Emergency Plan

for the American Centrifuge Plant
in Piketon, Ohio

Revision 23

Docket No. 70-7004 **September 2012**

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Page Number	Revision Number	Page Number	Revision Number
Cover Page	23	14	19
Inside Cover Page	23	15	19
ULOEP-1	23	16	19
ULOEP-2	22	17	19
Table of Contents	19	18	19
i	19	19	19
ii	19	20	19
iii	19	21	19
iv	21	22	19
v	19	23	19
vi	19	24	19
1	15	25	23
2	8	26	19
3	15	27	19
4	21	28	19
5	8	29	19
6	8	30	19
7	21	31	19
8	8	32	19
9	8	33	19
10	8	34	19
11	8	35	19
12	19	36	19
13	19	37	19

Page Number	Revision Number	Page Number	Revision Number
38	19	B-7	8
39	19	B-8	8
40	19	B-9	8
41	19	B-10	8
42	19	B-11	8
43	19	B-12	8
44	19	B-13	8
45	19	B-14	8
46	19	C-1	15
47	19	C-2	15
48	22	C-3	8
49	19	C-4	8
50	19	C-5	20
51	22	C-6	8
52	19	C-7	8
53	19	C-8	8
54	19	C-9	8
55	19	C-10	8
56	19	D-1	8
57	19	D-2	8
58	19	E-1	8
59	19	E-2	8
60	19	F-1	21
61	19	F-2	21
62	19	F-3	21
63	19	F-4	17
64	19		
65	19		
66	19		
67	19		
68	19		
A-1	15		
A-2	18		
A-3	18		
A-4	20		
A-5	18		
A-6	18		
A-7	18		
A-8	15		
A-9	15		
A-10	15		
A-11	15		
A-12	18		
A-13	18		
A-14	8		
B-1	8		
B-2	8		
B-3	8		
B-4	8		
B-5	11		
B-6	8		

TABLE OF CONTENTS

TABLE OF CONTENTS (Cont.)

TABLE OF CONTENTS (Cont.)

TABLE OF CONTENTS (Cont.)

APPENDICES

LIST OF TABLES

LIST OF FIGURES

1.0 DESCRIPTION

The Licensee, subleases portions of the U.S. Department of Energy (DOE) reservation from the DOE in Piketon Ohio for uranium enrichment activities at the American Centrifuge Plant (ACP). The United States Enrichment Corporation maintains the Portsmouth Gaseous Diffusion Plant (GDP) facilities in cold standby pursuant to an agreement with the DOE. The DOE and DOE contractors also conduct activities at the reservation. The Licensee conducts uranium enrichment activities in the ACP in accordance with 10 *Code of Federal Regulations* (CFR) Part 70. The United States Enrichment Corporation is certified to conduct uranium enrichment activities at the GDP in accordance with 10 CFR Part 76. The DOE regulates DOE and DOE contractor's activities in accordance with DOE requirements, except GDP activities, which are regulated by the U.S. Nuclear Regulatory Commission (NRC).

This Emergency Plan is an integrated plan applicable to the entire reservation. It is maintained by the Licensee. In preparing this emergency plan, the Licensee followed the guidance contained in Regulatory Guide 3.67, *Standard Format and Content for Emergency Plans for Fuel Cycle and Materials Facilities*. In this capacity, the Licensee prescribes protective actions for persons located on the reservation. These protective actions are included in Section 5.4 of this plan. Persons located outside the reservation boundary are considered members of the public. State and county agencies recognize the reservation boundary as the defining boundary between the public and persons located on the reservation.

1.1 Description of Licensed Activity

The DOE reservation is located on approximately 3,700 acres as shown in Figure 1-1. This figure identifies the general location of activities on the reservation. The reservation consists of buildings/facilities and areas leased to the United States Enrichment Corporation for GDP operations and subleased to the Licensee for ACP operations. In addition, DOE retains certain facilities.

Refer to Appendix A for a description of ACP licensed activities and to Appendix B for a description of the GDP certified activities.

1.2 Description of Plant and Site

The DOE reservation is located at latitude 39º00'30" north and longitude 83º00'00" west measured at the center of the reservation on approximately 3,700-acres in Pike County, Ohio, one of the state's less populated counties. The largest cities within an approximate 50-mile radius are Portsmouth, Ohio, located approximately 27 miles to the south, and Chillicothe, Ohio, located approximately 27 miles to the north. Figure 1-2 depicts the regional area surrounding the reservation.

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 industrial, commercial, institutional, or residential structures within the reservation other than those related to ACP, GDP, or DOE activities. The DOE leases facilities on-site to the Ohio National Guard. The Ohio National Guard does not store weapons on-site. There are no other military installations located near the reservation.

Roadways within the fenced limited access area of the reservation consist of several miles of paved surface. Several paved roads branch out from the reservation to the Perimeter Road that surrounds the limited access area. The west access to the reservation extends from U.S. 23 to the Perimeter Road. Shyville Road connects U.S. 32/124 to the north side of the reservation. Other access roads connect to secondary county roads around the reservation. Due to security concerns, access to the reservation is controlled at one access point. Other access points to the reservation are currently secured.

Rail and roadways are used for cylinder movements to the reservation. The rail spur enters the reservation from the north and branches to several areas inside the limited access area. In addition, cylinders are transported around the reservation using a variety of devices, including cylinder carriers, stackers, rail cars, forklifts, trucks, and wagons.

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

The reservation consists of approximately 3,700 acres with an approximately 1,300-acre central 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 wastewater treatment plant; sanitary and inert landfills; and open and forested buffer areas.

Most of the facilities and structures within the limited access area are located within the Controlled Access Area (CAA). The CAA is largely devoid of trees, with grass and paved roadways dominating the open space.

The ACP is situated on approximately 200 acres of the southwest quadrant of the CAA. Refer to Appendix A for a description of the ACP.

The GDP occupies approximately 550 acres of the remaining CAA. Refer to Appendix B for a description of the GDP.

1.3 Description of Area Near the Site

The areas adjacent to the DOE reservation are largely agricultural with a relatively low population density. Approximately 90 percent of the area surrounding the reservation is

agricultural and forested land. The remaining 10 percent is industrial, commercial, and residential land use. Figure 1-2 is a general map covering a radius of approximately 10 miles from the reservation.

Adjacent counties are Scioto, Jackson, Ross, Highland, and Adams. Nearby cities and their approximate distance from the reservation include the following: Chillicothe, 27 miles north; Portsmouth, 27 miles south; Waverly, eight miles north; and Jackson, 26 miles east. Communities closest to the reservation include the unincorporated towns of Piketon, Beaver, and Lucasville. The reservation is located in a rural, low-population area. The reservation (within a five mile radius) 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 off-site populations of events with potential health or safety impact. The immediate notification area, which extends approximately two miles from the center of the reservation, is wholly within Pike County. As shown in Figure 1-3, the Public Warning System covers the immediate notification area.

There are several installations or facilities (i.e., schools, prisons, nursing homes, etc.) located within five miles of the reservation boundary (see Figure 1-4) and are discussed in Section 1.3.2 of the License Application. Figure 1-4 depicts these special population centers and emergency response organizations within a five-mile radius of the reservation. Small businesses in close proximity to the reservation in Piketon, Ohio include the State Highway Department office and garage; wood sorting facility; feed store; restaurants; auto repair shops; agricultural center; overhead door company; concrete company; tractor supply; electrical and plumbing company; oil company; and service stations. There are no known impacts from these facilities or activities that might complicate emergency preparedness efforts. Figure 1-5 provides a topographical map and Figure 1-6 provides an aerial map of the DOE reservation.

The Licensee's Emergency Management personnel, which are responsible for ensuring that the emergency management program complies with Federal, State, and local regulations, maintains letters of agreement with off-site emergency support organizations (i.e., police, fire departments, hospitals, and other emergency support groups). Descriptions of services and locations of support organizations are included in Section 4.3 of this plan.

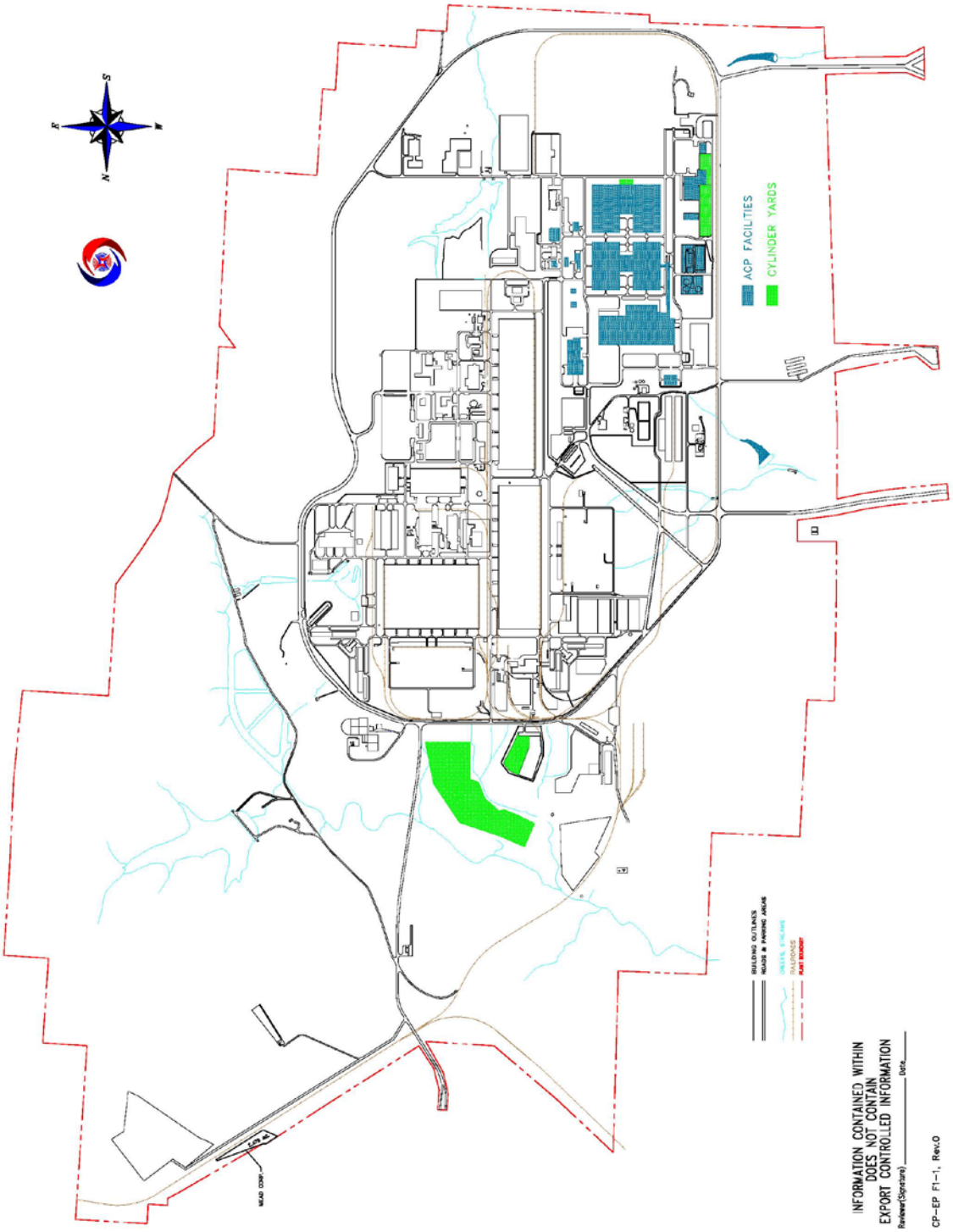


Figure 1-1 U.S. Department of Energy Reservation

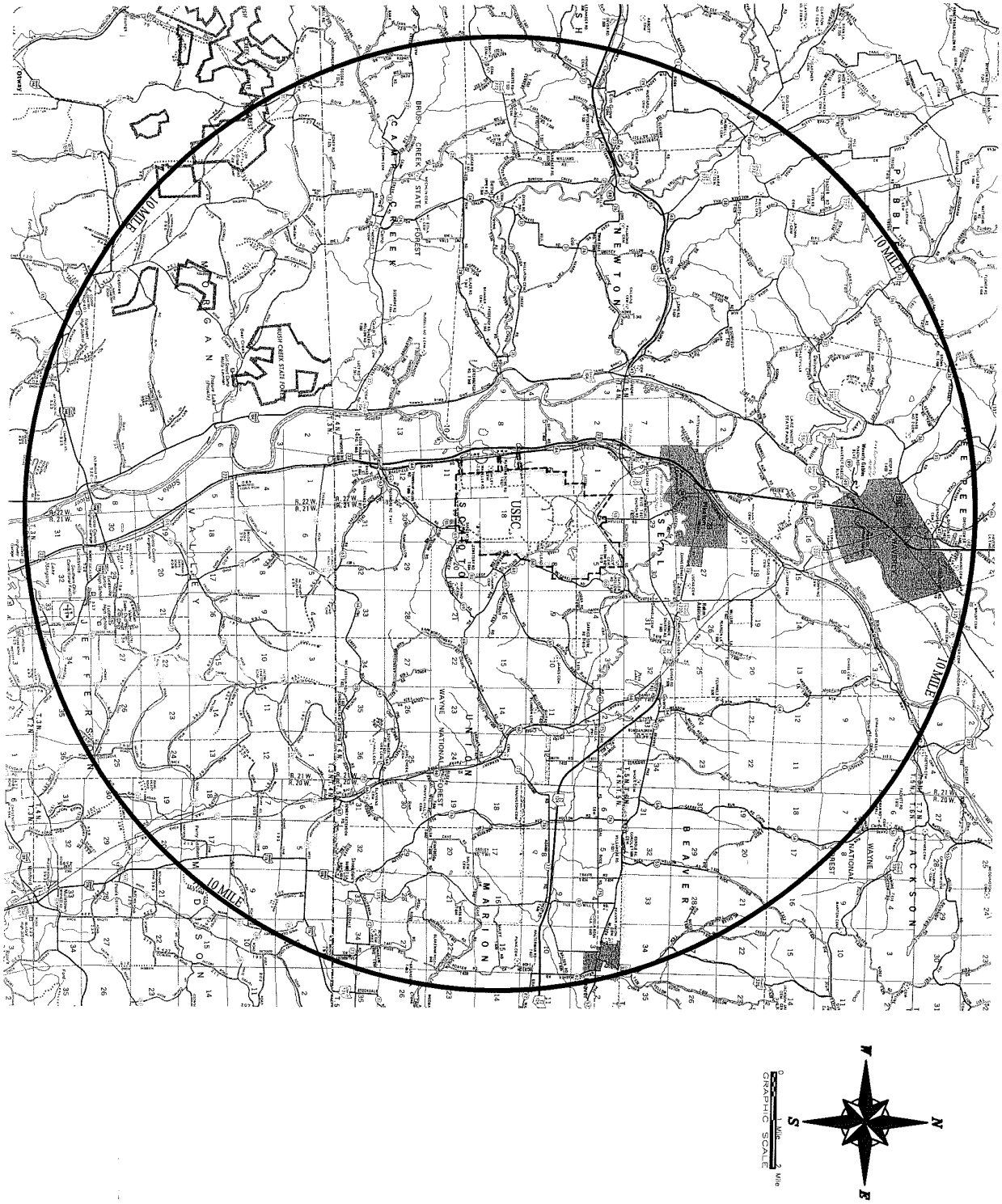


Figure 1-2 General Map Covering a Radius of Approximately 10 Miles from the U.S.

Department of Energy Reservation

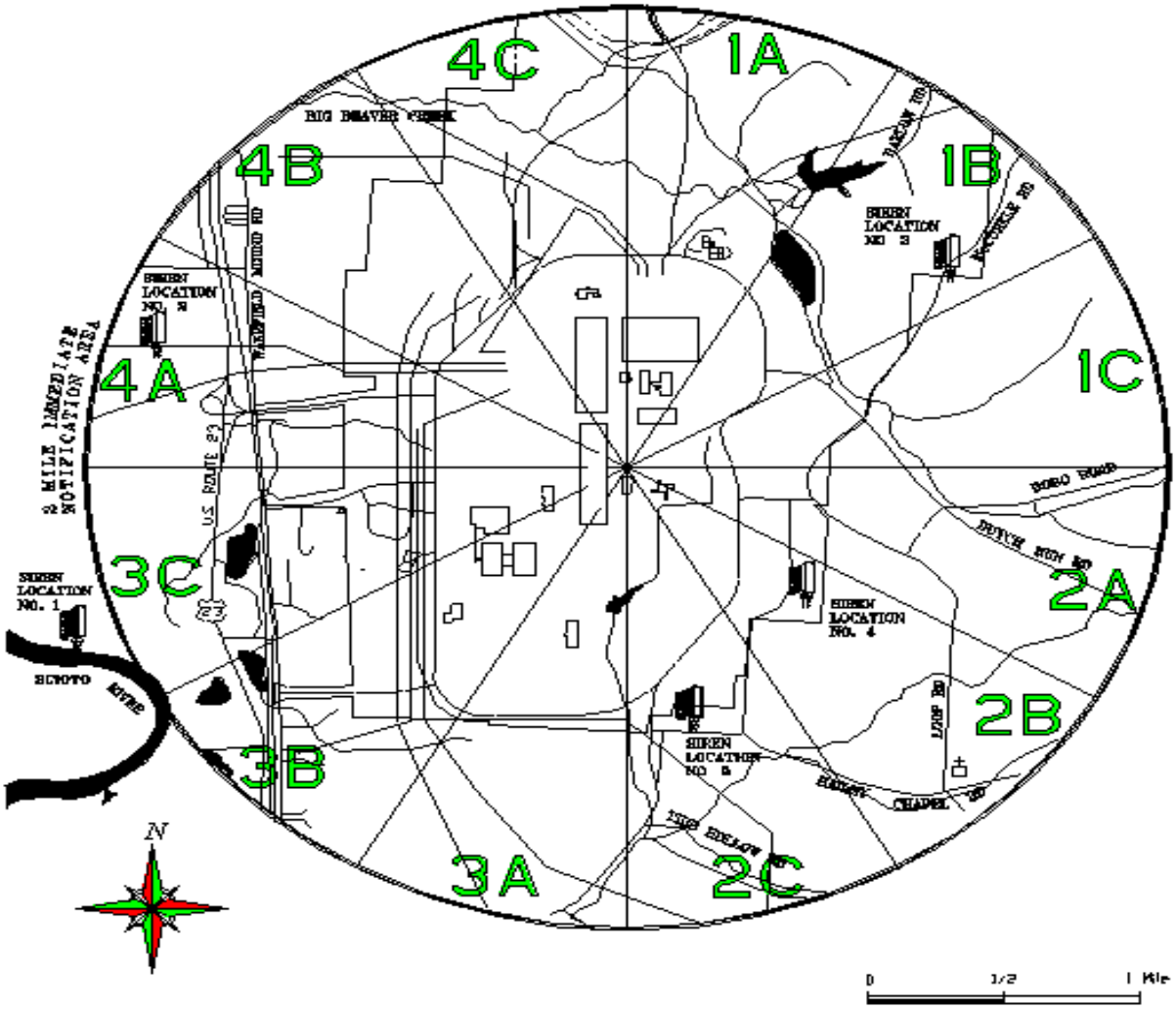


Figure 1-3 Reservation Public Warning System

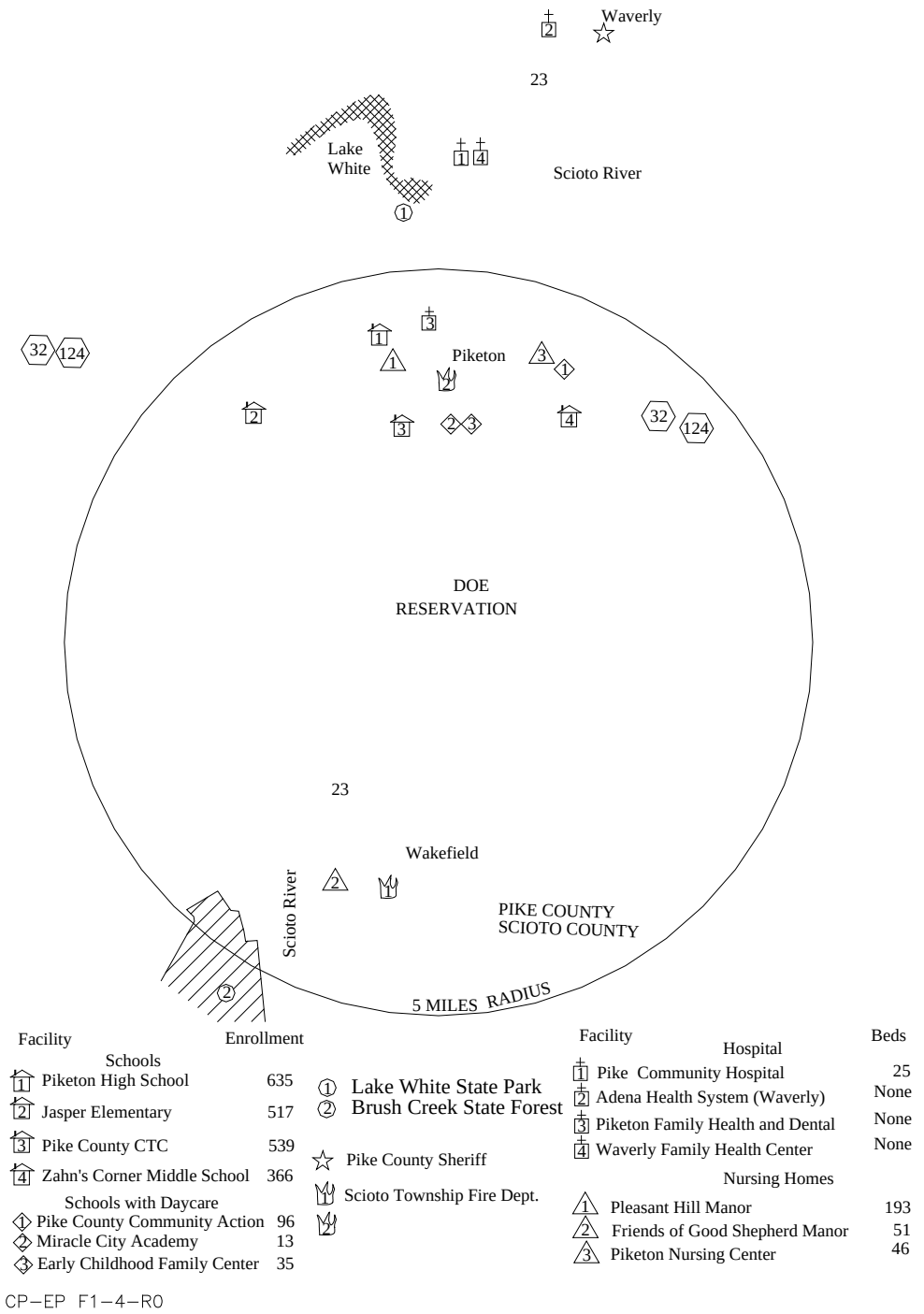


Figure 1-4 Special Population Centers and Off-Site Emergency Response Organizations within Five Miles of the U.S. Department of Energy Reservation

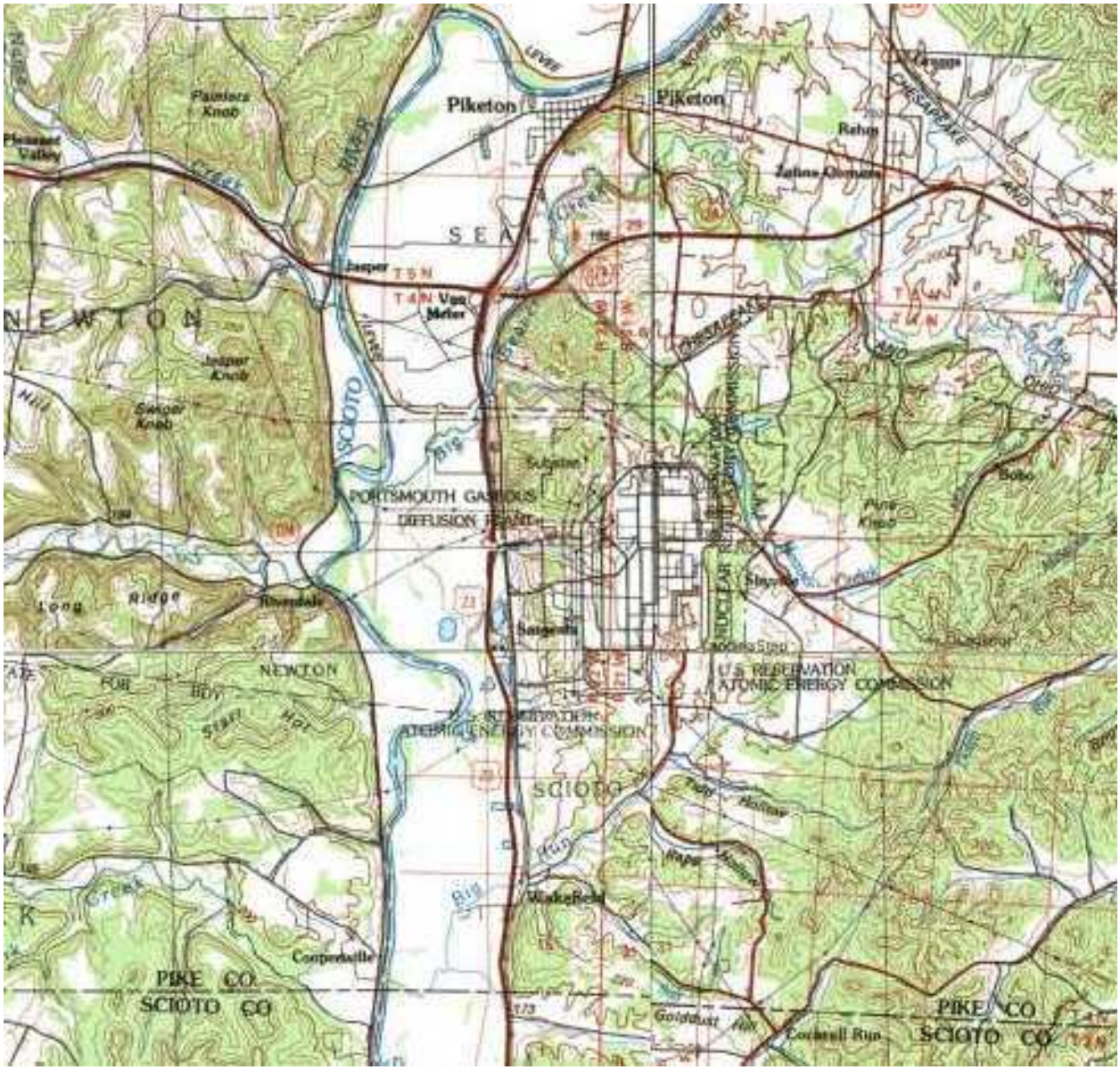


Figure 1-5 Topographical Map of the U.S. Department of Energy Reservation

Figure 1-6 Aerial Map of the U.S. Department of Energy Reservation

2.0 TYPES OF ACCIDENTS

Emergency planning at the DOE reservation consists of analysis of the potential hazards associated with ACP operations, as well as hazards associated with GDP activities, and ongoing DOE activities. The analyses also include consideration of the risks associated with the potential release of other hazardous radioactive and non-radioactive materials stored or used on-site. Other hazardous materials are identified in the Material Safety Data Sheets (MSDS); chemical inventory; information from the Safeguards and Security Plan; Spill Contingency, Control, and Countermeasures Plan; and Hazardous Waste Contingency Plans.

Both radiological and non-radiological accidents or other emergencies that could occur on the reservation, include the following:

- Hazardous materials (HAZMAT) releases involving toxic or radioactive materials;
- Equipment failures and industrial accidents;
- Natural phenomena (i.e., tornadoes and earthquakes) and fires; and
- Security-related events (i.e., bomb threats and civil disturbances).

American Centrifuge Plant

Hazards and consequence analyses reflected in the Integrated Safety Analysis (ISA) Summary for the American Centrifuge Plant form the basis for emergency preparedness planning. Emergency preparedness at the ACP is intended to prevent, mitigate, and minimize the consequences of an accident.

Emergency planning for the ACP is based upon an evaluation of the risks associated with various accident scenarios identified in the ISA. Those analyses concluded that the most extreme credible scenario would be an accident involving a large uranium hexafluoride (UF_6) release. The ISA included consideration of the risks associated with the potential release of other hazardous radioactive and non-radioactive materials stored or used at the ACP.

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; public; environment; and on-site and off-site property. Section 5.0 of this plan describes emergency response measures in detail, including on-site and off-site protective actions. Table A-4 (located in Appendix A) contains a summary of the event scenarios that, if unmitigated, could result in potential off-site consequences. The events listed in Table A-4 require crediting of Items Relied On For Safety (IROFS). The IROFS reduce the event likelihood and/or consequences to meet 10 CFR 70.61 Performance Requirements.

American Centrifuge Lead Cascade Activities

Hazards and consequence analyses reflected in the Integrated Safety Analysis (ISA) Summary for the American Centrifuge Lead Cascade Facility (Lead Cascade) form the basis for emergency preparedness planning. Emergency preparedness at the Lead Cascade is intended to prevent, mitigate, and minimize the consequences of an accident.

Emergency planning for the Lead Cascade is based upon an evaluation of the risks associated with various accident scenarios identified in the ISA. Those analyses concluded that the most extreme credible scenario would be a UF_6 release occurring in the X-3001 Process Building. Due to the small quantity of licensed material, the consequences of any accident postulated in the ISA would be small when compared to postulated accidents at the GDP or the ACP. Large quantities of other hazardous materials are not present in the Lead Cascade. Only small quantities of chemicals and materials (e.g., acetone, solvents, oils) are used during assembly and maintenance activities.

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; public; environment; and on-site and off-site property. Section 5.0 of this plan describes emergency response measures in detail, including on-site and off-site protective actions. Table C-3 (located in Appendix C) contains a summary of the event scenarios that, if unmitigated, could result in potential off-site consequences. The events listed in Table C-3 require crediting of IROFS. The IROFS reduce the event likelihood and/or consequences to meet 10 CFR 70.61 Performance Requirements.

Gaseous Diffusion Plant

Hazards and consequence analyses reflected in Section 4.0 of the Portsmouth Gaseous Diffusion Plant Application for United States Nuclear Regulatory Commission Certification, Safety Analysis Report (USEC-02) (hazards analysis) form the basis for emergency preparedness planning at the GDP. The NRC notice promulgating 10 CFR Part 76 indicated that the regulatory analysis for the emergency preparedness requirements for other nuclear fuel cycle facilities regulated by the NRC "concluded that off-site emergency preparedness should be based on chemical toxicity from a large UF_6 release."

Emergency planning for the GDP is based upon an evaluation of the risks associated with various accident scenarios identified in the site-specific hazards analyses and other potential emergency situations. Those analyses concluded that the most extreme credible scenario would be an accident involving a large UF_6 release.

Credible accidents or events that could result in an emergency associated with these hazards have been identified and analyzed, to assess the potential consequences to plant workers; public; environment; and on-site and off-site property. Section 5.0 of this plan describes emergency response measures, including on-site and off-site protective actions. Table B-4 (located in Appendix B) contains a summary of the postulated events that could result in potential off-site consequences from the GDP.

DOE Activities

The DOE has ongoing operations on the reservation. In addition to administering the lease agreement with the United States Enrichment Corporation, DOE conducts various operations on the reservation including environmental restoration; decontamination and decommissioning; remedial activities; waste management; treatment, storage, and shipment of low-level radioactive waste and mixed waste; and management of non-leased facilities. Accidents involving DOE activities are evaluated into the DOE safety analyses and emergency hazards assessments. This information is incorporated into plant emergency procedures.

The DOE has constructed and plans to operate a uranium processing facility on the DOE reservation north of the X-7725 facility to process depleted uranium hexafluoride (DUF_6). This locates the DUF_6 Conversion Facility within the Perimeter Road in the west-central area of the DOE reservation. The associated Depleted Uranium Hexafluoride Conversion Facility Documented Safety Analysis issued April 2009 and the Final Environmental Impact Statement (EIS) issued in June 2004 have been reviewed to determine if any of the proposed operations could have an adverse impact on workers or members of the public.

Final Environmental Impact Statement

The Final EIS is based on the conceptual conversion facility design proposed by the selected contractor. The effects of a number of operations that would be performed as part of the conversion process were presented in the Final EIS supporting documentation. This includes transportation of cylinders, transferring material from substandard cylinders, treatment of used cylinders, and conversion to uranium dioxide (UO_2), uranium trioxide (UO_3), or triuranium octaoxide (U_3O_8), and other conversion products.

The primary hazards identified would involve the presence of large quantities of one or more of the following hazardous materials: aqueous hydrogen fluoride (HF), calcium fluoride (CaF_2), uranium hexafluoride (UF_6), UO_2, UO_3, U_3O_8, and uranium (U). The accident scenarios considered in the Engineering Analysis Report for the Long-Term Management of Depleted Uranium Hexafluoride were based on the various processes that might be utilized. Natural phenomena (i.e., earthquakes, tornados, and floods) were considered along with leaks, overflows, and ruptures involving various chemicals (HF, NH_3, and U_3O_8), explosions, loss of power, and loss of cooling water.

Documented Safety Analysis

The DUF_6 Conversion Facility utilizes a conversion process that involves a two step chemical reaction. In the first step of the process, UF_6 is combined with steam creating uranyl fluoride (UO_2F_2) and hydrogen fluoride (HF) and the second step of the process exposes UO_2F_2 to steam and hydrogen producing uranium oxides (UO_2, UO_3, and U_3O_8) and HF. The facility design processing capacity is 45 MT DUF_6 per day.

The DUF_6 Conversion Facility Documented Safety Analysis (DSA) focuses on the actual operations to be carried out and presents the hazard evaluation of those operations. Note that the conversion process being used will not require the use of NH_3 so the DSA did not consider any accidents involving that chemical. The DSA addresses bounding releases of UF_6, UF_6 reaction products, uranium oxides and HF vapor; loss of confinement events resulting in process off gassing; hydrogen fire or explosion events; autoclave overpressure events; vehicle impact events; and natural phenomena initiated events. Release of HF was concluded to result in the worst consequences.

Considering that the location of the DUF_6 Conversion Facility is within approximately 600 ft of the closest ACP facility (X-1107D), some of the DUF_6 Conversion Facility accidents could affect the health and safety of ACP workers if they happen to be outside. There are DUF_6 Conversion Facility accidents determined to have high consequences, but sufficient controls are credited to minimize their probability of occurrence. None of the DUF_6 Conversion Facility accident scenarios create new accident scenarios or initiators for the ACP. The field Emergency Response Organization is prepared to address the hazards associated with the DUF_6 Conversion Facility and how to respond to mitigate their effects.

2.1 Description of Postulated Accidents

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 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, based upon the hazards analyses. Further detail for each scenario is provided in the ISA Summary for the American Centrifuge Plant and the Portsmouth Gaseous Diffusion Plant Application for United States Nuclear Regulatory Commission Certification, Safety Analysis Report (USEC-02).

2.1.1 Fire

The primary concern associated with fire events is the release of UF_6, which can result from overheating the UF_6 confinement device. If the heat generated in the fire breaches the confinement system for the UF_6, then the released UF_6 is converted into HF gas and particulate uranyl fluoride (UO_2F_2) via reaction with water vapor in the air.

2.1.2 Explosion

A major concern in these events is the potential for an energetic release of UF_6, HF, and UO_2F_2 or other chemicals as identified in Appendix B. Additionally, these events have the potential to result in significant physical injuries as well.

2.1.3 Loss of Confinement

The concern with loss of confinement events, as with other release mechanism types, is the release of UF_6, and the generation of HF gas and particulate UO_2F_2 as the UF_6 mixes with moist air. Most loss of confinement events involve UF_6 releases in solid or gaseous state, which limits potentially significant chemical and radiological consequences to receptors except for personnel in the Restricted Area.

2.1.4 Direct Radiological/Chemical Exposure Events

Because of the nature of the process, there is a potential for direct radiological or chemical exposure. Plant procedures are used to provide for worker safety.

2.1.5 Criticality

Occurrence of a criticality accident is theoretically possible in a number of areas on the reservation, but the Nuclear Criticality Safety (NCS) Program ensure a significant margin of safety. Equipment and operations are evaluated to the double contingency principle.

The potential consequences of an inadvertent criticality event are limited to a localized region. Because criticality produces local radiation effects, the potential consequences are limited to the workers within the Controlled Area with no off-site effects to the public health and safety. No significant fission product release and transport are anticipated from an inadvertent criticality event. In addition, there are no chemical consequences associated with a nuclear criticality accident.

2.1.6 External Events

External events include external explosions, physical impacts (e.g., vehicle crashes), and miscellaneous other man-made events (e.g., a Security Event) that could cause a loss of confinement event. In addition, external fire events include a brush or forest fire, a fire that starts in a nearby building, and a fire that starts in a nearby vehicle. These events are considered in the hazard evaluation.

2.1.7 Natural Phenomenon Events

Natural phenomenon events include earthquakes, with and without a subsequent fire, and tornadoes or high straight-line winds that impact the buildings or UF_6 cylinders and cause an uncontrolled release of hazardous material. Other events include those involving hazardous material release associated with a direct lightning strike; flooding (both major and shallow) as a

result of heavy rains and a rising river or plugged storm drainage system; and roof collapse resulting from heavy snow and ice loading.

2.2 Detection of Accidents

The ACP and GDP enrichment process buildings have Area Control Rooms (ACR), which permits operators to monitor process equipment, make changes in operations, and take corrective action to mitigate abnormal operating conditions. The Plant Shift Superintendent (PSS) is notified of conditions or incidents on the DOE reservation that would require activation of the Emergency Response Organization. During emergencies, the PSS functions as the Incident Commander (IC) and determines immediate actions.

Alarm systems are designed to alert personnel to initiate actions so that the consequences of a major malfunction can be mitigated prior to adverse effect on the plant population and the general public. These include UF_6 detection equipment and associated alarms, a Criticality Accident Alarm System (CAAS), automatic sprinkler systems, various chemical detectors, and other alarm systems.

Descriptions of the various alarms and detection methods for the hazards that have been analyzed are described in the following sections.

2.2.1 Fire

An extensive fire protection system is installed throughout the plants, primarily consisting of automatic sprinkler systems and fire alarms. Upon actuation of a sprinkler system, affected ACR operators receive a visual and/or audible fire alarm for the specific building/facility area. The actuation of a fire alarm reported to the PSS requires the activation and response of on-site field Emergency Response Organization (ERO) personnel.

2.2.2 Uranium Hexafluoride

The UF_6 Release Detection System is used to monitor selected equipment and areas that possess a potential for a UF_6 release in the process buildings. The UF_6 Release Detection System provides timely notification to workers in the Restricted Area of a UF_6 release. This serves as a design control to reduce the potential quantity of UF_6 and the time of exposure during loss of confinement events.

Upon system actuation, audible and visual alarms alert personnel to take appropriate response measures delineated by plant policy. Another means of detecting UF_6 releases is by operator observation through sight or smell.

Emergency response measures for a UF_6 release incident classified as an emergency are provided in Section 5.0 of this plan.

2.2.3 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 particular chemicals are present. As in a UF_6 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 protection personnel and the PSS. Both the fire protection personnel and PSS (acting in the role of the IC) respond to the incident area upon receiving an indication of a chemical release.

2.2.4 Nuclear Criticality

The primary radiation alarm system is the CAAS, designed to detect a nuclear criticality and provide audible and visual alarms that will alert personnel to evacuate the immediate area.

Operations involving fissile material are evaluated for NCS considerations prior to initiation. The need for CAAS coverage is considered during the evaluation process. CAAS coverage is provided, unless it is determined that coverage is not required per the requirements of 10 CFR 70.24 and the finding is documented in an NCS Evaluation. CAAS coverage is provided for ACP fissile material operations, except the UF_6 cylinder storage yards as specified in Section 1.2.5 of this license application.

The CAAS is designed to detect neutron radiation levels that would result from the minimum criticality accident of concern as defined by American National Standards Institute (ANSI)/American Nuclear Society (ANS) 8.3 (1997 Edition for the ACP and 1986 Edition for the GDP) and to provide an audible evacuation alarm.

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. 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 alarm location, the IC can direct the actions necessary to respond to the accident. Emergency response to CAAS alarms and/or nuclear criticality events is consistent with guidance contained in ANSI/ANS 8.23-1997.

2.2.5 Natural Phenomena

2.2.5.1 Earthquake

Digital strong motion accelerographs are installed for detecting earthquake-type movements. The strong motion accelerograph units are electronically connected in such a way that if one is triggered, the accelerograph units will start recording. Activation of the seismic detection system alarms an audible and visual annunciation to alert plant personnel that an earthquake has occurred.

2.2.5.2 Tornadoes/Strong Winds/Severe Weather

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 are possible, depending upon the location of touchdown and width/path of the tornado. 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 National Weather Service 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 miles per hour 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.

2.2.6 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.

3.0 CLASSIFICATION AND NOTIFICATION OF ACCIDENTS

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 as appropriate in the event of a change in the severity of the condition.

Emergency Action Levels (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 of the severity of an accident or event. The EALs provide the earliest possible indication of actual or potential emergency conditions. EALs associated with off-site radiological or non-radioactive 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 and the toxic endpoints established by the EPA in 40 CFR Part 68, Appendix A. Additionally, examples from NRC Regulatory Guide 3.67, *Standard Format and Content for Emergency Plans for Fuel Cycle and Materials Facilities*, Appendix A, have been used to develop EALs. The 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 on-site radiological releases are based on the EPA PAGs. EALs associated with on-site non-radioactive releases are based on the initial isolation and protective action distances as defined in the current edition of the U.S. Department of Transportation (DOT) *North American Emergency Response Guidebook*, and on the ERPGs/toxic endpoints. The ERO determines when an on-site radiological or non-radioactive 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 operations and instrumentation generally precludes symptom-based EALs. EALs are provided in plant procedures.

3.1 Classification System

The classification system is based on the requirements of 10 CFR 70.22 and 10 CFR 76.91.

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, but the release is not expected to require a response by an off-site response organization to protect persons off-site. An Alert reflects mobilization of the licensee's ERO, either in a standby mode that will activate some portions of the licensee's organization or full mobilization, but does not indicate an expectation of off-site consequences. However, an Alert may require off-site response organizations to respond to an on-site condition.

3.1.2 Site Area Emergency

A 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 and that could require a response by an off-site organization to protect persons off-site. A SAE reflects full mobilization of the licensee's ERO and may result in requests for off-site organizations to respond to the DOE reservation.

3.2 Notification and Coordination

This section describes the methods used for notification of emergency response personnel, appropriate Federal, State, and local agencies and response organizations. The IC is responsible for initial emergency notifications. The IC is trained in performing notifications in accordance with specific procedures. If initial notifications include activation of the Emergency Operations Center (EOC) cadre, the EOC becomes operational within approximately ninety minutes. Section 3.3 of this plan describes requirements, content, and format of the information to be provided to off-site authorities during a declared emergency.

3.2.1 Alert

The purposes of declaring an Alert are to ensure that appropriate emergency response personnel are alerted and stationed at their emergency duty stations to mitigate the consequences of the accident, the emergency is properly assessed, off-site officials are notified, and steps can be taken to escalate the response, if necessary.

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

The IC 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 specifics of this notification process are described in Section 3.3 of this plan and in the appropriate plant procedures. Additional information on emergency communications equipment is provided in Section 6.2 of this plan.

The IC or designee notifies the NRC Operations Center immediately after notification of appropriate state and local authorities, but no later than one hour after the declaration of an Alert. When the EOC has been activated and is operational, the Crisis Manager assumes responsibility from the IC for NRC notification.

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

Although very unlikely during Alerts, the IC determines the need for and subsequently requests off-site assistance. The various off-site emergency support organizations and agencies that may be requested to provide assistance to the reservation are listed in Section 4.3 of this plan.

The IC, or the Crisis Manager in the EOC once the EOC is operational, monitors emergency conditions during an Alert for potential changes in the emergency classification. This includes the decision to escalate the emergency class to an SAE if conditions degrade and the decision to terminate the emergency and begin recovery operations when event termination criteria have been reached.

Table 3.2-1 provides the bases for the EALs and protective actions for Alerts.

3.2.2 Site Area Emergency

The purpose of declaring an SAE is to ensure off-site officials are informed of potential or actual off-site consequences, off-site officials are provided with recommended actions to protect persons off-site as necessary, and the 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 IC is responsible for the initial classification of the event. Once the EOC is operational, the Crisis Manager 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. Emergency response personnel receive notification of activation through the reservation telephone system, PA system, radios, and pagers.

The IC 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 include any appropriate recommended protective actions for the general public near the reservation. 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. Once the EOC is operational, the Crisis Manager and EOC staff are responsible for appropriate

off-site notifications, including the NRC. The specifics of this notification process are described in Section 3.3 of this plan. Additional information on emergency communications equipment is provided in Section 6.2 of this plan.

The IC, or Crisis Manager once the EOC is operational, directs reservation personnel to take appropriate protective response actions based on the assessment of the emergency. During an SAE, protective actions for reservation personnel may range from evacuating a particular building or area to a full reservation evacuation, based on emergency conditions. Specific protective actions are described in detail in Section 5.4 of this plan, and more thoroughly in designated procedures.

During an SAE, additional emergency support may be necessary to augment the ERO. The IC normally makes the determination of need for and subsequently requests assistance from off-site emergency support organizations. The various off-site emergency support organizations and agencies that may be requested to provide assistance are listed in Section 4.3 of this plan.

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

Table 3.2-2 provides the bases for the EALs and protective actions for SAEs.

3.2.3 Other Emergency Events

For those emergency events that do not meet the criteria of an Alert or SAE, the Licensee maintains the responsibility and capability for assessment of the event, implementing appropriate protective actions, and ensuring that off-site 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 IC conducts initial emergency notifications, by procedure, to off-site authorities as soon as possible, normally within 15 minutes of declaration. Additional emergency information is provided to off-site authorities periodically as new information becomes available. Notifications to off-site authorities are provided when a change in emergency classification occurs and when protective action recommendations off-site are required. An example of the form used for off-site notifications is included in the appropriate procedures for emergency notification.

Trained individuals in accordance with specific procedures, convey information to off-site authorities. The information provided in emergency notifications includes plant status conditions; radiological/hazardous materials release data, recommendations for protective actions to be implemented by off-site response organizations, and other applicable emergency information as necessary. Protective response actions off-site are the responsibility of governmental authorities. Off-site 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 IC 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:

- Pike County Emergency Management Agency Director,
- Pike County Sheriff's Office/Local Emergency Planning Committee (LEPC),
- Ohio Emergency Management Agency, and
- DOE-Oak Ridge Operations.

Upon the issuance of protective action recommendations, the ERO may request verification callbacks from State and local agencies responsible for implementing off-site protective actions to ensure that the recommendations are understood. Callbacks also enable the ERO to receive information regarding off-site protective action implementation.

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

- Scioto County Sheriff's Office/LEPC,
- Scioto County Emergency Management Agency Director,
- Ohio EPA Emergency Response Center,
- U.S. National Response Center, and
- U.S. Occupational Safety and Health Administration (OSHA).

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-Headquarters is notified immediately after the declaration of an emergency, but no later than ninety minutes.

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.

Table 3.2-1 Alert - Emergency Action Level Criteria

Type of Event	Emergency Action Levels – EAL	Consequences
Chemical	Visible plume and/or concentrations $ OSHA PEL downwind from the release point on the DOE reservation	ERPG-2 exposure levels in immediate vicinity of release
Uranium Hexafluoride (UF_6)	Visible plume and/or HF concentration > 3.0 ppm downwind from release point on the DOE reservation	UF_6 exposure with HF concentration of 10 ppm in immediate vicinity and potential uptake of soluble uranium
Radiological	Nuclear criticality occurring anywhere on DOE reservation	Above normal to lethal radiation levels in area of criticality
	Unplanned release of radioactive material exceeding 100 times posting levels	Above normal to lethal concentrations of airborne radioactivity in the vicinity of the release
	Radiation levels > 500 mrem/hour @ 30 cm for 1 hour or more	Above normal radiation levels in the immediate vicinity.
	Unplanned release of radioactive material exceeding 100 times the DACs for 1 hour or more	Above normal to lethal concentrations of airborne radioactivity in the vicinity of the release
Fire	Fire that cannot be controlled within 15 minutes in areas with potential to exceed chemical or radiological EAL.	Potential to have ERPG-2 or UF_6, or radiation exposure levels depending on affected system.
Explosion	Explosion in areas with potential to exceed chemical or radiological EAL.	Potential to have ERPG-2, UF_6, or radiation exposure levels depending on affected system.
Natural Phenomenon	Event (earthquake, tornado, etc.) with potential to exceed chemical or radiological EAL.	Potential to have ERPG-2, UF_6, or radiation exposure levels depending on affected system.
Security	Security event in the CAA ongoing for > 15 minutes in areas with potential to exceed chemical or radiological EAL	Injury to personnel and potential to have ERPG-2, UF_6, or radiation exposure levels.
Other	Other events with potential to exceed chemical or radiological EAL.	Potential to have ERPG-2, UF_6, or radiation exposure levels depending on effected system.

There are no anticipated off-site consequences or off-site protective actions for the listed events. These events result in disruption of operations/activities in the affected area. Anticipated on-site responses and protective actions include:

- Evacuate affected area and consider precautionary evacuation or shelter in place of areas or buildings downwind
- Account for personnel in the evacuated area(s)
- Make appropriate response (hazardous materials or radiological)
- Activate the appropriate EOC cadre
- Notify off-site authorities
- Identify exposed persons for medical evaluation and/or bioassay sampling. Notify RPM if radiological or UF_6 events
- Evaluate the potential impact and or reportability of chemical or radiological contaminated runoff

Table 3.2-2 Site Area Emergency - Emergency Action Level Criteria

Type of Event	Emergency Action Level - EAL	On-Site Consequences	Off-Site Consequences
Chemical	Catastrophic rupture of a chemical storage tank	Visible plume and/or concentrations > ERPG-2 exposure levels downwind from the release point	U.S. EPA TE or ERPG-2 exposure levels beyond DOE Reservation boundary
Uranium Hexafluoride (UF_6)	Catastrophic rupture of UF_6 cylinder (2.5, 10, or 14 ton)	HF concentration >10 ppm in immediate vicinity an potential uptake of soluble uranium	UF_6 exposure with HF concentration of 10 ppm beyond DOE Reservation boundary
Fire	Event that cannot be controlled within 15 minutes and compromises any system, process, equipment and/or hazardous material storage area with potential to cause chemical or radiological EAL.	Chemical concentrations > ERPG-2 or UF_6 exposure levels in release area and downwind from DOE Reservation boundary	ERPG-2 or UF_6 exposure levels beyond the DOE Reservation boundary
Explosion	Event that compromises any system, process, equipment and/or hazardous material storage area with potential to cause chemical or radiological EAL.	Chemical concentrations > ERPG-2 or UF_6 exposure levels in release area and downwind from DOE Reservation boundary	ERPG-2, USEPA TE, or UF_6 exposure levels beyond the DOE Reservation boundary
Security	Imminent or actual loss of physical control of facilities containing systems, processes, equipment, and/or hazardous material storage areas with potential to cause chemical or radiological EAL.	Chemical concentrations > ERPG-2 or UF_6 exposure levels in release area and downwind from DOE Reservation boundary	ERPG-2 or UF_6 exposure levels beyond the DOE Reservation boundary
Other	An adverse event occurring on-site potentially or actually compromising any system, process, equipment and/or hazardous material storage area with potential to cause chemical or radiological EAL	Chemical concentrations > ERPG-2 or UF_6 exposure levels in release area and downwind from DOE Reservation boundary	ERPG-2 or UF_6 exposure levels beyond the DOE Reservation boundary

The above listed events result in disruption of operations/activities in the affected area. Anticipated responses and protective actions include but are not limited to:

- Evacuate affected area and buildings downwind, consider shelter in place option for off-site
- Account for personnel in the evacuated area(s)
- Activate the Public Warning System, Emergency Alert System, EOC, and Joint Public Information Center
- Notify off-site authorities
- Make appropriate response (hazardous material or radiological)
- Identify exposed persons for medical evaluation and/or bioassay sampling. Notify RPM if radiological or UF_6 events
- Evaluate the potential impact and or reportability of chemical or radioactive contaminated runoff

4.0 RESPONSIBILITIES

The Licensee is responsible for overall direction and control of emergency response activities on the DOE reservation. The Licensee is also required to provide site-wide emergency response services to the DOE.

4.1 Licensee

As described in Chapter 2.0 of the license application, the Vice President, Enrichment Operations is ultimately responsible for the safe operation of Licensee activities on the DOE reservation. The General Manager, American Centrifuge Plant Operations is responsible for the day-to-day management of Licensee activities on the reservation, including the ERO. The ACP Manager, Enrichment Operations and the GDP Plant Manager are responsible for day-to-day operation of the respective uranium enrichment plants. Administrative and technical support personnel are normally on-site daily, Monday through Friday, holidays excluded. Operational personnel are on duty 24 hours per day. The Plant Services Manager is responsible for maintaining the Emergency Plan.

Per plant procedures, the IC is responsible for making proper notifications of abnormal conditions, determining the severity of the event declaring an emergency, and initiating appropriate response. (The IC duties are assumed by the on-duty PSS.) The IC provides command and control over the specific incident area response based upon input from operations personnel. The IC acts as the on-scene IC and subsequently as the Crisis Manager until relieved by a member of management designated in the Emergency Line of Executive Succession. The General Manager, American Centrifuge Plant Operations, or designee, becomes the Crisis Manager and is authorized to declare an emergency, initiate the appropriate response, and assign a Recovery Manager when emergency conditions no longer exist. (The duties and responsibilities of the Recovery Manager are addressed in Section 9.0 of this plan.)

4.2 On-site 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 training, drills, and exercises. 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;
- Notification;
- Protective action recommendations;

- Management and decision making;
- Control of on-site emergency activities;
- Consequence assessment;
- Emergency public information;
- Activation and coordination of on-site response resources, security, communications, and administrative support; and
- Coordination and liaison with off-site support and response organizations.

The ERO is divided into the following functional groups: (1) Field ERO, (2) EOC cadre, and (3) Joint Public Information Center (JPIC).

Members of these groups are assigned to 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 IC. Upon classification of the emergency as an Alert or SAE, the IC becomes the Crisis Manager and maintains overall control of the reservation during the emergency until relieved. Once the EOC is operational, the General Manager, American Centrifuge Plant Operations, or designee, relieves the IC as Crisis Manager and assumes overall control of the emergency. Additional personnel are called in as needed by the IC, depending on the extent of the emergency.

The IC conducts transition and turnover of command and control authority and responsibility of the Crisis Manager function. A primary and alternates are identified for the Crisis Manager.

The following is the order of succession for the Crisis Manager position:

- Incident Commander
- General Manager, American Centrifuge Plant Operations
- Personnel designated by the General Manager, American Centrifuge Plant Operations and trained and qualified as Crisis Manager

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.

- **Emergency Classification** - Initially this is an IC responsibility as Crisis Manager. Once the EOC is operational, this responsibility is transferred from the IC to the Crisis Manager in the EOC.

- **Protective Action Recommendations** - Initially this is an IC responsibility as Crisis Manager. Once the EOC is operational, approval of off-site protective action recommendations is transferred to the Crisis Manager in the EOC.

- **EOC Activation** - The IC 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.

- **Notification and Reporting** - Initially this is an IC responsibility as Crisis Manager. Once the EOC is operational, this responsibility is transferred from the IC to the Crisis Manager in the EOC.

4.2.2 On-site Staff Emergency Assignments

4.2.2.1 Field Emergency Response Organization

The following positions provide capability for initial site-level response prior to EOC activation:

- Incident Commander,

- Guard Force personnel,

- Fire Protection personnel,

- Health Physics-Industrial Hygiene,

- Local emergency director, and

- Response Safety Officer.

Fire protection personnel are trained and have experience in fire fighting, HAZMAT response, health physics, and emergency medical treatment. Figure 4-1 illustrates a typical initial on-scene ERO. In addition, shift personnel can provide support for various technical areas (i.e., operations and maintenance activities).

4.2.2.2 Emergency Operations Center Cadre

The EOC cadre provides additional 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; communications; materials; supplies; environmental protection; and other needed services.

The EOC is the primary facility for coordinating on-site response and mitigation and off-site interface activities. Senior managers confer; provide personnel and materials; coordinate activities; and communicate with on-site and off-site personnel using the EOC resources. 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. Current reference material (i.e., as-built drawings, plant procedures, etc.) are available in the EOC for management's use in decision making during an emergency.

The Crisis Manager updates the EOC cadre by the use of the EOC Briefing Checklist, which is part of the plant procedures.

Figure 4-2 illustrates the EOC organization, depicting interface of other organizations (DOE, GDP, and UDS) with the Licensee during a declared emergency. Depending on the location and actual emergency, the Advisors reporting to the Response Manager shown in Figure 4-2 may be augmented by DOE, GDP, or UDS personnel. The following positions (with brief description of duties) provide support for site-level response upon EOC activation:

- **Response Manager** – advises the Crisis Manager on the development of strategic objectives, classification and protective action recommendations, and assists the Recovery Manager in the development of long-term recovery strategies.

- **Security Advisor** – coordinates security related activities during EOC activation.

- **Public Information Advisor** – coordinates the release of emergency public information during the emergency response phase and recovery operations.

- **Notification Advisor** – performs emergency notifications (initial and follow-up) to offsite agencies during classified emergencies.

- **Engineering Advisor** – coordinates the input from the Technical Support Room (TSR) on evaluations and recommendations addressing emergency response activities with the EOC cadre.

- **DOE Site Representative** – establishes and maintains communications with senior Department of Energy officials. The DOE Site Representative interfaces with the Crisis Manager on mitigation, response strategies, and long-term recovery planning.

- **DOE Contractors and Advisors** – provides oversight of DOE operations and assists in the evaluation of emergency response to, and recovery from emergency events involving activities under their oversight.

- **GDP Advisor** – provides oversight of GDP operations. The GDP Advisor also assists in the evaluation of emergency response to, and recovery from emergency events involving activities under their oversight.

- **UDS Advisor** – provides oversight of UDS construction and operations. The UDS Advisor also assists in the evaluation of emergency response to, and recovery from emergency events involving activities under their oversight.

- **Regulatory Liaison** – reviews and analyzes event-related information to ensure compliance with nuclear regulatory commitments.

- **Advisors** – provides coordination and support of activities during the response and recovery associated with Licensee operations.

- **Technical Support Room** – TSR Coordinator provides oversight of the TSR activities. The TSR Coordinator communicates evaluations and recommendations from subject matter experts (i.e., Health Physics, Industrial Hygiene, Safety, Nuclear Criticality, Environmental, etc.) to the Engineering Advisor.

4.2.2.3 Joint Public Information Center

The JPIC is activated upon 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 an emergency.

4.3 Local Off-site Assistance

The severity of some emergencies may warrant the use of off-site individuals, organizations, and agencies. As a result, letters of agreement (as identified in Appendix D) have been entered into with off-site groups to provide assistance in the unlikely event of an emergency exceeding the internally available resources. These support services encompass areas such as medical assistance, fire control, evacuation, and ambulance services. When the IC or Crisis Manager determines that off-site assistance is needed, the appropriate organization is notified and assistance is requested. Guard Force personnel provide reservation access control and escort support for the responding off-site organizations. Necessary emergency information is provided to the responding organizations, including potential hazards associated with the incident.

The off-site emergency support organizations are described in the following sections.

4.3.1 Medical Support

In certain instances, medical emergencies may require the transport of an injured person to an off-site medical facility. The on-site ambulance normally provides transportation of injured persons to the medical facility.

In the event the on-site ambulance is not available, the off-site emergency medical providers may provide for the transportation of injured persons to an off-site medical facility. This may include contaminated injured on-site workers. Ambulances are equipped with radios to maintain communications with local hospitals. The primary medical facilities for injured personnel with or without contamination are Pike Community Hospital, Southern Ohio Medical Center, and Adena Regional Medical Center. Figure 1-4, of this plan, depicts those hospitals within the five-mile radius of the reservation. These hospitals have agreed to accept injured personnel or victims of radiation/hazardous materials-related accidents for emergency medical and surgical treatment and observation.

4.3.2 Fire Support

When the IC or Crisis Manager determines that off-site fire support is needed, the applicable off-site fire departments are notified by telephone call or radio transmission to the Pike County Sheriff's Office.

The off-site 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. Figure 1-4, of this plan, depicts those fire departments within the five-mile radius of the reservation. These fire-fighting groups have agreed to furnish the DOE reservation with fire-fighting personnel and necessary resources upon request. Fire-fighting personnel are under the direction and control of the IC, who retains responsibility for the overall on-scene emergency response effort. In instances when off-site fire-fighting assistance is needed to fight a fire involving radioactive materials or HAZMAT, knowledgeable members of the ERO provide radiological/toxicological information and assistance. USEC also honors a mutual aid agreement with the Pike County Fire Fighters Association.

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 (location depicted in Figure 1-4 of this plan) provides local law enforcement assistance through a written agreement. The emergency support may include the following:

- Furnishing personnel and equipment as necessary to supplement the guard force;
- Controlling access to areas affected by the emergency; and
- Directing area evacuation.

4.4 Coordination with Participating Government Agencies

Coordination between the State, local, 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.

The Licensee's Emergency Management coordinates required emergency planning activities directly with these organizations and agencies. Emergency Management personnel offer to meet at least annually with off-site response organizations to review emergency plans and procedures and any changes relevant to the DOE reservation's Emergency Management program. 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 Hazardous Materials Emergency Support Functions #10, with its DOE Attachment for events at DOE facilities, provides guidance on dealing with incidents and outlines the State response to incidents at the reservation. The Ohio Emergency Management Agency (OEMA) is responsible for coordinating overall State response and assisting in the local implementation of recommended protective actions. The OEMA also assists the Governor and other state agencies 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 off-site law enforcement agencies as requested. The Ohio Department of Health coordinates radiological hazard assessment and is the principal contact for technical information and recommendations of protective actions regarding radioactive materials. The Ohio EPA coordinates chemical hazard assessment and is the principal contact for technical information and recommendations of protective actions regarding toxic materials. The Ohio EPA also oversees removal and disposal of hazardous waste generated as a result of an emergency.

The State of Ohio has a permanent EOC that has been designed and equipped to be the direction and control center for major emergencies in the State. The State of Ohio EOC is manned 24 hours a day by operations duty officers and has the capability to provide prompt 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 located north of the reservation.

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. Agency officials from their normal workstations may direct minor emergencies.

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.

Local law enforcement and fire 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 U. S. Nuclear Regulatory Commission

The NRC has established licensing requirements applicable to Licensee operations to protect the public health and safety from radiological hazards; to provide for the common defense and security; and to ensure adequate safeguards. The NRC also provides regulatory oversight over uranium enrichment activities to ensure compliance with these requirements, including the emergency planning requirements set forth in 10 CFR 70.22 and 76.91. The NRC Operations Center is notified of any emergency promptly after notification of the appropriate off-site organizations, within one hour after the declaration of an Alert or SAE. The NRC evaluates the protective actions taking place and coordinates with the Licensee and DOE to ensure that reasonable and appropriate actions are being taken to protect the public health and safety.

4.4.3.2 U. S. Department of Energy

The DOE provides nuclear safety oversight for those activities on-site involving DOE environmental management and operations. Additionally, DOE provides control and oversight of activities involving uranium enriched to greater than 10 percent ^{235}U. Events involving DOE operations or property are reported to DOE's Oak Ridge Operations (ORO) Office. 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 Special Weapons and Tactics team may also be provided if requested. The FBI will coordinate responses from Federal law enforcement agencies.

4.4.3.4 Other Federal Agencies

The following Federal Agencies may be involved in emergencies on the reservation:

- **Federal Aviation Administration (FAA) -** FAA restricts airspace over the DOE reservation at the request of the Crisis Manager or the IC, as appropriate.

- **Federal Emergency Management Agency (FEMA)** - FEMA is the primary Federal government agency for the administration of planning, preparedness, operational coordination, and recovery programs.

- **U.S. Environmental Protection Agency** - EPA is the major Federal government agency for the regulation and control of pollution and waste management programs. U.S. EPA provides a Federal on-scene coordinator for significant hazardous materials incidents.

- **U.S. Occupational Safety and Health Administration** - OSHA is the primary Federal government agency for the regulation of non-radiological worker safety.

Figure 4-1 Field Emergency Response Organization

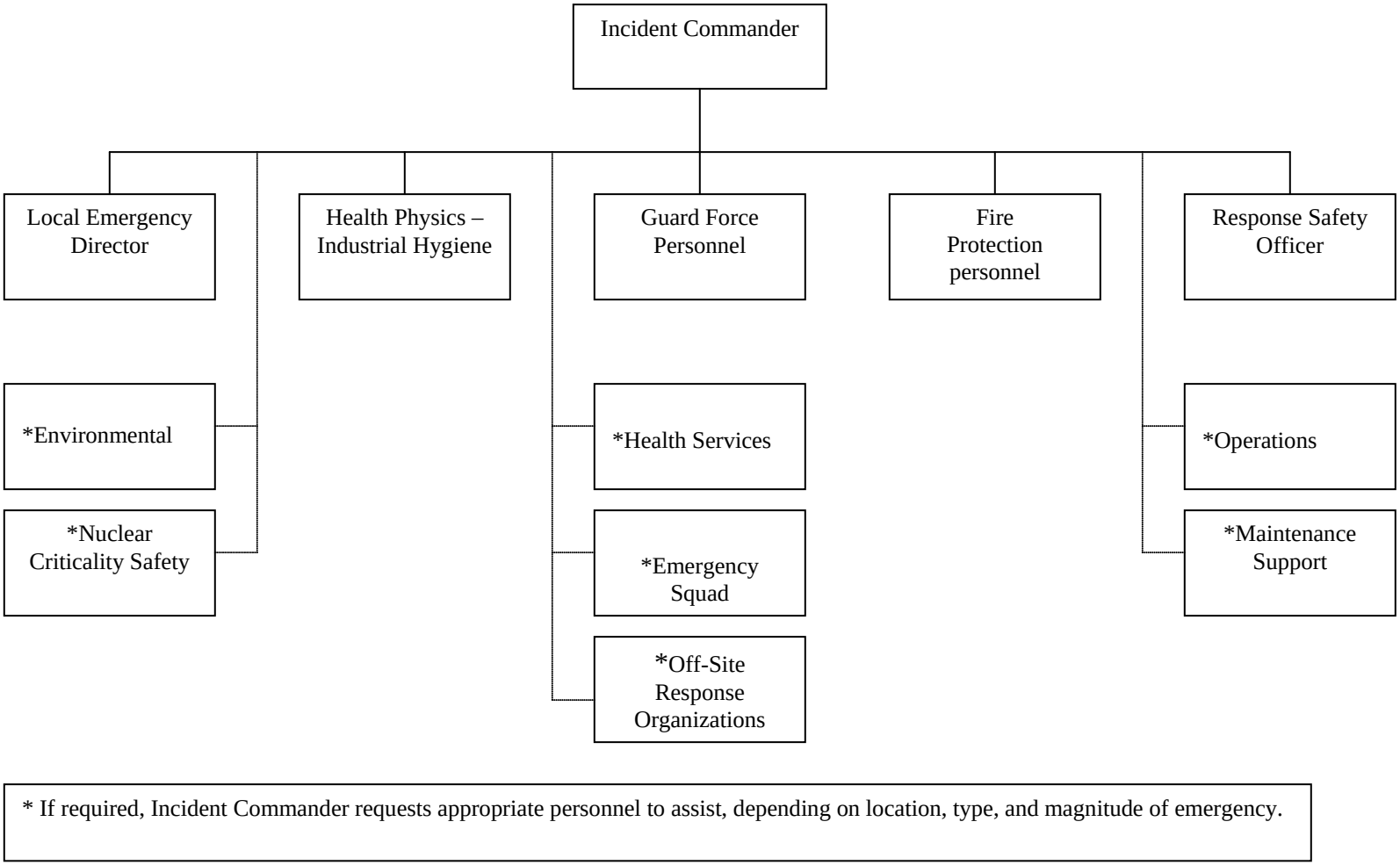
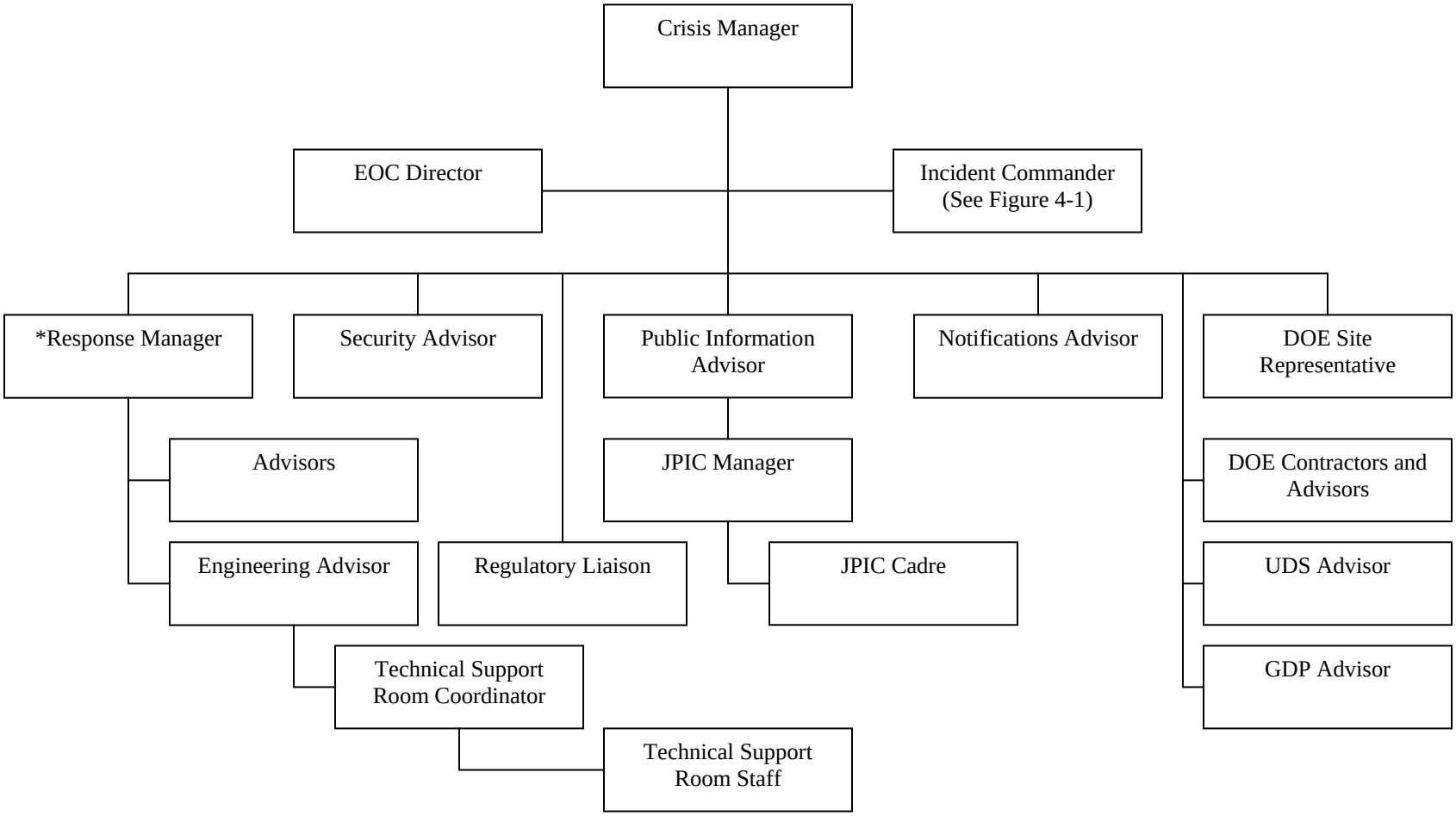


Figure 4-2 Emergency Operations Center Organization



*If the emergency conditions warrant, the CM may assign a DOE Contractor Advisor, UDS Advisor, or GDP Advisor as the Response Manager.

5.0 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 IC performs the following:

- Takes actions to ensure the safety of DOE reservation personnel and the general public;
- Takes actions to ensure safe operation/activities;
- Classifies the emergency and makes the required notifications;
- Takes actions to ensure that safeguards and security measures are maintained;
- Takes actions to ensure that material control and accountability measures are maintained;
- Performs assessment actions; and
- Performs other on scene emergency actions as appropriate.

5.1 Activation of Emergency Response Organization

Upon recognition of an emergency, the IC responds to the incident scene. The IC determines appropriate immediate protective actions at the incident scene and classifies the event, if applicable. If the emergency is classified as either an Alert or SAE, the IC as Crisis Manager activates the EOC. Minimum staffing requirements for activation and operation of the EOC are identified in procedures, and must be met prior to assumption of command and control of the emergency. A manager designated in the emergency line of executive succession when the EOC is operational assumes Crisis Manager responsibilities. Methods for ERO notification/activation are the same regardless of the time of the emergency and include reservation radios, pagers, and telephones. When notified, EOC cadre members are required to respond immediately. ERO activation is accomplished through the appropriate procedures.

The Crisis Manager delegates public information duties to the public information advisor, who, in concert with USEC Headquarters, 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 procedures allow for the establishment of additional incident scenes, designation of multiple incident commanders, and division of response resources, as necessary.

5.2 Assessment Actions

This section describes the processes used for assessing the actual or potential on-site and off-site consequences of an emergency. Initial and continuing assessment actions are the responsibility of the IC. Post-accident assessments are a shared responsibility between the IC, the Crisis Manager, and the Recovery Manager 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 of 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. Equipment used to assess releases is described in Section 6.4 of this plan.

The Areal Locations of Hazardous Atmospheres (ALOHA) **c**omputer program is used to assist in determining protective actions. ALOHA is designed to estimate movement and dispersion of chemical release plumes.

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/HAZMAT releases). The existence of an Alert requires the following initial and ongoing assessment actions as applicable:

- Increased surveillance of applicable instrumentation and visual observation of the incident conditions;
- 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
- 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 on-site and off-site exposures is performed regularly to determine if and when on-site sheltering or evacuation, or off-site sheltering or evacuation, may be required. The results, including methods and assumptions, are communicated to appropriate off-site officials as off-site 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 IC or the Crisis Manager when the EOC is operational, as appropriate:

- Performing continuing emergency assessments for mitigating events and protective actions on-site based on on-scene and field monitoring results, release information, and meteorological conditions for radiological/hazardous material releases and

- For off-site hazardous material releases, providing specific material information, release information, plume direction, projected plume location, appropriate meteorological information, and field monitoring results to responsible off-site authorities.

5.2.3 Post-Accident Assessment

The CM, and the Recovery Manager if assigned, provides post-accident emergency assessments.

Procedures 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 off-site 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 hazardous materials. Monitoring team personnel conduct appropriate sampling, 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 (i.e., the removal of contaminated soil or the return of a damaged facility to production). 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 9.0 of this plan, for information regarding restoration and recovery activities.

5.3 Mitigating Actions

5.3.1 Personnel 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 site personnel and the general public. By initiating prompt protective actions (i.e., evacuating personnel in the immediate incident area and controlling access to the surrounding accident vicinity) consequences to 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 or isolation of operating systems. Systems and instrumentation are available for detecting abnormal operating conditions that could result in an emergency and the methods and criteria used to ensure a safe shutdown of equipment and systems. Operations personnel determine, which if any, equipment or systems require shut down or isolation in connection with a specific accident or emergency. Based on input from operations, the IC or Crisis Manager determines 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 stable condition before the IC issues an all clear. The means for ensuring that the DOE reservation is in a safe condition may include monitoring, visual inspections, and equipment testing.

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 on-site to support fire-fighting activities and back up the fixed fire suppression systems. The fire protection system and equipment is tested and inspected, using test frequencies established in procedures.

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 (e.g., gulpers at the autoclaves and on the cylinder valve change cart). In other cases, authorized members of the ERO take the appropriate actions to reduce and contain the release.

5.4 Protective Actions

During emergencies, the IC or Crisis Manager must determine the best possible means to limit exposure of on-site and off-site personnel to potential or actual threats (i.e., 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. Specific procedures have been developed for the protection of emergency responders and other on-site and off-site personnel.

This section describes the protective actions developed to limit exposure of reservation personnel and the public following an emergency. The protective actions to be implemented on-site are the responsibility of qualified personnel. In the event of an emergency the IC notifies 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 off-site authorities are responsible for providing off-site protective actions.

5.4.1 On-site Protective Actions

5.4.1.1 Personnel Evacuation and Accountability

Protective actions for on-site personnel (including visitors and contractor personnel) include alerting; assembling and accounting for; sheltering in place; evacuating; monitoring; and decontaminating. As previously described, the primary concern is to minimize the impact on DOE reservation personnel and the general public.

- **Evacuation** – When it is determined that a threat to the safety of DOE reservation personnel exists, the IC or Crisis Manager may order an evacuation of personnel from affected areas. Criteria that should be considered before ordering an evacuation include wind direction, wind speed, and location of the emergency. Local area 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, reservation radios, or other reservation communications systems, as appropriate.

  At the discretion of the IC or Crisis Manager, reservation 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. Locations of monitoring stations are identified in site procedures. If a site-wide evacuation is ordered, personnel report to off-site reception centers. Evacuation to off-site reception centers is generally by individually owned vehicles.

  Emergencies include natural events, as well as radiological/hazardous materials incidents. The procedures to be followed in these evacuations are included in procedures, including designation of assembly areas. Provisions are made for consideration of impediments to evacuation caused by weather conditions, traffic, or radiological/hazardous materials release. Alerting is accomplished by use of the PA system, reservation radios, telephones, or if required, by runner. Short-term visitors on the reservation (i.e., commercial deliveries) will be directed to exit the reservation. The alerting time will depend upon the severity and location of the threat to safety.

- **Shelter in Place** – When sheltering personnel would greatly mitigate the consequences of an emergency, the Crisis Manager or IC recommends to shelter-in-place and reservation personnel are notified over the PA system, reservation radios, or other reservation communications systems, as appropriate.

- **Accountability** – In an emergency, one of the most likely protective actions for reservation personnel is evacuation of a particular building/facility 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 site procedures. Personnel permitted unescorted access are provided training on their assembly/accountability roles and responsibilities.

  Visitors that have a current clearance/badge are accounted for through their points of contact. Visitors within the CAA 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.

  Employees and contractor personnel are trained on actions to be taken in an emergency prior to their work assignments. An individual who has received General Employee Training (GET) emergency preparedness training must escort untrained personnel. The training includes instructions on reporting emergencies and the required actions in the event of an emergency.

- **Search and Rescue** – If accountability reveals that a missing person might be located within the incident area, the IC 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 IC 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.

- **Monitoring and Decontamination** – Personnel involved in an emergency submit urine samples for analyses when the possibility exists of exposure to hazardous materials. Monitoring team personnel conduct 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.

5.4.1.2 Use of Protective Equipment and Supplies

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. Personnel assigned emergency response tasks requiring the donning of protective equipment maintain communications with the IC via the reservation radio system, either by hand-held radio or radios within the self-contained breathing apparatus. Protective clothing and

other required personal protective equipment is available. Emergency personnel receive training on donning and using specific protective clothing and related equipment.

Individuals arriving or remaining at the reservation 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 equipment inventory, and emergency equipment maintenance are described in Section 7.6 of this plan.

5.4.1.3 Contamination Control Measures

The IC or Crisis Manager directs personnel evacuating potentially contaminated areas proceed to monitoring and decontamination stations. Monitoring and decontamination is performed in accordance with procedures. Access to the potentially contaminated area is controlled for contamination control.

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

5.4.2 Off-site Protective Actions

The IC or Crisis Manager 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 an understanding of the actual or potential 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 reservation boundary, ERO personnel provide recommendations based on accident assessment to aid the county in the decision-making process.

Upon recognition that a situation exists requiring off-site protective actions, ERO personnel recommend protective actions to the appropriate off-site authorities, which in turn are responsible for alerting and notifying persons living within the off-site impacted areas.

The most severe credible accident at the reservation from the Licensee's operations would involve the rupture of a liquid UF_6 cylinder. During a liquid UF_6 cylinder release incident, the UF_6 reacts with moisture in the air. The resulting hydrolysis products are uranyl fluoride particles and HF gas. An off-site 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 off-site hazard from a release of other hazardous materials. Section 2.0 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 on-site personnel are evacuated or sheltered. A monitoring and decontamination station is established at designated locations when directed by the IC or Crisis Manager. Emergency response personnel perform personnel monitoring and decontamination in accordance with procedures.

Contamination control measures are described in Radiation Protection 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.

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:

- Saving of human life and reduction of injury;
- Protection of health and safety of the public; and
- Protection of property.

The Crisis Manager authorizes emergency workers to receive emergency doses above the established administrative control 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 procedures and are consistent with the ERPGs established by the American Industrial Hygiene Association for extremely hazardous chemicals.

The following are radiation exposure guidelines:

- Doses to workers during emergencies to the extent practical, are limited to 5-roentgen equivalent man (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 plant procedures.

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 (i.e., MSDSs, emergency response guidebooks, professional industrial hygiene guidance, and meteorological conditions).

During a UF_6 release on-site, 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 a release of UF_6 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 personnel. Personnel who may be required to respond to the scene of an emergency are required to wear thermoluminesence dosimeters. Issuance of self-reading dosimeters and maintenance of interim emergency whole body dose records are addressed in procedures. Emergency worker dose records are maintained in accordance with procedures. Additional details of the personnel monitoring program is contained in Chapter 4.0 of the license application.

5.5.2 Decontamination of Personnel

On-site personnel decontamination stations 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. The

decontamination stations have provisions for disrobing, collecting contaminated clothing, showering of contaminated personnel, and donning clean clothing. On-site 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 above the limits specified by the Radiological Protection Program, decontamination is performed and preventive measures are initiated to mitigate the possibility of the spread of contamination.

5.6 Medical Transportation

Injured employees are normally transported to a medical treatment facility using an on-site ambulance. In the event that an on-site ambulance is unavailable, the local off-site ambulance service provides the transportation of injured persons to an off-site 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 measures are taken to protect response personnel and prevent contaminating the ambulance and medical facility.

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, 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 D) have been obtained to document these arrangements.

6.0 EMERGENCY RESPONSE EQUIPMENT AND FACILITIES

Emergency facilities are activated as needed to provide direction and control, off-site resource coordination, and public information for emergencies. Buildings/facilities are declared operational when minimum staffing is present and vital equipment is operational, as outlined in procedures. The following are descriptions of facilities and functions.

6.1 Command Center

6.1.2 Plant Control Facilities

The ACP ACR, located in the X-3012 Process Support Building, provides central operating functions to monitor and control centrifuge operations. The Senior Shift Supervisor directs the operation of systems within the facilities necessary to support the ACP cascade operation and is responsible for accumulation and dissemination of information regarding ACP activities to the IC during emergencies. The Senior Shift Supervisor is responsible for making event notifications during normal operations. This responsibility is initially delegated to the IC when the ERO is activated.

The GDP Plant Control Facility (PCF) located in the X-300 building is used to maintain surveillance and control of GDP operational processes; conduct incident assessment and mitigation; and initially direct protective actions. The PCF contains control instrumentation and communication equipment, required for supervision, direction, and coordination of GDP operations. GDP fire alarms go to the PCF. Sufficient equipment is available to monitor the operating conditions vital to the GDP cascade and power systems. The PSS directs response actions of the PCF staff.

During an emergency, the PSS becomes the IC. (There are two personnel onsite at all times who are qualified to perform the duties of the IC, the PSS and the Assistant PSS. During an emergency one of the PSS's would assume the IC role.) The IC provides command and control over the specific incident area response based on input from operations personnel. Personnel under the direction of the IC are responsible for initially performing the following duties until the EOC is operational:

- Assessing abnormal conditions;
- Activating EOC personnel;
- Making off-site notifications;
- Activating the public warning system, if necessary;
- Performing corrective actions;
- Directing GDP operations; and

- Implementing on-site 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 IC 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, (i.e., meteorological changes or escalation of the emergency) may cause the relocation of the Command Post.

6.1.4 X-1020 Emergency Operations Center

The EOC is the on-site 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 on-site response and mitigation and off-site interface activities. The X-1020 building serves as a focal point for ACP security activities during an emergency.

The IC activates the EOC for Alerts and SAEs. In addition, the EOC may be activated for other emergencies at the discretion of the IC. Once operational, the EOC provides coordination and management for the overall DOE reservation emergency response. The EOC communicates with Federal, State, and local organizations; and USEC Headquarters.

The Crisis Manager 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:

- Technical interactions with off-site Federal, State, and local officials;
- Generation of emergency information for public information activities;
- Ensuring required support to the incident scene; and
- Coordination of support for on-site response and mitigation.

Alternate EOCs are available 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 procedures.

The alternate EOC is located in the X-300 facility. In the unlikely event that the EOC is evacuated, the key EOC personnel evacuate the area and relocate to the alternate EOC by

direction from the IC or the Crisis Manager. The mobile communications vehicle may also be used as an alternate EOC.

The X-1020 building serves as a focal point for security activities during an emergency. The X-1020 building is operated on a 24-hour basis. The Security Console Operator is responsible for coordinating activities and communications. The Security Console Operator performs the following functions:

- Dispatches Protective Personnel,
- Maintains communications with the Protective Personnel at the emergency scene,
- Advises Protective Personnel management, and
- Advises the EOC staff.

Note: The Security Console Operator may have additional resources to direct in the event of a site-wide emergency. These resources will be Protective Personnel. In an emergency the Security Console Operator directs the initial response of all resources.

6.1.5 Decontamination Facilities

The primary facilities for personnel decontamination are the plant medical facility and X-1007 Fire Station, both operated by the United States Enrichment Corporation. Resources and provisions for the decontamination of vehicles and equipment are maintained. Decontamination equipment is designed and equipped to handle potential decontamination requirements identified during an emergency.

6.1.6 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. JPIC operations are described in designated procedures. The JPIC accommodates the following:

- Coordination of information with interfacing Federal, State, and local organizations and spokespersons;
- Press releases and media briefings; and
- Work space for JPIC personnel, interfacing organization personnel, and representatives of the news media.

The JPIC is located at the Word Alive Fellowship as shown in Figure 1-4 of this plan.

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 multiple channels of communication, dedicated communication equipment to preclude delays due to system overload, and routine use and testing of many of the systems, which lowers the likelihood of undetected system failures. Timeliness of information flow is achieved by prompt notification, predefined lines of communications, predefined emergency action levels 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:

- Commercial telephone system
- Facsimile machines
- Secure Telephone Units - designated STU-III secure phones
- Plant radio system
- Mobile communications system
- PA system
- Cellular telephones
- Pagers
- Public Warning System

6.2.1 On-site Communications

The telephone systems serve as the primary emergency communications systems; telephones and other available communication systems are discussed in the following sections. 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 commercial telephone system provides business and emergency communications. The telephone system consists of single line, multiline, and programmable digital units. Emergency Management personnel test the EOC telephones.

STU-IIIs provide secure voice communications to on-site and off-site users of other STU-III telephones, if classified information must be communicated. It can also operate as a normal telephone in the "clear" mode.

Cellular telephone service is available from the DOE reservation. Emergency response vehicles are equipped with cellular telephones and emergency response personnel also have access to other cellular telephones.

6.2.1.2 Public Address System

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

6.2.1.3 Radio Systems

The reservation radio systems are used on a daily basis throughout the DOE reservation and problems are addressed as they occur. Operational console checks and quarterly drills are used to test the systems. Some reservation radio frequencies are compatible with off-site frequencies and are capable of supporting emergency communications between on-site emergency responders and off-site mutual aid organizations.

6.2.1.4 Pager System

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

6.2.2 Off-site Communications

The DOE reservation uses the commercial telephone system for off-site emergency communications. The reservation's alternate means of emergency communications with off-site authorities include cellular telephones and the reservation radio system.

The public warning system, consisting of outdoor warning sirens and emergency alert system announcements, is used to provide emergency notification to the public. Inaudible testing of the public warning system 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, a mobile communications vehicle is available to provide communications support during any on- or off-site 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 On-site Medical Facilities

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.

Medical coverage is maintained consistent with the activities being conducted on-site. In an emergency, off-duty medical personnel are notified and directed to required locations as needed. The IC 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 off-site hospitals also have facilities, equipment, and supplies for the treatment of contaminated individuals.

Supplies, equipment, and trained personnel are available 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. Emergency response personnel assess patient condition, provide necessary emergency care, and determine appropriate supplemental treatment.

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

6.4 Emergency Monitoring Equipment

Various types of radiation detection equipment for normal and emergency response use are maintained on-site. Criticality accident alarms have been placed in those areas and facilities containing fissile material. The CAAS provides for radiation detection and an alarm system to alert personnel.

Persons requiring radiation exposure monitoring wear beta-gamma-sensitive dosimeters, 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. The dosimeters are exchanged and analyzed in accordance with Radiation

Protection procedures. As appropriate, other types of dosimeters (e.g., finger rings and direct-reading dosimeters) are used.

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

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

Radiological instruments are calibrated routinely as specified in procedures.

Designated emergency vehicles responding on scene 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 on-site for evacuation during radiological events. Emergency radiation monitoring equipment is stored and available at each monitoring station.

In addition to radiological monitoring equipment, emergency-monitoring instrumentation for chemically toxic material releases is maintained. These instruments are maintained in dedicated emergency response vehicle kits and will also be supplied from the inventory of routinely used monitoring equipment.

The primary source of meteorological information is the X-120H Meteorological Tower consisting of a tower with a data terminal, a data acquisition system, and meteorological sensors. This system measures wind speed, humidity, wind direction, and temperature. Refer to Figure 1-1 for the location of the X-120H Meteorological Tower. 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 via commercial telephone call to the National Weather Service in Wilmington, Ohio. Weather forecasts are used to inform personnel of impending related hazards and driving hazards.

7.0 MAINTAINING EMERGENCY PREPAREDNESS CAPABILITY

This section describes the responsibilities for developing, maintaining, and updating the plan and procedures and for maintaining emergency preparedness capability.

7.1 Written Emergency Plan Procedures

The Licensee is responsible for maintaining and updating the Emergency Plan. The Licensee may make changes to the Emergency Plan without prior commission approval if the changes do not decrease the effectiveness of the plan. The Licensee will furnish these changes to the NRC in accordance with 10 CFR 70.32 and 76.91 and to affected off-site response organizations within six months after the change is made. The Licensee controls the distribution of the Emergency Plan to ensure that groups having responsibilities for response functions are included in the distribution.

Procedures are reviewed, revised, approved, controlled, and distributed in accordance with administrative procedure requirements. In part, these requirements ensure that new or revised procedures state duties, responsibilities, and actions to be taken by individual groups or individuals in response to an emergency condition. Procedures are required to be reviewed by subject matter experts and personnel in affected areas and are approved by appropriate management. Procedures are distributed, controlled, and maintained in accordance with procedure requirements.

7.2 Training

Personnel assigned to the ERO are required to satisfactorily complete initial and continuous training. 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 fire-fighting 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 procedures.

A formal training record retention program has been established in accordance with plant procedures and is maintained for ERO members, support personnel, and off-site agency response organizations. Evaluation records for each course are maintained.

7.2.1 General Emergency Plan Training

Licensee, United States Enrichment Corporation, and DOE personnel (excluding visitors) are required to attend GET on a biennial basis. Contractors, subcontractors, and tenant organizations are required to attend emergency preparedness GET on a biennial basis.

Personnel allowed unescorted access complete emergency preparedness GET to ensure proper response to emergencies. The subjects covered include the following:

- Emergency safety objectives and priorities;
- Ways to report emergencies;
- Recognition and correct responses to alarm signals;
- Evacuation guidelines for radiological and non-radiological emergencies;
- Methods of personnel accountability; and
- Personnel responsibilities during emergencies.

This training requirement may be satisfied by attending GET delivered by the Licensee, or training prepared by a DOE contractor/subcontractor that has been reviewed by the Licensee Training Organization to ensure it is equivalent with the six emergency plan elements listed above. This training is documented by hard copy records and entered into an electronic database. The database identifies when training for individuals is due and this information is given to DOE and DOE contractor contacts. These contacts then notify the affected personnel that they need to schedule themselves into refresher training sessions. Only those individuals who enter the CAA of the reservation are subject to direct control of their training through the denial of access, if training is not up-to-date.

7.2.2 Specialized Emergency Plan Training for the Emergency Response Organization

A training program, which includes classroom-type training (i.e., lectures and seminars), practical applications (i.e., 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 an emergency. Specialized emergency management training is provided and includes, but is not limited to, the following categories of topics:

- **Emergency Management Overview.** This course provides an orientation to the Emergency Management Program. Subjects covered in this training include emergency response; responsibilities and authorities; requirements; facilities and equipment overview; and off-site interface summary. This course is provided initially.
- **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 on-site support groups and off-site agencies. This course is provided initially with biennial retraining requirements.

- **Credible Emergencies.** This course covers the response to a threat to the DOE reservation of a bomb threat, tornado, or earthquake. This course is provided initially.

- **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.

- **Emergency Classification and Protective Actions.** This course covers the event classification systems and EALs. The course also provides instruction about on-site and off-site protective actions. This course is provided initially with biennial retraining requirements.

- **Emergency Notifications/Communications.** This course is provided to those personnel who are responsible for preparing, approving, and/or conducting emergency notifications to on- and off-site authorities. This course is provided initially with biennial retraining requirements.

- **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.

- **Emergency Response Activities.** This course provides emergency response activities 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 Emergency Management training program. Emergency training requirements for each position are described in the procedure, which includes frequency of retraining.

7.2.3 Off-site Emergency Management Training

Training is offered to emergency support organizations that may be called upon to respond to emergencies at the DOE reservation. These agencies include local fire, law enforcement, ambulance, and hospital services. This training includes the following topics, as a minimum:

- Specific information on hazards; on-site and off-site protective actions; and emergency response from personnel or organizations augmenting the ERO.

- Orientation tours.

- Information briefings for the news media on operational emergencies, specific hazards and responses, 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 involve decision-making and actions by participating personnel to simulate emergency conditions.

An exercise is a training session that tests the integrated capability of all or most of the basic elements existing within the emergency plan and procedures. Exercises use scenarios that are wider in scope than drills and may involve off-site response personnel and agencies.

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

The Fire Safety/Emergency Management Manager, who reports to the Plant Services Manager, is responsible for implementing a coordinated program of emergency drills and exercises identified in a procedure. Procedures require emergency management to promulgate a drill and exercise schedule, 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 Protection/Safety, 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

DOE reservation personnel plan and conduct biennial exercises. Off-site response organizations and the NRC are invited to observe or participate in these scheduled exercises.

A biennial exercise scenario containing relevant documentation is developed for each drill and exercise. The exercise scenario contains a description of the accident to be used, prepared according to the scope and objectives of the 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 an exercise.

The exercise scenario manual is provided to the NRC 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 off-site 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. Personnel who were not participants, normally emergency management, conduct these critiques.

Emergency Management reviews critique comments. Critique items that have safety significance, indicate a regulatory non-compliance, or reflect serious deficiencies in plan content or implementation are identified and documented, utilizing the Corrective Action program. Resulting corrective actions are tracked in the corrective action tracking system in accordance with procedures.

Organization managers are responsible for implementing exercise corrective actions in their respective functional areas.

7.5 Independent Audit

The Emergency Management program is audited to ensure adequate and effective program function. The scope of the audit includes areas such as the Emergency Management Plan; procedures; training activities; emergency facilities; equipment and supplies; and those records associated with off-site support agency interface. Audit personnel do not have direct responsibilities for implementing the Emergency Management program.

Procedures provide measures that ensure that audit personnel are provided with appropriate training so that they are competent to perform the described in either the Quality Assurance Program Description for the ACP or GDP. Procedures also require that lead auditors meet the training and experience requirements of the Quality Assurance Program(s). The qualification and re-qualification of lead auditors is performed in accordance with Supplement 2S-3 to ASME NQA-1-1994.

Procedures require that emergency management investigate adverse audit findings and schedule corrective actions that prescribe measures to prevent recurrence.

7.6 Maintenance and Inventory of Emergency Equipment, Instrumentation, and Supplies

Equipment and supplies are kept available 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, emergency air supplies, and other equipment.

The quarterly inventory and inspection of emergency equipment and supplies is specified in procedures. Identified deficiencies are corrected.

Emergency equipment and instruments are inspected, inventoried, and operationally tested quarterly and after each use as required by procedure. 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 Emergency Plan are communicated to the appropriate off-site response organizations. Letters of Agreement with off-site support organizations and agencies are reviewed by Emergency Management personnel 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. Refer to Appendix D for a list of off-site organizations with which Letters of Agreement are maintained.

8.0 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 (on-site and off-site) resulting from the incident; locations of contamination with final decontamination survey results; corrective actions taken to terminate the emergency; measures taken to restore normal conditions; and action taken or planned to prevent a recurrence of the incident. The documentation includes on-site and off-site support assistance requested and received and any program changes resulting from a critique of emergency response activities.

The IC is responsible for reporting and recording events of abnormal operation, equipment failure, and accidents that lead to an emergency. Plant procedures depict the level of detail needed for completion of the emergency notification form. 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:

- Emergency management training and retraining, including lesson plans, test questions, and records of completed training;
- Drills, exercises, and related critiques;
- Inventories and locations of emergency equipment and supplies;
- Maintenance, surveillance, calibration, and testing of emergency equipment and supplies;
- Letters of Agreement;
- Reviews and updates of the Emergency Management Plan; and
- Notification of personnel and off-site agencies affected by an update of the Emergency Plan or procedures.

9.0 RECOVERY AND 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 DOE reservation personnel and the general public. Once the corrective and protective actions have established 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 operations within the scope of NRC-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 Crisis Manager to determine when the recovery phase of the emergency can be initiated. The following criteria for terminating an emergency and beginning recovery operations are applied:

- If emergency conditions no longer meet any EAL;
- The affected building/facility or area is in a stable condition and can be maintained in that condition;
- Fire or other similar emergency conditions no longer constitute a hazard;
- Releases of hazardous materials to the environment have ceased or are controlled; and
- Discussions with the ERO and appropriate off-site 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 location and the surrounding environment to pre-emergency conditions to the maximum extent practical. Specific recovery plans are developed in accordance with applicable procedures.

The DOE site manager is responsible for ensuring the adequacy and appropriateness of recovery operations involving non-leased portions of the DOE reservation.

9.2 Recovery Organization

Prior to termination of an emergency and deactivation of the ERO, the Crisis Manager appoints a Recovery Manager and a recovery organization is established to implement recovery plans. The Recovery Manager has overall responsibility for recovery activities, including ensuring that safety equipment is checked and restored to normal conditions and evaluating and retaining as low as reasonably achievable (ALARA) records. Other duties of the recovery manager include coordination of interactions with vendors and contractors, interfacing with off-site Federal, State, and local officials; and assignment of responsibility for compiling, evaluating, and ensuring retention of records associated with the event. The key operating and management positions of the recovery organization are listed below:

- Recovery Manager
- Advisor, Operations
- Advisor, Maintenance
- Advisor, Engineering
- Advisor, Public Affairs
- Health Physics Personnel
- Protective Personnel
- Additional personnel determined by the Recovery Manager, as needed

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

10.0 COMPLIANCE WITH *COMMUNITY RIGHT-TO-KNOW ACT*

The Licensee 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 plant procedures are used during hazardous chemical release emergencies. Plant 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 DOE reservation. MSDSs are maintained in a central location in the ACP and are available at all times to employees, including emergency response and fire department personnel from on- and off-site.

When hazardous materials spills or releases are reported, the IC responds to the incident scene. The IC directs the emergency containment of spills. Actions to be implemented are described in appropriate procedures and include the following:

- Evacuate/isolate the area of release/spill activity, as necessary, and determine areas of concern;
- Classify the emergency if appropriate;
- Determine if activation of additional ERO personnel is necessary;
- Take measures to minimize safety concerns;
- Determine a course of action and personal protective equipment requirements;
- Initiate containment procedures;
- Terminate the source;
- Make appropriate notifications to on-site and off-site officials;
- Determine material disposal; and
- Terminate the incident and enter recovery.

11.0 REFERENCES

1. U.S. Nuclear Regulatory Commission, NUREG-1520, *Standard Review Plan for the Review of a License Application for a Fuel Cycle Facility*

2. U.S. Nuclear Regulatory Commission, Regulatory Guide 3.67, *Standard Format and Content for Emergency Plans for Fuel Cycle and Materials Facilities*

3. USEC-02, Portsmouth Gaseous Diffusion Plant Application for United States Nuclear Regulatory Commission Certification, Safety Analysis Report, Volumes 1 and 2

4. USEC-02, Portsmouth Gaseous Diffusion Plant Application for United States Nuclear Regulatory Commission Certification, Volume 3, Emergency Plan

5. LA-3605-0003, Integrated Safety Analysis Summary for the American Centrifuge Plant

6. U.S. Environmental Protection Agency, 400-R-92-001, *Manual of Protective Action Guides and Protective Actions for Nuclear Incidents*

7. American Industrial Hygiene Association, *Emergency Response Planning Guides (ERPGs)*

8. U.S. Environmental Protection Agency, 40 CFR Part 68, Appendix A, *Table of Toxic Endpoints*

9. American National Standards Institute/American Nuclear Society 8.3-1997, *Nuclear Criticality Accident Emergency Planning and Response*, 1997

10. American National Standards Institute/American Nuclear Society 8.3-1986, *Criticality Accident Alarm System*, 1986

11. American National Standards Institute/American Nuclear Society 8.23-1997, *Nuclear Criticality Accident Emergency Planning and Response*, 1997

12. U.S. Department of Energy Oak Ridge Operations - Office of Environmental Management, *Final Environmental Impact Statement for Construction and Operation of a Depleted Uranium Hexafluoride Conversion Facility at the Portsmouth, Ohio Site*, DOE/EIS-0360, June 2004

13. Lawrence Livermore National Laboratory, *The Engineering Analysis Report for the Long-Term Management of Depleted Uranium Hexafluoride*, Volumes 1 and 2, Revision 2, Depleted Uranium Hexafluoride Management Program, UCRL-AR-124080, May 1997

14. Depleted Uranium Hexafluoride Conversion Facility Documented Safety Analysis, DUF6-X-G-DSA-001, Revision 2

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

ALARA — as low as reasonably achievable

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, but the release is not expected to require a response by an offsite response organization to protect persons off-site.

Areal Locations of Hazardous Atmospheres (ALOHA) – A computer program used to assist in determining protective actions. ALOHA is designed to estimate movement and dispersion of chemical release plumes

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

Controlled Access Area (CAA) — The area within the security fence, to control access or prevent inadvertent or deliberate access to a security area by unauthorized persons.

CAAS — Criticality Accident Alarm System

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

Controlled Area — An area, outside of a restricted area but inside the site boundary, access to which can be limited by the licensee for any reason.

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 equipment, e.g., shutting down equipment, fire fighting, repair, and damage control.

Derived Air Concentration (DAC) — The concentration of a given radionuclide in air, which if breathed by the reference man for a working year of 2,000 hours under conditions of light work (inhalation rate 1.2 cubic meters of air per hour), results in an intake of one Annual Limit of Intake.

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

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.

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; equipment status indicator; measurable parameter on-site or off-site; discrete, observable event; result of analyses; or 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 Crisis Manager, personnel present in the EOC supply strategic and corrective engineering and radiological, hazardous materials, and environmental support assistance to the IC 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. A committee of the American Industrial Hygiene Association approves the ERPGs.

EPA — U. S. Environmental Protection Agency

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

FBI — Federal Bureau of Investigation.

FEMA — Federal Emergency Management Agency

GDP — gaseous diffusion plant

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.

IC — Incident Commander

Immediate Notification Area — An area that extends approximately two miles from the center of the DOE reservation in which members of the public would be notified by Public Warning System sirens in the event of an emergency.

JPIC — Joint Public Information Center.

Letter of Agreement — An agreement between the Licensee and off-site 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).

NRC — U.S. Nuclear Regulatory Commission

Off-site — Refers to the area outside of the DOE reservation boundary.

On-site — Refers to the DOE reservation.

PA — Public Address

PCF – Plant Control Facility

Plan — Emergency Plan for the American Centrifuge Plant

Protective Action — Physical measures (i.e., 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 off-site 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

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

Restricted Area — an area, access to which is limited by the licensee for the purpose of protecting individuals against undue risks from exposure to radiation and radioactive materials.

SAE — Site Area Emergency: A site area emergency is defined as an incident that has led or could lead to a significant release to the environment of radioactive or other hazardous material and that could require a response by an offsite organization to protect persons off-site.

STU-III — Secure Telephone Units

USEC — USEC Inc.

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APPENDIX A

AMERICAN CENTRIFUGE PLANT LICENSED ACTIVITIES

American Centrifuge Plant Licensed Activities

The mission of the American Centrifuge Plant (ACP) is the enrichment of uranium with the isotope necessary to produce fuel for nuclear reactors (^{235}U) using the gas centrifuge process. 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 three isotopes are fissionable; however, only ^{235}U is capable of sustaining a critical reaction in most applications. Natural uranium contains 0.711 weight (wt.) percent ^{235}U isotope. Isotopic separation processes separate uranium (e.g., its compounds) into two fractions, one enriched in the ^{235}U isotope, and the other depleted.

Prior to the enrichment process, uranium is combined with fluorine to form uranium hexafluoride (UF_6). The ACP receives uranium in solid UF_6 form, in 10- or 14-ton cylinders in accordance with U.S. Department of Transportation regulations.

In the gas 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_6 is fed into the system in the gaseous state and is enriched up to 10 wt. percent assay ^{235}U. The ACP withdraws the enriched (product) stream and the depleted (tails) stream in the gaseous state. The product and tails streams are then sublimed into a solid state for handling/movement. The ACP minimizes the amount of UF_6 in the liquid state.

The ACP operates two process buildings containing the centrifuge machines arranged in cascades to produce an initial target of 3.8 million Separative Work Units.

Based upon the hazards and consequence analyses reflected in the Integrated Safety Analysis (ISA), the Licensee has concluded that UF_6 is the only material in sufficient quantity used at the ACP that poses a potential off-site hazard. Upon release to the atmosphere UF_6 reacts with moisture in the air to produce two highly toxic substances, uranyl fluoride particulate, and hydrogen fluoride (HF). The following provides a brief description of each of these substances, the manner in which it is used in the enrichment process, and the locations where it is stored or used at the ACP.

- UF_6 on-site is stored in solid form until it is heated, sublimed, and fed to the enrichment process. After enrichment, the UF_6 gas is sublimed as product and tails. The assay of the product can be adjusted by blending. Only the sampling operations require that UF_6 be heated at a high enough temperature and pressure to liquefy the material. UF_6 is located in the X-2232C Interconnecting Process Piping; X-3001 and X-3002 Process Buildings; X-3344 Customer Services Building, X-3346 Feed and Withdrawal Building; X-3346A Feed and Product Shipping and Receiving Building; X-7725 Recycle/Assembly Facility; X-7726 Centrifuge Training and Test Facility; X-7727H Interplant Transfer Corridor and ACP cylinder storage yards.

- HF is not used in the ACP operations nor are significant quantities stored at the ACP. However, HF is produced during a release of UF_6. UF_6 reacts with moisture in the air resulting in the formation of HF and uranyl fluoride (UO_2F_2). At room temperatures and at high humidity, UO_2F_2 hydrates and an HF-H_2O fog develops that results in an easily visible, buoyant cloud. HF is irritating to skin, eyes, and throat.

Table A-1 lists the primary locations of these chemicals.

Table A-1 Hazardous Chemicals – American Centrifuge Plant

Name	Building/Facility	Typical Quantity
Uranium Hexafluoride	X-2232C, X-3001, X-3002, X-3012, X-3344, X-3346, X-3346A, X-7725, X-7726, X-7727H, and Cylinder Storage Yards	123,000,000 lb
Hydrogen Fluoride	X-2232C, X-3001, X-3002, X-3012, X-3344, X-3346, X-3346A, X-7725, X-7726, X-7727H, and Cylinder Storage Yards	As a result of a release of UF_6

American Centrifuge Plant Description

The ACP uses existing former U.S. Department of Energy (DOE) Gas Centrifuge Enrichment Plant buildings. A brief description of primary ACP buildings and their purpose is provided below.

The ACP includes two process buildings: the X-3001 and X-3002 Process Buildings. The primary purpose of the process buildings is to house the centrifuge machines and the support systems necessary to perform the enrichment. At the north and south ends of the X-3001 and X-3002 Process Buildings are equipment/utility bays and mezzanines where auxiliary equipment is housed. Building vents for the purge and evacuation vacuum systems are also located in the buildings. Due to the nature of centrifuge operation, a vacuum is maintained on the centrifuge casings to remove air or gas that leaks into the machine thereby minimizing drag on the internal rotor.

The process is controlled by Local Control Centers (LCCs), which are located in the process buildings and are designed to control a portion of a process building. The LCCs are connected to the Area Control Room (ACR) located in the X-3012 building. In addition, the centrifuge process alarms relevant to emergency management are monitored in the X-1020 Emergency Operations Center (EOC).

The X-3012 Process Support Building is located between the X-3001 and X-3002 buildings. 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 and X-3002 buildings; 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 X-3001 and X-3002 buildings 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, men's and women's locker rooms, restrooms, and a mezzanine area with additional office areas, and HVAC rooms.

The X-3346A Feed and Product Shipping and Receiving Building is located south-southwest of X-3001 building. The X-3346A building serves as the focal point for receipt and shipping of natural and enriched uranium.

The X-3346 Feed and Withdrawal Building has two distinct areas of operation. The first area, also referred to as the Feed Area, supports the front end of the overall enrichment process by housing the equipment necessary to provide UF_6 feed to the enrichment process. This area also supports UF_6 cylinder blending/transfer operations. The second area, also referred to as the Withdrawal Area, houses the equipment necessary to withdrawal enriched and depleted UF_6 from the process. The X-3346 building is connected to the X-3001 and X-3002 buildings by the X-2232C Interconnecting Process Piping.

The X-3344 Customer Services Building is located to the north of the X-3346 building and west of the X-3001 building. The X-3344 building houses equipment necessary to sample UF_6 cylinders from the process.

The X-7725 Recycle/Assembly Facility is a very large multiple level building used for the assembly of centrifuge machines. Completely assembled centrifuge machines are tested in the Gas Test stands using UF_6 to verify the correct placement of machine components and the proper operation of the centrifuge machine. The Gas Test is performed in the X-7725 facility prior to moving the centrifuge machines to the process building for installation. This building may also be used for centrifuge manufacturing. Wrecked centrifuge machines are also stored in this building after removal from the process buildings. Areas of the X-7725 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 facility. 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 X-7727H Interplant Transfer Corridor provides an enclosed north-south throughway from the X-7725 and X-7726 facilities to the X-3001 and X-3002 buildings. The corridor is wide enough to accommodate bi-directional passage of two fully loaded centrifuge transporters.

The ACP cylinder yards provide storage for natural feed uranium, depleted (tails) uranium, and enriched (product) uranium-awaiting shipment. There are four cylinder storage yards that support the ACP. Two of the yards are located adjacent to the X-3346 building (X-7746S and X-7746W), and the other two are located just north of the reservation Perimeter Road to the north of X-344 facility (X-745G-2 and X-745H).

ACP operations are monitored continuously from the X-3012 building ACR. ACP alarm systems are duplicated in the X-1020 EOC. In the event of an emergency condition, the Plant Shift Superintendent (PSS) located in the X-300 building is notified. The PSS assumes Incident Commander duties in the unlikely event of a declared emergency. Communications between the ACP and X-300 building consist of a radio system, conventional telephone system, public address system, and evacuation alarm system.

Continuous vent sampling systems monitor emissions from ACP enrichment process vents. 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. These vents meet the U.S. Environmental Protection Agency (EPA) requirements.

There are nine vents that are monitored for radionuclide emissions. Although none of these atmospheric radionuclide emission sources were identified to have the potential to exceed a 0.1 millirem/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. Table A-2 summarizes stack heights and flow rates.

The health protection program provides services for individuals to meet regulatory requirements and to maintain a high level of employee health. The X-1007 Fire Station maintains a first aid room and provides ambulance service for emergency conditions.

The primary radiation alarm system is the Criticality Accident Alarm System. This system is designed to detect a nuclear criticality and provide audible and visual alarms that will alert personnel to evacuate the immediate area.

Other support includes protective force, fire department, health physics, industrial hygiene, industrial safety, environmental compliance, waste management, records management, and document control. The primary facilities on the DOE reservation associated with the ACP are shown in Figure A-1.

Possession limits for radioactive materials are summarized in Table A-3.

Table A-4 contains a summary of the event scenarios that, if unmitigated, could result in potential off-site consequences that exceed the 10 CFR 70.61 Performance Requirements. The events listed in Table A-4 require crediting of items relied on for safety to reduce the event frequency and/or consequences to meet the performance requirements. Further detail of each event scenario is located in the Integrated Safety Analysis Summary for the American Centrifuge Plant.

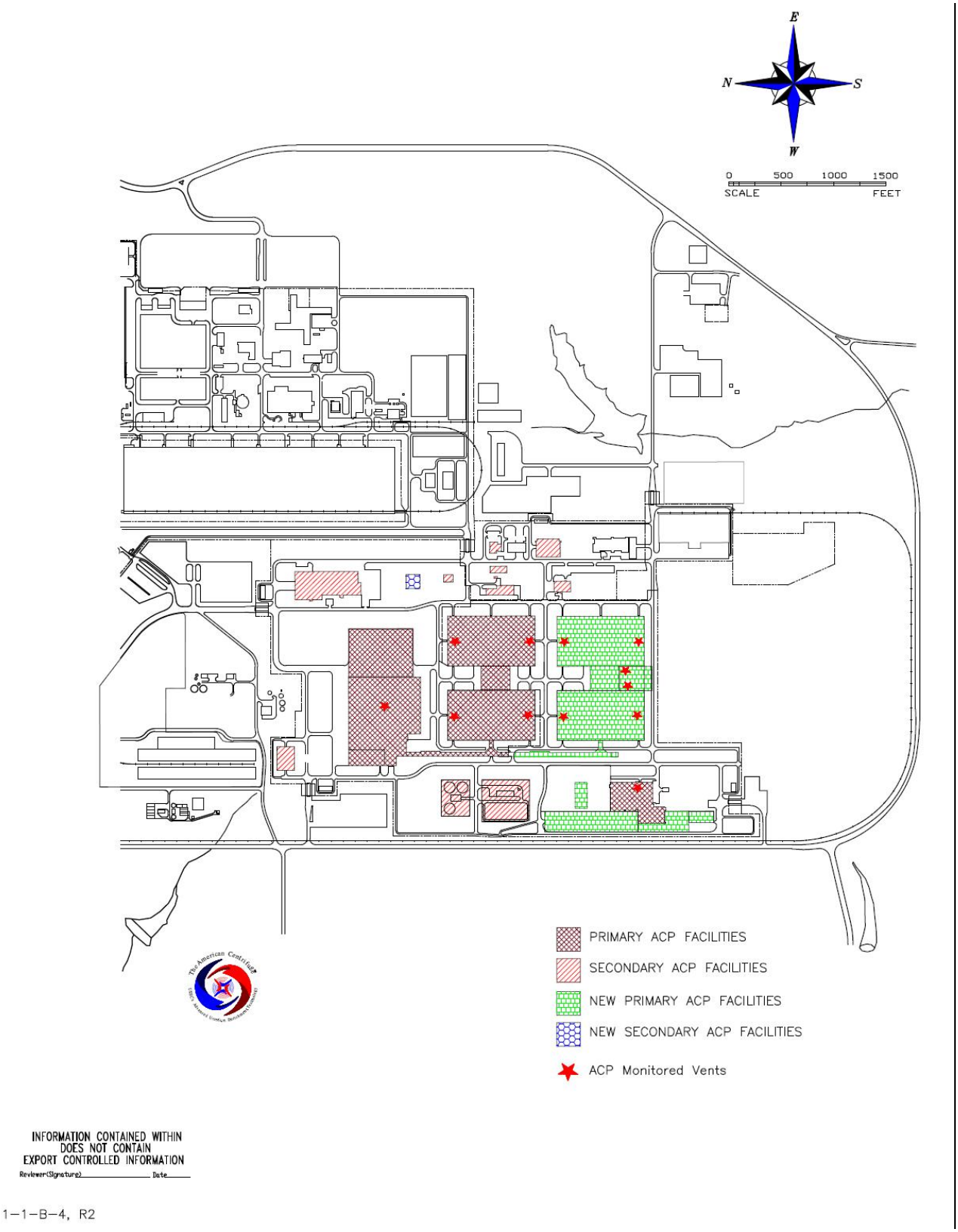

Figure A-1 American Centrifuge Plant Layout

Table A-2 Summary of Continuous Monitored Stack and Vent Characteristics – American Centrifuge Plant

		Stack Height (feet)		Flow Rates		Control Device Efficiency
Location	**Diameter (in.)**	**Above Roof**	**Above Ground**	**Vol. (ft/min)**	**Monthly Vol. (SCF)**	**Percent (%)**
X-3001 North Vent	4	11.5	97.5	3,394	1.30E+7	95
X-3001 South Vent	4	11.5	97.5	3,394	1.30E+7	95
X-3002 North Vent	4	11.5	97.5	3,394	1.30E+7	95
X-3002 South Vent	4	11.5	97.5	3,394	1.30E+7	95
X-3346 Feed and Withdrawal Area Vent*	6	7	62	2,243	1.94E+7	95
X-7725 Gas Test Stands Vent	4	4	79	3,959	1.51E+7	95

* The evacuation system heads used to support process piping connections and disconnections in the X-3346 and X-3344 building are connected to the evacuation system and exhaust through the permitted vent. The portable gulpers used to support activities like maintenance in any of the ACP buildings are not connected to a permitted vent and exhaust into the building in which they are used.

Table A-3 Possession Limits for NRC Regulated Materials and Substances

	Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
A.	Source Material [d,f]	92	Solid, liquid, and gas	UF_6, UF_4, UO_2F_2, oxides, metal and other compounds	215,000 Metric Tons Uranium (MTU)[a]	Uranium (including normal, depleted, and reprocessed), daughter products, process contaminants, and wastes Laboratory chemicals Analysis of samples[e] Instrument calibration and check sources
B.	Source Material	90	Solid and liquid	Soluble and insoluble chemicals, metal	10 curie (Ci)	Laboratory chemicals, instrument calibration sources, plated metallic sources, instrument check sources Analysis of samples[e]
C.	Special Nuclear Material, [b,c,d,f]	92	Solid, liquid, and gas	UF_6, UF_4, UO_2F_2, oxides, metal and other compounds	4,000 MTU	Uranium (including reprocessed) enriched in isotope 235 up to 10 percent by weight, uranium daughter products and process contaminants and wastes, to include: (1) laboratory chemicals, (2) analysis of samples[e], (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_6, UF_4, UO_2F_2, oxides, metal and other compounds	10,000 grams (g) ^{235}U[g]	Uranium enriched to isotope 235 from 10 percent up to 20 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[e]; or (4) instrument calibration and check sources.

Table A-3 Possession Limits for NRC Regulated Materials and Substances

	Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
		92	Solid, liquid, and gas	UF_6, UF_4, UO_2F_2, oxides, metal, and other compounds	1,000 g ^{235}U[f]	Uranium enriched in isotope 235 to 20 percent and up to 98 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[e], or (4) instrument calibration and check sources.
	Special Nuclear Material	94	Sealed Source		5 Ci	Instrument calibration sources, NDA
			Unsealed source		0.5 Ci	Laboratory chemicals Analysis of samples[e]
		94	Any	Any	0.5 Ci	Process contaminants and wastes, material held in cylinders from previous operations or from processing FSU or recycled uranium.
D.	By-Product Material	1-89, 91	Sealed source		1 Ci with no single isotope to exceed 100 millicuries (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[e]
		27 Co-57	Sealed Source		1 Ci	Calibration, internal Instrument standard, NDA
		27 Co-60	Sealed Source		10 Ci	Calibration, NDA, Process sources
			Unsealed Source		0.5 Ci	Laboratory chemicals Analysis of samples[e]

Table A-3 Possession Limits for NRC Regulated Materials and Substances

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
	28 Ni-63	Sealed Source		10 Ci	Process sources, internal instrument Standards
	38 Sr-90	Sealed Source		0.5 Ci	Calibration
	43 Tc-99	Sealed Source Unsealed Source		10 Ci 5 Ci	Calibration Laboratory chemicals, Analysis of samples[e]
		Any	Any	180 Ci	Process contamination and wastes, material held in cylinders from previous operations or from processing FSU or recycled uranium.
	55 Cs-137	Sealed Source		10 Ci	Calibration, NDA Process sources
		Unsealed Source		0.5 Ci	Laboratory chemicals Analysis of samples[e]
	70 Yb-169	Sealed Source		5.0 Ci	Calibration, NDA
	81 Tl-207	Sealed Source		1.0 Ci	Calibration
	88 Ra-226	Sealed Source		1 Ci	Calibration
	93, 96, 97, 99, 100	Sealed source Unsealed source		0.5 Ci 1.0 Ci	Calibration Laboratory Chemicals Analysis of samples[d]
	93, 95-100	Any	Any	0.5 Ci	Process contaminants and wastes, material held in cylinders from previous operations or from processing FSU or recycled uranium.
	95	Sealed source Unsealed source	Oxides, metals Oxides, metals, Solutions	15 Ci 0.5 Ci	Calibration, process source Analysis of samples[e] Laboratory chemicals

Table A-3 Possession Limits for NRC Regulated Materials and Substances

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
	98	Sealed source Unsealed source	Oxides, metals Oxides, metals, Solutions	10 Ci 0.5 Ci	Calibration, NDA Analysis of samples[e] Laboratory chemicals

a. MTU – Metric Tons Uranium

b. 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 in any of the foregoing, but does not include source material.

c. FSU material meets the American Society for Testing and Materials (ASTM) Standard C996, Standard Specification for Uranium Hexafluoride Enriched to Less Than 5 percent ^{235}U; UF_6 for enrichment meets the ASTM Standard C787, Standard Specification for Uranium Hexafluoride for Enrichment.

d. Reprocessed uranium includes the feed and processing of Paducah Product and any uranium stockpile UF_6 transferred from DOE to the Licensee for enrichment.

e. "Analysis of samples" include the activities required to obtain samples for analysis, whether on-site or off-site, and the potential subsequent return of this material for disposition (waste, utilization).

f. Uranium to be fed to the enrichment plant will meet the requirements of ASTM Standard C996, "Standard Specification for Uranium Hexafluoride Enriched to Less Than 5% ^{235}U " or ASTM Standard C787, "Standard Specification for Uranium Hexafluoride for Enrichment" for reprocessed UF_6. All other uranium that does not meet the requirements of ASTM C996 or C787 for reprocessed UF_6 may be accepted for storage and subsequent dispositioning but will not be introduced to the enrichment process, with the exception of small amounts (e.g., 50 pounds UF_6) associated with sampling, sub-sampling, and analyses required to establish receiver's values.

g. These possession limits do not include DOE material held up in installed equipment not leased.

FSU – Former Soviet Union

Table A-4 American Centrifuge Plant Analyzed Events with Potential Off-Site Consequences Exceeding 10 CFR 70.61 Criteria

ISA Event No.	Event Description/Initiator	Unmitigated Off-Site Consequences	
		Rad[1]	Chem[2]
CY1-2	Fire from spilled/leaked fuel causes over pressure and rupture of a cylinder	Int.	High
CY1-3	Vehicle or combustible material fire causes over pressure and rupture of a cylinder.	Int.	High
FB1-2	Large fire in the Feed Area results in a release of UF_6 from damaged feed cylinders, feed headers, process piping, burp system, and/or evacuation system.	High	High
FB1-4	Large fire in the Feed Area due to ongoing construction or maintenance activities results in a release of UF_6.	High	High
FB3-1a	Breach of over-pressurized feed cylinder releases UF_6.	High	High
FB3-3	Leak in feed process piping results in a release of UF_6.	Low	High
FB3-3a	Leak in coupling to feed cylinder (e.g. pigtail) results in a release of UF_6.	Low	High
FB3-4	Breach of coupling to feed cylinder (e.g., pigtail) results in a release of UF_6.	Low	High
FB3-5	A feed cylinder or process piping is impacted by a forklift or overhead bridge crane breaching the cylinder or piping, and releasing UF_6.	Low	High
FB3-7	Compressed gas bottle (such as nitrogen) is toppled shearing the valve. The bottle becomes a missile, which impacts a feed cylinder, or holding tank causing a cylinder or tank breach and releasing UF_6.	Low	High
FB3-10	Release of UF_6 due to a feed freezer/sublimer shell structural failure during the unloading phase.	Intermediate	High
FB6-10	Errant vehicle impacts Feed Area breaking through the building wall and damaging adjacent feed cylinder resulting in a release of UF_6.	Low	High
PB1-2	Large fire in the Process Building results in a release of UF_6 from damaged process equipment.	Low	Int.
PB1-6	Large fire in the Process Building due to ongoing construction activities results in a release of UF_6 from damaged process equipment.	Low	Int.
RA1-2	Large fire in the Recycle/Assembly Facility/Centrifuge Training and Test Facility/Interplant Transfer Corridor results in a release of contamination or trace amounts of UF_6 from wrecked centrifuges that have been stored and centrifuge(s) being tested, or UF_6 contained in the source cylinder.	Low	Int.
RA1-4	Large fire in the Recycle/Assembly Facility/Centrifuge Training and Test Facility/Interplant Transfer Corridor results in a release of contamination or trace amounts of UF_6 from wrecked centrifuges that have been stored and centrifuge(s) being tested, or UF_6 contained in the source cylinder due to ongoing construction or maintenance activities.	Low	Int.
BT1-2	Large fire in the Customer Services Building results in a release of UF_6 from damaged cylinders and piping.	High	High
BT1-4	Large fire in the Customer Services Building due to ongoing construction or maintenance activities results in a release of UF_6.	High	High
BT3-1a	Breach of over-pressurized cylinder in an autoclave releases UF_6.	High	High
BT3-1b	Structural failure of within an autoclave results in release of UF_6.	High	High

Table A-4 American Centrifuge Plant Analyzed Events with Potential Off-Site Consequences Exceeding 10 CFR 70.61 Criteria (Continued)

ISA Event No.	Event Description/Initiator	Unmitigated Off-Site Consequences	
		Rad[1]	Chem[2]
BT3-3	Breach of process piping results in a release of UF_6.	High	High
BT3-4	Breach of coupling to cylinder results in a release of UF_6.	High	High
BT3-4a	Breach of coupling during movement of heated cylinder from autoclave results in a release of UF_6.	High	High
TA1-2	Transport equipment fire during cylinder transport causes over pressure and rupture of a cylinder.	Int.	High
SR1-3	Vehicle or combustible material fire occurs in the X-3346A shipping/receiving area or in the vicinity of the bridge crane rail system to X-3346 during cylinder movement. Fire causes over pressure and rupture of cylinders, resulting in a UF_6 release.	Int.	High
WS1-1	Large fire in the Withdrawal Area results in a release of UF_6 from damaged process equipment.	High	High
WS1-4	Large fire in the Withdrawal Area due to ongoing construction activities results in release of UF_6.	High	High
WS3-12	Release of UF_6 due to a cold trap shell structural failure or failure of associated piping during the regeneration phase of burp operation.	Low	High
WS3-13	Release of UF_6 due to a cold trap transfer line rupture.	Low	High
WS3-17	Release of UF_6 due to freezer/sublimer shell structure failure during unloading phase.	Int.	High

[1] Definition of High, Intermediate (Int.), and Low consequences from Table A-5 of the ISA Summary for the American Centrifuge Plant.
[2] Definition of High, Intermediate (Int.), and Low consequences from Table A-6 of the ISA Summary for the American Centrifuge Plant.

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APPENDIX B

GASEOUS DIFFUSION PLANT CERTIFIED ACTIVITIES

Gaseous Diffusion Plant Certified Activities

The primary mission of the plant is the enrichment of uranium with the isotope necessary to produce fuel for nuclear reactors using the gaseous diffusion process. The enrichment operations were shutdown by the United States Enrichment Corporation in 2001. Enrichment sufficient to allow for a stand-alone enrichment capacity of 3 million Separative Work Units per year was placed in a "cold standby" condition. This equipment is currently maintained in cold standby with some chemical treatment for removal of residual deposits and some equipment removal and decontamination is in progress. The remaining cascade equipment is being maintained in a "cold shutdown" condition with some chemical treatment for deposit removal. A basic summary of this process follows.

The gaseous diffusion enrichment process employs a series of compressors and converters to enrich uranium hexafluoride (UF_6) in uranium-235 hexafluoride ($^{235}UF_6$) molecules. 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}U isotope, while the undiffused portion is slightly depleted in the ^{235}U 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 stages until the desired enrichment level is reached. Enriched UF_6 or depleted UF_6 is stored at the plant for future use or disposition.

The gaseous diffusion plant (GDP) receives 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 regulations.

Based upon the hazards and consequence analyses reflected in the Portsmouth Gaseous Diffusion Plant Application for United States Nuclear Regulatory Commission Certification, Safety Analysis Report (USEC-02), the United States Enrichment Corporation has concluded that besides UF_6, there are five other chemicals required to support the gaseous diffusion plant that are in sufficient quantities to pose a potential off-site hazard if released. The following is a brief description of each of these substances, the manner in which it is used in the enrichment process, and the locations where it is stored or used at the plant.

- UF_6 is stored in cylinder yards as a solid until it is heated to liquefy the cylinder contents so that the UF_6 can be fed for enrichment, sampling, and/or transfer. In gaseous and liquid forms, UF_6 could present a hazard. Material in these forms is primarily located in the X-326, X-330, and X-333 Process Buildings, the X-343 Feed Vaporization and Sampling Facility, the X-344A Toll Enrichment Facility, and the X-342A Feed, Vaporization and Fluorine Generation Building.

- ***Chlorine Trifluoride (ClF_3).*** Chlorine trifluoride is delivered to the plant in 160-pound (lb) cylinders and is stored in 160-lb cylinders at the X-742 Gas Cylinder Storage Facility and in two 2,000-ft storage drums located in the X-330 and X-333 buildings. Chlorine trifluoride is used for cell treatment on an as-needed basis in the process buildings.

- ***Nitric Acid (HNO_3).*** Nitric acid is transported to plant site by tank truck and is stored in two tanks, 1,500 gallon and 3,000 gallon located 60 feet east of X-705 Decontamination Building and directly north of the incinerator building. Nitric acid is pumped to a 100-gallon storage tank in X-705 building and gravity fed to various systems, such as small parts, the neutralization sink, and spray tanks. Nitric acid is also stored in glass bottles in the X-720 Maintenance and Stores Building toxic materials storage area. Nitric acid is used to decontaminate uranium-contaminated metal surfaces and in electroplating.

- ***Fluorine (F_2).*** Fluorine is generated from hydrogen fluoride gas in X-342A facility and is pumped to storage tanks in the X-342B Fluorine Storage Building. The three F_2 storage tanks measure 8 feet in diameter and 220 feet long. Fluorine is used to pacify and condition metal surfaces prior to exposure to UF_6 and for cell treatment on an as-needed basis.

- ***Chlorine (Cl_2).*** Chlorine is used in the treatment of the sanitary water supply and for sewage treatment at DOE reservation. The function of chlorine in the water and wastewater treatment processes is as a disinfectant for removal of disease-carrying organisms. Chlorine on plant site is found at the X-611E Water Treatment Plant in 1-ton cylinders, at the X-6619 Sewage Treatment Plant in 150-lb cylinders, and in the X-742 Gas Cylinder Storage Facility in 150-lb cylinders.

- ***Hydrogen Fluoride (HF).*** HF is used in the production of fluorine. Liquid HF is delivered to the plant in 850-lb cylinders and is stored in the X-342A facility. Therefore, the HF is vaporized and piped to four fluorine generators, where it is dissociated to produce fluorine.

Table B-1 lists the primary locations of these chemicals and their typical inventories.

Table B-1 Hazardous Chemicals – Gaseous Diffusion Plant

Name	Building	Typical Quantity
Uranium Hexafluoride	X-326, X-330, X-333, X-342A, X-343, X-344A, X-345, X-745, and Cylinder Storage Yards	400,000,000 lb
Chlorine Trifluoride	X-330, X-333, and X-742	4,000 lb
Nitric Acid	X-705 and X-720	30,000 lb
Fluorine	X-326, X-330, X-333, X-342A, X-343, X-344A, X-345, X-745, and Cylinder Storage Yards and, X-710, and plant fluorine distribution system	700 lb
Chlorine	X-611E, X-6619, and X-742	7,000 lb
Hydrogen Fluoride	X-342A	5,000 lb

Gaseous Diffusion Plant Facility Description

The three GDP process buildings account for 8 million square feet (ft^2) of the total 10 million ft^2 of floor space at the GDP. 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.

The X-326, X-330, and X-333 process buildings, are steel-framed transite-covered two-story buildings that house the gaseous diffusion cascade and withdrawal equipment. Three smaller buildings, X-343, X-342A, and X-344A, house the GDP feed and sampling and transfer facilities. Some of the instruments and controls in these buildings are duplicated in the X-300 Process Control Facility.

The X-300 facility (function described in Section 6.1.2 of this plan) also serves as the alternate Emergency Operations Center and the headquarters of the Plant Shift Superintendent. A description of the cascade/process buildings, key support buildings, on-site emergency facilities, and airborne effluent controls follows. The X-300 facility, also houses power operations personnel, the Cascade Controllers/Coordinators, and other cascade operations personnel. The X-300 facility provides centralized communications, information processing, and support services capabilities associated with GDP operations.

The process buildings (i.e., X-326, X-330, and X-333 buildings) contain UF_6 as a gas in the cascade equipment and as both gas and liquid in the withdrawal stations housed in each building. Most of the process equipment is operated at sub-atmospheric pressures. The withdrawal stations are operated at pressures greater than atmosphere. In addition, the buildings contain ClF_3 and F_2 in significant quantities to support operations.

UF_6 feed is supplied from the X-342A and X-343 buildings. Cylinders containing solid UF_6 are placed in autoclaves and heated to liquefy the UF_6. The UF_6 is then fed as a gas to the process building via interconnecting piping. The X-342A building also houses the fluorine generation cells where HF is converted to fluorine and then stored in the X-342B storage tanks. In addition, shipping and receiving of UF_6 cylinders may be performed at the X-343 building.

The X-344A Toll Enrichment Facility is the central receiving and shipping point for large-cylinder toll enrichment entering and leaving the plant. Small-cylinder shipping and receiving activities are performed at the special nuclear material storage facility (X-345).

Cylinders containing UF_6 are stored at several locations near the processing areas served. Large cylinders (10-ton and 14-ton) are stored in the X-745B, Toll Enrichment Process Gas Yard, X-745F, North Process Gas Stockpile Yard, and X-745G, Cylinder Storage Yard and at two additional processing lots (X-343N and X-343S) at the X-343 building. Empty feed cylinders can be stored east of X-343 in a gravel lot to await eventual return to the supplier. Product cylinders (2-l/2-ton) are stored at the X-745B, X-343N, and X-343S storage lots. Small (less than 2-1/2-ton) low assay UF_6 cylinders and empty small cylinders are stored in the X-344 miscellaneous storage area. The X-344A vault is used for storage of 5-, 8-, and 12-inch UF_6 cylinders.

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. Wastewater from the decontamination process, which requires treatment prior to discharge, is collected in a separate drain system.

The X-720 building contains several types of maintenance shops. The south side of the building contains the Main Stores Area, and a Toxic Materials Storage Area. The building and its facilities are necessary to provide services for maintenance of the plant. The work activities involved within this facility have the potential of dealing with radioactive contaminated materials and process related equipment.

The X-710 Technical Services Building, Analytical Laboratory performs environmental, chemical, and isotopic analyses for the GDP. F_2 gas is provided to select areas from a F_2 supply cabinet also located directly west of X-710. The licensed materials are bounded by the quantities listed in Table B-3.

Sanitary water is treated by chlorination, providing microbiological control. The primary components of the X-611E Chlorine System are chlorine containers, a feed manifold, chlorinators, chlorine injectors, and chlorine leak detectors and associated alarms.

The X-6619 Sewage Treatment Plant services the DOE reservation. Sewage is fed into a series of underground sanitary sewers. Post-chlorination followed by de-chlorination with sulfur dioxide is used to meet National Pollutant Discharge Elimination System (NPDES) effluent standards. The treated effluent is discharged to the Scioto River.

The XT-847 Waste Management Staging Facility is located near the southern end of the DOE reservation. The facility 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 facility by concrete block, four-hour rated firewalls, and steel fire doors.

The facilities on the DOE reservation associated with the GDP are shown in Figure B-1.

Airborne effluent monitors cover the enrichment 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; and continuous vent samplers monitor the seal exhaust vents. 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.

Fifteen United States Enrichment Corporation emission sources at the GDP 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 millirem/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. Table B-2 summarizes stack heights and flow rates.

Possession limits for radioactive materials are summarized in Table B-3.

Table B-4 contains a summary of the postulated events that could result in potential off-site consequences from the GDP.

Table B-2 Summary of Continuous Monitored Stack and Vent Characteristics – Gaseous Diffusion Plant

		Stack Height (feet)		Flow Rates		Control Device Efficiency
Location	**Diameter (in.)**	**Above Roof**	**Above Ground**	**Vol. (ft/min)**	**Monthly Vol. (SCF)** [a]	**Percent (%)**
X-326 Top Purge Vent[b]	5	103	165	2,779	1.47E+07	99.99
X-326 Side Purge [b]	5	103	165	4,588	2.46E+07	99.99
X-326 E-Jet [b]	5	103	165	6,372	3.54E+07	99.99
X-330 Cold Recovery Vent	4	12	78	4,753	1.57E+07	90
X-333 Cold Recovery Vent	3	15	97	8,746	1.50E+07	99
X-333 Building Evacuation Vent	4	15	97	10,508	2.27E+06	90
X-333 Seal Exhaust System Area 1	6	6	72	293	2.20E+06	99
X-330 Seal Exhaust System Area 2	4	6	72	424	1.71E+06	99
X-330 Seal Exhaust System Area 3	4	6	72	347	1.22E+06	99
X-326 Seal Exhaust System Area 4	8	6	72	87	1.22E+06	99
X-326 Seal Exhaust System Area 5	8	6	72	77	1.35E+06	99
X-326 Seal Exhaust System Area 6	8	6	72	83	1.20E+06	99
X-343 Cold Trap Operations Vent	3	68	110	1,033	2.19E+06	99
X-344 Cold Trap Operations Vent	3	12	58	1,033	2.19E+06	99
X-344 Gulper	16	8	58	322	2.81E+06	99

[a] Monthly volumes are based on an average of data from 1992 to 1994.
[b] These three vents physically discharge through four interconnected pipes of the listed dimensions.

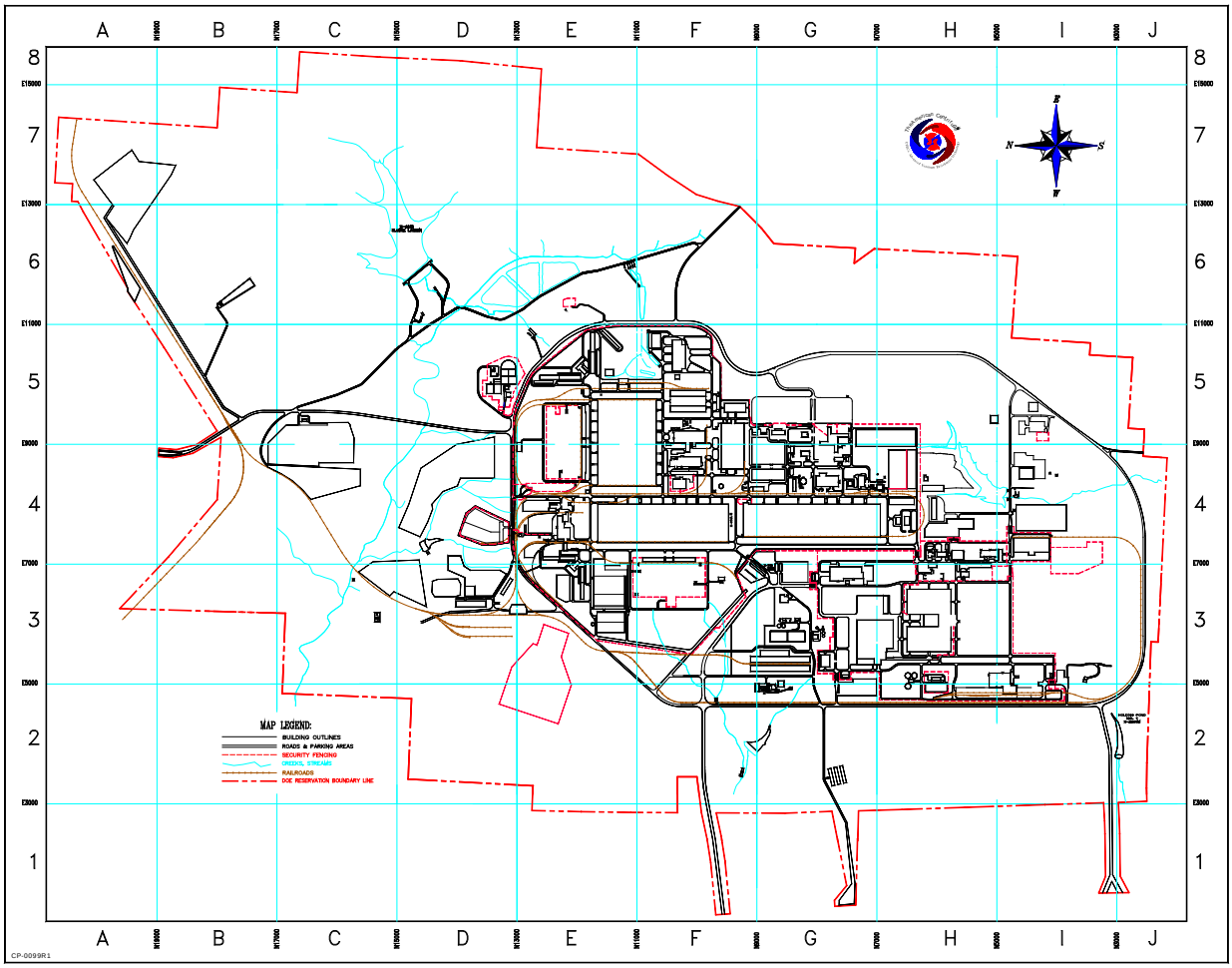

Figure B-1 Gaseous Diffusion Plant Layout

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Table B-3 Possession Limits for NRC-Regulated Materials and Substances – Gaseous Diffusion Plant

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
A. Source Material[d,f]	92	Solid, liquid, and gas	UF_6, UF_4, UO_2F_2, oxides, metal and other compounds	300,000 MTU[a]	Uranium (including natural, depleted and recycled) and daughter products and process contaminants and wastes Laboratory chemicals Analysis of samples[e] 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[e]
C. Special Nuclear Material[b,d,f]	92	Solid, liquid, and gas	UF_6, UF_4, UO_2F_2, oxides, metal and other compounds	300,000 MTU	Uranium (including recycled) enriched in isotope 235 up to 10 percent by weight, uranium daughter products and process contaminants and wastes, to include: (1) laboratory chemicals, (2) analysis of samples[e], (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_6, UF_4, UO_2F_2, oxides, metal and other compounds	10,000 g ^{235}U[g]	Uranium enriched in isotope 235 from 10 percent up to 20 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[e], or (4) instrument calibration and check sources.

Table B-3 Possession Limits for NRC-Regulated Materials and Substances – Gaseous Diffusion Plant (Cont.)

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
	92	Solid, liquid and gas	UF_6, UF_4, UO_2F_2, oxides, metal and other compounds	1,000 g ^{235}U[g]	Uranium enriched in isotope 235 to 20 percent and up to 98 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[e], 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[e]
	94	Any	Any	That resulting from the feed of recycled or FSU[c] uranium	Process contaminants and wastes, material held in equipment from previous operations
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[e]

Table B-3 Possession Limits for NRC-Regulated Materials and Substances – Gaseous Diffusion Plant (Cont.)

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
	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[e]
	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[e]
	43 Tc-99	Sealed Source		10 Ci	Calibration
		Unsealed Source		5 Ci	Laboratory chemicals, Analysis of samples[e]
		Any	Any	That resulting from the feed of recycled or FSU[c] 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[e]
	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

Table B-3 Possession Limits for NRC-Regulated Materials and Substances – Gaseous Diffusion Plant (Cont.)

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
	93,96,97,99,100	Sealed source Unsealed source		0.5 Ci 1.0 Ci	Calibration Laboratory chemicals Analysis of samples[e]
	93, 95-100	Any	Any	That resulting from the feed of recycled or FSU uranium[c]	Process contaminants and wastes, material held in equipment from previous operations
	95	Sealed source Unsealed source	Oxides, metals Oxides, metals, solutions	15 Ci 0.5 Ci	Calibration, process source Analysis of samples[e] Laboratory chemicals
	98	Sealed source Unsealed source	Oxides, metals Oxides, metals, solutions	10 Ci 0.5 Ci	Calibration, NDA Analysis of samples[e] Laboratory chemicals

[a] MTU - Metric Tons Uranium

[b] See 10 CFR Part 76 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 in any of the foregoing, but does not include source material.

[c] FSU meets the ASTM Standard C996, Standard Specification for Uranium Hexafluoride Enriched to Less Than 5 percent ^{235}U; UF_6 for enrichment meets the ASTM Standard C787, Standard Specification for Uranium Hexafluoride for Enrichment.

[d] Recycled uranium includes the feed and processing of Paducah Product and the "stockpile" UF_6 transferred from DOE to USEC for enrichment.

[e] "Analysis of samples" refers to the analysis of samples related to enrichment activities or site remediation (PORTS, PGDP, DOE-OR) activities utilizing existing facilities and analytical techniques to process low-level radioactivity samples bounded by the possession limits stated in this table.

[f] Except for Paducah Product and the "stockpile" UF_6 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% ^{235}U" or ASTM Standard C787, "Standard Specification for Uranium Hexafluoride for Enrichment" for reprocessed UF_6. All other uranium that does not meet the requirements of ASTM C996 or C787 for reprocessed UF_6 may be accepted for storage and subsequent dispositioning but will not be introduced to the cascade, with the exception of small amounts (e.g., 50 lb UF_6) associated with sampling, sub-sampling, and analyses required to establish receiver's values.

[g] These possession limits do not include material in USEC leased 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).

FSU - Former Soviet Union

Table B-4 Gaseous Diffusion Plant Postulated Events with Potential Off-Site Consequences

Event Description and Location	Potential Off-Site Consequences	
	Rad[1]	Chem[2]
Catastrophic rupture of F_2 storage tank in X-342B building.	NA	Int.
Catastrophic rupture of ClF_3 storage tank in X-330 or X-333 buildings.	NA	High
Catastrophic rupture of a 150 lb Cl_2 cylinder outside anywhere on-site.	NA	High
Catastrophic rupture of a 1-ton, (2,000 lb) Cl_2 cylinder occurring anywhere on-site.	NA	High
Catastrophic failure of an 850 lb HF container occurring anywhere on-site.	NA	High
Catastrophic rupture of the X-342 HF system.	NA	High
Catastrophic rupture of a liquid UF_6 cylinder (2.5-, 10-, or 14-ton UF_6 cylinder) occurring anywhere on-site.	Low	High
Catastrophic process failure in any facility that results in a large release outside the facility.	Low	High
Fire which cannot be controlled by Fire Protection Services within 15 minutes of the time of verification and compromises any system, process, equipment, and/or hazardous material storage area, and compromises any system, process, equipment, and/or hazardous material storage area which if breached has the potential to result in a Site Area Emergency (SAE).	Low	High
Explosion, which has compromised any system, process, equipment, and/or hazardous material storage area, and compromises any system, process, equipment, and/or hazardous material storage area which if breached, has the potential to result in an SAE.	Low	High
Security event with an imminent or actual loss of physical control of facilities containing systems, processes, equipment, and/or hazardous material storage areas and if breached has the potential to result in a radiological or non-radiological hazardous material release and has the potential for ERPG-2, TE, or SAR EBE exposure levels both on-site and off-site.	Low	High
Other adverse event occurring on-site, potentially or actually, compromising any system, process, equipment, and/or hazardous material storage area that may result in a radiological or non-radiological hazardous material release which has the potential for exceeding ERPG-2 exposure levels both on-site and off-site.	Low	High.

[1] High, Intermediate, and Low consequences consistent with definitions from Section 4.2 of the GDP Safety Analysis Report.

[2] High, Intermediate, and Low consequences consistent with definitions from Section 4.2 of the GDP Safety Analysis Report and the GDP Process Hazard Analyses

APPENDIX C

AMERICAN CENTRIFUGE LEAD CASCADE LICENSED ACTIVITIES

American Centrifuge Lead Cascade Licensed Activities

The mission of the American Centrifuge Lead Cascade (Lead Cascade) is to demonstrate the enrichment of uranium using the gas centrifuge process. In the gas 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.

The Lead Cascade occupies a very small fraction of the area of the U.S. Department of Energy (DOE) reservation (Figure C-1 located within Appendix F of this plan) and the Lead Cascade has a modest possession limit of 250 kilograms (kg) UF_6. The type, quantity, and form of U.S. Nuclear Regulatory Commission (NRC)-regulated source material, byproduct material, and special nuclear materials are shown in Table C-2.

The Lead Cascade receives uranium in normal form (approximately 0.711 wt. percent ^{235}U) UF_6 in either a Model 5A/B, 8A, or 12B UF_6 cylinder from the gaseous diffusion plant (GDP). The UF_6 is fed into the system in the gaseous state and is enriched up to 10 wt. percent assay ^{235}U.

The Lead Cascade is operated on recycle where the enriched product stream is recombined with the depleted stream prior to being re-fed to the cascade. No product withdrawals are made from the Lead Cascade other than the samples that are taken for laboratory analysis.

Due to the small quantity of licensed material, the consequences of any accident postulated in the Integrated Safety Analysis (ISA) would be small when compared to postulated accidents at the GDP or the American Centrifuge Plant (ACP).

UF_6 leak detection instrumentation and criticality accident detection instrumentation are not utilized in the Lead Cascade. The Lead Cascade is small in area and manned on a continuous basis while UF_6 is present in the system. Abnormal operating conditions and accidents are identified by human observation, based on installed instrumentation and routine operator rounds of the facility.

Based upon the hazards and consequence analyses reflected in the ISA, the Licensee has concluded that UF_6 is the only material in sufficient quantity used at the Lead Cascade that poses a potential off-site hazard. Upon release to the atmosphere UF_6 reacts with moisture in the air to produce two highly toxic substances, uranyl fluoride particulate, and hydrogen fluoride (HF). The following provides a brief description of each of these substances, the manner in which it is used in the enrichment process, and the locations where it is stored or used at the Lead Cascade.

- UF_6 on-site is stored in solid form until it is heated, sublimed, and fed to the enrichment process.

- HF is not used in the Lead Cascade operations nor is significant quantities stored at the Lead Cascade. However, HF is produced during a release of UF_6. UF_6 reacts with moisture in the air resulting in the formation of HF and uranyl fluoride (UO_2F_2). At room temperatures and at high humidity, UO_2F_2 hydrates and an HF-H_2O fog

develops that will result in an easily visible, buoyant cloud. HF is irritating to skin, eyes, and throat.

Table C-1 lists the primary locations of these chemicals.

Table C-1 Hazardous Chemicals – American Centrifuge Lead Cascade

Name	Building	Typical Quantity
Uranium Hexafluoride	X-3001 building (primarily in CCZ area depicted in Figure C-2 [located within Appendix F of this plan])	250 kg
Hydrogen Fluoride	X-3001 building (primarily in CCZ area depicted in Figure C-2 [located within Appendix F of this plan])	As a result of a release of UF_6

American Centrifuge Lead Cascade Description

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

The Lead Cascade operates 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. Additional centrifuges may be available for other uses, but are not installed for operation (e.g., spares). 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.

Facility Layout

The Lead Cascade facilities shown in Figure C-1 (located within Appendix F of this plan) includes the X-3001 Process Building, which houses up to 240 operating centrifuge machines, associated process piping, instrumentation and controls, computer systems, and auxiliary support equipment. Other facilities include the X-3012 Process Support Building, the X-7725 Recycle/Assembly Facility, the X-7726 Centrifuge Training and Test Facility, and the X-7727H Interplant Transfer Corridor.

A small portion of the X-3001 building houses the Lead Cascade. The centrifuge machine is connected to a service module position where the centrifuge is supplied with auxiliary utilities, power, controls, and UF_6. The Lead Cascade is supplied normal (approximately 0.711 wt. percent ^{235}U) UF_6 from either a Model 5A/B, 8A, or 12B UF_6 cylinder through a feed system consisting of a portable cart capable of heating the solid material to a gaseous state.

After the initial fill from the portable feed cart, the centrifuge machines operate on a recycle mode as a "closed loop" system in the gaseous state, and the feed cart is on "standby." This recycle mode in the "closed loop" causes the enriched material within the cascade to be mixed with the depleted material within the cascade prior to it re-entering the feed stage. Laboratory quantities of UF_6 are sampled from the Lead Cascade in order to perform analyses. No enriched product is withdrawn from the cascade, except for the samples. Samples are processed in the X-710 Analytical Laboratory. The cascade enrichment is normally less than 5 wt. percent assay. However, testing of the cascade may result in some material being enriched above 5 wt. percent, with a licensed limit of 10 wt. percent ^{235}U.

A dump cart is provided to remove the contents of the cascade in the event inventory must be reduced for normal operations or as a result of upset conditions. A local control center (LCC) at the cascade provides operator interface through controls and instruments with the centrifuge machines, and an area control room (ACR) located in the X-3012 building also provides limited control of the centrifuges remotely.

The Lead Cascade operational area (area containing Lead Cascade licensed material listed in Table C-1) is located in a small portion (approximately one-eight) of the X-3001 building. The Lead Cascade operational area is identified as the Contamination Control Zone (CCZ) shown in Figure C-2 (located within Appendix F of this plan). The primary purpose of the process buildings is to house the centrifuge machines and the support systems necessary to perform the enrichment. At the north and south ends of the X-3001 building are equipment/utility bays and mezzanines where auxiliary equipment is housed. A building vent for the purge and evacuation vacuum systems is also located in the building. Due to the nature of centrifuge operation, a vacuum is maintained on the centrifuge casings to minimizing drag on the internal rotor.

The process is controlled by the LCC, which is located within the Lead Cascade operational area and is designed to control the Lead Cascade centrifuge process. The LCC is connected to the ACR located in the X-3012 building.

The X-3012 building is located between the X-3001 and X-3002 buildings. (The X-3002 building is described in Appendix A of this Emergency Plan; however, is not a Lead Cascade facility.) 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 houses the ACR for the Lead Cascade; 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 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, men's and women's locker rooms, restrooms, and a mezzanine area with additional office areas, and HVAC rooms.

The X-7725 facility is a very large multiple level building used for the assembly of centrifuge machines. A small portion of the X-7725 facility, shown in Figure C-1 (located in Appendix F of this plan), provides administrative facilities; buffer storage area for storage, handling, and assembly preparation of centrifuge components; and completed machines, as well as training rooms, and the storage and maintenance areas for the transporter. Areas of the X-7725 will be utilized for shipping, receiving, and storage of materials.

The X-7726 facility is located in the northwest corner of the X-7725 facility. 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 X-7727H corridor provides an enclosed north-south throughway from the X-7725 and X-7726 facilities to the X-3001 and X-3002 buildings. A transporter moves centrifuge machines between the X-7726 facility and X-3001 building through the covered X-7727H corridor. The corridor is wide enough to accommodate bi-directional passage of two fully loaded centrifuge transporters.

GDP facilities that provide support to the Lead Cascade include the XT-847 Waste Management Staging Facility and X-710 Technical Services Building (these facilities are discussed in Appendix B).

Lead Cascade operations are monitored continuously from the X-3012 building ACR. In the event of an emergency condition, the Plant Shift Superintendent (PSS) located in the X-300 Process Control Facility is notified. The PSS assumes the Incident Commander duties in the unlikely event of a declared emergency. Communications between the ACP and X-300 facility consists of a radio system, conventional telephone system, public address system, and evacuation alarm system.

A four-inch continuous vent sampling system with a total stack height of 97.5 feet located on the X-3001 building roof, monitors emissions from the Lead Cascade enrichment process vent. The continuous vent sampler draws a flow-proportional sample of the vent stream through two alumina traps in series by way of an isokinetic probe. The process flow rate from this vent is a maximum of 256 cubic feet per minute. This vent meets the U.S. Environmental Protection Agency requirements.

This vent is monitored for radionuclide emissions. Although no atmospheric radionuclide emissions from the Lead Cascade have been identified to have the potential to exceed a 0.1 millirem/year dose to the most exposed member of the public during normal operation, the continuous vent monitor has been installed to quantify plant radiological airborne emissions.

The health protection program provides services for individuals to meet regulatory requirements and to maintain a high level of employee health. The X-1007 Fire Station maintains a first aid room and provides ambulance service for emergency conditions.

Other support includes protective force, fire department, health physics technicians, industrial hygiene technicians, environmental monitoring, waste management, records management, and document control. The primary facilities on the DOE reservation associated with the Lead Cascade are shown in Figure C-1 (located within Appendix F of this plan).

Table C-3 contains a summary of the event scenarios that, if unmitigated, could result in potential off-site consequences that exceeds the performance requirements of 10 *Code of Federal Regulations* 70.61 Performance Requirements. The events listed in Table C-3 require crediting of items relied on for safety, which reduces the event frequency and/or consequences. Further detail of each event scenario is located in the ISA Summary for the Lead Cascade.

Large quantities of other hazardous materials are not present in the Lead Cascade area. Only small quantities of chemicals and materials (e.g., acetone, solvents, oils) are used in the X-7726 facility and X-3012 building, primarily for assembly and maintenance activities. Storage of the chemicals and materials is in approved containers. Those items are listed in the Hazardous Material Inventory Control System.

The information within this figure has been determined to contain Export Controlled Information and is located in Appendix F of this plan

Figure C-1 Lead Cascade Facility Layout

The information within this figure has been determined to contain Export Controlled Information and is located in Appendix F of this plan

Figure C-2 Contamination Control Zone (Lead Cascade Operational Area)

Table C-2 Lead Cascade Possession Limits

Type of Material	Atomic Number	Physical State	Chemical Form	Possession Limit	Description
A. Source Material	92	Solid and gas	UF_6, UF_4, UO_2F_2, oxides, and other compounds	250 kg UF_6 169 kg U	Uranium (including natural and depleted) and daughter products and process contaminants and wastes
B. Special Nuclear Material[a]	92	Solid and gas	UF_6, UF_4, UO_2F_2, oxides, metal, and other compounds	700 g ^{235}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

[a] 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 5l 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.

Table C-3 American Centrifuge Plant Analyzed Events with Potential Off-Site Consequences Exceeding 10 CFR 70.61 Criteria

ISA Event No.	Event Description/Initiator	Unmitigated Off-Site Consequences	
		Rad[1]	Chem[2]
CP1-1	Overheated UF_6 cylinder results in a breach of cylinder and release of UF_6.	Low	High
CP1-2	Large fire in process building results in a release of UF_6 from damaged process equipment.	Low	High
CP2-4	Rupture of over-pressurized cylinder releases UF_6.	Low	High
CP2-5	Fire in diesel room spreads to day tank causing over-pressurization and deflagragation of diesel day tank, resulting in damage to Lead Cascade and release of UF_6.	Low	Int.
CP6-1	Forest or brushfire impacts process building leading to a fire within the facility and a release of UF_6.	Low	High
CP6-2	Fire from an adjacent building propagates to within the Lead Cascade building and a release of UF_6.	Low	High
CP6-3	Fire from vehicle parked or traveling adjacent to the process building propagates to within the building and a release of UF_6.	Low	High
CP6-5	Explosion/deflagration of a diesel fuel storage tank outside process building impacts Lead Cascade resulting in a release of UF_6.	Low	Int.

[1] Definition of High, Intermediate, and Low consequences from Table A-5 of the ISA Summary for the American Centrifuge Lead Cascade.
[2] Definition of High, Intermediate, and Low consequences from Table A-6 of the ISA Summary for the American Centrifuge Lead Cascade.

APPENDIX D

LETTERS OF AGREEMENT

Letters of Agreement are maintained at the plant for the following off-site response organizations.

1. Adena Regional Medical Center (Hospital)
2. Eastern High School
3. Pike County Emergency Medical Service
4. Pike County Fire Fighters Association
5. Pike Community Hospital
6. Pike County Sheriff
7. Southern Ohio Medical Center
8. Valley High School
9. Waverly High School
10. Western High School
11. Word Alive Fellowship

APPENDIX E

OFF-SITE RESPONSE ORGANIZATION COMMENTS

Off-site Response Organization Comments

Pursuant to the requirements of 10 CFR 70.22(i)(4), this enclosure provides any comments received from the off-site response organizations' review of the proposed draft Emergency Plan for the American Centrifuge Plant. Comments received by these organizations have been incorporated into this plan. This plan was submitted to the following off-site response organizations.

Off-Site Response Organization

Pike County Emergency Management Agency

Pike County Sheriff's Office/Pike County Local Emergency Planning Committee

Pike County Health Department

Pike County Fire Fighters Association

Pike County Emergency Medical Service

Scioto County Emergency Management Agency

Southern Ohio Medical Center

Pike Community Hospital

Adena Regional Medical Center (Hospital)

Word Alive Fellowship

Waverly City School District

Pike County Schools (Eastern/Western High Schools)

Valley Local School District

Ohio Emergency Management Agency

Ohio State Highway Patrol

To manage an unlikely event requiring the use of this plan, the plant has procedures that serve to protect not only employees, but also through coordination with appropriate off-site Emergency Response Organizations, the plant's neighbors as well.

Pike Co. EMA
2577 Alma Omega Rd
Waverly, Ohio 45690
Phone: 740-947-7346
Fax: 740-947-7337

[redacted]

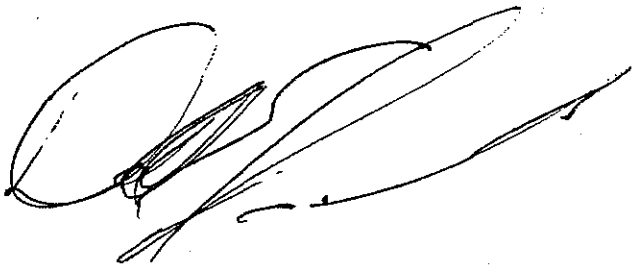
Fax

To:	**KellyCoriell**	**From:**	Pike County EMA
Fax:	897-4541	**Date:**	August 9, 2004
Phone:	[Click here and type phone number]	**Pages:**	[Click here and type number of pages]
Re:		**CC:**	[Click here and type name]

☐ **Urgent** ☐ **For** Review ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

•Comments: Enclosed please find the signed letter of concurrence with the draft Emergency Plan as presented.

At this time we have no comments nor changes to the "DRAFT" plan.



PIKE COUNTY SHERIFF'S OFFICE

LARRY D. TRAVIS
Sheriff
116 South Market St., Suite 200.
Waverly, Ohio 45690

Kelly Coriellll
Acting Regulatory Manager
P. O. Box 628, MS-1212
Piketon, Ohio 45661

Dear Ms. Coriell:

This is to advise you that the Law Enforcement Assistance Section of the EMERGENCY PLAN for the American Centrifuge Plant meets with my approval.

Should you have any questions, please give me a call.

Sincerely,

Larry D. Travis
Sheriff

Phone: 740-947-2111 *Fax: 740-947-2984* *ltravis@pikecosheriff.com*

PIKE COUNTY GENERAL HEALTH DISTRICT

229 VALLEYVIEW DRIVE WAVERLY, OHIO 45690
PUBLIC HEALTH (740) 947-7721 • HOME HEALTH (740) 947-7595 • ENVIRONMENTAL (740) 947-7721 • FAX (740) 947-1109

July 29, 2004

W. B. Burden
Health Commissioner
Pike County General Health District
229 Valleyview Drive
Waverly, Ohio 45690

Kelly Coriell, Acting Regulatory Manager
USEC Inc.
3930 U.S. Route 23 South
P.O. Box 628, Mail Stop 1212
Piketon, Ohio 45661

Dear Mrs. Coriell:

The Pike County General Health District has reviewed the draft Emergency Plan that USEC Inc. provided for the American Centrifuge Plant, which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant, and U.S. Department of Energy.

Our review found no comments, nor necessary changes to the proposed draft Emergency Plan.

The Pike County General Health District looks forward to continuing our positive relationship with USEC Inc. It is understood that we will continue with existing commitments to support the reservation, if needed, as stated in the existing Letter of Agreement until such time that a new Agreement is formalized. Accordingly, in the unlikely event of an emergency on the reservation and request for services, our organization agrees to cooperate and coordinate the necessary response/support to the plant's needs.

Please feel free to contact me at (740) 947 7721 or at pcghd@bright.net for any questions or additional information.

Cordially,

WB Burden

Wally Burden
Health Commissioner

PIKE COUNTY FIREFIGHTERS ASSOCIATION

8/13/04

To: USEC

Re: Emergency Plan Draft Update

We have reviewed the draft of the Emergency Plan and are working on section 4.3.2, to resolve wording that every department will understand.

Thank you for your patience in regards to this matter.

Sincerely,

Paul V. Swickard

Paul V. Swickard
President, Pike County Firefighters Association

Pike County EMS

116 S. Market St. Waverly, Oh. 45690

740-947-2905

8/03/2004

To: Kelly Coriell, Acting Regulatory Manager
P.O. Box 628, MS-1212
Piketon, Oh. 45661

The American Centrifuge Plant Emergency Plan was reviewed by myself and Marty Redden. The "Plan" is acceptable and no changes or corrections are required by Pike County EMS.

Respectfully,

Mike Beekman 8/3/2004

Mike Beekman
Director Pike County EMS

Scioto County

Emergency Management Agency

Kim Carver, Director (740) 355-8300

Ms. Kelly Coriell
Acting Regulatory Affairs Mgr
Advantage Technology
P.O. Box 628
Piketon, Ohio 45661

July 27, 2004

Dear Ms. Coriell,

The Scioto County Emergency Management Agency (EMA) and Scioto County Emergency Planning Committee (LEPC) are in receipt of the draft Emergency Plan for new facilities at the Portsmouth United States Enrichment Facility under regulation by the Nuclear Regulatory Commission (NRC) and the United States Department of Energy (DOE). While some of the facility information and interfaces with existing personnel and departments have changed, much of the information for facility planning and response is about the same.

Therefore, we find no changes apparent in off site agency considerations and protocol and are making no change comments for the said plan. We have been in conversation with the plant Emergency Management Director Marty Redden and are writing this letter according to his recommendations and request.

Sincerely,

Kim Carver

Kim Carver

Wayne B. Wheeler, M. D., M.P.H.
Medical Director Community Health and Wellness
Southern Ohio Medical Center
1805 27th Street
Portsmouth, OH 45662
Email wheelerw@somc.org
740-356-2593 740-356-7818 (fax)
July 26, 2004

Kelly Coriell, Acting Regulatory Manager
USEC Inc.
3930 U. S. Route 23 South
P. O. Box 628, Mail Stop 1212
Piketon, Ohio 45661

Re: NR-3605-0008 Emergency Plan for the American Centrifuge Plant in Piketon, Ohio
Docket No. 70-7004 (Revision 0)

Dear Mrs. Coriell

The Southern Ohio Medical Center has reviewed the draft Emergency Plan above cited that USEC Inc. prepared for the American Centrifuge Plant which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant, and U. S. Department of Energy.

Our review produced no comments nor necessary changes to the proposed draft Emergency Plan required by our organization. We are pleased to offer emergency medical and surgical treatment and observation within the scope of our capabilities to injured personnel with or without contamination. We are further pleased to participate in appropriate exercises testing the capabilities and performance of this emergency plan and to engage in what ever training should be necessary to appropriate respond to emergencies as described in the plan. We have personnel who have attended RE/ACTS training in Oak Ridge and participate actively in the Scioto County Local Emergency Planning Committee.

The Southern Ohio Medical Center looks forward to continuing our positive relationship with USEC Inc. It is understood that we will continue with existing commitments to support the reservation, if needed, as stated in the existing Letter of Agreement until such time that a new agreement is formalized. Accordingly, in the unlikely event of an emergency on the reservation and request for services, our organization agrees to cooperate and coordinate the necessary response/support to the plant's needs.

Please feel free to contact me at 740-356-2593 for any questions or additional information.

Very truly yours,

W. B. Wheeler

Wayne B. Wheeler, MD MPH

Cc: R. Arnett, W. Angelos, M. Dilts, A. Hodge, K. Carver

July 27, 2004

Kelly Coriell, Acting Regulatory Manager
USEC Inc.
3930 U.S. Route 23 South
P.O. Box 628, Mail Stop 1212
Piketon, Ohio 45661

Dear Mrs. Coriell:

Pike Community Hospital's Emergency Department Supervisor has reviewed the draft Emergency Plan that USEC Inc. provided for the American Centrifuge Plant, which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant, and U.S. Department of Energy.

Our review found no comments, nor necessary changes to the proposed draft Emergency Plan.

Pike Community Hospital looks forward to continuing our positive relationship with USEC Inc. It is understood that we will continue with existing commitments to support the reservation, if needed, as stated in the existing Letter of Agreement until such time that a new Agreement is formalized. Accordingly, in the unlikely event of an emergency on the reservation and request for services, our organization agrees to cooperate and coordinate the necessary response/support to the plant's needs.

Please feel free to contact me at (740) 947-6347 for any questions or additional information.

Regards,

Nicole McKee, RN

Nicole McKee, RN, Emergency Department Supervisor

AUG.10.2004 3:21PM

ADENA™
Health System

To: Kelly Coriell
Acting Regulatory Manager
P.O. Box 628, MS-1212
Piketon, OH 45661

From: Scott R. Bryant RN, BBA
Director Emergency Services
272 Hospital Road
Chillicothe, Ohio 45601

Date: August 6, 2004

To Whom It May Concern:

I, Scott R. Bryant, RN, BBA – Director of Emergency Services for Adena Health system have reviewed the Draft Emergency Medical Plan for the American Centrifuge Plant in Piketon, Ohio. I recommend the plan as written without any changes. Thank you for giving us the opportunity to have input in your plan. If any questions feel free to contact me Scott Bryant @ (740) 779-7612.

Sincerely,

Scott R. Bryant

Scott R. Bryant

WORD ALIVE FELLOWSHIP

July 28, 2004

Kelly Coriell, Acting Regulatory Manager
USEC
3930 U.S. Route 23 South
P.O. Box 628, Mail Stop 1212
Piketon, Ohio 45661

Dear Mrs. Coriell:

Word Alive Fellowship Inc. has reviewed the draft Emergency Plan that USEC Inc. provided for the American Centrifuge Plant, which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant, and U.S. Department of Energy.

Our review found no comments, nor necessary changes to the proposed draft Emergency Plan.

Word Alive Fellowship Inc. looks forward to continuing our positive relationship with USEC Inc. It is understood that we will continue with existing commitments to support the reservation, if needed, as stated in the existing Letter of Agreement until such time that a new Agreement is formalized. Accordingly, in the unlikely event of an emergency on the reservation and request for services, our organization agrees to cooperate and coordinate the necessary response/support to the plant's needs.

Please feel free to contact me at 740-289-4030 for any questions or additional information.

Regards,

Rick Struckel
President

204 COMMERCIAL BLVD. PIKETON, OH 45661 OFFICE: (740)289-4030 FAX: (740)289-2013

Waverly City Schools

500 E. Second Street
Waverly, Ohio 45690
(740) 947-4770
Fax (740) 947-4483
www.waverly.k12.oh.us

August 5, 2004

Dear Mrs. Coriell:

On behalf of the Waverly City School District, I have reviewed the draft Emergency Plan that USEC, Inc. provided for the American Centrifuge Plant which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant and U.S. Department of Energy.

On review, I have no further questions or comments regarding the draft Emergency Plan. The Waverly City School District will continue with existing commitments.

Sincerely,

Cheryl Francis

Cheryl Francis
Superintendent

CF/eb

ROSS - PIKE COUNTY EDUCATIONAL SERVICE DISTRICT

475 Western Avenue ▪ Suite E
Chillicothe ▪ OH 45601
Phone: 740/702-3120 ▪ Fax: 740/702-3123

P.O. Box 578
Piketon ▪ OH 45661
Phone: 740/289-4171 ▪ Fax: 740/289-4542

August 10, 2004

Brian Zeik
USEC
Piketon, Ohio

Dear Mr. Zeik:

I have received the Emergency Plan for the American Centrifuge Plant in Piketon, Ohio (USEC). On behalf of the Pike County Schools, I have reviewed this plan and determined it reflects the components of the previous emergency plan for Portsmouth Gaseous Diffusion Plant. I do not have any questions about the plan.

Sincerely,

Dr. Ronda L. Frueauff
Superintendent

RLF:sm

VALLEY LOCAL SCHOOL DISTRICT

Douglas L. Booth
Superintendent

Michael W. Bennett
Treasurer

Board of Education

Carl Crabtree **Don Crabtree** **Charles W. Wilson**
Joseph D. Romanello **Jerry L. Buckler, Esq.**

August 9, 2004

Kelly Coriell, Acting Regulatory Manager
USEC Inc.
3930 U.S. Route 23 South
P.O. Box 628, Mail Stop 1212
Piketon, OH 45661

Dear Mrs. Coriell:

The Valley Local School District has reviewed the draft Emergency Plan that USEC Inc. provided for the American Centrifuge Plant, which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant, and U.S. Department of Energy.

Our review found no comments, nor necessary changes to the proposed draft Emergency Plan.

Regards,

Paul F. Miller

Paul F. Miller
Interim Superintendent

P.O. Box 888 • Lucasville, Ohio 45648
Phone (740) 259-3116 • Fax (740) 259-2314

OHIO PUBLIC SAFETY
EDUCATION • SERVICE • PROTECTION

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Bob Taft, Governor
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Dale W. Shipley
Executive Director

Emergency Management Agency
2855 West Dublin-Granville Road
Columbus, Ohio 43235-2206
(614) 889-7150
www.state.oh.us/odps/division/ema

August 6, 2004

Kelly Coriell, Acting Regulatory Manager
USEC Inc.
3930 U.S. Route 23 South
P.O. Box 628, Mail Stop 1212
Piketon, Ohio 45661

Dear Mrs. Coriell:

I have reviewed the draft Emergency Plan that USEC Inc. provided for the American Centrifuge Plant (ACP), which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant, and U.S. Department of Energy.

I present the following comments and/or suggestions (Italics) for Section 4.4.1 of the proposed draft Emergency Plan.

4.4.1 State of Ohio Government Interfaces

The State of Ohio's *Hazardous Materials Emergency Support Function (ESF) #10, with its DOE Attachment* for events at DOE facilities, provides guidance on dealing with incidents and outlines the State response to incidents at the reservation. The Ohio Emergency Management Agency (OEMA) is responsible for coordinating overall State response and *assisting in* the local implementation of recommended protective actions. The OEMA also assists the Governor *and other state agencies* in formulating policy; establishing priorities; gathering and analyzing information; monitoring the execution of planned activities; and directing modifications, as necessary. The Ohio State Highway Patrol provides support to off-site law enforcement agencies as requested. The Ohio Department of Health coordinates *radiological* hazard assessment and is the principal contact for technical information and recommendations of protective actions *regarding radioactive materials*. The Ohio EPA coordinates *chemical* hazard assessment and is the principal contact for technical information and recommendations of protective actions *regarding toxic materials*. The Ohio EPA *also* oversees removal and disposal of hazardous waste generated as a result of an emergency.

Thank you for giving me the opportunity to comment on the Draft of the ACP Emergency Plan. I look forward to continuing our efforts to coordinate planning and response activities with the USEC staff, in order to protect the public. Marty Redden and his staff have been most helpful over the years in this effort and shared responsibility.

Please feel free to contact me at 614-799-3679 or at Lbokman@dps.state.oh.us for any questions or additional information.

Regards,

Lloyd Bokman

Lloyd Bokman
DOE Liaison/HazMat Planner

Cc: Marty Redden

July 27, 2004

Kelly Coriell, Acting Regulatory Manager
USEC Inc.
3930 U.S. Route 23 South
P.O. Box 628, Mail Stop 1212
Piketon, Ohio 45661

Dear Mrs. Coriell:
The State Highway Patrol has reviewed the draft Emergence Plan that USEC Inc. provided for the American Centrifuge Plant, which encompasses the reservation activities associated with the American Centrifuge Program, Portsmouth Gaseous Diffusion Plant, and U.S. Department of Energy.

Our review found no comments, nor necessary changes to the proposed draft Emergency Plan.

The State Highway Patrol looks forward to continuing our positive relationship with USEC Inc. It is understood that we will continue with existing commitments to support the reservation, if needed, as stated in the existing Letter of Agreement until such time that a new Agreement is formalized. Accordingly, in the unlikely event of an emergency on the reservation and request for services, our organization agrees to cooperate and coordinate the necessary response/support to the plant's needs.

Please feel free to contact me at 740-773-7071 for any questions or additional information.

Regards,
Lieutenant Jeffrey R. Carman
Chillicothe Post Commander