



January 9, 2014  
ACO 14-0003

ATTN: Document Control Desk  
Ms. Christiana Lui, Director  
Division of Security Policy  
Office of Nuclear Security and Incident Response  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**American Centrifuge Lead Cascade Facility**  
**Docket Number 70-7003; License Number SNM-7003**  
**Submittal of Changed Pages of the Emergency Plan for the American Centrifuge Lead Cascade Facility**

Dear Ms. Lui:

**Purpose**

In accordance with 10 *Code of Federal Regulations* (CFR) 70.32(i), American Centrifuge Operating, LLC hereby submits to the U.S. Nuclear Regulatory Commission (NRC) changed pages of the Emergency Plan for the American Centrifuge Lead Cascade Facility as Enclosure 1 of this letter.

**Discussion**

The changes noted in Enclosure 1 have been reviewed in accordance with 10 CFR 70.32 and have been determined not to decrease the effectiveness of the applicable plan. Revision bars in the right hand margin depict changes from the previous revision submitted to the NRC.

**Action**

No specific action is requested concerning this submittal.

AX45  
NSIR02

Ms. Christiana Lui  
January 9, 2014  
ACO 14-0003, Page 2

**Contact**

If you have any questions regarding this matter, please contact me at (740) 897-2343.

Sincerely,

A handwritten signature in black ink, appearing to read "V. J. Shanks", with a long horizontal flourish extending to the right.

Vernon J. Shanks  
Regulatory Manager

Enclosure: As Stated

cc: J. Downs, NRC HQ  
J. Hickey, NRC Region II  
L. Pitts, NRC Region II  
O. Siurano, NRC HQ  
B. Smith, NRC HQ

**Enclosure 1 to ACO 14-0003**

**Changed Pages of the Emergency Plan for the American Centrifuge Lead Cascade Facility**

**Information contained within  
does not contain  
Export Controlled Information**

**Reviewer: R.S. Lykowski  
Date: 11-21-13**

## Page

PLAN SUMMARY .....	vii
1. FACILITY DESCRIPTION .....	1-1
1.1 DESCRIPTION OF ACTIVITIES .....	1-1
1.1.1 Description of NRC-Regulated Activities .....	1-1
1.1.2 Description of DOE-Regulated Activities and Operations .....	1-2
1.1.2.1 FUEF Operations .....	1-2
1.1.2.2 DUF <sub>6</sub> Conversion Facility .....	1-3
1.2 DESCRIPTION OF FACILITY AND SITE .....	1-4
1.2.1 Primary Emergency Plan Support Facilities .....	1-5
1.2.2 Former Uranium Enrichment Facilities .....	1-6
1.2.3 Lead Cascade .....	1-7
1.2.4 Airborne Emission Sources .....	1-8
1.2.5 DUF <sub>6</sub> Conversion Facility .....	1-8
1.3 DESCRIPTION OF AREA NEAR THE SITE .....	1-9
2. TYPES OF ACCIDENTS AND OTHER EMERGENCIES .....	2-1
2.1 FUEF DOE-REGULATED OPERATIONS .....	2-1
2.1.1 Description Of Postulated Accidents and Other Emergencies .....	2-1
2.1.1.1 Nuclear Criticality Event .....	2-2
2.1.1.2 Uranium Hexafluoride Release .....	2-2
2.1.1.3 Nitric Acid Release .....	2-2
2.1.1.4 Fluorine Release .....	2-2
2.1.1.5 Chlorine Release .....	2-3
2.1.1.6 Hydrogen Fluoride Release .....	2-3
2.1.1.7 Chlorine Trifluoride Release .....	2-3
2.1.1.8 Other Nonradioactive Hazardous Material Releases .....	2-3
2.1.1.9 Natural Phenomena and Fire .....	2-3
2.1.1.10 Security-Related Events .....	2-3
2.1.2 Detection of Accidents and Other Emergencies .....	2-4
2.1.2.1 Nuclear Criticality .....	2-4
2.1.2.2 Uranium Hexafluoride .....	2-4
2.1.2.3 Other Toxic Chemical Releases .....	2-5
2.1.2.4 Natural Phenomena and Fire .....	2-5
2.1.2.5 Security-Related Events .....	2-6

**TABLE OF CONTENTS (Continued)**

	<u>Page</u>
<b>2.2 DOE-REGULATED NON-FUEF ACTIVITIES .....</b>	<b>2-6</b>
<b>2.2.1 Description of Postulated Accidents and Other Emergencies .....</b>	<b>2-6</b>
2.2.1.1 DUF <sub>6</sub> Release .....	2-6
2.2.1.2 Hydrogen Fluoride Release .....	2-6
2.2.1.3 Uranium Oxide Release.....	2-6
2.2.1.4 Other Hazardous Material Release .....	2-6
2.2.1.5 Natural Phenomena and Fire .....	2-6
2.2.1.6 Security-Related Events .....	2-6
<b>2.2.2 Detection of Accidents and Other Emergencies.....</b>	<b>2-7</b>
<b>3. CLASSIFICATION AND NOTIFICATION OF ACCIDENTS AND OTHER EMERGENCIES .....</b>	<b>3-1</b>
<b>3.1 CLASSIFICATION SYSTEM.....</b>	<b>3-1</b>
3.1.1 Alert.....	3-1
3.1.2 Site Area Emergency.....	3-2
<b>3.2 NOTIFICATION AND COORDINATION .....</b>	<b>3-2</b>
3.2.1 Alert.....	3-2
3.2.2 Site Area Emergency .....	3-3
3.2.3 Other Emergency Events.....	3-4
<b>3.3 INFORMATION TO BE COMMUNICATED .....</b>	<b>3-4</b>
<b>4. RESPONSIBILITIES.....</b>	<b>4-1</b>
<b>4.1 NORMAL FACILITY ORGANIZATION.....</b>	<b>4-1</b>
<b>4.1.1 FBP Organization .....</b>	<b>4-1</b>
4.1.1.1 Program Manager .....	4-1
4.1.1.2 Project Support and Oversight Directors .....	4-1
4.1.1.3 Project Execution Directors.....	4-1
4.1.1.4 Training Manager.....	4-2
4.1.1.5 Shift Operations Manager .....	4-2
4.1.1.6 Quality Assurance Manager .....	4-2
4.1.1.7 Emergency Management Manager .....	4-2
4.1.1.8 On-Duty Plant Shift Superintendent .....	4-2
4.1.1.9 Assistant Plant Shift Superintendent.....	4-2
4.1.1.10 Nuclear Criticality Safety Manager.....	4-2
4.1.1.11 Protective Force Manager .....	4-3

**TABLE OF CONTENTS (Continued)**

	<u>Page</u>
4.1.2 USEC Inc. Organization.....	4-3
4.1.2.1 General Manager, American Centrifuge Plant Operations .....	4-3
4.1.2.2 Organizational Managers .....	4-3
4.1.2.3 Fire Safety/Emergency Management Manager.....	4-3
4.1.2.4 Operations Shift Supervisors.....	4-3
4.2 ONSITE EMERGENCY RESPONSE ORGANIZATION .....	4-3
4.2.1 Direction and Coordination .....	4-4
4.2.2 Onsite Staff Emergency Assignments .....	4-5
4.3 LOCAL OFFSITE ASSISTANCE TO FACILITY .....	4-5
4.3.1 Medical Support .....	4-6
4.3.2 Fire Support.....	4-6
4.3.3 Law Enforcement Assistance .....	4-6
4.4 COORDINATION WITH PARTICIPATING GOVERNMENT AGENCIES.....	4-7
4.4.1 State of Ohio Government Interfaces .....	4-7
4.4.2 Local Government Interfaces .....	4-7
4.4.3 Federal Government Interfaces.....	4-8
5. EMERGENCY RESPONSE MEASURES.....	5-1
5.1 ACTIVATION OF EMERGENCY RESPONSE ORGANIZATION .....	5-1
5.2 ASSESSMENT ACTIONS.....	5-2
5.2.1 Assessment Actions During an Alert .....	5-2
5.2.2 Assessment Actions During a Site Area Emergency .....	5-2
5.2.3 Post-Accident Assessment .....	5-2
5.3 MITIGATING ACTIONS .....	5-3
5.3.1 Personnel Actions .....	5-3
5.3.2 Safe Shutdown .....	5-3
5.4 PROTECTIVE ACTIONS.....	5-4
5.4.1 Onsite Protective Actions .....	5-4
5.4.2 Offsite Protective Actions.....	5-6

**TABLE OF CONTENTS (Continued)**

	<b><u>Page</u></b>
<b>5.5 EXPOSURE CONTROL IN RADIOLOGICAL EMERGENCIES .....</b>	<b>5-7</b>
<b>5.5.1 Emergency Radiation Exposure Control Program .....</b>	<b>5-7</b>
<b>5.5.2 Decontamination of Personnel .....</b>	<b>5-8</b>
<b>5.6 MEDICAL TRANSPORTATION .....</b>	<b>5-9</b>
<b>5.7 MEDICAL TREATMENT .....</b>	<b>5-9</b>
<b>6. EMERGENCY RESPONSE EQUIPMENT AND FACILITIES .....</b>	<b>6-1</b>
<b>6.1 EMERGENCY FACILITIES .....</b>	<b>6-1</b>
6.1.1 Section Deleted.....	6-1
6.1.2 Plant Control Facility .....	6-1
6.1.3 Command Post.....	6-2
6.1.4 Emergency Operations Center.....	6-2
6.1.5 X-104.....	6-3
6.1.6 Decontamination Facilities .....	6-3
6.1.7 Joint Public Information Center .....	6-3
<b>6.2 COMMUNICATIONS EQUIPMENT.....</b>	<b>6-4</b>
6.2.1 Onsite Communications.....	6-4
6.2.2 Offsite Communications .....	6-5
6.2.3 Mobile Communications Vehicle .....	6-5
<b>6.3 ONSITE MEDICAL FACILITIES .....</b>	<b>6-5</b>
<b>6.4 EMERGENCY MONITORING EQUIPMENT .....</b>	<b>6-6</b>
<b>7. MAINTAINING EMERGENCY PREPAREDNESS CAPABILITY .....</b>	<b>7-1</b>
<b>7.1 WRITTEN EMERGENCY PLAN AND PROCEDURES.....</b>	<b>7-1</b>
<b>7.2 TRAINING .....</b>	<b>7-1</b>
7.2.1 General Emergency Plan Training.....	7-2
7.2.2 Specialized Emergency Plan Training for the Emergency Response Organization .....	7-2
7.2.3 Offsite Emergency Management Training .....	7-3

**TABLE OF CONTENTS (Continued)**

	<b><u>Page</u></b>
<b>7.3 DRILLS AND EXERCISES .....</b>	<b>7-3</b>
<b>7.3.1 Biennial Exercises.....</b>	<b>7-4</b>
<b>7.3.2 Quarterly Communications Checks .....</b>	<b>7-5</b>
<b>7.4 CRITIQUES.....</b>	<b>7-5</b>
<b>7.5 PROGRAM AUDIT .....</b>	<b>7-5</b>
<b>7.6 MAINTENANCE AND INVENTORY OF EMERGENCY EQUIPMENT,     INSTRUMENTATION, AND SUPPLIES.....</b>	<b>7-6</b>
<b>7.7 LETTERS OF AGREEMENT .....</b>	<b>7-6</b>
<b>8. RECORDS AND REPORTS .....</b>	<b>8-1</b>
<b>8.1 RECORDS OF INCIDENTS .....</b>	<b>8-1</b>
<b>8.2 RECORDS OF PREPAREDNESS ASSURANCE .....</b>	<b>8-1</b>
<b>9. RECOVERY AND PLANT RESTORATION.....</b>	<b>9-1</b>
<b>9.1 RECOVERY.....</b>	<b>9-1</b>
<b>9.2 RECOVERY ORGANIZATION .....</b>	<b>9-2</b>
<b>10. COMPLIANCE WITH COMMUNITY RIGHT-TO-KNOW ACT .....</b>	<b>10-1</b>
<b>APPENDIX A APPENDIX DELETED .....</b>	<b>A-1</b>
<b>APPENDIX B LETTERS OF AGREEMENTS.....</b>	<b>B-1</b>
<b>APPENDIX C LIST OF SUPPORTING DOCUMENTS .....</b>	<b>C-1</b>
<b>APPENDIX D DEFINITIONS/ACRONYMS .....</b>	<b>D-1</b>



## LIST OF TABLES

<b><u>Table</u></b>	<b><u>Page</u></b>
<b>1-1 FUEF Evaluation Quantities for Regulated Materials and Substances.....</b>	<b>1-10</b>
<b>1-2 Hazardous Chemicals.....</b>	<b>1-13</b>
<b>1-3 Summary of Continuous Monitored Stack and Vent Characteristics .....</b>	<b>1-14</b>
<b>1-4 Lead Cascade Possession Limits .....</b>	<b>1-15</b>

## LIST OF FIGURES

<b><u>Figure</u></b>	<b><u>Page</u></b>
<b>1-1 Regional Area Surrounding PORTS .....</b>	<b>1-17</b>
<b>1-2 PORTS Plant Layout .....</b>	<b>1-19</b>
<b>1-2a PORTS Plant Layout Index .....</b>	<b>1-20</b>
<b>1-3 Population Distribution Around PORTS.....</b>	<b>1-21</b>
<b>1-4 Immediate Notification Area.....</b>	<b>1-22</b>
<b>1-5 Topographical Map of the U.S. Department of Energy Reservation .....</b>	<b>1-23</b>
<b>4-1 Field Emergency Response Organization .....</b>	<b>4-9</b>

## PLAN SUMMARY

The USEC Inc. has established and shall maintain and be prepared to follow the Portsmouth Gaseous Diffusion Plant (PORTS) Emergency Plan (the Plan) to ensure that plant personnel are adequately prepared for accidents or other emergencies involving the potential release of radioactive materials and that prompt, orderly, and effective response actions are taken to mitigate the consequences of such accidents and emergencies and protect the health and safety of the public and workers at the plant.

This Plan is implemented by the Emergency Plan Implementing Procedures (EPIPs). The EPIPs address generic requirements for responses to incidents involving hazardous chemicals, radioactive materials, natural phenomena, and other adverse conditions. This Plan and the accompanying EPIPs meet the requirements of 10 *Code of Federal Regulations* (CFR) 70.22(i)(3). A single emergency classification system is in place at PORTS. The U.S. Department of Energy (DOE) Portsmouth, Paducah Project Office (PPPO) has an exemption, to implement the U.S. Nuclear Regulatory Commission (NRC) emergency classification system indefinitely, as long as NRC-regulated activities are in operation onsite.

The format of the Plan is generally based upon NRC Regulatory Guide 3.67, *Standard Format and Content for Emergency Plans for Fuel Cycle and Materials Facilities* (January, 1992). Additionally, PORTS Emergency Action Levels (EALs) have been developed using examples provided in this Regulatory Guide. The details of the EPIPs implementing each section of the Plan are not included in the Plan itself, but the Plan includes a general description of the procedures that are followed in connection with each activity to demonstrate that appropriate actions can and will be taken to mitigate accident consequences and to protect the health and safety of the public and plant personnel in the event of an emergency.

The Plan provides an overall description of the comprehensive site-wide emergency preparedness program, which is based, in large measure, on the emergency preparedness policies, procedures, and practices that have been successfully used at PORTS for over 40 years. This program has been established to manage and respond in a consistent and integrated fashion to accidents or other emergency situations that may occur at the site. The structure of this program is intended to ensure that the consequences of emergencies are promptly mitigated and that the health and safety of the public, personnel on the surrounding DOE reservation, and plant personnel are protected, regardless of the cause or nature of the emergency. Therefore, the Plan addresses both radiological and non-radiological emergencies as well as potential emergencies arising out of activities at the site that are regulated by the NRC and that are regulated by DOE.

The scenarios addressed in the Plan include accidents involving radioactive materials, non-radioactive materials, chemicals, fires, natural disasters such as earthquakes and tornadoes, and security-related emergencies. The scenarios include a large uranium hexafluoride (UF<sub>6</sub>) release.

The Plan includes a general description of the plant and the surrounding area. It identifies the types of accidents and the emergencies for which protective actions may be needed and describes the manner in which accidents are detected and classified. The Plan also contains a description of the policies and procedures that are followed for the notification of and communication with plant personnel, local governments, and regulatory agencies in the event of an emergency and for the coordination of the emergency response activities of both onsite and offsite response organizations. The Plan provides a description of the responsibilities of the key individuals and organizations involved in emergency response activities and the manner in which the consequences of an emergency are mitigated and assessed.

The Plan also includes separate sections and subsections addressing the establishment and maintenance of emergency response equipment, facilities, and capabilities; the training and exercises that are conducted to maintain and enhance emergency preparedness; the manner in which plant equipment and systems are restored to a safe condition after an accident; and all other topics required under 10 CFR 70.22(i)(3). The Plan also confirms that USEC Inc. and site DOE contractors have met the responsibilities under the Emergency Planning and Community Right-to-Know Act of 1986. The Plan is maintained and updated by USEC Inc. In accordance with 10 CFR 70.32, USEC Inc. may change the Plan without receiving prior NRC approval, providing the change does not decrease the effectiveness of the Plan and the NRC and affected offsite response organizations are provided with copies of any changes to the Plan. In addition, any changes to the Plan are reviewed for approval by PORTS DOE contractors who utilize the Plan with DOE approval as required.

In summary, the Plan is the master document summarizing the site-wide emergency preparedness program and the policies, procedures, and actions that will be implemented in any emergency at the site to mitigate the consequences of the emergency and protect the health and safety of the public and plant workers.

## 1. FACILITY DESCRIPTION

USEC Inc. leases portions of the PORTS facilities and site from the DOE and conducts activities in the Lead Cascade Facility (Lead Cascade) in support of uranium enrichment projects for the construction and deployment of the American Centrifuge Plant (ACP). These activities are regulated by the NRC. DOE, Fluor-B&W Portsmouth LLC (FBP) – the DOE Prime Contractor for the PORTS site and the Former Uranium Enrichment Facilities (FUEF), and Babcock-Wilcox Conversion Services, LLC (BWCS) Depleted Uranium Hexafluoride (DUF<sub>6</sub>) Conversion Facility also conduct activities and operate non-leased facilities at the site that are regulated by DOE and are not regulated by the NRC.

The PORTS Emergency Plan and accompanying EIPs are used to meet the requirements in 10 CFR 70.22(i)(1)(ii) and (i)(3) for the Lead Cascade. Thus, this Plan contains pertinent information specific to the Lead Cascade. However, the overall elements of the Plan apply to the entire PORTS reservation and the activities conducted on the PORTS site. These activities include the FUEF and DUF<sub>6</sub> Conversion Facility and other DOE activities. Therefore, unless otherwise noted, the term “Plant” refers to the entire DOE reservation.

### 1.1 DESCRIPTION OF ACTIVITIES

#### 1.1.1 Description of NRC-Regulated Activities

The primary mission of the Lead Cascade is to install and operate up to 240 centrifuge machines in the recycle mode as a “closed loop” system, where the enriched product stream is recombined with the depleted stream prior to being refed to the cascade. The Lead Cascade uses full-scale equipment and laboratory samples are withdrawn to obtain information on American Centrifuge enrichment technology. The Lead Cascade is operated so that no enriched material is withdrawn, other than laboratory samples. No finished product is produced by the Lead Cascade. A basic summary of this process follows:

The uranium element appears in nature in numerous isotopes; the three major isotopes of interest have atomic weights of 234, 235, and 238. The <sup>235</sup>U isotope is capable of sustaining a critical reaction in most applications. Natural uranium contains 0.711 percent <sup>235</sup>U isotope. Isotopic separation processes separate uranium (e.g., its compounds) into two fractions, one enriched in the <sup>235</sup>U isotope, and the other depleted. Prior to the enrichment process, uranium is combined with fluorine to form UF<sub>6</sub>. The Lead Cascade receives natural assay uranium in solid UF<sub>6</sub> form in cylinders. In the gaseous centrifuge process, the isotopic separation is accomplished by centrifugal force, which uses the difference in weight percent of the different uranium isotopes to achieve this isotopic separation. UF<sub>6</sub> is fed into the system in the gaseous state and is enriched up to 10 weight percent assay <sup>235</sup>U. The Lead Cascade withdraws enriched and depleted samples in the gaseous state at specified locations for evaluation of cascade performance. The enriched and depleted streams are then recycled. UF<sub>6</sub> and release products associated with the Lead Cascade are highly toxic and present. Based on the hazards and consequence analysis reflected in the Integrated Safety Analysis (ISA), USEC Inc. has concluded that any hazardous release would most likely involve these two substances.

Lead Cascade possession limits for UF<sub>6</sub> are summarized in Table 1-4 of this Plan.

## 1.1.2 Description of DOE-Regulated Activities and Operations

### 1.1.2.1 FUEF Operations

The uranium enrichment operations at PORTS are shutdown and the FUEF are controlled by the DOE. The primary mission of FUEF plant operation is FUEF surveillance and maintenance, and activities in preparation for Decontamination and Decommissioning (D&D). A basic summary of these activities follows.

FUEF receives and ships uranium in solid  $UF_6$  form, which is shipped by truck and rail in 10- or 14-ton cylinders in accordance with U.S. Department of Transportation (DOT) regulations. Solid  $UF_6$  cylinders are stored in cylinder yards and in buildings.

The gaseous diffusion enrichment process employed a series of compressors and converters to enrich  $UF_6$  in  $^{235}U$ . The fundamental building block of the process consists of a compressor and a converter that form a stage. Stages are grouped together to form cells. The cells are then interconnected to provide what is known as a cascade. The compressors, which are driven by electric motors, are used to circulate the process gas and maintain flow through the cascade. The converters contain porous tubes called barriers through which the process gas is diffused. In each converter, a portion of the process gas diffuses through the barrier and is fed to the next higher stage, with the undiffused gas being recycled to the next lower stage. The diffused stream is slightly enriched in the 235 isotope, while the undiffused portion is slightly depleted in the 235 isotope to the same degree. Each stage also contains a gas cooler to remove the heat of compression from the process gas and a control valve for process control. The process is repeated through numerous cells until the desired enrichment level is reached. Separated  $^{238}U$  or depleted material is stored at the plant for future use or disposition. The operating inventory of the enrichment process has been removed; residual holdup remains. Limited operations are ongoing for removal of uranium deposits,  $UF_6$  processing and storage, surveillance and maintenance of the shutdown equipment and facilities, limited removal and decontamination of process equipment, uranium material recovery and storage, and waste handling and management.

FUEF evaluated radionuclide inventories are shown in Table 1-1 of this Plan.

Numerous substances associated with the FUEF processes could pose hazards if they were released to the environment. Only a few of these substances are highly toxic and present in large quantities at the plant. Based upon the hazards and consequence analyses reflected in the Basis for Interim Operation (BIO), any hazardous release with potential impact outside of the immediate process area would most likely involve one or more of six substances. The following is a brief description of each of these substances, the manner in which they are used in the FUEF processes, and the locations where they are stored or used at the plant.

1. *Uranium Hexafluoride ( $UF_6$ )*. In gaseous, liquid and solid forms,  $UF_6$  could present a hazard. Material in these forms has been used with the gaseous diffusion process and is primarily located in the X-326, the X-330, and the X-333 Process Buildings, the X-344A Toll Enrichment Facility, X-343 Feed Vaporization and Sampling Facility, the X-342A Feed Vaporization and Fluorine Generation Facility, and various cylinder yards.
2. *Chlorine Trifluoride ( $ClF_3$ )*.  $ClF_3$  is delivered to the plant in 160 pound cylinders and is stored in 160 pound cylinders at the X-742 facility and in two 2,000-ft<sup>3</sup> storage drums located in the X-330 building.  $ClF_3$  is used for cell treatment on an as-needed basis in the Process Buildings.

3. *Nitric Acid (HNO<sub>3</sub>)*. HNO<sub>3</sub> is transported to plant site by tank truck and is stored in two tanks, 1,500 gallon and 3,500 gallon, located 60 feet east of X-705 and directly north of the former incinerator building location. HNO<sub>3</sub> is pumped to a 100-gallon storage tank in X-705 and gravity fed to various systems, such as small parts, the neutralization sink, and spray tanks. HNO<sub>3</sub> is also stored in glass bottles in the X-720 toxic materials storage area. HNO<sub>3</sub> is primarily used to decontaminate uranium-contaminated metal surfaces and recover uranium.
4. *Fluorine (F<sub>2</sub>)*. F<sub>2</sub> is generated from HF gas in X-342A and is pumped to storage tanks in the X-342B facility. The three F<sub>2</sub> storage tanks measure 8 feet in diameter and 20 feet long. F<sub>2</sub> is used to pacify and condition metal surfaces prior to exposure to UF<sub>6</sub> and for treatment on an as-needed basis.
5. *Chlorine (Cl<sub>2</sub>)*. Cl<sub>2</sub> is used in the treatment of the sanitary water supply and for sewage treatment at PORTS. The function of Cl<sub>2</sub> in the water and waste water treatment processes is as a disinfectant for removal of disease-carrying organisms. Cl<sub>2</sub> on plant site is found at the water treatment plant (X-611E) in 1-ton cylinders, at the sewage treatment plant (X-6619) in 150 pound cylinders, and in the X-742 in 150 pound cylinders.
6. *Hydrogen Fluoride (HF)*. HF is used in the production of F<sub>2</sub>. Liquid HF is delivered to the plant in 850-lb cylinders and is stored in the X-342A facility. There, the HF is vaporized and piped to four F<sub>2</sub> generators, where it is dissociated to produce F<sub>2</sub>.

Table 1-2 shows the major locations and quantities of hazardous chemicals described above.

#### 1.1.2.2 DUF<sub>6</sub> Conversion Facility

A DOE operation is the operation of the DUF<sub>6</sub> Conversion Facility. The plant operation includes the following activities:

- Storage, handling, and movement of cylinders of UF<sub>6</sub>, primarily depleted enriched uranium;
- Receipt and preparation of the cylinders for heating in the processing building;
- Heating, feed, and conversion of DUF<sub>6</sub> to uranium oxide and storage of uranium oxide in disposal containers;
- Collection, purification, and packaging of HF for offsite shipment;
- Production of hydrogen from natural gas for use in the conversion process;
- Treatment and/or disposition of process wastes; and
- Handling and shipping of uranium oxides and other waste materials.

DOE has approved a Documented Safety Analysis (DSA) with associated Technical Safety Requirements (TSRs) for the operation of the DUF<sub>6</sub> Conversion Facility. A number of postulated accidents could impact the PORTS site requiring selective evacuation or sheltering in place for USEC Inc. personnel at the Lead Cascade or DOE contractors performing D&D or environmental remediation activities.

A number of substances associated with the DUF<sub>6</sub> conversion process could pose hazards if they were released to the environment. A smaller number of substances used in the DUF<sub>6</sub> Conversion Facility are highly toxic and present in relatively large quantities. The following is a brief description of each of these more highly toxic substances, the manner in which they are used in the DUF<sub>6</sub> conversion processes, and the locations where they are stored or used at the plant.

1. *Depleted Uranium Hexafluoride (UF<sub>6</sub>)*. In gaseous and liquid forms, UF<sub>6</sub> can present a significant hazard if released. Material in these forms is used with the conversion process and is primarily located in the X-1300 DUF<sub>6</sub> Conversion facility. DUF<sub>6</sub> (primarily in solid form) is located in the cylinder storage/staging areas.
2. *Hydrogen Fluoride (HF)*. HF is a product of the conversion process. It is produced as a gas and condensed into a liquid solution (55 weight % in water). Material in these forms is present in the X-1300 facility, the HF recovery system, and the HF storage tank system.
3. *Uranium Oxide (primarily U<sub>3</sub>O<sub>8</sub>)*. Uranium oxide is a product of the conversion process. It is produced as a fluidized solid in gas and is densified and collected as solid particles in modified UF<sub>6</sub> cylinders. Material in these forms is present in the X-1300 facility and Oxide Cylinder Staging Area.
4. *Hydrogen and Natural Gas*. These materials (present in the gas phase) are input to the conversion reaction; the natural gas is processed to make hydrogen and the hydrogen is fed to the conversion reactors. Material in these forms is found in the Hydrogen generation area and hydrogen is found in the X-1300 facility.
5. *Potassium Hydroxide (KOH)*. These materials are present as solid and in solution. Material in these forms is present in the X-1300 facility and KOH Regeneration Building.

Table 1-2 of this Plan shows the major locations and quantities of the hazardous chemicals described above.

## 1.2 DESCRIPTION OF FACILITY AND SITE

PORTS is located at latitude 39°00'30" north and longitude 83°00'00" west measured at the center of the plant on a 3,708-acre tract in Pike County, Ohio, one of the state's lesser populated counties. The plant site is located between Chillicothe and Portsmouth, Ohio, approximately 70 miles south of Columbus, Ohio. Figure 1-1 shows the regional area surrounding the plant.

The general location is an area of steep to gently rolling hills, with average elevations of 120 feet above the Scioto River Valley. The steep hills characteristically are forested, while the rolling hills provide marginal farmland. With the exception of the Scioto River and its floodplain, the floodplains and valleys are narrow and are occupied by small farms.

There are no unrelated industrial, commercial, institutional, or residential structures within the plant property. DOE leases facilities onsite to the Ohio National Guard. The Ohio National Guard does not store weapons onsite. There are no other military installations located near the site.

Roadways within the fenced limited access or protected area of the plant consist of several miles of paved surface. Several paved roads branch out from the plant to the Perimeter Road that surrounds the plant site. The west access to the plant extends from U.S. 23 to the Perimeter Road. Shyville Road connects U.S. 32 to the north side of the plant, Big Run Road leads to the south side of the plant, and Dutch Run Road enters the area from the east side of the plant.

Rail and roadways are used for cylinder movements to the plant. The rail spur enters the site from the north and branches to several areas inside the fence. All the process buildings and most of the support facilities have direct rail service. In addition, cylinders are transported around the plant site using a variety of devices, including cylinder carriers, stackers, rail cars, forklifts, trucks, and wagons.

Rivers or major streams do not traverse the plant area. However, Big Beaver Creek and Little Beaver Creek cross the northern edge of the PORTS reservation. Runoff water flows from the area through three streams: Little Beaver Creek, Big Run Creek, and a drainage ditch to the Scioto River.

The PORTS site consists of 3,708 acres with an 800-acre central developed area surrounded by the Perimeter Road. The reservation land outside the Perimeter Road is used for a variety of purposes, including a water treatment plant, lagoons for the process waste water treatment plant, sanitary and inert landfills, and open and forested buffer areas.

Most of the site improvements are located within the 500-acre fenced core area. The core area is largely devoid of trees, with grass and paved roadways dominating the open space. Within this area are the three gaseous diffusion process buildings, each approximately 882 ft by 1,781 ft and 80 ft tall.

#### **1.2.1 Primary Emergency Plan Support Facilities**

The primary Emergency Operations Center (EOC) is located in the X-1020 building. The EOC is a facility that provides communications, information processing capabilities, and support services with which the Crisis Manager (CM) can direct mitigation of an emergency. Upon activation, the EOC is staffed by a preassigned cadre who assists the CM.

The alternate EOC is located in the X-300 Plant Control Facility (PCF), which houses the Plant Shift Superintendents (PSSs), power operations personnel, and cascade control. The PCF provides communications, information processing capabilities, and support services with which the CM can direct mitigation of an emergency.

The X-1007 Fire Station is located just south of the EOC. The X-1007 houses the emergency response personnel and response vehicles and a first aid room. It also contains the fire alarm system room.

The plant medical facility is operational during the day shift, Monday through Friday excluding holidays. The medical facility has supplies, equipment, and personnel to treat most injuries. Medical personnel assess patient condition, provide emergency care, and determine appropriate supplemental treatment. Medical personnel are capable of treating contaminated individuals.



### 1.2.2 Former Uranium Enrichment Facilities

The FUEF consists of various buildings and processes which are described below.

The three process buildings account for 8 million ft<sup>2</sup> of the total 10 million ft<sup>2</sup> of floor space at PORTS, excluding the Gas Centrifuge Enrichment Plant (GCEP) facilities. The plant also includes a series of electrical switchyards, storage areas, cooling towers, a steam plant, water treatment plant, sewage disposal plant, pollution abatement facility, service and maintenance buildings, and facilities for administration, medical, fire, and security. Figure 1-2 of this Plan shows the plant layout at PORTS.

The process buildings are referred to as the cascade buildings. These cascade buildings, designated X-326, X-330, and X-333, are steel-framed transite-covered two-story buildings that house the enrichment process equipment. Three smaller buildings, X-343, X-342A, and X-344A, are referred to as the feed vaporization and sampling facility, feed vaporization and fluorine generation facility, and toll enrichment facility, respectively. Some of the instruments and controls in these buildings are duplicated in the X-300 PCF. This facility also serves as the alternate EOC and the headquarters of the PSS. A description of the cascade/process buildings, key support buildings, onsite emergency facilities, and airborne effluent controls follows.

The three process buildings, X-326, X-330, and X-333, located near the central portion of plant site, form an "L" configuration. Such a configuration permits easy connection of most overhead and underground piping and service lines required between the process buildings. The purpose of the process buildings is to house the equipment and much of the support systems necessary for the isotopic separation of uranium.

The vaporization facilities, X-342A and X-343, located adjacent to their respective process buildings, are the entry points of the feed material into the cascade. Autoclaves are used to vaporize the feed from the cylinders.

Cascade UF<sub>6</sub> withdrawal points are installed at various locations. As with feed operations, there are both fixed and portable withdrawal facilities, but some were designed for liquid UF<sub>6</sub> transfers. These UF<sub>6</sub> liquid phase withdrawals are possible at three fixed facilities: the X-330 tails withdrawal station, the X-333 low assay withdrawal, and the X-326 extended range product station. These withdrawals involve the compression and condensation of UF<sub>6</sub>.

Assay control for enriched products withdrawn from the cascade was verified by samples taken simultaneously at the withdrawal point. Low-assay (5.0 wt % <sup>235</sup>U) materials were withdrawn into 10-ton heavy wall cylinders at X-326 or X-333.

The toll enrichment facility (X-344A) is a receiving and shipping point for large-cylinders entering and leaving the plant. Small-cylinder shipping and receiving activities may be performed at a number of locations.

The plant decontamination facility is located in the X-705 building, which is designed for the safe disassembly and decontamination of process and support equipment. Contaminated emergency equipment and supplies that are not decontaminated at the emergency scene are sent to the X-705 building for decontamination. Waste water from the decontamination process which requires treatment prior to discharge is collected in a separate drain system.

The XT-847 Waste Management Staging Facility is located near the southern end of the DOE reservation. The building is a steel structure with concrete floors and is divided into three major staging areas. The northern and southern sections are separated from the center section of the building by concrete block four-hour rated firewalls and steel fire doors.

### **1.2.3 Lead Cascade**

The Lead Cascade uses existing former DOE GCEP buildings. A brief description of primary Lead Cascade buildings and their purpose is provided below.

The Lead Cascade is located in a portion of the X-3001 Process Building. The primary purpose of the X-3001 building is to house the centrifuge machines and support systems necessary to perform the Lead Cascade activities. The north end of X-3001 building has an equipment/utility mezzanine where auxiliary equipment is housed. A building vent for the purge and evacuation vacuum systems is also located in the X-3001 building. Due to the nature of the centrifuge operation, a purge vacuum is applied to the machine to remove gas (either process gas or in-leakage of atmospheric gases) that enters the space between the internal rotor and the casing.

The process is controlled by a Local Control Center (LCC) at the cascade located in the X-3001 building. The LCC is connected to the Area Control Room (ACR) located in the X-3012 Process Support Building.

The X-3012 building is located east of X-3001 building. The X-3012 building is divided into three functional areas: an operational area, maintenance area, and a machine transfer corridor. The operational area is located in the north section of the building and includes the ACR for the X-3001 building; offices; lunchroom; restrooms; battery room; switchgear room; and heating, ventilation, and air conditioning (HVAC) rooms. A mezzanine above the north section contains the mechanical equipment room for the building.

The ACR provides the central operating functions to monitor and control both the Lead Cascade machines and process. The maintenance area is located in the south section of the building and includes maintenance shops, storage areas, a battery charging room, offices, locker rooms, restrooms, and a mezzanine area with additional office areas, and HVAC rooms.

The X-7725 Recycle/Assembly Building is a very large multiple level building. X-7725 building is used for office space, building utilities, and interim storage and handling of centrifuge machines/components prior to final movement to the Lead Cascade. Areas of the X-7725 building will be utilized for shipping, receiving, and storage of materials.

The X-7726 Centrifuge Training and Test Facility is located in the northwest corner of the X-7725 building. The X-7726 facility is the area where material and components are received; components or subassemblies are inspected and tested; the components are assembled as centrifuge machines; the final assembly is evacuated and leak checked; and repairs are performed to the machine or subassemblies.

The X7727H Interplant Transfer Corridor provides an enclosed north-south thoroughway from the X-7725 building and X-7726 facility to the X-3001 building. The corridor is wide enough to accommodate bi-directional passage of two fully loaded centrifuge transporters.

#### 1.2.4 Airborne Emission Sources

Airborne effluent monitors cover the FUEF, Lead Cascade, and the supporting systems that are potentially significant contributors to total plant emissions. Gaseous radionuclide emissions from the purge cascade vents; the cold recovery and wet air evacuation vents; the sampling and transfer evacuation vent; the seal exhaust vents; and the X-3001 building process vent are monitored when operating by continuous vent samplers. The continuous vent samplers draw a flow-proportional sample of the vent stream through two alumina traps in series by way of an isokinetic probe.

Sixteen emission sources at the plant have been identified as potentially significant contributors to the total plant radionuclide emissions. Although none of these atmospheric radionuclide emission sources were identified to have the potential to exceed a 0.1 mrem/year dose to the most exposed member of the public during normal operation, continuous vent monitors have been installed to quantify plant radiological airborne emissions. Figure 1-2 of this Plan, PORTS Plant Layout, shows the locations of these process vents, and Table 1-3 of this Plan, Summary of Continuous Monitored Stack and Vent Characteristics, summarizes stack heights and flow rates. In addition, the stack at the X-1300 facility is monitored for radionuclide emissions.

#### 1.2.5 DUF<sub>6</sub> Conversion Facility

The X-1300 facility is constructed on the west side of the plant inside the Perimeter Road and near the West Access Road. A brief description of the Conversion Facility primary buildings and their purpose is provided below.

The X-1300 facility is a precast concrete structure with two principal operating floors and contains the major systems and equipment needed for DUF<sub>6</sub> conversion to uranium oxide and for recovery of HF. In addition, the facility contains the Control Room and electric power distribution for the X-1300 facility, the uranium oxide packaging, and shipping activities.

The Scrubber Room receives aqueous HF solution and process offgas containing HF vapor from the Condenser Room (each conversion line has dedicated equipment). Aqueous HF is monitored for uranium content prior to accumulating in the HF receiver tank, and is pumped to the HF Storage Area when it receives a tank level setpoint. An HF overflow tank is provided to contain aqueous HF in the off-normal event of overfilling an HF receiver tank. HF vapor entrained in the process offgas is condensed in a Deionized Water (DIW) scrubber where the solution is transferred to the HF receiver tank at a tank level setpoint. Process offgas leaving the DIW scrubber enters a KOH scrubber eductor where it is contacted by high pressure KOH spray. The liquid is collected in the scrubber tank, and the vapor is routed through a packed column for scrubbing. Process offgas exiting the KOH scrubber passes through a backup KOH scrubber for final processing before it is released from the plant stack. Fans on the offgas lines in the Scrubber Room are used to control offgas flow and pressure in the conversion process.

The HF Storage System (HFS) is used to receive and store the nominal 55 wt % HF acid pumped from the X-1300 facility. The major components of the HFS include the HF storage tanks (5 – 10,000 gallon tanks) and HF pumps.

The KOH Regeneration Building is a heated pre-engineered metal building. The building contains equipment for the regeneration of potassium hydroxide scrubber solution for reuse. The building also contains the cooling tower blowdown and DIW treatment effluent collection tanks, the Effluent Treatment System and the DIW equipment.

Three cylinder staging areas (concrete pads) directly support conversion facility operations: the DUF<sub>6</sub> Full Cylinder Staging Area, the Empty and Heel Cylinder Staging Area, and the Oxide Cylinder Staging Area.

In addition, the DOE contractor operating the DUF<sub>6</sub> Conversion Facility also maintains and operates a number of DOE-regulated cylinder yards storing primarily DUF<sub>6</sub>.

For the purposes of emergency management, the entire DOE reservation is assumed to be controlled by the Emergency Plan in that lease and contractual agreements exist between USEC Inc. and DOE or between their respective contractors that govern site responsibilities and services to be provided. Within these agreements, the Emergency Response Organization (ERO) prescribes protective actions for all persons on the DOE reservation. These protective actions are included in Section 5.4, Protective Actions, of this Plan. Persons at the DOE reservation boundary are considered members of the public. State and county agencies recognize the DOE reservation boundary as the defining boundary between the public and PORTS.

### **1.3 DESCRIPTION OF AREA NEAR THE SITE**

The areas adjacent to the site are largely agricultural with a relatively low population density. Agricultural and forested land account for approximately 90% of the area surrounding the plant. The remaining 10% is taken up by industrial, commercial, and residential land use.

With the exception of the host county of Pike, counties adjacent to the plant include Scioto, Jackson, Ross, Highland, and Adams. Nearby cities and their approximate distance from the site include the following: Chillicothe, 25 miles north; Portsmouth, 22 miles south; Waverly, 7 miles north; and Jackson, 26 miles east. Communities closest to the site include the unincorporated towns of Piketon, Beaver, and Lucasville. As Figure 1-3 of this Plan indicates, PORTS is in a rural, low-population area. The plant is well separated from high-density, high-growth-rate areas that might complicate emergency preparedness efforts. An emergency planning area, known as the immediate notification area, established by agreement with Pike County and State of Ohio officials, is used as a tool to aid in warning offsite populations of events with potential health or safety impact. The immediate notification area, which extends Emergency Plan-approximately two miles from the center of the plant, is wholly within Pike County. As shown in Figure 1-4 of this Plan, the immediate notification area, is covered by the Public Warning System (PWS).

No installations or facilities (such as schools, prisons, etc.) that would require special precautionary measures are located in the immediate areas surrounding the plant. Small businesses in close proximity of PORTS include small businesses in Piketon, the State Highway Department office and garage, a feed store, bars and restaurants, auto repair shops, an agricultural center, and service stations. There are no known problems or threats foreseen from these facilities or operations. Figure 1-5 of this Plan indicates the site on a United States Geological Survey topographical map.

The plant maintains letters of agreement with offsite emergency support organizations, such as fire departments, hospitals, and other emergency support groups. Descriptions of services and locations of support organizations are included in Section 4.3, Local Offsite Assistance to Facility, of this Plan.

Table 1-1 FUEF Evaluation Quantities for Regulated Materials and Substances

Type of Material	Atomic Number	Physical State	Chemical Form	Evaluation Quantity	Description
A. Source Material <sup>d,f</sup>	92	Solid, liquid, and Gas	UF <sub>6</sub> , UF <sub>4</sub> , UO <sub>2</sub> F <sub>2</sub> , oxides, metal and other compounds	300,000 MTU <sup>a</sup>	Uranium (including natural, depleted and recycled) and daughter products and process contaminants and wastes  Laboratory chemicals Analysis of samples <sup>e</sup>  Instrument calibration and check sources
B. Source Material	90	Solid and liquid	Soluble and insoluble chemicals, metal	10 Ci	Laboratory chemicals, instrument calibration sources, plated metallic sources, instrument check sources Analysis of samples <sup>e</sup>
C. Special Nuclear Material <sup>b,d,f</sup>	92	Solid, liquid, and gas	UF <sub>6</sub> , UF <sub>4</sub> , UO <sub>2</sub> F <sub>2</sub> , oxides, metal and other compounds	300,000 MTU	Uranium (including recycled) enriched in isotope 235 up to 20 percent by weight, uranium daughter products and process contaminants and wastes, to include: (1) laboratory chemicals, (2) analysis of samples <sup>e</sup> , (3) instrument calibration and check sources, or (4) material that may be held up in facilities and equipment from previous operations
	92	Solid, liquid and gas	UF <sub>6</sub> , UF <sub>4</sub> , UO <sub>2</sub> F <sub>2</sub> , oxides, metal and other compounds	98,000 g <sup>235</sup> U <sup>g</sup>	Uranium enriched in isotope 235 from 20 percent up to 50 percent by weight, to include: (1) material that may be held up in uninstalled equipment and facilities from previous operations and in equipment received from other facilities, (2) laboratory chemicals, (3) analysis of samples <sup>e</sup> , or (4) instrument calibration and check sources.
	92	Solid, liquid and gas	UF <sub>6</sub> , UF <sub>4</sub> , UO <sub>2</sub> F <sub>2</sub> , oxides, metal and other compounds	18,000 g <sup>235</sup> U <sup>g</sup>	Uranium enriched in isotope 235 > 50 percent and up to 100 percent by weight, to include: (1) material that may be held up in uninstalled equipment and facilities from previous operations and in equipment received from other facilities, (2) laboratory chemicals, (3) analysis of samples <sup>e</sup> , or (4) instrument calibration and check sources.
Special Nuclear Material	94	Sealed source		50 Ci	Instrument calibration sources, NDA
		Sealed glass ampules		3 Ci	Instrument calibration sources, NDA
		Unsealed sources		0.5 Ci	Laboratory chemicals Analysis of samples <sup>e</sup>
	94	Any	Any	That resulting from the feed of recycled or FSU <sup>c</sup> uranium	Process contaminants and wastes, material held in equipment from previous operations

Table 1-1 (Continued)

Type of Material	Atomic Number	Physical State	Chemical Form	Evaluation Quantity	Description
D. By-Product Material	3-89, 91	Sealed source		1 Ci with no single isotope to exceed 100 mCi, except as noted below	Calibration, instrument internal source Instrument calibration and check sources
		Unsealed source		1 Ci with no single isotope to exceed 100 mCi, except as noted below	Laboratory chemicals Analysis of samples <sup>c</sup>
	27Co-57	Sealed Source		10 Ci	Calibration, internal Instrument standard, NDA
	27 Co-60	Sealed Source		450 Ci	Calibration, NDA, Process sources
		Unsealed Source		0.5 Ci	Laboratory chemicals Analysis of samples <sup>c</sup>
	28 Ni-63	Sealed Source		10 Ci	Process sources, internal instrument standards
	38 Sr-90	Sealed Source		0.5 Ci	Calibration
		Unsealed Source		0.5 Ci	Laboratory chemicals, Analysis of samples <sup>c</sup>
	43 Tc-99	Sealed Source		10 Ci	Calibration
		Unsealed Source		5 Ci	Laboratory chemicals, Analysis of samples <sup>c</sup>
		Any	Any	That resulting from the feed of recycled or FSU <sup>c</sup> uranium	Process contaminants and wastes, material held in equipment from previous operations
	55 Cs-137	Sealed Source		2,000 Ci	Calibration, NDA, Process sources
		Unsealed Source		0.5 Ci	Laboratory chemicals Analysis of samples <sup>c</sup>
	61 Pm-147	Sealed Source		0.5 Ci	Calibration
	70 Yb-169	Sealed Source		5.0 Ci	Calibration, NDA
	81 Tl-207	Sealed Source		1.0 Ci	Calibration
	88 Ra-226	Sealed Source		15 Ci	Calibration
	93,96,97, 99,100	Sealed source		0.5 Ci	Calibration
		Unsealed source		1.0 Ci	Laboratory chemicals Analysis of samples <sup>c</sup>
	93, 95-100	Any	Any	That resulting from the feed of recycled or FSU uranium <sup>c</sup>	Process contaminants and wastes, material held in equipment from previous operations

Table 1-1 (Continued)

Type of Material	Atomic Number	Physical State	Chemical Form	Evaluation Quantity	Description
	95	Sealed source Unsealed source	Oxides, metals Oxides, metals, solutions	15 Ci 0.5 Ci	Calibration, process source Analysis of samples <sup>c</sup> Laboratory chemicals
	98	Sealed source Unsealed source	Oxides, metals Oxides, metals, solutions	10 Ci 0.5 Ci	Calibration, NDA Analysis of samples <sup>c</sup> Laboratory chemicals

- a. MTU - Metric Tons Uranium
- b. FSU meets the ASTM Standard C996, "Standard Specification for Uranium Hexafluoride Enriched to Less Than 5 % <sup>235</sup>U"; UF<sub>6</sub> for enrichment meets the ASTM Standard C787, "Standard Specification for Uranium Hexafluoride for Enrichment."
- c. Recycled uranium includes the feed and processing of Paducah Product and the "stockpile" UF<sub>6</sub> transferred from DOE to USEC for enrichment.
- d. "Analysis of samples" refers to the analysis of samples related to enrichment activities or site remediation (PORTS, Paducah Gaseous Diffusion Plant, DOE-OR) activities utilizing existing facilities and analytical techniques to process low-level radioactivity samples founded by the possession limits stated in this table.
- e. Except for Paducah Product and the "stockpile" UF<sub>6</sub> transferred from DOE to USEC for enrichment, uranium to be fed to the cascade will meet the requirements of ASTM Standard C996, "Standard Specification for Uranium Hexafluoride Enriched to Less Than 5% <sup>235</sup>U" or ASTM Standard C787, "Standard Specification for Uranium Hexafluoride for Enrichment" for reprocessed UF<sub>6</sub>. All other uranium that does not meet the requirements of ASTM C996 or C787 for reprocessed UF<sub>6</sub> may be accepted for storage and subsequent dispositioning but will not be introduced to the cascade (except at DOE direction), with the exception of small amounts (e.g., 50 pounds UF<sub>6</sub>) associated with sampling, subsampling, and analyses required to establish receiver's values.
- f. These evaluation quantities are site totals based on the current MBA structure. Each MBA is limited to the appropriate level of HEU associated with the Attractiveness Level and Category Quantity. These evaluation quantities do not include material in FUEF space from previous DOE operations to include retained inventory of uranium plated out on the inside surfaces of both shutdown and operating equipment in the X-326 facility; specific components in the X-326 cascade that need to be removed for maintenance or other operational purposes; material and equipment such as alumina traps, seal exhaust oil and GP containers from always-safe vacuums that are generated as part of ongoing operations in X-326; or material held up in X-705 equipment (some of which may have to be removed for maintenance). Such holdup material is evaluated in the BIO for specific applicable accident scenarios.

FSU - Former Soviet Union

**Table 1-2 Hazardous Chemicals**

<b>Name</b>	<b>Locations</b>	<b>Typical Quantity</b>
<b>FUEF</b>		
Uranium Hexafluoride	X-326, X-330, X-333, X-342A, X-343, X-344A, X-345, X-745 storage locations	400,000,000 pounds
Chlorine Trifluoride	X-330, X-333, X-742	4,000 pounds
Nitric Acid	X-705, X-720	30,000 pounds
Fluorine	X-342A, X-342B	700 pounds
Chlorine	X-611E, X-6619, X-742	7,000 pounds
Hydrogen Fluoride	X-342A	5,000 pounds
<b>DUF<sub>6</sub> Conversion Facility</b>		
UF <sub>6</sub>	X-745C, X-745E, X-745G-1	561,000,000 pounds
Depleted UF <sub>6</sub>	X-1300, X-1745A	630,000 kg
Hydrogen Fluoride	X-1300, X-1305, rail cars, tank trucks	681,000 kg
Uranium Oxide	X-1300, X-1745C	560,000 kg
<b>Lead Cascade</b>		
UF <sub>6</sub>	X-3001	250 kg



**Table 1-3 Summary of Continuous Monitored Stack and Vent Characteristics**

LOCATION	DIMENSIONS				FLOW RATES		Control Device Efficiency
	I.D.* (in.)	Height (ft.)		Vol. (ACFM)	Vel. (Ft./Min.)	Monthly Vol. (SCF) <sup>a</sup>	
		Above Roof	Above Ground				Percent (%)
X-326 Top Purge Vent (X-326-P-2799) <sup>b</sup>	5	103	165	379	2,779	1.47E+07	99.99
X-326 Side Purge (X-326-P-2798) <sup>b</sup>	5	103	165	626	4,588	2.46E+07	99.99
X-326 E-Jet (X-326-P-616) <sup>b</sup>	5	103	165	869	6,372	3.54E+07	99.99
X-330 Cold Recovery Vent (X-330-P-272)	4	12	78	415	4,753	1.57E+07	90
X-333 Cold Recovery Vent (X-333-P-852)	3	15	97	429	8,746	1.50E+07	99
X-333 Building Evacuation Vent (X-333-P-856)	4	15	97	917	10,508	2.27E+06	90
X-333 Seal Exhaust System Area 1 (X-333-A-851)	6	6	72	58	293	2.20E+06	99
X-330 Seal Exhaust System Area 2 (X-330A-262)	4	6	72	37	424	1.71E+06	99
X-330 Seal Exhaust System Area 3 (X-330-A-279)	4	6	72	30	347	1.22E+06	99
X-326 Seal Exhaust System Area 4 (X-326-A-512)	8	6	72	30	87	1.22E+06	99
X-326 Seal Exhaust System Area 5 (X-326-A-528)	8	6	72	27	77	1.35E+06	99
X-326 Seal Exhaust System Area 6 (X-326-A-540)	8	6	72	29	83	1.20E+06	99
X-343 Cold Trap Operations Vent (X-343-P-964)	3	68	110	51	1,033	2.19E+06	99
X-344 Cold Trap Operations Vent (X-344-P-3103)	3	12	58	51	1,033	2.19E+06	99
X-344 Gulper (X-344-P-929)	16	8	58	450	322	2.81E+06	99
X-3001 Process Vent (X-3001-A-3111) <sup>c</sup>	4	11.5	97.5	296	3,394	1.30E+07	95

\* I.D. represents inside diameter.

<sup>a</sup> Monthly volumes are based on an average of data from 1992 to 1994.

<sup>b</sup> These three vents physically discharge through four interconnected pipes of the listed dimensions.

<sup>c</sup> This vent is regulated under the NRC License issued under 10 CFR Part 70.

**Table 1-4**  
**Lead Cascade Possession Limits**

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
A. Source Material	92	Solid and Gas	UF <sub>6</sub> , UF <sub>4</sub> , UO <sub>2</sub> F <sub>2</sub> , oxides, and other compounds	250 kg UF <sub>6</sub> 169 kg U	Uranium (including natural and depleted) and daughter products and process contaminants and wastes
B. Special Nuclear Material <sup>a</sup>	92	Solid and gas	UF <sub>6</sub> , UF <sub>4</sub> , UO <sub>2</sub> F <sub>2</sub> , oxides, metal, and other compounds	700 g <sup>235</sup> U	Uranium enriched in isotope 235 up to 10 percent by weight, uranium daughter products and process contaminants and wastes, to include: (1) instrument calibration and check sources, or (2) material that may be in process and/or held up in facilities and equipment from Lead Cascade operations
	94	Sealed source		0.5 Ci	Instrument calibration sources, NDA

<sup>a</sup> See 10 CFR Part 70 definitions. Special nuclear material means: (1) Plutonium, uranium-233, uranium enriched in the isotope 233 or in the isotope 235, and any other material which the Commission, pursuant to the provisions of Section 51 of the Act, determines to be special nuclear material, but does not include source material; or (2) any material artificially enriched by any of the foregoing, but does not include source material.

Blank Page

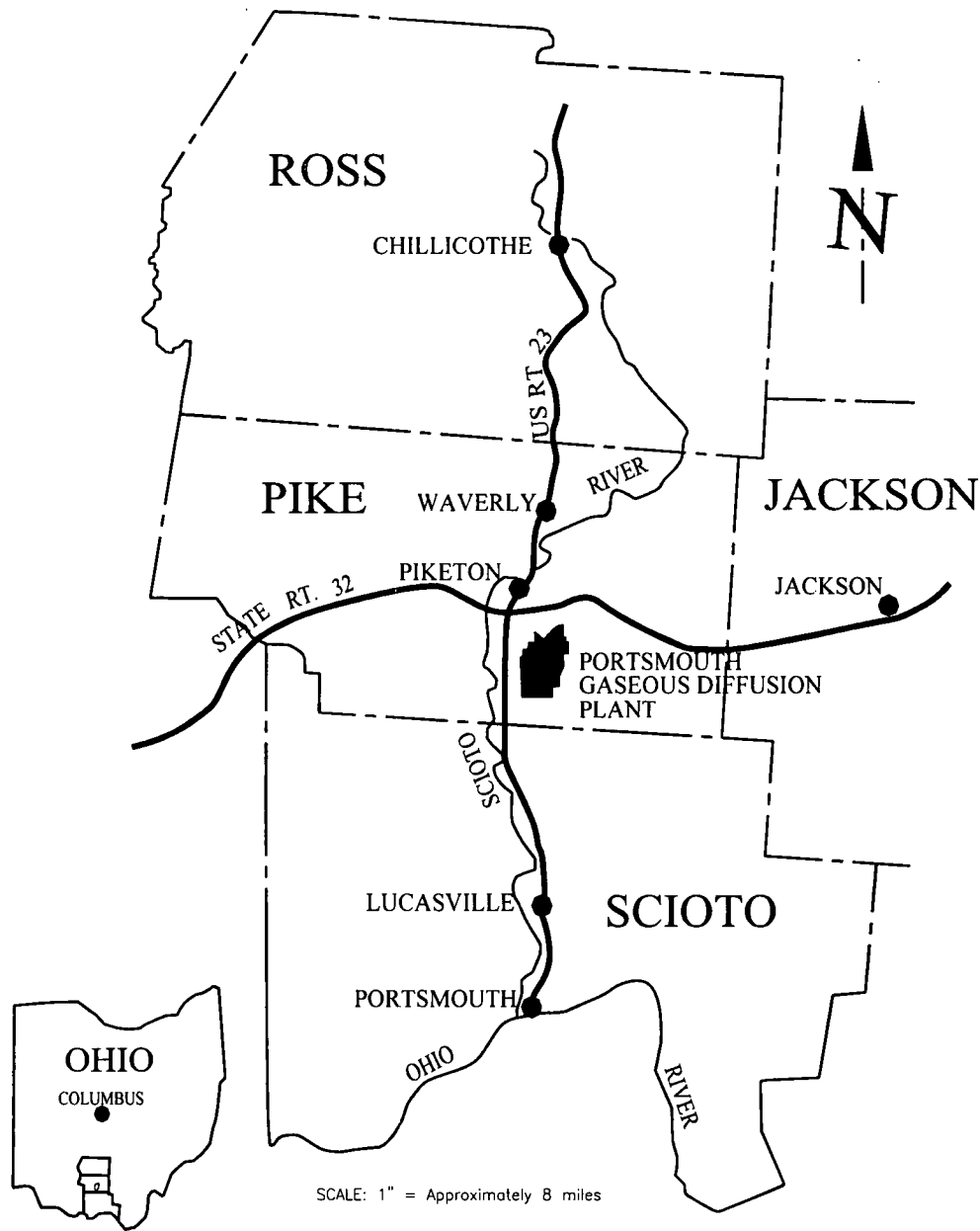


Figure 1-1 Regional area surrounding PORTS

Blank Page

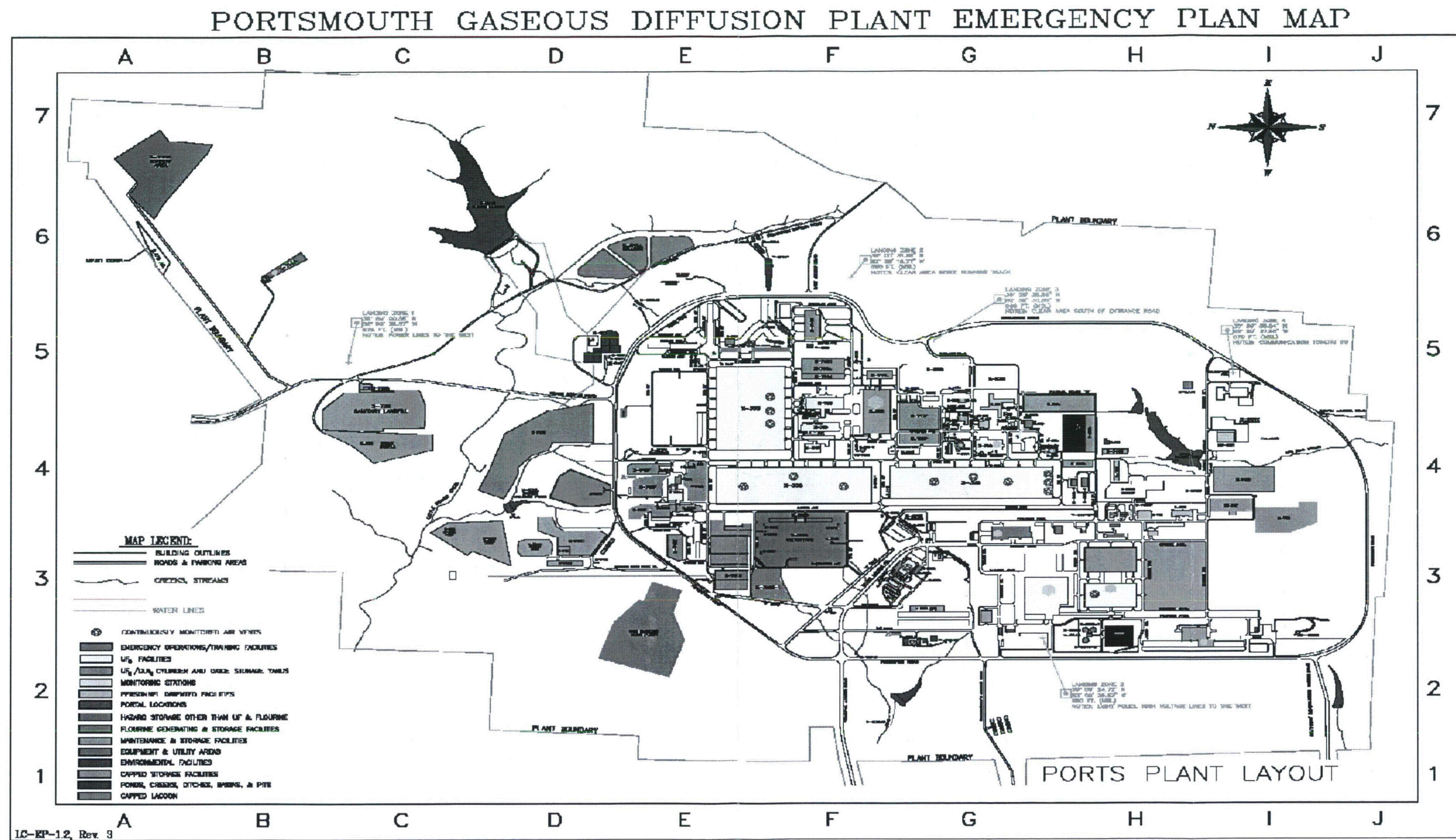


Figure 1-2 PORTS Plant Layout



PORTSMOUTH GASEOUS DIFFUSION PLANT EMERGENCY PLAN MAP INDEX

FACILITY #	FACILITY NAME	GRID LOCATION	FACILITY #	FACILITY NAME	GRID LOCATION	FACILITY #	FACILITY NAME	GRID LOCATION
X-100	ADMINISTRATION BLDG	G5	X-685H	BOOSTER PUMP HOUSE & FAC	C3	X-744Y	WASTE STORAGE YARD	E3
X-100B	AIR CONDITIONING EQUIP BLDG	G4	X-685I	CHLORINATOR BLDG	C3	X-745B	TCLL ENRICHMENT PROCESS GAS YARD	E4
X-101	HEALTH SERVICES	G4	X-685J	DIESEL GENERATOR BLDG	C3	X-745C	W OUF6 STORAGE YARD	E3
X-102	CAFETERIA	G4	X-611	WATER TREATMENT PLANT	D5	X-745D	CYLINDER STORAGE YARD	E5
X-103	AUX OFFICE BLDG	G4	X-611A	PRAIRIE	E6	X-745E	NW OUF6 STORAGE YARD	E3
X-104	GUARD HEADQUARTERS	G5	X-611B	SLUDGE LAGOON	D6	X-745F	N PROCESS GAS STOCKPILE YARD	E4
X-104A	INDOOR FIRING RANGE	G5	X-611C	FILTER BLDG	D5	X-745G	CYLINDER STORAGE YARD	D4
XT-104B	PROTECTIVE FORCES OPERATIONS	G4	X-611D	RECARBONIZATION INSTRUMENT BLDG	D5	X-745G-1	CYLINDER STORAGE YARD	E3
XT-104C	PROTECTIVE FORCES SHOWER/LOCKER	G4	X-611E	CLEARWELL & CHLORINE BLDG	D5	X-745H	CYLINDER STORAGE YARD	D4
X-106	TACTICAL RESPONSE BLDG	G4	X-612	ELEVATED WATER TANK	E3	X-747	CLEAN SCRAP YARD	D3
X-106C	NEW FIRE TRAINING BLDG	G3	X-614A	SEWAGE PUMPING STA	F4	X-747A	MATERIAL STORAGE YARD	G4
X-108A	S PORTAL & SHELTER	G5	X-614B	SEWAGE LIFT STA	E4	X-747B	MATERIAL STORAGE YARD	G4
X-108B	N PORTAL & SHELTER	G5	X-614D	S SEWAGE LIFT STA	H4	X-747C	MATERIAL STORAGE YARD	E5
X-108E	CONSTRUCTION PORTAL	F4	X-614P	NE SEWAGE LIFT STA	E5	X-747D	MATERIAL STORAGE YARD	E5
X-108H	PIKE AVE PORTAL	E4	X-614Q	SEWAGE BOOSTER PUMP STATION	G4	X-747E	MATERIAL STORAGE YARD	E5
X-108M	SECURITY PORTAL	E3	X-617	S HOLDING POND & PH CONTROL FAC	H4	X-747F	MISCELLANEOUS MATERIAL STORAGE YARD	F5
X-108N	SECURITY PORTAL	E4	X-618	N HOLDING POND STORAGE BLDG	D4	X-747H	NW CONTAMINATED SCRAP YARD	D3
X-108P	SECURITY PORTAL	F3	X-621	COAL PILE RUNOFF TREATMENT FAC	H4	X-748	TRUCK SCALE FAC	G3
X-109B	PERSONNEL MONITORING STA	F5	X-622	S GROUNDWATER TREATMENT BLDG	H4	X-749	S CONTAMINATED MATERIAL STORAGE YARD (CAPPED)	H4
X-109E	PERSONNEL MONITORING STA	G4	X-623	N GROUNDWATER TREATMENT BLDG	F5	X-749A	S CLASSIFIED BURIAL YARD (CAPPED)	H5
X-111A	SNM MONITORING PORTAL (X-326)	G4	X-624	LITTLE BEAVER GROUNDWATER TREATMENT FAC	E6	X-749B	PETER KIEWIT LANDFILL (CAPPED)	H4
X-111B	SNM MONITORING PORTAL (NW X-326)	F4	X-624-1	LITTLE BEAVER GROUNDWATER TREATMENT DECONTAMINATION PAD	E6	X-750	MOBILE EQUIP MAINTENANCE GARAGE	C4
X-112	DATA PROCESSING BLDG	H4	X-625	PILOT SCALE TREATMENT FAC	I3	X-750A	GARAGE STORAGE BLDG	C4
X-114A	OUTDOOR FIRING RANGE	B6	X-626-1	RECIRCULATING WATER PUMP HOUSE	H4	X-751	GCEP MOBILE EQUIP GARAGE	F3
X-120H	NEW WEATHER STA	I4	X-626-2	COOLING TOWER	H4	X-752	WAREHOUSE	D3
X-206A	N MAIN PARKING LOT	G5	X-627	GROUNDWATER TREATMENT FACILITY	F4	X-760	CHEMICAL ENGINEERING BLDG	G4
X-206B	S MAIN PARKING LOT	G5	X-633-1	RECIRCULATING WATER PUMP HOUSE	E5	X-1000	ADMINISTRATION BLDG	H4
X-206E	CONSTRUCTION PARKING LOT	G4	X-633-2A	COOLING TOWER	E5	X-1007	FIRE STA	H4
X-206H	PIKE AVE PARKING LOT	E4	X-633-2B	COOLING TOWER	E5	X-1020	EMERGENCY OPERATIONS CENTER (EOC)	H4
X-206J	S OFFICE PARKING LOT	I4	X-633-2C	COOLING TOWER	E5	X-1300	OUF6 CONVERSION BUILDING	F3
X-230J-2	S HOLDING POND EFFLUENT MONITORING STA	I4	X-633-2D	COOLING TOWER	E5	X-1305	HYDROGEN FLUORIDE STORAGE TANK AREA	F3
X-230J-3	W ENVIR MONITORING STA	F2	X-640-1	FIRE WATER PUMP HOUSE	E5	X-1320	POTASSIUM HYDROXIDE REGENERATION BUILDING	F3
X-230J-5	W HOLDING POND & ENVIR SAMPLING BLDG	F2	X-640-2	ELEVATED WATER TANK	F4	X-1745A	FULL CYLINDER STORAGE AREA	F3
X-230J-6	NE HOLDING POND & MONITORING STA	E6	X-640-1A	FIRE WATER PUMP HOUSE SUBSTATION	E5	X-1745C	OXIDE CYLINDER STORAGE AREA	FE
X-230J-7	E HOLDING POND & MONITORING STA	F6	X-640-2A	ELEVATED WATER TANK ALX. BLDG.	F4	X-6613	SANITARY WATER STORAGE TANK	H3
X-230J-8	N ENVIR SAMPLING STA	G3	X-670	DRY AIR PLANT	G4	X-6614E	SEWAGE LIFT STA	G2
X-230K	S HOLDING POND	H4	X-670A	COOLING TOWER	G4	X-6614G	SEWAGE LIFT STA	
X-230L	N HOLDING POND	D4	X-675	PLANT NITROGEN STATION	G4	X-6614H	SEWAGE LIFT STA	
X-230M	CLEAN SITE NE OF XT-801	H5	X-680	BLOWDOWN SAMPLE & TREATMENT BLDG.	G3	X-6614J	SEWAGE LIFT STA	
X-231A	SE OIL BIODEGRADATION PLOT	H4	X-690	STEAM PLANT	G4	X-6619	SEWAGE TREATMENT PLANT	G2
X-231B	SW OIL BIODEGRADATION PLOT	H4	X-700	CONVERTER SHOP & CLEANING BLDG	F5	X-6643-1	FIRE WATER STORAGE TANK #1	H3
X-300	PLANT CONTROL FAC	G4	X-700A	AIR CONDITIONING EQUIP BLDG		X-6643-2	FIRE WATER STORAGE TANK #2	H2
X-300A	PROCESS MONITORING BLDG	G4	X-701B	HOLDING POND (DRAINAGE)	F5	X-6644	FIRE WATER PUMP HOUSE	H3
X-300B	PLANT CONTROL FAC CARPORT	G4	X-701E	NEUTRALIZATION BLDG	F5	X-7721	MAINTENANCE, STORES & TRAINING BLDG	G3
X-326	PROCESS BLDG	G4	X-705	DECONTAMINATION BLDG	F4	XT-801	S OFFICE BLDG	I4
X-326L	L-CAGE, L-CAGE GLOVE BOX & STORAGE AREA	G4	X-705O	HEATING BOOSTER PUMP BLDG	F4	XT-847	WAREHOUSE	H4
X-330	PROCESS BLDG	F4	X-705E	OXIDE CONVERSION AREA	E4			
X-333	PROCESS BLDG	E5	X-710	TECHNICAL SERVICES BLDG	G4			
X-334	TRANSFORMER CLEANING BLDG	E4	X-710A	TECHNICAL SERVICES GAS MANIFOLD SHED	G4			
X-342A	FEED, VAPORIZATION & FLUORINE GENERATION BLDG	E4	X-710B	EXPLOSION TEST FAC	G4			
X-342B	FLUORINE STORAGE BLDG	E4	X-720	MAINTENANCE & STORES BLDG	F4			
X-343	FEED, VAPORIZATION & SAMPLING BLDG.	E5	X-720B	RADIO BASE STA BLDG	F4			
X-343A	SECURITY PORTAL	G4	X-720C	PAINT & OIL STORAGE BLDG	F4			
X-344A	UFF SAMPLING FAC	E4	X-721	RADIATION INSTRUMENT CALIBRATION FAC	F4			
X-344B	MAINTENANCE STORAGE BLDG	E4	X-734	OLD SANITARY LANDFILL	B4			
X-345	SNM STORAGE BLDG	F4	X-734A	CONSTRUCTION SPOILS DISPOSAL AREA	C3			
X-501	SUBSTATION	G4	X-734B	CONSTRUCTION SPOILS DISPOSAL AREA	D3			
X-501A	SUBSTATION	G4	X-735	SANITARY LANDFILL	C5			
X-502	SUBSTATION	G4	X-735A	LANDFILL UTILITY BLDG	C5			
X-530A	SWITCH YARD	F3	X-735B	BORROW AREA	A7			
X-530B	SWITCH HOUSE	F4	X-736	W CONSTRUCTION SPOILS LANDFILL	C4			
X-530C	TEST & REPAIR BLDG	F3	X-741	OIL DRUM STORAGE FAC	F5			
X-530D	OIL HOUSE	F3	X-742	GAS CYLINDER STORAGE FAC	G5			
X-530E	VALVE HOUSE	F3	X-743	LUMBER STORAGE SHED	G4			
X-530F	VALVE HOUSE	F3	X-744B	SALT STORAGE SHED	D3			
X-530G	GCEP OIL PUMPING STA	F3	X-744C	BULK STORAGE BLDG	F5			
X-533	TRANSFORMER STORAGE PAD	E4	X-744H	BULK STORAGE BLDG	F5			
X-533A	SWITCH YARD	E4	X-744J	BULK STORAGE BLDG	F5			
X-533B	SWITCH HOUSE	E6	X-744K	WAREHOUSE K	H4			
X-533C	TEST & REPAIR BLDG	E6	X-744L	STORES & MAINTENANCE BLDG	F5			
X-533D	OIL HOUSE	E4	X-744N	WAREHOUSE N NON UEA	G2			
X-533E	VALVE HOUSE	E5	X-744P	WAREHOUSE P NON UEA	G2			
X-533F	VALVE HOUSE	E4	X-744Q	WAREHOUSE Q NON UEA	G2			
X-533H	MONITORING STATION #1	E5	X-744S	WAREHOUSE S NON UEA	G3			
X-533J	GAS RECLAIMING CART GARAGE	E5	X-744W	SURPLUS & SALVAGE BLDG	D3			
X-540	TELEPHONE BLDG	G4						
X-600	STEAM PLANT FAC	H4						
X-600A	COAL PILE YARD	H4						
X-600B	STEAM PLANT SHOP	G4						
X-600C	ASH WASH TREATMENT BLDG	H4						

**ABBREVIATION LEGEND**

AOC = AREA OF CONTAMINATION	EQUIP = EQUIPMENT
AUX = AUXILIARY	FAC = FACILITY
AVE = AVENUE	N = NORTH
BLDG = BUILDING	S = SOUTH
E = EAST	STA = STATION
ENVIR = ENVIRONMENTAL	SWMU = SOLID WASTE MANAGEMENT UNIT
	W = WEST

**MONITORING STATIONS**

NO.	LOCATION	PHONE
1.	X-570 DRY AIR PLANT	2238
2.	X-109E MINI MOBILE SOUTHWEST CORNER OF MAHONING AVE AND 11ST	5956
3.	X-109B FRAME BUILDING EAST OF X-106	2535
4.	X-533H TRAILER - WEST SIDE OF X-640-1	4183
5.	NOT USED	
6.	X-108E PEDESTRIAN PORTAL	4122
7.	X-1007 FIRE STATION	5611

**PA/SIREN LOCATIONS**

NO.	LOCATION
1.	NORTH SIDE OF X-749A
2.	NORTH SIDE OF X-745F
3.	NORTH EAST OF X-6619

**PORTS PLANT LAYOUT INDEX**

Figure 1-2a PORTS Plant Layout Index

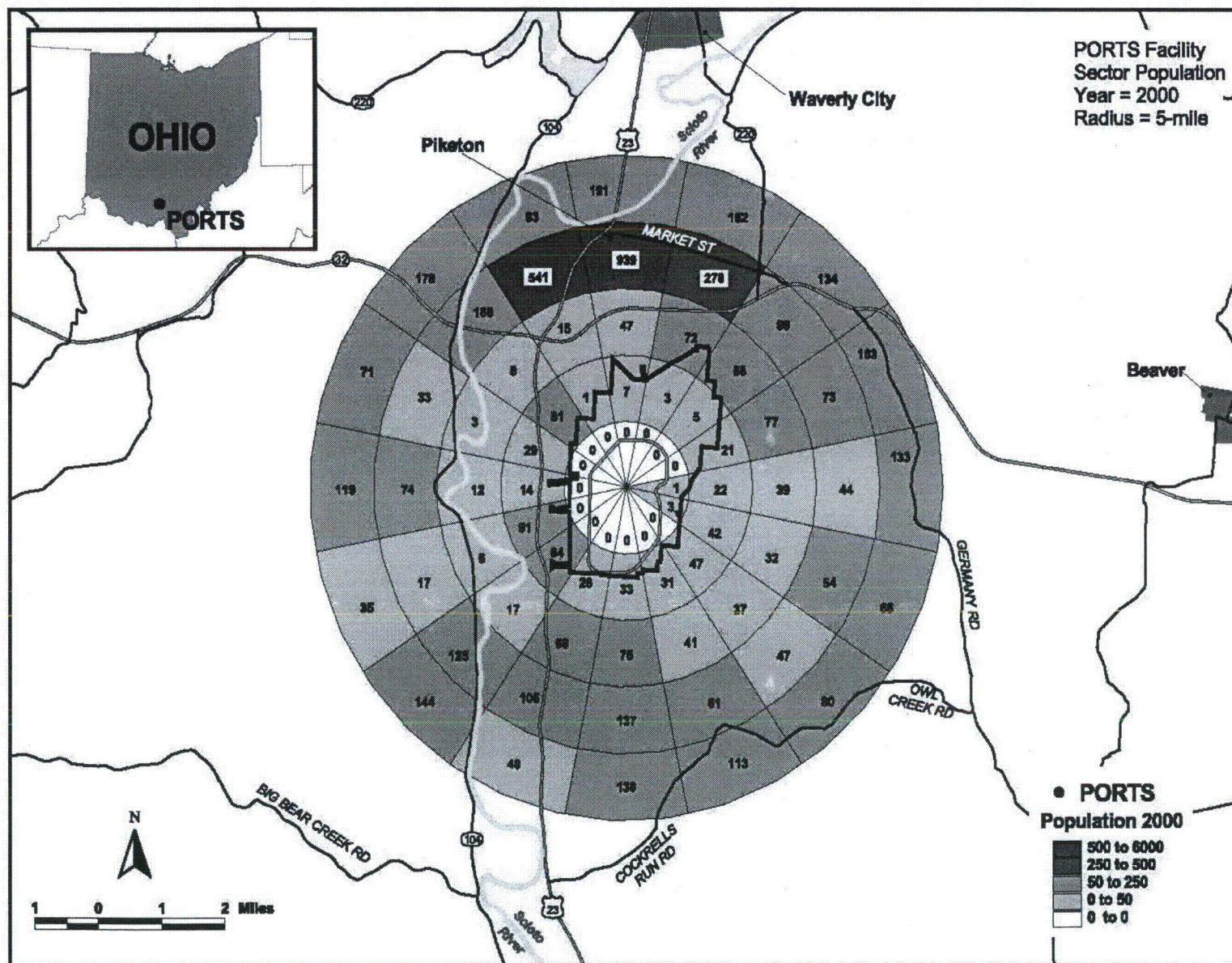


Figure 1-3 Population distribution around PORTS





Figure 1-4 Immediate Notification Area



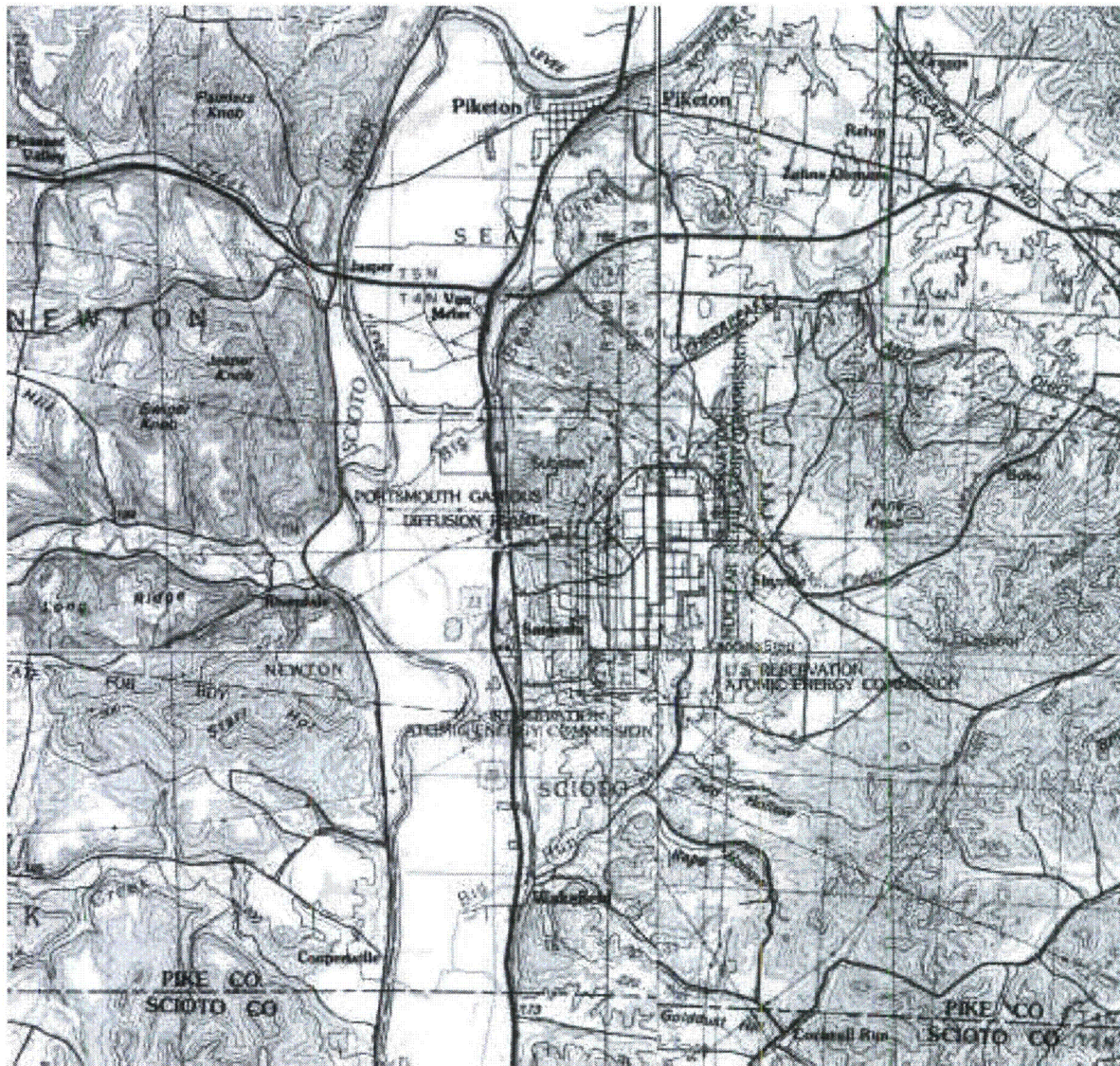


Figure 1-5 Topographical Map of the U.S. Department of Energy Reservation

Blank Page

## 2. TYPES OF ACCIDENTS AND OTHER EMERGENCIES

### 2.1 FUEF DOE-REGULATED OPERATIONS

Hazards and consequence analyses reflected in FUEF Basis for Interim Operation (BIO) and supporting analysis, Process Hazard Analysis (PHAs), and Emergency Planning Hazard Assessments and in the DOE DSA and hazard assessments for the DUF<sub>6</sub> Conversion Facility and for the Category 2 Non-leased Facilities form the basis for emergency preparedness planning.

This Plan is based upon an evaluation of the risks associated with various accident scenarios identified in the site-specific hazards analyses for PORTS and other potential emergency situations at PORTS. Those analyses concluded that the most extreme credible scenario would be an accident involving a large UF<sub>6</sub> release. The analyses included consideration of the risks associated with the potential release of other hazardous radioactive and non-radioactive materials stored or used onsite. These other hazardous materials are identified in the Material Safety Data Sheets (MSDS); the chemical inventory; information from the Safeguards and Security Plan; the Spill Contingency, Control, and Countermeasures Plan; and Hazardous Waste Contingency Plans.

Due to the small quantity of licensed material ( $\leq 250$  kg UF<sub>6</sub>), the consequences of any Lead Cascade accident postulated in the ISA would be minor when compared to the postulated accidents at the FUEF. Therefore, postulated accidents addressed in the Plan bound identified Lead Cascade accidents.

Each type of credible accident or event that could result in an emergency associated with these hazards has been identified and analyzed to assess the potential consequences to plant workers, the public, the environment, and onsite and offsite property.

This Plan is applicable to radiological and non-radiological accidents or other emergencies that could occur at the site, including the following:

1. Hazardous materials (HAZMAT) releases involving toxic or radioactive materials;
2. Equipment failures and industrial accidents;
3. Natural phenomena, such as tornadoes and earthquakes, and fires; and
4. Security-related events, such as bomb threats and civil disturbances.

#### 2.1.1. Description of Postulated Accidents and Other Emergencies

Various hazardous materials are used or stored at the reservation. Accidents involving the release of these materials could require an emergency response. Fires, a nuclear criticality event, or severe natural phenomena could also require an emergency declaration and/or response.

It should be noted that other events that do not meet the criteria for classification as an emergency under this Plan may also require reporting to Federal, State, and local agencies, require time-urgent mitigation efforts, or possibly impact plant operations. Examples of these types of events include certain equipment failures or industrial accidents and loss of power, steam, process water, or compressed air to certain areas of the reservation.

The following sections contain brief descriptions of each type of accident and other events that could be classified as potential emergencies under the Plan, based upon the hazards analyses.

#### **2.1.1.1 Nuclear Criticality Event**

Based on the safe operating history of the gaseous diffusion plant, a nuclear criticality event at the FUEF is very unlikely. In case of a criticality event, detectors and alarm systems are in place in the gaseous diffusion plant as described in Chapter 6 of the BIO. The consequences of an inadvertent criticality event are likely to be limited to a localized region. Because criticality produces primarily local radiation effects, the expected consequences are limited to the onsite workers with no offsite effects to the public health and safety. No significant fission product release and transport are anticipated from an inadvertent criticality event.

#### **2.1.1.2 Uranium Hexafluoride Release**

When  $\text{UF}_6$  reacts with moisture in the air, the resulting hydrolysis produces uranyl fluoride particles and HF gas. The radiotoxicity of uranium is insignificant when compared with its chemical toxicity. Radiation doses received by persons at the DOE reservation boundary due to a  $\text{UF}_6$  release would also be insignificant.

##### **2.1.1.2.1 Liquid Cylinder Rupture**

The dropping and rupturing of a  $\text{UF}_6$  liquid cylinder could result in a significant onsite and offsite hazard. Historical evidence indicates that an incident involving the rupture of a liquid 14-ton  $\text{UF}_6$  cylinder could release  $\text{UF}_6$  into the atmosphere. In the worst-case scenario, serious injuries or fatalities could occur onsite to the reservation boundary and beyond. Sheltering citizens in the path of the plume would greatly mitigate the consequences.

#### **2.1.1.3 Nitric Acid Release**

$\text{HNO}_3$  stored in the X-705 and X-720 areas is used for miscellaneous chemical operations and maintenance activities. Because of the volatility and corrosive nature of the material, releases could result in personal injuries or fatalities onsite, but would pose no hazard to offsite populations.

#### **2.1.1.4 Fluorine Release**

$\text{F}_2$  generated from HF gas in the X-342A is pumped to storage tanks in the X-342B facility.  $\text{F}_2$  is used to pacify metal surfaces prior to exposure to  $\text{UF}_6$  and for cell treatment on an as-needed basis. Because  $\text{F}_2$  is an extreme irritant and readily combines with water vapor to form HF, releases could result in personal injuries or fatalities onsite. However, because of the small quantities of material available for releases, no hazards are projected to offsite populations.



#### **2.1.1.5 Chlorine Release**

Cl<sub>2</sub> is used in water and wastewater treatment. Cl<sub>2</sub> is located at the water treatment plant (X-611E) in 1-ton cylinders and at the sewage treatment plant (X-6619) in 150 pound cylinders, and in X-742 in 150 pound cylinders. A cylinder or valve rupture could release Cl<sub>2</sub> gas and in a worst-case scenario the resulting plume could be carried offsite. Unprotected on and offsite personnel could experience serious injuries or fatalities. Sheltering citizens in the path of the plume would greatly mitigate the consequences.

#### **2.1.1.6 Hydrogen Fluoride Release**

HF is stored in the X-342A area. Releases could result in on and offsite fatalities or serious injuries. Possible releases could be attributed to valve failure, pigtail failure, vessel failure, or temperature/pressure control failure.

#### **2.1.1.7 Chlorine Trifluoride Release**

ClF<sub>3</sub> stored in cylinders and drums in the X-330 process building and the X-742 could be released if containment is lost (e.g., due to a valve break). Dispersion estimates indicate this release could result in an offsite hazard. Sheltering citizens in the path of the plume would greatly mitigate the consequences. Fatalities or serious injuries could be experienced in an unprotected onsite population.

#### **2.1.1.8 Other Nonradioactive Hazardous Material Releases**

Other nonradioactive hazardous material releases from offsite sources may pose a threat to the safety of personnel and impact plant operations and activities. In addition, hazardous material releases from onsite and offsite transportation activities may pose a threat to the safety of personnel and impact plant operations and activities.

#### **2.1.1.9 Natural Phenomena and Fire**

Natural phenomena, such as earthquakes, tornadoes, severe storms, and fires may cause varying degrees of damage to the plant. In themselves, these types of events may disrupt or threaten plant operations sufficiently to warrant the declaration of an emergency. These types of events may result in a nuclear criticality or hazardous material release as described earlier in this section.

#### **2.1.1.10 Security-Related Events**

Security-related events, such as bomb threats, civil disturbances, extortion, and hostage taking, could also result in personal injuries or fatalities to on and offsite personnel.

## **2.1.2 Detection of Accidents and Other Emergencies**

Personnel, located in the X-300 PCF, monitor, coordinate, and/or control critical plant processes, power distribution, utilities, communications, plant alarm systems, and emergency operations.

Each process building has an ACR, which permits operators to monitor any operating process equipment, make changes in operations, and take corrective action to mitigate abnormal operating conditions.

Systems are designed to ensure that the consequences of a major malfunction are mitigated prior to any adverse effect on the plant population and the general public. These include UF<sub>6</sub> detection equipment and associated alarms, a criticality accident alarm system (CAAS), automatic sprinkler systems, various chemical detectors, and other alarm systems. Alarm systems are under continuous observation by operations personnel stationed locally, in the ACRs, and in the PCF, and are tested in accordance with plant programs and procedures.

The Lead Cascade is small in area and is manned on a continuous basis while UF<sub>6</sub> is present in the system. UF<sub>6</sub> leak detection and criticality accident detection instrumentation is not utilized in the Lead Cascade. Therefore, abnormal operating conditions and accidents are identified by human observation and reported accordingly.

Descriptions of the various alarms and detection methods for the hazards that have been analyzed follow.

### **2.1.2.1 Nuclear Criticality**

Plant analyses show the risk associated with inadvertent criticality is extremely low. Analyses of possible criticality incidents reveal that both a fast-burst type reaction and a low-power incident have little effect on personnel except those in the immediate vicinity of the incident.

Criticality alarms are installed in facilities containing fissile material as described in Section 2.6 and Chapter 6 of the BIO. The criticality detection system consists of locator clusters and an alarm system. When a criticality accident alarm activates, a radiation alarm is generated actuating building local horns and lights as well as audible and visual alarms in the PCF. Alarm activation requires evacuation of personnel from the affected area to a designated monitoring station that is located a safe distance from the area. On the basis of the alarmed location, the PSS or designee can direct the actions necessary to respond to the accident.

### **2.1.2.2 Uranium Hexafluoride**

Since the enrichment process is shutdown, there is no potential for a large UF<sub>6</sub> release from the enrichment process. When operating UF<sub>6</sub> release detectors in withdrawal and toll enrichment areas provide both alarm actuation and system isolation capability. A system may be isolated by automatic shutdown, automatic valve closing, or automatic valve opening.

Upon a UF<sub>6</sub> detection system actuation, audible and visual alarms located locally and in the ACR and PCF alert operators to take appropriate response measures delineated by plant policy. Another means of detecting UF<sub>6</sub> releases is by physical operator observation and normal visual or smell senses.

Emergency response measures for a UF<sub>6</sub> release incident classified as an emergency are provided in Section 5 of this Plan.

### **2.1.2.3 Other Toxic Chemical Releases**

Detection equipment and/or chemical release alarms for various toxic chemicals in the plant have been installed at strategic locations where the appropriate chemicals are present. As in a UF<sub>6</sub> release, if an operator is in the immediate vicinity of a chemical release, the operator should detect the release by sight or smell. Upon recognition or detection of a release, the release is reported immediately to fire services and the PSS or designee. Both fire services and the PSS respond simultaneously to the incident area upon receiving an indication of a chemical release. Section 5 of this Plan describes emergency response measures in detail, including onsite and offsite protective actions.

### **2.1.2.4 Natural Phenomena and Fire**

#### **2.1.2.4.1 Fire**

An extensive fire protection system is installed throughout the plant site, primarily consisting of automatic sprinkler systems and fire alarms as described in Section 2.6 and Chapter 11 of the BIO. Upon actuation of a sprinkler system, affected ACR and PCF operators in the gaseous diffusion plant receive a visual and audible fire alarm for the specific building area. Lead Cascade alarms are received in the alarm receiving area in the X-1007 Fire Station. Alarm announcement is not local, but a building evacuation system can be manually initiated from the Lead Cascade ACR and X-300 PCF. The actuation of a fire alarm reported to the PSS requires the activation and response of onsite field ERO personnel.

#### **2.1.2.4.2 Earthquake**

PORTS has digital strong motion accelerographs located in the X-300 PCF for detecting earthquake-type movements. The strong motion accelerograph units are electronically connected in such a way that if one is triggered, all will start recording. Activation of the seismic detection system alarms an audible and visual annunciation in the PCF to alert the personnel that an earthquake has occurred. Section 5 of this Plan describes emergency response measures in detail, including onsite and offsite protective actions.

#### **2.1.2.4.3 Tornadoes/Strong Winds**

Like earthquakes, tornadoes can produce multiple emergency categories and emergency action levels due to the great amount of energy that is released. Personnel injury, building and facility damage, hazardous material releases, or electrical hazards can be expected, depending upon the location of touchdown and width/path of the tornado. If a tornado watch is issued, the PCF is automatically notified by the National Weather Service (NWS). Upon receiving a tornado watch, a public address (PA) announcement is made. Monitoring of communications and warning systems is increased during a tornado watch.

When the NWS issues a tornado warning or a tornado is sighted, announcements are made to plant personnel through the plant PA system and other communication devices directing the plant personnel to take appropriate protective response actions in accordance with plant implementing procedures.

Strong downbursts of wind are more likely to occur than tornadoes. An intense downburst can produce straight-line damaging winds of up to 100 mph over a very limited area. Downbursts can occur in association with any severe thunderstorm. Tornadoes or strong winds may produce effects that would be classified as emergencies. Section 5 of this Plan describes emergency response measures in detail, including onsite and offsite protective actions.



### **2.1.2.5 Security-Related Events**

Security-related events will generally be detected by observation of the event by plant personnel, communication with individuals who initiated the event, or law enforcement agencies.

## **2.2 DOE-REGULATED NON-FUEF ACTIVITIES**

### **2.2.1 Description of Postulated Accidents and Other Emergencies**

#### **2.2.1.1 DUF<sub>6</sub> Release**

The X-1300 facility and the associated DUF<sub>6</sub> Cylinder Storage Yards have postulated accidents that could result in the release of large quantities of DUF<sub>6</sub>. When UF<sub>6</sub> reacts with moisture in the air, the resulting hydrolysis reaction produces uranyl fluoride particles and HF gas. The radiotoxicity of uranium is insignificant when compared to its chemical toxicity. Radiation doses received by persons at the DOE reservation boundary due to a UF<sub>6</sub> release would be insignificant. However, the chemical toxicity effects could result in significant onsite and offsite hazards. In the worst-case scenario, serious injuries or fatalities could occur onsite to the reservation boundary and beyond. Sheltering citizens in the path of the plume would greatly mitigate the consequences.

#### **2.2.1.2 Hydrogen Fluoride Release**

HF is produced, condensed, collected and stored as part of the conversion process; it is found primarily in the X-1300 facility and the HF Storage Area and in railcars for offsite shipment. Releases could result in onsite and offsite injuries or fatalities. Sheltering citizens in the path of the plume would greatly mitigate the consequences.

#### **2.2.1.3 Uranium Oxide Release**

Uranium oxides are less chemically toxic than UF<sub>6</sub>; however, the radiological hazard is greater. Based on analyses of consequences from potential releases, no hazards are projected to the offsite public.

#### **2.2.1.4 Other Hazardous Material Releases**

Other releases of hazardous materials may occur; however, they would not be expected to pose a hazard to the offsite public.

#### **2.2.1.5 Natural Phenomena and Fire**

Natural phenomena (such as earthquakes, tornadoes, severe storms) and fires may cause varying degrees of damage to the X-1300 facility. In themselves, these types of events may disrupt or threaten operations sufficiently to warrant the declaration of an emergency. These types of events may result in a hazardous material release as described earlier in this section.

#### **2.2.1.6 Security-Related Events**

Security-related events, such as bomb threats, civil disturbances, extortion and hostage taking could also result in personal injuries or fatalities to onsite and offsite personnel.

### **2.2.2 Detection of Accidents and Other Emergencies**

Personnel, located in the X-1300 facility Control Room, monitor, coordinate and control critical plant processes and to allow operators to take corrective action to prevent or mitigate abnormal operating conditions.

Systems are designed to ensure that the consequences of a major malfunction are mitigated prior to an adverse effect on the plant population and the general public. These include DUF<sub>6</sub> release detection equipment and alarms; HF release detection equipment and alarms; automatic sprinkler systems and alarms; and other alarm systems. Alarm systems are under continuous observation by control room personnel.

Blank Page

|

### **3. CLASSIFICATION AND NOTIFICATION OF ACCIDENTS AND OTHER EMERGENCIES**

Significant emergencies are classified as either Alerts or Site Area Emergencies (SAEs). This classification system facilitates the notification process and the implementation of immediate response actions applicable to a specific emergency. This system also provides for upgrading or downgrading the response accordingly in the event of a change in the severity of the condition.

EALs are used to determine whether any given accident or event rises to the level of an emergency and, if so, whether it should be classified as an Alert or SAE. These levels are used to give a relatively quick indication to the plant staff of the severity of an accident or event. The EALs provide the earliest possible indication of actual or potential emergency conditions. EALs associated with offsite radiological or nonradioactive hazardous materials releases are based upon the U. S. Environmental Protection Agency's (EPA) Protective Action Guides (PAGs), as summarized in EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents, and the Emergency Response Planning Guides (ERPGs) established by the American Industrial Hygiene Association for extremely hazardous chemicals, Acute Exposure Guideline Levels (AEGLs) established by the EPA, and the toxic endpoints established by the EPA in 40 CFR Part 68, Appendix A. Additionally, examples from NRC Regulatory Guide 3.67, Appendix A, have been used to develop EALs. The plant ERO determines the potential for reaching or exceeding the PAGs or ERPGs/toxic endpoints in the event of a radiological or non-radioactive hazardous materials release to the environment.

EALs associated with onsite radiological releases are based on the EPA PAGs. EALs associated with onsite nonradioactive releases are based on the initial isolation and protective action distances as defined in the current edition of the DOT North American Emergency Response Guidebook, and on the AEGLs/ERPGs/toxic endpoints. The plant emergency response organization determines when an onsite radiological or nonradioactive hazardous materials release to the environment reaches or exceeds the PAGs or the DOT initial isolation and protective action distances.

EALs may be symptom-based or event-based. However, the nature of plant operations and instrumentation generally precludes symptom-based EALs. Developed EALs are provided in an EPIP.

#### **3.1 CLASSIFICATION SYSTEM**

The classification system is based on the requirements of 10 CFR 70.22(i)(3). A single emergency classification system is in place at PORTS. The Portsmouth DOE Site Office has an exemption, to implement the NRC emergency classification system indefinitely, as long as NRC-regulated activities are in operation on-site.

##### **3.1.1 Alert**

An Alert is defined as an incident that has led or could lead to a release to the environment of radioactive or other hazardous material. Such a release is not expected to require a response by an offsite response organization to protect the general public offsite.

An Alert involves an emergency situation that could have a direct effect on the health and safety of plant personnel. The ERO is activated and key offsite authorities are notified. An Alert also addresses limited releases of radioactive or hazardous material and therefore might require some onsite monitoring and assessment actions by the plant ERO.

An Alert ensures that emergency personnel are readily available to respond to a change in plant conditions and to provide assessment support as required. An incident classified as an Alert may require offsite emergency support organizations to respond to an onsite emergency, such as a fire or security-related event. Declaration of an Alert will ensure that appropriate onsite and offsite personnel are properly advised and available for activation with appropriate resources if the situation becomes more serious.

### **3.1.2 Site Area Emergency**

The most severe classification used in emergency planning at the plant is the SAE. An SAE is defined as an incident that has led or could lead to a significant release to the environment of radioactive or other hazardous material. Such an incident could require a response by an offsite organization to protect persons offsite.

An SAE could result in offsite releases that exceed the EPA PAGs for radiological releases or AEGLs/ERPGs for toxic materials releases.

Declaration of an SAE requires the full activation of the ERO and other appropriate personnel and resources as necessary to mitigate the consequences of emergency conditions, monitor the situation, and ensure protection of onsite and offsite personnel. The nature of SAEs requires prompt protective actions for onsite personnel in the vicinity of the incident area and may require protective response measures for the entire site population and members of the public. Actions include completely activating the onsite ERO, alerting or mobilizing field monitoring teams, notifying appropriate offsite authorities, and activating the PWS.

The SAE classification includes accidents or other emergency conditions that have a significant potential for the release of radioactive or hazardous materials. The PSS or designee declares an SAE whenever conditions exist that indicate protective actions are or may be required for the general public offsite. An SAE may also result in the request for assistance from offsite emergency support organizations.

## **3.2 NOTIFICATION AND COORDINATION**

This section describes the methods used for notification of emergency response personnel, appropriate local, State, and Federal agencies and response organizations. The PSS, or designee, is responsible for initial notifications. The PSS or designees are individuals properly trained in performing notifications in accordance with specific EPIP. If initial notifications include activation of the EOC cadre, the EOC becomes operational within approximately sixty minutes. Section 3.3 of this Plan, describes requirements, content, and format of the information to be provided to offsite authorities during a declared plant emergency.

### **3.2.1 Alert**

The purposes of declaring an Alert are to ensure that appropriate emergency response personnel are activated and stationed at their emergency duty stations to mitigate the consequences of the

accident, the emergency is properly assessed, offsite officials are notified, and steps can be taken to escalate the response if necessary.

The PSS is responsible for initially classifying the event and activating the plant ERO. This activation is accomplished by using the plant radio system, pagers, PA system, or the plant telephone system. The means for notification of plant personnel is the Protective Alarm System, which consists of several distinct alarms, the PA system, pagers, and telephones.

The PSS, or designee, promptly notifies the appropriate county and state authorities as soon as possible, normally within 15 minutes after an event is declared an Alert. The emergency notifications to state and local authorities are conducted via telephone or radio if the telephone system is not operational. The specifics of this notification process are described in Section 3.3 of this Plan and in more detail in the appropriate EPIP. Additional information on emergency communications equipment is provided in Section 6.2 of this Plan.

The PSS, or designee, notifies the NRC Operations Center by telephone immediately after notification of appropriate state and local authorities, but no later than one hour after the declaration of an Alert. The PSS also notifies, as soon as possible, the PPPO Site Lead, PPPO Manager, DOE Oak Ridge Operations Center (OROC) duty officer, and DOE-Headquarters (HQ) operations center duty officer. When the EOC has been activated and is operational, the CM assumes responsibility from the PSS or designee for NRC notification.

Based on the nature of the event, the PSS or designee, or the CM in the EOC once the EOC is activated and operational, issues protective response measures to the applicable plant population at his/her discretion. Typically, during an Alert, protective actions for plant personnel, if any at all, are limited to the particular incident area. Specific plant protective actions are described in detail in Section 5.4 of this Plan, and more thoroughly in designated EPIPs.

Although very unlikely during Alerts, the PSS or designee determines need for and subsequently requests offsite assistance. The various offsite emergency support organizations and agencies that may be requested to provide assistance to the plant are listed in Section 4.3 of this Plan.

The PSS or designee, or the CM in the EOC once the EOC is operational, monitors emergency conditions during an Alert for potential changes in the emergency classification. This entails the decision to escalate the emergency class to an SAE as plant conditions degrade and the decision to terminate the emergency and begin plant recovery operations when specific event termination criteria have been reached.

### **3.2.2 Site Area Emergency**

The purpose of declaring an SAE is to ensure that offsite officials are informed of potential or actual offsite consequences, that offsite officials are provided with recommended actions to protect persons offsite as necessary, and that the plant's ERO is augmented by additional personnel and equipment as necessary.

It is possible that an SAE may be declared without the initial declaration of an Alert. The PSS is responsible for the initial classification of the event. Once the EOC is operational, the CM assumes responsibility for declaring the appropriate class of emergency and making any changes to the emergency classification, including event termination. The declaration of an SAE requires the full activation of the ERO. Plant emergency response personnel receive notification of activation through the plant telephone system, PA system, radios, and pagers.

The PSS, or designee, promptly notifies the appropriate county and state authorities as soon as possible, normally within 15 minutes after an event is declared an SAE. The state and local notifications shall include any appropriate recommended protective actions for the general public near the plant property. The NRC Operations Center is notified as soon as possible after the state and local notifications have been made, but no later than one hour after the declaration of an SAE. The PSS also notifies, as soon as possible, the PPPO Site Lead, PPPO Manager, DOE OROC duty officer, and DOE-HQ operations center duty officer. Once the EOC is operational, the CM and EOC staff are responsible for appropriate offsite notifications, including the NRC and DOE. The emergency notifications to state and local authorities are conducted via telephone. The specifics of this notification process are described in Section 3.3. Additional information on emergency communications equipment is provided in Section 6.2 of this Plan.

The PSS or designee, or CM once the EOC is operational, directs plant personnel to take appropriate protective response actions based on the assessment of the emergency. During an SAE, protective actions for plant personnel may range from evacuating a particular building or area to a full site evacuation, based on emergency conditions. Specific plant protective actions are described in detail in Section 5.4, and more thoroughly in designated EIPs.

During an SAE, additional emergency support may be necessary to augment the plant ERO. The PSS or designee normally makes the determination of need for and subsequently requests assistance from offsite emergency support organizations. The various offsite emergency support organizations and agencies that may be requested to provide assistance to the plant are listed in Section 4.3 of this Plan.

The CM monitors emergency conditions during an SAE for potential changes in the emergency classification. The CM may downgrade the emergency class to an Alert or may terminate the emergency and begin recovery operations when specific termination criteria have been reached.

### **3.2.3 Other Emergency Events**

For those emergency events that are not classified as Alerts or SAEs, the plant maintains the responsibility and capability for assessment of the event, implementing appropriate protective actions, and ensuring that offsite officials are informed of potential or actual consequences, if necessary.

## **3.3 INFORMATION TO BE COMMUNICATED**

Upon declaration of an Alert or an SAE, the PSS, or designee, conducts initial emergency notifications to offsite authorities as soon as possible, normally within 15 minutes of declaration. Additional emergency information is provided to offsite authorities periodically as new information becomes available. Notifications to offsite authorities are provided when a change in emergency classification occurs and when protective action recommendations are required. An example of the form used for offsite notifications is included in the appropriate EIP for emergency notification.

Information communicated to offsite authorities shall be conveyed by properly trained individuals in accordance with specific EIPs. The information provided in emergency notifications includes plant status conditions, radiological/hazardous materials release data, recommendations for protective actions to be implemented by offsite response organizations, and other applicable emergency information as necessary. Protective response actions offsite are the responsibility of governmental authorities. Offsite protective action recommendations for the different types of postulated emergencies requiring protective measures are discussed in detail in Section 5.4.2 of this Plan.

The PSS or designee ensures that at a minimum, the following Federal, State, and local agencies, are notified as soon as possible, normally within 15 minutes of the initial emergency declaration:

1. Pike County Emergency Management Agency (EMA) director,
2. Pike County Sheriff's Office/Local Emergency Planning Committee (LEPC),
3. Ohio EMA, and
4. DOE entities as described earlier in this Section of this Plan.

Upon the issuance of protective action recommendations, the plant may request verification callbacks from state and local agencies responsible for implementing offsite protective actions to ensure that the recommendations are understood. Callbacks also enable plant officials to receive information regarding offsite protective actions implemented.

Based on the nature and status of the incident, in addition to the primary agencies listed above, other offsite organizations may be notified of emergency conditions. These include the following:

1. Scioto County Sheriff's Office/LEPC,
2. Scioto County Emergency Management Agency director,
3. Ohio EPA Emergency Response Center,
4. U.S. National Response Center,
5. U.S. Occupational Safety and Health Administration (OSHA), and
6. Other affected organizations.

The NRC Operations Center is notified immediately after notification of the appropriate state and local agencies; but no later than one hour after the declaration of an Alert or an SAE.

USEC-HQ is notified immediately after the declaration of an emergency, but no later than one hour. Once the EOC is operational, a dedicated open communications telephone line will be maintained with the NRC Operations Center. This communications line is used during a declared emergency (Alert or SAE) to keep the NRC Operations Center current as the event is occurring.



Blank Page

## 4. RESPONSIBILITIES

USEC Inc. is responsible for the control of the Plan. FBP provides emergency management and response services. USEC Inc., FBP and other DOE contractors and subcontractors will each meet the requirements of the Plan.

### 4.1 NORMAL FACILITY ORGANIZATION

FBP is responsible for the safe operation of the FUEF and is responsible for the day-to-day management and operation of the FUEF, including the program of emergency management and response services. An FBP organizational chart showing the functional levels and reporting responsibilities is provided in the BIO Chapter 17. The administrative and technical support personnel staffing the plant organization are normally onsite daily, Monday through Thursday or Friday, holidays excluded. Plant operational personnel are on duty 24 hours per day. Descriptions of the key managers at the plant and their responsibilities are provided below.

Other senior managers are responsible for the Lead Cascade and the DUF<sub>6</sub> Conversion Facility. Senior managers from these site entities may be designated and qualified as CMs. The CM is authorized to declare an emergency, initiate the appropriate response, and assign a RM when emergency conditions no longer exist. The duties and responsibilities of the RM are addressed in Section 9 of this Plan.

#### 4.1.1 FBP Organization

##### 4.1.1.1 Program Manager

The Program Manager has direct responsibility for operation of the FUEF in a safe, reliable, and efficient manner.

The Program Manager also oversees FUEF industrial safety, nuclear safety, and nuclear criticality safety functions which provide support to the Emergency Plan and emergency plan management function. These areas are managed by directors who report to the Program Manager.

##### 4.1.1.2 Project Support and Oversight Directors

Project Support and Oversight Directors are responsible for technical functions in direct support of plant activities. These positions oversee engineering; environmental; waste management; records management document control; procedures and training; radiation protection and health physics and industrial hygiene technician functions; fire services; emergency management; emergency medical services; and work control and maintenance of the work control database. These services are managed by functional area managers who report through this Director.

##### 4.1.1.3 Project Execution Directors

Project Execution Directors are responsible for the day-to-day operations of shift operations; power, utilities, chemical services; and related infrastructure support systems. These responsibilities are managed by managers who report through these Directors.

Project Execution Directors are also responsible for day-to-day activities of project maintenance; X-326/X-330/X-333 operations; X-340 Complex activities; X-705, X-720, X-700 operations; and project management and oversight of special projects. These responsibilities are managed by managers who report through these Directors.

#### **4.1.1.4 Training Manager**

The Training Manager is responsible for the FUEF Training and Procedures programs.

#### **4.1.1.5 Shift Operations-Manager**

The Shift Operations Manager oversees the activities of the PSSs and has the responsibility and authority to make decisions to assure safe operation of the FUEF.

#### **4.1.1.6 Quality Assurance Manager**

The Quality Assurance Manager is responsible for implementing and directing independent assessments, quality systems, quality control, and administration of the problem reporting, commitment management and corrective action system.

#### **4.1.1.7 Emergency Management Manager**

The Emergency Management Manager is responsible for ensuring that the emergency management program is designed to comply with Federal, State, and local regulations.

#### **4.1.1.8 On-Duty Plant Shift Superintendent**

The on-duty PSS responsibilities include operational, technical and/or environmental, safety, and health support functions to site operations. The on-duty PSS reports directly to the Shift Operations Manager, who in turn, reports to the Site Infrastructure & Utilities Services Manager.

The on-duty PSS is responsible for making proper notifications of abnormal plant conditions, determining the severity of the event declaring an emergency, and initiating appropriate response. The on-duty PSS acts as the on-scene Incident Commander (IC) and subsequently as the CM until relieved by a member of management designated in the Emergency Line of Executive Succession. While acting as the CM, this position has the authority to declare an emergency.

#### **4.1.1.9 Assistant Plant Shift Superintendent (APSS)**

The APSS responsibilities include operational, technical and/or environmental, safety and health support functions to the plant shift operating staff. The on-duty APSS reports directly to the on-duty PSS.

The on-duty APSS may function as the IC when necessary and, if acting as the CM, has the authority to declare an emergency.

#### **4.1.1.10 Nuclear Criticality Safety Manager**

The Nuclear Criticality Safety Manager is responsible for implementing the nuclear criticality safety program. This position reports to the Nuclear Safety Manager.

#### **4.1.1.11 Protective Force Manager**

The Protective Force Manager is responsible for plant police services and security.

#### **4.1.2 USEC Inc. Organization**

##### **4.1.2.1 General Manager, American Centrifuge Plant Operations**

As described in Chapter 2.0 of the license application, the General Manager, American Centrifuge Plant Operations is responsible for the day-to-day management of Licensee activities in the Lead Cascade. The General Manager, American Centrifuge Plant Operations also oversees activities of line management organizations that support Lead Cascade operations, as applicable. The General Manager, American Centrifuge Plant Operations may delegate responsibility for this day-to-day interface to the Organizational Managers.

##### **4.1.2.2 Organizational Managers**

As described in Chapter 2.0 of the license application, the Organizational Managers are responsible for managing the activities in their area of responsibility in direct support of the Lead Cascade. These managers oversee technical services; operations; maintenance; environmental; waste management; records management; procedures and training; radiation protection and health physics, fire services, emergency management, quality assurance, and security.

##### **4.1.2.3 Fire Safety/Emergency Management Manager**

The Fire Safety/Emergency Management Manager is responsible for maintenance and control of the Plan. The Fire Safety/Emergency Management Manager has established an agreement with the DOE for emergency management program support, fire services testing and inspections, emergency response and event notification.

##### **4.1.2.4 Operations Shift Supervisors**

As the senior manager on shift (one per shift), the Operations Shift Supervisor represents the General Manager, American Centrifuge Plant Operations and has the authority and responsibility to make decisions, as necessary, to ensure safe operations. The Operations Shift Supervisors are responsible for accumulation and dissemination of information regarding plant activities to the IC during emergencies. The Operations Shift Supervisors are also responsible for directing the operation of systems within the facilities necessary to support the Lead Cascade enrichment operation.

#### **4.2 ONSITE EMERGENCY RESPONSE ORGANIZATION**

The ERO is responsible for taking immediate mitigative and corrective actions to minimize the consequences of an incident to workers, public health and safety, and the environment. The ERO is staffed with trained personnel who respond to events and are required to participate in formal training, drills, and exercises. The ERO is comprised of personnel from USEC Inc. and DOE Contractors/Subcontractors from various site entities. The incident type and severity dictate the level of ERO activation.

The ERO has the following specific functions and responsibilities, depending on the incident and level of response needed to mitigate the problem: event categorization, determination of emergency class, notification, protective action recommendations, management and decision making, control of onsite emergency activities, consequence assessment, medical support, emergency public information, activation and coordination of onsite response resources, security, communications, administrative support, and coordination and liaison with offsite support and response organizations.

The ERO is divided into functional groups as follows:

1. Field ERO,
2. EOC cadre, and
3. Joint Public Information Center (JPIC).

Members of these groups are assigned to on-scene response locations and emergency response centers such as the EOC. Emergency assignments correspond as closely as possible to daily duties. Primary and alternate personnel are assigned to the ERO positions. Assignments are updated periodically. Management ERO positions in each group provide oversight and final authority in the group's decision-making process.

#### **4.2.1 Direction and Coordination**

The initial ERO consists of the appropriate shift personnel with the PSS or designee as IC. Upon classification of the emergency as an Alert or SAE, the PSS becomes the CM and maintains overall control of the plant during the emergency until relieved. Once the EOC is operational, the CM relieves the PSS as CM and the overall control of the emergency shifts from the PSS to the CM.

The PSS conducts transition and turnover of command and control authority and responsibility of the CM function in a formal manner by use of specially developed procedural checklists and, if possible, face-to-face briefings. A primary and alternates are identified for the CM.

The order of succession for the CM position is identified in an EPIP and includes the following:

1. PSS and
2. CM (CMs are designated by the Program Manager and trained and qualified as CM.)

Because of the importance of some emergency responsibilities, these responsibilities may be performed only by the ERO position assigned to address them. The following responsibilities are transferred when the overall responsibility for emergency response is transferred.

1. Emergency Classification — Initially this is a PSS responsibility as CM. Once the EOC is operational, this responsibility is transferred from the PSS to the CM in the EOC.
2. Protective Action Recommendations — Initially this is a PSS responsibility as CM. Once the EOC is operational, approval of offsite protective action recommendations is transferred to the CM in the EOC.
3. Facility Activation — The PSS or designee is responsible for directing activation of the EOC. The EOC is automatically activated for Alerts and SAEs and may be selectively activated for other emergencies related to non-Plan described activities.

#### **4.2.2 Onsite Staff Emergency Assignments**

##### **4.2.2.1 Plant Field Emergency Response Organization**

Capability for initial site-level response prior to EOC activation is provided by the following:

1. PSS personnel,
2. Protective force personnel,
3. Fire services personnel,
4. Emergency squad personnel, and
5. Local emergency director.

Fire services personnel are trained and have experience in fire fighting, HAZMAT response, health physics, environmental response, and emergency medical treatment. Plant emergency squad personnel are trained in basic fire fighting response. Figure 4-1 of this Plan illustrates a typical plant initial on-scene ERO. In addition, shift personnel can provide support for various technical areas, such as operations and maintenance activities.

##### **4.2.2.2 Emergency Operations Center Cadre**

The EOC cadre provides the external support to the IC and provides information to Federal, State, and local government agencies. Specifically, the EOC cadre provides additional technical expertise in engineering, radiological/hazardous materials monitoring and assessment, logistics support, such as transportation, food, communications, materials, and supplies, and other needed services.

The EOC is the primary facility for coordinating onsite response and mitigation and offsite interface activities. EOC staff confer, provide personnel and materials, coordinate activities, and communicate with onsite and offsite personnel. A support staff serves on the EOC cadre and provides technical advice to other members of the EOC staff and to the IC at the scene.

The EOC cadre is updated by the CM by the use of the EOC Briefing Checklist, which is part of the EOC Concept of Operations Procedure.

##### **4.2.2.3 Joint Public Information Center**

The JPIC is activated at the declaration of an SAE or for other events that may generate significant interest from the media. This organization provides for timely information dissemination to the media and to the public regarding a plant emergency.

#### **4.3 LOCAL OFFSITE ASSISTANCE TO FACILITY**

The severity of some emergencies may warrant the use of offsite individuals, organizations, and agencies. As a result, letters of agreement (as identified in Appendix B of this Plan) have been entered into with offsite groups to provide assistance in the event of an emergency. These support services encompass areas such as medical assistance, fire control, evacuation, and ambulance services. When the PSS or designee or CM determines that offsite assistance is needed, the appropriate organization is notified and assistance is requested. Properly trained members of the ERO which conduct these notifications and requests for assistance include but are not limited to the PSS or designee, APSS, and EOC Director. Plant protective force personnel provide site access control and escort support for the responding offsite organizations.

TLDs will be provided to off-site responders as required when entering the Controlled Access Area (CAA). Necessary emergency information is provided to the responding organizations, including potential hazards associated with the incident.

The offsite emergency support organizations are described in the following subsections.

#### **4.3.1 Medical Support**

In certain instances, medical emergencies may require the transport of an injured person from the plant to an offsite medical facility. Transportation of injured persons to the medical facility is normally provided by the plant's onsite ambulance. To maintain a state of readiness the onsite ambulance is tested for operability and inspected for response capability on a daily basis.

In the event the onsite ambulance is not available, the Pike County Emergency Medical Service or locally based paid ambulance services provide the transportation of injured persons to an offsite medical facility. This includes contaminated injured onsite workers. Ambulances are equipped with radios to maintain communications with local hospitals. The primary medical facilities for injured personnel with or without contamination are Adena Pike Medical Center, Southern Ohio Medical Center, and Adena Regional Medical Center Hospital. These hospitals have agreed to accept injured personnel or victims of radiation/hazardous materials-related accidents for emergency medical and surgical treatment and observation. These hospitals are notified by telephone or radio of the need for offsite assistance.

#### **4.3.2 Fire Support**

When the PSS or designee or CM determines that offsite fire support is needed, the applicable offsite fire departments are notified by telephone call or radio transmission to the Pike County Sheriff's Office.

The offsite fire departments include Beaver Fire Department, Benton Township Fire Department, Camp Creek Fire Department, Elm Grove Fire Department, Jackson Township Fire Department, Pebble Township Fire Department, Pike Forest Fire Department, Piketon-Seal Township Fire Department, Scioto Township Fire Department, Stockdale Fire Department, and Waverly Fire Department. These firefighting groups have agreed to furnish the plant with fire-fighting personnel and necessary resources upon request. The fire services are under the direction and control of the PSS or designee, who retains responsibility for the overall on-scene emergency response effort. In instances when offsite firefighting assistance is needed to fight a fire involving radioactive/hazardous materials, radiological/toxicological information and assistance is provided by knowledgeable members of the plant ERO.

#### **4.3.3 Law Enforcement Assistance**

The nature of an emergency may require that the local law enforcement agencies be activated to assist in the emergency response effort. The Pike County Sheriff's Office provides local law enforcement assistance through a written agreement. The emergency support may include the following:

1. Furnishing personnel and equipment as necessary to supplement the protective force,
2. Controlling access to areas affected by the emergency,
3. Directing area evacuation, and
4. Responding to bomb threats.

#### **4.4 COORDINATION WITH PARTICIPATING GOVERNMENT AGENCIES**

Coordination between the local, state, and plant emergency plans serves to better ensure the safety and health of the general public. It also enables emergency organizations to participate in the emergency effort with a minimum of confusion and hesitation. During an emergency effort, participating agencies must have a clear picture of their responsibilities which are provided for in their respective emergency plans and procedures. Appendix C of this Plan provides a list of supporting documents.

Emergency management coordinates required emergency planning activities directly with these organizations and agencies. Emergency management personnel offer to meet at least annually with each offsite response organization to review emergency plans and procedures and any changes relevant to the plant's emergency management program. Plant EALs, notifications, and the overall response coordination process are discussed at these meetings. Response roles of the key agencies are summarized in this section.

##### **4.4.1 State of Ohio Government Interfaces**

The State of Ohio's Emergency Response Annex for Events at DOE Facilities provides guidance on dealing with all types of disasters or incidents and outlines the state response to incidents at PORTS. The Ohio EMA is responsible for coordinating overall state response and overseeing the local implementation of recommended protective actions. The EMA also assists the Governor in formulating policy; establishing priorities; gathering and analyzing information; monitoring the execution of planned actions; and directing modifications, as necessary. The Ohio State Highway Patrol provides support to offsite law enforcement agencies as requested. The Ohio Department of Health coordinates hazard assessment and is the principal contact for technical information and recommendation of protective actions. The Ohio EPA oversees removal and disposal of hazardous waste generated as a result of a PORTS emergency.

The State of Ohio has a permanent EOC that has been designed and equipped to be the direction and control center for all major emergencies in the state. The EOC is manned 24 hours a day by operations duty officers and has the capability to provide almost instantaneous communications with key state officials.

##### **4.4.2 Local Government Interfaces**

The Pike County commissioners have overall responsibility and authority for conducting county emergency responses and exercises. They serve as the officials-in-charge during an emergency and are supported by the county EOC staff. The county EOC is at the Pike County Airport two miles north of Waverly, Ohio, which is approximately seven miles north of PORTS.

The Pike County EMA director serves as the chief of staff for the county EOC staff. The director is responsible for ensuring that the County EOC is fully functional. In addition, the director is responsible for coordinating local government emergency management planning and response activities.

The Pike County commissioners and Pike County EMA director can authorize the opening and staffing of the county EOC. The County EOC may be opened and staffed on the threat of an emergency or because of an actual emergency. Minor emergencies may be directed by agency officials from their normal work stations.

Pike County authorities can also authorize the opening and staffing of the JPIC to ensure that the public and media can obtain information during an emergency. Rumor control measures are addressed in specific EPIPs.



Local law enforcement and fire services assistance is coordinated with the director and staff in the county EOC.

Notification and warning points have been established for each local government entity. Local government entities coordinate response efforts from the Pike County EOC.

#### **4.4.3 Federal Government Interfaces**

##### **4.4.3.1 United States Nuclear Regulatory Commission**

The NRC provides regulatory oversight over the USEC Inc. Lead Cascade uranium enrichment activities to ensure compliance with the license requirements, including the emergency planning requirements. The NRC Operations Center is notified of any emergency immediately after notification of the appropriate offsite organizations, within one hour after the declaration of an alert or SAE. The NRC evaluates the protective actions taking place and coordinates with USEC Inc. and DOE to ensure that all reasonable and appropriate actions are being taken to protect the public health and safety.

##### **4.4.3.2 United States Department of Energy**

The DOE provides oversight for those activities onsite involving DOE environmental management and FUEF facilities and operations. Events involving DOE operations or property are reported to DOE's PPPO, DOE OROC duty officer, and DOE-HQ operations center. The DOE maintains various emergency response assets capable of providing radiological monitoring and support assistance during an emergency.

##### **4.4.3.3 Federal Bureau of Investigation**

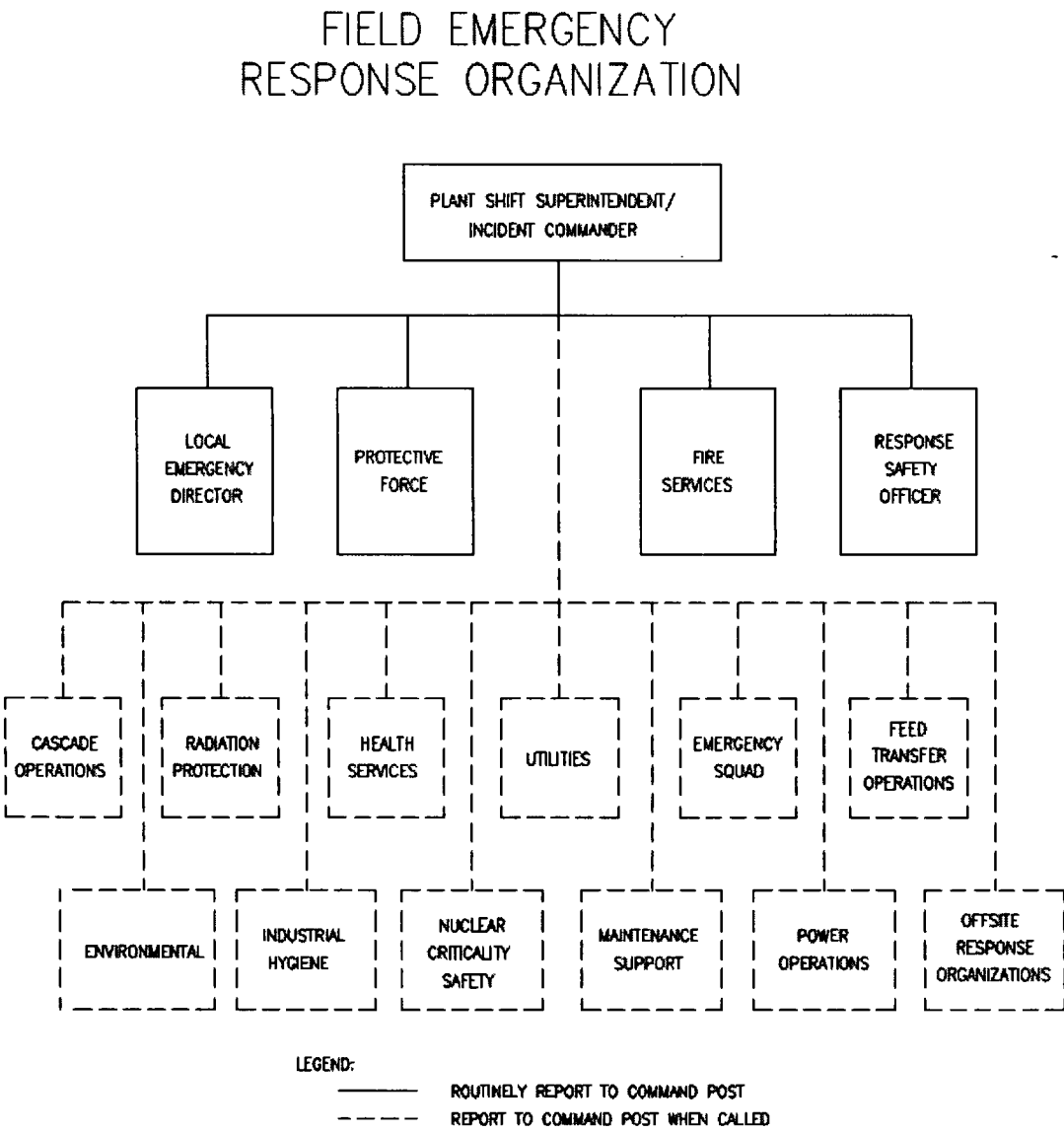
The Federal Bureau of Investigation (FBI) has jurisdictional authority for safeguards and security emergencies involving violations of Federal criminal law. A representative of the FBI may assume command and control of these types of emergencies. The FBI Hostage Rescue Team or regional SWAT team may also be provided if requested. The FBI will coordinate all responding Federal law enforcement agencies.

##### **4.4.3.4 Other Federal Agencies**

The following Federal Agencies that may be involved in plant emergencies:

1. *Federal Aviation Administration (FAA)*. FAA restricts airspace over the plant at the request of the CM or the PSS or designee, as appropriate.
2. *Federal Emergency Management Agency (FEMA)*. FEMA is the primary Federal government agency for the administration of planning, preparedness, operational coordination, and recovery programs.
3. *U.S. Environmental Protection Agency (EPA)*. EPA is the major Federal government agency for the regulation and control of pollution and waste management programs. EPA provides a Federal on-scene coordinator for significant hazardous materials incidents.
4. *U.S. Occupational Safety and Health Administration (OSHA)*. OSHA is the primary Federal government agency for the regulation of nonradiological worker safety.

Figure 4-1 Field Emergency Response Organization



Blank Page

## **5. EMERGENCY RESPONSE MEASURES**

Emergency measures must be taken in response to an emergency. Upon recognizing that an emergency exists, the ERO is activated. Once activation has taken place, assessments of the condition are made, corrective and protective actions are taken, and aid to affected persons is administered as required.

After becoming aware that an emergency exists, the PSS does the following:

1. Takes actions to ensure the safety of plant personnel and the general public,
2. Takes actions to ensure safe operation/activities of the plant,
3. Classifies the emergency and makes the required notifications,
4. Takes actions to ensure that safeguards and security measures are maintained,
5. Takes actions to ensure that material control and accountability measures are maintained,
6. Performs assessment actions,
7. Performs other emergency actions as appropriate, and
8. For Lead Cascade emergencies, takes actions to ensure that items relied on for safety are assessed for collateral damage.

### **5.1 ACTIVATION OF EMERGENCY RESPONSE ORGANIZATION**

Upon recognition of an emergency, the PSS, or designee, responds to the incident scene as the IC. The IC determines appropriate immediate protective actions at the incident scene. The PSS classifies the event if applicable. If the emergency is classified as either an Alert or SAE, the PSS as CM activates the EOC. Minimum staffing requirements for activation and operation of the EOC are identified in an EPIP, and must be met prior to assumption of command and control by the crisis management team. CM responsibilities are assumed as designated in the emergency line of executive succession when the EOC is operational. Methods for ERO notification/activation are the same regardless of the time of the emergency and include plant radios, emergency pager system, and telephones. When notified, EOC cadre members are required to respond immediately. ERO activation is accomplished through the appropriate EPIPs.

The CM delegates public information duties to the public information advisor, who is responsible for activating the JPIC.

The IC maintains command and control over the specific area response and protective actions. The IC coordinates mitigation and protective action strategy and direction and keeps the EOC informed of the incident status when the EOC is operational.

In the event that two or more emergencies occur simultaneously so that they cannot be managed effectively as a single incident scene, provisions in the appropriate EPIPs allow for the establishment of additional incident scenes, designation of multiple ICs, and division of response resources as necessary.

## **5.2 ASSESSMENT ACTIONS**

This section describes the processes used for assessing the actual or potential onsite and offsite consequences of an emergency. Initial and continuing assessment actions are the responsibility of the PSS or designee. Post-accident assessments are a shared responsibility between the PSS or designee, the CM, and the RM, if assigned.

Continuous assessment throughout the course of an emergency is necessary to effectively coordinate and direct the elements of the ERO. The initial assessment actions are dictated, in part, by the nature and severity of the emergency. Emergency assessment provides an indication of the vulnerability to life, the environment, and property to injury or damage if an emergency occurs. The different assessment actions for Alert and SAEs are described in Sections 5.2.1 and 5.2.2 of this Plan; specific assessment actions are provided in the EALs for the various classified emergencies including anticipated responses and protective actions. Equipment used to assess releases is described in Section 6.4 of this Plan.

### **5.2.1 Assessment Actions During an Alert**

An Alert requires basic emergency assessments. Attention must be paid to parameters that may indicate a possible worsening of conditions (e.g., radioactive/hazardous materials releases). The existence of an Alert requires the following initial and ongoing assessment actions as applicable:

1. Increased surveillance of applicable plant instrumentation and visual observation of the incident conditions,
2. Determination of the resources necessary to mitigate the event on the basis of evaluation of reports of damage and injury or by on-scene inspection, and
3. Monitoring event conditions for potential changes in emergency classification level.

### **5.2.2 Assessment Actions During a Site Area Emergency**

In the event of an SAE, assessment activities are more extensive than for an Alert. During a release of radiological/hazardous materials, assessment of onsite and offsite exposures are performed regularly to determine if and when onsite sheltering or evacuation, or offsite sheltering or evacuation, may be required. The results, including methods and assumptions, are communicated to appropriate offsite officials as offsite protective action recommendations. In addition to the activities that would be carried out during an Alert, the following activities are performed at the direction of the PSS or designee or the CM when the EOC is operational, as appropriate:

1. Performing continuing emergency assessments for mitigating events and protective actions onsite based on on-scene and field monitoring results, release information, and meteorological conditions for radiological/hazardous material releases; and
2. For offsite hazardous material releases, providing specific material information, release information, plume direction, projected plume location, appropriate meteorological information, and field monitoring results to responsible offsite authorities.

### 5.2.3 Post-Accident Assessment

Post-accident emergency assessments are provided by the PSS or designee, the CM, and the RM, if assigned. EIPs contain criteria that must be met before recovery can be initiated. These criteria may be radiation readings for criticality events, airborne concentration values for hazardous material releases, or other appropriate identifiable conditions. Concurrence from offsite officials must be obtained before downgrading from an SAE.

In the event of a radioactive or other hazardous materials release, post-accident assessment activities may include monitoring individuals and sampling of water, air, and soil. Personnel involved in an emergency submit urine samples for analyses when the possibility exists for exposure to contamination. Monitoring team personnel conduct fenceline sampling when applicable, depending upon the location of the emergency and meteorological conditions at the time of the event.

During post-accident assessments, specific recovery goals are identified, such as the removal of contaminated soil or the return of a damaged facility to productivity. These actions may be based on survey or inspection data obtained prior to entry into the recovery phase or based on new data obtained specifically for the proposed recovery goal. See Section 9 of this Plan, for information regarding plant restoration and recovery activities.

## 5.3 MITIGATING ACTIONS

### 5.3.1 Personnel Actions

Plant personnel who are technically trained and capable of implementing the plant's emergency plan and procedures perform mitigating actions. Emergency procedures have been established to provide effective response to the various emergency events described in this Plan. During emergency conditions, the primary concern is to minimize the impact on plant personnel and the general public. By initiating prompt protective actions, such as evacuating personnel in the immediate incident area and controlling access to the surrounding accident vicinity, consequences to plant workers as well as the general public are minimized. Additional information on protective actions is provided in Section 5.4 of this Plan. Emergency operating and implementing procedures also provide for the proper mitigating actions to reduce or stop releases.

### 5.3.2 Safe Shutdown

An emergency condition that may have an actual or potential impact on operations may require the safe shutdown of process equipment or systems. The FUEF BIO and DSAs for the DUF<sub>6</sub> Conversion Facility and other facilities/operations, and in the case of the Lead Cascade, the ISA Summary, describes the plant systems and instrumentation available for detecting abnormal operating conditions that could result in an emergency and the methods and criteria used to ensure a safe shutdown of plant equipment and systems. The PSS or designee or CM determines which, if any, equipment or systems require shutdown in connection with a specific accident or emergency and takes appropriate action to ensure that the designated equipment or systems are shut down safely and promptly. After an accident or other emergency, the plant is restored to a safe condition before the PSS or designee issues an all clear. The means for ensuring that the plant is in a safe condition include monitoring, visual inspections, and equipment testing.

The period of time involved in a safe shutdown depends on such factors as the location of the emergency, the magnitude of the emergency, and events that caused the emergency condition. Emergency shutdown of isolated areas, such as a ruptured pigtail or feed line, occurs within minutes. If the emergency is of such

magnitude that an entire building is shutdown, plant procedures and operating methods are in place that direct personnel on the methodology for the safe shutdown. The BIO/DSAs/ISA Summary describes various accident scenarios and covers shutdown actions.

The major physical components of the fire protection system consist of water supply system, pumps, sprinkler systems, and fire alarms. Mobile fire equipment is maintained onsite to support fire fighting activities and back up the fixed fire suppression systems. The fire services, using test frequencies established in group procedures, oversees the testing and inspection program for the fire protection system and equipment. Further information pertaining to fire protection is provided in Chapter 11 of the BIO.

In the event of an ongoing release of radioactive or hazardous material, the goal is for personnel to escape from the vicinity without personal contact with the release and assist in ensuring that non-response personnel do not enter the vicinity of the release. In some cases, approved engineering controls are used to mitigate the effects of a minor release, i.e., gulpers at the autoclaves and on the cylinder valve change cart. In other cases, authorized members of the ERO shall take the appropriate actions to reduce and contain the release.

## **5.4 PROTECTIVE ACTIONS**

During emergencies, the PSS or designee or CM must determine the best possible means to limit exposure of onsite and offsite personnel to potential or actual threats, such as radioactive or toxic materials that may be accidentally released to the environment. Guidelines are provided to limit the exposure of personnel in the case of accidental releases to the environment. These guidelines are prescribed according to potential health effects and are called PAGs for radioactive materials and ERPGs or AEGLs for hazardous materials. Specific EPIPs have been developed for the protection of emergency workers and other onsite and offsite personnel.

This section describes the protective actions developed to limit exposure of plant personnel and the public following an emergency. The protective actions to be implemented onsite are the responsibility of qualified plant personnel. In the event of an emergency the PSS or designee notifies onsite agencies such as the Ohio National Guard and Ohio Valley Electric Corporation via telephone. The time of notification will be affected by the location of the emergency and the impact on the operations of these organizations. The appropriate offsite authorities are responsible for providing offsite protective actions.

### **5.4.1 Onsite Protective Actions**

#### **5.4.1.1 Alerting**

Whenever it is determined that a threat or potential threat to the safety of personnel on the DOE reservation exists, the PSS or designee directs that persons on the DOE reservation or within a specified area are alerted, whichever is appropriate. Alerting is accomplished by use of the PA system, plant radios, telephones, or if required, by runner. Transients on the DOE reservations (i.e., commercial deliveries, school buses, area residents) will be directed to exit the reservation. The alerting time will depend upon the severity and location of the threat to safety.

#### **5.4.1.2 Personnel Evacuation and Accountability**

Protective actions for onsite personnel (including visitors and contractor personnel) include alerting, assembling and accounting for, sheltering in place, evacuating, monitoring, and decontaminating. As previously described, the plant's primary concern is to minimize the impact on plant personnel and the general public.

1. **Evacuation.** When it is determined that a threat to the safety of plant personnel exists, the PSS or designee or CM may order an evacuation of personnel from affected plant areas. Criteria that should be considered before ordering an evacuation includes wind direction, wind speed, and location of the emergency. Evacuation will be implemented immediately in the event of actuation of the radiation and gas release alarm systems. The evacuation alarm and announcement, including any special instructions, is sounded over the PA system, plant radios, or other plant communications systems as appropriate.

At the discretion of the PSS or designee or CM, plant personnel, visitors, and contractors will evacuate to a designated assembly point or monitoring station or be sent to reception centers. Personnel are sent to assembly points during non-radiological events. However, personnel report to a monitoring station if the event involves a radiological release. Refer to Figure 1-2, PORTS Plant Layout, of this Plan for locations of monitoring stations. If a site-wide evacuation is ordered, personnel report to offsite reception centers.

The PSS or designee will provide directions on the specific evacuation routes. The appropriate selection of an assembly area and evacuation route is based upon plant conditions, wind direction, and weather. Evacuation to offsite reception centers is generally by individually owned vehicles. As discussed in this section, emergencies include natural events as well as radiological/hazardous materials incidents. The procedures to be followed in these evacuations are included in the EIPs, including designation of assembly areas. Provisions are made for consideration of impediments to evacuation caused by weather conditions, traffic, or radiological/hazardous materials release. When sheltering personnel would greatly mitigate the consequences of an emergency, the CM or PSS or designee recommends to shelter-in-place and plant personnel are notified over the PA system, plant radios, or other plant communications systems as appropriate.

2. **Accountability.** In an emergency, one of the most probable protective actions for site personnel is evacuation of a building or area. Provisions for determining and maintaining the accountability of personnel are established. Search and rescue operations may be initiated if a person is determined to be missing.

Monitoring stations are identified in Figure 1-2 of this Plan. Personnel permitted unescorted site access are provided training on their assembly/accountability roles and responsibilities. To ensure proficiency, site personnel participate in annual retraining and periodic evacuation and accountability drills.

Visitors that have a current plant clearance/badge are accounted for through their points of contact. Visitors within plant property that do not possess a clearance are assigned to an escort. This escort is responsible for informing the visitors of emergencies when they occur and for taking action as necessary.

Plant employees and contractor personnel are trained on actions to be taken in an emergency prior to their work assignments. Untrained personnel must be escorted by an individual who has received GET emergency preparedness training. The training includes instructions on reporting emergencies and the required actions in the event of an emergency.

3. **Search and Rescue.** If an accountability reveals that a missing person might be located within the incident area, the PSS or designee may assemble a search and rescue team made up of members of the field ERO. The search and rescue team obtains information on the latest known location, and likely areas are searched until missing persons are located. The PSS or designee directs on-scene search and rescue teams. Teams are briefed prior to entry on their specific mission, route of



ingress/egress, area of danger, personal protective clothing/equipment required, and stay times associated with control of exposure to radioactive or hazardous materials.

4. Monitoring and Decontamination. Personnel involved in an emergency shall be required to submit urine samples for analyses when the possibility exists of exposure to contamination. Monitoring team personnel shall conduct fenceline sampling when applicable, depending upon the location of the emergency and meteorological conditions at the time of the event. If decontamination is necessary, decontamination sectors are established using appropriate decontamination equipment. Decontamination and waste disposal are conducted in accordance with specific implementing procedures.

#### **5.4.1.3 Use of Protective Equipment and Supplies**

All individuals entering an area during an emergency where airborne concentrations of contaminants are considered immediately hazardous or potentially immediately hazardous to life or health are required to wear appropriate protective clothing and self-contained breathing apparatus. Plant personnel assigned emergency response tasks requiring the donning of protective equipment maintain communications with the PSS, or designee, via the plant radio system, either by hand-held radio or radios within the self-contained breathing apparatus. Protective clothing and other required personal protective equipment are available throughout the plant at predesignated areas. Emergency personnel receive training on donning and using specific protective clothing and related equipment.

Individuals arriving or remaining at the plant during certain emergency situations are provided monitoring equipment, protective clothing, and respiratory equipment. These supplies are on emergency vehicles. Specific procedures dictate the requirements for use of this equipment. The facilities, equipment inventory, and emergency equipment maintenance are described in Section 7.6 of this Plan.

#### **5.4.1.4 Contamination Control Measures**

The PSS or designee or CM directs personnel evacuating areas potentially contaminated by an incident proceed to monitoring and decontamination stations. Monitoring and decontamination is performed in accordance with plant procedures. Access to the potentially contaminated area is controlled to provide for plant contamination control.

Contamination control measures for both radiological and toxic materials are implemented in plant procedures.

#### **5.4.2 Offsite Protective Actions**

The PSS or designee or CM is responsible for providing protective action recommendations to local officials as part of initial notifications and ongoing communications. These recommendations are based on assessment actions and a thorough understanding of the actual or potential plant conditions. These recommendations can take the form of sheltering in place, evacuation, or advisories that no action is needed.

County officials are responsible for determining and recommending protective actions for the public in potentially impacted areas. If a release of material exceeds the plant reservation boundary, plant personnel provide recommendations based on accident assessment to aid the county in the decision-making process.

The plant is equipped with detection and warning systems to recognize hazardous materials and radiation releases and to warn personnel on and offsite. Upon recognition that a situation exists requiring offsite protective actions, plant personnel recommend protective actions to the appropriate offsite authorities, who in turn are responsible for alerting and notifying persons living within the offsite impacted areas.

The most severe credible accident at the plant would involve the dropping and rupturing of a liquid UF<sub>6</sub> cylinder. During a liquid UF<sub>6</sub> cylinder release incident, the UF<sub>6</sub> reacts with moisture in the air. The resulting hydrolysis products are uranyl fluoride particles and HF gas. An offsite hazard could result from the chemical toxicity of HF and uranium. The radiotoxicity of uranium is insignificant when compared with its chemical toxicity. Analysis suggests that there is some possibility of an offsite hazard from a release of other plant hazardous materials. Section 2 of this Plan describes the various types of hazards and their consequences. In either event, sheltering citizens in the path of the plume can greatly mitigate the consequences.

## **5.5 EXPOSURE CONTROL IN RADIOLOGICAL EMERGENCIES**

In the event of a radiological/hazardous material release, potentially affected personnel are evacuated or sheltered in accordance with an EPIP. A monitoring and decontamination station is established at designated plant locations when directed by the PSS or designee or CM. Plant emergency response personnel perform personnel monitoring and decontamination in accordance with plant procedures.

When releases occur onsite before the evacuation of non-essential personnel can be completed, personnel are routed to the established evacuation/decontamination monitoring stations.

Onsite contamination control measures are described in other plant procedures.

### **5.5.1 Emergency Radiation Exposure Control Program**

#### **5.5.1.1 Radiation Protection Program**

This section of the Plan describes measures that are used to provide necessary assistance if individuals are injured or radiologically exposed or contaminated.

In certain emergency situations, the acceptance of above-normal radiation exposure may be warranted. It may not be possible to perform corrective/protective actions while maintaining exposures below limits specified in 10 CFR Part 20 or 10 CFR Part 835.

Although an emergency situation transcends the normal requirements for limiting exposure, there are EPA recommended levels of exposure acceptable in emergencies (set forth in Section 5.5.1.2 of this Plan).

Three categories of risk versus benefit are considered:

1. Saving of human life and reduction of injury,
2. Protection of health and safety of the public, and
3. Protection of property.

The CM authorizes emergency workers to receive emergency doses above the established plant administrative exposure limits. Exposure guidelines for emergency situations are described in the following section.

### 5.5.1.2 Exposure Guidelines

Exposure guidelines for radiological emergencies are consistent with the EPA's PAGs summarized in EPA 400-R-92-001, Manual of Protective Action Guides and Protective Actions for Nuclear Incidents. Exposure guides for toxic/hazardous chemicals have been incorporated in EPIPs and are consistent with the ERPGs established by the American Industrial Hygiene Association and AEGLs established by the EPA for extremely hazardous chemicals.

The following are radiation exposure guidelines:

- Doses to all workers during emergencies to the extent practical, are limited to 5 rem. Justifications for exposing workers beyond the 5 rem limit include the presence of conditions that prevent the rotation of workers or other commonly used dose-reduction methods.
- Emergency exposures are limited to 10 rem for protecting valuable property.
- Emergency exposures are limited to 25 rem for life saving activities and the protection of large populations.
- Emergency exposures in excess of 25 rem are authorized only for rare situations when such exposure is unavoidable in order to carry out a lifesaving operation or to avoid extensive exposure to large populations. Persons undertaking any emergency operation in which the dose will exceed 25 rem to the whole body do so only on a volunteer basis and with full awareness of the risks involved, including the numerical levels of dose at which acute effects of radiation will be incurred and the numerical estimates of the risks of delayed effects. Details for providing this information and for documenting an individual's willingness to volunteer are in an EPIP.

For hazardous material/toxic gas release incidents, the IC and emergency response personnel assess the incident scene and take appropriate protective and mitigative response actions based on available information, such as MSDSs, emergency response guidebooks, professional industrial hygiene guidance, and meteorological conditions.

During a UF<sub>6</sub> release onsite, the resulting hydrolysis products are uranyl fluoride particles and HF gas. The radiotoxicity of uranium is insignificant when compared with the chemical toxicity of HF and uranium. Therefore, exposure control during an emergency involving UF<sub>6</sub> will be based on chemical toxicity.

### 5.5.1.3 Monitoring

Provisions have been made for 24-hour-per-day capability to determine uranium uptakes received by emergency personnel. Personnel who may be required to respond to the scene of an emergency are required to wear TLDs. Issuance of self-reading dosimeters and maintenance of interim emergency whole body dose records are addressed in an EPIP. Emergency worker dose records are maintained in accordance with radiological protection procedures.

### 5.5.2 Decontamination of Personnel

Onsite personnel decontamination facilities for emergency conditions are equipped with decontamination material and necessary supplies. The primary means of decontamination is through the use of equipment and supplies carried on emergency response vehicles. Other decontamination facilities are located in other areas of the plant. The decontamination facilities have provisions for disrobing, collecting contaminated

clothing, showering of contaminated personnel, and donning clean clothing. Onsite personnel contain and process contaminated wastes.

Personnel exiting contamination control zones, contamination areas, high contamination areas, or airborne contamination areas are monitored for contamination. The instruments used for this monitoring procedure are portable contamination survey instruments. If personnel contamination is detected, preventive measures are initiated to mitigate the possibility of the spread of contamination.

## **5.6 MEDICAL TRANSPORTATION**

Injured employees are normally transported to the plant medical treatment facility using a plant ambulance. An onsite ambulance normally provides transportation of injured persons to an offsite hospital. In the event that an onsite ambulance is unavailable, the local offsite ambulance service provides the transportation of injured persons to an offsite hospital.

Contaminated injured persons are decontaminated prior to transport if medical conditions permit. In the event that contaminated injured persons must be transported, contamination control materials and measures are taken to protect response personnel and prevent contaminating the ambulance.

## **5.7 MEDICAL TREATMENT**

In the event of a serious accident requiring medical treatment, local hospitals have agreed to provide the required assistance. The hospitals are equipped to handle the initial evaluation and treatment of radiologically contaminated injured individuals. Upon request from the hospitals, plant Health Physics personnel are dispatched to assist in contamination control and decontamination of the patient, hospital staff, and hospital facilities/equipment. Letters of agreement (listed in Appendix B of this Plan) have been obtained to document these arrangements.

Blank Page

## **6. EMERGENCY RESPONSE EQUIPMENT AND FACILITIES**

Emergency planning requires facilities and equipment that allow the emergency organization to perform the following actions:

1. Assess the extent of the emergency,
2. Perform the proper corrective actions to mitigate the effects of the emergency,
3. Perform actions to protect onsite and offsite personnel,
4. Provide information to offsite support agencies, and
5. Perform the proper recovery actions.

Emergency facilities, equipment, and materials are established and maintained to adequately support emergency response operations. Response activities are coordinated at the emergency facilities required to be activated for each particular classification. These facilities and associated equipment are used to coordinate and manage response as well as to assess and monitor functions. Additional facilities provide for specific response activities, such as security, decontamination, medical support, laboratory analyses, and media interface.

### **6.1 EMERGENCY FACILITIES**

Emergency facilities are activated as needed to provide direction and control, offsite resource coordination, and public information for emergencies. Facilities are declared operational when minimum staffing is present and vital equipment is operational, as outlined in procedures. The following are descriptions of facility locations, composition, activation criteria, and functions.

#### **6.1.1 Section Deleted**

#### **6.1.2 Plant Control Facility**

The PCF is located in the X-300 building and is used to maintain surveillance and control of operational processes; conduct incident assessment and mitigation; and initially direct protective actions. The PSS or designee, who in an emergency becomes the IC, directs response actions of the PCF staff. The PSS or designee provides command and control over the specific incident area response. PCF personnel under the direction of the PSS or designee are responsible for initially performing the following duties until the EOC is operational:

1. Assessing abnormal conditions,
2. Notifying EOC personnel,
3. Making offsite notifications,
4. Activating the public warning system if necessary,
5. Performing corrective actions,
6. Directing plant operations, and
7. Implementing onsite protective actions.

### 6.1.3 Command Post

The Command Post is a distinctly marked vehicle or specific area equipped with communications capabilities and other resources required to manage the incident. The Command Post provides the PSS or designee and emergency response personnel with a location as close as possible to the actual scene from which they can operate and assess the situation.

Uncontrolled events, such as meteorological changes or escalation of the emergency, may cause the relocation of the Command Post.

### 6.1.4 Emergency Operations Center

The EOC is the onsite facility for the overall management of the emergency response. The EOC, a dedicated facility located in the X-1020 building, is the primary facility for coordinating onsite response and mitigation and offsite interface activities.

The PSS or designee activates the EOC for Alerts and SAEs. In addition, the EOC may be activated for other emergencies at the discretion of the PSS or designee. Once operational, the EOC provides coordination and management for the overall site emergency response. The EOC communicates with USEC Inc., FBP, and other DOE prime contractors and Federal, State, and local organizations.

The CM directs activities at the EOC and is supported by the EOC Director. The EOC Director is responsible for coordination of EOC functions and communications.

EOC personnel are responsible for performing the following functions:

1. Technical interactions with offsite Federal, State, and local officials,
2. Generation of emergency information for public information activities,
3. Ensuring required support to the incident scene, and
4. Coordination of support for onsite response and mitigation.

The plant has planned for and has established alternate EOCs in the unlikely event that the primary EOC, the X-1020 building, becomes uninhabitable due to a radiological/toxic materials release. The requirements, responsibilities, and activities pertaining to the activation of an alternate EOC are described in the EIPs.

The alternate EOC is located in the X-300 PCF. In the unlikely event that the EOC is evacuated, the key EOC personnel evacuate the area and relocate to the alternate EOC in accordance with the EIPs and direction from the PSS or designee or the CM. The plant mobile communications vehicle may also be used as an alternate EOC.

#### **6.1.5 X-104**

The X-104, serves as a focal point for security activities during an emergency. The X-104 is operated on a 24-hour basis and is, therefore, immediately available to support emergency security operations. The Shift Commander is responsible for coordinating activities and communications and performs the following functions:

1. Dispatches protective force personnel,
2. Maintains communications with the protective force officer at the emergency scene,
3. Advises protective force personnel management, and
4. Advises the EOC staff.

#### **6.1.6 Decontamination Facilities**

Specific facilities, resources, and provisions for the decontamination of personnel, vehicles, and equipment are provided. These facilities are located, designed, and equipped to handle potential emergencies identified in the Plan.

#### **6.1.7 Joint Public Information Center**

The JPIC is the designated location for the dissemination of official information about the emergency to the media and to the public. The JPIC accommodates the following:

1. Coordination of information with interfacing Federal, State, and local organizations and spokespersons,
2. Press releases and media briefings, and
3. Work space for site personnel, interfacing organization personnel, and representatives of the news media.

The JPIC is located at the Word Alive Fellowship / Miracle City Academy. JPIC operations are described in designated EPIPs.



## **6.2 COMMUNICATIONS EQUIPMENT**

This section describes the communications systems in place to support emergency response. The communications systems are designed to ensure the reliable, timely flow of information and action directives between all parties having a role to play in the mitigation of emergencies. Reliability is provided via redundancy, dedicated communication equipment to preclude delays due to system overload, and routine use and testing of many of the systems, which lowers the probability of undetected system failures. Timeliness of information flow is achieved by prompt notification, predefined lines of communications, predefined EALs and predefined levels of authority and responsibility. The communications network is formulated around this basic concept and is designed to channel information directly to the key parties having closely related functions, thus eliminating errors often associated with second-hand information. The essential communications links are manned continuously and are periodically tested to ensure availability. The communications systems in place include the following:

1. Commercial telephone system,
2. Facsimile machines,
3. Secure telecommunication devices (STD),
4. Radio repeater networks for plant groups,
5. Mobile communications system,
6. Two designated pagers programmed for weather advisories,
7. Local emergency response agency radio networks,
8. PA system,
9. Cellular telephones,
10. Pagers, and
11. PWS.

### **6.2.1 Onsite Communications**

The telephone systems serve as the primary emergency communications systems. Maintenance and operational testing of primary and alternate communications systems are described in Section 7.6 of this Plan.

#### **6.2.1.1 Telephone Systems**

The administrative telephone system provides business and emergency communications. The telephone system consists of single line, multiline, and programmable digital units. The EOC telephones are tested by Emergency Management personnel.

STDs provide secure voice communications to onsite and offsite users of other STDs. They can also operate as a normal telephone in the "clear" mode.

Cellular telephone service is available from the plant site. Certain emergency response vehicles are equipped with cellular telephones and emergency response personnel also have access to other cellular telephones. This service also provides back-up for the plant telephone system.

#### **6.2.1.2 Public Address System**

A PA system is in place with the capability to cover most occupied site buildings. During emergencies, the system is not used for routine traffic. The system is tested daily. Two-way radios, telephones, and runners are used to communicate with individuals who are not covered by the PA system.

#### **6.2.1.3 Radio Systems**

Radio systems that support emergency response include system title, call sign, frequencies, and locations. Radio systems for the most part are used on a daily basis throughout the plant and problems are addressed as they occur. Operational console checks and quarterly drills are used to test the systems.

Radio net communications are recorded 24 hours a day.

Some plant radio frequencies are compatible with offsite frequencies and are capable of supporting emergency communications between onsite emergency responders and offsite mutual aid organizations.

#### **6.2.1.4 Pager System**

Key EOC personnel have pagers which provide access from any tone-type telephone, can relay return telephone numbers or coded responses to the holder of the unit. Pagers are used frequently for non-emergency use, which enhances the regular testing program.

#### **6.2.2 Offsite Communications**

The plant uses the commercial telephone system for offsite emergency communications. The plant's alternate means of emergency communications with offsite authorities include cellular telephones and the plant radio system.

The PWS, consisting of outdoor warning sirens and emergency alert system announcements, is used to provide emergency notification to the public. Inaudible testing of the PWS sirens occurs on a monthly basis, and audible testing is conducted semiannually.

#### **6.2.3 Mobile Communications Vehicle**

In addition to the fixed communications system at PORTS, a mobile communications vehicle is available to provide communications support during any on or offsite emergency. When the vehicle is activated, a three person crew provides round-the-clock operation of the vehicle's communications and technical functions, security, and on-board power source. This provides a remote communications capability.

### **6.3 ONSITE MEDICAL FACILITIES**

The plant maintains medical coverage consistent with the activities being conducted onsite. In an emergency, off-duty medical personnel are notified and directed to required locations as needed. The PSS or designee notifications include alerting appropriate occupational health services and medical personnel in the event of emergencies ranging from industrial accidents to toxic or radiological releases. Letters of Agreement are maintained with area hospitals. These offsite hospitals also have facilities, equipment, and supplies for the treatment of contaminated individuals. A summary of the medical resources follows.

A plant medical facility is maintained onsite during the day shift excluding weekends and holidays. This facility has the supplies, equipment, and personnel to treat most injuries. This includes capabilities for the treatment of contaminated individuals including a shower for contaminated ambulatory patients, radiation survey instruments, and decontamination supplies. Medical personnel assess patient condition, provide necessary emergency care, and determine appropriate supplemental treatment.

Health services personnel are available during the day shift hours with plant fire fighters providing emergency medical coverage the remainder of the time. Health services personnel may be called onsite during off shifts, as deemed necessary.

Emergency medical technicians provide ambulance service. Additional ambulance support is available from offsite. Emergency air ambulance service is also available upon request from plant personnel for transport of injured non-contaminated personnel.

#### **6.4 EMERGENCY MONITORING EQUIPMENT**

The plant maintains various radiation detection equipment onsite for normal and emergency response use. Criticality accident alarms have been placed in those areas and facilities containing fissile material as described in Chapter 6 of the BIO. The CAAS provides for radiation detection and an alarm system to alert plant personnel.

Persons requiring radiation exposure monitoring wear beta-gamma-sensitive dosimeters (i.e., TLDs), which are processed and evaluated by a processor holding current accreditation from the National Voluntary Laboratory Accreditation Program of the National Institute of Standards and Technology. These personnel exposure monitoring dosimeters are exchanged and analyzed in accordance with Chapter 7 of the BIO. As appropriate, other types of dosimeters (e.g., finger rings, direct-reading dosimeters, and neutron dosimeters) are used.

Radiation dose rate and contamination survey instruments used are appropriate to measure the types and energies of radiation encountered at PORTS. Instruments capable of supporting radiography operations are also maintained in inventory.

Instrumentation includes alpha/beta count rate and scalar instrumentation as well as ion chambers used to evaluate personnel exposure.

Radiological instruments are calibrated routinely as specified in procedures.

Designated plant emergency vehicles responding on scene and containing necessary emergency equipment and supplies ensure that personnel and monitoring equipment are readily available to emergency personnel. This equipment and supplies include count rate monitors for measuring contamination, dose rate monitors for measuring radiation, and portable airborne monitors. This equipment is tested daily.

Monitoring stations are strategically located onsite for evacuation during radiological events. Emergency monitoring equipment is stored and always available at each monitoring station.

In addition to radiological monitoring equipment, the plant maintains emergency monitoring instrumentation for chemically toxic material releases. These instruments are maintained in dedicated

emergency response vehicle kits and will also be supplied from the plant's inventory of routinely used monitoring equipment.

The primary source of meteorological information is the X-120H New Weather Station consisting of a tower with a data terminal, a data acquisition system, and meteorological sensors located at ground level, 10 meters, 30 meters, and 60 meters. This system measures wind speed, wind direction, and temperature. It also automatically measures temperature differential, humidity, stability, and precipitation. The data is displayed in the PCF and displayed and recorded in the EOC. Refer to Figure 1-2 of this Plan for the location of the X-120H New Weather Station. Meteorological data is used to ensure safe emergency scene response (from the upwind direction), facilitate plume dispersal modeling, and to enable appropriate protective action recommendations in the event of an airborne release.

Weather forecasting information is also available at the X-300 PCF via commercial telephone call to the NWS in Wilmington, Ohio. Weather forecasts are used to inform plant personnel of impending related hazards, driving hazards, and may be used to inhibit proposed plant evolutions such as cylinder movements.

Blank Page

## **7. MAINTAINING EMERGENCY PREPAREDNESS CAPABILITY**

This section describes the responsibilities for developing, maintaining, and updating the Plan and EIPs and for maintaining emergency preparedness capability.

### **7.1 WRITTEN EMERGENCY PLAN AND PROCEDURES**

USEC Inc. is responsible for maintaining and updating the Plan, as appropriate. USEC Inc. may make changes to the Plan without prior NRC or DOE approval if the changes do not decrease the effectiveness of the Plan. USEC Inc. will furnish these changes to DOE and to the NRC in accordance with license requirements and to affected offsite response organizations within six months after the change is made. USEC Inc. RMDC provides the onsite distribution of the Plan to ensure that groups having responsibilities for response functions are included in the distribution.

Most EIPs are level 2 plant procedures and are revised, reviewed, approved, controlled, and distributed in accordance with plant administrative procedure requirements. In part, these requirements ensure that new or revised EIPs state duties, responsibilities, and actions to be taken by individual groups or individuals in response to an emergency condition. Level 2 procedures are required to be reviewed by subject matter experts and personnel in affected areas and are approved by the FBP Level 1 Managers. Level 2 procedures are distributed to each controlled procedure set holder. The revisions of the procedures incorporate required changes to correct deficiencies identified in emergencies, training, drills, or exercises.

### **7.2 TRAINING**

FBP Emergency Management is responsible for administering the emergency management training program. A series of course modules has been developed for onsite training programs.

Personnel assigned to the ERO are required to satisfactorily complete an initial training program followed by retraining. Required continuing or refresher training is conducted biennially, except for firefighting, hazardous material emergency response, and emergency medical recertification which are described in an applicable implementing procedure. A physical examination and respiratory protection training are prerequisites to both firefighting and hazardous material emergency response initial and refresher training. The initial training program is composed of a collection of functional modules, which emergency personnel receive based on their emergency assignment. Specific training requirements are defined in the Training, Development and Administrative Guide for the Emergency Management Training Program.

A formal training record retention program has been established and is maintained for ERO members, support personnel, and offsite agency response organizations. Evaluation records for each course are maintained for incorporation into upgrades of the program.

The emergency management staff participates in professional emergency management development training activities and other related training.

### **7.2.1 General Emergency Plan Training**

FBP, contractors, and subcontractors requiring unescorted access must attend General Employee Training (GET) on a biennial basis.

GET is completed in order to ensure proper response to emergencies. The emergency preparedness subjects covered include the following:

1. Emergency plant safety objectives and priorities,
2. Ways to report emergencies,
3. Recognition and correct responses to plant alarm signals,
4. Evacuation guidelines for radiological and nonradiological emergencies,
5. Methods of personnel accountability, and
6. Personnel responsibilities during emergencies.

USEC Inc., DOE employees, contractors, and subcontractors requiring access to the security controlled area also receive biennial training on the six emergency plan elements listed above. This training requirement may be satisfied by attending GET delivered by the FBP Training Organization, or training prepared by USEC Inc., DOE, or by a DOE contractor/subcontractor that has been reviewed by the FBP Training organization manager or designee to ensure the training, including subsequent revisions, is equivalent with respect to the six emergency plan elements listed above and requirements for unescorted access in BIO Section 12.4.

All personnel requiring unescorted access to the security controlled area (DOE, DOE contractors/subcontractors, USEC Inc., and FBP) are subject to direct control of their training through denial of access if the individual does not present evidence of having current GET.

### **7.2.2 Specialized Emergency Plan Training for the Emergency Response Organization**

A formal training program, which includes classroom-type training (lectures, seminars), practical applications (tabletop drills, functional drills, and exercises), and self-study programs has been developed for the ERO and support personnel. The ERO receives training commensurate with assigned positions. This training program ensures the continued emergency management training of persons who may respond/participate during a plant emergency. Specialized emergency management training is provided and includes but is not limited to the following categories of topics:

1. Emergency Management Overview. This course provides an orientation to the PORTS Emergency Management Program. Subjects covered in this training include emergency response, responsibilities and authorities, requirements, facilities and equipment overview, and offsite interface summary. This course is provided initially.
2. Operational Facility Training. This course covers the operation of the EOC during a declared emergency, including the interface with the IC and an overview on communications with onsite support groups and offsite agencies. This course is provided initially with biennial retraining requirements

3. Credible Emergencies. This course covers the response to a threat to the facility of a bomb threat, tornado, or earthquake. This course is provided initially.
4. Emergency Management Drill and Exercise Participation. This course covers the Emergency Management Drill and Exercise Program. This course is provided initially with biennial retraining requirements.
5. Emergency Classification and Protective Actions. This course covers the event classification systems and PORTS EALs. The course also provides instruction about onsite and offsite protective actions. This course is provided initially with biennial retraining requirements.
6. Emergency Notifications/Communications. This course is provided to those personnel who are responsible for preparing, approving, and/or conducting emergency notifications to on and offsite authorities. This course is provided initially with biennial retraining requirements.
7. Operational Facility Support. This course provides instruction about how to use the communication and computer equipment available at EOC positions. This course is provided initially.
8. Emergency Response Activities. This course provides emergency response activities being directed from other than the EOC and subsequent responsibilities and authorities following the exit of an emergency classification. This course is provided initially with biennial retraining requirements.

The Emergency Management Training procedure establishes the requirements for the formal Emergency Management Training program. The procedure is supplemented by the Training, Development and Administrative Guide for the Emergency Management Training program. Specific emergency training requirements for each position are described in the Training, Development and Administrative Guide, which includes lesson plans for the emergency management training, frequency of retraining, and the number of hours of initial and retraining that are provided to the ERO.

### **7.2.3 Offsite Emergency Management Training**

Training is offered biennially by letter of invitation to non-licensee emergency support organizations that may be called upon to respond to emergencies at the plant, including Lead Cascade. These agencies include local fire, law enforcement, ambulance, and hospital services. In addition to emergency management, personnel from other plant groups such as training, health physics, industrial hygiene, fire services, and security, provide assistance as needed. This training includes the following topics as a minimum:

1. Site-specific information on hazards, onsite and offsite protective actions, and emergency response from personnel or organizations augmenting the ERO,
2. Orientation tours of the PORTS reservation, and
3. Information briefings for the news media on operational emergencies, site-specific hazards and responses, site points of contact, and procedures for the release of information in the event of an emergency.

### **7.3 DRILLS AND EXERCISES**

Emergency management drills and exercises are conducted to develop, maintain, and test the response capabilities of emergency personnel, facilities, equipment, procedures, and training.



A drill is a supervised instruction session that develops, tests, or maintains a specific emergency response capability using a limited scope scenario. Drills are held quarterly and involve decision-making and actions by participating personnel to simulate emergency conditions but do not involve offsite response personnel.

An exercise is a training session that tests the integrated capability of all or most of the basic elements existing within the Plan and EIPs. Exercises use scenarios that are wider in scope than drills and may involve offsite response personnel and agencies.

Drills and exercises are conducted by persons trained in the control and evaluation of drills. Controllers and evaluators are assigned to various locations if a drill or exercise involves simultaneous activities at more than one location. Evaluators are provided with criteria for acceptable performance to evaluate the performance of participants.

The FBP Emergency Management Manager has overall responsibility for implementing a coordinated program of emergency drills and exercises identified in an EPIP. The EPIP requires emergency management to promulgate a drill and exercise schedule annually, which identifies drill/exercise category, shift/group, and tentative dates. Management personnel are responsible for ensuring that employees under their oversight are available to participate in drills and exercises. Personnel are required to participate in drills and exercises in a safe and realistic manner.

The Emergency Management Drill and Exercise Committee is responsible for exercise scenario development, establishing a planning schedule, and identifying participants and evaluators. The committee is chaired by a representative of emergency management and consists of members representing the areas of security, fire services, PSS staff, and others as appointed.

Members of the ERO are required to participate in drills and exercises. This requirement is met if the activated personnel of the ERO respond to an emergency and meet response objectives, keep records, and critique the response.

### **7.3.1 Biennial Exercises**

Plant personnel plan and conduct biennial exercises. Offsite response organizations, DOE, and the NRC are invited to observe or participate in these scheduled exercises.

An exercise is an event that tests the integrated capability of the basic elements existing within emergency plans and organizations. An exercise simulates an emergency resulting in potential or actual offsite impacts that may require response by offsite authorities.

An exercise scenario manual containing relevant documentation will be developed for each drill and exercise. The drill/exercise scenario contains a preplanned description of the accident to be used, prepared according to the scope and objectives of the drill/exercise. Each scenario describes a hypothetical situation that serves as the basis for emergency response actions. Scenarios are varied from year to year and are designed to minimize simulation. No scenario information is given to participants prior to a drill or exercise.

The exercise scenario manual is provided to the NRC and DOE at least 60 days before the exercise.

Drill and exercise controllers and evaluators are trained on the proper conduct of emergency exercises. This training includes information on safety precautions, scenario messages, simulated actions, participant interactions and controller input, evaluation methodology, and critique format.

### **7.3.2 Quarterly Communications Checks**

Communications checks with offsite response organizations are conducted on a quarterly basis and include the checking and updating of necessary telephone numbers.

## **7.4 CRITIQUES**

Formal critiques are conducted for key participants, controllers, and evaluators following each exercise. These critiques are conducted by personnel who were not participants, normally emergency management or contractor personnel.

Emergency management screens all critique comments. Critique items that have safety significance indicate a regulatory violation or reflect serious deficiencies in plan content or implementation are identified to the PSS and a Problem Report is initiated. Resulting corrective actions are tracked in the plant management tracking system in accordance with plant procedures. The remaining critique items are submitted to the Emergency Management Drill and Exercise Committee, which determines their validity and determines the appropriate method for corrective actions as required by an EPIP.

Emergency management tracks corrective actions identified by the Emergency Management Drill and Exercise Committee through completion or implementation. Management is responsible for implementing exercise corrective actions in their respective functional areas.

## **7.5 PROGRAM AUDIT**

The Emergency Management program is audited in accordance with Section 2.18 of the Quality Assurance program to ensure adequate and effective program function. This ensures that changes in plant layout are included in revisions to the Plan. The scope of the audit includes the Plan and the EIPs, training activities, exercise deficiencies, emergency facilities, equipment, and supplies, and those records associated with offsite support agency interface. Audit personnel do not have direct responsibilities for implementing the Emergency Management program and are qualified according to established procedures.

Procedures provide measures that ensure that audit personnel are provided with appropriate training so that they are competent to perform the required audits. Procedures also require that lead auditors meet the training and experience requirements described in Section 2.2.4 of the Quality Assurance Program. Technical specialists may occasionally participate as audit team members provided that they receive the required indoctrination and guidance during the audit.

Procedures require that emergency management investigate adverse audit findings and schedule corrective actions that prescribe measures to prevent recurrence. The auditing organization evaluates the adequacy of the written responses.

Procedures require that follow-up actions be taken to verify that corrective actions be completed as scheduled.

## **7.6 MAINTENANCE AND INVENTORY OF EMERGENCY EQUIPMENT, INSTRUMENTATION, AND SUPPLIES**

Adequate equipment and supplies are kept available, properly stored, and maintained in operable status for emergency response personnel to perform their respective duties and responsibilities. This includes equipment and materials for radiological and toxicological monitoring, protective clothing, fire fighting equipment, sampling equipment, respiratory protection equipment and emergency air supplies, damage control materials, dedicated spare parts, radios, telephones, vehicles, and administrative supplies.

The FBP Emergency Management Manager has an administrative oversight responsibility for the quarterly inventory and inspection of emergency equipment and supplies. Identified deficiencies are corrected in a responsible period of time.

Emergency equipment and instruments are inspected, inventoried, and operationally tested quarterly and after each use. The appropriate groups manually track emergency equipment and supplies, i.e., respirators and medical supplies that have shelf-lives.

Sufficient reserves of emergency equipment and instruments are available to replace emergency equipment that is removed for calibration or repair. Emergency instruments are calibrated at the intervals specified for each type of instrument. A summary report of each inventory and inspection is prepared and submitted as emergency management documentation.

## **7.7 LETTERS OF AGREEMENT**

Changes to the Plan are communicated to the appropriate offsite response organizations. Letters of Agreement with offsite support organizations and agencies are reviewed and updated every four years or more frequently if needed. A change in original signatory to a given Letter of Agreement does not in itself require revision of that letter. A change in applicability of content of a Letter of Agreement; however, does require a revision to that letter. Letters of Agreement are identified in Appendix B of this Plan.

## **8. RECORDS AND REPORTS**

### **8.1 RECORDS OF INCIDENTS**

Event documentation includes the cause of the incident, personnel and equipment involved, extent of injury and damage (onsite and offsite) resulting from the incident, locations of contamination with final decontamination survey results, corrective actions taken to terminate the emergency, measures taken to restore the plant to normal conditions, and action taken or planned to prevent a recurrence of the incident. The documentation includes plant and offsite support assistance requested and received and any program changes resulting from a critique of emergency response activities.

The PSS or designee is responsible for reporting and recording events of abnormal operation, equipment failure, and accidents that lead to a plant emergency. Records unique to a radiological emergency and decommissioning are retained until the license is terminated.

### **8.2 RECORDS OF PREPAREDNESS ASSURANCE**

Records are retained and maintained to document readiness assurance. These records include the following:

1. Emergency management training and retraining, including lesson plans and test questions;
2. Drills, exercises, and related critiques;
3. Inventories and locations of fire services emergency equipment and supplies;
4. Maintenance, surveillance, calibration, and testing of fire services emergency equipment and supplies;
5. Letters of Agreement;
6. Reviews and updates of the Plan; and
7. Notification of personnel and offsite agencies affected by an update of the Plan or the EPIPs.

Blank Page

## 9. RECOVERY AND PLANT RESTORATION

In an emergency, the immediate action is directed toward limiting the consequences of the incident in a manner that affords the maximum protection to plant personnel and the general public. Once the corrective and protective actions have established an effective control over the situation, and emergency conditions no longer exist, the emergency response shifts into the recovery phase.

Emergencies may or may not impact plant operations within the scope of NRC and DOE-regulated activities. Therefore, it may be possible to continue operations that are not impacted either directly or indirectly by an emergency situation.

It is the responsibility of the CM to determine when the recovery phase of the emergency can be initiated. The following criteria for terminating an emergency and beginning recovery operations are considered as appropriate:

1. If classified emergency conditions no longer meet any EAL;
2. The affected facility/area is in a stable condition and can be maintained in that condition indefinitely;
3. Fire or other similar emergency conditions no longer constitute a hazard;
4. Releases of hazardous materials to the environment have ceased or are controlled; and
5. Discussions with the ERO and appropriate offsite agencies identify no valid reason to continue in any emergency classification.

### 9.1 RECOVERY

The nature and extent of the emergency determines what recovery operations are required and the extent of the recovery organization that must be formed. A recovery plan must be flexible enough to adapt to the existing conditions. It is not possible to anticipate in advance all of the conditions that may be encountered as a result of the emergency. General principles addressed in this section serve as a guide for developing a flexible plan of action.

Recovery includes those actions necessary to return an incident site and the surrounding environment to pre-emergency conditions to the maximum extent practical. Specific recovery plans are developed in accordance with the applicable EPIP.

The DOE site manager (or designee) is responsible for ensuring the adequacy and appropriateness of recovery operations involving nonleased portions of the facility. The General Manager, American Centrifuge Plant Operations is responsible for ensuring the adequacy and appropriateness of recovery operations involving the Lead Cascade.

## 9.2 RECOVERY ORGANIZATION

Prior to termination of an emergency and deactivation of the ERO, the CM appoints a RM and a recovery organization is established to implement recovery plans. The recovery manager has overall responsibility for recovery activities, including ensuring that all safety equipment is checked and restored to normal conditions and evaluating and retaining As Low As Reasonably Achievable (ALARA) records. Other duties of the RM include coordination of interactions with vendors and contractors; approval of special procedures and related training, interfacing with offsite Federal, State, and local officials; and assignment of responsibility for compiling, evaluating, and ensuring retention of all records associated with the event. The key operating and management positions of the recovery organization are listed below:

1. RM
2. Advisor, Operations
3. Advisor, Lead Cascade and Construction
4. Advisor, Safety, and Health
5. Field Response Coordinator
6. Advisor, Public Affairs
7. Health Physics Personnel
8. Protective Force personnel
9. Other site entities as necessary

Personnel radiation exposures during restoration activities shall be maintained in accordance with the ALARA principle. After the emergency condition no longer exists, a thorough radiological evaluation of the situation shall be performed. Plant radiological protection procedures shall be followed during restoration activities.

## **10. COMPLIANCE WITH COMMUNITY RIGHT-TO-KNOW ACT**

The plant complies with the EPA Superfund Amendments and Reauthorization Act (SARA) Title III regulations, also known as the Emergency Planning and Community Right to Know Act. Specific responsibilities include emergency response planning, emergency release reporting, hazardous chemical inventory reporting, and toxic chemical release reporting.

This Plan and appropriate EIPs are used during any hazardous chemical release emergencies. Plant administrative procedures have been developed for hazardous materials releases that are not classified as emergencies to ensure that the requirements of SARA Title III are met. MSDSs are maintained in several areas throughout the plant.

Hazardous materials spills or releases are reported to the PSS who responds to the incident scene as IC or dispatches a designee in that capacity. The IC directs the emergency containment of spills. Actions to be implemented are described in appropriate EIPs and include the following:

1. Evacuate/isolate the area of release/spill activity, as necessary, and determine areas of concern;
2. Classify the emergency if appropriate;
3. Determine if activation of additional ERO personnel is necessary;
4. Take measures to minimize safety concerns;
5. Determine a course of action and personal protective equipment requirements;
6. Initiate containment procedures;
7. Terminate the source;
8. Make appropriate notifications to onsite and offsite officials;
9. Determine material disposal; and
10. Terminate the incident and enter recovery.



Blank Page

**Appendix A (Deleted)**

Blank Page

**Appendix B**

**LETTERS OF AGREEMENT**

1. Pike County Firefighter's Association
2. Southern Ohio Medical Center
3. Adena Pike Medical Center
4. Adena Regional Medical Center Hospital
5. Pike County Emergency Medical Service
6. Word Alive Fellowship / Miracle City Academy
7. Eastern School District
8. Waverly City School District
9. Valley Local School District
10. Western Local School District
11. Pike County Sheriff's Office

Blank Page

## **Appendix C**

### **LIST OF SUPPORTING DOCUMENTS**

1. Pike County Emergency Management Agency, *Pike County Ohio Emergency Operations Plan, Annex N, Section 2, Site Specific Response Plan for a Hazardous Chemical Emergency.*
  2. Ohio Emergency Management Agency, *State of Ohio Hazardous Materials Emergency Management Plan* and its *Department of Energy Facilities Annex to the State of Ohio Hazardous Materials Emergency Management Plan.*
  3. *PORTS Communications Plan.*
-

Blank Page

## Appendix D

### DEFINITIONS/ACRONYMS

**Accident** — A deviation from normal operations or activities associated with a hazard that has the potential to result in an emergency.

**ACP** — American Centrifuge Plant.

**ACR** — Area Control Room.

**AEGL** — Acute Exposure Guideline Levels.

**ALARA** — As Low As Reasonably Achievable.

**APSS** — Assistant Plant Shift Superintendent.

**Assessment actions** — Those actions taken during or after an accident to obtain and process information that is necessary to make decisions to implement specific emergency measures.

**BIO** — Basis for Interim Operation.

**BWCS** — Babcock-Wilcox Conversion Services, LLC.

**CAA** — Controlled Access Area.

**CAAS** — Criticality Accident Alarm System.

**CAS** — Central Alarm System.

**CFR** — Code of Federal Regulations.

**CM** — Crisis Manager.

**Consequence** — The result or effect (especially projected doses or dose rates) of a release of radioactive or hazardous materials to the environment.

**Corrective actions** — Those emergency measures taken to lessen the severity of or terminate an emergency situation at or near the source of the problem to prevent or control a release of radioactive material or to minimize the damage to plant equipment, e.g., shutting down equipment, firefighting, repair, and damage control.

**Decontamination** — The removal of surface radioactive/hazardous material from individuals, equipment, surfaces, etc.

**D&D** — Decontamination and Decommissioning.

**DIW** — Deionized water.



**DOE** — U.S. Department of Energy.

**DOT** — U.S. Department of Transportation.

**Drill** — A supervised hands-on instruction period intended to test, develop, or maintain a specific emergency response capability.

**DSA** — Documented Safety Analysis.

**DUF<sub>6</sub>** — Depleted Uranium Hexafluoride.

**EMA** — Emergency Management Agency.

**Emergency** — Any operational, civil, natural-phenomenon or security event that could endanger or adversely affect people, property, or the environment, which requires a time-urgent response for mitigation.

**Emergency Action Level (EAL)** — Specific, predetermined, observable criteria used to detect recognize, and determine the class of emergencies. An EAL can be an instrument reading, an equipment status indicator, a measurable parameter onsite or offsite, a discrete, observable event, a result of analyses, another observed phenomenon that indicates entry into a particular emergency class.

**Emergency Operations Center (EOC)** — An emergency response facility that accommodates personnel acting in support of the command and control functions but separate from the IC and on-scene command post. Under the guidance of the CM, these personnel supply strategic and corrective engineering and radiological, hazardous materials, and environmental support assistance to the PSS and on-scene emergency personnel.

**Emergency Response Organization (ERO)** — The designated group of personnel responsible for coping with and minimizing or mitigating the effects of any emergency.

**Emergency Response Planning Guideline (ERPG)** — A hazardous material personnel exposure level or range that, when exceeded by a short-term or acute exposure, will cause irreversible or other serious health effects in humans. The ERPGs are approved by a committee of the American Industrial Hygiene Association.

**EPA** — U.S. Environmental Protection Agency.

**EPIP** — Emergency Plan Implementing Procedure.

**Event** — Any real-time occurrence or significant deviation from planned or expected behavior that could endanger or adversely affect people, property, or the environment.

**Exercise** — A scheduled and planned large-scale activity that tests the integrated capability and most aspects of the Emergency Management program.

**FAA** — Federal Aviation Administration.

**FBP** — Fluor-B&W Portsmouth LLC.

**FBI** — Federal Bureau of Investigation.

**FEMA** — Federal Emergency Management Agency.

**FUEF** — Former Uranium Enrichment Facilities.

**GCEP** — Gas Centrifuge Enrichment Plant.

**GET** — General Employee Training.

**Hazardous Material (HAZMAT)** — Any solid, liquid, or gaseous material that is toxic, flammable, radioactive, corrosive, chemically reactive, or unstable upon prolonged storage in quantities that could pose a threat to life, property, or the environment.

**HFS** — HF Storage System.

**HQ** — Headquarters.

**HVAC** — heating, ventilation, and air conditioning.

**IC** — Incident Commander.

**Immediate Notification Area** — An area that extends approximately two miles from the center of the plant in which members of the public would be notified by PWS sirens in the event of an emergency.

**ISA** — Integrated Safety Analysis.

**JPIC** — Joint Public Information Center.

**LCC** — Local Control Center.

**LEPC** — Local Emergency Planning Committee.

**Letter of Agreement** — An agreement drawn up between the plant and offsite local governments or other organizations for assistance in the event of an emergency (also called Memorandum of Understanding, Mutual Aid Agreement, Memorandum of Agreement and/or Letter of Assistance).

**MSDS** — Material Safety Data Sheet.

**NRC** — U.S. Nuclear Regulatory Commission.

**NWS** — National Weather Service.

**OROC** — Oak Ridge Operations Center.

**OSHA** — U.S. Occupational Safety and Health Administration.

**PA** — Public Address.

**PCF** — Plant Control Facility.

**PHA** — Process Hazard Analysis.

**Plan** — The plant Emergency Plan.

**PORTS** — Portsmouth Gaseous Diffusion Plant. (including all of DOE reservation).

**PPPO** — Portsmouth, Paducah Project Office.

**Protective action** — Physical measures, such as evacuation or sheltering, taken to prevent potential health hazards resulting from a release of hazardous materials to the environment from adversely affecting employees or the offsite population.

**Protective Action Guide (PAG)** — A radiation personnel exposure level or range beyond which protective action should be considered. PAG values should reflect a balance of risks and costs to on-site personnel, public health and safety, and the environment weighed against the benefits obtained from protective actions.

**PSS** — Plant Shift Superintendent.

**PWS** — Public Warning System.

**Recovery** — Actions taken after the emergency to restore the plant or area as nearly as possible to pre-emergency conditions.

**RM** — Recovery Manager.

**SAE** — Site Area Emergency.

**SARA** — *Superfund Amendments and Reauthorization Act.*

**STD** — Secure Telecommunications Device.

**TLD** — Thermoluminescence Dosimeter.

**TSR** — Technical Safety Requirements.