND

1.1 STATE EMERGENCY OPERATIONS CENTER

- a. **MET:** Objectives 1, 2, 3, 4, 9, 10, 14, 23, 30, and 32
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 12

Issue No.: 11-99-12-A-01

Description: Two of the press releases developed and disseminated by the Maryland State Emergency Operations Center (EOC) Public Information Officers (PIO) contained errors. Press release #5 concerned the protective action decision (PAD) to evacuate Zones 1, 2, 3, 4 and 6, and to shelter-in-place in Zones 5, 7 and 8. Zone 8 is part of Dorchester County that was ordered to shelter-in-place. However, at the bottom of page 3 of the press release, it indicates that "Evacuees from Dorchester County should report to the Reception Center... at: Maple Elementary School...". This error probably occurred because a pre-scripted release was used and the above-cited section should have been deleted before it was printed, approved and released. Press Release #9, *Additional Precautionary Measures Recommended for Farmers*, did not accurately reflect the PAD which was for livestock within the 50-mile EPZ (Zones J, K, L, M, N, P, Q, and R) to be sheltered and placed on stored feed and water. However, the press release did not indicate this, but instead discussed radiation and decontamination measures. (NUREG-0654, E.7. and G.4.a.)

Recommendation: Provide additional training to the PIOs in the State EOC to ensure that the drafting of new press releases and the editing of pre-scripted press releases results in accurate and consistent information.

Schedule of Corrective Action: Additional training will be provided to the PIOs in the State EOC to ensure that drafting of news releases and the editing of pre-scripted press releases results in accurate, consistent information.

- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objectives 3 and 9

Issue No.: 11-97-03-A-01

Description: The Director of the Maryland Emergency Management Agency (MEMA) sent Update #4 to the Governor at 2315, but it did not correctly indicate protective actions by the State. The update said, "Protective action recommended is to evacuate zones one through five and to shelter zones six through eight," implying that these were the State's recommendations. It did not say that the

stated protective action recommendation was only that of the licensee, nor that it was superseded by the Secretary of Environment's PAD at 2244 to order evacuation for zones one through seven and shelter for zone eight. (NUREG-0654, A.1.d., A.2.a., and A.2.b.)

Corrective Action Demonstrated: The content of the six updates to the Governor of Maryland from the director of MEMA, including the descriptions of the PAD's, was correct during the October 1999 exercise.

Issue No.: 11-97-09-A-03

Description: Until the Secretary of the Environment's conference call at 2239, the staff at the EOC failed to coordinate airspace and waterway restrictions with the Secretary. At 2020, Syscom contacted the Baltimore-Washington International Airport (BWI) tower requesting a no fly zone/restricted airspace. In response, BWI established a 100-mile radius zone. Also, at 2020, the Coast Guard reported a 10-nautical-mile evacuation and a 50-nautical-mile shelter zone, with vessel access closed at Chesapeake Bay south of the Bay Bridge Tunnel and north of the Maryland/Virginia state line. These actions were verbally briefed to EOC staff, but EOC staff did not inform the Secretary of these actions until he announced at 2239 that he was considering restricting airspace and waterways to a 10-mile radius. (NUREG-0654, J.9.)

Corrective Action Demonstrated: Both air space and the waterways were restricted during this exercise. The discussions on these restrictions were coordinated with the Secretary of the Maryland Department of the Environment (MDE) who made appropriate and timely protective action decisions which were communicated to the public via Emergency Alert System (EAS) and press releases and to the affected agencies by telephone and follow-up hard copy messages.

Issue No.: 11-97-09-A-04

Description: According to plans from Calvert and St. Mary's Counties (Section 1.5.2.1 of the plans), counties may initiate PADs "until such time as the MDE brings its resources to bear." The MDE was operational at the Dundalk Accident Assessment Center (AAC) at 1827, during the Alert Emergency Classification Level (ECL). Therefore, discussion and coordination of PAD #1 should have occurred not only between the applicable risk counties, but also with the State and MDE before being implemented by any offsite response organization. (NUREG-0654, J.9., J.10.m., and N.1.a.)

Corrective Action Demonstrated: The MDE was involved in all protective action decision making during this exercise, in consultation with the risk counties and the state.

f. **PRIOR ISSUES - UNRESOLVED:** Objectives 5 and 13

Issue No.: 11-97-05-A-02

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

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

Reason ARCA Unresolved: This prior issue was partially resolved during this exercise, based on the following: Appropriate dosimeters that could read the 1R exposure limits were issued at the Calvert County reception center; emergency worker decontamination center; TCP/ACP, and St. Mary's and the State FMTs.

Reason ARCA Partially Unresolved: State sampling team A was not scheduled for demonstration during this exercise.

Recommendation: State Sampling Team A should demonstrate the use of dosimeters during the next ingestion exercise.

Schedule of Corrective Actions: Plans, procedures and equipment have been revised to ensure emergency workers are issued appropriate dosimetry devices and are able to read 1 R emergency worker exposure limits. The reason this issue is (partially) unresolved is because State sampling team A is not scheduled for demonstration until the next ingestion exercise.

Issue No.: 11-97-13-A-21

Description: The extent-of-play agreement requires rumor control to receive approximately 12 calls per hour; however, only 3 or 4 calls per hour were received. Two individuals should staff the rumor control function per the extent-of-play agreement. In addition, the rumor control phone was not answered several times during the exercise. (NUREG-0654, N.1.a.)

Reason ARCA Unresolved: The extent-of-play agreement required a minimum of 16 calls be received. Only 9 were received in the St. Mary's County EOC.

Recommendation: Provide more calls in order that the rumor control function can process the minimum number required by the extent-of-play agreement.

Schedule of Corrective Actions: More rumor calls will be made to St. Mary's County to ensure compliance with the extent-of-play agreement.

Issue No.: 11-97-13-A-31

Description: The Rumor Control function was not fully demonstrated in accordance with the extent-of-play agreement. The average number of calls handled per hour was 4.29 calls per person (15 calls in 105 minutes). The extent-of-play agreement stated that a minimum of 6 calls per hour per person would be received. (NUREG-0654, G.4.b. and G.4.c.)

Reason ARCA Unresolved: Extent of play required sixteen (16) "rumor control messages" be demonstrated at Dorchester County. Only eleven (11) calls were received.

Recommendation: The State should ensure that at least the minimum numbers of calls specified in the extent-of-play agreement are received by the rumor control staff at the appropriate areas.

Schedule of Corrective Actions: More rumor calls will be made to Dorchester County to ensure compliance with the extent-of-play agreement.

1.2 ACCIDENT ASSESSMENT (Dundalk)

- a. **MET:** Objectives 1, 2, 4, and 7
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objective 7

Issue No.: 11-97-07-A-05

Description: On occasion, the dose calculators, the Emergency Information Systems Operator, the Emergency Response Data System Operator, and other Dundalk AAC staff were hesitant in fulfilling their assigned functions. (NUREG-0654, I.10.)

Corrective Action Demonstrated: The personnel at the Dundalk AAC were eager and knowledgeable. They were able to explain and demonstrate their assigned functions with no hesitancy. Dose calculations were simulated with both RADDOS V and RASCAL, field monitoring teams were briefed and dispatched, status boards were kept up, communications with en route vehicles maintained and information passed on, and communications with the Emergency Operations Facility (EOF), Technical Support Center (TSC) and other sites/personnel were maintained in a professional manner.

Issue No.: 11-97-07-A-06

Description: The rationale behind, and the decision to authorize, the ingestion of potassium iodide (KI) was not communicated to MEMA at the State EOC in a timely fashion. The decision was communicated to the FMTs at 2014, but MEMA was not informed until 2051. In addition, all staff in the AAC did not maintain complete message logs, which are needed to document the decision to use KI. (NUREG-0654, H. and I.10.)

Corrective Action Demonstrated: The Dundalk AAC personnel maintained complete logs of communications during their time of activation. The decision to order the ingestion of KI was made by the Secretary of MDE at the EOF and communicated to the EOCs at the State and three risk counties at 1235 during a conference call. Sufficient logs were maintained by the AAC staff to document the KI decision.

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

1.3 ACCIDENT ASSESSMENT (Emergency Operations Facility)

a. **MET:** Objectives 1, 2, 4, and 9

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 3 and 7

Issue No.: 11-99-03-A-02

Description: The dose assessment staff at the EOF were not kept informed on a timely basis of changing plant and emergency conditions, nor of Protective Action Recommendations (PAR) and Protective Action Decisions (PAD) being considered or implemented. The radio communicator for the Field Monitoring Teams (FMT) did not inform the FMTs of the General Emergency declaration, release conditions and magnitude, when the plume was expected to reach them, and PADs being implemented, etc. The radio communicator also failed to provide the directive to ingest KI to FMT-B and verify when taken. (NUREG-0654, A.1.d., A.2.a., and J.10.f.)

Recommendation: The Dose Assessment Coordinator needs to inform the staff and radio communicator of the current situation and changes as they occur. The radio communicator needs to ensure that the field teams are aware of emergency classification changes, release conditions, PARs and PADs and other information impacting the team. The order to ingest KI should be verified for each team.

Schedule of Corrective Action: Additional training will be provided as appropriate to ensure that dose assessment and FMT personnel are regularly updated on plant conditions and emergency status.

Issue No.: 11-99-07-A-03

Description: The Dose Assessment Staff was unable to relate field measurement radioiodine data to a projected thyroid dose commitment or to the appropriate Protective Action Guideline. The current procedure was not used for the manual calculation and difficulty in performing the calculations resulted in apparent projections that severely underestimated the doses. When the calculations were performed using the RASCAL computer program, improperly converted input data were entered, resulting in apparent doses six orders of magnitude low. (NUREG-0654, I.10.)

Recommendation: Additional emphasis needs to be placed on following procedures and in particular in relating field measurements to projected dose commitments and to the PAGs. Additional training and experience should be considered for both the manual and computer methodologies.

Schedule of Corrective Action: Additional training will be provided as appropriate to ensure that dose assessment personnel are proficient in the use of manual dose calculations and computer dose modeling.

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

1.4 NEWS MEDIA CENTER

- a. **MET:** Objectives 1, 2, and 4
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objectives 10 and 12

Issue No.: 11-95-10/12-A-02

Description: The State EOC, EOF, and News Media Center (NMC) did not receive copies of the EAS messages and news releases from Dorchester and St. Mary's Counties. Because hard copies of EAS messages were not available at the EOF and the State EOC, decision makers were unable to confirm whether the PADs were implemented in the counties. Because news releases were not available, the NMC staff was not fully aware of response actions taken by each county and may not have been fully prepared to brief the media. Although both

counties made several attempts to contact the MEMA PIO and fax EAS and news releases to the NMC, the EOF, and the State EOC, they were unsuccessful because of busy signals. (NUREG-0654, N.1.a.)

Corrective Action Demonstrated: During this exercise the staff in the counties assured that all issued EAS messages were forwarded to the Joint Information Center (JIC) for use of the staff in the conduct of their emergency duties. This assured that the PIOs at the JIC were aware of the actual protective actions transmitted to the public and could take them into account when briefing the media representatives at the JIC.

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

1.5 STATE MONITORING TEAM A

a. **MET:** Objectives 4, 5, 6, and 14

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 8

Issue No.: 11-99-08-A-04

Description: The air sampling pump was not checked by FMT-A for proper operation prior to deployment in accordance with Section III.B.4.a. of their procedures. (NUREG-0654, H.10.)

Recommendation: The MDE should provide the FMT with training related to checking proper operation of the air sampling pump prior to field deployment.

Schedule of Corrective Action: Additional training will be provided as appropriate to ensure that FMT personnel follow existing procedures pertaining to equipment checks.

In lieu of waiting until CALVEX-01 to correct this issue, MDE requests that the issue be reevaluated for correction as part of PEACHBEX-00 exercise activity.

FEMA Response: This may be reevaluated during the Peach Bottom exercise that will be held during fiscal year 2000.

d. **NOT DEMONSTRATED:** None

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

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

1.6 STATE MONITORING TEAM B

- a. **MET:** Objectives 4, 5, and 14
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 6 and 8

Issue No.: 11-99-06-A-05

Description: The FMT-B did not keep the detector probes enclosed in plastic as a protective measure as required by FEMA-REP-14. (NUREG-0654, I.7.)

Recommendation: The MDE should provide the FMT with training related to radiological contamination control procedures and ensure the detectors are properly protected prior to deployment to the field.

Schedule of Corrective Action: Additional training will be provided as appropriate to ensure that FMT personnel follow existing procedures regarding instrument contamination control.

In lieu of waiting until CALVEX-01 to correct this issue, MDE requests that the issue be reevaluated for correction as part of PEACHBEX-00 exercise activity.

FEMA Response: This may be reevaluated during the Peach Bottom exercise that will be held during fiscal year 2000.

Issue No. 11-99-08-A-06

Description: The FMT-B did not check the MS-2/SPA-3 counting system or air pump prior to deployment. A source check was not performed in accordance with the procedures (Emergency Procedure(EP) 302, Revision 6, Section B and Attachment 8). In addition, the FMT did not follow their procedures (EP-302 revision 6, section E) for collecting an air sample. The team collected a two-minute air sample, drawing only four cubic feet of air through the sample media. In addition, reproducible geometry was not used when radioiodine and particulate measurements were made. (NUREG-0654, H.10. and I.9.)

Recommendation: The MDE should provide the FMT with training related to the need to follow procedures and utilize reproducible geometry when measurements are made.

Schedule of Corrective Action: Additional training will be provided as appropriate to ensure that FMT personnel follow existing procedures pertaining to equipment checks, source checks, and air sample collection.

FMT-B did utilize reproducible geometry when counting the radionuclide cartridge. In accordance with MDE procedure EP-302, the team "set the SPA-3 detector directly on the inlet side of the cartridge (side opposite direction of airflow)" and counted for two minutes. This procedure is indeed reproducible and was the same procedure utilized by FMT-A during this exercise with no issue noted. This same procedure has been repeatedly used in prior exercises with no issues noted. Recommend that references to "reproducible geometry" be removed from this issue.

In lieu of waiting until CALVEX-01 to correct this issue, MDE requests that the issue be reevaluated for correction as part of PEACHBEX-00 exercise activity.

FEMA Response: After discussing this with the evaluator, we determined that FMT-B did not use "reproducible geometry" when counting the particulate filter and cartridge media. The team members counted the samples while holding the SPA-3 probe over the sample bags rather than placing the samples and detectors into fixed devices such as a planchet holder and a jig. This may be reevaluated during the Peach Bottom exercise that will be held during fiscal year 2000.

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

2. RISK JURISDICTIONS

2.1 CALVERT COUNTY

2.1.1 COUNTY EMERGENCY OPERATIONS CENTER

- a. **MET:** Objectives 1, 2, 4, 5, 9, 10, 11, 12, 13, 14, 15, 16, 30, 31, and 32
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 3

Issue No.: 11-99-03-A-07

Description: The Sheriff's representative failed to inform the route alerting team in the field that a release from the plant was taking place. This caused the route alerting team to inform the residents of information that was not current. The route alerting team had been advising the residents that a release was possible. (NUREG-0654, A.2.a. and J.10.c.)

Recommendation: Keep staff in the field advised of all current information concerning the emergency.

Schedule of Corrective Action: The route alerting team was dispatched at approximately 1200, with specific instructions as to their route and prescribed broadcast message. The first notice of a release of radiation was at 1346. The Sheriff's Department representative was not aware that the evaluator would have the team demonstrate the entire route and was confident that the demonstrated objectives of this team had been completed prior to this point in the exercise. This objective has never taken 1 hour and 46 minutes to demonstrate in the past. If the Sheriff's Department representative in the EOC had know (sic, known) that the team was still under scrutiny of the evaluator, the updated message would have actually been broadcast instead of simulated. Many efforts were demonstrated by all EOC agency representatives with respect to notifying field teams and sites with updates and emergency classification changes. This practice was witnessed and documented by the evaluation team as being satisfactorily met in a response to corrective actions taken with Issue # 11-97-03-A-09 in this exercise report. We feel that the objective of relaying updated information was clearly met and demonstrated during the extent of play in the EOC. In conclusion, we believe that this incident is a simulation and scenario timing consideration and not an ARCA. Please take these facts into consideration when completing the final report.

FEMA Response: The route alert team was not provided with current information. Therefore, this ARCA will remain as classified.

- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objectives 2, 3, 10, 11, and 14

Issue No.: 11-97-02-A-08

Description: The status boards were not updated with emergency information from 1800 to 2138. For example, no weather data were listed on the board until 2138; ECLs did not reflect receipt times; the only siren status posted was for PAD 1; and the time was incorrect. The board showed that sirens were activated at 1954; however, they were activated at 1956. (NUREG-0654, H., J.10.a., J.10.b., J.11., P.5., and N.1.a.)

Corrective Action Demonstrated: Status boards were updated promptly with emergency information pertaining to weather data, siren sounding, PADs and other pertinent information as changes occurred.

Issue No.: 11-97-03-A-09

Description: The Calvert County decision makers failed to ensure that the EOC staff adhered to operational requirements stated in the Calvert County Radiological Emergency Plan and Standard Operating Procedures. For example:

1. A County Health Liaison Officer did not report to the CCNPP's EOF. (Attachment 2, paragraph 3.4.15.)

2. The Health Officer did not assist the Board of Commissioners in interpreting radiological data. (Attachment 8, paragraph 5.0)
3. The Department of Agriculture representative at the County EOC did not recommend or order that animals be removed from pasture and placed on alternate feed supplies at the PAD, which issued sheltering at 1938. (page 13, paragraph 1.5.2.4, *Control*)
4. The President of the Board of Commissioners neither solicited nor implemented protective actions for livestock from EOC staff members. (Attachment 1, paragraph 6.0, and page 24, paragraph 4.2.4, *Food, Water, Milk, and Livestock Feed Control*)
5. The decision makers failed to ensure that operational updates (ECL escalations and PADs) were transmitted to the Emergency Worker Decontamination Center, Mass Care Center, and Reception Center. (NUREG-0654, A.1.d., A.2.a., and A.2.b.)

Corrective Action Demonstrated: A county health officer was present in the EOC and assisted the decision-makers in interpreting radiological data. The Farm Services Agency representatives in the EOC recommended that animals be removed from pasture and placed on alternate feed supplies for the 10-mile EPZ and 50-mile ingestion zone. The decision makers in the EOC coordinated with the Farm Services Agency staff in implementing protective actions for livestock. The decision makers continually ensured that operational updates were passed on to staff in the field.

Issue No.: 11-97-03-A-10

Description: No systematic review or analysis was made of internal or external message traffic. (NUREG-0654, A.1.d., A.2.a., and A.2.b.)

Corrective Action Demonstrated: All incoming and outgoing messages were routed through the operations officer who made a systematic review of the messages and kept the EOC staff aware of all the activities taking place in the exercise.

Issue No.: 11-97-10-A-11

Description: For all Alert and Notification (A&N) sequences, the Director of the Department of Social Service, who was responsible for activating the Telecommunications Device for the Deaf (TDD), did not prepare nor provide to the 911 TDD operator a message to be sent to hearing-impaired citizens living in Calvert County. Also, according to Attachment 15, Section 6.1.1., page 15-3, of the plan, once a decision to "take shelter" has been made and the areas for this action delineated by the county emergency worker, the Department of Natural Resources Police will notify the public in campgrounds, marinas, and on the

water. These actions did not occur following the decision to shelter-in-place Zones 1 and 2 in Calvert County. (NUREG-0654, E.6.)

Corrective Action Demonstrated: Calvert County Department of Social Services representative at the EOC has a TDD and a list of the hearing-impaired population within the 10-mile EPZ. He keeps the hearing-impaired population informed of all pertinent actions at the EOC by use of the TDD. The Department of Natural Resources Police representative at the EOC notifies the public in the state park and the Sheriff's office to send route alerting teams to the state park to alert and notify the public after an A&N sequence is initiated.

Issue No.: 11-97-10-A-12

Description: Neither the Sheriff's Office nor the Communications Director knew how to determine if a siren failed or who would inform them if this action occurred so that backup route alerting procedures could be initiated. (NUREG-0654, E.5.)

Corrective Action Demonstrated: Route alerting is conducted anytime sirens are sounded in the county.

Issue No.: 11-97-11-A-13

Description: The Calvert County PIO did not include the following in demonstrated actions:

1. The PIO did not verify the content of messages with the EAS station.
2. According to Attachment 5, Section 3.0, page 5-1, of the plan, the PIO will maintain contact with EAS, and other, radio and television stations. However, no contact was made with other radio and television stations, other than with the EAS station.
3. Although news releases were faxed to the NMC, they were not faxed to the EAS station. Therefore, the EAS station could not broadcast zone boundary information.
4. It was difficult to clearly differentiate between previous and current information in EAS/news releases, as the messages were not sequentially numbered or time dated.
5. Messages were not consistent with the public information brochure, which indicates on page 5 that the EAS/news releases would provide information about the Mass Care Center.

6. It was not until EAS/news release #7 at 2258 that instructions for transients without shelter, evacuation routes, locations of congregate care centers, or information regarding special populations was provided to the public. (NUREG-0654, E.5. and E.7.)

Corrective Action Demonstrated: The PIO verified content of messages with the EAS station by telephone. The EOC staff also faxed all EAS messages and news releases to the EAS station and other radio and TV stations. All EAS messages and news releases were sequentially numbered and maintained. Messages and public information broadcasts were consistent concerning mass care centers. Information on transients without shelter, evacuation routes, location of mass care centers and special populations were covered either in EAS messages, news releases or public information broadcasts.

Issue No.: 11-97-11-A-14

Description: There is a lack of clear guidelines and procedures for coordinating and disseminating information or for clearly defining the responsibilities of each jurisdiction. The Calvert County PIO assigned to the NMC did not address the following in briefings: how to maximize protection when sheltering, how to give instructions to transients without shelter, what to leave behind and what to take along when evacuating, evacuation routes, information for special populations, or rumor control telephone numbers. (NUREG-0654, E.7. and G.4.a.)

Corrective Action Demonstrated: The Calvert County PIO at the media center covered the following items in the media briefings. How to maximize protection when sheltering; how to give instructions to transients without shelter; what to leave behind and what to take along when evacuating; evacuation routes; information for special populations; and rumor control numbers.

Issue No.: 11-97-14-A-15

Description: Although the Radiological Officer (RO) at Calvert County provided all radiological briefings, these briefings did not include the reason for taking KI or a list of the possible side effects of KI. (NUREG-0654, J.10.e. and J.10.f.)

Corrective Action Demonstrated: Instructions stating the reason for taking KI, dosage amounts and time intervals, as well as possible side effects were included in the RO briefing and appeared in the operational plan.

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

2.1.2 FIELD MONITORING TEAM

- a. **MET:** Objectives 4, 5, 6, and 14
- b. **DEFICIENCY:** None

- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objective 6

Issue No.: 11-97-06-A-16

Description: The Calvert County FMT was only in the plume at one location. Open and closed window readings were not taken at six inches above ground level, as stated in Tab D, page 3-12, of the county plan and procedures. (NUREG-0654, I.7., I.8., and I.11.)

Corrective Action Demonstrated: The Calvert County FMT went to six different monitoring locations and took open and closed window readings at waist level and six inches above ground. At location #17, which was on the edge of the plume, appropriate measurements were taken and the data was provided to the Calvert County RO via radio.

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

2.1.3 RECEPTION CENTER (Calvert Senior High School)

- a. **MET:** Objectives 5 and 18
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objective 18

Issue No.: 11-97-18-A-17

Description: The time required to monitor persons and to complete the necessary paperwork was 1.3 minutes per individual. With both portal monitors operational, only 1,128 persons out of more than 2,000 evacuees expected at the Calvert Senior High School Reception Center could be monitored in 12 hours. (NUREG-0654, J.12.)

Corrective Action Demonstrated: Six people from the Calvert County Social Services Department are now used to speed the process of filling out the necessary paperwork. The additional personnel can now process all the evacuees expected at this reception center within 12 hours.

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

2.1.4 **EMERGENCY WORKER DECONTAMINATION STATION (Calvert County Landfill)**

a. **MET:** Objectives 5

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 22

Issue No.: 11-99-22-A-08

Description: The personnel monitor at the Calvert County Emergency Worker Decontamination Station did not follow his procedure in performing thyroid screenings in accordance with the Calvert County REP and Standard Operating Procedures (SOP), Attachment 4-2, Section 3.2. The beta shield window was open when thyroid screenings were demonstrated. (NUREG-0654, K.5.b.)

Recommendation: The briefing to the monitors should cover personnel and vehicle monitoring and decontamination procedures as set forth in Attachment 4-2.

Schedule of Corrective Action: The personnel monitor in violation was given remedial radiological monitoring training two days prior to the evaluation. Specific instructions were reviewed on procedures, proper techniques, exposure limits, etc. This was clearly an error on the part of the monitor. This action will be correctly demonstrated during the 2001 exercise. Even though the briefing covers the proper techniques of monitoring a person, we will note a particular emphasis on this act. Monitoring procedures will be posted at the facility as a reminder.

Issue No.: 11-99-22-A-09

Description: After decontamination, according to County procedure, a person would be remonitored out-of-doors while wearing a Tyvek suit. Such a procedure has the following faults. Remonitoring on the stairs out of doors while wearing a Tyvek suit could lead to discomfort in inclement weather. In addition, could underestimate the extent of beta contamination, which would be attenuated by the Tyvek suit, and could lead to contamination of the passageway if a person needs to be re-decontaminated. (NUREG-0654, K.5.b.)

Recommendation: The decontamination facility should be relocated to a more appropriate location where sufficient space and amenities are available.

Schedule of Corrective Action: We will make changes in the procedures to correct this issue as follows: A disposable step pad will be placed at the exit point of the shower stall, the victim will step out onto the step pad and be monitored. They will then continue on to the dressing area or return to the shower for continued

decontamination process. If the victim is contaminated, the step pad will then be disposed of properly and replaced with a new pad. We feel that this will serve as a solution to both concerns, victim discomfort and contaminated passageway. This will be correctly demonstrated in the next exercise.

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

2.1.5 ROUTE ALERTING TEAM

- a. **MET:** Objectives 4, 5, 10, and 14
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** None
- f. **PRIOR ISSUES - UNRESOLVED:** None

2.1.6 TRAFFIC AND ACCESS CONTROL

- a. **MET:** Objectives 4, 5, 14, and 17
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** None
- f. **PRIOR ISSUES - UNRESOLVED:** None

2.1.7 SCHOOL DISTRICT (Dowell School)

- a. **MET:** Objectives 5, 14, and 16
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None

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

2.1.8 SCHOOL DISTRICT (Patuxent High School)

- a. **MET:** Objectives 5, 14, and 16
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** None
- f. **PRIOR ISSUES - UNRESOLVED:** None

2.2 ST. MARY'S COUNTY

2.2.1 COUNTY EMERGENCY OPERATIONS CENTER

- a. **MET:** Objectives 1, 2, 4, 5, 9, 13, 15, 16, 30, and 32
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 3, 10, 11, 12, and 14

Issue No.: 11-99-03-A-10

Description: A management system for tracking internal and external messages did not exist within the St. Mary's County EOC. Because of this, the TDD and rebroadcast of EAS messages did not occur. (NUREG-0654, A.1.d. and A.2.a.)

Recommendation: Develop a system to log and number all internal and external messages to ensure all actions and coordinations are accomplished.

Schedule of Corrective Action: St. Mary's County will track messages in accordance with existing internal procedures that have proven effective in the EOC under past activation's. NUREG-0654, A.1.d. and A.2.a. make no reference to specific message tracking.

FEMA Response: The FEMA Senior Evaluator discussed this concern with the Coordinator and his deputy at the exercise debriefing and at the FEMA/State

/Utility meeting. The Coordinator stated that he understood the concern. However, St. Mary's County had received issues related to their tracking system in past exercises, so he opted to track the messages in accordance with his current internal procedures. In addition, at the conclusion of the exercise, the Evaluator Team Leader requested copies of all SOPs and IPs related to the radiological response. A copy of the above reference internal procedure was not provided. The bases for this issue are:

- a. In reviewing, the documents provided to the evaluation team the day of the exercise, there was no reference available to substantiate an internal record, message, system, or a LoA/MoU requesting the simulated activation of the TDD.
- b. In the documents provided to the evaluation team the day of the exercise, there was no reference available to substantiate an internal record, message, system, or a LoA/MoU requesting the EAS station to rebroadcast the EAS message. The requirement to rebroadcast EAS messages was initiated in April 1999. Before that EBS messages were required to be rebroadcast.
- c. FEMA-REP-14, September 1991, Objective 3: Direction and Control, page D.3.1 states, "OROs should demonstrate leadership and management capabilities of their organizations. OROs should be able to demonstrate capabilities related to issuance of instructions to staff." FEMA-REP-15, (a derivative of FEMA-REP-14), September 1991, page 3-1), requires an ORO to make available a copy of the current plan or procedures for reference and use, to provide for the retention of message logs for incoming and outgoing messages and transmissions.

Issue No.: 11-99-10-A-11

Description: The 911 Center TDD System was not used (simulated) during the 3rd A&N sequence. Consequently, the hearing-impaired individuals living inside and outside the EPZ, but still in St. Mary's County, were not notified to evacuate (if they live north of the intersection of Routes 4 and 5) or to shelter-in-place (if they live south of Route 4 and 5 intersection) during the 3rd A&N sequence. (NUREG-0654, J.10.d.)

Recommendation: A tracking system should be developed to ensure the 911 center's TDD is activated during all A&N sequences.

Schedule of Corrective Action: The extent of play for this exercise required two A&N sequences which were properly demonstrated in St. Mary's County, including activation of the TDD (simulated). Procedures in place prove effective. The third protective action included areas outside the 10-mile planning zone. Since there are not sirens in the areas included in the affected area, alternate means of alerting the public would be required. This portion of the scenario was

outside the bounds of the FEMA evaluation, and was so stated at the FEMA hotwash.

FEMA Response: The FEMA Senior Evaluator, 911 Communications staff, and the Emergency Management Coordinator discussed this concern at the conclusion of the exercise and at FEMA/State/Utility meeting. The Communication staff acknowledged that they never received instructions to activate the TDD system for the 1st, 2nd, nor 3rd A & N sequence. The Senior Federal evaluator questioned the staff member on at least two separate occasions concerning the activation of the TDD system. Additionally, the examination of documents provided to the evaluation team the day of the exercise did not reveal an internal record, message or tracking system to indicate the simulated activation of the TDD.

Issue No.: 11-99-11-A-12

Description: The St. Mary's County generated EAS messages and press announcements did not contain specific features (e.g., numbers, date, times, etc.) that indicate the effective time of the message, what number in the sequence of messages that applies to a particular message, and if and when the message was communicated to the public. (NUREG-0654, E.5. and E.7.)

Recommendation: The county plans and procedures should be reviewed and revised to include a process to identify messages, verify message transmission and their number in the sequence of messages communicated to the public.

Schedule of Corrective Action: St. Mary's County will review procedures to ensure EAS messages and press release transmissions are communicated to the public. Procedures will be verified or revised based on current practice at the county EOC.

Issue No.: 11-99-11-A-13

Description: The St. Mary's County EOC's message logs do not indicate that instructions were given to the EAS station to re-broadcast the EAS messages, as required by the PIO implementing procedure. (NUREG-0654, E.5.)

Recommendation: Provide training to ensure that EAS messages are re-broadcast as required by the plan.

Schedule of Corrective Action: St. Mary's County plans and NUREG-0654, E.5. and E.7. do not require rebroadcast of an EAS message. EAS stations in St. Mary's County have been instructed to rebroadcast EAS message upon receipt. Verification of rebroadcast occurs by listening to the radio station.

FEMA Response: In the documents provided to the evaluation team the day of the exercise, there was no reference available to substantiate an internal record, message, system, or a LoA/MoU requesting the EAS station to rebroadcast the

EAS message. The requirement to rebroadcast EAS messages is in FEMA-REP-14, page D.11.4. In addition, on the FEMA Preparedness, Training, & Exercise Home Page, the background and requirement for the EAS is contained in Kay Goss's memorandum, Subject: *Guidance for Providing Emergency Information and Instructions to the Public for Radiological Emergency Using the New Emergency Alert System (EAS)*, dated February 2, 1999.

Issue No.: 11-99-12-A-14

Description: The media briefings in the St. Mary's County EOC did not include all appropriate information related to the emergency situation or action needed to protect the public until prompted by the evaluators playing the role of mock media. (NUREG-0654, E.7. and G.4.a.)

Recommendation: Ensure all appropriate information is included in future media briefings.

Schedule of Corrective Action: Procedures will be reviewed and a checklist will be developed to ensure appropriate information is included in media briefings.

Issue No.: 11-99-12-A-15

Description: Inaccurate information was presented during media briefings conducted at St. Mary's County relating to a PAD affecting people at Patuxent Naval Air Station (NAS). Specifically, the briefer advised that personnel had been granted liberal leave after the decision had been announced to shelter these same people. The NAS representative in the EOC subsequently stated that personnel had followed the sheltering instructions. (NUREG-0654, G.4.a.)

Recommendation: Ensure information about the appropriate PAD is disseminated.

Schedule of Corrective Action: This issue will be corrected with actions taken for issue 11-99-12-A-14.

Issue No.: 11-99-14-A-16

Description: The St. Mary's County Health Officer's radiological briefing to emergency workers was lacking information concerning KI, who should not take KI, and its possible side effects. (NUREG-0654, J.10.f.)

Recommendation: The health officer should receive KI training and develop a standard emergency worker briefing so that KI information is accurate and consistent.

Schedule of Corrective Action: A standard emergency worker briefing sheet has been developed. The health officer will receive additional training to ensure

appropriate information is regarding the use of KI and KI side effects are communicated to emergency workers.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ISSUES - RESOLVED:** Objectives 3, 11, 12, and 13

Issue No.: 11-97-03-A-18

Description: The liaison from BG&E misinterpreted information regarding wind direction and posted the plume heading in the opposite direction at the St. Mary's County EOC. As a result, the RO initially dispersed FMTs to the wrong radiological monitoring points and also caused the staff to focus protective actions in the wrong places. The RO recognized the error prior to the FMTs deployed and implemented protective actions. (NUREG-0654, A.1.d., A.2.a., and A.2.b.)

Corrective Action Demonstrated: During this exercise, the BG&E liaison was instrumental in interpreting relevant technical plant data and weather information. Throughout the exercise he provided the Director a direct conduit through the EOF to the plant control room operators through which all necessary information was passed and questions answered.

Issue No.: 11-97-11-A-19

Description: Several news releases prepared in St. Mary's County lacked critical information or contained erroneous information as indicated below:

1. News releases containing additional instructions and information for the public were not labeled as supplemental information for EAS messages.
2. The originating agency was not included in the news releases.
3. St. Mary's County sent out news releases that applied to other jurisdictions.
4. News release #2 informed the public that representatives from MEMA, MDE, and BG&E were at the NMC prior to its activation. (NUREG-0654, E.7.)

Corrective Action Demonstrated: During this exercise, all news releases contained accurate and complete information concerning the emergency situation and protective action decisions.

Issue No.: 11-97-12-A-20

Description: A media briefing was not conducted, as required in the extent-of-play agreement. (NUREG-0654, G.3.a., G.4.a., and G.4.b.)

Corrective Action Demonstrated: Two media briefings were conducted at the EOC by the PIO and representatives of the EOC staff were present to provide information to the media.

Issue No.: 11-95-11-A-06

Description: None of the EAS messages contained information regarding the precautionary school evacuation. According to the St. Mary's County Plan (Attachment 8, Section E.2), "EAS announcements will be made to notify parents of school protective actions, if appropriate." (NUREG-0654, E.7.)

Corrective Action Demonstrated: An EAS message related to a precautionary school evacuation was made during the out-of-sequence school drill on October 21, 1999.

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

2.2.2 FIELD MONITORING TEAM

a. **MET:** Objectives 4, 5, and 14

b. **DEFICIENCY:** None

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

Issue No.: 11-99-06-A-17

Description: A radioactive check source was not available to properly check the operational response of the survey instrument used by the St. Mary's County FMT in accordance with FEMA-REP-14. (NUREG-0654, H.10.)

Recommendation: A radioactive check source should be obtained and attached to the instrument case or ensure that a source is available and used by the FMT while checking for proper operation of the survey instrument. The plan should be revised to require the presence of an operational check source.

Schedule of Corrective Action: A radioactive source check is available to perform an operational check of the survey instruments. Training will be conducted to ensure the teams perform the correct source check prior to departure.

Issue No.: 11-99-06-A-18

Description: There was not an equipment inventory list available in the St. Mary's County REP concerning the need to inventory equipment prior to deployment to the field in accordance with FEMA-REP-14. (NUREG-0654, H.10.)

Recommendation: The plan should be revised to provide an equipment checklist and require an inventory of equipment prior to deployment of the field monitoring team to the field.

Schedule of Corrective Action: An inventory list will be added to the St. Mary's County SOP to ensure the field teams have appropriate equipment prior to deployment.

Issue No.: 11-99-06-A-19

Description: The St. Mary's County REP plan requires that open and closed readings be made at 3 inches and 6 feet instead of 3 inches and waist high (approximately 3 feet) in accordance with FEMA-REP-14. (NUREG-0654, I.7. and I.8.)

Recommendation: The plan should be revised to specify open and closed readings at 3 inches and waist high (approximately 3 feet). Modify the *Monitoring Form* to reflect the change.

Schedule of Corrective Action: The St. Mary's County SOP will be revised to include three feet (waist level) and six inch (ground level) readings.

- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objectives 5, 6, and 14

Issue No.: 11-97-05-A-22

Description: The St. Mary's County FMT members were issued appropriate dosimetry in accordance with their plan. However, one 0-200 R dosimeter had drifted 20 R in about 1 hour, and readings from a 0-200 Millirem(s) (mR) direct-reading dosimeters (DRD) reached 128 mR in the same time. (NUREG-0654, K.3.a.)

Corrective Action Demonstrated: DRDs, two 0-200 mR and two 0-20 R were issued to the St. Mary's County FMT and did not drift.

Issue No.: 11-97-06-A-23

Description: Although informed of a radiological release, the St. Mary's County FMTs did not, on occasion, alter their monitoring technique of exiting their vehicle to take measurements, as stated in its plan and procedures. In addition, they did not don the protective clothing they had been issued. (NUREG-0654, I.7., I.8., and I.11.)

Corrective Action Demonstrated: During this exercise, the St. Mary's County FMT explained the donning of protective clothing and the correct monitoring technique to be followed in taking measurements.

Issue No.: 11-97-06-A-24

Description: The St. Mary's County FMT used the wrong form for recording measurements. Attachment 7, page 7-22, of the plan, specifies use of the equipment contamination survey data sheet. (NUREG-0654, I.7., I.8., and I.11.)

Corrective Action Demonstrated: The St. Mary's County FMT used the *Gamma Exposure Rate Monitoring Form*.

Issue No.: 11-97-14-A-25

Description: The only information given to the FMT at the St. Mary's County EOC concerning KI was that it should not be ingested until the team members were instructed to do so by the County Health Officer. The FMT was not briefed nor did team members know about the reason for taking KI and its possible side effects. (NUREG-0654, J.10.e. and J.10.f.)

Corrective Action Demonstrated: The St. Mary's County FMT was briefed on the reason for taking KI and its possible side effects. The team was knowledgeable on the use of KI.

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

2.2.3 RECEPTION CENTERS AND EMERGENCY WORKER DECONTAMINATION STATION (Leonard Hall-Drill Hall)

a. **MET:** Objectives 5, 18, and 22

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ISSUES - RESOLVED:** Objectives 5 and 18

Issue No.: 11-97-05/18-A-26

Description: The monitoring team at the St. Mary's County Reception Center-Leonard Hall Drill Hall was unable to demonstrate its capabilities to monitor and decontaminate individuals and vehicles because the specified number of evacuees and vehicles requiring monitoring and possible decontamination never arrived. In addition, the emergency workers at the Leonard Hall Drill Hall were neither issued dosimetry nor briefed on its use. (NUREG-0654, H.10., J.12., K.3.a., K.3.b., K.4., and N.1.a.)

Corrective Action Demonstrated: The monitoring team at St. Mary's County reception center at Leonard Hall Drill Hall satisfactorily demonstrated monitoring of 6 individuals and decontamination of two individuals simulating contamination. Monitoring and decontamination of vehicles was described in accordance with the extent-of-play agreement. Emergency workers were issued a 0-20 R DRD and a thermoluminescent dosimeter (TLD). The emergency workers were fully aware of the procedures for using dosimeters, turnback valve, and reporting procedures.

Issue No.: 11-97-18-A-27

Description: Only one team, consisting of two individuals, was present at the St. Mary's County Reception Center at the Leonard Hall Drill Hall. More than 3,200 evacuees would potentially need to be monitored. One team would not be sufficient to handle all the monitoring activities required at that location. (NUREG-0654, J.12.)

Corrective Action Demonstrated: There were two portable portal monitoring devices at the reception center with six monitors available. The center can now monitor over 3,200 evacuees in less than 12 hours.

Issue No.: 11-95-18-A-07

Description: The monitoring/decontamination team leader was uncertain about screening equipment functions and stated that the personal decontamination action level was 0.5 mR, although the county plan stated 0.1 Milliroentgen per Hour(s) (mR/h). (NUREG-0654, J.12.)

Corrective Action Demonstrated: St. Mary's County Reception Center at the Leonard Hall Drill Hall was staffed with 5 trained radiological monitors. During the exercise, all five radiological monitors demonstrated their understanding of the 0.1 mR/h decontamination action level.

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

2.2.4 ROUTE ALERTING TEAM

a. **MET:** Objectives 4, 5, 10, and 14

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

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

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

2.2.5 TRAFFIC AND ACCESS CONTROL

- a. **MET:** Objectives 4 and 17
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** None
- f. **PRIOR ISSUES - UNRESOLVED:** Objectives 5 and 14

Issue No.: 11-97-05/14-A-28

Description: The St. Mary's County EOC staff, including the sheriff and Maryland State Police Barrack Commander, did not instruct their ACP personnel to obtain their DRDs, TLDs, radiation exposure record cards, and KI (simulated) prior to their dispatch to the ACPs at Routes 235 and 245 and Routes 4 and 235. (page 5-2, Attachment 5, St. Mary's County Sheriff Department Procedure). The extent-of-play agreement required that a number of emergency workers at their field locations have appropriate dosimetry. (NUREG-0654, H.10., J.10.e., J.10.f., and K.3.a.)

Reason ARCA Unresolved: The St. Mary's County EOC staff did not instruct ACP personnel to obtain DRDs, TLDs, radiation exposure record cards and KI (simulated). The Maryland State Police, Post T, Assistant Commander did not instruct the TCP/ACP personnel to obtain dosimetry kits (DRDs, TLD, KI, and Dosimetry-KI forms) prior to their dispatch to Routes 4 and 235 in accordance with the SOPs, page 5-2.

Recommendation: DRDs, TLDs, record cards and KI should be issued to ACP personnel prior to dispatch to assigned locations. The Maryland State Police Post Assistant Commander should receive radiological training and follow the St. Mary's County Sheriff's Office SOPs.

Schedule of Corrective Actions: DRDs, TLDs, record cards and KI will be issued to ACP personnel prior to dispatch to assigned locations. The Maryland State Police Post Assistant Commander will receive radiological training including use of the St. Mary's County Sheriff's Office SOPs and checklists.

2.2.6 SCHOOL DISTRICT (Hollywood Elementary School)

- a. **MET:** Objectives 5, 14, and 16

- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objective 16

Issue No.: 11-97-16-A-29

Description: Buses needed to evacuate the Hollywood Elementary School did not have the capability to communicate with the St. Mary's County EOC. (NUREG-0654, J.10.d. and J.10.g.).

Corrective Action Demonstrated: The bus driver had a cellular telephone to communicate with the St. Mary's County EOC.

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

2.2.7 SCHOOL DISTRICT (St. John's Elementary School)

- a. **MET:** Objectives 5, 14, and 16
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** None
- f. **PRIOR ISSUES - UNRESOLVED:** None

2.3 DORCHESTER COUNTY

2.3.1 COUNTY EMERGENCY OPERATIONS CENTER

- a. **MET:** Objectives 1, 2, 3, 4, 5, 9, 13, 14, 15, 30, and 32
- b. **DEFICIENCY:** Objective 10, 11, and 12

Issue No.: 11-99-10-D-01

Description: The Dorchester County PIO waited for a previous fax to finish before faxing the first EAS message, and faxed the EAS message to several other locations before faxing them to the designated EAS station. As a result, the EAS

station identified in public information materials did not receive the first EAS message until 34 minutes after the first protective action decision. (NUREG-0654, E.6.)

Recommendation: Dorchester County should ensure that all A&N sequences are completed within the required 15-minute time period.

Remedial Action Demonstrated: During the second and third A&N sequences, all EAS messages were received by the station within 15 minutes of their respective protection action decisions.

Issue No.: 11-99-11/12-D-02

Description: During the exercise, the Dorchester County EOC staff generated three EAS messages. The staff followed up with the required Special News Broadcast/News Release attachment for only the last EAS message. A Special News Broadcast/News Release is required for each EAS message generated that exceeds a two-minute broadcast time. The purpose of the attachment is to provide critically important information that is not contained in the cryptic EAS message. In addition, EAS messages written in English were the only type of messages sent by the county. Dorchester County's Standard Operating Procedures, Attachment 5, contain prescribed EAS messages for both English- and Spanish-speaking members of the affected public. EAS messages written in Spanish should have been issued in addition to those written in English.

The Dorchester County PIO did not contact the EAS station(s) or other broadcast outlets by telephone, as required by the Dorchester County Standard Operating Procedures, Attachment 5, Section 3.2. Therefore, there was no assurance that the EAS station(s) or other broadcast outlets actually received the faxed messages, verified their authenticity, or understood that they were to be issued immediately. The PIO also did not detect and correct an error in a MEMA news release related to instructions for reporting to a reception center. Specifically, the news release issued referred to "evacuees from Dorchester County" although no evacuation had been ordered for the county. This oversight occurred despite the fact that the county and other jurisdictions had exchanged copies of news releases.

The Dorchester County news releases were unclear and constructed in such a way ("The public is advised to evacuate Zone 1 & 2 [and] shelter 10-mile radius") that both the news media and the public could have taken them to be PADs instead of PARs. Finally, News Releases generated by the county did not provide landmark boundaries of the zones affected by protective actions. (NUREG-0654, E.5. and E.7.)

Recommendation: FEMA Region III requires that the following actions be taken to address the Deficiency:

- County plans must be revised to address the concerns identified in the Deficiency, and the plans must be submitted to FEMA for review and approval.
- EOC staff must receive additional training.
- EOC staff must participate in a remedial exercise to address the concerns identified in the Deficiency within 120 days of the exercise date.

Remedial Action Demonstrated: The Dorchester County EOC staff demonstrated their capability to timely disseminate public instructions and emergency information to the public and media during the remedial exercise conducted on February 17, 2000. There were three EAS messages generated during the drill along with three special news broadcast/news releases. The third EAS message concerning evacuation provided additional information to the public on actions being implemented related to students at local schools. After the message was broadcast (simulated) the exercise was terminated in accordance with the scenario.

The requirement for instructional information for the Spanish-speaking population had been incorporated erroneously into the Emergency Operating Procedures (EOP) several years ago by mistake. The Spanish-speaking population was well under one percent of the population then, as well as now. The EOPs at the remedial exercise were correct.

The EAS broadcasts to the public were released at 1025 and 1136, when the EMC called radio station WCEI personnel and instructed them to broadcast the appropriate pre-scripted messages. The times required to complete the initial A&N sequences were within 15 minutes of the decision by the Dorchester County EMC to alert and notify the public. Simulated EAS broadcasts originating from the radio station were verified for receipt at the station by the coordinating officials prior to broadcast. Protective action areas were described in the third EAS broadcast message in terms of familiar landmarks and boundaries. The contents of these messages were effectively coordinated prior to being released. The contents of all EAS messages and press releases were reviewed with the PIO. Activity logs were systematically used, and EAS messages were correctly logged.

Schedule of Corrective Actions: The corrective actions for the deficiency were demonstrated using the agreed-upon scenario, objectives, and extent of play within the 120 day period specified by FEMA.

- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None

e. **PRIOR ISSUES - RESOLVED:** Objective 11

Issue No.: 11-97-11-A-30

Description: The Dorchester County PIO did not follow all the procedures in the Public Information Standard Operating Procedures (Attachment 5, August 1997, of the County Plan) as follows:

1. The PIO did not send a copy of EAS messages to the State PIO at the joint NMC because of a failure of the fax equipment. (Annex P, Dorchester County RERP, page 20)
2. The Board of Commissioners (releasing authority) did not sign any of the backup hard-copy news release forms for disseminating public information. (Dorchester County Agency SOP, Attachment 5, Tabs B-1 through B-5)
3. Two of three supplemental public information releases, providing additional instructions to the public, were not clearly distinguishable from other news releases.
4. No news releases included an "as of" time to ensure that updates were current. Consequently, staff had difficulty in differentiating between previous and current information and instructions.
5. The PIO released incorrect information concerning another jurisdiction. Coordination of this information did not occur. (NUREG-0654, A.1.b., E.5., E.7., and G.4.a.)

Corrective Action Demonstrated: All concerns were resolved between the exercise on October 26, 1999, and the remedial exercise on February 17, 2000. The PIO did send a copy of the EAS messages and news releases to the State PIO (simulated) since the Media Center was not activated during the exercise. The County Emergency Management Agency (EMA) Director provided written approval for all news releases and EAS messages prior to their release during the remedial. The EAS messages and news releases were all properly marked with the proper designation to clearly distinguish one message from another during the remedial. News releases and EAS messages were issued with dates and times, and logs of these messages were maintained during the remedial. The news releases and EAS messages contained accurate and comprehensive information developed by the County PIO during the remedial. Errors in messages received from the State (simulated) were promptly corrected prior to being released in the County during the remedial. The PIO released correct information about other jurisdictions and coordinated the message content with other jurisdictions (simulated) prior to being released for broadcast during the exercise.

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

2.3.2 FIELD MONITORING TEAM

- a. **MET:** Objectives 4, 5, 6, and 14
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** None
- f. **PRIOR ISSUES - UNRESOLVED:** None

2.3.3 RECEPTION CENTER AND EMERGENCY WORKER DECONTAMINATION STATION (Maple Elementary School)

- a. **MET:** Objective 5, 18, and 22
- b. **DEFICIENCY:** None
- c. **AREAS REQUIRING CORRECTIVE ACTION:** None
- d. **NOT DEMONSTRATED:** None
- e. **PRIOR ISSUES - RESOLVED:** Objectives 5 and 18

Issue No.: 11-97-05-A-32

Description: Several monitors at the Dorchester County Reception Center at Maple Elementary School were not provided with dosimetry devices. (NUREG-0654, K.3.a. and H.10.)

Corrective Action Demonstrated: All monitors at the Maple Elementary School facility were provided with appropriate dosimetry as well as corresponding documentation.

Issue No.: 11-97-18-A-33

Description: The radiological monitoring staff at the Dorchester County Reception Center at Maple Elementary School and at the Emergency Worker Decontamination Center experienced difficulties getting the portal monitor to operate properly. (NUREG-0654, H.10., J.12., and K.5.b.)

Corrective Action Demonstrated: The monitoring staff at the Maple Elementary School had no difficulty in setting up and operating the portal monitor.

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

2.3.4 ROUTE ALERTING TEAM

- a. **MET: Objectives 4, 5, 10, and 14**
- b. **DEFICIENCY: None**
- c. **AREAS REQUIRING CORRECTIVE ACTION: None**
- d. **NOT DEMONSTRATED: None**
- e. **PRIOR ISSUES - RESOLVED: None**
- f. **PRIOR ISSUES - UNRESOLVED: None**

2.3.5 TRAFFIC AND ACCESS CONTROL

- a. **MET: Objectives 4, 5, 14, and 17**
- b. **DEFICIENCY: None**
- c. **AREAS REQUIRING CORRECTIVE ACTION: None**
- d. **NOT DEMONSTRATED: None**
- e. **PRIOR ISSUES - RESOLVED: None**
- f. **PRIOR ISSUES - UNRESOLVED: None**

2.3.6 SCHOOL DISTRICT (Cambridge South Dorchester High School)

- a. **MET: Objective 16**
- b. **DEFICIENCY: None**
- c. **AREAS REQUIRING CORRECTIVE ACTION: None**
- d. **NOT DEMONSTRATED: None**
- e. **PRIOR ISSUES - RESOLVED: None**
- f. **PRIOR ISSUES - UNRESOLVED: None**

APPENDICES

APPENDIX 1

ACRONYMS AND ABBREVIATIONS

AAC	Accident Assessment Center
ACP	Access Control Point
ANL	Argonne National Laboratory
ARCA	Area Requiring Corrective Action
A&N	Alert and Notification
BG&E	Baltimore Gas and Electric
BWI	Baltimore-Washington International
CCNPP	Calvert Cliffs Nuclear Power Plant
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
DRD	Direct-Reading Dosimeter
EAS	Emergency Alert System
ECL	Emergency Classification Level
EMA	Emergency Management Agency
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EOP	Emergency Operating Procedure
EP	Emergency Procedure
EPZ	Emergency Planning Zone
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
HPSI	High-Pressure Safety Injection
ISFSI	Independent Spent Fuel Storage Installation
JIC	Joint Information Center
KI	Potassium Iodide
KLT	K.L. Travis and Associates
LOCA	Loss-of-Coolant Accident
MDE	Maryland Department of the Environment
MEMA	Maryland Emergency Management Agency
mR	Millirem(s)
mR/h	Milliroentgen per Hour(s)

NAS	Naval Air Station
NASA	National Aeronautical Space Administration
NMC	News Media Center
NRC	U.S. Nuclear Regulatory Commission
NUREG-0654	NUREG-0654/FEMA-REP-1, Rev. 1 <i>Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants</i> , November 1980
PAD	Protective Action Decision
PAR	Protective Action Recommendation
PIO	Public Information Officer
R	Roentgen(s)
RAC	Regional Assistance Committee
RCS	Reactor Cooling System
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RO	Radiological Officer
SAE	Site Area Emergency
SOP	Standard Operating Procedure
TCP	Traffic Control Point
TDD	Telecommunications Device for the Deaf
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 Plant exercise on October 26, 1999, and the out-of-sequence activities on October 21, 1999. Evaluator Team Leaders are indicated by an asterisk following their organization's name. The organization each evaluator represents is indicated by the following abbreviations:

ANL	Argonne National Laboratory
FEMA	Federal Emergency Management Agency
KLT	K.L. Travis and Associates
NRC	U.S. Nuclear Regulatory Commission

<u>POSITION</u>	<u>NAME</u>	<u>ORGANIZATION</u>
Regional Assistance Chairperson	K. Koob	FEMA
Project Officer	R. Van	FEMA

1. Plume Exposure Pathway Exercise (October 26, 1999)

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
STATE OF MARYLAND		
State EOC	A. Henryson	FEMA *
	R. Thomson	ANL
	A. Teotia	ANL
Joint Information Center	J. Sutch	ANL
Accident Assessment - Dundalk	B. VanPelt	ANL
Accident Assessment - EOF	M. Geer	KLT
	R. Bores	NRC
Field Monitoring Team A	E. Fuente	ANL
Field Monitoring Team B	D. Blunt	ANL

RISK JURISDICTIONS

CALVERT COUNTY

Calvert County EOC	J. Price	FEMA *
	A. Lookabaugh	ANL
	M. Willis	ANL
Field Monitoring Team	E. Wojnas	ANL
Route Alerting Team	P. Kier	ANL
Traffic and Access Control	L. Poch	ANL

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
ST. MARY'S COUNTY		
St. Mary's County EOC	H. Skoczalek	FEMA *
	P. Roberts	ANL
	J. Jackson	ANL
Field Monitoring Team	F. Bold	ANL
Route Alerting Team	J. Karvelas	ANL
Traffic and Access Control	B. Lueders	ANL

DORCHESTER COUNTY

Dorchester County EOC	R. Helo	FEMA *
	D. Newsom	ANL
	J. Flynn	ANL
Field Monitoring Team	G. Jacobson	ANL
Route Alerting Team	K. Flynn	ANL
Traffic and Access Control	T. Green	ANL

2. Activities occurring out-of-sequence (October 21, 1999 – 0900-1700)

<u>EVALUATION SITE</u>	<u>EVALUATOR</u>	<u>ORGANIZATION</u>
Calvert County		
Calvert County EOC	J. Price	FEMA
Reception Center (Calvert Senior High School)	L. Poch	ANL
Emergency Worker Decontamination Station (Calvert County Landfill)	P. Kier	ANL
Schools (Dowell Elementary School Patuxent Elementary School)	L. Poch P. Kier	ANL ANL
St. Mary's County		
St. Mary's County EOC	H. Skoczalek	FEMA
Reception Center and Emergency Worker Station (Leonard Hall-Drill Hall)	T. Green	ANL
Schools (Hollywood Elementary School St. John's Elementary School)	P. Roberts T. Green	ANL ANL
Dorchester County		
Dorchester County EOC	R. Helo	FEMA
Reception/Emergency Worker Center (Maple Elementary School)	K. Flynn	ANL
Schools (Cambridge South High School)	K. Flynn	ANL

APPENDIX 3

EXERCISE OBJECTIVES AND EXTENT-OF-PLAY AGREEMENT

This appendix contains descriptions of the exercise objectives scheduled for demonstration at the Calvert Cliffs Nuclear Power Plant exercise on October 26, 1999, the out-of-sequence activities on October 21, 1999, and the extent-of-play agreement approved by the Federal Emergency Management Agency (FEMA), Region III, by October 15, 1999.

The exercise objectives, contained in FEMA-REP-15, *Radiological Emergency Preparedness Exercise Evaluation Methodology*, September 1991, 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 objectives are intended for use at all nuclear power plant sites, and because of variations among offsite plans and procedures, an extent-of-play agreement is prepared by the State and approved by FEMA to provide evaluators with guidance on expected actual demonstration of specific objectives.

Exercise Objectives and Extent-of-Play Agreement

Listed below are the specific radiological emergency preparedness objectives and the extent-of-play agreements scheduled for demonstration during this exercise.

GROUP A OBJECTIVES

OBJECTIVE 1: MOBILIZATION OF EMERGENCY PERSONNEL

Demonstrate the capability to alert and fully mobilize personnel for both emergency facilities and field operations. Demonstrate the capability to activate and staff emergency facilities for emergency operations.

Expected Demonstration:

Mobilization of emergency personnel will be demonstrated in accordance with plans and procedures. All activities will be demonstrated as they would in an actual emergency. State and local plans will be utilized to alert, notify, and mobilize emergency personnel, in accordance with declaration of ECLs.

OBJECTIVE 2: FACILITIES - EQUIPMENT, DISPLAYS, AND WORK ENVIRONMENT

Demonstrate the adequacy of facilities, equipment, displays and other materials to support emergency operations.

Expected Demonstration:

Facilities, equipment, and displays will be demonstrated in accordance with plans.

OBJECTIVE 3: DIRECTION AND CONTROL

Demonstrate the capability to direct and control emergency operations.

Expected Demonstration:

Direction and control will be demonstrated in accordance with plans.

OBJECTIVE 4: COMMUNICATIONS

Demonstrate the capability to communicate with all appropriate emergency personnel at facilities and in the field.

Expected Demonstration:

Evaluation of communication with appropriate personnel will be fully by the transmission and receipt of exercise messages. Backup communication will be available and functioning during the exercise. Backup communications will be demonstrated if primary systems fail. Communication equipment for the out-of-sequence activities should be demonstrated during scheduled evaluations.

OBJECTIVE 5: EMERGENCY WORKER EXPOSURE CONTROL

Demonstrate the ability to continuously monitor and control radiation exposure to emergency workers.

Expected Demonstration:

Emergency worker exposure control will be demonstrated as it would in an actual emergency. Actual direct-reading dosimeters (DRDs) and TLDs will be used. DRDs and TLDs will be distributed to emergency workers who are required to have them at each location.

Electrical leakage test records are retained with the annual letter of certification documents and will not be inspected during the exercise. Radiation exposure limits and/or turn-back values may be obtained through interviews with the Health Officer and emergency workers. Procedures to monitor and record dosimeter readings and manage radiological exposures will be demonstrated by emergency workers in accordance with appropriate plans. Maryland Department of the Environment (MDE) field teams will be issued a single electronic DRD and TLD in accordance with MDE procedures.

OBJECTIVE 6: FIELD RADIOLOGICAL MONITORING – AMBIENT RADIATION MONITORING

Demonstrate the appropriate use of equipment and procedures for determining field radiation measurements.

Expected Demonstration:

State – Ambient radiological monitoring will be demonstrated as it would in an actual emergency. MDE will demonstrate two Field Monitoring Teams (FMTs) for air sampling and monitoring. Procedures for collecting samples will be demonstrated in the field. At least six monitoring points for each FMT will be demonstrated. Equipment and inventory lists of equipment will be available for evaluation. In accordance with letters of agreement, peak measurements in the plume are monitored by the licensee and will not be demonstrated by State teams.

Calvert, Dorchester, and St. Mary's Counties – Ambient radiological monitoring will be demonstrated as it would in an actual emergency. Each county will field one monitoring team. At least six monitoring points for each FMT will be demonstrated. Equipment and inventory lists of equipment will available for evaluation.

OBJECTIVE 7: PLUME DOSE PROJECTION

Demonstrate the capability to develop dose projections and protective action recommendations regarding evacuation and sheltering.

Expected Demonstration:

State – This objective will be demonstrated by the MDE Accident Assessment Center (AAC) in accordance with MDE procedures.

Calvert, Dorchester, and St. Mary's Counties – Not applicable.

OBJECTIVE 8: FIELD RADIOLOGICAL MONITORING – AIRBORNE PARTICULATE ACTIVITY MONITORING

Demonstrate the appropriate use of equipment and procedures for the measurement of airborne radioiodine concentrations as low as 10^{-7} (0.0000001) microcuries per cubic centimeter in the presence of noble gases and obtain samples of particulate activity in the airborne plume.

Expected Demonstration:

State – MDE will demonstrate two field teams for air sampling and monitoring. Procedures for collecting samples will be demonstrated in the field. At least one sample per team will be collected in the field in areas of the plume that exhibit radiation readings of 1 mR/h or greater. Field measurements will be demonstrated in a low background area to determine radioiodine activity and gross particulate activity. Sample delivery procedures (using courier) to a fixed

laboratory for isotopic analysis will be described. Actual laboratory analysis will not be demonstrated.

Calvert, Dorchester, and St. Mary's Counties – Not applicable.

OBJECTIVE 9: PLUME PROTECTIVE ACTION DECISION-MAKING

Demonstrate the capability to make timely and appropriate protective action decisions (PAD).

Expected Demonstration:

State – The AAC will make protective action recommendations (PARs) to the Secretary of the Environment. The Secretary of the Environment (or designated alternate) will make a PAD after conferring with the State and County EOCs. Counties have the responsibility to independently assess protective actions for their portions of the EPZ and have the authority to independently implement a PAD or expand the Secretary's PAD.

Calvert, Dorchester, and St. Mary's Counties – In accordance with the plan.

OBJECTIVE 10: ALERT AND NOTIFICATION

Demonstrate the capability to promptly alert and notify the public within the 10-mile plume pathway emergency planning zone (EPZ) and disseminate instructional messages to the public on the basis of decisions by appropriate State or local officials.

Expected Demonstration:

State – The 15-minute capability will be evaluated during the initial sequence at Site Area Emergency (SAE) when it becomes necessary to inform the public. The 15-minute clock will begin when the State and counties agree on a protective action. Preparation of an appropriate EAS message, with information pertinent to the scenario events, will be demonstrated. Siren and EAS activation will be simulated, but procedures will be demonstrated up to the point of siren and EAS activation. County EOCs have the capability to broadcast EAS messages from the EOC. Contact with EAS stations will be demonstrated, however, the EAS message will be simulated. At least two A&N sequences will be demonstrated. Route alerting procedures will be described at the respective county EOCs. One route alerting team will be dispatched. The State EOC does not demonstrate siren or EAS activation.

Calvert, Dorchester, and St. Mary's Counties – In accordance with the plan, as stated in the above extent of play.

OBJECTIVE 11: PUBLIC INSTRUCTIONS AND EMERGENCY INFORMATION

Demonstrate the capability to coordinate the formulation and dissemination of accurate information and instructions to the public.

Expected Demonstration:

State – Not applicable.

Calvert, Dorchester, & St. Mary's Counties – EAS messages that contain appropriate information and instructions will be prepared to inform the public of protective actions, including updates. Follow-up news releases may be used to expand or clarify EAS messages.

OBJECTIVE 12: EMERGENCY INFORMATION – MEDIA

Demonstrate the capability to coordinate the development and dissemination of clear, accurate, and timely information to the news media.

Expected Demonstration:

State – Media briefings will be conducted at the Calvert Cliffs Joint Information Center at the St. John Vianney Parish Center in Prince Frederick, Maryland. Press releases will be generated at the EOC.

Calvert, Dorchester, and St. Mary's Counties – Media briefings and press releases will be demonstrated at the Dorchester and St. Mary's County EOCs; Calvert County will demonstrate at the Joint Information News Center in Prince Frederick.

OBJECTIVE 13: EMERGENCY INFORMATION – RUMOR CONTROL

Demonstrate the capability to establish and operate rumor control in a coordinated and timely manner.

Expected Demonstration:

State – Rumor control will be conducted at the State EOC by at least two persons. Each rumor control location will receive a minimum of 16 calls to identify rumor trends. Equipment for monitoring news broadcasts will be available, but will not be operated during the exercise.

Calvert, Dorchester, and St. Mary's Counties – Rumor control will be conducted at the EOC by at least two persons. Each rumor control location will receive a minimum of 16 calls to identify rumor trends. Equipment for monitoring news broadcasts will be available but will not be operated during the exercise.

GROUP B OBJECTIVES

OBJECTIVE 14: IMPLEMENTATION OF PROTECTIVE ACTIONS – USE OF KI FOR EMERGENCY WORKERS, INSTITUTIONALIZED INDIVIDUALS, AND THE GENERAL PUBLIC

Demonstrate the capability and resources to implement potassium iodide (KI) protective actions for emergency workers, institutionalized individuals, and, if the State plan specifies, the general public.

Expected Demonstration:

Appropriate State or county health officials will decide to authorize the use of KI by emergency workers. Distribution of KI will be demonstrated with simulated KI. There are no institutionalized persons in the Calvert Cliffs EPZ. Supplies of KI may be inspected before or after the exercise at the storage locations. Sealed boxes will not be opened. Inventory lists will be available. The Maryland Plan does not call for the distribution of KI to the general public.

State – In accordance with the plan and previous expected demonstration.

Calvert, Dorchester, and St. Mary’s Counties – In accordance with the plan and previous expected demonstration.

OBJECTIVE 15: IMPLEMENTATION OF PROTECTIVE ACTIONS – SPECIAL POPULATIONS

Demonstrate the capability and resources necessary to implement appropriate protective actions for special populations.

Expected Demonstration:

State – Not applicable.

Calvert, Dorchester, and St. Mary’s Counties – Lists of special populations will be available. Procedures will be described to demonstrate movement of special populations. Calls to transportation providers will be made until sufficient resources are met. Actual vehicles will not be dispatched.

OBJECTIVE 16: IMPLEMENTATION OF PROTECTIVE ACTIONS – SCHOOLS

Demonstrate the capability and resources necessary to implement protective actions for schoolchildren within the plume pathway EPZ.

Expected Demonstration:

Implementation of protective actions of schools will be scheduled as an out-of-sequence demonstration in Calvert and St. Mary’s Counties. There are no schools within the 10-mile EPZ in Dorchester County.

Two schools will implement protective actions in accordance with the county plan. One bus driver from each school will demonstrate movement of students from the risk school, however actual movement of students will not take place.

OBJECTIVE 17: TRAFFIC AND ACCESS CONTROL

Demonstrate the organizational capability and resources necessary to control evacuation traffic flow and to control access to evacuated and sheltered areas.

Expected Demonstration:

State – Not applicable.

Calvert, Dorchester, and St. Mary's Counties – The requirement for establishing traffic and access control for the evacuated or sheltered area will be discussed administratively at the EOC. One TCP/ACP will actually be demonstrated at a pre-determined location.

OBJECTIVE 18: RECEPTION CENTER – MONITORING, DECONTAMINATION, AND REGISTRATION

Demonstrate the adequacy of procedures, facilities, equipment, and personnel for the radiological monitoring, decontamination, and registration of evacuees.

Expected Demonstration:

State – Not applicable.

Calvert, Dorchester, and St. Mary's Counties – Monitoring and decontamination will be demonstrated at one reception center. Facilities will be set up at the initial monitoring point and decontamination area. Complete setup of the facility will be described to the evaluator. Coverings in hallways will not be installed. Flow diagrams of the facility setup will be available. Facilities will be staffed by at least one-third of the monitoring and decontamination teams required by the plan. At least six evacuees will be monitored. One person will be contaminated above screening limits. Decontamination will be demonstrated by interviews with appropriate individuals. Interviews should include actions involved if the contaminated person cannot be successfully decontaminated at the facility. Registration will be demonstrated at the Mass Care Center.

OBJECTIVE 19: CONGREGATE CARE

Demonstrate the adequacy of facilities, equipment, supplies, personnel, and procedures for congregate care of evacuees.

Expected Demonstration:

State – Not applicable.

Calvert, Dorchester, and St. Mary's Counties – This objective will be demonstrated in accordance with the plans.

OBJECTIVE 20: MEDICAL SERVICES - TRANSPORTATION

Demonstrate the adequacy of vehicles, equipment, procedures, and personnel for transporting contaminated, injured, or exposed individuals.

Expected Demonstration:

This objective will be demonstrated as a separate drill.

OBJECTIVE 21: MEDICAL SERVICES - FACILITIES

Demonstrate the adequacy of the equipment, procedures, supplies, and personnel of medical facilities responsible for treatment of contaminated, injured, or exposed individuals.

Expected Demonstration:

This objective will be demonstrated as a separate drill.

OBJECTIVE 22: EMERGENCY WORKERS, EQUIPMENT, AND VEHICLES - MONITORING AND DECONTAMINATION

Demonstrate the adequacy of procedures for monitoring and decontamination of emergency workers, equipment, and vehicles.

Expected Demonstration:

State – State emergency workers and equipment will be monitored and decontaminated in accordance with the specific county plans and procedures.

Calvert County – Emergency workers, equipment, and vehicle monitoring and decontamination are located at the Calvert County Landfill. Staffing includes a manager and a monitoring and decontamination team. At least one vehicle and one emergency worker will be simulated contaminated. Flow diagrams of facility setup will be available. Decontamination of the vehicle will be demonstrated through interviews with the appropriate personnel.

Dorchester and St. Mary's Counties – Emergency worker monitoring and decontamination is co-located with the reception center and the evacuee monitoring and decontamination center. Staffing includes a manager and a monitoring and decontamination team. Emergency equipment, and vehicles monitoring and decontamination will be demonstrated across the street from the reception center. Flow diagrams of facility setup will be available. At least one vehicle and one emergency worker will be simulated as being contaminated. Decontamination of the vehicle will be demonstrated through interviews with the appropriate personnel.

OBJECTIVE 23: SUPPLEMENTARY ASSISTANCE (FEDERAL/OTHER)

Demonstrate the capability to identify the need for external assistance and to request such assistance from Federal or other support organizations.

Expected Demonstration:

The State will demonstrate requesting Federal assistance in accordance with the plans. Federal participation will not be demonstrated and contacts to Federal agencies (FEMA, DOE, NRC) will be simulated.

Group C Objectives

OBJECTIVE 24: POST-EMERGENCY SAMPLING

Demonstrate the use of equipment and procedures for the collection and transportation of samples from areas that received deposition from the airborne plume.

Expected Demonstration:

Not applicable.

OBJECTIVE 25: LABORATORY OPERATIONS

Demonstrate laboratory operations and procedures for measuring and analyzing samples.

Expected Demonstration:

Not applicable.

OBJECTIVE 26: INGESTION EXPOSURE PATHWAY – DOSE PROJECTION AND PROTECTIVE ACTION DECISION MAKING

Demonstrate the capability to project dose to the public for the ingestion exposure pathway and to recommend protective actions.

Expected Demonstration:

Not applicable.

OBJECTIVE: 27 INGESTION EXPOSURE PATHWAY – PROTECTIVE ACTION IMPLEMENTATION

Demonstrate the capability to implement protective actions for the ingestion exposure pathway.

Expected Demonstration: Not applicable.

OBJECTIVE: 28 RELOCATION, RE-ENTRY, AND RETURN – DECISION MAKING

Demonstrate the capability to develop decisions on relocation, re-entry, and return.

Expected Demonstration:

Not applicable.

OBJECTIVE: 29 RELOCATION, RE-ENTRY, AND RETURN – IMPLEMENTATION

Demonstrate the capability to implement appropriate measures for relocation, re-entry, and return.

Expected Demonstration:

Not applicable.

OBJECTIVE: 30 CONTINUOUS, 24-HOUR STAFFING

Demonstrate the capability to maintain staffing on a continuous, 24-hour basis through and actual shift change.

Expected Demonstration:

State and local EOCs will be placed on stand-by as a result of potential impact of the Mir Space Station. Impact is predicted to occur the week of October 25, 1999, somewhere in the Delaware, Maryland, Virginia area. On the morning of the evaluated exercise, notification from National Aeronautical Space Administration (NASA) will place the Maryland State and local EOCs on stand-by for predicted impact in the Southern Maryland Eastern Shore area.

State: – A shift turnover will be demonstrated by key personnel at some time after activation of emergency center. All State agency representatives will demonstrate a shift turnover at the MEMA EOC. Key personnel at the Maryland Department of the Environment include the Secretary of MDE and AAC staff. The AAC staff will demonstrate shift turnover through the transition of operations from MDE Headquarters in Baltimore to the EOF. The Secretary of MDE will demonstrate a shift change at the EOF. The field team leader and field teams will not demonstrate a shift change due to logistical constraints; a second shift roster will be provided to demonstrate that sufficient personnel are available to support protracted field team operations.

Calvert, St. Mary's, and Dorchester Counties: – A shift turnover will be demonstrated by key personnel at some time after activation of emergency centers. Key personnel at the county EOCs include the Emergency Management Director, Communications, Public Information, Public Health, and the Radiological Officer.

OBJECTIVE: 31 OFFSITE SUPPORT FOR THE EVACUATION OF ONSITE PERSONNEL

Demonstrate the capability to provide offsite support for the evacuation of onsite personnel.

Expected Demonstration:

The utility will notify the Calvert County Emergency Management Agency of intentions to release non-essential personnel from the site. The Calvert County Director will be informed of any additional resources that may be requested or required.

OBJECTIVE: 32 UNANNOUNCED DRILL OR EXERCISE

Demonstrate the capability to carry out emergency response functions in an unannounced exercise or drill.

Expected Demonstration:

CALVEX 99 will be an unannounced drill. The window for the exercise date is the week of October 25, 1999. State and local jurisdictions will activate appropriate emergency centers on the predetermined date in accordance with the scenario; exercise objective and extent-of-play agreements.

OBJECTIVE: 33 OFF-HOURS EXERCISE OR DRILL

Demonstrate the capability to carry out emergency response functions in an unannounced exercise or drill.

Expected Demonstration:

Not applicable.

APPENDIX 4

EXERCISE SCENARIO

This appendix contains a summary of the simulated sequence of events used as the basis for invoking emergency response actions by offsite response organizations in the CCNPP exercise on October 26, 1999 and the out-of-sequence activities on October 21, 1999.

This exercise scenario was submitted by the State of Maryland and approved by the Federal Emergency Management Agency, Region III, by October 20, 1999.

Specific scenario events were generated during the exercise by the plant reference simulator computer, operated by BG&E, at the site. The scenario included actual field monitoring data transmissions and meteorological conditions. Backup information was available in case the simulator computer malfunctioned.

Controllers from the State of Maryland gave "inject messages" that contained scenario events, or simulated data, to persons who would normally be notified of such events in order to invoke response actions by offsite response organizations.

This summary is a compilation of exercise scenario materials submitted by the State of Maryland and BG&E. Events at the plant site, which are not applicable to the emergency response, have been omitted.

SCENARIO SUMMARY:

School Scenario – October 21, 1999

At 0900, CCNPP declares an Alert. Initial notification call and documentation from the utility is completed. The county EOCs, MEMA and MDE staff is complete.

At 0915, CCNPP declares a SAE. Initial notification to state and county EOCs is made. County EOCs should notify respective county agencies (simulated). The Board of Education representatives in Calvert and St. Mary's county discuss protective actions for risk schools.

At 0930, state and county agencies agree to alert the public of the emergency at CCNPP. County commissioners, Emergency Management Directors and Board of Education representatives agree to evacuate risk schools in Calvert and St. Mary's counties. Risk schools should be notified to evacuate to respective host school. EAS message should be prepared at the county EOC. Siren activation and EAS message broadcast completed will be simulated. The schools should implement school evacuation procedures. Students (simulated) evacuate to a host school. One bus drives the route from each of the two schools in Calvert and St. Mary's county to the host school.

Plume Scenario

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

National Aeronautical Space Administration (NASA) has issued a warning in the national news that the computer systems that maintain altitude on board the Russian space station MIR had failed on will reenter the atmosphere of the earth during the week. Pieces of the space station will impact the surface of the United States on a footprint that extends from Cincinnati, Ohio to the Atlantic coast of Delaware and Maryland. NASA has calculated that, given the current trajectory of the space station, the MIR core (the main body of the space station), which measures 43 feet long by 13.6 feet wide, will impact in Calvert County, Maryland.

At 0700, Patuxent River NAS control tower will call the CCNPP Control Center and CCNPP Control Room and warn that the MIR core has been located on their radar. Impact on CCNPP property will occur within fifteen minutes.

At 0710, a Security patrol will observe the MIR core crashing into the independent spent fuel storage installation (ISFSI) Protected Area, causing severe damage to the Protected Area fence and surveillance equipment. No fire will result from the crash and no one will be hurt. There will be no damage to the Horizontal Storage Modules. The wreckage will be contaminated with radioactivity associated with the disintegration of an onboard power reactor. The Shift Manager will declare an Unusual Event as a result of an aircraft crash into the ISFSI Protected Area.

At 0730, Patuxent River NAS control tower will call Maryland EMA and CCNPP Cliffs Control Room and report that the MIR core is off their radar. NASA will call the Plant Manager and request access to the property to investigate the impact. NASA will warn that the MIR wreckage may be contaminated due to a damaged onboard power reactor. Radiation Safety will investigate the debris for contamination and will establish a radiological controlled area.

Security will establish a guard of the ISFSI. Engineering and Maintenance will develop a plan for clean up and repair of the ISFSI Protected Area.

At 0800, an acetylene-welding rig will Catch fire and explode in the Unit 1, 45-foot elevation, East Electrical Penetration Room. The explosion will cause unobservable hairline cracks in the canister liner welds of fifteen electrical penetrations and will leave the surface of the penetration wall area scorched with black soot from the acetylene fire. The explosion will destroy the wiring of 11 and 13 Containment Air Cooler starters. The fire brigade will be called out for the fire and will extinguish the fire within fifteen minutes. The Control Room will send a plant operator to investigate the electrical penetrations and the Containment Air Cooler starters and will review

AOP-9P, *Safe Shutdown*, due to severe fire in Room 429 and will secure the ventilation. The Shift Manager will declare an Alert for an explosion in the Electrical Penetration Room.

At 0830, Radiation Safety will report alpha contamination of the wreckage at the ISFSI and the Shift Manager will declare a Radiological Event.

At 0900, the Emergency Response Organization staffing will be completed and the Site Emergency Coordinator will relieve the Control Room and Technical Support Center of interim Emergency Response Preparedness Implementing Procedures duties. Repair teams will be assembled and dispatched from the Operational Support Center to organize the cleanup of the ISFSI and the Electrical Penetration room.

At 1000, a Loss of Coolant Accident (LOCA) will occur on Unit 1. The Pressurizer will empty and pressurizer pressure will decrease. The reactor and main turbine will be manually or automatically tripped and the Control Room will implement EOP-0, *Reactor Trip Immediate Actions*. A Safety Injection Actuation Signal (SIAS) will be generated on low reactor coolant system (RCS) pressure. 11 and 12 HPSI pumps will not run due to the failure of the 4 kilo-volt (Kv) breakers. There will be concurrent mechanical damage to the 12 HPSI pump shaft. 12 Charging pump will not produce flow due to coupling failure. The common mode failure consists of the wiring error which prevents breaker operation of the 13 HPSI pump, and 23 Auxiliary Feedwater pump. This will cause the 12 and 14 Containment Air Cooler and 11 and 12 Containment Spray pumps to fail to run when they receive start signals.

At 1015, EOP-0 safety function, *RCS pressure and inventory control*, will not be met due to pressurizer level, pressurizer pressure, and subcooling. Containment environment will not be met due to containment pressure and temperature. The Control Room will implement EOP-5, *LOCA*, due to no available HPSI pumps or EOP-8, *Functional Recovery Procedures*, directly.

By 1020, two immediate safety functions will not be met in EOP-5 and the Control Room will implement EOP-8, *Functional Recovery Procedure*. By 1030, Core and RCS heat removal acceptance criteria will not be met in EOP-8 and the Shift Manager will declare a SAE for fission degradation based on the loss or potential loss of two barriers.

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

By 1100, the Technical Support Center will implement the Severe Accident Management ERPIPs when the core exit thermocouples reach 1200 degrees. By 1120, when the core exit thermocouples have reached 1300 degrees, the Site Emergency Coordinator will declare a General Emergency for fission barrier degradation based on the loss of two barriers and a potential loss of a third barrier.

At 1315, vessel melt through will occur without a hydrogen burn. The containment, having no source of cooling, will overheat momentarily to 1149 degrees at the time of a pressure spike to 107 pounds, causing the weakened electrical penetrations to fail.

By 1330, a release pathway from the damaged containment penetrations through the plant ventilation and out the plant main vent will convey the core melt radioactivity into the atmosphere.

The radioactivity will be transported downwind using controlled meteorological data. The two-mile dose will exceed U.S. Environmental Protection Agency (EPA) protective action guides as calculated with the RADDOSE dose modeling software. Radiation levels will be elevated out to and beyond 10 miles.

The plant will recommend protective actions for the public. The State and counties will implement protective actions to reduce the exposure of the public to the accidental release of radioactive materials.

The plant will determine the magnitude of the release and estimate the location of the offsite impact. The licensee will monitor the release with the Wide Range Noble Gas Monitor and dispatch field-monitoring teams to obtain downwind samples that will be used to define the plume.

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

Onsite, the exercise will terminate on or before 1500. Offsite, State and county participants will continue specific activities, as needed, until offsite objectives are met.

APPENDIX 5

PLANNING ISSUES

This appendix contains the descriptions, recommendations and status of planning issues identified during the October 26, 1999, exercise and the out-of-sequence activities on October 21, 1999. Planning issues are defined as issues observed or identified in an exercise that do not address participant or organizational performance, but rather inadequacies in the plan or procedures. **A plan issue should be corrected no later than the next annual plan review and update.**

Dorchester County TCP/ACP

Issue No. 11-99-14-P-01

Description: No provision was made for documenting ingestion of KI. (NUREG-0654,)

Recommendation: Modify Attachment 4-1 Tab C to include provision for documenting the ingestion of KI.

Schedule of Corrective Action:

Dorchester County EOC

Issue No.: 11-99-11-P-02

Description: The Dorchester County Standard Operating Procedures, Attachment 5, Tab A, identifies only one radio station (WSCL) as the local EAS station. WSCL was not included at all in the preset fax list of media outlets during the exercise; therefore, WSCL never received the EAS messages. However, radio station WCEM was identified as an EAS station in MEMA news releases during the exercise, and in various public information materials, and the station was provided with all EAS messages. (NUREG-0654, E.6. and E.7.)

Recommendation: The Dorchester County SOPs should be appropriately revised to ensure that all stations receiving EAS messages and Special News Bulletins from Dorchester County are correctly identified.

Schedule of Corrective Actions:

APPENDIX 6

ADDITIONAL PRIOR ISSUES

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

PRIOR ISSUES AT FUNCTIONAL ENTITIES NOT SCHEDULED TO BE DEMONSTRATED

None

PRIOR ISSUES FOR INGESTION EXPOSURE PATHWAY OBJECTIVES

Issue No.: 11-97-05-A-02 – State Sampling Team

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

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

Reason ARCA Unresolved: The State sampling teams were not scheduled to demonstrate objective 24 during the 1999 exercise.

Recommendation: State sampling teams should demonstrate their capabilities during the next ingestion exercise.

Issue No.: 11-97-24-A-07 – State Sampling Team

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

Reason ARCA Unresolved: The State sampling teams were not scheduled to demonstrate objective 24 during the 1999 exercise.

Recommendation: State sampling teams should demonstrate their capabilities during the next ingestion exercise.

Issue No.: CCX91-35R – State Sampling Team

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

Reason ARCA Unresolved: The state sampling teams were not scheduled to demonstrate objective 24 during the 1999 exercise.

Recommendation: State sampling teams should demonstrate their capabilities during the next ingestion exercise.

Issue No.: CCX91-36R – Washington D.C. EOC

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

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

Recommendation: The Washington D.C. EOC should demonstrate objective 11 during the next ingestion exposure pathway exercise.