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

FEMA

NOV 5 2008

NRC Headquarters Document Control Desk
US Nuclear Regulatory Commission
Washington, DC 20555-0001

Enclosed is the final report for the North Anna Power Station (NAPS) Plume and Ingestion Pathway Radiological Emergency Preparedness Exercises that were held on July 22 and 23, 2008.

If you have any questions, please contact Darrell Hammons at (215) 931-5546.

Sincerely,

Darrell Hammons
Regional Assistance Committee Chair

Enclosure

IX49
AX45
NRR

North Anna Power Station Exercise – July 22-23, 2008

Final Report – Radiological Emergency Preparedness Program

October 28, 2008

FEMA

FEMA Region III

Final Exercise Report

North Anna Power Station

Licensee:	**Dominion Generation**
Exercise Date:	**July 22-23, 2008**
Report Date:	**October 28, 2008**

U.S. DEPARTMENT OF HOMELAND SECURITY
OFFICE OF INFRASTRUCTURE PROTECTION
CHEMICAL & NUCLEAR PREPAREDNESS AND PROTECTION DIVISION
RADIOLOGICAL EMERGENCY PREPAREDNESS

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

TABLE OF CONTENTS

I. Executive Summary 1

II. Introduction 2

III. Exercise Overview 5

A. Plume Emergency Planning Zone Description 5

B. Exercise Participants 7

C. Exercise Timeline 16

IV. Evaluation and Results 18

A. Summary Results of Exercise Evaluation 18

B. Status of Jurisdictions Evaluated 22

1.0. Commonwealth of Virginia 24

1.1 State Emergency Operations Center 24
1.2 State Emergency Operations Center (Division of Radiation Protection/ Radiological Health Program) 25
1.3 Joint Public Information Center (Dominion-Innsbrook Technical Center). 25
1.4 Joint Information Center 25
1.5 Local Emergency Operations Facility (Division of Radiological Health and Virginia Department of Emergency Management) 26
1.6 State Field Monitoring Team 1 26
1.7 State Field Air Monitoring Team 2 26
1.8 State Field Sampling Team 1 27
1.9 State Mobile Laboratory 27
1.10 Medical Services – Transportation (Spotsylvania Volunteer Rescue Squad) 27
1.11 Medical Services – Facility (Mary Washington Hospital) 28

2.0 Risk Jurisdictions 29

2.1 Caroline County 29

2.1.1 Caroline County Emergency Operations Center 29
2.1.2 Staging Area – Traffic Control Point/Access Control Point 29
2.1.3 Field Monitoring Team 29
2.1.4 Exception Area Route Alerting (Route A) 30

2.1.5 Back-up Route Alerting (Siren 36) 30
2.1.6 Evacuation Assembly Center (Caroline High School) 31
2.1.7 School District (Ladysmith Elementary School) 31

2.2 Hanover County 32

2.2.1 Hanover County Emergency Operations Center 32
2.2.2 Staging Area – Traffic Control Point/Access Control Point 32
2.2.3 Field Monitoring Team 32
2.2.4 Exception Area Route Alerting (Route B) 33
2.2.5 Back-up Route Alerting (Siren 41) 33
2.2.6 Evacuation Assembly Center (Liberty Middle School) 33
2.2.7 School District (Liberty Middle School) 34

2.3 Louisa County 34

2.3.1 Louisa County Emergency Operations Center 34
2.3.2 Staging Area – Traffic Control Point/Access Control Point 35
2.3.3 Field Monitoring Team 35
2.3.4 Primary Route Alerting (Route V, Assignment 2) 35
2.3.5 Exception Area Route Alerting (Route L, O, Assignment 5) 36
2.1.6 School District (Ladysmith Elementary School) 36

2.4 Orange County 36

2.4.1 Orange County Emergency Operations Center 36
2.4.2 Staging Area – Traffic Control Point/Access Control Point 37
2.4.3 Field Monitoring Team 37
2.4.4 Exception Area Route Alerting (Route B) 38
2.4.5 Back-up Route Alerting (Siren 10) 38
2.4.6 School District (Lightfoot Elementary School) 39

2.5 Spotsylvania County 39

2.5.1 Spotsylvania County Emergency Operations Center 39
2.5.2 Staging Area – Traffic Control Point/Access Control Point 40
2.5.3 Field Monitoring Team 40
2.5.4 Primary Route Alerting (Route Q, Assignment 13) 41
2.5.5 Exception Area Route Alerting (Route H, I, Assignment 8) 41
2.5.6 Evacuation Assembly Center (Massaponax High School) 41
2.5.7 School District (Spotsylvania County High School) 42

3.0 Ingestion Jurisdictions 43

3.1 Virginia Jurisdictions 43

3.1.1 Caroline County (Risk) 43
3.1.2 Hanover County (Risk) 43
3.1.3 Louisa County (Risk) 43
3.1.4 Orange County (Risk) 44
3.1.5 Spotsylvania County (Risk) 44
3.1.6 Albemarle County/Charlottesville 44
3.1.7 Amelia County 45
3.1.8 Buckingham County 45
3.1.9 Chesterfield County 46
3.1.10 Culpeper County 46
3.1.11 Cumberland County 46
3.1.12 Essex County 47
3.1.13 Fairfax County 47
3.1.14 Fauquier County 48
3.1.15 Fluvanna County 48
3.1.16 Fredericksburg City 48
3.1.17 Goochland County 49
3.1.18 Greene County 49
3.1.19 Henrico County 50
3.1.20 King and Queen County 50
3.1.21 King George County 50
3.1.22 King William County 51
3.1.23 Madison County 51
3.1.24 Manassas City County 52
3.1.25 New Kent County 52
3.1.26 Page County 52
3.1.27 Powhatan County 53
3.1.28 Prince William County 53
3.1.29 Rappahannock County 54
3.1.30 Richmond County 54
3.1.31 Richmond City 54
3.1.32 Rockingham County 55
3.1.33 Stafford County 55
3.1.34 Westmoreland County 56

APPENDICES

APPENDIX 1: Acronyms and Abbreviations 57
APPENDIX 2: Exercise Evaluators and Team Leaders 59
APPENDIX 3: Exercise Evaluation Area Criteria and Extent of Play Agreement 65
APPENDIX 4: Exercise Scenario 99
APPENDIX 5: Planning Issues 101

LIST OF TABLES

Table 1 – Exercise Timeline 17
Table 2 – Summary Results of Exercise Evaluation 19

I. EXECUTIVE SUMMARY

On July 22, 2008, a full-scale plume exercise was conducted in the 10-mile plume exposure pathway, emergency planning zone (EPZ) around the North Anna Power Station (NAPS) by the Federal Emergency Management Agency (FEMA), Region III. An ingestion exercise was held on July 23, 2008. Out-of-sequence demonstrations were conducted on June 9-11, 2008. The purpose of the exercise and the out-of-sequence demonstrations was to assess the level of State and local preparedness in responding to a radiological emergency. The exercise and out-of-sequence demonstrations were held in accordance with FEMA's policies and guidance concerning the exercise of State and local radiological emergency response plans (RERP) and procedures.

The most recent prior full-scale exercise at this site was conducted on December 5, 2006. 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 jurisdictions of Caroline, Hanover, Louisa, Orange, and Spotsylvania counties; and the ingestion jurisdictions of Albemarle, Amelia, Buckingham, Caroline, Chesterfield, Culpeper, Cumberland, Essex, Fairfax, Fauquier, Fluvanna, Goochland, Greene, Hanover, Henrico, King and Queen, King George, King William, Louisa, Madison, New Kent, Orange, Page, Powhatan, Prince William, Rappahannock, Richmond, Rockingham, Spotsylvania, Stafford, and Westmoreland counties and Fredericksburg, Manassas and Richmond cities who were evaluated at this exercise.

Protecting the public health and safety is the full-time job of some of the exercise participants and an additional assigned responsibility for others. Still others have willingly 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 evaluation of the following out-of-sequence activities:

- *Evacuation Assembly Centers*: Conducted on June 9, 2008 in Caroline County and on June 10, 2008 in Hanover and Spotsylvania Counties.

- *Medical Services*: Conducted on June 9-11, 2008 in Spotsylvania County and the City of Fredericksburg.

The State and local organizations, except where noted in this report, demonstrated knowledge of their emergency response plans and procedures and adequately implemented them. There were no Deficiencies and no Areas Requiring Corrective Action (ARCAs) identified as a result of this exercise. Five ARCAs from a previous exercise were successfully demonstrated at this exercise. Two new planning issues were identified. Four planning issues from a previous exercise were successfully demonstrated; two planning issues from a prior exercise remain unresolved (see Appendix 5 all planning issues).

II. Introduction

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

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

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

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

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

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

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

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

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

A REP exercise was conducted on July 22-23, 2008, 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 North Anna Power Station (NAPS). The purpose of this exercise report is to present the exercise results and findings on the performance of the off-site response organizations (OROs) during a simulated radiological emergency.

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

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

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

- NUREG-0654/FEMA-REP-1, Rev. 1, "Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants," November 1980;

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

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

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

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

Section III of this report, entitled "Exercise Overview," presents basic information and data relevant to the exercise. This section of the report contains a description of the plume pathway emergency planning zone (EPZ), a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

Section IV of this report, entitled "Exercise Evaluation and Results," presents detailed information on the demonstration of applicable exercise evaluation areas at each jurisdiction or functional entity evaluated in a jurisdiction-based, issues-only format. This section also contains: (1) descriptions of all Deficiencies and Areas Requiring Corrective Action (ARCAs) assessed during this exercise, recommended corrective actions, and the Tribal, State, and local governments' schedule of corrective actions for each identified exercise issue and (2) descriptions of ARCAs assessed during previous exercises and resolved at this exercise,

including the corrective action demonstrated, as well as ARCAs assessed during previous exercises and scheduled for demonstration at this exercise which remain unresolved.

The final section of the report is comprised of the appendices, which present the following supplementary information: acronyms and abbreviations, exercise evaluators and team leaders, exercise evaluation area criteria and extent of play agreement, and the exercise scenario. It also presents information on planning issues (both new planning issues identified during this exercise and resolved planning issues identified during previous exercises).

III. Exercise Overview

Contained in this section are data and basic information relevant to the July 22-23, 2008 exercise to test the off-site emergency response capabilities in the area surrounding North Anna Power Station (NAPS). This section of the exercise report includes a description of the plume pathway emergency planning zone (EPZ), a listing of all participating jurisdictions and functional entities that were evaluated, and a tabular presentation of the time of actual occurrence of key exercise events and activities.

A. Plume Emergency Planning Zone Description

Dominion Generation owns and operates the North Anna Power Station. It consists of two units (Unit 1 and Unit 2) each of which includes a three-loop pressurized light water reactor nuclear steam system and turbine generator. Each reactor unit is designed for an initial core power output of 2,893 megawatts (thermal), which results in a gross electrical output of approximately 960 megawatts (electrical). Cooling water, contained by an earthen dam structure, is obtained from the 17-mile long Lake Anna. Commercial operations began at Unit 1 in June 1978, and at Unit 2 in December 1980. The operating license for Unit 1 will expire in April 2018, and for Unit 2 in August 2020.

Location

The North Anna Power Station is located in Mineral, Virginia. The site and exclusion area consist of approximately 1,856 acres. The units are located on a peninsula on the southern shore of Lake Anna in Louisa County approximately 40 miles north-northwest of Richmond, 38 miles east of Charlottesville, and 24 miles southwest of Fredericksburg.

Population Density

Population centers of 25,000 or more (based on the 2000 census) within a 50-mile radius of the station site are Richmond, 40 miles south-southeast of the site; Charlottesville, 38 miles west of the site; and Fredericksburg, 24 miles northeast of the site. The largest residential area within a ten-mile radius of the site is the Town of Mineral and the area around the Lake Anna. The residential population within a five-mile radius as determined by using 2000 census data is approximately 4,052. The residential population to a distance of ten miles from the site using 2000 census data is about 20,292. The largest population within the 10-mile EPZ is the town of Mineral, which has 471 residents. Five risk county boundaries are located within the 10-mile EPZ. The 50-mile ingestion exposure pathway EPZ includes 30 counties and three city jurisdictions, with a total population of 1,286,156.

Sixty-six sirens have been strategically placed throughout the 10-mile EPZ for notifying the public in case an accident occurs at one of the two units. In addition, there are several areas requiring route-alerting teams for notifying residents.

No large 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 in the area is sandy or marshy, the primary crops are animal feeds. The few dairies and other food sources primarily serve local residents.

B. Exercise Participants

The following agencies, organizations, and units of government participated in the NAPS out-of-sequence activities on June 9-11, 2008, or the plume and ingestion exercises on July 22-23, 2008.

COMMONWEALTH OF VIRGINIA

Center for Disease Control
Department of Energy
Environmental Protection Agency
Federal Radiological Monitoring and Assessment Center
Food and Drug Administration
Nuclear Regulatory Commission
Spotsylvania County Department of Fire, Rescue, and Emergency Management
Spotsylvania County Rescue Squad Station #5
United States Department of Agriculture
Virginia Cooperative Extension
Virginia Department of Agriculture and Consumer Affairs
Virginia Department of Corrections
Virginia Department of Criminal Justice Services
Virginia Department of Emergency Management
Virginia Department of Emergency Management, External Affairs, 4 participants
Virginia Department of Game and Inland Fisheries
Virginia Department of Health
Virginia Department of Health, Bureau of Radiological Health
Virginia Department of Military Affairs
Virginia Department of Social Services
Virginia Department of Transportation
Virginia Information Technology Agency
Virginia Secretary of Public Safety
Virginia State Police

RISK JURISDICTIONS

Caroline County
Alexandria Fire-EMS
Arlington County Fire Department
Caroline County Department of Fire and Rescue/Emergency Services
Caroline County Department of Social Services
Caroline County Dispatch Center
Caroline County Emergency Management
Caroline County Hazardous Material Team
Caroline County Public Schools
Caroline County Sheriff's Department

Caroline County Superintendent of Schools
Ladysmith Volunteer Fire Station No. 2
Virginia Department of Emergency Management
Virginia Department of Transportation
Virginia Health Department
Virginia Polytechnic Institute and State University Extension Division
Virginia State Police

Hanover County
Ashland Police Department
Hanover County 911/Emergency Communications Center
Hanover County Administration
Hanover County Fire Department/Emergency Medical Service
Hanover County Fire EMS Station No. 2
Hanover County Local Emergency Planning Committee
Hanover County Office of Emergency Services
Hanover County Public Schools
Hanover County Sheriff's Department
Hanover Department of Social Services
Virginia Cooperative Extension Service
Virginia Department of Emergency Management
Virginia Department of Health/Hanover County Department of Public Health

Louisa County
Coast Guard Auxiliary
Henrico County Fire Department
Henrico County Hazmat Incident Team
Louisa County Administrator
Louisa County CERT Team
Louisa County Department of Emergency Services
Louisa County Extension Office
Louisa County Facilities Management
Louisa County Finance Department
Louisa County Fire Association
Louisa County Health Department
Louisa County IT Department
Louisa County Middle School
Louisa County Public Schools
Louisa County Public Schools Superintendent's Office
Louisa County Sheriff's Department
Louisa County Social Services
Louisa Town Police Department
Town of Mineral
Virginia Department of Transportation
Virginia State Police
York County

Orange County
City of Fredericksburg Fire Department
Fredericksburg Hazardous Material Regional Response Team
Orange County Administration
Orange County Attorney's Office
Orange County Board of Supervisors
Orange County Department of Emergency Services
Orange County Department of Health
Orange County Emergency Communications Center
Orange County Emergency Management Agency
Orange County Fire and Emergency Management Services Department
Orange County Health Department
Orange County Office of Emergency Services
Orange County Public School System
Orange County Sheriff's Department
Orange County Volunteer Fire Company
Virginia Department of Emergency Management

Spotsylvania County
Fredericksburg Volunteer Fire
Spotsylvania County Agricultural Extension Service
Spotsylvania County Department of Fire, Rescue and Emergency Services
Spotsylvania County Department of General Services
Spotsylvania County Department of Geographical Information Systems
Spotsylvania County Department of Health
Spotsylvania County Department of Social Services
Spotsylvania County Emergency Services
Spotsylvania County Fire Company #1
Spotsylvania County High School
Spotsylvania County High School Principal
Spotsylvania County School Superintendent
Spotsylvania County School Transportation Department
Spotsylvania County Schools
Spotsylvania County Sheriff's Department
Spotsylvania County Social Services
Spotsylvania Sheriffs Office
Spotsylvania Volunteer Fire Department, Station 1
Virginia Department of Emergency Management
Virginia Department of Emergency Management, Controller
Virginia Department of Health
Virginia Department of State Parks
Virginia Department of Transportation
Virginia State Police

INGESTION JURISDICTIONS

Caroline County
Agriculture Extensions
Caroline County Communications
Caroline County Emergency Management
Caroline County Public Information Officer
Virginia Department of Health

Hanover County
Hanover County Fire/EMS
Virginia Department of Health

Louisa County
Louisa County Administrator
Louisa County Agricultural Extension Office
Louisa County Emergency Services
Louisa County Sheriff's Office
Thomas Jefferson Health District

Orange County
Orange County Attorney/Public Information Officer
Orange County Emergency Services
Orange County Extension Service
Orange County Public Health Department

Spotsylvania County
Spotsylvania County Agricultural Extension Service
Spotsylvania County Department of Fire, Rescue and Emergency Support
Spotsylvania County Social Services

Albemarle County/Charlottesville County
Albemarle County Office of the County Executive, Community Relations Manager/PIO
Charlottesville/UVA/Albemarle County
Thomas Jefferson Health District, Environmental Health Supervisor
Virginia Cooperative Extension, Extension Agent

Amelia County
Amelia County Administrator
Amelia County Emergency Services Coordinator
Amelia County Sheriff's Office
Virginia Department Agriculture and Customer Services
Virginia Department of Health

Buckingham County
Buckingham County Administration
Buckingham County Board of Supervisors
Buckingham County Health Department
Buckingham County Sheriff's Office
US Department of Agriculture, Farm Service Agency

Chesterfield County
Chesterfield County Emergency Management Department
Chesterfield County Fire Department
Chesterfield County Health Department
Chesterfield County Police Department
Chesterfield County Public Affairs Office
Chesterfield County Utility Department
Virginia Cooperative Extension Service

Culpeper County
Culpeper County Department of Emergency Services
Culpeper County Volunteer Fire and Rescue Department
Virginia Cooperative Extension Office, Culpeper County Office
Virginia Department of Health, Culpeper County Office

Cumberland County
Cumberland County Board of Supervisors
Cumberland County Emergency Services
Cumberland County Health Department
Cumberland County Sheriff's Department
Virginia Cooperative Extension Service

Essex County
Essex County 9-1-1 Communications
Essex County Administrator's Office
Essex County Office of Emergency Management
Essex County Sheriff's Office

Fairfax County
Fairfax City Police Department
Fairfax County 911
Fairfax County Department of Human Services
Fairfax County Fire and Rescue
Fairfax County Health Department
Fairfax County Information Technology Services Department
Fairfax County Office of Emergency Management
Virginia Department of Agriculture and Consumer Affairs
Virginia Department of Emergency Management

Fauquier County
Fauquier County 911 Services
Fauquier County Cooperative Agriculture
Fauquier County Fire Rescue Emergency Services
Fauquier County Health Department

Fluvanna County
Fluvanna County Sherriff's Department
Palmyra Fire Department
Virginia Agriculture and Natural Resource Department
Virginia Department of Health

Fredericksburg City
City of Fredericksburg Fire Department
City of Fredericksburg Police Department
City of Fredericksburg, Communications Officer
Virginia Department of Health

Goochland County
Goochland County Administrator
Goochland County Emergency Manager
Goochland County GIS
Goochland County Health Department
Goochland County Sheriff's Office

Greene County
Greene County Board of Supervisors
Greene County Department of Public Safety
Greene County Sheriffs Office
Virginia Department of Agriculture
Virginia Department of Emergency Management
Virginia Department of Health

Henrico County
Henrico County Division of Fire
Henrico County Division of Police (Communications/9-1-1)
Henrico County Emergency Management
Henrico County Environmental Health
Henrico County Extension Office
Henrico County Hazmat
Henrico County Health Department
Henrico County Public Relations & Media Services
Henrico County Public Utilities
Henricopolis Soil & Water Conservation District

King and Queen County
Virginia Cooperative Extension, King and Queen County Office
Virginia Department of Health, King and Queen County Health Department

King George County
King George County 911
King George County Administrator/Public Information Officer
King George County Communications Director
King George County Deputy Emergency Management Coordinator
King George County Emergency Management Coordinator
King George County Emergency Management Planner
King George County Finance Director
King George County GIS Coordinator
King George County Procurement Manager
King George County RACES and 911 Lead Dispatcher
King George County Service Authority
Virginia Cooperative Extension

King William County
King William County Emergency Management
King William County Public Information Office
King William County Sheriff's Office
Three Rivers Health District
Virginia Cooperative Extension

Madison County
Madison County Emergency Services Coordinator
Madison County 9-1-1 Communications Director
Madison County Health Department
Madison County Cooperative Extension Agent

Manassas City
Manassas City Communication Supervisor
Manassas City Deputy Emergency Management Coordinator
Manassas City HAZMAT/Safety Officer
Manassas City Public Information Officer

New Kent County
New Kent County Emergency Management Agency
New Kent County Health Department
Providence Forge Fire Department

Page County
Page County Communication
Page County Emergency Services
Page County Extension Agent

Page County Fire Rescue
Page County Sheriff Office
Virginia Department of Health
Virginia State Police

Powhatan County
Chesterfield Health District
Powhatan County Administration
Powhatan County Emergency Management
Powhatan County GIS Coordinator
Powhatan County Health Department
Powhatan County Sheriffs Office
Virginia Department of Agriculture

Prince William County
Prince William County Emergency Management
Prince William County Extension/Agriculture
Prince William County Fire and Rescue
Prince William County GIS/Mapping
Prince William County HazMat
Prince William County Health District
Prince William County Planning
Prince William County Police
Prince William County Public Affairs
Prince William County Public Health Planning
Prince William County Public Safety Communications
Prince William County Public Works

Rappahannock County
Rappahannock County Administration
Rappahannock County Emergency Dispatch (911)
Rappahannock County Health Department
Rappahannock County Office of Emergency Management
Rappahannock County Sheriff's Office
Virginia Cooperative Extension

Richmond County
Richmond County Agricultural Agent
Richmond County Emergency Services
Richmond County Sheriffs Office

Richmond City
City of Richmond Fire Department
City of Richmond Health District
City of Richmond Office of Emergency Management
Richmond Ambulance Authority

Rockingham County
Agricultural Extension Office
City of Harrisonburg/Rockland County Emergency Management
Rockland County Department of Health

Stafford County
Stafford County 911 Communication Center
Stafford County Fire/Rescue Department
Virginia County Extension
Virginia Department of Public Safety

Westmoreland County
Westmoreland County Administrator Office
Westmoreland County Emergency Services
Westmoreland County Public Works

PRIVATE/VOLUNTEER ORGANIZATIONS

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

Amateur Radio Emergency Services (ARES) and Radio Amateur Civil Emergency Services (RACES), including the following clubs:
- Caroline County ARES/RACES
- Orange County RACES Team
- Spotsylvania County ARES/RACES

American Red Cross, including the following local chapters:
- Central Virginia Regional Chapter

Dominion Resources Services, Inc
Hanover County Fire/EMS Volunteers
Mary Washington Hospital
Virginia Nation Guard, 34th Civil Support Team

C. Exercise Timeline

Table 1, on the following page, presents the times at which key events and activities occurred during the NAPS plume exercise on July 22, 2008. Also included are times notifications were made to the participating jurisdictions/functional entities.

TABLE 1. EXERCISE TIMELINE

DATE AND SITE: *July 22, 2008 – North Anna Power Station*

Emergency Classification Level or Event	Time Utility Declared	Time That Notification Was Received							
		Virginia EOC	Emergency Operations Facility	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
Alert	0815	0823	0815	0835	0839	0855	0832	0842	0834
Site Area Emergency	1000	1011	1000	1011	1017	1031	1015	1014	1019
General Emergency	1123	1140	1123	1150	1150	1158	1147	1153	1154
Simulated Radiation Release Started	1123	1140	1123	1150	1150	1158	1147	1153	1154
Simulated Radiation Release Terminated	N/A	NA	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Facility Declared Operational		0800	0943	0854	0930	1036	0856	0920	0840
Declaration of State of Emergency Local		1207	1207	1233	1210	1212	1019	1207	1207
Exercise Terminated		1329	1319	1319	1345	1435	1344	1330	1337
Precautionary Actions: Air, Rail, Waterways (if made)		1050	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Precautionary evacuation of schools Local		N/A	N/A	N/A	N/A	N/A	N/A	N/A	0931
Livestock advisory – stored food & water, shelter		1020	1205	1039	1045	1143	1049	1043	1100
Local – Livestock Advisory		N/A	N/A	N/A	1205	1140	N/A	N/A	1140
1st A&N Decision (State [made]; local [received]) Evac-4,6,7,8,9,10,25 Shelter 5,11,22,26		1207	1207	1211	1211	1211	1211	1211	1211
1st Siren Activation		1222					1222		1222
1st EAS Message		1226							
KI Administration Decision: Emergency Workers advised not to take KI		1247	1243	1255	1255	1255	1255	1255	1255

Legend: N/A – Not Applicable

IV. Evaluation and Results

Contained in this section are the results and findings of the evaluation of all jurisdictions and locations that participated in the July 22, 2008, biennial Radiological Emergency Preparedness (REP) plume exercise and the July 23, 2008 ingestion exercise. The exercises were held to test the offsite emergency response capabilities of local governments in the 10-mile Emergency Planning Zone (EPZ) surrounding the North Anna Power Station (NAPS).

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

A. Summary Results of Exercise Evaluation

The matrix presented in Table 2, on the following pages, presents the status of the exercise evaluation area criteria from the REP Exercise Evaluation Methodology that were scheduled for demonstration during this exercise by all participating jurisdictions and functional entities. Exercise evaluation area criteria are listed by number and the demonstration status of the criteria is indicated by the use of the following letters:

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

R Resolved ARCA(s) from prior exercises

U Unresolved ARCA(s) from prior exercises

TABLE 2. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: July 22-23, 2008 – North Anna Power Station

JURISDICTION/LOCATION	1.a.1	1.b.1	1.c.1	1.d.1	1.e.1	2.a.1	2.b.1	2.b.2	2.c.1	2.d.1	2.e.1	3.a.1	3.b.1	3.c.1	3.c.2	3.d.1	3.d.2	3.e.1	3.e.2	3.f.1	4.a.1	4.a.2	4.a.3	4.b.1	4.c.1	5.a.1	5.a.2	5.a.3	5.b.1	6.a.1	6.b.1	6.c.1	6.d.1
COMMONWEALTH OF VIRGINIA																																	
State Emergency Operations Center	M		M	M	M		M	M		M	M		M					M	M	M						M			M				
State EOC (DRP-RPH)	M			M	M	M	M						M																				
Joint Public Information Center (Dominion-Innsbrook Tech. Ctr.)																													M				
Joint Information Center																													M				
Local EOF (DRH & VDEM)			M	M	M	M	M			M		M	M									M											
State Field Monitoring Team 1				M	M							M	M								M		M										
State Field Monitoring Team 2				M	M							M	M								M		M										
State Field Sampling Team 1				M	M							M									M												
State Mobile Laboratory				M	M							M													M								
Medical Services – Transportation (Spotsylvania Vol. Rescue Squad)												M																					M
Medical Services – Facility (Mary Washington Hospital)					M							M																					M
RISK JURISDICTIONS																																	
Caroline County																																	
Caroline County EOC	M		M	M	M	M		M				M	M	M		M	M					M				M			M				
Staging Area – TCP/ACP	M			M	M							M	M			M	M																
Field Monitoring Team	M			M	M							M	M								M/R		M										
Exception Area Route Alerting (Route A)	M			M	M							M	M															M					
Back-up Route Alerting (Siren 36)	M			M	M							M	M															M					
EAC (Caroline HS)					M							M	M																	M	M	M	
School District (Ladysmith ES)															M																		
Hanover County																																	
Hanover County EOC	M		M	M	M	M		M				M	M	M		M	M					M				M			M				
Staging Area – TCP/ACP	M			M	M							M	M			M	M																
Field Monitoring Team	M			M	M							M	M								M		M										
Exception Area Route Alerting (Route B)	M			M	M							M	M															M					
Back-up Route Alerting (Siren 41)	M			M	M							M	M															M					
EAC (Liberty MS)					M							M	M																	M	M	M	
School District (Ladysmith ES)															M																		
Louisa County																																	
Louisa County EOC	M		M	M	M	M		M				M	M	M		M	M					M				M			M				
Staging Area – TCP/ACP	M			M	M							M	M			M	M																
Field Monitoring Team	M			M	M							M	M								M		M										
Primary Route Alerting (Route V, Assignment 2)	M			M	M							M	M															M					

LEGEND: M = Met (no Deficiency or ARCA(s) assessed)
R = Resolved ARCA(s) from prior exercises
A = ARCA(s) assessed
U = Unresolved ARCA(s) from prior exercise
A[1] = ARCA(s) assessed but successfully re-demonstrated
Blank = Not scheduled for demonstration

TABLE 2. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: July 22-23, 2008 – North Anna Power Station

JURISDICTION/LOCATION	1.a.1	1.b.1	1.c.1	1.d.1	1.e.1	2.a.1	2.b.1	2.b.2	2.c.1	2.d.1	2.e.1	3.a.1	3.b.1	3.c.1	3.c.2	3.d.1	3.d.2	3.e.1	3.e.2	3.f.1	4.a.1	4.a.2	4.a.3	4.b.1	4.c.1	5.a.1	5.a.2	5.a.3	5.b.1	6.a.1	6.b.1	6.c.1	6.d.1
Exception Area Route Alerting (Route L,O, Assignment 5)	M			M	M							M	M															M					
School District (Louisa Co. MS)															M																		
Orange County																																	
Orange County EOC	M		M	M	M	M		M				M	M	M		M	M					M				M			M				
Staging Area – TCP/ACP	M			M	M							M	M/R			M	M																
Field Monitoring Team	M			M	M							M	M								M/R		M										
Exception Area Route Alerting (Route B)	M			M	M							M	M															M					
Back-up Route Alerting (Siren 10)	M			M	M							M	M															M					
School District (Lightfoot ES)															M																		
Spotsylvania County																																	
Spotsylvania County EOC	M		M	M	M	M		M				M	M	M		M	M					M				M			M				
Staging Area – TCP/ACP	M			M	M							M	M			M	M																
Field Monitoring Team	M/R			M	M							M	M								M		M										
Primary Route Alerting (Route Q, Assignment 13)	M			M	M							M	M															M					
Exception Area Route Alerting (Route H, I, Assignment 8)	M			M	M							M	M															M					
EAC (Massaponax HS)					M							M	M																	M	M	M	
School District Spotsylvania County HS)															M																		
INGESTION JURISDICTIONS																																	
Risk/Ingestion Counties																																	
Caroline County			M	M	M													M	M	M									M				
Hanover County			M	M	M													M	M	M									M				
Louisa County			M	M	M													M	M	M									M				
Orange County			M	M	M													M	M	M									M				
Spotsylvania County			M	M	M													M	M	M									M				
Virginia Jurisdictions																																	
Albemarle County/Charlottesville	M	M	M	M	M													M	M										M				
Amelia County	M	M	M	M	M													M	M										M				
Buckingham County	M	M	M	M	M													M	M										M				
Chesterfield County	M	M	M	M	M													M	M										M				
Culpeper County	M	M	M	M	M													M	M										M				
Cumberland County	M	M	M	M	M													M	M										M				
Essex County	M	M	M	M	M													M	M										M				
Fairfax County	M	M	M	M	M													M	M										M				
Fauquier County	M	M	M	M	M													M	M										M				
Fluvanna County	M	M	M	M	M													M	M										M				
Fredericksburg City	M	M	M	M	M													M	M										M				
Goochland County	M	M	M	M	M													M	M										M				

LEGEND: M = Met (no Deficiency or ARCA(s) assessed)
R = Resolved ARCA(s) from prior exercises
A = ARCA(s) assessed
U = Unresolved ARCA(s) from prior exercise
A^1 = ARCA(s) assessed but successfully re-demonstrated
Blank = Not scheduled for demonstration

TABLE 2. SUMMARY RESULTS OF EXERCISE EVALUATION

DATE AND SITE: July 22-23, 2008 – North Anna Power Station

JURISDICTION/LOCATION	1.a.1	1.b.1	1.c.1	1.d.1	1.e.1	2.a.1	2.b.1	2.b.2	2.c.1	2.d.1	2.e.1	3.a.1	3.b.1	3.c.1	3.c.2	3.d.1	3.d.2	3.e.1	3.e.2	3.f.1	4.a.1	4.a.2	4.a.3	4.b.1	4.c.1	5.a.1	5.a.2	5.a.3	5.b.1	6.a.1	6.b.1	6.c.1	6.d.1
Greene County	M	M	M	M	M													M	M										M				
Henrico County	M	M	M	M	M													M	M										M				
King and Queen County	M	M	M	M	M													M	M										M				
King George County	M	M	M	M	M													M	M										M				
King William County	M	M	M	M	M													M	M										M				
Madison County	M	M	M	M	M													M	M										M				
Manassas City	M	M	M	M	M													M	M										M				
New Kent County	M	M	M	M	M													M	M										M				
Page County	M	M	M	M	M													M	M										M				
Powhatan County	M	M	M	M	M													M	M										M				
Prince William County	M	M	M	M	M													M	M										M				
Rappahannock County	M	M	M	M	M													M	M										M				
Richmond County	M	M	M	M	M													M	M										M				
Richmond City	M	M	M	M	M													M	M										M				
Rockingham County	M	M	M	M	M													M	M										M				
Stafford County	M	M	M	M	M													M	M										M				
Westmoreland County	M	M	M	M	M													M	M										M				

LEGEND: M = Met (no Deficiency or ARCA(s) assessed)
R = Resolved ARCA(s) from prior exercises

A = ARCA(s) assessed
U = Unresolved ARCA(s) from prior exercise

A^1 = ARCA(s) assessed but successfully re-demonstrated
Blank = Not scheduled for demonstration

B. Status of Jurisdictions Evaluated

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

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

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

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

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

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

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

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

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

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

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

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

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

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

- **Evaluation Area Criterion** – A letter and number corresponding to the criteria in the FEMA REP Exercise Evaluation Methodology.

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

- **Exercise Issue Identification Number** – A separate two digit indexing number assigned to each issue identified in the exercise.

1.0 COMMONWEALTH OF VIRGINIA

1.1 State Emergency Operations Center

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** One

Issue No.: 41-06-1.e.1-A-01

Condition: The modified administrative exposure limit (0.45 R reporting level) could not be read using the issued dosimetry. This condition was also identified during the 2006 Surry exercise.

Reason ARCA Unresolved: The State replaced the 0-20R Direct Reading Dosimeters with SAIC Model PSD-03 Digital Alarming Dosimeters which are capable of accurately reading any dose that an emergency worker could receive including very low doses. However, each county was not provided with the number of Digital Alarming Dosimeters that is currently specified for Model 622 0-20R Dosimeters in Tab E to Appendix 7 of the Virginia Emergency Operations Plan. The following is the number of dosimeters specified/provided for each risk county: Caroline 32/20, Hanover 26/10, Louisa 50/10, Orange 28/10, and Spotsylvania 49/10.

Recommendation: Provide each risk county with dosimetry as specified in Tab E to Appendix 7. Also, change the column heading from "0-20R Dosimeter Model 622" to "SAIC Model-03 Digital Alarming Dosimeter."

1.2 State Emergency Operations Center (Division of Radiation Protection/Radiological Health Program)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.3 Joint Public Information Center (Dominion-Innsbrook Technical Center)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.4 Joint Information Center

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.5 Local Emergency Operations Facility (Division of Radiological Health and Virginia Department of Emergency Management)

a. **MET:** 1.c.1 2.a.1 3.a.1 4.a.2
1.d.1 2.b.1 3.b.1
1.e.1 2.d.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.6 State Field Monitoring Team 1

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.7 State Field Air Monitoring Team 2

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.8 State Field Sampling Team 1

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.9 State Mobile Laboratory

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.10 Medical Services – Transportation (Spotsylvania Volunteer Rescue Squad)

a. **MET:** 3.a.1 6.d.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

1.11 Medical Services – Facility (Mary Washington Hospital)

a. **MET:** 3.a.1 6.d.1

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.0 RISK JURISDICTIONS

2.1 Caroline County

2.1.1 Caroline County Emergency Operations Center

a. MET:

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

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs – RESOLVED: None

f. PRIOR ARCAs – UNRESOLVED: None

2.1.2 Staging Area – Traffic Control Point/Access Control Point

a. MET:

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

b. DEFICIENCY: None

c. AREAS REQUIRING CORRECTIVE ACTION: None

d. NOT DEMONSTRATED: None

e. PRIOR ARCAs – RESOLVED: None

f. PRIOR ARCAs – UNRESOLVED: None

2.1.3 Field Monitoring Team

a. MET:

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

b. DEFICIENCY: None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** One

Issue No.: 41-06-4.a.1-A-03

Condition: The Ludlum 2240 Survey Meter Probe was not wrapped in a probe cover before leaving the Staging Area.

Corrective Action Demonstrated: The Caroline County Radiological Officer first cautioned the teams to cover the Ludlum 2240-1 probes with thin plastic covers during her briefing at the staging area. This instruction was also contained in the ESF #10 field monitoring procedure. Each team was issued at least six probe covers at the staging area. Both Field Monitoring Teams 1 and 2 assured that the probes were covered prior to deployment to the Emergency Planning Zone and throughout monitoring operations in the field.

f. **PRIOR ARCAs – UNRESOLVED:** None

2.1.4 Exception Area Route Alerting (Route A)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.1.5 Back-up Route Alerting (Siren 36)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.1.6 Evacuation Assembly Center (Caroline High School)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.1.7 School District (Ladysmith Elementary School)

a. **MET:** 3.c.2

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.2 Hanover County

2.2.1 Hanover County Emergency Operations Center

a. **MET:** 1.a.1 2.a.1 3.a.1 4.a.2 5.a.1
1.c.1 2.c.1 3.b.1 5.b.1
1.d.1 3.c.1
1.e.1 3.d.1
3.d.2

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.2.2 Staging Area – Traffic Control Point/Access Control Point

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.2.3 Field Monitoring Team

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.2.4 Exception Area Route Alerting (Route B)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.2.5 Back-up Route Alerting (Siren 41)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.2.6 Evacuation Assembly Center (Liberty Middle School)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.2.7 School District (Liberty Middle School)

a. **MET:** 3.c.2

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.3 Louisa County

2.3.1 Louisa County Emergency Operations Center

a. **MET:**

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.3.2 Staging Area – Traffic Control Point/Access Control Point

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.3.3 Field Monitoring Team

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.3.4 Primary Route Alerting (Route V, Assignment 2)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.3.5 Exception Area Route Alerting (Route L, O, Assignment 5)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.1.6 School District (Ladysmith Elementary School)

a. **MET:** 3.c.2

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.4 Orange County

2.4.1 Orange County Emergency Operations Center

a. **MET:** 1.a.1 2.a.1 3.a.1 4.a.2 5.a.1
1.c.1 2.c.1 3.b.1 5.b.1
1.d.1 3.c.1
1.e.1 3.d.1
3.d.2

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.4.2 Staging Area – Traffic Control Point/Access Control Point

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** One

Issue No.: 41-06- 3.b.1-A-05

Condition: Although simulated potassium iodide (KI) was available at the Orange County Staging Area, it was not issued to emergency workers (including the field monitoring team) prior to their deployment to the field.

Corrective Action Demonstrated: The staging area manager provided a briefing and issued KI to all emergency workers at the staging area prior to their deployment to the field.

f. **PRIOR ARCAs – UNRESOLVED:** None

2.4.3 Field Monitoring Team

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** One

Issue No.: 41-06-4.a.1-A-06

Condition: The Ludlum 2240 Survey Meter Probe was not wrapped in a probe cover before leaving the Staging Area.

Corrective Action Demonstrated: During the North Anna Power Station Exercise on 07/22/08, the Radiological Officer included the wrapping of the probe in his briefing prior to deployment of the field monitoring teams. The teams wrapped the probes in plastic and maintained them in that condition throughout the exercise. Also, Item "E" under the Alert section of the Field Monitoring Team procedures directs the teams to wrap the probe before leaving the staging area.

f. **PRIOR ARCAs – UNRESOLVED:** None

2.4.4 Exception Area Route Alerting (Route B)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.4.5 Back-up Route Alerting (Siren 10)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.4.6 School District (Lightfoot Elementary School)

a. **MET:** 3.c.2

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 Spotsylvania County Emergency Operations Center

a. **MET:**

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.5.2 Staging Area – Traffic Control Point/Access Control Point

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.5.3 Field Monitoring Team

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** One

Issue No.: 41-06-1.a.1-A-07

Condition: The Spotsylvania County Field Monitoring Team (FMT) was not dispatched in a timely manner.

Corrective Action Demonstrated: Procedures were revised to dispatch the monitoring team at Site Area Emergency. The Site Area Emergency Notification was received at the assembly point for the FMT at 1036. At 1055 the FMT was proceeding to their first monitoring location.

f. **PRIOR ARCAs – UNRESOLVED:** None

2.5.4 Primary Route Alerting (Route Q, Assignment 13)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.5.5 Exception Area Route Alerting (Route H, I, Assignment 8)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.5.6 Evacuation Assembly Center (Massaponax High School)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

2.5.7 School District (Spotsylvania County High School)

a. **MET:** 3.c.2

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.0 INGESTION JURISDICTIONS

3.1 Virginia Jurisdictions

3.1.1 Caroline County (Risk)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.2 Hanover County (Risk)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.3 Louisa County (Risk)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.4 Orange County (Risk)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.5 Spotsylvania County (Risk)

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.6 Albemarle County/Charlottesville

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.7 Amelia County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.8 Buckingham County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.9 Chesterfield County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.10 Culpeper County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.11 Cumberland County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.12 Essex County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.13 Fairfax County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.14 Fauquier County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.15 Fluvanna County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.16 Fredericksburg City

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.17 Goochland County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.18 Greene County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.19 Henrico County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.20 King and Queen County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.21 King George County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.22 King William County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.23 Madison County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.24 Manassas City County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.25 New Kent County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.26 Page County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.27 Powhatan County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.28 Prince William County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.29 Rappahannock County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.30 Richmond County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.31 Richmond City

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.32 Rockingham County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.33 Stafford County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

3.1.34 Westmoreland County

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

b. **DEFICIENCY:** None

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

d. **NOT DEMONSTRATED:** None

e. **PRIOR ARCAs – RESOLVED:** None

f. **PRIOR ARCAs – UNRESOLVED:** None

APPENDIX 1:
Acronyms and Abbreviations

A&N	Alert and Notification
ACP	Access Control Point
ARCA	Area Requiring Corrective Action
ATL	Assistant Team Leader
CFR	Code of Federal Regulations
COVRERP	Commonwealth of Virginia Radiological Emergency Response Plan
DRH	Division of Radiological Health
DRP	Division of Radiation Protection
EAL	Emergency Action Level
EAS	Emergency Alerting System
EBS	Emergency Broadcast System
ECL	Emergency Classification Level
EOC	Emergency Operations Center
EOF	Emergency Operations Facility
EPZ	Emergency Planning Zone
ERP	Emergency Response Plan
ES	Elementary School
ESF	Emergency Support Function of the National Response Plan
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FMT	Field Monitoring Team
FR	Federal Register
FRERP	Federal Radiological Emergency Response Plan
HS	High School
I	Ingestion
ICF	ICF International
IPZ	Ingestion Pathway Emergency Planning Zone
JPIC	Joint Public Information Center
KI	Potassium Iodide
LEOF	Local Emergency Operations Facility
LOCA	Loss of Coolant Accident

MS	Middle School
NAPS	North Anna Power Station
NRC	U.S. Nuclear Regulatory Commission
NUREG-0654	NUREG-0654/FEMA-REP-1, Rev. 1 (Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants), November 1980
ORO	Offsite Response Organization
P	Plume
PAD	Protective Action Decision
PAG	Protective Action Guidance
PAR	Protective Action Recommendation
PIO	Public Information Officer
PRD	Permanent Record Dosimeter
R	Roentgen(s)
RAC	Regional Assistance Committee
Rem	Roentgen Equivalent Man
REP	Radiological Emergency Preparedness
RERP	Radiological Emergency Response Plan
RHP	Radiological Health Program
R/hr	Roentgens per hour
SAE	Site Area Emergency
SEOC	State Emergency Operations Center
SRD	Self-Reading Dosimeter
TCP	Traffic Control Point
TEDE	Total Effective Dose Equivalent
TL	Team Leader
VDEM	Virginia Department of Emergency Management
VDOT	Virginia Department of Transportation
VEOC	Virginia Emergency Operations Center

APPENDIX 2:
Exercise Evaluators and Team Leaders

The following is a list of the personnel who evaluated the North Anna Power Station (NAPS) exercise on July 22-23, 2008 and out-of-sequence activities on June 9-11, 2008. The letter P indicates plume exercise; I indicates ingestion exercise. Evaluator Team Leader (TL) and Assistant Team Leader (ATL) are indicated by the letters after their organization's name. The organization each evaluator represents is indicated by the following abbreviations:

DHS	Department of Homeland Security
FEMA	Federal Emergency Management Agency
ICF	ICF International
NRC	U.S. Nuclear Regulatory Commission

OBSERVERS-AT-LARGE	NAME	ORGANIZATION
RAC Chairman	Darrell Hammons	DHS
Project Officer	Joseph Suders	DHS
ICF Regional Coordinator	Roger Kowieski	ICF

1. Biennial Plume Exercise — July 22, 2008

EVALUATION SITE	EVALUATOR	ORGANIZATION
COMMONWEALTH OF VIRGINIA		
State Emergency Operations Center	Bart Freeman (TL)	DHS/FEMA
	Marcy Campbell (P & I)	ICF
	Pat Taylor (P & I)	ICF
	Ronald Biernacki (P & I)	ICF
	Robert Trojanowski - (Ingestion only) - Wednesday	NRC
State Emergency Operations Center (DRP/RHP)	Ronald Biernacki	ICF
	Melody Geer	ICF
JPIC @ Dominion-Innsbrook Technical Center	Quirino Iannazzo	ICF
Joint Information Center	Bruce Swiren	ICF
Emergency Operations Facility (DRH/VDEM)	Robert Trojanowski	NRC
State Field Monitoring Team 1	Paul Cormier	ICF
State Field Monitoring Team 2	Garianne Howard	ICF
Mobile Laboratory	Reggie Rodgers	ICF

- **Biennial Plume Exercise — July 22, 2008 (cont.)**

EVALUATION SITE	EVALUATOR	ORGANIZATION
RISK JURISDICTIONS		
CAROLINE COUNTY		
Caroline County EOC	Al Lookabaugh (TL)	ICF
	Henry Christiansen (ATL)	ICF
	Gary Goldberg	ICF
Staging Area & TCP/ACP	Robert Nelson Young	ICF
Field Monitoring Team	Richard Watts	ICF
Exception Area Route Alerting, Route A (5-10 miles)	Charlie Zeppenfeld	ICF
Back Up Route Alerting	Gary Bolender	ICF
School District, Ladysmith Elementary	Robert Nelson Young	ICF
HANOVER COUNTY		
Hanover County EOC	John Price (TL)	FEMA
	Paul Nied (ATL)	ICF
	Kim Wood	ICF
Staging Area & TCP/ACP	Alejandro Fernandez	ICF
Field Monitoring Team	Kent Tosch	ICF
Exception Area Route Alerting (5-10 miles)	Tracey Green	ICF
Back-Up Route Alerting	Bart Ray	ICF
School District – Liberty Middle School	Alejandro Fernandez	ICF
LOUISA COUNTY		
Louisa County EOC	Roy Smith (TL)	ICF
	Wendy Swygert (ATL)	ICF
	Nancy Johnson	ICF
Staging Area & TCP/ACP	David Petta	ICF
Field Monitoring Team	Earl Shollenberger	ICF
Primary Route Alerting (0-5 miles)	Deborah Bell	ICF
Exception Area Route Alerting (5-10 miles)	Larry Visniesky	ICF
School District, Louisa County Middle	David Petta	ICF

1. **Biennial Plume Exercise — July 22, 2008 (cont.)**

EVALUATION SITE	EVALUATOR	ORGANIZATION
ORANGE COUNTY		
Orange County EOC	James McClanahan (TL)	ICF
	Lyle Slagle (ATL)	ICF
	Robert Duggleby	ICF
Staging Area & TCP/ACP	Todd Sniffin	ICF
Field Monitoring Team	James Hickey	ICF
Exception Area Route Alerting (5-10 miles)	W. Morrison Jackson	ICF
Back-Up Route Alerting	Deborah Blunt	ICF
School District, Lightfoot Elementary	Todd Sniffin	ICF
SPOTSYLVANIA COUNTY		
Spotsylvania County EOC	Wayne Shych (TL)	DHS/FEMA
	Rosemary Samsel (ATL)	ICF
	Jon Christiansen	ICF
Staging Area & TCP/ACP (Sheriff's office)	Harold Spedding	ICF
Field Monitoring Team	Bernis Hannah	ICF
Primary Route Alerting (0-5 miles)	Frank Cordaro	ICF
Exception Area Route Alerting (5-10 miles)	Keith Earnshaw	ICF
School District – Spotsylvania High School	Harold Spedding	ICF

2. **Post Plume — July 22, 2008 P.M.**

EVALUATION SITE	EVALUATOR	ORGANIZATION
COMMONWEALTH OF VIRGINIA		
State Emergency Operations Center	Bart Freeman	DHS/FEMA
	Ronald Biernacki	ICF
Mobile Laboratory	Reggie Rodgers	ICF
State Field Sampling Team 1	Paul Cormier	ICF

Post Plume — July 23, 2008 A.M.

EVALUATION SITE	EVALUATOR	ORGANIZATION
COMMONWEALTH OF VIRGINIA		
State Emergency Operations Center	Bart Freeman	DHS/FEMA
	Marcy Campbell	ICF
	Bob Trojanowski	NRC
	Ronald Biernacki Pat Taylor	ICF ICF
Mobile Laboratory	Reggie Rodgers	ICF

3. **Ingestion Jurisdictions — July 23, 2008 11:00 am**

EVALUATION SITE	EVALUATOR	ORGANIZATION
Virginia Jurisdictions		
	Nancy Johnson (TL)	ICF
Caroline County (Risk)	Carl Wentzell	ICF
Hanover County (Risk)	Robert Host	ICF
Louisa County (Risk)	Robert Lemeshka	ICF
Orange County (Risk)	David White	ICF
Spotsylvania County (Risk)	Jim Torgler	ICF
Albemarle County/Charlottesville City	Lenora Borchardt	ICF
Amelia County	Michael Burriss	ICF
Buckingham County	Terry Blackmon	ICF
Chesterfield County	Robert Black	ICF
Culpeper County	Greg Vanden-Eykel	ICF
Cumberland County	David Stuhan	ICF
Essex County	Gregg Dawkins	ICF
Fairfax County	DeeEll Fifield	ICF
Fauquier County	John Flynn	ICF
Fluvanna County	James Foster	ICF
Fredericksburg City	Jon Fox	ICF
Goochland County	Robert Gantt	ICF
Greene County	Simon Guereca	ICF
Henrico County	Thomas Hegele	ICF
King and Queen County	Doug Himle	ICF
King George County	Daniel Inman	ICF
King William County	Roger Jobe	ICF
Madison County	Nick Lowe	ICF
Manassas City	George MacDonald	ICF
New Kent County	Richard McPeak	ICF
Page County	Ronald Bonner	ICF
Powhatan County	William Obrien	ICF
Prince William County	William Palmer	ICF
Rappahannock County	Michael Petullo	ICF
Richmond County	Glenn Kinnear	ICF
Richmond City	Richard Smith	ICF
Rockingham County	Denise Solomon	ICF
Stafford County	Clark Cofer	ICF
Westmoreland County	Alexis Kacho	ICF

3. **Ingestion Jurisdictions — July 23, 2008 11:00 am (cont.)**

State of Maryland Jurisdictions		
Charles County (Not to be evaluated)		

4. Out-of-Sequence Exercises — June 9-11, 2008

CAROLINE COUNTY		
Evacuation Assembly Center – Caroline County High School	Wayne Shych Bart Freeman	DHS/FEMA
HANOVER COUNTY		
Evacuation Assembly Center – Liberty Middle School	Wayne Shych Bart Freeman	DHS/FEMA
SPOTSYLVANIA COUNTY		
Evacuation Assembly Center – Massaponax	Wayne Shych Bart Freeman	DHS/FEMA
Medical Services – Transportation (Spotsylvania County Volunteer Rescue Squad)	Bart Freeman	DHS/FEMA
Medical Services – Hospital (Mary Washington Hospital)	Wayne Shych	DHS/FEMA

APPENDIX 3:
Exercise Evaluation Area Criteria and Extent of Play Agreement

This appendix contains the extent of play agreement from the Commonwealth of Virginia approved by the Federal Emergency Management Agency (FEMA) Region III on July 14, 2008.

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

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

Exercise Evaluation Criteria and Extent of Play

1. EMERGENCY OPERATIONS MANAGEMENT
1.a Mobilization
Criterion 1.a.1: Offsite Response Organization's use effective procedures to alert, notify, and mobilize emergency personnel and activate facilities in a timely manner. (NUREG-0654, A.4; D.3, 4; E.1, 2; H.4)

Extent of Play
Responsible Offsite Response Organization's should demonstrate the capability to receive notification of an emergency situation from the licensee, verify the notification, and contact, alert, and mobilize key emergency personnel in a timely manner. Responsible Offsite Response Organization's should demonstrate the activation of facilities for immediate use by mobilized personnel when they arrive to begin emergency operations. Activation of facilities should be completed in accordance with the plan and/or procedures. Pre-positioning of emergency personnel is appropriate, in accordance with the extent of play agreement, at those facilities located beyond a normal commuting distance from the individual's duty location or residence. Further, pre-positioning of staff for out-of-sequence demonstrations is appropriate in accordance with the extent of play agreement. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

State:
The State will notify and mobilize appropriate response agencies noted below which have responsibilities in the Virginia Emergency Operations Center (VEOC), at the appropriate emergency classification level and in accordance with established plans and procedures in a timely manner. No other state agencies will be notified. Personnel assigned to the Local Emergency Operations Facility at North Anna Power Station (VDEM and DRH personnel), Joint Public Information Center (JPIC), Mobile laboratory at VDOT Residency Shop, Louisa County and field monitoring teams will be pre-positioned. VDEM and DRH will provide staffing as per procedures.

The State will demonstrate the capability to receive notification of an emergency situation from the licensee and verify notification. The State will demonstrate the activation of facilities for immediate use by mobilized personnel when they arrive to begin emergency operations.

On the afternoon of July 22 through July 23, DRH will be interacting with the Federal Radiological Monitoring and Assessment Center (FRMAC). In addition, the mobile lab will be staffed.

On July 23, a representative from the Department of Agriculture and Consumer Services will be present at the VEOC and will be available to provide technical support to the public information function. DRH will be represented by the staff of DRH.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Will notify and mobilize appropriate response agencies and key personnel assigned to the local Emergency Operations Centers (EOC's) and media centers, field workers and Evacuation

Assembly Centers, (out of sequence, June 9-10, 2008) if activated, at the appropriate Emergency Classification Level (ECL) and as per procedures in a timely manner.

Will demonstrate the capability to receive notification of an emergency situation from the licensee and verify notification. The risk jurisdictions will demonstrate the activation of facilities for immediate use by mobilized personnel when they arrive to begin emergency operations.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

On July 23, 11 a.m., risk and ingestion jurisdictions will mobilize the appropriate personnel (emergency services coordinator or deputy coordinator, a communication officer, health department representative, public information officer, and extension agent). The personnel will be pre-staged. Activities will consist of receiving and verifying calls from the VEOC and table top interviews.

Outstanding Issues:
41-06-1.a.1-A-07: Spotsylvania County Field Monitoring Team. The Spotsylvania County Field Monitoring Team was not dispatched in a timely manner.

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

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

Extent of Play
Facilities will only be specifically evaluated for this criterion if they are new or have substantial changes in structure or mission. Responsible Offsite Response Organization's should demonstrate the availability of facilities that support the accomplishment of emergency operations. Some of the areas to be considered are: adequate space, furnishings, lighting, restrooms, ventilation, backup power and/or alternate facility (if required to support operations). Facilities must be set up based on the Offsite Response Organization's plans and procedures and be demonstrated as they would be used in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

Ingestion Jurisdictions: On July 23, 11 a.m., ingestion jurisdictions will demonstrate that adequate space, supplies, equipment, plans and procedures will be used to the extent required to respond to the simulated emergency. The simulated emergency is not guaranteed to require use of every item described in the plans, only to exercise major portions.

- Backup power capability will be reviewed only. The generators will not be operated.

Outstanding Issues:
None

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

1.c Direction and Control
Criterion 1.c.1: Key personnel with leadership roles for the Offsite Response Organization's provide direction and control to that part of the overall response effort for which they are responsible. (NUREG-0654, A.1.d; A.2.a, b)

Extent of Play
Leadership personnel should demonstrate the ability to carry out essential functions of the response effort, for example: keeping the staff informed through periodic briefings and/or other means, coordinating with other appropriate Offsite Response Organization's and ensuring completion of requirements and requests. All activities associated with direction and control must be performed based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless otherwise noted above or indicated in the extent of play agreement.

Virginia Department of Emergency Management
Virginia Department of Health - Division of Radiological Health
On July 22, overall direction and control of state activities will be demonstrated in the VEOC, Local Emergency Operations Facility (LEOF) and Joint Public Information Center (JPIC). The Governor's representative or a simulated designee will be present and will simulate coordinating decisions with the Governor's Office. The State Coordinator or designee will demonstrate the ability to keep staff informed, hold briefings and coordinate activities with other offsite response

organizations. Both the State and risk jurisdictions should ensure the completion of requirements and requests. Demonstration will be in accordance with plans and procedures.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
The emergency services coordinator or designee will demonstrate his ability to keep staff informed, hold briefings, and coordinate activities with other offsite response organizations. Both the State and risk jurisdictions should ensure the completion of requirements and requests. Demonstration will be in accordance with plans and procedures.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

On July 23, 11 a.m., ingestion jurisdictions will demonstrate via tabletop interview the ability to keep staff informed, hold briefings and coordinate activities with other offsite response organizations. Demonstration will be in accordance with plans and procedures.

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

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

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

Response Organization's should be commensurate with that specified in the response plan and/or procedures. Exercise scenarios could require the failure of a communications system and the use of an alternate system, as negotiated in the extent of play agreement. All activities associated with the management of communications capabilities must be demonstrated based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless otherwise noted above or in the extent of play agreement.

Virginia Department of Emergency Management
Virginia Department of Health - Division of Radiological Health
Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
This evaluation area will be demonstrated in all participating locations, in accordance with plans and procedures. OROs will demonstrate that at least one communication system is functional. Facility and field workers will have access to at least one communications system that is independent of commercial landline telephone. The use of primary communication pathways will be demonstrated during this exercise. A backup communication pathway will be demonstrated only if primary communication pathway fails.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

On July 23, 11 a.m., this evaluation area will be demonstrated by tabletop interview and during the exercise through documentation of messages sent and received.

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

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

Extent of Play
Equipment within the facility (facilities) should be sufficient and consistent with the role assigned to that facility in the Offsite Response Organization's plans and/or procedures in support of emergency operations. Use of maps and displays is encouraged. All instruments, should be inspected, inventoried, and operationally checked before each use. Instruments should be calibrated in accordance with the manufacturer's recommendations. Unmodified CDV–700

series instruments and other instruments without a manufacturer's recommendation should be calibrated annually. Modified CDV-700 instruments should be calibrated in accordance with the recommendation of the modification manufacturer. A label indicating such calibration should be on each instrument or calibrated frequency can be verified by other means. Additionally, instruments being used to measure activity should have a range of readings sticker affixed to the side of the instrument. The above considerations should be included in the following criteria: 4.a.1 for field team equipment, 4.c.1 for radiological laboratory equipment (does not apply to analytical equipment), 6.a.1 for reception center and emergency worker facilities' equipment and 6.d.1 for ambulance and medical facility equipment. Sufficient quantities of appropriate direct-reading and permanent record dosimetry and dosimeter chargers should be available for issuance to all categories of emergency workers that could be deployed from that facility. Appropriate direct-reading dosimetry should allow individual(s) to read the administrative reporting limits and maximum exposure limits contained in the Offsite Response Organization's plans and procedures. Dosimetry should be inspected for electrical leakage at least annually and replaced, if necessary. CDV–138s, due to their documented history of electrical leakage problems, should be inspected for electrical leakage at least quarterly and replaced if necessary. This leakage testing will be verified during the exercise, through documentation submitted in the Annual Letter of Certification, and/or through a staff assistance visit. Responsible Offsite Response Organization's should demonstrate the capability to maintain inventories of KI sufficient for use by emergency workers, as indicated on rosters; institutionalized individuals, as indicated in capacity lists for facilities; and, where stipulated by the plan and/or procedures, members of the general public (including transients) within the plume pathway Emergency Planning Zone. Available quantities of dosimetry and KI and their storage locations(s) will be confirmed by physical inspection at the storage location(s) or through documentation of current inventory submitted during the exercise, provided in the Annual Letter of Certification submission, and/or verified during a staff assistance visit. Available supplies of KI should be within the expiration date indicated on KI bottles or blister packs. As an alternative, the Offsite Response Organization's may produce a letter from a certified private or State laboratory indicating that the KI supply remains potent, in accordance with U.S. Pharmacopoeia standards. At locations where traffic and access control personnel are deployed, appropriate equipment (e.g., vehicles, barriers, traffic cones and signs, etc.) should be available or have their availability described. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management
Virginia Department of Health - Division of Radiological Health
Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Equipment within the facility should be sufficient and consistent with the role assigned to that facility in the ORO's plans and/or procedures in support of emergency operations. Use of maps and displays will be demonstrated.

Sufficient quantities of appropriate dosimetry should be available for issuance to all emergency workers.

Responsible ORO's should demonstrate the capability to maintain inventories of KI sufficient for use by emergency workers, as indicated on rosters.

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

- TCP/ACP maps (*pages from the plans may be used)*
- Population by protective action zone (*pages from the plans may be used)*

Demonstration of the KI inventory rosters for the general public will occur in the local EOC's by Health Representatives.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

On July 23, 11 a.m. ingestion jurisdictions will be evaluated by out-of-sequence interview. Staff will discuss how equipment within the facility is sufficient and consistent with the role assigned to that facility in the ORO's plans and/or procedures in support of emergency operations. Maps and displays should be discussed.

Outstanding Issues: 41-06-1.e.1-A-01: State EOC. The modified administrative exposure limit (0.45 R reporting level) could not be read using the issued dosimetry.

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

2. PROTECTIVE ACTION DECISION MAKING

2.a Emergency Worker Exposure Control

Criterion 2.a.1: Offsite Response Organizations use a decision making process, considering relevant factors and appropriate coordination, to ensure that an exposure control system, including the use of KI, is in place for emergency workers including provisions to authorize radiation exposure in excess of administrative limits or protective action guides. (NUREG-0654, K.4, J.10.e, f)

Extent of Play

Responsible Offsite Response Organization's authorized to send emergency workers into the plume exposure pathway Emergency Planning Zone should demonstrate a capability to meet the criterion based on their emergency plans and procedures. Responsible Offsite Response Organization's should demonstrate the capability to make decisions concerning the authorization of exposure levels in excess of preauthorized levels and to the number of emergency workers

receiving radiation dose above pre-authorized levels. As appropriate, Offsite Response Organization's should demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure, based on the Offsite Response Organization's plan and/or procedures or projected thyroid dose compared with the established Protective Action Guides (Protective Action Guides) for KI administration. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Managemen & Virginia Department of Radiological Health:
VDEM and DRH working in the EOF will rely on the facility's area monitor system and will not perform 30-minute dosimeter readings. If the area monitoring system fails or facility dose rates are shown to increase, dosimetry will be issued to facility personnel in accordance with Dominion Generation procedures, and Dominion Generation facility monitoring personnel will monitor exposure. State field monitoring teams and mobile lab workers will demonstrate emergency worker exposure control, as per procedures. As appropriate, DRH will demonstrate the capability to make decisions on the distribution and administration of KI, as a protective measure, based on the calculated thyroid dose resulting from a field sample exceeds the established protective action guides (PAGs) for KI administration.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Risk Jurisdictions authorized to send emergency workers into the plume exposure pathway EPZ will demonstrate a capability to meet the criterion based on their emergency plans and procedures. As appropriate, risk jurisdictions will demonstrate the capability for the distribution and administration of KI, as a protective measure, based on the ORO's plan and/or procedures or projected thyroid dose compared with the established protective action guides (PAGs) for KI administration. This distribution will occur only if the State Commissioner of Health or his designee orders the ingestion of KI by emergency workers.

2.b Radiological Assessment and Protective Action Recommendations and Decisions for the Plume Phase of the Emergency
Criterion 2.b.1: Appropriate protective action recommendations are based on available information on plant conditions, field monitoring data, and licensee and Offsite Response Organization dose projections, as well as knowledge of onsite and offsite environmental conditions. (NUREG-0654, I.8, 10 and Supplement 3)

Extent of Play
During the initial stage of the emergency response, following notification of plant conditions that may warrant offsite protective actions, the Offsite Response Organization's should demonstrate the capability to use appropriate means, described in the plan and/or procedures, to develop protective action recommendations for decision-makers based on available information and recommendations from the licensee and field monitoring data, if available. When the licensee provides release and meteorological data, the Offsite Response Organization's also considers this data. The Offsite Response Organization's should demonstrate a reliable capability to independently validate dose projections. The types of calculations to be demonstrated depend on the data available and the need for assessments to support the Protective Action

Recommendations appropriate to the scenario. In all cases, calculation of projected dose should be demonstrated. Projected doses should be related to quantities and units of the Protective Action Guide to which they will be compared. Protective Action Recommendations should be promptly transmitted to decision-makers in a prearranged format. Differences greater than a factor of 10 between projected doses by the licensee and the Offsite Response Organization's should be discussed with the licensee with respect to the input data and assumptions used, the use of different models, or other possible reasons. Resolution of these differences should be incorporated into the Protective Action Recommendation if timely and appropriate. The Offsite Response Organization's should demonstrate the capability to use any additional data to refine projected doses and exposure rates and revise the associated Protective Action Recommendations. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Radiological Health:
The initial Protective Action Recommendation (PAR) is based on plant conditions. Scenario driven doses may not exceed EPA PAGs, as the plant condition-based PAR will dictate the appropriate evacuation/sheltering recommendation.

Dose projections will be developed by the Division of Radiological Health at the LEOF to confirm or modify, as necessary, the PAR in effect. The protective action recommendation will be forwarded from the LEOF to the VEOC with any information necessary to support the recommendation.

Criterion 2.b.2: A decision-making process involving consideration of appropriate factors and necessary coordination is used to make protective action decisions for the general public (including the recommendation for the use of KI, if Offsite Response Organization policy). (NUREG-0654, J.9; J.10.f, m)

Extent of Play
Offsite Response Organizations should have the capability to make both initial and subsequent Protective Action Decisions. They should demonstrate the capability to make initial Protective Action Decisions in a timely manner appropriate to the situation, based on notification from the licensee, assessment of plant status and releases, and Protective Action Recommendations from the utility and Offsite Response Organization staff. The dose assessment personnel may provide additional Protective Action Recommendations based on the subsequent dose projections, field monitoring data, or information on plant conditions. The decision makers should demonstrate the capability to change protective actions as appropriate based on these projections. If the Offsite Response Organization's has determined that KI will be used as a protective measure for the general public under offsite plans, then the Offsite Response Organization's should demonstrate the capability to make decisions on the distribution and administration of KI as a protective measure for the general public to supplement sheltering and evacuation. This decision should be based on the Offsite Response Organization's plan and/or procedures or projected thyroid dose compared with the established Protective Action Guide for KI administration. The KI decision making process should involve close coordination with appropriate assessment and decision-making staff. If more than one Offsite Response Organization's is involved in decision-making,

Offsite Response Organizations should communicate and coordinate Protective Action Decisions with affected Offsite Response Organization's. Offsite Response Organization's should demonstrate the capability to communicate the contents of decisions to the affected jurisdictions. All decision-making activities by Offsite Response Organization's personnel must be performed based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management
Virginia Department of Radiological Health:
Decisions to evacuate and shelter any portion of the affected population will be demonstrated by the VDEM State Coordinator or his representative in the VEOC. These decisions will be coordinated with risk jurisdictions. The State Commissioner of Health (or designee) will determine whether and when to authorize the administration of KI to emergency workers within the 10-mile EPZ.

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

Extent of Play
Usually, it is appropriate to implement evacuation in areas where doses are projected to exceed the lower end of the range of Protective Action Guides, except for situations where there is a high-risk environment or where high-risk groups (e.g., the immobile or infirm) are involved. In these cases, examples of factors that should be considered are: weather conditions, shelter availability, availability of transportation assets, risk of evacuation vs. risk from the avoided dose, and precautionary school evacuations. In situations where an institutionalized population cannot be evacuated, the administration of KI should be considered by the Offsite Response Organization's. Applicable Offsite Response Organization's should demonstrate the capability to alert and notify all public school systems/districts of emergency conditions that are expected to or may necessitate protective actions for students. Contacts with public school systems/districts must be actual. In accordance with plans and/or procedures, Offsite Response Organization's and/or officials of public school systems/districts should demonstrate the capability to make prompt decisions on protective actions for students. Officials should demonstrate that the decision making process for protective actions considers (that is, either accepts automatically or gives heavy weight to) protective action recommendations made by Offsite Response Organization personnel, the EAL at which these recommendations are received, preplanned strategies for protective actions for that EAL, and the location of students at the time (for example, whether the students are still at home, en route to the school, or at the school). All decision-making activities associated with protective actions, including consideration of available resources, for special population groups must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
All risk jurisdictions will have a school representative and social services representatives available at their EOC. When dictated by events and according to procedures, officials will demonstrate what protective action decision they would make for schools located within the 10 mile EPZ, impact on students residing in the 10 mile EPZ, but attending schools outside the EPZ, and the impact on other special needs populations. EOC representatives will consider relevant factors, such as weather, shelter availability and time evacuation estimates when determining what protective actions to recommend for special populations. EOC representatives will also consider relevant factors such as the availability of transportation assets, risk of evacuation vs. risk from the avoided dose, precautionary school evacuation, and the administration of KI in situations where an institutionalized population cannot be evacuated.

2.d. Radiological Assessment and Decision-Making for the Ingestion Exposure Pathway Criterion 2.d.1: Radiological consequences for the ingestion pathway are assessed and appropriate protective action decisions are made based on the Offsite Response Organization planning criteria. (NUREG-0654, I.8; J.11)

Extent of Play
It is expected that the Offsite Response Organization will take precautionary actions to protect food and water supplies, or to minimize exposure to potentially contaminated water and food, in accordance with their respective plans and procedures. Often such precautionary actions are initiated by the Offsite Response Organization's based on criteria related to the facility's emergency classification levels. Such actions may include recommendations to place milk animals on stored feed and to use protected water supplies. The Offsite Response Organization should use its procedures (for example, development of a sampling plan) to assess the radiological consequences of a release on the food and water supplies. The Offsite Response Organization's assessment should include the evaluation of the radiological analyses of representative samples of water, food, and other ingestible substances of local interest from potentially impacted areas, the characterization of the releases from the facility, and the extent of areas potentially impacted by the release. During this assessment, Offsite Response Organization's should consider the use of agricultural and watershed data within the 50-mile Emergency Planning Zone. The radiological impacts on the food and water should then be compared to the appropriate ingestion Protective Action Guides contained in the Offsite Response Organization's plan and/or procedures. The plan and/or procedures may contain Protective Action Guides based on specific dose commitment criteria or based on criteria as recommended by current Food and Drug Administration guidance. Timely and appropriate recommendations should be provided to the Offsite Response Organization decision-makers group for implementation decisions. As time permits, the Offsite Response Organization may also include a comparison of taking or not taking a given action on the resultant ingestion pathway dose commitments. The Offsite Response Organization should demonstrate timely decisions to minimize radiological impacts from the ingestion pathway, based on the given assessments and other information available. Any such decisions should be communicated and to the extent practical, coordinated with neighboring and local Offsite Response Organization's. Offsite Response Organization's should use Federal resources, as identified in the Federal Radiological Emergency Response Plan, and other resources (e.g., compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and

other resources participating. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Radiological Health:
DRH will complete their initial sampling plan at the conclusion of the plume phase of the exercise on July 22. The ingestion phase will be demonstrated at the VEOC by tabletop exercise. Controller data will provide sample results to DRH on July 22. Additionally, the Aerial Monitoring Survey (AMS) results (controller inject) will be provided to DRH. Sample results will be provided to DRH via controller inject.

DRH will be prepared to provide their dose assessment results and protective action recommendations to VDEM. Protective action recommendations will be based on the EPA 400 guideline and will be provided for the following:

1st year – 2 rem
2nd year - .5 rem
50 year – 5 rem

On July 23, VDEM and local jurisdictions will coordinate and make protective action decisions based on the information provided to them. Protective action decision-making may involve all of the impacted jurisdictions and the State of Maryland.

2.e. Radiological Assessment and Decision-Making Concerning Relocation, Reentry, and Return
Criterion 2.e.1: Timely relocation, re-entry, and return decisions are made and coordinated as appropriate, based on assessments of the radiological conditions and criteria in the Offsite Response Organization's plan and/or procedures. (NUREG-0654, A.1.b; I.10; M.1)

Extent of Play
Relocation: Offsite Response Organizations should demonstrate the capability to estimate integrated dose in contaminated areas and to compare these estimates with Protective Action Guides, apply decision criteria for relocation of those individuals in the general public who have not been evacuated but where projected doses are in excess of relocation Protective Action Guides and control access to evacuated and restricted areas. Decisions are made for relocating members of the evacuated public who lived in areas that now have residual radiation levels in excess of the Protective Action Guides. Determination of areas to be restricted should be based on factors such as the mix of radionuclides in deposited materials, calculated exposure rates vs. the Protective Action Guides and field samples of vegetation and soil analyses.

Re-entry: Decisions should be made regarding the location of control points and policies regarding access and exposure control for emergency workers and members of the general public who need to temporarily enter the evacuated area to perform specific tasks or missions. Examples of control procedures are: the assignment of, or checking for direct reading and non-direct-reading dosimetry for emergency workers; questions regarding the individual's objectives and locations expected to be visited and associated time frames; availability of maps and plots of

radiation exposure rates; advice on areas to avoid; and procedures for exit including; monitoring of individuals, vehicles, and equipment; decision criteria regarding decontamination and proper disposition of emergency worker dosimetry and maintenance of emergency worker radiation exposure records. Responsible Offsite Response Organizations should demonstrate the capability to develop a strategy for authorized re-entry of individuals into the restricted zone, based on established decision criteria. Offsite Response Organizations should demonstrate the capability to modify those policies for security purposes (e.g., police patrols), for maintenance of essential services (e.g., fire protection and utilities), and for other critical functions. They should demonstrate the capability to use decision making criteria in allowing access to the restricted zone by the public for various reasons, such as to maintain property (e.g., to care for farm animals or secure machinery for storage), or to retrieve important possessions. Coordinated policies for access and exposure control should be developed among all agencies with roles to perform in the restricted zone. Offsite Response Organizations should demonstrate the capability to establish policies for provision of dosimetry to all individuals allowed re-entry to the restricted zone. The extent that Offsite Response Organizations need to develop policies on re-entry will be determined by scenario events.

Return: Decisions are to be based on environmental data and political boundaries or physical/geological features, which allow identification of the boundaries of areas to which members of the general public may return. Return is permitted to the boundary of the restricted area that is based on the relocation Protective Action Guide. Other factors that the Offsite Response Organization should consider are, for example: conditions that permit the cancellation of the Emergency Classification Level and the relaxation of associated restrictive measures; basing return recommendations (i.e., permitting populations that were previously evacuated to reoccupy their homes and businesses on an unrestricted basis) on measurements of radiation from ground deposition; and the capability to identify services and facilities that require restoration within a few days and to identify the procedures and resources for their restoration. Examples of these services and facilities are: medical and social services, utilities, roads, schools, and intermediate term housing for relocated persons. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management:
Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
DRH will provide their dose assessment results and any additional protective action recommendations concerning relocation, re-entry, and return to VDEM at the VEOC. These protective action recommendations will be based on the projected dose for 1 year and will involve relocation, re-entry and/or return of the population within the 10-mile emergency planning zone (EPZ).

VDEM will make protective action decisions based on information provided by DRH. This protective action decision-making is a joint process and will involve the impacted risk jurisdictions.

An evaluator will be present in each risk jurisdiction and the VEOC to observe the decision-making process between the VEOC and the risk jurisdictions by monitoring communications via

Instaphone. The implementation of the protective action decisions for relocation, re-entry and/or return will be conducted by evaluator interviews.

Outstanding Issues:
None

3. PROTECTIVE ACTION IMPLEMENTATION
3.a Implementation of Emergency Worker Exposure Control:
Criterion 3.a.1: The Offsite Response Organizations issue appropriate dosimetry and procedures, and manage radiological exposure to emergency workers in accordance with the plans and procedures. Emergency workers periodically and at the end of each mission read their dosimeters and record the readings on the appropriate exposure record or chart. (NUREG-0654, K.3.a, b)

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

radiological exposure commensurate with completing their missions. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management
Virginia Department of Radiological Health:
VDEM and DRH working in the LEOF will rely on the facility's area monitor system and will not perform 30-minute dosimeter readings. If the area monitoring system fails or facility dose rates are shown to increase, dosimetry will be issued to facility personnel in accordance with Dominion Generation procedures, and exposure will be monitored by Dominion Generation facility monitoring personnel. State field monitoring teams and mobile lab workers will demonstrate emergency worker exposure control, as per procedures.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Appropriate emergency workers in the risk jurisdictions will demonstrate emergency worker exposure control, as per procedures. Radiological Officers will be evaluated on their management (equipping and briefing) of field workers at the staging area location where field workers are equipped and briefed.

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

Extent of Play
Offsite Response Organizations should demonstrate the capability to make KI available to emergency workers, institutionalized individuals, and, where provided for in the Offsite Response Organization plan and/or procedures, to members of the general public. Offsite Response Organizations should demonstrate the capability to accomplish distribution of KI consistent with decisions made. Organizations should have the capability to develop and maintain lists of emergency workers and institutionalized individuals who have ingested KI, including documentation of the date(s) and time(s) they were instructed to ingest KI. The ingestion of KI recommended by the designated Offsite Response Organization health official is voluntary. For evaluation purposes, the actual ingestion of KI is not necessary. Offsite Response Organizations should demonstrate the capability to formulate and disseminate appropriate instructions on the use of KI for those advised to take it. If a recommendation is made for the general public to take KI, appropriate information should be provided to the public by the means of notification specified in the Offsite Response Organization's plan and/or procedures. Emergency workers should demonstrate the basic knowledge of procedures for the use of KI whether or not the scenario drives the use of KI. This can be accomplished by an interview with the evaluator. All activities must be based on the Offsite Response Organization's plans and procedures and be completed, as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Radiological Health:
The State Commissioner of Health will determine whether and/or when to authorize the administration of KI to emergency workers.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Risk jurisdictions will have a sufficient quantity of KI on hand in their EOC or at some other storage location or be capable of demonstrating its availability through written documentation (inventory sheets or letter). The KI intended for use will not exceed the expiration date. Emergency workers, as appropriate, will receive KI according to their procedures and will be briefed or given information on its use. Included organizations will have the capacity to develop and maintain lists of emergency workers who have ingested KI, including documentations of the date(s) and time(s) they were instructed to ingest KI. Simulated KI can be used. Emergency workers will demonstrate through interview the basic knowledge of procedures for the use of KI whether or not the scenario drives the use of KI. Implementation of KI use by the general public will not be demonstrated.

Outstanding Issues:
41-06-3.b.1-A-05: Orange County TCP/ACP. Although simulated potassium iodide (KI) was available at the Orange County staging area, it was not issued to emergency workers (including the field monitoring team) prior to their deployment to the field.

3.c Implementation of Protective Actions for Special Populations:
Criterion 3.c.1: Protective action decisions are implemented for special populations other than schools within areas subject to protective actions. (NUREG-0654, J.10.c, d, g)

Extent of Play
Applicable Offsite Response Organizations should demonstrate the capability to alert and notify (for example, provide protective action recommendations and emergency information and instructions) special populations (hospitals, nursing homes, correctional facilities, mobility impaired individuals, transportation dependent, etc.). Offsite Response Organizations should demonstrate the capability to provide for the needs of special populations in accordance with the Offsite Response Organization's plans and procedures. Contact with special populations and reception facilities may be actual or simulated, as agreed to in the Extent of Play. Some contacts with transportation providers should be actual, as negotiated in the extent of play. All actual and simulated contacts should be logged. All implementing activities associated with protective actions for special populations must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.
Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Jurisdictions will demonstrate that a list of any special needs individuals within their portion of the 10-mile EPZ is maintained by Social Services. If resources are needed to assist these individuals for areas included in the Protective Action Decision, the availability of these resources will be verified (e.g., through discussion and presentation of transportation methods or providers, available vehicles, etc.). Contact with any special needs individuals will be simulated. Contact with the transportation providers will occur in the EOC with transportation providers (e.g., rescue squad). All actual or simulated communications will be logged.

Criterion 3.c.2: Offsite Response Organizations/School Officials implement protective actions for schools. (NUREG-0654, J.10.c, d, g)

Extent of Play

Public school systems/districts shall demonstrate the ability to implement protective action decisions for students. The demonstration shall be made as follows: At least one school in each affected school system or district, as appropriate, needs to demonstrate the implementation of protective actions. Implementation procedures for canceling the school day, dismissing early or sheltering should be simulated by describing those procedures to evaluators. If evacuation is the implemented protective action, all activities to coordinate and complete the evacuation of students to reception centers, congregate care centers, or host schools may actually be demonstrated or accomplished through an interview process. If accomplished through an interview process, appropriate school personnel including decision making officials (e.g., superintendent/principal, transportation director/bus dispatcher), and at least one bus driver (and the bus driver's escort, if applicable) should be available to demonstrate knowledge of their role(s) in the school evacuation process. Communications capabilities between school officials and the buses, if required by the plan and/or procedures, should be verified. Officials of the school system(s) should demonstrate the capability to develop and provide timely information to Offsite Response Organizations for use in messages to parents, the general public, and the media on the status of protective actions for schools. The provisions of this criterion also apply to any private schools, private kindergartens and day care centers that participate in Radiological Emergency Preparedness exercises pursuant to the Offsite Response Organization's plans and procedures as negotiated in the extent of play agreement. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):

This evaluation area will be demonstrated during the exercise at the local EOC. An inject message will be provided to the school superintendent or designee to initiate the table-top interview. The superintendent or designee will discuss procedures and appropriate actions to be taken for school closing due to a radiological emergency at North Anna Power Station. The superintendent or designee will make notifications via telephone to school representatives, i.e., School principal, transportation director, etc. from the local EOC. The evaluator will have actual contact with the designated school and be given the opportunity to speak with the school principal or designee to affirm that the actions they take when notification is received are appropriate and in accordance with their procedure. The school superintendent or designee will have the radiological plan available and show the pre-scripted EAC message regarding school children. In addition, the superintendent or designee will illustrate a letter to parents informing them of policies and procedures regarding early dismissal of children due to a radiological incident.

The following schools will be contacted:

- Caroline County – Ladysmith Elementary School
- Hanover County – Liberty Middle School
- Louisa County – Louisa County Middle School

- Orange County – Lightfoot Elementary School
- Spotsylvania County – Spotsylvania County High School

3.d Implementation of Traffic and Access Control.
Criterion 3.d.1: Appropriate traffic and access control is established. Accurate instructions are provided to traffic and access control personnel. (NUREG-0654, J.10.g, j)

Extent of Play
Offsite Response Organizations should demonstrate the capability to select, establish, and staff appropriate traffic and access control points, consistent with protective action decisions (for example, evacuating, sheltering, and relocation), in a timely manner. Offsite Response Organizations should demonstrate the capability to provide instructions to traffic and access control staff on actions to take when modifications in protective action strategies necessitate changes in evacuation patterns or in the area(s) where access is controlled. Traffic and access control staff should demonstrate accurate knowledge of their roles and responsibilities. This capability may be demonstrated by actual deployment or by interview, in accordance with the extent of play agreement. In instances where Offsite Response Organizations lack authority necessary to control access by certain types of traffic (rail, water, and air traffic), they should demonstrate the capability to contact the State or Federal agencies with authority to control access. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management:
The VEOC, driven by Protective Action Decisions will need to demonstrate the requesting of control of air, rail and waterways to the appropriate organizations. All communication will be simulated and logged.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Risk Jurisdictions, driven by the Protective Action Decision (PAD) to activate traffic control points and access control points will activate one traffic control point (TCP) and one access control point (ACP) simulated at the staging area. Both the TCP and the ACP will be established and held until evaluated. One unit (officer) will be provided to demonstrate this evaluation area. The personnel used to activate the TCP can also be the one to activate the ACP.

Risk jurisdictions will demonstrate the capability to provide instructions to traffic and access control staff on actions to take when modifications to protective action strategies necessitate change in evacuation patterns or in the area(s) where access is controlled.

The TCP/ACP officers will be knowledgeable of the following:
- Traffic Control
- Access Control
- Location of the EAC
- Dosimetry and exposure limits (reporting and turnback levels)
- Required Protective Actions

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

Extent of Play
Offsite Response Organizations should demonstrate the capability, as required by the scenario, to identify and take appropriate actions concerning impediments to evacuation. Actual dispatch of resources to deal with impediments, such as wreckers, need not be demonstrated; however, all contacts, actual or simulated should be logged. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
Risk jurisdictions will demonstrate the capability and knowledge of procedures to identify and take appropriate actions concerning impediments to evacuation, as required by the scenario or controller inject messages. Actual dispatch of resources to deal with impediments, such as wreckers, will not be demonstrated; however, all contacts, actual or simulated will be logged.

3.e Implementation of Ingestion Pathway Decisions
Criterion 3.e.1: The Offsite Response Organization demonstrates the availability and appropriate use of adequate information regarding water, food supplies, milk, and agricultural production within the ingestion exposure pathway emergency planning zone for implementation of protective actions. (NUREG-0654, J.9, 11)

Extent of Play
Applicable Offsite Response Organizations should demonstrate the capability to secure and utilize current information on the locations of dairy farms, meat and poultry producers, fisheries, fruit growers, vegetable growers, grain producers, food processing plants and water supply intake points to implement protective actions within the ingestion pathway Emergency Planning Zone. Offsite Response Organizations should use Federal resources as identified in the Federal Radiological Emergency Response Plan, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management
Virginia Department of Health - Division of Radiological Health
DRH will report their protective action recommendations to VDEM regarding ingestion pathway decisions. VDEM will demonstrate the capability to obtain copies of ingestion information in a timely manner. VDEM will notify the risk jurisdictions of the protective action decisions via instaphone. VDEM will notify the host and ingestion jurisdictions via Virginia Criminal Information Network (VCIN) or fax.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
The local risk jurisdictions will demonstrate the capability to obtain copies of ingestion information in a timely manner and demonstrate their knowledge of the appropriate use of the

information of ingestion pathway planning for the implementation of protective actions. The emergency services coordinator, health department and the extension agent will demonstrate that all water sources, dairies, and agricultural production sources within the ingestion pathway planning zone are identified and know how to utilize the information and materials to implement ingestion pathway decisions according to their plan and procedures.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

On July 23, ingestion jurisdictions will receive information via VCIN and confirm receipt of information via VCIN or fax. No further actions will be taken or evaluated.

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

3.e Implementation of Ingestion Pathway Decisions
Criterion 3.e.2: Appropriate measures, strategies, and pre-printed instructional material are developed for implementing protective action decisions for contaminated water, food products, milk, and agricultural production. (NUREG-0654, E.5, 7; J.9, 11)

Extent of Play
Development of measures and strategies for implementation of ingestion pathway zone protective actions should be demonstrated by formulation of protective action information for the general public and food producers and processors. This includes the capability for the rapid reproduction and distribution of appropriate reproduction-ready information and instructions to predetermined individuals and businesses. Offsite Response Organizations should demonstrate the capability to control, restrict or prevent distribution of contaminated food by commercial sectors. Exercise play should include demonstration of communications and coordination between organizations to implement protective actions. However, actual field play of implementation activities may be simulated. For example, communications and coordination with agencies responsible for enforcing food controls within the Ingestion Pathway Zone should be demonstrated, but actual communications with food producers and processors may be simulated. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management
On July 23, the State Public Affairs Officer at the VEOC will demonstrate that pre-printed instructional materials are available and strategies are developed to implement ingestion pathway decisions by drafting and distributing appropriate news release in a timely manner. No public inquiry calls or media briefings will occur on July 23.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
On July 23, at 11 a.m., the Emergency Services Coordinator or designee, the public information officer (PIO) and the extension agent will demonstrate that pre-printed instructional materials are available and strategies are developed to implement ingestion pathway decisions. No public inquiry calls or media briefing will occur on July 23. All actions will be demonstrated in accordance to the plan and procedures.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

On July 23, at 11 a.m., the Emergency Services Coordinator or designee, the public information officer (PIO) and the extension agent will demonstrate that pre-printed instructional materials are available and strategies are developed to implement ingestion pathway decisions. No public inquiry calls or media briefing will occur on July 23. All actions will be demonstrated in accordance to the plan and procedures.

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

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

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

include the capability to communicate with Offsite Response Organizations regarding timing of actions, notification of the population of the procedures for relocation, and the notification of, and advice for, evacuated individuals who will be converted to relocation status in situations where they will not be able to return to their homes due to high levels of contamination. Offsite Response Organizations should also demonstrate the capability to communicate instructions to the public regarding relocation decisions.

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

Return: Offsite Response Organizations should demonstrate the capability to implement policies concerning return of members of the public to areas that were evacuated during the plume phase. Offsite Response Organizations should demonstrate the capability to identify and prioritize services and facilities that require restoration within a few days, and to identify the procedures and resources for their restoration. Examples of these services and facilities are medical and social services, utilities, roads and schools and intermediate term housing for relocated persons. Communications among Offsite Response Organizations for relocation, re-entry and return may be simulated; however all simulated or actual contacts should be documented. These discussions may be accomplished in a group setting. Offsite Response Organizations should use Federal resources as identified in the Federal Radiological Emergency Response Plan, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management

VDEM will make protective action decisions based on information provided by DRH. This protective action decision-making is a joint process and will involve the impacted risk jurisdictions.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):

On July 23, an evaluator will observe the decision-making process between the VEOC and the local risk jurisdictions by monitoring communications via instaphone. The implementation of the protective action decisions for relocation, re-entry and/or return will be conducted by evaluator interviews. All decisions will be in accordance with plans and procedures.

4. FIELD MEUREMENT AND ANALYSIS

4.a Plume Phase Field Measurements and Analysis

Criterion 4.a.1: The field teams are equipped to perform field measurements of direct radiation exposure (cloud and ground shine) and to sample airborne radioiodine and particulates. (NUREG-0654, H.10; I.7, 8, 9)

Extent of Play

Field teams should be equipped with all instrumentation and supplies necessary to accomplish their mission. This should include instruments capable of measuring gamma exposure rates and detecting the presence of beta radiation. These instruments should be capable of measuring a range of activity and exposure, including radiological protection/exposure control of team members and detection of activity on the air sample collection media, consistent with the intended use of the instrument and the Offsite Response Organization's plans and procedures. An appropriate radioactive check source should be used to verify proper operational response for each low range radiation measurement instrument (less than 1 R/hr) and for high range instruments when available. If a source is not available for a high range instrument, a procedure should exist to operationally test the instrument before entering an area where only a high range instrument can make useful readings. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Health, Division of Radiological Health

Two State Field Monitoring Teams (FMTs), consisting of at least two individuals per team, will be staged at the Louisa County and Post Oak VDOT Residency Shops. The team will be briefed and equipped with the appropriate field monitoring instruments and the team will check the equipment for operability before deployment into the field.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):

Each jurisdiction will deploy one FMT, consisting of at least two individuals per team, from the staging area within their jurisdiction.

The Radiological Officer will provide a briefing, survey meters and appropriate forms to field monitors.

The field monitors will perform an operational check on the meters before being deployed into the field.

If an instrument is found to be broken or working incorrectly, the radiological officer will take appropriate actions according to plans and procedures.

Outstanding Issues:

41-06-4.a.1-A-03: Caroline County Field Monitoring Team. The Ludlum 2240 Survey Meter probe was not wrapped in a probe cover before leaving the staging area.

41-06-4.a.1-A-06: Orange County Field Monitoring Team. The Ludlum 2240 Survey Meter probe was not wrapped in a probe cover before leaving the staging area.

Criterion 4.a.2: Field teams are managed to obtain sufficient information to help characterize the release and to control radiation exposure. (NUREG-0654, H.12; I.8, 11; J.10.a)

Extent of Play

Responsible Offsite Response Organizations should demonstrate the capability to brief teams on predicted plume location and direction, travel speed, and exposure control procedures before deployment. Field measurements are needed to help characterize the release and to support the adequacy of implemented protective actions or to be a factor in modifying protective actions. Teams should be directed to take measurements in such locations, at such times to provide information sufficient to characterize the plume and impacts. If the responsibility to obtain peak measurements in the plume has been accepted by licensee field monitoring teams, with concurrence from Offsite Response Organizations, there is no requirement for these measurements to be repeated by State and local monitoring teams. If the licensee teams do not obtain peak measurements in the plume, it is the Offsite Response Organization's decision as to whether peak measurements are necessary to sufficiently characterize the plume. The sharing and coordination of plume measurement information among all field teams (licensee, Federal, and Offsite Response Organization) is essential. Coordination concerning transfer of samples, including a chain-of-custody form, to a radiological laboratory should be demonstrated. Offsite Response Organizations should use Federal resources as identified in the Federal Radiological Emergency Response Plan, and other resources (for example, compacts, utility, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play-agreement.

Virginia Department of Health, Division of Radiological Health

Two State Field Monitoring Teams (FMTs), consisting of at least two individuals per team, will be staged at the Louisa County and Post Oak VDOT Residency Shop. Each team will communicate results, as necessary, to the DRH representative at the LEOF. It should be noted that the overall monitoring effort is coordinated by DRH from the LEOF.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):

Each jurisdiction will deploy one FMT (at least two individuals per team) from the staging area within their jurisdiction. The Radiological Officer will provide a briefing, survey meters and appropriate forms to field monitors. The field monitoring team will be in contact with the Radiological Officer (RO). The field teams will report field readings to the RO who will then forward the appropriate information to DRH at the LEOF. In addition, the RO will be responsible to inform the field teams, in a timely manner, all relevant information, including weather conditions, changes in wind direction, and all protective action decisions.

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

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

Extent of Play

Field teams should demonstrate the capability to report measurements and field data pertaining to the measurement of airborne radioiodine and particulates and ambient radiation to the field team coordinator, dose assessment, or other appropriate authority. If samples have radioactivity significantly above background, the appropriate authority should consider the need for expedited laboratory analyses of these samples. Offsite Response Organizations should share data in a timely manner with all appropriate Offsite Response Organizations. All methodology, including contamination control, instrumentation, preparation of samples, and a chain of custody form for transfer to a laboratory, will be in accordance with the Offsite Response Organization's plan and/or procedures. Offsite Response Organizations should use Federal resources as identified in the Federal Radiological Emergency Response Plan, and other resources (for example, compacts, utility, etc.), if available. Evaluation of this criterion will take into consideration the level of both Federal and other resources participating in the exercise. All activities must be must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Health, Division of Radiological Health

Two State Field Monitoring Teams (FMTs), consisting of at least two individuals per team, will be staged at the Louisa County and Post Oak VDOT Residency Shops.

Each team will take measurements at a minimum of two locations and will operate according to procedures. A minimum of six total sets of readings will be taken per team (for example, each team may visit two locations and take three sets of readings per location, or another combination may be used).

The field teams will demonstrate the capability to determine the location of the plume. Each team will communicate results, as necessary, to the DRH representative at the LEOF. It should be noted that the overall monitoring effort is coordinated by DRH from the LEOF. Controllers will provide data to the field teams.

Each State field monitoring team will demonstrate the collection of at least one air sample in the field. A second air sample may be taken if needed. At least one sample will be taken to the mobile laboratory for gamma spectral analysis. Chain of Custody procedures shall be demonstrated.

Laboratory operations will not be demonstrated for the sample at the mobile laboratory. Appropriate sample analysis information will be forwarded to DRH at the LEOF.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):

Each jurisdiction will deploy one FMT, consisting of at least two individuals per team, to a minimum of two monitoring points located within their jurisdiction. Teams will take measurements and operate according to their procedures. The monitoring results will be reported

to their EOC, which will then be forward the appropriate information DRH at the LEOF. The controllers will have the necessary data to provide radiation levels to these teams.

4.b Post Plume Phase Field Measurements and Sampling
Criterion 4.b.1: The field teams demonstrate the capability to make appropriate measurements and to collect appropriate samples (e.g., food crops, milk, water, vegetation, and soil) to support adequate assessments and protective action decision-making. (NUREG-0654, I.8; J.11)

Extent of Play
The Offsite Response Organization's field teams should demonstrate the capability to take measurements and samples, at such times and locations as directed, to enable an adequate assessment of the ingestion pathway and to support re-entry, relocation, and return decisions. When resources are available, the use of aerial surveys and in-situ gamma measurement is appropriate. All methodology, including contamination control, instrumentation, preparation of samples, and chain of custody form for transfer to a laboratory, will be in accordance with the Offsite Response Organization's plan and/or procedures. Ingestion pathway samples should be secured from agricultural products and water. Samples in support of relocation and return should be secured from soil, vegetation, and other surfaces in areas that received radioactive ground deposition. Offsite Response Organizations should use Federal resources as identified in the Federal Radiological Emergency Response Plan, and other resources (e.g. compacts, nuclear insurers, etc), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise. All activities must be must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Health, Division of Radiological Health
Department of Agriculture and Consumer Services
Office of Water Engineering
The State environmental sampling teams will be comprised of the State agencies listed above will demonstrate post-emergency sampling on the afternoon of July 22. A minimum of two State environmental sampling teams will be established. The two teams will take a total of 4 samples. These samples will be one of narrow leaf vegetation, surface water, and soil. The locations where these samples will be taken will be included as a controller inject. Note that these pre-selected sample points are not necessarily points, which will be selected as part of Division of Radiological Health's dose assessment process.

The appropriate procedures will be followed for this demonstration. Each sample will be transported to the Mobile Laboratory for analysis.

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

Extent of Play
The laboratory staff should demonstrate the capability to follow appropriate procedures for receiving samples, including logging of information, preventing contamination of the laboratory, preventing buildup of background radiation due to stored samples, preventing cross contamination of samples, preserving samples that may spoil (for example, milk), and keeping track of sample identity. In addition, the laboratory staff should demonstrate the capability to prepare samples for conducting measurements. The laboratory should be appropriately equipped to provide analyses of media, as requested, on a timely basis, of sufficient quality and sensitivity to support assessments and decisions as anticipated by the Offsite Response Organization's plans and procedures. The laboratory (laboratories) instrument calibrations should be traceable to standards provided by the National Institute of Standards and Technology. Laboratory methods used to analyze typical radionuclides released in a reactor incident should be as described in the plans and procedures. New or revised methods may be used to analyze atypical radionuclide releases (for example, transuranics or as a result of a terrorist event) or if warranted by circumstances of the event. Analysis may require resources beyond those of the Offsite Response Organization. The laboratory staff should be qualified in radioanalytical techniques and contamination control procedures. Offsite Response Organizations should use Federal resources as identified in the Federal Radiological Emergency Response Plan, and other resources (for example, compacts, utility, nuclear insurers, etc.), if available. Evaluation of this criterion will take into consideration the level of Federal and other resources participating in the exercise. All activities must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Health, Division of Radiological Health
Laboratory operations will be demonstrated for the sample at the mobile laboratory. Appropriate sample analysis information will be forwarded to the Radiological Health Programs representative in the LEOF.

5. EMERGENCY NOTIFICATION AND PUBLIC INFORMATION
5.a Activation of the Prompt Alert and Notification System
Criterion 5.a.1: Activities associated with primary alerting and notification of the public are completed in a timely manner following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The initial instructional message to the public must include as a minimum the elements required by current Federal Emergency Management Agency Radiological Emergency Preparedness guidance. (10 CFR Part 50, Appendix E.IV.D and NUREG-0654, E.5, 6, 7)

Extent of Play
Responsible Offsite Response Organizations should demonstrate the capability to sequentially provide an alert signal followed by an initial instructional message to populated areas (permanent resident and transient) throughout the 10-mile plume pathway Emergency Planning Zone.

Following the decision to activate the alert and notification system, in accordance with the Offsite Response Organization's plan and/or procedures, completion of system activation should be accomplished in a timely manner (will not be subject to specific time requirements) for primary alerting/notification. The initial message should include the elements required by current Federal Emergency Management Agency Radiological Emergency Preparedness guidance. Offsite Response Organizations with route alerting as the primary method of alerting and notifying the public should demonstrate the capability to accomplish the primary route alerting, following the decision to activate the alert and notification system, in a timely manner (will not be subject to specific time requirements) in accordance with the Offsite Response Organization's plan and/or procedures. At least one route needs to be demonstrated and evaluated. The selected route(s) should vary from exercise to exercise. However, the most difficult route should be demonstrated at least once every six years. All alert and notification activities along the route should be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcast) as agreed upon in the extent of play. Actual testing of the mobile public address system will be conducted at an agreed upon location. The initial message should include the elements required by current Federal Emergency Management Agency Radiological Emergency Preparedness guidance. For exercise purposes, timely is defined as "the responsible Offsite Response Organization personnel or representatives demonstrate actions to disseminate the appropriate information or instructions with a sense of urgency and without undue delay." If message dissemination is to be identified as not having been accomplished in a timely manner, the evaluator(s) will document a specific delay or cause as to why a message was not considered timely. Procedures to broadcast the message should be fully demonstrated as they would in an actual emergency up to the point of transmission. Broadcast of the message(s) or test messages *is not* required. The alert signal activation may be simulated. However, the procedures should be demonstrated up to the point of actual activation. The capability of the primary notification system to broadcast an instructional message on a 24-hour basis should be verified during an interview with appropriate personnel from the primary notification system. All activities for this criterion must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, except as noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management
Risk Jurisdictions: Louisa County and Spotsylvania County
Coordination will occur between the VEOC and the affected counties with respect to the Alert and Notification System (ANS) process. Louisa County and Spotsylvania County have the control equipment for activation of sirens. Sirens will be coordinated and the sounding simulated at the appropriate time with the simulated activation of EAS taking place approximately 3 minutes following the simulated activation of the sirens. The VEOC is the initiating point for the activation of the EAS. Regular Broadcasting will not be interrupted on the EAS Stations. Broadcast of the message(s) or test message(s) is **NOT** required and **NOT** requested. Following the decision to activate the alert and notification system, in accordance with the ORO's plan and/or procedures, ANS activation should be accomplished in a timely manner for primary alerting/notification. This action will **NOT** be subject to specific time requirements.

All actions to broadcast stations will be simulated. Systems that use automatic sending technology may be demonstrated by explanation during an interview. Each risk county will

demonstrate, by interview, route alerting of the hearing impaired residents within their jurisdiction. Hearing impaired notification teams will not be deployed.

Louisa and Spotsylvania Counties will conduct primary route alerting for exception areas located within 0-5 miles from North Anna Power Station. The designated route should be completed in a timely manner following the decision to alert and notify the public.

Each risk county will demonstrate, by interview, route alerting of the hearing impaired residents within their jurisdiction. Hearing impaired notification teams will not be deployed.

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

Extent of Play

Offsite Response Organizations with Federal Emergency Management Agency approved exception areas (identified in the approved Alert and Notification System Design Report) 5–10 miles from the nuclear power plant should demonstrate the capability to accomplish primary alerting and notification of the exception area(s) within 45 minutes following the initial decision by authorized offsite emergency officials to notify the public of an emergency situation. The 45 minute clock will begin when the Offsite Response Organizations make the decision to activate the alert and notification system for the first time for a specific emergency situation. The initial message should, at a minimum, include: a statement that an emergency exists at the plant and where to obtain additional information. For exception area alerting, at least one route needs to be demonstrated and evaluated. The selected route(s) should vary from exercise to exercise. However, the most difficult route should be demonstrated at least once every six years. All alert and notification activities along the route should be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcast) as agreed upon in the extent of play. Actual testing of the mobile public address system will be conducted at an agreed upon location.

Backup alert and notification of the public should be completed within 45 minutes following the detection by the Offsite Response Organization of a failure of the primary alert and notification system. Backup route alerting only needs to be demonstrated and evaluated, in accordance with the Offsite Response Organization's plan and/or procedures and the extent of play agreement, if the exercise scenario calls for failure of any portion of the primary system(s), or if any portion of the primary system(s) actually fails to function. If demonstrated, only one route needs to be selected and demonstrated. All alert and notification activities along the route should be simulated (that is, the message that would actually be used is read for the evaluator, but not actually broadcast) as agreed upon in the extent of play. Actual testing of the mobile public address system will be conducted at an agreed upon location. All activities for this criterion must be based on the Offsite Response Organization's plans and procedures and be completed as they

would be in an actual emergency, except as noted above or otherwise indicated in the extent of play agreement.

Risk Jurisdictions:
Caroline, Hanover, Louisa, Spotsylvania and Orange Counties will conduct route alerting for exception areas located within 5-10 miles from North Anna Power Station. The designated route should be completed within 45 minutes of the decision to alert and notify the public.

Caroline, Hanover, and Orange Counties will conduct backup route alerting for a failed siren. The designated route should be completed within 45 minutes following the detection by the offsite response organization of the siren failure.

5.b Emergency Information and Instructions for the Public and the Media
Criterion 5.b.1: Offsite Response Organizations provide accurate emergency information and instructions to the public and the news media in a timely manner.
(NUREG-0654, E. 5, 7; G.3.a; G.4.c)

Extent of Play
Subsequent emergency information and instructions should be provided to the public and the media in a timely manner and will not be subject to specific time requirements. For exercise purposes, timely is defined as "the responsible Offsite Response Organization personnel/representatives demonstrate actions to disseminate the appropriate information/instructions with a sense of urgency and without undue delay." If message dissemination is identified as not having been accomplished in a timely manner, the evaluator(s) will document a specific delay or cause as to why a message was not considered timely. The Offsite Response Organization should ensure that emergency information and instructions are consistent with protective action decisions made by appropriate officials. The emergency information should contain all necessary and applicable instructions (for example, evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, information concerning pets, shelter-in-place instructions, information concerning protective actions for schools and special populations, public inquiry telephone number, etc.) to assist the public in carrying out protective action decisions provided to them. The Offsite Response Organization should also be prepared to disclose and explain the Emergency Classification Level of the incident. At a minimum, this information must be included in media briefings and/or media releases. Offsite Response Organizations should demonstrate the capability to use language that is clear and understandable to the public within both the plume and ingestion pathway Emergency Planning Zones. This includes demonstration of the capability to use familiar landmarks and boundaries to describe protective action areas. The emergency information should be all-inclusive by including previously identified protective action areas that are still valid, as well as new areas. The Offsite Response Organizations should demonstrate the capability to ensure that emergency information that is no longer valid is rescinded and not repeated by broadcast media. In addition, the Offsite Response Organizations should demonstrate the capability to ensure that current emergency information is repeated at pre-established intervals in accordance with the plan and/or procedures. Offsite Response Organizations should demonstrate the capability to develop emergency information in languages other than English when required by the plan and/or procedures. If ingestion pathway measures

are exercised, Offsite Response Organizations should demonstrate that a system exists for rapid dissemination of ingestion pathway information to pre-determined individuals and businesses in accordance with the Offsite Response Organization's plan and/or procedures. Offsite Response Organizations should demonstrate the capability to provide timely, accurate, concise and coordinated information to the news media for subsequent dissemination to the public. This would include demonstration of the capability to conduct timely and pertinent media briefings and distribute media releases as the situation warrants. The Offsite Response Organizations should demonstrate the capability to respond appropriately to inquiries from the news media. All information presented in media briefings and media releases should be consistent with protective action decisions and other emergency information provided to the public. Copies of pertinent emergency information (for example, Emergency Alert System messages and media releases) and media information kits should be available for dissemination to the media. Offsite Response Organizations should demonstrate that an effective system is in place for dealing with calls to the public inquiry hotline. Hotline staff should demonstrate the capability to provide or obtain accurate information for callers or refer them to an appropriate information source. Information from the hotline staff, including information that corrects false or inaccurate information when trends are noted, should be included, as appropriate, in emergency information provided to the public, media briefings, and/or media releases. All activities for this criterion must be based on the Offsite Response Organization's plans and procedures and be completed as they would be in an actual emergency, unless noted above or otherwise indicated in the extent of play agreement.

Virginia Department of Emergency Management

This evaluation area will be demonstrated at the JPIC on July 22. A VDEM Public Affairs Officer will prepare news releases. The news releases will be coordinated and exchanged with local jurisdictions. Dissemination of news releases may be accomplished by the use of fax or other means. One simulated media briefing will be demonstrated at the JPIC.

VDEM will establish a public inquiry function at the JPIC with a minimum of two individuals. Some calls will be designed so as to allow public inquiry staff to demonstrate the capability to identify trends in rumors (e.g., frequently expressed false or misleading information). The hotline staff will demonstrate the capability to provide or obtain accurate information for callers or refer them to an appropriate source. Information from the hotline staff, including information that correct false, or inaccurate information when trends are noted will be included as appropriate in emergency information provided to the public, media briefings and/or media releases. Public inquiry telephone number(s) will be designated and published during the Alert Emergency Classification Level (ECL). Public information staff will simulate monitoring EAS broadcasts to determine whether false or misleading information is being disseminated to the public. Media monitoring equipment will be available. Since no actual exercise related broadcasts will be made, the media monitoring equipment will be tested for operability and the staff will be demonstrate their capability to monitor area EAS stations. All subsequent emergency information and instruction will be provided to the public and the media in a timely manner. All emergency information and instructions are consistent with protective action decisions made by appropriate officials. The emergency information will contain all necessary and applicable instructions (e.g. evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, information concern pets, shelter in place, information concerning protective action for schools and special populations, public inquiry telephone numbers, etc. The

State will demonstrate the capability to use familiar landmarks and boundaries to describe protective action areas. The emergency information will be all-inclusive by including previously identified protective actions areas that are still valid as well as new areas. The State will demonstrate the capability to ensure that emergency information that is no longer valid is rescinded and not repeated by broadcast media. The State will demonstrate the capability to ensure that current emergency information is repeated at pre-established intervals.

Risk Jurisdiction (Caroline, Hanover, Louisa, Orange and Spotsylvania Counties):
On July 22, each jurisdiction will demonstrate this evaluation area. One simulated media briefing will be demonstrated. Each risk jurisdiction will establish a public inquiry phone line and will respond to calls. Some calls will be designed so as to allow public inquiry staff to demonstrate the capability to identify trends in rumors (e.g., frequently expressed false or misleading information). The public inquiry staff will demonstrate the capability to provide or obtain accurate information for callers or refer them to an appropriate source. Information from the hotline staff, including information that correct false, or inaccurate information when trends are noted will be included as appropriate in emergency information provided to the public, media briefings and/or media releases. Public inquiry number(s) will be designated and published according to each jurisdiction's procedures. Since no actual exercise related broadcasts will be made, the media monitoring equipment will be tested for operability and demonstration of reception on local EAS stations, however, continued monitoring will not be demonstrated.

All subsequent emergency information and instruction will be provided to the public and the media in a timely manner. All emergency information and instructions are consistent with protective action decisions made by appropriate officials. The emergency information will contain all necessary and applicable instructions (e.g. evacuation instructions, evacuation routes, reception center locations, what to take when evacuating, information concern pets, shelter in place, information concerning protective action for schools and special populations, public inquiry telephone numbers, etc. The risk jurisdictions will demonstrate the capability to use familiar landmarks and boundaries to describe protective action areas. The emergency information will be all-inclusive by including previously identified protective actions areas that are still valid as well as new areas. The risk jurisdictions will demonstrate the capability to ensure that emergency information that is no longer valid is rescinded and not repeated by broadcast media. The risk jurisdictions will demonstrate the capability to ensure that current emergency information is repeated at pre-established intervals.

Ingestion Pathway Jurisdictions:

Albemarle County/ Charlottesville City	Fredericksburg City	Powhatan County
Amelia County	Goochland County	Prince William County
Buckingham County	Greene County	Rappahannock County
Chesterfield County	Henrico County	Richmond County
Culpeper County	King and Queen County	Richmond City
Cumberland County	King George County	Rockingham County
Essex County	King William County	Stafford County
Fairfax County	Madison County	Westmoreland County
Fauquier County	Manassas City	
Fluvanna County	New Kent County	State of Maryland (Charles County)*
	Page County	

Ingestion Jurisdictions: On July 23 at 11 a.m., each ingestion jurisdiction will demonstrate this evaluation area through discussion with the evaluator.

*The State of Maryland (Charles County) requested and has been granted an exercise exemption.

APPENDIX 4:
Exercise Scenario

This appendix contains a summary of the simulated sequence of events used as the basis for invoking emergency response actions by Offsite Response Organizations (OROs) during the North Anna Power Station (NAPS) exercise on July 22, 2008

The exercise scenario was submitted by the Commonwealth of Virginia. The scenario was approved by the Federal Emergency Management Agency (FEMA) Region III on July 7, 2008.

The summary presented in this appendix is a compilation of exercise scenario materials submitted by the Commonwealth of Virginia and Dominion Generation. Events at the plant site that are not pertinent to the ORO response have been omitted.

North Anna 2008 – Plume Scenario		
0800	Exercise begins	
0804	"Loose Parts" alarm received; letdown radiation monitor begins to increase due to fuel damage	ALERT conditions (Tab C-8) exists at 0808
0916	Charging pump trips; letdown isolates; letdown isolation valve fails closed at 0932.	
0956	Electrical fault on emergency bus; diesel generator starts, but does not load; other charging pump not available	SITE AREA EMERGENCY conditions (Tab A-1) exist
1053	Small break loss of coolant accident (LOCA) causes safety injection to actuate; reactor coolant pump fails to secure – operator dispatched; pump secured after high head safety injection flow established.	GENERAL EMERGENCY conditions (Tab C-1 and potentially Tab C-5) exist IF charging pump not returned to service. PAR: evacuate 0 – 2 miles, 360^0 (Louisa & Spotsylvania Counties); 2 – 5 miles in sectors H, J, K (Louisa County)
1113	Degrade to large break LOCA. Containment depressurization signal will be actuated. "B train" recirculation spray pumps start and then immediately trip/fail; "A train" unavailable due to loss of emergency bus (at 0956). No containment or recirculation spray available to depressurize the containment structure after the LOCA.	
1117	Weld leak occurs on the containment hogger drain line outside of containment. The inside containment isolation valve for this flow path (although indicating fully closed) is partially open – release path to the environment through the main stack.	GENERAL EMERGENCY conditions (Tab B-1) exists if not declared earlier. PAR: evacuate 0 – 2 miles, 360^0 (Louisa & Spotsylvania Counties); 2 – 5 miles in sectors H, J, K (Louisa County). Insufficient radioiodine in plume for KI use to be recommended.
1330	Plume Exercise terminated.	

APPENDIX 5:
Planning Issues

This appendix contains the Planning Issues assessed during the July 22-23, 2008, exercise at North Anna Power Station (NAPS) and those outstanding from earlier exercises. Planning Issues are issues identified in an exercise or drill that do not involve participant performance, but rather involve inadequacies in the plan or procedures. Planning Issues are required to be corrected through the revision and update of the appropriate State and local radiological emergency response plans (RERPs) and/or procedures in accordance with the following schedule:

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

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

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

NEW PLANNING ISSUES

State Emergency Operations Center

Issue No.: 41-08-2.a.1-P-01

Condition: Changes were made to the Radiological Exposure Control Appendix of the Virginia Emergency Operations Plan (Appendix 7, dated 05/08) that are consistent with the EPA graduated dose limit system for emergency workers; however, the changes have not been carried throughout the Commonwealth's and counties' plans.

The EPA dose limits are incorrectly stated in the Commonwealth of Virginia Radiological Emergency Response Plan (COVRERP), Appendix 7, Tab B2, table at top of page. The correct limits are 5, 10, 25, and >25 rem.

The Commonwealth has replaced the 0 – 20 R self-reading dosimeters with electronic dosimeters; however, references to the old dosimeters are still included throughout the Commonwealth's and counties' plans.

The trigger level for the use of potassium iodide (KI) by emergency workers was changed to 5 Rem in the Health Department's Appendix (8 of COVRERP); however, in many of the tables throughout both the Commonwealth and Division of Radiological Health plans, it is still given as "25 Rem."

The units for the Total Effective Dose Equivalent (TEDE), Rem, and for the Self-Reading Dosimeter (SRD), Roentgen (R), are used interchangeably and incorrectly in many places.

The following list is for example only and is not an exhaustive list:

- **COVRERP (05/08 version):**
  Tab B2 to Appendix 7 correctly lists the "Emergency Worker Exposure Limits" of Self-Reading Dosimeter (SRD) readings of 1.5 R (reporting), 2.5 R (turnback), 12.5 R (lifesaving), and >12.5 R (Voluntary Lifesaving); it would be helpful to include that the assumed initial ratio is "2." Tab C and Tab E refer to the 0 – 20 R dosimeter. Tab G lists the old limits of 3 R, 5 R, 8 R, and >8 R and references the use of a 0 – 20 R dosimeter. Appendix 8 details information about Potassium Iodide (KI) Administration and states, on page 8-5 that KI may be recommended for use by the general public and emergency workers when a dose assessment predicts a thyroid exposure threshold of 5 rem or if an actual measurement of 5 rem is obtained offsite; the age group for the calculation is not detailed. However, on page 8-7 (Tab A to Appendix 8), the administration of KI for emergency workers is given as 25 rem in Table 2. There is also an error in the first table since the predicted thyroid exposure threshold should be 5 rem for all age groups, but information is not included on how this calculation is performed.
- **VDH/DRH Emergency Response Manual (1/30/08 version):**
  Appendix 6, Radiological Exposure Control, lists the correct emergency worker limits in step 2.1, but then refers to the old limits in step 2.4 (and also incorrectly states that the limits are in "R TEDE" instead of "R"; a TEDE is Rem only). A footnote in step 2.1 incorrectly states that "Federal Guideline is 25 rem for emergency workers [to ingest KI]…" The guidance provided by EPA stated that KI should be used by emergency workers where atmospheric releases include radioiodine without a dose threshold. In Appendices 17.2 and 17.4, the reporting level, turnback level, etc. are listed in units of "rem" instead of "R" in multiple places (pages 17.2-5, 17.2-9, 17.2-11, 17.4-2, 17.4-3, 17.4-5, etc.).
- **Risk County RERPs (either 10/06 version for Caroline County or 05/08 for all other counties):**
  In the Basic Plan, Section V.D. Situation, Protection Against the Hazard, incorrectly gives the dose thresholds in terms of "R" instead of "rem." In Section VIII.B.F.2, Concept of Operations, Accident Assessment, Exposure Limits, Emergency Workers, the Exposure Control Ratio is

given as "3" instead of "2;" for all but Caroline County, the administrative limits are given correctly but have a note that "minors and the unborn are limited to one-tenth of these values;" however, minors and pregnant women should not be used as emergency workers.

In the Public Health ESF, the KI limit is correct, but the emergency worker exposure control levels are incorrect.

Possible Cause: Incomplete search and change done during procedure changes.

References: NUREG-0654, J.10.f; K.4
All State and local plans/procedures.

Effect: The incorrect dose limits or administrative exposure levels could be used resulting in excess exposures being received by emergency workers.

Recommendation: Review every page of the plans and procedures to ensure that all instances of the administrative limits (including the trigger level for the use of KI) are correctly updated. Ensure that the correct units are used throughout the plans: "R" for the dosimeter readings (exposure limits) and "Rem" for the dose limits. All references to "0 – 20 R SRD" should be changed to "electronic dosimeter" or "pocket dosimeter" or just "self-reading dosimeter."

State Response: The VDH/DRH Emergency Response Manual plan corrections have been made. Inconsistencies in the COVRERP have been identified and will be addressed in the next scheduled plan update 60 days prior to the 2009 Surry biennial exercise. Inconsistencies in the risk county plans have been identified and will be addressed in the next scheduled plan update 60 days prior to the 2010 North Anna biennial exercise.

State Emergency Operations Center

Issue No.: 41-08-2.e.1/3.f.1-P-02

Condition: There are errors and insufficient information in the COVRERP, VDH/DRH ERP, and ingestion county RERPs for the exposure control of workers entering a contaminated area.

- **COVRERP, Appendix 11, Decontamination, Re-Entry, Return, and Recovery:**
  Step II.I.3, Concept of Operations, Re-Entry and Return, states that individuals entering the restricted zone should be controlled in accordance with dose limitations and other procedures for control of occupationally-exposed workers. This is in accordance with the guidance from EPA-400-

R-92-001. However, specific information is not given about what this dose limitation is.

- **VDH/DRH Appendix 17.4, Local Emergency Operations Facility (LEOF), Nuclear Emergency Response – Plume Phase:**
  Step 3.4, Radiological Assessment Officer, states that "During the recovery phase, consider lowering the exposure control limits for emergency workers to 5 rem TEDE…" This is a requirement based on the COVRERP and federal guidance. Also, during the recovery phase, the workers are no longer considered "emergency workers."

- **Risk County RERPs, Basic Plan and Hazardous Materials ESF:**
  There is no discussion in the basic plan about post-emergency activities including worker exposure control.

  In the Hazardous Materials ESF, the Radiological Officer's procedure includes a statement that "Each person requesting re-entry is only allowed an exposure of 2 R/yr and must be given appropriate dosimetry, consisting of one digital alarming dosimeter and one TLD. Each re-entrant's exposure must be logged and tracked." This limit of 2 R/yr is inconsistent with the Virginia limit of 5 Rem/yr.

- **Ingestion County RERPs, Basic Plan, Section VIII.E.3, Concept of Operations, Exposure Limits, Emergency Workers:**
  There is a discussion about Emergency Worker limits (including those for lifesaving and protecting valuable property or large populations). There is no discussion about the dose limit system for post-emergency activities which will be carried out in the ingestion counties.

Possible Cause: Since these procedures are rarely used, the confusion and errors were not recognized during development.

References: NUREG-0654, J.9; J.11; M.1
COVRERP
VDH/RHP ERP
Risk County RERPs
Ingestion County RERPs

Effect: Worker exposure control for individuals entering the restricted zone after the emergency phase could be compromised resulting in overexposures.

Recommendation: Review the procedures for post-plume activities and remove confusing wording and incorrect information. Ensure that the established dose limit system for individuals entering the restricted zone is consistent with the normal Virginia occupationally-exposed worker dose limit system (i.e., the same as established in 10 CFR 20).

State Response: The VDH/DRH Emergency Response Manual plan corrections have been made. Inconsistencies in the COVRERP have been identified and will be addressed in the next scheduled plan update 60 days prior to the 2009 Surry biennial exercise. Inconsistencies in the risk county plans have been identified and will be addressed in the next scheduled plan update 60 days prior to the 2010 North Anna biennial exercise.

PRIOR PLANNING ISSUES RESOLVED

State Emergency Operations Center (Virginia Department of Health/Radiological Health Program)

Issue No.: 41-06-2.a.1-P-01

Condition: The Commonwealth of Virginia uses the Environmental Protection Agency (EPA) "lifesaving or protective of large populations" dose limit (25 rem) as the dose limit for all of their emergency workers. This is contrary to the guidance delineated by the EPA on the use of a graduated dose limit system for emergency workers under various conditions. This issue was previously identified at the 2006 Surry exercise.

Corrective Action Demonstrated: This issue was resolved at the Surry Power Station exercise on June 27, 2007. The Commonwealth of Virginia RERP has been revised and Appendix 7 and 8 now conform to EPA guidance for emergency worker exposure control.

State Emergency Operations Center (Virginia Department of Health/Radiological Health Program)

Issue No.: 41-06-2.a.1-P-02

Condition: Justification and selection criteria for lifesaving actions have not been specified for emergency workers to exceed administrative exposure limits.

In addition, no specific emergency response position at the State level has been tasked with the responsibility to authorize State emergency workers to exceed the administrative limits (turnback and lifesaving).

Also, at the local level, the Emergency Operations Center Radiological Officer has the authority to approve exposure in excess of the turnback limit. There is no specific emergency response position that has been assigned the authority to authorize exposures above the lifesaving limit (corresponding to the maximum EPA dose limit of 25 rem).

This issue was previously identified at the 2006 Surry exercise.

Corrective Action Demonstrated: This issue was resolved at the Surry Power Station exercise on June 27, 2007. The York County, James City County, and Isle of Wight County (Appendix 6, page 6-4, respectively) procedures have been revised to more clearly define persons who are authorized to allow emergency workers to exceed administrative dose limits.

State Emergency Operations Center (Virginia Department of Health/Radiological Health Program)

Issue No.: 41-06-2.b.1-P-03

Condition: The Virginia Department of Health (VDH) implementing procedure Appendix 17.2 states that a Protective Action Recommendation (PAR) must be given to the Virginia Department of Emergency Management (VDEM) within 15 minutes from the time the licensee declares a General Emergency (GE). However, this time requirement is not specified in federal regulations nor is it specified in federal guidelines. The licensee requirement for informing the offsite authorities of the GE declaration is within 15 minutes of that declaration and must be accompanied by a PAR (which is the minimum that should be implemented by the offsite authorities unless conditions exist that would make implementation of the PAR more risky than the dose savings from the implementation).

Corrective Action Demonstrated: This issue was resolved at the Surry Power Station exercise on June 27, 2007. The Virginia Department of Health, Division of Radiological Health Emergency Plan Implementing Procedures have been revised to eliminate the requirement to provide a Protective Action Recommendation to VDEM within 15 minutes after the utility declares a General Emergency.

State Emergency Operations Center (Virginia Department of Health/Radiological Health Program)

Issue No.: 41-06-2.d.1-P-04

Condition: Virginia Department of Health/Radiological Health Program Procedures have not been updated to reflect the 1998 Food and Drug Administration (FDA) guidelines for radioactive contamination of human food and animal feeds.

This issue was previously identified at the 2006 Surry exercise.

Corrective Action Demonstrated: This issue was resolved at the Surry Power Station exercise on June 27, 2007. Virginia Department of Health, Division of

Radiological Health Emergency Plan Implementing Procedures, Appendix 17.8 Post Plume Projection Procedure now cites the 1998 FDA guidelines for radioactive contamination of human food and animal feeds.

PRIOR PLANNING ISSUES UNESOLVED

Caroline County Exception Area Route Alerting

Issue No.: 41-06-5.a.3-P-05

Condition: There is a typographical error in the procedure sheet that is furnished to the offsite response organization performing the exception area alerting. It presently directs the Deputy to turn right from Country Road (Route 679) onto a driveway for house number 23015. The directions then say to drive to the end of that drive and alert to the second house. There is no house number 23015 on Country Road (Route 679) in Caroline county. The numbers begin at the Spotsylvania /Caroline County line at 18482 and progress consecutively to 19444.

Reason Issue Remains Unresolved: Caroline County Emergency Management Director and Ladysmith Volunteer Fire Station #2 Radiological Officer were not aware that this issue existed.

Recommendation: County procedure should be changed to reflect correct address.

Spotsylvania County Evacuation Assembly Center (Chancellor High School)

Issue No.: 41-04-6.a.1-P-06

Condition: The Spotsylvania County Radiological Emergency Response Plan, Appendix 8, Evacuation Assembly Center Operation Procedure, has the inconsistencies listed below and does not address some aspects of monitoring/decontamination:

- The posting of background readings for monitoring locations is not required by the plan.
- The area diagram for Chancellor High School shows two entrances into the parking area instead of indicating that one would be used as the exit.
- Vehicle monitoring would be performed on all vehicles entering the area (both evacuee vehicles and emergency worker vehicles). Instructions are given for external monitoring only. No instructions are included on monitoring the driver of the vehicle or how that individual would get back to the school entrance.
- A method for decontaminating a vehicle with a contaminated air filter is not specified.

- The route for returning a decontaminated vehicle to the clear parking area is not indicated on the area diagram.
- The procedure is unclear on where contaminated individuals (as identified from an alarm on the portal monitor) were to be monitored using a survey instrument. This was done next to the portal monitor (which did not allow it to be used until the person was taken into the locker room for decontamination) and then repeated inside the locker room prior to decontamination.
- The list of Attachments on page 8-17 does not match the actual attachments (Attachment 7 is listed as Form REC-3; however, Attachment 7 is now the Portal Monitor Operating Instructions Ludlum Model 52, while Attachment 8 is Form REC-3).

Reason Issue Remains Unresolved: This location was not scheduled for demonstration at this exercise. It will be scheduled for demonstration at the next biennial exercise.