

COMMONWEALTH OF VIRGINIA

**Emergency Operations Plan**



**HAZARD-SPECIFIC ANNEX #1  
RADIOLOGICAL EMERGENCY  
RESPONSE**

VIRGINIA DEPARTMENT  
OF  
EMERGENCY MANAGEMENT

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**Lead Agency**

- Virginia Department of Emergency Management (VDEM)

**Support Agencies and Organizations**

- Virginia Department of Agriculture & Consumer Services (VDACS)
- Department of Conservation & Recreation (DCR)
- Department of General Services (DGS)

- Department of Corrections (DOC)
- Department of Environmental Quality (DEQ)
- Virginia Department of Forestry (VDOT)
- Department of Game & Inland Fisheries (DGIF)
- Virginia Department of Health (VDH)
- Virginia Marine Resource Commission (VMRC)
- Department of Military Affairs (DMA)
- Virginia Department of Social Services (VDSS)
- Virginia State Police (VSP)
- Virginia Department of Transportation (VDOT)
- Virginia Cooperative Extension (VCE)
- Dominion Virginia Power

**Purpose**

The Commonwealth of Virginia Radiological Emergency Response Annex is a hazard-specific component of the Commonwealth of Virginia Emergency Operations Plan (COVEOP). It has been developed to provide a sound basis for radiological emergency preparedness and to establish the organizational framework and operational concepts and procedures designed to minimize the loss of life and property and to expedite the restoration of essential services following a radiological emergency.

This COVEOP annex provides an overview of how the Commonwealth will respond to a radiological emergency. Detailed response and technical data can be found in the Radiological Response Technical Support Document (secure, non-public text).

**Scope & Applicability**

This annex applies to incidents occurring at a fixed nuclear facility; those caused by a transportation accident involving radiological materials; terrorist events involving radiological materials; or a radiological emergency involving a Naval Nuclear Propulsion Program (NNPP) facility or ship.

This annex also:

- Provides for warning of the public and for the implementation of protective actions to be taken during a radiological emergency.

- Provides guidance to agencies of the State government and to the political subdivisions as to their emergency preparedness and operating responsibilities in preparing for and coping with a radiological emergency to minimize radiation exposure and environmental contamination.
- Provides a basis for the preparation of detailed Radiological Emergency Response Plans, procedures, and training programs by agencies of the state government and the political subdivisions.
- Assigns responsibilities to state agencies and local governments in radiological emergency response and preparedness.
- Sets forth procedures for reporting and disseminating warning of radiological emergencies.
- Specifies immediate response procedures by state and local governments to the four NRC/FEMA-defined emergency action levels.
- Delineates the policies and concepts under which state and local governments will operate during a radiological emergency response.

## Planning Assumptions

- Radiological incidents may not be immediately recognized as such until the radioactive material is detected or the effects of radiation exposure are manifested in the population.
- An act of radiological terrorism, particularly an act directed against a large population center within the United States, will have major consequences that can overwhelm the capabilities of many local and state governments to respond and may seriously challenge existing Federal response capabilities.
- An incident involving the potential release of radioactivity may require the implementation of protective measures.
- State agency representatives working in the Virginia Emergency Operations Center (VEOC) may be asked to respond to frequent inquiries from the Federal Emergency Management Agency (FEMA) and the Nuclear Regulatory Commission (NRC) regarding local impacts and situation status.

## Policies

- All agencies assigned responsibilities within this annex will develop and maintain the necessary plans, standard operating procedures, mutual aid agreements, and model contracts to successfully accomplish their tasks.
- Local governments are responsible for maintaining the capability to implement their Radiological Emergency Response Plan and for participating in periodic training exercises of the plan.

## Organizational Structure

### *State*

The state organization is based on normal governmental structures and channels of

communication with the Governor in his role as Director of Emergency Management directing the response through the State Coordinator of Emergency Management, who coordinates the overall response. The Virginia Department of Health provides technical advice and assistance on radiological monitoring, radiological incident assessment, protective actions, and radiological exposure control. Other state agencies provide support and assistance, on request, in accordance with their responsibilities and capabilities

The state organization for response to radiological emergencies is the same as that for other incidents and events.

For incidents at nuclear facilities, the VDEM State On-Scene Coordinator (SOSC) at the utility's Emergency Operations Facility (EOF) or other appropriate location will serve as the state's representative to provide interface with the utility's Recovery Manager and to facilitate receipt and transmission of appropriate information between the utility, and state and local governments. Similarly, the SOSC will provide the interface with the Naval Nuclear Propulsion Program's local Emergency Control Center (ECC), if appropriate.

### *Facilities*

The nuclear facility operator has significant responsibilities in incident assessment, warning, and public information and has organized its response organization accordingly. Government and facility operator response organizations require close interface and coordination. This will be accomplished primarily in the on-site utility Emergency Operations Facility.

## Concept of Operations

This annex is effective for execution upon notification of a radiological emergency within the state and as a basis for training and preparation of supporting plans and procedures upon receipt.

VDEM and VDH will request and coordinate Federal assistance for monitoring and assessment provided under the National

Response Framework and provide administrative, logistical and liaison support to Federal personnel on request.

### 1. Fixed Facilities

The following fixed nuclear facilities are potential sources of radiological emergencies in Virginia:

- Surry Power Station
- North Anna Power Station
- Calvert Cliffs Power Station
- Babcock & Wilcox - Nuclear Products Division

Protective actions within the facility site boundary will be the responsibility of the operator. The state and neighboring local governments will provide on-site assistance as requested and as mutually agreed upon with the facility operator.

The implementation of protective actions beyond the site boundary but within the ten-mile plume exposure Emergency Planning Zone (EPZ) and within the fifty-mile Ingestion Pathway Zone (IPZ) for commercial nuclear power stations is the primary responsibility of the elected officials of the local governments.

Initial response is based upon the implementation of preplanned actions outlined in state and local government plans.

Follow-up action will be taken on advice from the VERT based on evaluation and assessment of the incident. Local Directors of Emergency Services, based upon knowledge of weather conditions, evacuation routes, special populations, predicted arrival of the radioactive plume, etc., may take independent and preemptive action to implement protective actions within their jurisdictions. Jurisdictions implementing preemptive local protective actions will ensure that the VERT and surrounding jurisdictions are fully informed of all actions and decisions.

Radiation assessment and coordination of protective actions within the ingestion pathway

Emergency Planning Zone will be the primary responsibility of VDEM and VDH in cooperation with the VDACS and DEQ.

### *Emergency Notification*

The following four emergency classification levels have been established for the purpose of reporting and defining pre-planned actions to be taken in response to emergencies at fixed nuclear facilities:

#### a) Notification of Unusual Event

An incident has occurred that may result in degradation of the level of safety of the plant. No releases of radioactive material requiring off-site response or monitoring are expected unless further degradation of safety systems occurs. (Does not apply to Babcock & Wilcox due to small amount of radiological products housed/handled)

#### b) Alert

An incident has occurred that potentially or actually threatens the safety of the plant, personnel, or site equipment. This may be a security event involving hostile actions. Any releases expected to be limited to small fractions of the EPA Protective Action Guidelines exposure levels.

#### c) Site Area Emergency

An incident has occurred that involves actual failures of plant functions needed for protection of the public. This includes security events that result in intentional damage or malicious acts. Any releases not expected to exceed EPA Protective Action Guidelines exposure levels except near site boundary.

#### d) General Emergency

An incident has occurred which involves actual or imminent substantial core

degradation or melting. There is a potential for loss of containment integrity. Releases can be reasonably expected to exceed EPA Protective Action Guidelines exposure levels off-site for more than the immediate site area. (Does not apply to Babcock & Wilcox due to small amount of radiological products housed/handled.)

### *Incident Assessment*

The initial assessment and report of an emergency classification level at a nuclear facility will be made by the facility operator, based on instrumentation within the facility control room. This initial assessment will include a projection of off-site consequences; and if indicated, immediate protective actions will be recommended to state and local government officials. This initial on-site assessment will be verified and refined as soon as possible and on a continuing basis by the VDH Radiological Health Program in cooperation with facility health physics personnel assessments and recommendations will be based on on-site radiation monitoring, off-site reports provided by local governments, the state Radiological Emergency Response Team (RERT), field units, and laboratory analysis.

## 2. Naval Nuclear Programs

Naval Nuclear Propulsion Program (NNPP) radiological work facilities and ships in the Greater Hampton Roads area are potential sources of radiological emergencies. All nuclear powered vessels and their support facilities are under the radiological regulatory authority of the Naval Nuclear Propulsion Program (NNPP) – a joint program of the U.S. Navy and U.S. Department of Energy/National Nuclear Security Administration.

The NNPP transports radioactive material on roadways, railways, and waterways within the Commonwealth of Virginia. Norfolk Naval Shipyard and Northrop Grumman Newport News have radiological emergency response teams will respond to NNPP radiological

transportation accidents and will work with the local authorities and incident commanders to ensure public safety. NNPP radiological emergency teams can respond to non-NNPP radiological transportation accidents, if requested.

The NNPP radiological emergency response organization is based on normal naval command structures and channels of communication with the Primary Commander directing the response through the Area Commander, who coordinates the overall response. The NNPP provides support to the Primary Commander during the response.

### *Emergency Notification*

#### a) Unusual Event

An incident has occurred that may result in degradation of the level of safety of the plant. No releases of radioactive material requiring offsite response are expected unless further degradation of safety systems occurs. This is the initial event classification if a reactor core is not involved (e.g. facility fire involving radioactive materials) and there is potential for measurable exposure to the public near the facility site boundary. If minor releases of radioactivity off-site do occur, releases are expected to result in whole body radiation exposures of <0.01 Rem or thyroid exposures of <0.05 Rem at the Federal Government or NNPP property boundary (or nearest public residence).

#### b) Alert

An incident has occurred that potentially or actually threatens the safety of the plant, personnel, or site equipment. Any releases are expected to be limited to small fractions of the EPA Protective Action Guides exposure levels near the Federal Government or NNPP facility property boundary (or nearest public residence). Radioactivity releases are expected to result in whole body

radiation exposures of >0.01 to <0.10 Rem or thyroid exposures of >0.05 to <0.50 Rem at the Federal Government or NNPP property boundary (or nearest public residence).

c) Site Emergency

An incident has occurred that involves actual failures of plant functions needed for protection of the public. Any releases are not expected to exceed EPA PAG exposure levels beyond the Federal Government or NNPP property boundary. Releases are expected to result in whole body radiation exposures of >0.1 to <1.0 Rem or thyroid exposures of >0.5 to <5 Rem at the Federal Government or NNPP facility property boundary.

d) General Emergency

An incident has occurred which involves actual or imminent substantial core degradation or melting. There is a potential for loss of containment integrity. Releases can be expected to exceed EPA PAG exposure levels near the Federal Government or NNPP facility property boundary. Releases are expected to result in whole body radiation exposures >1.0 Rem or thyroid exposures of >5.0 Rem at the Federal Government or NNPP facility property boundary.

*Incident Assessment*

The Area Commander will perform initial incident assessment as soon as possible after identification of the problem. Results of the assessment, emergency classification level, along with recommended protective actions will be transmitted without delay to the VEOC. If immediate protective actions are required, local governments will be notified on a priority basis. The Bureau of Radiological Health, State Department of Health (BRH) will perform independent follow-on monitoring and assessment. BRH will continue to independently

monitor and evaluate the off-site radiological situation to the extent possible until such activities are no longer required.

3. Transportation

Radioactive materials may be transported within the State by any of four basic modes--air, water, highway, or railroad. The majority of radioactive materials, however, will move by motor vehicle over existing road nets. The concepts and procedures delineated for transportation accidents emphasize this mode but are equally applicable for the other modes.

Local government officials of the political jurisdiction in which the accident occurs are responsible for the overall response as it affects the general public. Technical guidance and assistance in the radiological aspects will be provided by VDH. The overall State response will be coordinated by the VERT.

4. Evacuation

Under the provisions of Section 44-146.17 of the Commonwealth of Virginia Emergency Services and Disaster Law, the Governor may direct and compel evacuation of all or part of the populace from any stricken or threatened area if this action is deemed necessary for the preservation of life or other emergency mitigation, response or recovery; prescribe routes, modes of transportation and destination in connection with evacuation; and control ingress and egress at an emergency area, the movement of persons within the area and the occupancy of premises therein.

VDEM, in coordination with other state agencies will coordinate with local jurisdictions (including jurisdictions outside the impacted area) to establish Evacuation Assembly Centers (EACs) for radiological screening, decontamination, evaluation, treatment, and long-term health monitoring of populations evacuated from radiologically contaminated areas. Establishment and Operation of EACs remain the responsibility of local jurisdictions. VDEM will coordinate with localities regarding the opening of the EACs and will coordinate

with other state agencies to augment the EACs as needed.

### **Roles & Responsibilities**

#### Virginia Department of Emergency Management

- Provide a VDEM State On-Scene Coordinator to the EOF or the local Naval Nuclear Propulsion Program (NNPP) ECC.
- Provide warning in coordination with the State Police and the operators of fixed nuclear facilities or the local NNPP ECC.
- Coordinate emergency response actions with federal and state agencies.
- Provide public information, assisted by the Department of Health and the nuclear facility operator; maintain and keep current a list of media representatives, including names and telephone numbers.
- Coordinate the provision of radiological monitoring and personal protective equipment.
- Notify the Federal Emergency Management Agency (FEMA) when the emergency classification level at a nuclear power facility or at a NNPP facility is classed as an Alert or higher level and provide updated information and request assistance, if required, when the emergency classification level is classed as a Site Area Emergency or General Emergency.
- Provide regional Hazmat assistance and equipment to local subdivisions and governments for radiological monitoring when requests are received through the VEOC.

#### Virginia Department of Agriculture & Consumer Services

- Obtain milk samples from dairy farms, meat samples from packing firms, and food samples from retail and wholesale establishments located within fifty miles of the nuclear power station, as requested, and provide them to the Division of Consolidated Laboratory Services for analysis.
- Coordinate the control and disposition of contaminated food, milk, and animal feed.
- Coordinate the provision of uncontaminated feed for dairy cattle and other farm animals, if required.
- Coordinate the disposition of farm animals affected by radiological contamination.
- Provide advice on and coordinate the disposition or use of farm crops, lands, and equipment that have been contaminated.
- Assist VDH in radiological monitoring and in obtaining samples for incident assessment.

#### Department of Conservation & Recreation

- For radiological emergencies at the Surry Power Station, warn and evacuate all personnel in the Chippokes Plantation State Park when notified of an emergency affecting the Park.
- For radiological emergencies at the North Anna Power Station, warn and evacuate all personnel in the Lake Anna State Park when notified of an emergency affecting the Park.

## Department of General Services

- Provide emergency laboratory services to State agencies and political subdivisions as required.

## Department of Corrections

- Provide emergency clothing (shirts and trousers) for temporary use by individuals who are contaminated when arriving at the Evacuation Assembly Centers.
- Provide emergency bedding (including mattresses and blankets) for temporary use by individuals who will be staying at Evacuation Assembly Centers or shelters.
- Provide vehicular back-up support from Department of Corrections Central Garage Car Pool.
- Provide back-up communications to support emergency response activities.

## Department of Environmental Quality

- Conduct and provide air quality monitoring data and analysis from existing air monitoring network to VDH as requested.
- Provide assistance in collection and analysis of meteorological data.
- Collect water samples from rivers and lakes located within the ingestion pathway EPZ for assessment.
- Collect fish samples from waters adjacent to the nuclear facility for assessment when it is safe to do so.
- Assist the VDH in radiological monitoring and incident assessment.

## Virginia Department of Forestry

- Provide back-up communications to support emergency services activities for

regional communications within the capability of the forestry network.

- Determine initial damage assessment of state-owned forests.

## Department of Game &amp; Inland Fisheries

- Assist in collecting samples of wildlife and fish suspected of being contaminated for analysis by VDH.
- Provide back-up communications to support emergency response activities.
- Provide small boats with motors for administrative, logistical, and operational use of waterways contiguous to nuclear power stations.
- Assist in warning people in boats on Lake Anna in the vicinity of the North Anna Power Station.
- Assist in traffic control of boats and ships on the James River in the vicinity of the Surry Power Station.
- Assist in evacuation of Surry Power Station personnel and other persons from Hog Island Wildlife Management Area, if necessary.
- Assist in traffic control of boats of Lake Anna in the vicinity of the North Anna Power Station.
- Assist in warning persons in the Hog Island Wildlife Management Area in the vicinity of Surry Power Station.

## Virginia Department of Health

- Provision of the Radiological Emergency Response Team (RERT) for radiological assessment and response.
- Radiological site assessment to include determining actual off-site radiological consequences and documentation of off-site effects of the incident.

- Advise State and local officials on the implementation of pertinent protective actions based on incident assessment.
- When requested and if available, furnish appropriate personal protective equipment.
- Determine the availability of and coordinate the use of medical facilities that could accommodate and care for persons involved in a radiological emergency who may require medical care.
- Develop criteria for establishing controlled areas or zones surrounding an incident site, including ingress/egress control provisions and perimeter radiological surveillance of persons entering or leaving controlled zones within the plume and ingestion pathways.
- Request and coordinate Federal assistance for monitoring and assessment provided under the National Response Plan and provide administrative and logistical support and liaison to Federal personnel on request.
- Develop criteria for re-entry into homes and evacuated areas and advise local governments when these criteria have been met.
- Develop and conduct, in coordination with VDEM, training programs for medical support personnel who may be called upon to care for off-site victims of a radiological incident and assist in conducting other radiological training programs.
- Procure, store, and administer the issuance of potassium iodide.
- Provide DRH Radiological Operations Officers and advisors and a decision-making official from the Division of Emergency Medical Services (EMS) to the Virginia EOC.

- Provide additional radiological monitoring survey instruments to local field monitoring teams as needed and if available.
- Establish radiological exposure control.
- Maintain Emergency Plan Implementation Procedures (EPIP) for radiological emergencies.

#### Virginia Marine Resource Commission

- In case of a radiological emergency at the Surry Power Station, provide boats and any other available resources to assist in warning and evacuation, as required.

#### Department of Military Affairs

- Be prepared to provide the radiological monitoring capability to facilitate radiological monitoring operations within the affected radius of a nuclear incident.
- Be prepared to provide decontamination capability to facilitate decontamination of civilian populous and or emergency responders as situation dictates.
- Based on force availability, be prepared to provide Security Forces to assist State and local law enforcement authorities with traffic control operations and protection of property.
- Based on force availability, be prepared to provide available ground transportation assets to facilitate the evacuation of civilian populous located within the affected radius of a nuclear facility, transport emergency response teams, and transport of equipment and supplies.
- Based on force availability, be prepared to provide available airlift capability to facilitate the evacuation of civilian populous, area reconnaissance, transport

of emergency response teams, and transport of equipment or supplies.

#### Virginia Department of Social Services

- Assist local governments in caring for people evacuated from their homes.
- Provide access to expedited benefit claims, financial assistance, and applications for services for those affected by the incident.
- Request and coordinate the assistance provided by quasi-government and volunteer relief organizations (Red Cross and Salvation Army) in accordance with those organizations emergency procedures

#### Virginia State Police

- Assist local officials in disseminating warnings.
- Assist in evacuation, in coordination with local officials.
- Enforce access/egress provision in controlled areas, when established, in coordination with local officials.
- Provide traffic control.
- Conduct radiological monitoring of vehicles and personnel at traffic control points.
- Assist DGIF/VMRC with warning of boaters on the James River and/or Lake Anna
- Assist or handle counter-terrorism response and recovery for radiological incidents by deploying the Counter-Terrorism and Criminal Interdiction Unit (CCI).
- Assist with search and recovery operations by deploying Tactical Field

Force, Search and Recovery Teams, Tactical Teams.

- Assist with law enforcement response by deploying Tactical Teams (highly specialized teams equipped with special weapons, explosive breaching capabilities and related equipment with expertise in the use of tactics for emergency situations) in the event of a terrorist event involving radiological materials.
- Handle or assist with traffic crash investigations that result in a radiological incident/emergency.
- Assist with providing site security.
- Utilize aviation to assist DGIF with warning boaters, to provide Medflight, to assist with search, recovery, and operations.

#### Virginia Department of Transportation

- Provide back-up communications to support emergency response activities.
- Barricade State-maintained roads in those areas affected by a Radiological Emergency.
- Suspend operation of the Jamestown Ferry near the Surry Power Station, when so advised by the VEOC, until the radiological condition warrants resumption of services.

#### Virginia Cooperative Extension

- Provide advice to state and local officials on how to minimize losses to agricultural resources from radiation effects.
- Provide information and assistance to farmers and others to aid them in preparing for, and returning to normal after a radiological emergency.

- Conduct damage assessments in potentially affected areas and inform farmers, growers and producers of any actions which should be undertaken.
- Serve as a member of both the state and Local Food and Agriculture Council, and respond to both local and state requests for help in preventing damage, assessing damage, and providing information to help people recover from a disaster.

## **Authorities & References**

### *Authorities*

- Commonwealth of Virginia Emergency Services and Disaster Law of 2000, Title 44, Chapter 3.2, Code of Virginia, as amended.
- Radiation Control Act, Title 32.1, Chapter 6, Article 8, Code of Virginia.
- Title 10, Chapter 1, Code of Federal Regulations.
- Title 44, Chapter 1, Code of Federal Regulations.

### *References*

- NUREG-0654/FEMA-REP-1 - Criteria for Preparation and Evaluation of Radiological Emergency Response Plans and Preparedness in Support of Nuclear Power Plants, U.S. Nuclear Regulatory Commission/Federal Emergency Management Agency, Revision 1, November 1980.
- Nuclear Weapon Incident Response Procedures (NARP) Manual, Defense Nuclear Agency (DNA), September 1990.
- Department of Defense (DOD) Directive 5100.52, "DOD Response to An Accident or Significant Incident Involving Radioactive Materials," December 21, 1989.