January 2, 1997

Virginia Electric and Power Company
ATTN: Mr. J. P. O'Hanlon
Senior Vice President - Nuclear
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

SUBJECT: FEMA FINAL REPORT FOR THE JULY 23-25, AUGUST 1, AND AUGUST 13-15, 1996, EXERCISE AT THE NORTH ANNA POWER STATION

Dear Mr. O'Hanlon:

Enclosed is the final report dated October 25, 1996, from the Federal Emergency Management Agency (FEMA) discussing their findings of the full participation plume and ingestion exposure pathway exercise at the North Anna Power Station.

No Deficiencies were identified. However, 24 Areas Requiring Corrective Actions (ARCAs) were identified. A detailed description of the ARCAs is included in the enclosed FEMA exercise report.

We encourage your cooperation with State and local agencies undertaking correction actions for the ARCA's before the next full-scale exercise. If you have any questions, please contact me at (404) 331-0335.

Sincerely,

(Original signed by K. P. Barr)

Kenneth P. Barr, Chief
Plant Support Branch
Division of Reactor Safety

Docket Nos. 50-338, 50-339
License Nos. NPF-4, NPF-7

Enclosure: FEMA Report

cc w/encl: (See page 2)

Final Exercise Report

North Anna Power Station

Licensee:	Virginia Power Company
Exercise Dates:	August 13-15, 1996
Report Date:	October 25, 1996

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION III
LIBERTY SQUARE BUILDING
2ND FLOOR, 105 S. SEVENTH STREET
PHILADELPHIA, PENNSYLVANIA 19106-3316

cc w/encl:
M. L. Bowling, Manager
Nuclear Licensing and Operations
Support
Virginia Electric & Power Company
Innsbrook Technical Center
5000 Dominion Boulevard
Glen Allen, VA 23060

W. R. Matthews, Manager
North Anna Power Station
P. O. Box 402
Mineral, VA 23117

D. A. Christian, Manager
Surry Power Station
Virginia Electric & Power Company
5570 Hog Island Road
Surry, VA 23883

Executive Vice President
Old Dominion Electric Cooperative
4201 Dominion Boulevard
Glen Allen, VA 23060

Dr. W. T. Lough
Virginia Corporation Commission
Division of Energy Regulation
P. O. Box 1197
Richmond, VA 23209

William C. Porter, Jr.
County Administrator
Louisa County
P. O. Box 160
Louisa, VA 23093

Michael W. Maupin, Esq.
Hunton and Williams
Riverfront Plaza, East Tower
951 E. Byrd Street
Richmond, VA 23219

Attorney General
Supreme Court Building
900 East Main Street
Richmond, VA 23219

Robert B. Strobe, M.D., M.P.H.
State Health Commissioner
Office of the Commissioner
Virginia Department of Health
P. O. Box 2448
Richmond, VA 23218

Distribution w/encl:
G. Belisle, RII
L. Garner, RII
B. Buckley, NRR
R. Gibbs, RII
P. Fillion, RII
D. Jones, RII
W. Stansberry, RII
C. Payne, RII
PUBLIC

NRC Resident Inspector
U.S. Nuclear Regulatory Commission
1024 Haley Drive
Mineral, VA 23117

NRC Resident Inspector
U.S. Nuclear Regulatory Commission
Surry Nuclear Power Station
5850 Hog Island Road
Surry, VA 23883

OFFICE	RII:DRS	RII:DRS	RII:DRP			
SIGNATURE						
NAME	WSartor	KBarr	ABelisle			
DATE	12 / 23 / 96	12 / 23 / 96	12 / 26 / 96	12 / / 96	12 / / 96	12 / / 96
COPY?	YES NO	YES NO	YES NO	YES NO	YES NO	YES NO

OFFICIAL RECORD COPY DOCUMENT NAME: G:\FEMA\NORTHANN.WMS

Final Exercise Report

North Anna Power Station

Licensee:	Virginia Power Company
Exercise Dates:	August 13-15, 1996
Report Date:	October 25, 1996

FEDERAL EMERGENCY MANAGEMENT AGENCY
REGION III
LIBERTY SQUARE BUILDING
2ND FLOOR, 105 S. SEVENTH STREET
PHILADELPHIA, PENNSYLVANIA 19106-3316

TABLE OF CONTENTS (Cont.)

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

TABLE OF CONTENTS (Cont.)

APPENDICES

LIST OF TABLES

II. INTRODUCTION

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

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

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

- Taking the lead in offsite emergency planning and in the review and evaluation of RERPs and procedures developed by State and local governments;

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

- Responding to requests by the U.S. Nuclear Regulatory Commission (NRC) pursuant to the Memorandum of Understanding between the NRC and FEMA dated June 17, 1993 (Federal Register, Vol. 58, No. 176, September 14, 1993).

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

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

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

The Commonwealth of Virginia and local jurisdictions submitted their RERPs for the North Anna Power Station to FEMA Region III around September 1982. FEMA granted formal approval of the RERPs in February 1983 under 44 CFR 350.

FEMA Region III conducted a REP exercise on August 13-15, 1996, and out-of-sequence activities on July 22-23 and August 1, 1996, to assess the capabilities of State and local emergency preparedness organizations in implementing their RERPs and procedures to protect the public health and safety during a radiological emergency involving the North Anna Power Station. The purpose of this exercise report is to present the exercise results and findings on the performance of the offsite response organizations (ORO) during a simulated radiological emergency.

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

The criteria used in the FEMA evaluation process are contained in

- 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 plume pathway EPZ, a listing of all participating jurisdictions and functional entities evaluated, and a tabular presentation of the time of the 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 and ARCAs assessed during this exercise, recommended corrective actions, and the State and local governments' schedule of corrective actions for each identified exercise issue and (2) descriptions of unresolved ARCAs assessed during previous exercises and the status of the OROs' efforts to resolve them.

III. EXERCISE OVERVIEW

This section contains data and basic information relevant to the July 23-25, August 1, and August 13-15, 1996, exercise to test the offsite emergency response capabilities in the area surrounding the North Anna Power Station. This section of the exercise report includes a description of the plume pathway EPZ, a listing of all participating jurisdictions and functional entities evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

A. Plume EPZ Description

The North Anna Power Station, located at Mineral, Virginia, is owned and operated by Virginia Power Company. It consists of two pressurized water reactors that can produce 915 megawatts of electrical power. Commercial operations began at Unit 1 in June 1978 and at Unit 2 in December 1980. The operating license will expire for Unit 1 in April 2018 and for Unit 2 in August 2020. The station is located in the northeastern portion of Virginia in Louisa County, about 40 miles north-northwest of Richmond, 38 miles east of Charlottesville, 24 miles southwest of Fredericksburg, and about 40 miles from the Maryland border. The coordinates are 38°03'48" north latitude and 77°47'13" west longitude. The site is on a peninsula along the southern shore of Lake Anna, a newly formed reservoir. The onsite area consists of approximately 1,856 acres.

No population centers within the 10-mile EPZ have a population of 25,000 or more. The Cities of Richmond, Charlottesville, and Fredericksburg lie within the 50-mile EPZ and have populations greater than 25,000. The total population distribution, including transients, shows the following densities: 325 in the 2-mile ring, 2,194 in the 5-mile ring, and 14,876 in the 10-mile ring. The largest population area in the 10-mile EPZ is the Town of Mineral with 471 residents. Five risk county boundaries exist within the 10-mile EPZ. The 50-mile ingestion exposure pathway EPZ involves 30 counties and 3 city jurisdictions with a total population of 1,286,156.

No significant airports lie within the 10-mile EPZ. No railroad lines or major interstate highways pass through the 10-mile EPZ. Because most of the soil is sandy or marshy, the main agricultural crops grown in the area are animal feeds. The few dairies and other food sources primarily serve for local consumption.

I. EXECUTIVE SUMMARY

On July 23-25, August 1, and August 13-15, 1996, an exercise was conducted in the plume and ingestion exposure pathway emergency planning zone (EPZ) around the North Anna Power Station. 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 the Federal Emergency Management Agency's (FEMA) policies and guidance concerning the exercise of State and local radiological emergency response plans (RERP) and procedures.

The most recent previous exercise at this site was conducted on June 22, 1994. The qualifying emergency preparedness exercise was conducted on September 18, 1983.

FEMA wishes to acknowledge the efforts of the many individuals in the Commonwealth of Virginia; the risk counties of Caroline, Hanover, Louisa, Orange, and Spotsylvania in Virginia; the North Anna ingestion jurisdictions of Albemarle, Amelia, Buckingham, Culpeper, Cumberland, Essex, Fauquier, Fluvanna, Goochland, Greene, Henrico, King George, King and Queen, King William, Madison, Page, Powhatan, Prince Williams, Rappahannock, Rockingham, Stafford, and Westmoreland Counties and the Cities of Charlottesville and Fredericksburg in Virginia; the North Anna ingestion jurisdiction of Charles County in the State of Maryland; and the Calvert Cliffs ingestion jurisdictions of Arlington, Fairfax, and Richmond Counties and the Cities of Alexandria and Falls Church in Virginia.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly sought this responsibility by volunteering to provide vital emergency services to their communities. Cooperation and teamwork of all the participants were evident during this exercise.

This report contains the final evaluation of the biennial exercise and the out-of-sequence activities conducted during July 22-23 and August 1, 1996, related to all ingestion jurisdictions affected by the North Anna Power Station, except for Chesterfield County, New Kent County, and Richmond City. It also includes the ingestion jurisdictions of Alexandria City, Arlington County, Fairfax County, Falls Church City, and Richmond County, associated with the Calvert Cliffs Power Station.

The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. No Deficiencies and twenty-four (24) Areas Requiring Corrective Action (ARCA) were identified as a result of this exercise.

LOUISA COUNTY

County Department of Emergency Services
County Department of Health
County Department of Parks and Recreation
County Department of Planning, Building, and Zoning
County Department of Social Services
County Sheriff Police
County Volunteer Rescue Squad
County Water Authority
County Welfare Office
County Animal Control
Trevilians Elementary School
Henrico County Fire/Rescue, Hazardous Material Department
Town of Mineral Fire/Rescue Department
Virginia Agriculture Extension

ORANGE COUNTY

County Department of Emergency Services
County 911 Communications Center
County Administrator's Office
County Board of Supervisors
County Department of Health
County Department of Recreation
County Sheriff's Department
Orange County High School
Virginia Cooperative Extension

SPOTSYLVANIA COUNTY

County Department of Emergency Services
County 911 Communications Center
County Department of Finance
County Department of Social Services
County Department of Utilities
County Fire Administration
County Fire and Rescue Services
County Hazardous Materials Department
County Planning Office
County School Board
County Sheriff's Department
County Volunteer Fire Department 1
Fredericksburg Fire Department
Mary Washington Hospice
Courtland High School

B. Exercise Participants

The following agencies, organizations, and units of government participated in the North Anna Power Station exercise on July 23-25, August 1, and August 13-15, 1996.

COMMONWEALTH OF VIRGINIA

Department of Agriculture and Consumer Services
Department of Emergency Services (VDES)
Department of Game and Inland Fisheries
Department of Health, Bureau of Radiological Health (BRH)
Department of Health, Division of Emergency Medical Services
Department of Health, Division of Water Supply Engineering
Department of Military Affairs
Department of Social Services
Department of Transportation (VDOT)
Cooperative Extension

RISK JURISDICTIONS

CAROLINE COUNTY

County Department of Emergency Services
County 911 Communications Center
County Department of Health
County Department of Public Works
County Department of Recreation and Parks
County Department of Social Services
County Fire and Rescue
County Schools
County Sheriff's Department
Office of the County Administrator

HANOVER COUNTY

County Department of Emergency Services
County 911 Communications Center
County Department of Health
County Department of Social Services
County Emergency Medical Service
County Fire Department
County School System
County Sheriff's Department
Beaver Dam Fire Station 2

Rappahannock Area Community Services Board
Virginia State Park Service
Virginia State Police Area 5
VDOT Post Oak Area Headquarters
Virginia Cooperative Extension

INGESTION JURISDICTIONS - July 23-25, 1996, and August 1, 1996

COMMONWEALTH OF VIRGINIA

VDES
BRH
Department of Health, Office of Written Programs
Department of Health, Division of Water Supply Engineering
Department of Agriculture and Consumer Services, Dairy and Food
Governor's Representative
Virginia Cooperative Extension

ALBEMARLE COUNTY/CHARLOTTESVILLE CITY

County Department of Emergency Services
Virginia Cooperative Extension

ALEXANDRIA CITY

County Department of Emergency Services
City Manager's Office
Alexandria Fire Department

AMELIA COUNTY

County Department of Emergency Services
County Sheriff's Office
Virginia Cooperative Extension

ARLINGTON COUNTY

County Department of Emergency Services

BUCKINGHAM COUNTY

County Department of Emergency Services
Virginia Cooperative Extension
State Department of Health

CAROLINE COUNTY

County Department of Emergency Services
County Planning Department
Virginia Cooperative Extension

CULPEPER COUNTY

County Department of Emergency Services
County Sheriff s Office

CUMBERLAND COUNTY

County Department of Emergency Services
County Administrator's Office
County Fire/Rescue
County Sheriff's Office
Virginia Cooperative Extension

ESSEX COUNTY

County Department of Emergency Services
County Administrator's Office

FAIRFAX COUNTY

County Department of Emergency Services

FALLS CHURCH CITY

Department of Emergency Services
Office of the City Manager

FAUQUIER COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

FLUVANNA COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

FREDERICKSBURG CITY

County Department of Emergency Services

ORANGE COUNTY

County Department of Emergency Services
County Board of Supervisors
Virginia Cooperative Extension

PAGE COUNTY

County Department of Emergency Services
County Sheriff's Office
County Administrator's Office

POWHATAN COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

PRINCE WILLIAMS COUNTY

County Department of Emergency Services
County Department of Public Works
Virginia Cooperative Extension

RAPPAHANNOCK COUNTY

County Department of Emergency Services
County Sheriff's Department
Virginia Cooperative Extension

RICHMOND COUNTY

County Department of Emergency Services
County Sheriff's Office
Virginia Cooperative Extension

ROCKINGHAM COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

SPOTSYLVANIA COUNTY

County Department of Emergency Services

GOOCHLAND COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

GREENE COUNTY

County Department of Emergency Services
County Administrator's Office
Virginia Cooperative Extension

HANOVER COUNTY

County Department of Emergency Services

HENRICO COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

KING AND QUEEN COUNTY

County Department of Emergency Services

KING GEORGE COUNTY

County Department of Emergency Services
County Sheriff's Office

KING WILLIAM COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

LOUISA COUNTY

County Department of Emergency Services
Virginia Cooperative Extension

MADISON COUNTY

County Department of Emergency Services
County Administrator's Office
County Sheriff's Office
VDES Region 2

STAFFORD COUNTY

County Department of Emergency Services
County Emergency Medical Services

WESTMORELAND COUNTY

County Department of Emergency Services
County Sheriff's Office
County Administrator's Office
Virginia Cooperative Extension

STATE OF MARYLAND

CHARLES COUNTY

County Department of Emergency Services

PRIVATE/VOLUNTEER ORGANIZATIONS

American Red Cross
Radio Amateur Civil Emergency Services (RACES)
Albemarle Amateur Radio Club
WJMA Radio Station
Rappahannock Amateur Radio Club

C. Exercise Timeline

Table 1, on the following page, presents the time at which key events and activities occurred during the North Anna Power Station exercise on August 13-15, 1996. Also included are times notifications were made to the participating jurisdictions/functional entities.

TABLE 1. EXERCISE TIMELINE

DATE AND SITE: *August 13, 1996, North Anna Power Station*

Emergency Classification Level or Event	Time Utility Declared	Time Notification Was Received or Action Was Taken								
		Virginia State EOC	Accident Assessment State EOC	LEOF – State BRH	Joint Public Information Center	Caroline County EOC	Hanover County EOC	Louisa County EOC	Orange County EOC	Spotsylvania County EOC
Unusual Event	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Alert	0930	0938	0938	0938	N/A	0938	0938	0938	0938	0938
Site Area Emergency	1101	1107	1107	1101	N/A	1107	1107	1107	1107	1107
General Emergency	1206	1215	1215	1206	1215	1215	1215	1215	1215	1215
Simulated Radiation Release Started	1204	1215	1210	1204	1215	1215	1215	1215	1215	1215
Simulated Radiation Release Terminated	N/A	1418	1418	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Facility Declared Operational		0955	0935	1010	1015	1040	1027	0955	0938	1000
Declaration of State of Emergency		1142	1142	N/A	1145	1206	1145	1154	1145	1151
Exercise Terminated		1418	1418		1445	1445	1445	1445	1445	1445
1st Alert & Notification Decision Time		1151[D]	1151	N/A	N/A	1151	1151	1151	1151	1151
1st Siren Activation		1159	N/A	N/A	N/A	N/A	N/A	1159[A]	N/A	N/A
1st EAS/EBS Message		1200	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2nd Alert & Notification Decision Time		1304[D]	1304	N/A	N/A	1304	1304	1304	1304	1304
2nd Siren Activation		1312	N/A	N/A	N/A	N/A	N/A	1312[A]	N/A	N/A
2nd EAS/EBS Message		1315	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1st Protective Action Decision (Sectors Affected) Shelter: Zones 8 & 9 Place Livestock on Stored Feed & Covered Water: Zones 2, 3, 5, 6, 7, 8, 9, & 26 out to 10 miles		1151	1151	N/A	N/A	1151	1151	1151	1151	1151
2nd Protective Action Decision Shelter: Zones 16-24 Evacuate: Zones 2-15, 25, & 26		1304	1304	N/A	N/A	1304	1304	1304	1304	1304
KI Administration Decision Emergency Workers Advised Not to Take		1312	1312	N/A	N/A	N/A	N/A	N/A	N/A	N/A

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

IV. EXERCISE EVALUATION AND RESULTS

Contained in this section are the results and findings of the evaluation of all jurisdictions and functional entities which participated in the July 23-25, 1996, August 1, 1996, and August 13-15, 1996, exercise to test the offsite emergency response capabilities of State and local governments in the 10- and 50-mile EPZs surrounding the North Anna Power Station.

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

A. Summary Results of Exercise Evaluation — Table 2

The matrix presented in Table 2, on the following page(s), presents the status of all exercise objectives from FEMA-REP-14 scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise objectives are listed by number and the demonstration status of those objectives is indicated by the use of the following letters:

M — Met (no Deficiency or ARCAs assessed)

D — Deficiency assessed

A — ARCA(s) assessed (not affecting the health and safety of the public)

N — Not Demonstrated (reason explained in Section IV.B.)

U — Unresolved ARCA(s) from prior exercise(s)

Blank — Not scheduled for demonstration

TABLE 2. SUMMARY RESULTS OF 1996 EXERCISE EVALUATION

DATE AND SITE: *August 13, 1996, North Anna Power Station*

JURISDICTION/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
PLUME EXPOSURE PATHWAY																																	
DAY 1																																	
COMMONWEALTH OF VIRGINIA																																	
STATE EMERGENCY OPERATIONS CENTER	M	M	M	M					M	M	A	A	M	M																			
LOCAL EMERGENCY OPS FACILITY/ACCIDENT ASSESSMENT			M	M	M		U		M					M																		
JOINT PUBLIC INFORMATION CENTER		M		M								M	A																			
STATE FIELD MONITORING TEAM 1				M	M	A		U						M																		
STATE FIELD MONITORING TEAM 2				M	M	M		U						M																		
RISK JURISDICTIONS																																	
CAROLINE COUNTY																																	
EMERGENCY OPERATIONS CENTER	M	M	A	A	M					A		A	M	M	M		M															
FIELD MONITORING TEAM				M	M	M								M																		
ROUTE ALERTING				M	M					M				M																		
HANOVER COUNTY																																	
EMERGENCY OPERATIONS CENTER	M	M	M	M	A					M		M	M	M	M		M															
FIELD MONITORING TEAM			U	M	M	M								M																		
ROUTE ALERTING				A	M					M				M																		

LEGEND: M = Met (No Deficiency or ARCAs assessed)
A = ARCA(s) assessed (Not affecting health and safety of public)
D = Deficiency(ies) assessed
U = Unresolved ARCA(s) from p or exercise(s)
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (Reason explained in Section IV.B.)

TABLE 2 GOES HERE

TABLE 2. SUMMARY RESULTS OF 1996 EXERCISE EVALUATION

DATE AND SITE: *August 13, 1996, North Anna Power Station*

JURISDICTION/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
LOUISA COUNTY																																	
EMERGENCY OPERATIONS CENTER	M	A	A	M	A					A		A	M	M	M																		
FIELD MONITORING TEAM				M	M	M								M																			
PRIMARY ROUTE ALERTING				M	A					A				M																			
TRAFFIC/ACCESS CONTROL				M	A									M			M																
EVACUATION ASSEMBLY CENTER				M	M													M	M			M											
MEDICAL SERVICES TRANSPORTATION					A															M													
ORANGE COUNTY																																	
EMERGENCY OPERATIONS CENTER	M	M	M	M	M					M		M	M	M	M		M																
FIELD MONITORING TEAM				M	A	M								M																			
ROUTE ALERTING				M	M					M				M																			
SPOTSYLVANIA COUNTY																																	
EMERGENCY OPERATIONS CENTER	M	A	M	M	U					M		M	M	U	M																		
FIELD MONITORING TEAM				M	M	M								M																			
PRIMARY ROUTE ALERTING				M	M					M				M																			
TRAFFIC/ACCESS CONTROL				M	A									M			M																
EVACUATION ASSEMBLY CENTER				M	M													M	M			M											
MEDICAL SERVICES FACILITY					M																M												

LEGEND: M = Met (No Deficiency or ARCAs assessed)
A = ARCA(s) assessed (Not affecting health and safety of public)
D = Deficiency(ies) assessed
U = Unresolved ARCA(s) from prior exercise(s)
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (Reason explained in Section IV.B.)

TABLE 2. SUMMARY RESULTS OF 1996 EXERCISE EVALUATION

DATE AND SITE: *August 14,1996, North Anna Power Station*

JURISDICTION/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
INGESTION EXPOSURE PATHWAY																																	
DAY 2																																	
COMMONWEALTH OF VIRGINIA																																	
LOCAL EMERGENCY OPS FACILITY/ACCIDENT ASSESSMENT																										M	M						
STATE FIELD SAMPLING TEAM 1	M			M	M																			M									
STATE FIELD SAMPLING TEAM 2	M			M	M																			M									
STATE LABORATORY - MOBILE				M	M																				M								

LEGEND: M = Met (No Deficiency or ARCAs assessed)
A = ARCA(s) assessed (Not affecting health and safety of public)
D = Deficiency(ies) assessed
U = Unresolved ARCA(s) from prior exercise(s)
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (Reason explained in Section IV.B.)

TABLE 2. SUMMARY RESULTS OF 1996 EXERCISE EVALUATION

DATE AND SITE: *July 23-25, 1996, and August 1 and 15, 1996, North Anna Power Station*

JURISDICTION/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
HANOVER COUNTY EOC												M	M														M		A				
HENRICO COUNTY EOC				M								M	M														M						
KING AND QUEEN COUNTY EOC				M								M	M														M						
KING GEORGE COUNTY EOC				M							M	A	M														M						
KING WILLIAM COUNTY EOC				M								M	M														M						
LOUISA COUNTY EOC												M	M														M		A				
MADISON COUNTY EOC				M								M	M														M						
ORANGE COUNTY EOC												M	M														M		M				
PAGE COUNTY EOC				M								M	M														M						
POWHATAN COUNTY EOC				M								M	M														M						
PRINCE WILLIAM COUNTY EOC				M								M	M														M						
RAPPAHANNOCK COUNTY EOC				M								M	M														M						
RICHMOND COUNTY				M								A	M														M						
ROCKINGHAM COUNTY EOC				M								M	M														M						
SPOTSYLVANIA COUNTY EOC												M	M														M		A				
STAFFORD COUNTY EOC				M								M	M														M						
WESTMORELAND COUNTY EOC				M								M	M														M						
STATE OF MARYLAND																																	
CHARLES COUNTY EOC				M								M	M														M						

LEGEND: M = Met (No Deficiency or ARCAs assessed)
A = ARCA(s) assessed (Not affecting health and safety of public)
D = Deficiency(ies) assessed
U = Unresolved ARCA(s) from prior exercise(s)
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (Reason explained in Section IV.B.)

TABLE 2. SUMMARY RESULTS OF 1996 EXERCISE EVALUATION

DATE AND SITE: *July 23-25, 1996, and August 1 and 15, 1996, North Anna Power Station*

JURISDICTION/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
INGESTION EXPOSURE PATHWAY																																	
DAY 3																																	
COMMONWEALTH OF VIRGINIA																																	
STATE EMERGENCY OPERATIONS CENTER	M		M	M							M	M	M	M													M	M	M				
ALBEMARLE COUNTY/CHARLOTTESVILLE CITY EOC				M								M	M														M						
ALEXANDRIA CITY				M								M	M														M						
AMELIA COUNTY EOC				M								M	M														M						
ARLINGTON COUNTY				M								M	M														M						
BUCKINGHAM COUNTY EOC				M								M	M														M						
CAROLINE COUNTY EOC												M	M														M		M				
CULPEPER COUNTY EOC				M								M	M														M						
CUMBERLAND COUNTY EOC				M								M	M														M						
ESSEX COUNTY EOC				M								M	M														M						
FAIRFAX COUNTY EOC				M								M	M														M						
FALLS CHURCH CITY EOC				M								M	M														M						
FAUQUIER COUNTY EOC				M								M	M														M						
FLUVANNA COUNTY EOC				M								M	M														M						
FREDERICKSBURG CITY EOC				M								M	M														M						
GOOCHLAND COUNTY EOC				M								M	M														M						
GREENE COUNTY EOC	M			M								M	M														M						

LEGEND: M = Met (No Deficiency or ARCAs assessed)
A = ARCA(s) assessed (Not affecting health and safety of public)
D = Deficiency(ies) assessed
U = Unresolved ARCA(s) from prior exercise(s)
Blank = Not scheduled for demonstration
N = Not demonstrated as scheduled (Reason explained in Section IV.B.)

B. Status of Jurisdictions Evaluated

This subsection provides information on the evaluation of each participating jurisdiction and functional entity, in a jurisdiction based, issues only format. Presented below is a definition 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 one or more Deficiencies 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 ARCAs assessed during prior exercises remain unresolved. Included is a description of the ARCAs assessed during this exercise and the recommended corrective action to be demonstrated before or during the next biennial exercise.

- **Not Demonstrated** — Listing of the exercise objectives which were not demonstrated as scheduled during this exercise and the reason they were not demonstrated.

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

- **Prior ARCAs - Unresolved** — Descriptions of ARCAs assessed during prior exercises which were not resolved in this exercise. Included is the reason the ARCA remains unresolved and recommended corrective actions to be demonstrated before or during the next biennial exercise.

The following are definitions of the two types of exercise issues which are 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."

1. COMMONWEALTH OF VIRGINIA

1.1 STATE EMERGENCY OPERATIONS CENTER

a. **MET:** Objectives 1, 2, 3, 4, 9, 10, 13, and 14

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objectives 11 and 12

Issue No.: 41-96-11/12-A-01

Description: Farmers were not notified of the second set of protective action decisions (PAD) for livestock. When the first PAD was being discussed, it was decided that PADs for humans would be disseminated through Emergency Broadcast System (EBS) messages, and instructions regarding livestock would be disseminated through news releases. News release 2, which accompanied EBS message 1, gave instructions for livestock. News release 3, which accompanied EBS message 2, did not give instructions for livestock in eight additional zones that were to evacuate or in nine zones that were to shelter in place.

Emergency classification levels (ECL) and the possibility of a radioactive release were not discussed in news releases. The first news release gave the ECL, but subsequent news releases did not. News release 2 mentioned only "worsening conditions." News release 3 was similar in content. (NUREG-0654, E.5, E.7, G.3.a, G.4.a, G.4.b, and G.4.c)

Recommendation: Instructions regarding livestock should be included in news releases whenever such PADs are made. The ECL and the possibility of a radioactive release should be discussed in news releases.

Schedule of Corrective Actions: The Public Information appendix of the Commonwealth of Virginia Radiological Emergency Response Plan will be revised to ensure PADs and ECLs are included in news releases. Further instructions will be given to PIOs on the contents of news releases.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 2, 3, 4, 9, 10, and 13

Issue No.: NAX94-01R

Description: Maps in the State Emergency Operations Center (EOC) were confusing and differed from those in the plan. Lines delineating counties and Emergency Planning Zones (EPZ), as well as routes and other labels,

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

- **Plant Site Identifier** — A two-digit number corresponding to the Utility Billable Plant Site Codes.

- **Exercise Year** — The last two digits of the year the exercise was conducted.

- **Objective Number** — A two-digit number corresponding to the objective numbers in FEMA-REP-14.

- **Issue Classification Identifier** — (D = Deficiency, A = ARCA). Only Deficiencies and ARCAs are included in exercise reports.

- **Exercise Issue Identification Number** — A separate two (or three) digit indexing number assigned to each issue identified in the exercise.

made the maps difficult to read. After the Protective Action Recommendation (PAR) was received, the staff had problems locating the designated zones on the map. The maps on the wall (with one exception) indicating the protective action zones differed slightly from those in the plan. This difference became apparent when the Bureau of Radiological Health (BRH) staff was drafting a message for livestock protection. The protective action was to include only those sectors within the 5-mile protective action zone. The large maps in the State EOC include a small portion of sector 16 in this zone, while the map in the plan does not. (Objective 2; NUREG-0654, H.3, J.10.a, J.10.b, and J.11)

Corrective Action Demonstrated: The maps used to delineate counties, zones, and EPZs were clear and easy to read. They were used in conjunction with overlays to indicate the protective action zones affected. The overlays matched the shape of the protective action zones and came in two colors. Red overlays indicated the evacuated areas, and blue depicted the areas where sheltering was required. These maps were the same as those in the plan.

Issue No.: NAX94-02R

Description: Message 10, which discussed the General Emergency (GE) Emergency Classification Level (ECL) and the PAR, was received at 1225. The runner took the message form to the copy machine in the EOC, where she waited 9 minutes, until 1239, for another person to finish making copies of a radiological health statistics document. Finally, the runner took the message to another copier and made copies. She completed this task at 1240. This sequence of events delayed the distribution of crucial information, which delayed the meeting for the development of the PAD until 1252. (Objective 3; NUREG-0654, A.1.d, A.2.a, and A.2.b)

Corrective Action Demonstrated: The message-handling process has been revised. Now, all messages originate from or are faxed to the Virginia Department of Emergency Services (VDES) message center. The message center staff hand-carries Utility messages to the Coordination Officer so that action can be taken. Other routine or jurisdictional messages are immediately hand-carried to the VDES assessment and coordination staff so that they can be handled immediately or delegated to the appropriate agency for action. The Coordination Officer kept copies of messages requiring delegated action so that they could be tracked to completion.

Issue No.: NAX94-03R

Description: A second alert and notification (A&N) sequence was not demonstrated. The extent-of-play agreement indicated that a second EBS message would also be transmitted to the radio station in conjunction with a second simulated siren activation, but it would not be acted upon. After

Issue No.: 62-95-09-A-01 (Surry)

Description: When the State EOC received notification of the Site Area Emergency (SAE) ECL from the Utility, the State was aware that nonessential plant personnel had been evacuated during the Alert. In consultation with State staff and local directors, the Director of Operations decided not to implement automatic 2-mile sheltering because the SAE declaration was not driven by a radiological release. The Director of Operations described the plan provision concerning automatic 2-mile protective action as giving him the "capability" to implement such action. However, the State plan, Tab A to Appendix 4, Section C, page 4-11, Site Area Emergency, states, "If the power plant evacuates nonessential personnel, an automatic protective action *will* be initiated out to two miles off-site (emphasis added)." The Director of Operations' decision was inconsistent with the plan. (Objective 9; NUREG-0654, N.1.a)

Corrective Action Demonstrated: The State plan has been revised to indicate protective action options, not automatic protective actions, at the SAE.

Issue No.: 62-95-09-A-03 (Surry)

Description: In converting the Utility's radii and sectors into protective action zones, State EOC staff treated zones inconsistently. They attempted to evacuate the entire zone even if it was only partially within the affected radii and sectors. But they applied this principle inconsistently, as described below:

(1) They evacuated zones 7 and 14 because small portions of those zones lay within the 5-mile radius, although most of the zones were 5-10 miles crosswind (zone 7) or upwind (zone 14) of the release. But they did not evacuate zone 10; part of this zone is located within the 5-mile radius, but most of it is 5-10 miles outside the 5-mile radius and crosswind.

(2) They evacuated zones 1, 2, 4, 5, and 7 but not zone 3, which does not technically touch the 5-mile radius or sectors N, P, or Q, but lies geographically *between* zones they evacuated. (Objective 9; NUREG-0654, J.9)

Corrective Action Demonstrated: The VDES staff at the State EOC converted the Utility's recommended protective action areas into protective action zones in a logically consistent manner.

f. **PRIOR ARCAs - UNRESOLVED:** Objective 11

Issue No.: NAX94-04R

activation of the EBS following the PAD, the Coordination Officer and the controller discussed the need for transmitting a second message to the radio station. They decided that this procedure might cause confusion and result in an inappropriate message being aired. The controller indicated that this demonstration was not necessary, and the second EBS message could be simulated. Nothing was mentioned regarding the coordination and simulation of siren activation. No record of a second EBS message was made, nor were the counties contacted to coordinate simulation of sirens. (Objective 10; NUREG-0654, E.6)

Corrective Action Demonstrated: Two complete A&N sequences were demonstrated, including EBS messages.

Issue No.: SYX93-05R (Surry)

Description: On several occasions, the BRH team at the State EOC and the BRH team at the Local Emergency Operations Facility (LEOF) transmitted or received untimely information, or they were unaware of certain events. For example, the BRH team at the LEOF did not inform the BRH team at the State EOC of the offsite release that occurred at 1245 until 1321. The BRH team at the State EOC did not have a detailed understanding of the location of the Utility or county field monitoring team (FMT) activities. The BRH team at the LEOF was unaware that a total of three PADs were issued by the State EOC. The BRH team at the LEOF participated in discussions associated with the second PAD but were not informed that it was actually implemented. In fact, they believed that the third PAD was the second and final PAD. They were also unaware that potassium iodide (KI) had been issued to Surry County emergency workers. (Objective 4; NUREG-0654, A.1.d and F)

Corrective Action Demonstrated: Communications were established between the BRH personnel at the LEOF and those at the State EOC. Communications were almost continuous from their arrival at 1010 until the exercise terminated at about 1445. Dose assessment and PAR information were compared, and no confusion regarding PARs existed at the LEOF. At one point, the exact final implementation PAD was checked with VDES.

Issue No.: SYX93-26R (Surry)

Description: Six rumor calls per hour were required by the extent-of-play agreement, but an average of only two calls per hour were received. (Objective 13; NUREG-0654, G.4.b and G.4.c)

Corrective Action Demonstrated: The rumor control teams received the prescribed number of calls.

Description: The EBS message did not address instructions for transients, items to leave or take when evacuating, how often the EBS message would be rebroadcast, rumor control numbers, and information on plant status. (Objective 11; NUREG-0654, E.5 and E.7)

Reason ARCA Unresolved: The pre-scripted EBS messages do not address the following: instructions for transients (addressed only in the first EBS message), what to leave behind and what to take along when evacuating, and rumor control telephone numbers (discussed in news releases only). Listeners were told to consult their emergency calendars or the yellow pages, which mentioned what to leave behind and what to take along when evacuating.

Recommendation: All EBS messages should contain all pertinent information (e.g., instructions for transients, items to take or leave behind when evacuating, and how often the EBS messages will be broadcast, rumor control numbers, and information on plant status).

State Response: Due to the impending transition to EAS, EBS procedures will not be revised to ensure the inclusion of the recommended information. This information will be provided in news releases.

Issue No.: NAX92-47R

Description: The pre-scripted EBS messages lack critical information and instructions to the public in a number of subject areas. (Objective 11; NUREG-0654, E.5 and G.4.b)

Reason ARCA Unresolved: The pre-scripted EBS messages do not address the following: instructions for transients (addressed only in the first EBS message), what to leave behind and what to take along when evacuating, and rumor control telephone numbers (discussed in news releases only). Listeners were told to consult their emergency calendars or the yellow pages, which mentioned what to leave behind and what to take along when evacuating.

Recommendation: All EBS messages should contain all pertinent information (e.g., instructions for transients, items to take or leave behind when evacuating, and how often the EBS messages will be broadcast, rumor control numbers, and information on plant status).

State Response: Due to the impending transition to EAS, EBS procedures will not be revised to ensure the inclusion of the recommended information. This information will be provided in news releases.

1.2 LOCAL EMERGENCY OPERATIONS FACILITY/ACCIDENT ASSESSMENT

a. **MET:** Objectives 4, 5, 9, and 14

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 3, 4, and 7

Issue No.: NAX94-09R

Description: The FTC at the LEOF did not receive data from all county FMTs. (Objective 7; NUREG-0654, I.8, I.10, and I.11)

Corrective Action Demonstrated: The plan has been modified. The information the plans requires to be sent to the LEOF (i.e., FMT available or on duty) was received in a timely manner at 1057, 1210, 1211, 1212, and 1213, before or about the same time as the start of the release (1205).

Issue No.: NAX90-04R

Description: Three FMTs performed field monitoring and sampling tasks (Utility, State, and county). However, none of these activities was coordinated. At times, Utility and State FMTs were monitoring and sampling in the same locations. Furthermore, the FMTs did not have a central location for reporting results so that the best use could be made of all information to assist in the accident assessment process. (Objective 3; NUREG-0654, A.1.d and A.2.a)

Corrective Action Demonstrated: The Utility and BRH Field Team Coordinators (FTC) managed the two Utility FMTs and the two State FMTs, respectively. According to the county plans, the county FMTs were to notify their Radiological Officer if any measurements were above background.

Issue No.: NAX90-07R

Description: Various communications problems were identified on both days of the exercise. Not all the radios worked, and some were on different frequencies; at times, radio transmissions at the LEOF were unanswered for up to 15 minutes; the ranges of some

instruments were limited; and neither the State or county FMTs nor the LEOF BRH personnel prefaced or ended any of their messages with the words, "This is a drill." Reportedly, people reacted to information heard over the radios, thinking the drill was an actual emergency. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: Communications were maintained with the State FMTs and the mobile laboratory. Transmissions were concluded with the words, "This is a drill."

Issue No.: SYX93-04R (Surry)

Description: The State plan, Appendix 17.3, pages 17.3-7, Section 4.3 (4.3.5), states: "After the plume has been detected, instruct the team(s) to begin traversing the plume in order to find the centerline." The State FMTs were not instructed to determine the centerline of the plume. Instead, they were sent to preselected monitoring locations (P-5, N-7, and N-4) and remained at these points throughout the exercise. (Objective 7; NUREG-0654, I.11)

Corrective Action Demonstrated: The State FMTs were directed to preselected monitoring locations, one at SK-6 (about 5.5 miles from the plant) and one at SK-7 (about 7 miles from the plant). The FTC at the LEOF instructed them to take measurements. As the plume was detected, they were to find the centerline and collect an air sample.

Issue No.: SYX93-05R (Surry)

Description: On several occasions, the BRH team at the State EOC and the BRH team at the LEOF transmitted or received untimely information, or they were unaware of certain events. For example, the BRH team at the LEOF did not inform the BRH team at the State EOC of the offsite release that occurred at 1245 until 1321. The BRH team at the State EOC did not have a detailed understanding of the location of the Utility or county FMT activities. The BRH team at the LEOF was unaware that a total of three PADs were issued by the State EOC. The BRH team at the LEOF participated in discussions associated with the second PAD but were not informed that it was actually implemented. In fact, they believed that the third PAD was the second and final PAD. They were also unaware that KI had been issued to Surry County emergency workers. (Objective 4; NUREG-0654, A.1.d and F)

Corrective Action Demonstrated: Communications were established between the BRH personnel at the LEOF and those at the State EOC. Communications were almost continuous from their arrival at 1010 until the exercise terminated at about 1445. Dose assessment and PAR information were compared, and no confusion regarding PARs was apparent at the LEOF. At one point, the exact final implementation PAD was checked with VDES.

Issue No.: 62-95-04-A-05 (Surry)

Description: The Radiological Data Network (RADNET) communication system was not operational during the exercise. This problem was identified during the previous exercise at several local EOCs. During this exercise, the system was again reported to be inoperable at the Isle of Wight EOC and the Accident Assessment Group in the State EOC. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: The RADNET has been replaced by a new system, called Group Wise, which handles radiological data and has a much greater capability. This near-real-time e-mail system can broadcast messages to all local EOCs and selected State agencies. The training for local personnel is scheduled to begin in September.

Issue No.: 62-95-07-A-06 (Surry)

Description: The State BRH team did not provide technical accident assessment assistance to the State EOC staff in developing the PAD. (Objective 7; NUREG-0654, I.10)

Corrective Action Demonstrated: The BRH staff at the State EOC provided frequent technical input to the VDES decision development process. Information was conveyed from the LEOF and from independent assessments conducted by the BRH staff at the State EOC.

f. **PRIOR ARCAs - UNRESOLVED:** Objective 7

Issue No.: NAX94-08R

Description: The plume position and FMT position were not plotted on the map. The times of the FMT data were not posted on the status board; previous data were erased as new data became available. (Objective 7; NUREG-0654, I.10 and I.11)

Reason ARCA Unresolved: Data were not plotted on the map during this exercise. Data were recorded on a status board and the projected plume trajectory by sector was added to the 10-mile EPZ map, but no actual data points were plotted. Only two data points (locations) were reported for Utility FMTs.

Recommendation: Additional training should be provided to BRH personnel, with an emphasis on the importance of recording the times of the FMT readings and plotting the plume, FMT positions, and FMT data on a map.

State Response: FEMA-REP-14, Objective 7 does not have any requirements for plotting FMT data on maps. BRH believes that the combination of status boards, which contain data for field team location by sector and distance, field measurement, and time of measurement; and the 10-mile EPZ map, which indicates the pre-selected monitoring points and the downwind sector are adequate to represent the FMT efforts. The FMT is also archived into the communications log for post-plume assessment activities. This ARCA should be removed.

FEMA Response: FEMA-REP-14, Objective 7, Paragraph 5, Line 5 states that, "The use of plots on a map or other prearranged format should be used for transmitting the information and recommendations." In addition, FEMA-REP-15, Objective 7, Point of Review I.10.,11.7.6.(a) addresses the questions about plume locations plotted on the map.

1.3 JOINT PUBLIC INFORMATION CENTER

a. **MET:** Objectives 2, 4, and 12

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 13

Issue No.: 41-96-13-A-02

Description: The extent-of-play agreement called for sufficient messages so that the rumor control staff could identify a trend in the calls they received. The rumor control staff could not discern any trends, although they were questioned about this subject. (NUREG-0654, G.4.c and N.1.a)

Recommendation: An effort should be made to inject rumor control messages that indicate trends, and the rumor control staff should identify those trends and report them to the public information staff.

Schedule of Corrective Actions: Additional emphasis will be given to rumor control staff's ability to identify trends.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 2, 12, and 13

Issue No.: NAX94-06R

Description: Press releases were not corrected when they were found to be in error. Press release 3 did not accurately describe the protective action zones. A corrected press release was issued; however, this correction did not include zone 25 among the areas to be evacuated. This second error was never noted or corrected throughout the exercise. (Objective 12; NUREG-0654, E.7)

Corrective Action Demonstrated: All State messages were prepared by the EOC and included in the media briefing at the JPIC. One message contained references to both Virginia nuclear sites (i.e., Surry and North Anna). The State Public Information Officer (PIO) corrected this error before the briefing and initiated a cross-checking system to avoid issuing incorrect data.

Issue No.: NAX94-07R

Description: The State provided only one person to staff the rumor control cell, although the extent-of-play agreement called for two persons. (Objective 13; NUREG-0654, G.4.a, G.4.b, and G.4.c)

Corrective Action Demonstrated: State staffing for the rumor control group included three VDES employees; one was the supervisor.

Issue No.: NAX92-04R

Description: The VDES PIO's news releases did not describe protective action zones in terms of familiar geographic landmarks and boundaries, nor did they include instructions for transients, use of ad hoc respiratory protection, items to leave and take when evacuating, evacuation routes, or information relative to schools. (Objective 12; NUREG-0654, E.5 and G.4.b)

Corrective Action Demonstrated: The JPIC spokesperson covered the essential issues and referred to press releases, EBS messages, the Utility

calendar, and the local telephone book. The spokesperson provided the necessary information to enable the public to evacuate or shelter, as appropriate. In addition, the mock media raised specific questions about evacuating and sheltering.

Issue No.: SYX93-06R (Surry)

Description: No standing displays of maps, status boards displaying ECLs and PADs, or other information displays were used in or near the media briefing and work areas. There was no media sign-in area nor an area where the media could pick up news releases, media kits, EBS messages, or other vital information. No area was set aside for media interviews. (Objective 2; NUREG-0654, H.3)

Corrective Action Demonstrated: The ECLs were displayed in the media briefing area; PADs and other emergency information were included in media briefings and press releases. Appropriate maps and displays were available and used, as required, in the briefing, and EPZ area maps were displayed.

Issue No.: 62-95-12-A-07 (Surry)

Description: The VDES PIO gave a comprehensive briefing on protective actions and measures to be taken by the public. However, instructions on evacuation routes, what to do when evacuating, how to manage transients without shelter and special populations (including transport-dependent individuals) were not included. (Objective 12, NUREG-0654, E.7 and G.4.a)

Corrective Action Demonstrated: The JPIC spokesperson covered the essential issues and referred to press releases, EBS messages, the Utility calendar, and the local telephone book. The spokesperson provided the necessary information to enable the public to evacuate or shelter, as appropriate. In addition, the mock media raised specific questions about evacuating and sheltering.

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

1.4 STATE FIELD AIR MONITORING TEAM 1

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

b. **DEFICIENCY:** None

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

Issue No.: 41-96-06-A-03

Description: The FMT did not check their survey instruments for proper response with a check source, did not perform a battery check, were not familiar with proper use of survey equipment, and were not aware that they had found the plume. There was a 10-minute delay in reporting elevated ambient radiation levels. (NUREG-0654, H.10, H.12, I.7, I.8, and I.11))

Recommendation: The FMT should be provided additional training on checking and using their survey equipment, monitoring, and reporting.

Schedule of Corrective Actions: Remedial training will be offered to the field team members.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 3, 4, and 8

Issue No.: NAX90-04R

Description: Three FMTs performed field monitoring and sampling tasks (Utility, State, and county). However, none of these activities was coordinated. At times, Utility and State FMTs were monitoring and sampling in the same locations. Furthermore, the FMTs did not have a central location for reporting results so that the best use could be made of all information to assist in the accident assessment process. (Objective 3; NUREG-0654, A.1.d and A.2.a)

Corrective Action Demonstrated: State FMT 1 reported all their results to BRH personnel at the LEOF.

Issue No.: NAX90-07R

Description: Various communications problems were identified on both days of the exercise. Not all the radios worked, and some were on different frequencies; at times, radio transmissions at the LEOF were unanswered for up to 15 minutes; the ranges of some instruments were limited; and neither the State or county FMTs nor the LEOF BRH personnel prefaced or ended any of their messages with the words, "This is a drill." Reportedly, people reacted to information heard over the radios, thinking the drill was an actual emergency. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: State FMT 1 communicated effectively with the LEOF throughout the exercise. All messages were prefaced with the words, "This is a drill."

State Response: The BRH procedures will be modified to include gamma measurements for the beginning, middle, and completion of air sampling.

1.5 STATE FIELD AIR MONITORING TEAM 2

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 3, 4, and 8

Issue No.: NAX90-04R

Description: Three FMTs performed field monitoring and sampling tasks (Utility, State, and county). However, none of these activities was coordinated. At times, Utility and State FMTs were monitoring and sampling in the same locations. Furthermore, the FMTs did not have a central location for reporting results so that the best use could be made of all information to assist in the accident assessment process. (Objective 3; NUREG-0654, A.1.d and A.2.a)

Corrective Action Demonstrated: State FMT 2 was sent to positions SK-6 and SK-7 and given specific routes when traversing the plume. They saw a Utility FMT at position K5 while traversing the plume. All results were reported to the FTC at the LEOF.

Issue No.: NAX90-07R

Description: Various communications problems were identified on both days of the exercise. Not all the radios worked, and some were on different frequencies; at times, radio transmissions at the LEOF were unanswered for up to 15 minutes; the ranges of some instruments were limited; and neither the State or county FMTs nor the LEOF BRH personnel prefaced or ended any of their messages with the words, "This is a drill." Reportedly, people reacted to information heard over the radios, thinking the drill was an actual emergency. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: Two radios on the same frequency were used (one hand-held and one car-mounted). Communications were maintained with both the FTC at the LEOF and the mobile laboratory. The FMT, the FTC, and the radio operator at the staging area consistently used the phrase "This is a drill" during the exercise.

Issue No.: 62-95-08-A-08 (Surry)

Description: The FTC requested only one air sample. However, the extent-of-play agreement required a minimum of two samples. (Objective 8; NUREG-0654, I.9)

Corrective Action Demonstrated: Two air samples were collected, in accordance with the extent-of-play agreement.

Issue No.: 62-95-08-A-09 (Surry)

Description: The one air sample was initiated at 1411, but it took the FMT about 6 minutes to set up the tandem holder with a simulated silver zeolite cartridge and a filter (used for collection of airborne particulates) and to connect the holder to the air sampler. However, the sampling procedures did not address the need to preload the tandem holder for the air sampler before deployment into the field. (Objective 8; NUREG-0654, I.8)

Corrective Action Demonstrated: State FMT 1 loaded cartridges without undue delay.

Issue No.: 62-95-08-A-11 (Surry)

Description: The FMT did not collect two air samples at different locations, as required in the extent-of-play agreement. (Objective 8; NUREG-0654, I.8)

Corrective Action Demonstrated: Two air samples were collected, in accordance with the extent-of-play agreement.

f. **PRIOR ARCAs - UNRESOLVED:** Objective 8

Issue No.: 62-95-08-A-10 (Surry)

Description: Because they were not instructed to do so, FMT 2 did not conduct gamma measurements during and after collection of the air sample, in accordance with FEMA-REP-14, to verify that the plume remained constant during the sampling period. (Objective 8; NUREG-0654, I.9)

Reason ARCA Unresolved: The plan has not been revised; it only calls for gamma measurement before taking an air sample. The FMT made one measurement, in accordance with their procedures.

Recommendation: The FMT procedures should be revised to include the need to conduct gamma measurements before taking an air sample, while acquiring the sample, and upon conclusion of the sampling process, in accordance with FEMA-REP-14.

plume was present. The area reading was reported to the FTC at the LEOF, but the FTC indicated that actual readings were not necessary. With another Controller inject, the FMT decided to move to a low-background area, purge the sample, and count it. The results were not reported to the LEOF. The second air sample was taken according to procedure, and the results were reported at approximately 1427.

Recommendation: The FMT procedures should be revised to include the need to conduct gamma measurements before taking an air sample, while acquiring the sample, and upon conclusion of the sampling process, in accordance with FEMA-REP-14.

State Response: The BRH procedures will be modified to include gamma measurements for the beginning, middle, and completion of air sampling.

2. RISK JURISDICTIONS

2.1 CAROLINE COUNTY

2.1.1 EMERGENCY OPERATIONS CENTER

a. **MET:** Objectives 1, 2, 5, 13, 14, 15, and 17

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objectives 3, 4, 10, and 12

Issue No.: 41-96-03-A-04

Description: The EOC staff did not prioritize incoming messages. (NUREG-0654, A.1.d, 2.a, 2.b, and N.1.a)

Recommendation: The current internal message-handling procedures should be reviewed and revised to ensure that important messages are prioritized.

Schedule of Corrective Actions: The current message handling system will be reviewed and improved where warranted.

Issue No.: 41-96-10-A-05

Description: The Emergency Services Coordinator (ESC) failed to notify the Sheriff's Office to implement route alerting until 52 minutes after the State decision to activate the A&N system. Although it took the Sheriff's Office 2 minutes to complete the route alerting, the total elapsed time from

the decision to activate the A&N system to completion of the route was 54 minutes. (NUREG-0654, A.1.d, 2.a, 2.b, and N.1.a)

Recommendation: The ESC should use a checklist to follow his procedures.

Schedule of Corrective Actions: The method for transmitting route alerting instructions will be reviewed and improved where warranted.

Issue No.: 41-96-12-A-06

Description: The media briefing and news releases did not include instructions for transients without shelter. (NUREG-0654, E.7 and G.4.b)

Recommendation: When sheltering is directed as a protective action, all news releases and media briefings should contain sheltering information for transients.

Schedule of Corrective Actions: Procedures will be revised to indicate what should be included in briefings and news releases.

d. **NOT DEMONSTRATED:** None

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

f. **PRIOR ARCAs - 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 ARCAs - RESOLVED:** Objectives 3, 4, and 5

Issue No.: NAX90-04R

Description: Three FMTs performed field monitoring and sampling tasks (Utility, State, and county). However, none of these activities was coordinated. At times, Utility and State FMTs were monitoring and sampling in the same locations. Furthermore, the FMTs did not have a central location for reporting results so that the best use could be made of

Issue No.: 62-95-08-A-08 (Surry)

Description: The FTC requested only one air sample to be taken. However, the extent-of-play agreement required a minimum of two samples. (Objective 8; NUREG-0654, I.9)

Corrective Action Demonstrated: Two air samples were requested and performed.

Issue No.: 62-95-08-A-09 (Surry)

Description: The one air sample was initiated at 1411, but it took the FMT about 6 minutes to set up the tandem holder with a simulated silver zeolite cartridge and a filter (used for collection of airborne particulates) and to connect the holder to the air sampler. However, the sampling procedures do not address the need to preload the tandem holder for the air sampler prior to deployment into the field. (Objective 8; NUREG-0654, I.8)

Corrective Action Demonstrated: State FMT 2 quickly set up the first sample. They loaded the sample head immediately after removing the first sample, thereby minimizing the time necessary for setting up the second sample.

Issue No.: 62-95-08-A-11 (Surry)

Description: The FMT did not collect two air samples at different locations, as required in the extent-of-play agreement. (Objective 8; NUREG-0654, I.8)

Corrective Action Demonstrated: State FMT 2 took two air samples, as required.

f. **PRIOR ARCAs - UNRESOLVED:** Objective 8

Issue No.: 62-95-08-A-10 (Surry)

Description: Because they were not instructed to do so, FMT 2 did not conduct gamma measurements during and after collection of the air sample, in accordance with FEMA-REP-14, to verify that the plume remained constant during the sampling period. (Objective 8; NUREG-0654, I.9)

Reason ARCA Unresolved: The BRH procedures were not revised in the latest edition of the plan, dated July 26, 1996. The need for this revision was demonstrated during the first air sample. The area readings were taken at 1300, and the air sample was started at 1307. The plume arrived at 1304, but the FMT did not realize it until later. After the air sample was taken, the Controller injected that an area reading be taken that indicated that the

all information to assist in the accident assessment process. (Objective 3; NUREG-0654, A.1.d and A.2.a)

Corrective Action Demonstrated: No other FMTs were in the area, and the FMT reported their monitoring results to the county Radiological Officer.

Issue No.: NAX90-07R

Description: Various communications problems were identified on both days of the exercise. Not all the radios worked, and some were on different frequencies; at times, radio transmissions at the LEOF were unanswered for up to 15 minutes; the ranges of some instruments were limited; and neither the State or county FMTs nor the LEOF BRH personnel prefaced or ended any of their messages with the words, "This is a drill." Reportedly, people reacted to information heard over the radios, thinking the drill was an actual emergency. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: Both primary and backup communication systems operated without difficulty. The FMT prefaced and ended their communications with the words, "This is a drill."

Issue No.: NAX90-09R

Description: The FMTs from the Department of Agriculture and the State Water Control Board were not provided with radiation detection instruments or protective clothing to minimize personal contamination. Much of the equipment necessary to take samples was not provided. The FMTs had only plastic bags and writing materials. The equipment list shown in the county plan for FMTs identifies only CD V-742 dosimeters, which have a range of 0-200 R. Used alone, these dosimeters are not acceptable because a dose of 0.5 R cannot be measured accurately on a 0-200 R dosimeter. (Objective 5; NUREG-0654, K.3.a, K.3.b, and K.4)

Corrective Action Demonstrated: The Caroline County FMT was issued both a Victoreen model 545 (0-20 R) and a CD V-742 (0-200 R), in accordance with Appendix 7, Section II.B, page 7-1, of the county plan.

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

2.1.3 ROUTE ALERTING

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objective 10

Issue No.: NAX94-12R

Description: The primary route alerting team misinterpreted radio communications from the Caroline County ESC and initiated primary route alerting before the PAD and sounding of the sirens. (Objective 10; NUREG-0654, E.6)

Corrective Action Demonstrated: During the exercise, the police officer initiated primary route alerting after the PAD was communicated to him from the Sheriff's dispatch point.

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

2.2 HANOVER COUNTY

2.2.1 EMERGENCY OPERATIONS CENTER

a. **MET:** Objectives 1, 2, 3, 4, 10, 12, 13, 14, 15, and 17

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 5

Issue No.: 41-96-05-A-07

Description: The Hanover County FMT was not informed of the GE declaration or to don protective clothing. Although the County was informed of a radiological release and the EOC staff was briefed, the FMT was not notified. The Hanover County Radiological Officer's procedure calls for notifying the FMT of the declaration of a GE, however, the FMT was not notified. (NUREG-0654, K.3.b and K.4)

Recommendation: The Hanover County Radiological Officer should receive further training on adhering to the actions required by the procedures.

Schedule of Corrective Actions: Additional training will be offered.

d. **NOT DEMONSTRATED:** None

Issue No.: NAX90-09R

Description: The FMTs from the Department of Agriculture and the State Water Control Board were not provided with radiation detection instruments or protective clothing to minimize personal contamination. Much of the equipment necessary to take samples was not provided. The FMTs had only plastic bags and writing materials. The equipment list shown in the county plan for FMTs identifies only CD V-742 dosimeters, which have a range of 0-200 R. Used alone, these dosimeters are not acceptable because a dose of 0.5 R cannot be measured accurately on a 0-200 R dosimeter. (Objective 5; NUREG-0654, K.3.a, K.3.b, and K.4)

Corrective Action Demonstrated: The Hanover County FMT was issued both a Victoreen model 545 (0-20 R) and a CD V-742 (0-200 R), in accordance with Appendix 7, Section II.B, page 7-1, of the county plan.

f. **PRIOR ARCAs - UNRESOLVED:** Objective 3

Issue No.: NAX90-04R

Description: Three FMTs performed field monitoring and sampling tasks (Utility, State, and county). However, none of these activities was coordinated. At times, Utility and State FMTs were monitoring and sampling in the same locations. Furthermore, the FMTs did not have a central location for reporting results so that the best use could be made of all information to assist in the accident assessment process. (Objective 3; NUREG-0654, A.1.d and A.2.a)

Reason ARCA Unresolved: The FMT reported to the Operations Chief at the staging area, but according to the FMT Procedures, Appendix 7, page 2, they should report to the Radiological Officer.

Recommendation: The FMT should report to the Radiological Officer as required by the plan.

State Response: Procedures will be revised to reflect the actions taken in the field.

2.2.3 ROUTE ALERTING

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

b. **DEFICIENCY:** None

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

e. **PRIOR ARCAs - RESOLVED:** Objectives 12 and 13

Issue No.: NAX94-13R

Description: The Hanover County PIO did not prepare or conduct any media briefings, as required by the plan (Appendix 2, Public Information Officer Procedures) and the extent-of-play agreement. (Objective 12; NUREG-0654, G.3.a, G.4.a, and G.4.b)

Corrective Action Demonstrated: Four news releases advised residents of the emergency telephone numbers for the PIO and rumor control, ECL changes, and the sheltering advisory for livestock and poultry. County demographics and emergency facility information were included in a simulated media handout, and the PIO conducted a media briefing concerning protective actions for the county.

Issue No.: NAX94-14R

Description: Rumor control forms for recording incoming calls on the rumor control line were not logged consistently. Important information, such as caller name, telephone number, time, and conversation content, was frequently omitted from the record. This inconsistency and incompleteness undermines the execution of the plan requirement in Appendix 2, Section II.H, to ensure that a log of all calls on the rumor control telephone line is maintained. (Objective 13; NUREG-0654, G.4.c)

Corrective Action Demonstrated: Calls were documented on appropriate forms listing time, caller information if available, subject, and response. The ESC was notified of each call; no pattern or trend was apparent.

Issue No.: NAX92-15R

Description: The PIO did not prepare or conduct media briefings, as stated on page 7-2 of the plan. (Objective 12; NUREG-0654, G.3.a)

Corrective Action Demonstrated: Four news releases advised residents of the emergency telephone numbers for the PIO and rumor control, ECL changes, and the shelter' .g advisory for livestock and poultry. County demographics and eme. gency facility information were included in a simulated media handout, and the PIO conducted a media briefing concerning protective actions for the county.

Issue No.: NAX90-21R

Description: No instructions to the public, briefings to the media, or press releases were developed or distributed at the Hanover County EOC. These activities are required by the plan (Appendix 7, Public Information). In

addition, rumor control functions were discussed and not actually demonstrated. It is the belief of the ESC that rumor control is the responsibility of the State EOC and the JPIC. No EBS messages for press releases were received from the State EOC or the JPIC. Hanover County should develop its own public information program as outlined in the county plan. The county response staff should be provided all information and instructions given to the public by the State to use in developing their own briefings and press releases, and the ability to perform these functions should be demonstrated during exercises. (Objectives 12 and 13; NUREG-0654, G, E.2, and E.5)

Corrective Action Demonstrated: Four news releases advised residents of the emergency telephone numbers for the PIO and rumor control, ECL changes, and the sheltering advisory for livestock and poultry. County demographics and emergency facility information were included in a simulated media handout, and the PIO conducted a media briefing concerning protective actions for the county.

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

2.2.2 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 ARCAs - RESOLVED:** Objectives 4 and 5

Issue No.: NAX90-07R

Description: Various communications problems were identified on both days of the exercise. Not all the radios worked, and some were on different frequencies; at times, radio transmissions at the LEOF were unanswered for up to 15 minutes; the ranges of some instruments were limited; and neither the State or county FMTs nor the LEOF BRH personnel prefaced or ended any of their messages with the words, "This is a drill." Reportedly, people reacted to information heard over the radios, thinking the drill was an actual emergency. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: The FMT encountered no communication problems and used the words "This is a drill" in their communications with the Operations Chief at the staging area.

Issue No.: 41-96-04-A-08

Description: When communicating periodic dosimetry readings, the Radiological Officer and the Operations Supervisor at the staging area did not use the phrase, "This is a drill." (NUREG-0654, F.1 and F.2)

Recommendation: The Radiological Officer and the Operations Supervisor should use the phrase, "This is a drill," in all communications.

Schedule of Corrective Actions: All players will again be reminded to use the phrase, "This is a Drill" during exercises.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objective 10

Issue No.: NAX94-29R

Description: The Hanover County primary route alerting team never reported to the EOC for a briefing and a map of the route. The team went directly from their field location to the staging area. The FEMA evaluator arrived late at the staging area because he was not informed of the change in plans. (Objective 10; NUREG-0654, E.6)

Corrective Action Demonstrated: The Hanover County primary route alerting team went directly from their field location to the staging area where the FEMA evaluator was in place. The extent-of-play agreement did not specify that the route alerting team should report to the Hanover EOC before going to the staging area.

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

2.3 LOUISA COUNTY

2.3.1 EMERGENCY OPERATIONS CENTER

a. **MET:** Objectives 1, 4, 13, 14, and 15

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objectives 2, 3, 5, 10, and 12

faxing, internal distribution, or release to the media. In most cases, the PIO used pre-scripted material in the plan as the basis for news releases. But the draft releases did not indicate that this was a drill and did not include information about rumor control telephone numbers. Once the news releases were prepared, they were not copied and distributed to the Louisa County EOC staff. Only the EOC staff members who were directly involved in developing specific news releases (typically, the ESC and the County Extension Agent) knew of their content.

The extent-of-play agreement specifies that each risk jurisdiction is to provide one media briefing on day 1 of the exercise. No media briefing was demonstrated. The ESC and PIO scheduled a media briefing between 1230 and 1245. However, the GE was declared, several rumor calls came in (which the PIO handled), and the media briefing never occurred. (NUREG-0654, E.7, G.4.a, and N.1.a)

Recommendation: The ESC should ensure that the PIO is properly trained. Checklists would be useful. The PIO fielded rumor control calls rather than using the designated staff for that purpose. Better use of the staff would help the PIO handle fast-breaking events.

Schedule of Corrective Actions: Additional training will be offered to the PIO.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objective 2

Issue No.: NAX94-15R

Description: Although the Louisa County EOC was moved to the county's backup facilities, cramped conditions have not changed during the past 4 years. (Objective 2; NUREG-0654, H.3)

Corrective Action Demonstrated: The new EOC facility provides adequate space.

Issue No.: NAX92-27R

Description: The EOC is poorly organized in too small a space, thereby limiting efficient staff participation. (Objective 2; NUREG-0654, H.3)

Corrective Action Demonstrated: The new EOC facility provides adequate space.

Issue No.: NAX90-27R

Issue No.: 41-96-02-A-09

Description: A secondary access door to the EOC, which was initially secured, was unlocked by the staff, and unauthorized persons could enter the EOC. The primary access point was not continuously staffed, as required in the county plan, Appendix 1, Paragraph II.I.4. (NUREG-0654, H.3)

Recommendation: The ESC should ensure that security procedures are maintained at all times, including staffing the primary access point and controlling secondary access points. Electronic magnetic locks requiring a security code or card access should be installed to eliminate accidental unlocking of access doors.

Schedule of Corrective Actions: Procedures will be revised to include security precautions necessary at the new Louisa EOC.

Issue No.: 41-96-03-A-10

Description: Several discrepancies were noted in the way in which information was recorded and displayed at the EOC. The plan-specified EOC security log (Appendix 1, Attachment 1) was not used; instead, a yellow legal pad was used as a facility sign-in/sign-out sheet where the arrival and departure times were not consistently entered. As the exercise progressed, security became lax. The entrance to the EOC was not guarded at all times, a previously locked entrance was opened and left uncontrolled, and several unauthorized persons entered the EOC unchallenged. Messages were recorded on a York County emergency communications center message and routing log instead of a message log (Appendix 1, Attachment 2). Several status boards were not maintained, and two boards (evacuation status and hospital bed availability) were not used at all. The 10-mile EPZ map was not used to track the plume, and information from a previous exercise was left on the map. (NUREG-0654, N.1.a)

Recommendation: The Louisa County ESC should ensure that the EOC staff uses the proper forms and that all displays and maps are used and updated. Also, the ESC should ensure that all security measures are continually enforced at the facility. The EOC staff should receive additional training on the proper use of forms and status boards and security procedures.

Schedule of Corrective Actions: EOC staff will be encouraged to attend training to correct the items noted.

Issue No.: 41-96-05-A-11

Description: The Louisa County EOC does not have sufficient depth in the Radiological Officer function. The regular Radiological Officer was unavailable, and the acting Radiological Officer was inadequately trained for the position. In addition, a replacement Radiological Officer requested by the ESC also was inadequately trained.

When the medical services transportation team received dosimetry at the County EOC before they were dispatched, they were not given a complete briefing by the Radiological Officer. The briefing did not include maximum authorized exposure limits, zeroing of the dosimeters, and radiation effects. The proper complete briefing data are shown in the county plan, Appendix 6, Attachment 5.

The Radiological Officer failed to notify the county FMT of the GE, as required by the plan, Appendix 6, page 5, Paragraph D.3. The Radiological Officer also failed to inform the FMT to don protective clothing after the radiological release at the power station. (NUREG-0654, K.3.b and K.4)

Recommendation: The ESC should ensure that sufficient personnel properly trained in the Radiological Officer function are available at all times. Additional personnel should receive training in all radiological activities described in the plan and be capable of properly briefing and responding to FMTs.

Schedule of Corrective Actions: Additional training will be offered to Radiological Officers.

Issue No.: 41-96-10-A-12

Description: After the first siren activation, the County ESC did not notify the State Department of Game and Inland Fisheries or the Coast Guard Auxiliary to alert and notify boaters on Lake Anna, as called for in the county plan (Appendix 1, pages 1-3, 1-4, and 1-6). After the second siren activation, the ESC initiated A&N procedures for the Lake Anna exception area in accordance with the plan. (NUREG-0654, E.6)

Recommendation: The County ESC should follow procedures in alerting and notifying exception areas in the county.

Schedule of Corrective Actions: Further training will be offered to the ESC to ensure proper notifications are made.

Issue No.: 41-96-12-A-13

Description: The news releases required by the Louisa County plan (Appendix 2, Paragraphs II.C, D, and E; III.B, C, E, and F; and IV.D) were prepared in draft form but not finalized in a form presentable for

Description: The EOC is poorly organized in too small a space, thereby limiting efficient staff participation. The EOC operations room should be located in a more spacious area where staff can function together and stay apprised of actions. (Objective 2; NUREG-0654, H.3)

Corrective Action Demonstrated: The new EOC facility provides adequate space.

f. **PRIOR ARCAs - 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 ARCAs - RESOLVED:** Objectives 3, 4, and 6

Issue No.: NAX94-16R

Description: Ambient radiation readings were taken by the Louisa County FMT. The probe was held near head level, and the results on the survey instrument were read. The readings were not taken in accordance with the county plan, Appendix 7, Section III.F, which states that radiation readings, both open and closed window, are to be taken at 3 feet and 3 inches above ground level. Because the readings were not recorded on the Field Team Survey Record Form listed in Appendix 7, Attachment 1, the data could not properly be reported to the County Radiological Officer. Finally, the FMT did not enclose the detectors of their survey instruments in thin plastic, as stated in the county plan, Appendix 7, Section II.F. (Objective 6; NUREG-0654, I.7, I.8, and I.9)

Corrective Action Demonstrated: Louisa County FMT 1 surveyed their assigned location at 3 feet and 3 inches with the survey instrument window open and closed. The data were recorded on the Field Team Survey Record Form and radioed to the Louisa County EOC. The survey instrument probe was enclosed in a thin plastic bag to reduce the possibility of contamination.

Issue No.: NAX94-17R

Description: The Louisa County FMT was issued a CD V-715 survey instrument, calibrated in November 1993, that read 0.25 R/hr when it was

turned on. The FMT brought out another CD V-715 that was zeroed and turned on to the ×0.1 R/hr scale. When it was turned to the ×1.0 R/hr scale, the instrument read 0.7 R/hr. Both instruments should have read zero because no radiation field was present. (Objective 6; NUREG-0654, H.10)

Corrective Action Demonstrated: CD V-715 and CD V-700 survey instruments have been replaced with solid-state Ludlum 2240 survey instruments with Ludlum 44-6 and 44-9 probes that operated properly.

Issue No.: NAX90-04R

Description: Three FMTs performed field monitoring and sampling tasks (Utility, State, and county). However, none of these activities was coordinated. At times, Utility and State FMTs were monitoring and sampling in the same locations. Furthermore, the FMTs did not have a central location for reporting results so that the best use could be made of all information to assist in the accident assessment process. (Objective 3; NUREG-0654, A.1.d and A.2.a)

Corrective Action Demonstrated: Louisa County FMT 1 was the only FMT observed at this location. No Utility or State FMTs were noted.

Issue No.: NAX90-07R

Description: Various communications problems were identified on both days of the exercise. Not all the radios worked, and some were on different frequencies; at times, radio transmissions at the LEOF were unanswered for up to 15 minutes; the ranges of some instruments were limited; and neither the State or county FMTs nor the LEOF BRH personnel prefaced or ended any of their messages with the words "This is a drill." Reportedly, people reacted to information heard over the radios, thinking the drill was an actual emergency. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: Louisa County FMT 1 used radios that worked with no failures. The FMT also prefaced or ended each radio transmission with the words, "This is a drill."

Issue No.: NAX90-09R

Description: The FMTs from the Department of Agriculture and the State Water Control Board were not provided with radiation detection instruments or protective clothing to minimize personal contamination. Much of the equipment necessary to take samples was not provided. The FMTs had only plastic bags and writing materials. The equipment list shown in the county plan for FMTs identifies only CD V-742 dosimeters, which have a range of 0-200 R. Used alone, these dosimeters are not acceptable because a dose of

0.5 R cannot be measured accurately on a 0-200 R dosimeter. (Objective 5; NUREG-0654, K.3.a, K.3.b, and K.4)

Corrective Action Demonstrated: The Louisa County FMT was issued both a Victoreen model 545 (0-20 R) and a CD V-742 (0-200 R), in accordance with Appendix 7, Section II.B, page 7-1, of the county plan.

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

2.3.3 PRIMARY ROUTE ALERTING

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

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objectives 5 and 10

Issue No.: 41-96-05-A-14

Description: The primary route alerting team and traffic control personnel were not aware of their emergency worker exposure limits. The Louisa County plan, page 24, refers to reporting, turn-back, and maximum exposure levels of 3, 5, and 8 R, respectively. (NUREG-0654, K.3.b and K.4)

Recommendation: All emergency workers should be aware of their radiological exposure limits. Additionally, the workers should be provided with Emergency Worker Information Cards, which contain this information, before being dispatched for field activities.

Schedule of Corrective Actions: Additional training will be offered to law enforcement officers.

Issue No.: 41-96-10-A-15

Description: During the SAE, the route alerting teams did not "go directly to the Route's Starting Point," as stated on page 4-21 of the Sheriff Department's procedure. Instead, they remained at the staging area until the decision to notify the public was received by the team captain. Furthermore, one of the route alerting vehicles was refueled while en route for public notification. (NUREG-0654, E.6)

Recommendation: The route alerting teams should proceed to their appropriate "starting points" during the SAE or GE, when applicable, as required by the plan.

Schedule of Corrective Actions: Additional training will be offered to law enforcement officers.

d. **NOT DEMONSTRATED:** None

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

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

2.3.4 TRAFFIC/ACCESS CONTROL

a. **MET:** Objectives 4, 14, and 17

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 5

See issue number 41-96-05-A-14 in Section 2.3.3 of this report.

d. **NOT DEMONSTRATED:** None

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

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

2.3.5 EVACUATION ASSEMBLY CENTER

a. **MET:** Objectives 4, 5, 18, 19, and 22

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objective 18

Issue No.: NAX94-18R

Description: The procedures for monitoring evacuees were inadequate. No female monitor was present, in accordance with the county plan (Appendix 8, Section A.5, page 8-1). The two male monitors were insufficiently skilled; they did not monitor the shoe soles or thoroughly monitor the whole body. There were not enough monitors to complete the required monitoring of 20% of the population within 12 hours, according to the plan (Appendix 8, Section C.8, page 8-8). No evacuees appeared at this location; the

2.4 ORANGE COUNTY

2.4.1 EMERGENCY OPERATIONS CENTER

a. **MET:** Objectives 1, 2, 3, 4, 5, 10, 12, 13, 14, 15, and 17

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 2, 12, and 15

Issue No.: NAX94-19R

Description: Sufficient backup power is not available at the EOC to support emergency operations. (Objective 2; NUREG-0654, H.3)

Corrective Action Demonstrated: The EOC was not equipped with a backup power supply. However, the building is wired for backup power. The EOC has an arrangement with Coach Auto to deliver a 50-kilowatt generator within 30 minutes in the event of an emergency. The alternate EOC is the Orange County Sheriff's Department, which is equipped with a backup generator. If backup power were needed, the alternate EOC could be used. Sufficient measures have been taken to ensure the availability of backup power.

Issue No.: NAX94-20R

Description: The RADNET system was not functional at this facility. Therefore, RADNET communications could not be established with the State EOC, the LEOF, and the Caroline, Hanover, Spotsylvania, and Louisa County EOCs in accordance with the plan (page 1-2, paragraph 2). (Objective 4; NUREG-0654, A.2.a)

Corrective Action Demonstrated: The RADNET system has been replaced by a new system, called Group Wise. However, the plan still requires network capability with RADNET (page 22, 1-2 and 1-8). The plan will be revised to reflect the new system, and references to RADNET will be deleted.

Issue No.: NAX94-21R

Description: Because the RADNET system was not functioning at the County EOC, the PIO did not receive State news releases and EBS

messages. In addition, the PIO failed to request that the messages be sent through alternate means. The PIO did not send the county news releases to the State. (Objective 12; NUREG-0654, E.7 and G.4.b)

Corrective Action Demonstrated: The PIO used alternate means, such as fax and Insta-phone information to keep abreast of the emergency. The PIO also sent copies of news releases to the State. In addition, the RADNET system has been replaced with the Group Wise system, which operated properly.

Issue No.: NAX94-22R

Description: The representative from the Department of Health did not contact transportation-dependent individuals to see whether they required transportation, as required by the plan (Appendix 9, Section III.E, page 9-1). (Objective 15; NUREG-0654, E.7, J.10.c, and J.10.d)

Corrective Action Demonstrated: Only two individuals were classified under "Special Population" in the plan. The ESC simulated calling these people, and a current phone number was available for each.

Issue No.: NAX92-31R

Description: There was no backup power for the EOC. (Objective 2; NUREG-0654, H.3)

Corrective Action Demonstrated: The EOC was not equipped with a backup power supply. However, the building is wired for backup power. The EOC has an arrangement with Coach Auto to deliver a 50-kilowatt generator within 30 minutes in the event of an emergency. The alternate EOC is the Orange County Sheriff's Department, which is equipped with a backup generator. If backup power were needed, the alternate EOC could be used. Sufficient measures have been taken to ensure the availability of backup power.

Issue No.: NAX92-33R

Description: No actual press briefings, or the capability to hold briefings, were demonstrated. (Objective 12; NUREG-0654, G.3.a)

Corrective Action Demonstrated: The PIO, who is also a radio station news director, demonstrated an excellent capability to brief the media with good coverage and accurate information. Five briefings were held, approximately one every hour.

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

extent-of-play agreement stated that at least six evacuees would be present and monitored. Therefore, the monitors monitored each other. (Objective 18; NUREG-0654, H.10 and J.12)

Corrective Action Demonstrated: The monitoring team from the Henrico County Fire/Rescue Hazardous Materials Department demonstrated all elements of this objective. Six monitors were on hand. They used a new Ludlum model 52 portal monitor for the initial scan. This new device (along with the hand-held Ludlum model 2240 monitoring instrument) ensured that the center could monitor 20% of the population within the required time. The monitors were well trained (34 monitors are available, including women) and followed all the proper monitoring procedures (scan distance, scan speed, protective measures). Six evacuees were processed; one was determined to be contaminated and was properly decontaminated.

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

2.3.6 MEDICAL SERVICES TRANSPORTATION

a. **MET:** Objective 20

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 5

Issue No.: 41-96-05-A-16

Description: The Rescue Squad was not issued all the equipment identified in the Fire and Rescue Procedure, Appendix 11 of the Louisa County plan (July 29, 1996). (NUREG-0654, K.3.b)

Recommendation: A copy of the procedure identifying the required equipment should be made available to the Rescue Squad as well as to the person responsible for issuing the equipment. The equipment issued should be compared with the list of equipment required for adequate exposure control.

Schedule of Corrective Actions: Attempts will be made to ensure that the Rescue Squad is properly equipped in the future.

d. **NOT DEMONSTRATED:** None

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

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

2.4.2 FIELD MONITORING TEAM

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

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 5

Issue No.: 41-96-05-A-17

Description: The RACES operator who accompanied the Orange County FMT was not provided with any dosimetry. (NUREG-0654, K.3.a)

Recommendation: All emergency workers entering the plume should be provided with the appropriate dosimetry indicated in the county plan, Appendix 7, Section II.B, page 7-1.

Schedule of Corrective Actions: Additional training will be offered to the RACES operators.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 3, 4, and 5

Issue No.: NAX90-04R

Description: Three FMTs performed field monitoring and sampling tasks (Utility, State, and county). However, none of these activities was coordinated. At times, Utility and State FMTs were monitoring and sampling in the same locations. Furthermore, the FMTs did not have a central location for reporting results so that the best use could be made of all information to assist in the accident assessment process. (Objective 3; NUREG-0654, A.1.d and A.2.a)

Corrective Action Demonstrated: The Orange County FMT, in accordance with Appendix 7, Section IV. C, page 7-3, are to transmit all readings above background to the Radiological Officer, who in turn will report the readings to the LEOF. During this exercise, however, no readings taken by the FMT were above background.

Issue No.: NAX90-07R

Description: Various communications problems were identified on both days of the exercise. Not all the radios worked, and some were on different frequencies; at times, radio transmissions at the LEOF were unanswered for up to 15 minutes; the ranges of some instruments were limited; and neither

the State or county FMTs nor the LEOF BRH personnel prefaced or ended any of their messages with the words, "This is a drill." Reportedly, people reacted to information heard over the radios, thinking the drill was an actual emergency. (Objective 4; NUREG-0654, F.1 and F.2)

Corrective Action Demonstrated: Orange County FMT members prefaced their communications with the words, "This is a drill."

Issue No.: NAX90-09R

Description: The FMTs from the Department of Agriculture and the State Water Control Board were not provided with radiation detection instruments or protective clothing to minimize personal contamination. Much of the equipment necessary to take samples was not provided. The FMTs had only plastic bags and writing materials. The equipment list shown in the county plan for FMTs identifies only CD V-742 dosimeters, which have a range of 0-200 R. Used alone, these dosimeters are not acceptable because a dose of 0.5 R cannot be measured accurately on a 0-200 R dosimeter. (Objective 5; NUREG-0654, K.3.a, K.3.b, and K.4)

Corrective Action Demonstrated: The Orange County FMT member, not the RACES Operator, was issued both a Victoreen model 545 (0-20 R) and a CD V-742 (0-200 R) dosimeter, in accordance with Appendix 7, Section II.B, page 7-1, of the county plan.

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

2.4.3 ROUTE ALERTING

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

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

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

2.5 SPOTSYLVANIA COUNTY

2.5.1 EMERGENCY OPERATIONS CENTER

a. **MET:** Objectives 1, 3, 4, 5, 10, 12, 13, and 15

Corrective Action Demonstrated: Reference to the representative from the Department of Public Utilities has been deleted from the plan.

Issue No.: NAX94-26R

Description: Press release 4, issued at 1337, did not include information related to sheltering in zone 21 in Spotsylvania County. (Objective 12; NUREG-0654, E.7 and G.4.a)

Corrective Action Demonstrated: Appendix 2 of the PIO procedure describes procedures for news releases concerning maximizing protection when sheltering. News release 10 explained the measures to be taken for sheltering in Spotsylvania County, and all zones affected were mentioned.

Issue No.: NAX94-28R

Description: The Social Services representative was aware of lists of special-needs individuals who might require assistance in implementing protective actions. These lists were not available at the EOC and could not be consulted during the exercise. Additionally, the Department of Mental Health and Mental Retardation was not contacted to determine whether any of their clients required assistance. (Objective 15; NUREG-0654, E.7, J.10.c, and J.10.d)

Corrective Action Demonstrated: An up-to-date list of 12 persons with special needs was available at the Spotsylvania County EOC. A list of seven patients at a hospice who required assistance was also available. At 1217, the Department of Social Services representatives also called the Rappahannock Area Community Services Board to find out whether assistance was needed.

f. **PRIOR ARCAs - UNRESOLVED:** Objectives 5 and 14

Issue No.: NAX94-25R

Description: The Transportation Supervisor did not coordinate with the Radiological Officer regarding the need for dosimetry for bus drivers. Therefore, the dosimetry requirement for bus operators was unknown to the Radiological Officer. (Objective 5; NUREG-0654, H.10 and K.3.a)

Reason ARCA Unresolved: At 1210 and 1230, the Transportation Supervisor instructed the bus drivers to go to the staging area at Spotsylvania Volunteer Fire Department Company 1 to receive dosimetry. However, as of 1405, he had not informed the Radiological Officer of the need for dosimetry for bus drivers.

b. **DEFICIENCY:** None

c. **AREAS REQUIRING CORRECTIVE ACTION:** Objective 2

Issue No.: 41-96-02-A-18

Description: Critical information was not updated or provided on the EOC status board. Only two entries were made: (1) the time the EOC was declared operational and (2) a hand-drawn EPZ matrix that indicated the time of the local disaster declaration. The EPZ matrix was not updated with protective actions as decisions were made. Other key information was never posted. For example, route alerting status, Evacuation Assembly Center (EAC) activation status, and traffic/access control point (TCP/ACP) activation status were not indicated. The county plan and procedures contains no guidance as to what information is required to be displayed on the status board. (NUREG-0654, A.1.d, A.2.a, and H.3)

Recommendation: The ESC and the EOC staff should identify the essential elements of information to be displayed on the status board. An overlay depicting the information in an organized manner should be developed. One individual should be designated to update the status board on the basis of input from the EOC staff. County plans and procedures should be updated to reflect changes made to correct this issue.

Schedule of Corrective Actions: The procedure will be reviewed and revised if necessary. Additional training in status board maintenance will be offered.

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs - RESOLVED:** Objectives 1, 12, and 15

Issue No.: NAX94-23R

Description: Pre-positioning of EOC staff was contrary to the extent-of-play agreement and the Spotsylvania County plan (Appendix 1, page 1-12). (Objective 1; NUREG-0654, E.2)

Corrective Action Demonstrated: No EOC staff members were pre-positioned, in accordance with the extent-of-play agreement.

Issue No.: NAX94-24R

Description: All staff members were present in the EOC, except a representative of the Department of Public Utilities. The plan (Appendix 5, page 5-8) indicates that the Department of Public Utilities should be present. (Objective 1; NUREG-0654, E.1, E.2, and H.4)