USEC
A Global Energy Company

April 6, 2012
GDP 12-0012

Ms. Catherine Haney
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001, Certificate No. GDP-1
Transmittal of 2012 Annual Update to Certification Application USEC-01

Ms. Haney:

In accordance with 10 CFR 76, the United States Enrichment Corporation (USEC) hereby submits the 2012 Annual Update to the certification documents for the PGDP. The annual update is required by 10 CFR 76.68(b). The 2012 Annual Update consists of Revision 133 (March 30, 2012) to USEC-01, Application for United States Nuclear Regulatory Commission Certification, Paducah Gaseous Diffusion Plant. Revision 133 includes the following changes:

- Revision 133 incorporates changes to the Safety Analysis Report (SAR) that have been reviewed in accordance with 10 CFR 76.68 and have been determined to not require prior NRC approval. Revision 133 is effective March 30, 2012.

- Revision 133 incorporates changes to the Emergency Plan and Gaseous Diffusion Plant Security Program (GDPSP). These changes have been reviewed in accordance with 10 CFR 76.68 and have been determined to not require prior NRC approval. Revision 133 is effective March 30, 2012.

- Revision 133 incorporates a change to a Technical Safety Requirement (TSR) Basis Statement. This change has been reviewed in accordance with 10 CFR 76.68 and has been determined to not require prior NRC approval. Revision 133 is effective March 30, 2012.

This transmittal also includes a replacement page (page 5-2) for Revision 129 to the Fundamental Nuclear Materials Control Plan (FNMCP). This page replacement corrects a typographical error from the approved version. Revision 129 was effective September 16, 2011, and was transmitted to you by USEC letter GDP 11-0024, dated September 16, 2011.

Revision bars are provided in the right-hand margin to identify changes.

NMSS01

Revision 129 to the FNMCP and Revision 133 to the GDPSP contain certain trade secrets and commercial and financial information exempt from public disclosure pursuant to Section 1314 of the Atomic Energy Act of 1954 (AEA), as amended, and 10 CFR 2.390 and 9.17(a)(4). In accordance with 10 CFR 76.33(e) and 2.390(b), the changes to these plans are being submitted under separate cover (USEC letter GDP 12-0011).

Should you have any questions regarding this matter, please contact me at (301) 564-3250. There are no new commitments contained in this submittal.

Sincerely,

S. A. Toelle

Steven A. Toelle
Director, Regulatory Affairs

Enclosures:
1. Oath and Affirmation
2. USEC-01, Application for United States Nuclear Regulatory Commission Certification, Paducah Gaseous Diffusion Plant, Revision 133

cc: R. DeVault (DOE)	USEC-01, Copy Number 641
D. Hartland, NRC Region II	1 copy
J. Calle, NRC Region II	USEC-01, Copy Numbers 442, 664
T. Liu, NRC Project Manager	2 copies
NRC Senior Resident Inspector – PGDP	USEC-01, Copy Number 697

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HQ-RA

FILE: j:\nra\letters.nrc\hq\gdp12-0012

Enclosure 1
GDP 12-0012

Oath and Affirmation

OATH AND AFFIRMATION

I, Steven A. Toelle, swear and affirm that I am the Director, Regulatory Affairs of the United States Enrichment Corporation (USEC), that I am authorized by USEC to sign and file with the Nuclear Regulatory Commission Revision 133 to USEC-01, Application for United States Nuclear Regulatory Commission Certification, Paducah Gaseous Diffusion Plant, as described in USEC Letter GDP 12-0012, that I am familiar with the contents thereof, and that the statements made and matters set forth therein are true and correct to the best of my knowledge, information, and belief.

S. A. Toelle

Steven A. Toelle

On this 6th day of April, 2012, the person signing above personally appeared before me, is known by me to be the person whose name is subscribed to within the instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof I hereunto set my hand and official seal.

Joan M. Hadro

Joan M. Hadro, Notary Public
State of Maryland, Montgomery County
My commission expires December 13, 2013

Enclosure 2
GDP 12-0012

USEC-01
Application for the United States
Nuclear Regulatory Commission Certification
Paducah Gaseous Diffusion Plant
Revision 133

APPLICATION FOR NUCLEAR REGULATORY COMMISSION CERTIFICATION
PADUCAH GASEOUS DIFFUSION PLANT (USEC-01)
REMOVAL/INSERTION INSTRUCTIONS
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3.9.2.1 Raw Water System

The raw water supply source for the plant is the Ohio River, downstream of the confluence of the Ohio, Cumberland and Tennessee Rivers. Raw water is taken from the Ohio River at a pumping station operated by TVA under contract to USEC at the Shawnee Steam Plant. The pumping station uses vertical turbine pumps that are located in pump wells. The pump groups are supplied from separate electrical buses through a double ended substation so an interruption of either bus does not impact the plant water supply.

The raw water pumps discharge into one or both of two pipe lines that carry the water to the C-611 Water Treatment Plant Distribution System and Appurtenant Structures. Regardless of whether the lines are being operated separately or simultaneously, the raw water system can supply a sufficient water flow to C-611 to maintain the maximum cascade power load.

Protection of the raw water system from zebra mussels is provided by an anti-mollusk chemical feed system.

3.9.2.2 Water Treatment Plant

The processes used for raw water treatment at C-611 are both physical and chemical. The various processes for raw water treatment that provide softened water are briefly described in the following paragraphs. Mechanical outages and/or raw water conditions adverse to softening and/or flocculation may alter this normal treatment process.

The cold lime-soda ash process is employed at C-611 for softening the water. A coagulant aid is also used when conditions require.

Softening is followed by flocculation and prechlorination, and then by settling prior to further treatment for the sanitary and fire water system (SFWS) or as settled for the plant water system (PWS). Predisinfection is carried out after the softening process which reduces chlorine consumers.

After leaving the flocculator basin, water flows to the settling basins. Settled water leaving the settling basins is divided for use in the SFWS and the PWS.

3.9.2.3 Sanitary and Fire Water System

Settled water for the SFWS is processed through sand filters for the removal of suspended particles, referred to as turbidity. The filters are operated to maintain the turbidity in the SFWS per Kentucky Public and Semipublic Drinking Water Regulations. Under normal operations, the effluent of the filters is post-chlorinated and then flows to the clearwell for supply to the SFWS.

Post-chlorination is performed to ensure an adequate disinfectant concentration in the water before entering the distribution system. Samples are taken of the water entering the distribution system and at various locations in the distribution system to ensure that chlorine levels in the distribution system remain at or above the minimum value of the Kentucky Public and Semipublic Drinking Water Regulations. Additionally, the sanitary and fire water system is routinely sampled for bacteriological analyses, with the samples tested by an independent, certified laboratory, per Kentucky Public and Semipublic Drinking Water Regulations.

Water for the SFWS is pumped from the clearwell, located at C-611, into two mains which convey the water to the SFWS distribution system. Electric motor, dual drive electric motor/diesel engine driven, and diesel engine pumps are used to supply the SFWS as required by demand usage of water.

The SFWS within the fenced portion of the plant is a system of underground mains. These mains supply sanitary water for drinking, boiler makeup water, laundry, firewater, and numerous other operations that require sanitary water and sanitary water to the DOE DUF_6 Conversion Plant.

The firewater demands arise from fire hydrants located around various buildings and from sprinkler and other fire suppression systems in buildings when such systems are provided and they are not supplied by the HPFWS.

The C-611-O Sanitary Water Storage Tank, located east of the C-631-02 Cooling Tower, floats on the system during normal operation and has a maximum capacity of 250,000 gallons at overflow.

3.9.2.4 Plant Water/RCW System

The plant water system supplies makeup water to the RCW system serving the C-310, C-315, C-331, C-333, C-335, C-337, C-360 Toll Transfer and Sampling Building, C-631 RCW Pump House and Appurtenant Structures, C-633 RCW Pump House and Appurtenant Structures, C-635 RCW Pump House and Appurtenant Structure, and C-637 RCW Pump House and Appurtenant Structures areas. This system also supplies side stream cooling water to the C-600 Steam Plant & Associated Utility Appurtenant Structures. In addition, the plant water system normally supplies the water charge and makeup water for the HPFWS and water to the DOE DUF_6 Conversion Plant.

Settled water intended for use in the PWS flows to the plant water pumps located at C-611. Electrically driven pumps supply the PWS as required by demand. The plant water flows through a normally looped system to supply the recirculating cooling water systems, C-631, C-633, C-635, and C-637. Plant water may also be supplied to the recirculating water systems by gravity during periods of low cascade power load or an outage of the pumps.

There are two booster pump stations located within the PWS. The C-611-P Pump House provides the side stream cooling water for use in C-600. The C-611-T Booster Pump Station (Plant Water) is located in one leg of the looped system, and can be used to supply plant water to the recirculating cooling systems in the event of an outage of the pumps located at C-611.

Water lost through evaporation in the cooling towers is made up by the plant water system. Evaporation causes the dissolved minerals in the recirculating cooling water to concentrate. To prevent solids accumulations from exceeding desired levels, a blowdown stream is provided. The blowdown stream is routed to C-616 for treatment before discharge to the receiving stream.

3.9.2.5 High Pressure Fire Water System

The High Pressure Fire Water System (HPFWS) supplies water to C-310, C-315, C-331, C-333, C-335, and C-337 process buildings, the C-310-A Product Withdrawal Building, the C-360 Toll Transfer and Sampling Building, the C-620 Air Compressor Room, the C-631-03 Pump House (Firewater), and the RCW blend pump houses. It also supplies the water spray systems in the RCW cooling towers. (see Figure 3.9-9).

The HPFWS consists of a distribution piping network, a 300,000-gallon elevated storage tank [C-611-R Water Tank – RCW Fire Water (High Pressure)], a water supply reservoir (C-631-02 cooling tower basin) and four water pumps (housed in C-631). The distribution piping network is a system consisting of underground mains and smaller lead-in pipes, automatic wet pipe sprinkler systems that distribute high pressure fire water to the point of use at sprinkler heads in the process buildings, and the RCW cooling towers (see Figure 3.9-9). The lead-ins serve as tie lines which connect each automatic sprinkler system within a process building to the HPFWS distribution system. A single control valve [i.e. a post indicator valve (PIV)] is located in each lead-in as a single control point for potential isolation of the sprinkler system. Many sectional isolation valves are located in the distribution piping system to permit isolation of one or more building sprinkler systems should the need arise.

Water can be supplied to the HPFWS from the RCW system via four water pumps located in C-631. Water pumps 2 and 3 are located in C-631-03. They take suction from the C-631-02 cooling tower basin. Pumps 5 and 6 are located in the C-631-01 Pump House. They take suction from the C-631-01 wet well. The C-631-01 wet well is connected to the C-631-02 cooling tower basin via a flume (see Figure 3.9-8). All four water pumps discharge into the HPFWS distribution loops. Pumps 2, 3 and 5 are electrically driven. The power supply for these pumps can be transformer 2PH3, 2PH4A or 2PH4B (13.8 kV-4,160 VAC) depending on how the associated 4,160 VAC switchgear bus, bus supply breakers, and bus tie breakers are configured. All circuit breakers that are fed from the 4,160 VAC switchgear main bus are equipped with protective relays. Pump 6 is driven by a diesel engine. The diesel engine is equipped with a fuel oil supply tank and fuel supply system that transfers fuel oil from the fuel oil supply tank to the diesel engine. The diesel engine is also equipped with an electric starting mechanism that is powered by batteries. Pumps 2, 3, 5 and 6 are connected by piping to the HPFWS distribution network. A pump may be used to perform routine pressure maintenance on the 300,000-gallon elevated storage tank (C-611-R) that floats on the HPFWS. Each of the water pumps starts automatically on a drop in HPFWS pressure. Each pump can be started remotely from the CCF, located in the C-300 facility, but the pumps can not be stopped from the CCF. Each pump can be started and stopped manually at the local pump control panel. All pumps and associated equipment are interconnected with the appropriate associated circuitry that is required for the High Pressure Fire Water System to function properly.

When a demand is placed on the HPFWS, water from the elevated storage tank flows into the distribution network to replace water that has been discharged. When the tank's water level has dropped to a preset limit, makeup water is pumped to the tank, automatically or manually. If the water level in the tank continues to drop, pressure switches in the water system will automatically activate the C-631 pumps. The elevated storage tank provides a gravity-fed supply of water to the fire sprinkler system that meets the functional requirements for flow rates, pressures, and duration. The various sprinkler systems are actuated automatically by the heat of a fire opening sprinkler heads thus initiating the flow of water through the system. The following table lists the capacity and type of each pump.

Pump No.	Capacity (gpm)	Motor Type
2	4625	Electric
3	4625	Electric
5	4500	Electric
6	4500	Diesel

With all pumps operating, a maximum of approximately 18,250 gpm is available to accommodate fire water needs. Should the water demand exceed the amount available (once the 300,000-gallon tank, C-611-R, has emptied) from the C-631-02 basin, the plant water system can supply up to approximately 25,000 gpm to the basin. In addition, approximately 9,000 gpm can be pumped to the basin from C-633 using the crossover piping and valve arrangement.

3.9.2.6 C-600 Chilled Water System

The C-600 chilled water system supplies water for air conditioning and humidity control equipment in various buildings.

3.9.2.7 Process Waste Heat Utilization System

A hot water heating system is used in some auxiliary service buildings. This system consists of a pumping station to supply hot water from the C-335 process RCW System, a piping distribution system to provide both supply and return water piping to each building and heating coils in each of the buildings for transferring the heat from the hot RCW to the building ambient air.

The RCW supply and return lines for the system are connected to the C-335 RCW system.

3.9.3 C-616 Liquid Pollution Abatement and Appurtenant Structures

The RCW systems are treated for corrosion control. A blowdown is used to control the buildup of soluble salts and nondissolved impurities, as a result of RCW evaporation. The corrosion inhibitors and other contaminants in the blowdown prohibit direct discharge of this water to the receiving stream (Big Bayou creek). The C-616 plant treats this waste water to lower the concentrations below the limits of the Kentucky Pollutant Discharge Elimination System (KPDES) permit.

The C-616 plant uses both chemical and physical processes to precipitate contaminants in the blowdown water for removal.

Air production is measured at the three compressor stations by orifice meters. A pressure indicator in C-300 monitors overall system pressure. When system pressures begin to drop, the shift superintendent acts to increase output or to coordinate usage.

The air distribution system is arranged in a loop configuration to tie the major points of consumption together in such a manner that portions of the system can be taken out of service for maintenance while maintaining an uninterrupted supply of dry compressed air.

3.9.7 Plant Nitrogen System

Nitrogen is received in liquid and gas forms from off-site suppliers, stored on site and made available for use in three forms; as a low pressure gas in the plant nitrogen distribution system, as a high pressure bottled gas and in liquid form.

3.9.7.1 Vaporized Nitrogen System

The vaporized N_2 system consists of equipment necessary to receive, store, dispense, and control the rate of evaporation of liquid N_2.

3.9.7.2 High Pressure Nitrogen System Storage Tanks

Three vertical storage tanks supply liquid N_2 for various uses. Each storage tank is a double wall vessel with space between the walls. The inner vessel is a rated pressure vessel. The outer vessel or jacket forms a seal for evacuating space between the inner and outer vessel walls. The space is filled with an insulating material for additional thermal insulation.

3.9.7.3 Storage Tank Pressure Build System

The storage tank pressure build system maintains the desired pressure in the storage tank. The pressure build system automatically maintains adequate gaseous pressure in the tank to maintain flow to the ambient air-type vaporizer. If the tank pressure drops below a minimum pressure set point, a regulator opens and admits liquid N_2 into an ambient air vaporizer, which is an ambient air heat exchanger. A line pressure regulator controls nitrogen gas flow into the vaporized nitrogen system distribution line.

3.9.7.4 Storage Tank Economizer System

Although the storage tanks are well insulated, heat leaks will vaporize liquid N_2 and eventually exceed maximum rated pressure unless relieved. When this occurs, a regulator in the vent line opens at a preset high pressure and directs the gas to the liquid draw line enroute to the vaporizer; thus no gas is lost. If no liquid is being withdrawn from the tank, the gas is then vented to the atmosphere.

3.9.7.5 Gaseous Nitrogen Distribution

The gaseous nitrogen produced by the liquid nitrogen vaporizing equipment is distributed to users in the plant through a piping system. The piping is arranged in loops. The loop arrangement of the distribution system makes it possible for sections of the system to be out of service without interrupting the supply of nitrogen to the principal users.

A preset nitrogen pressure is maintained in the distribution system. A pressure reducing station manifold and a metering system located near the various points of use reduce nitrogen pressure to the desired level.

3.9.7.6 Warm Converter

The warm converter unit is designed to fill high pressure N_2 cylinders. The high pressure is obtained by "bottling" liquid N_2 and applying heat, by admitting steam to a coil immersed in a water bath surrounding the container of liquid N_2. The high pressure vaporized N_2 is valved into the cylinders through a cylinder filling manifold.

3.9.7.7 Liquid Nitrogen Cryogenic Container Filling Unit

There are several uses of N_2 in liquid form throughout the plant. The liquid nitrogen is transported from the liquid N_2 storage tank at C-600 to the various points of use in cryogenic containers. The cryogenic containers are filled at the liquid N_2 cryogenic container filling unit located near the No. 1 liquid N_2 storage tank. The filling unit consists of a gravity-type manifold connected to the liquid phase of the liquid N_2 storage tank. The manifold has valved positions which accommodate the filling of cryogenic containers.

3.9.8 Plant Oxygen and Acetylene Systems

Oxygen and acetylene are the two gases used to fuel portable hand torches and machine-guided torches. The oxygen system combined with the acetylene system are commonly known as the oxyacetylene system which supplies the C-720 building.

3.9.9 Chlorine System

Liquid chlorine is delivered on-site by a private vendor, normally in one-ton containers and 150-lb. cylinders. The one-ton containers are stored at the C-745-A Cylinder Yard, while the 150-lb. cylinders are stored in C-615, where they are used. Chlorine is primarily used for biocide protection, which is part of the overall water treatment process at C-611, and to control the growth of micro-organisms in the RCW systems at the C-631, C-633, C-635, and C-637 pump houses.

Portions of the Chlorine System are important to safety as described in Section 3.15. Chlorine leak detectors and associated alarms at each facility require 120 VAC power.

3.9.9.1 C-611-B Head House/C-611-S Corrosion Inhibitor Building Feed Facilities

Equipment for handling and injecting chlorine gas into the softened and filtered water is located at two separate locations in the C-611 facilities. One location is the pre-chlorination facility in C-611-B and

NOTES

1. PUMPING STATION IS OPERATED BY TVA AT SHAWNEE STEAM PLANT
2. WATER TREATMENT MAY INCLUDE COLD LIME - SODA SOFTENING, FLOCCULATION, DISINFECTION AND SETTLING. THE PRODUCT IS SETTLED WATER.
3. SETTLED WATER TO FILTER BUILDING, SANITARY WATER PUMP STATION AND PLANT WATER PUMP STATION.
4. PLANT WATER IS SETTLED WATER.
5. WATER IS FILTERED AND POST DISINFECTED. THE PRODUCT IS SANITARY AND FIRE WATER.
6. CHILLED WATER IS DISTRIBUTED TO VARIOUS SERVICE BUILDINGS.
7. SANITARY AND FIRE WATER IS PUMPED FROM THE C-611-H CLEARWELL INTO THE SFWS DISTRIBUTION MAINS.
8. THE C-611-P BOOSTER PUMP STATION IN THE PWS PROVIDES SIDE STREAM COOLING WATER FOR THE C-600 STEAM PLANT.
9. WATER FLOWS THROUGH THE CHILLED WATER SYSTEM FROM THE C-600 CHILLED WATER WET WELL OR THE PLANT WATER SYSTEM.
10. CROSSOVER PIPING FROM C-633 TO C-631.
11. FLUME CONNECTING C-631 BASIN TO C-631-01 PUMP HOUSE WET WELL.

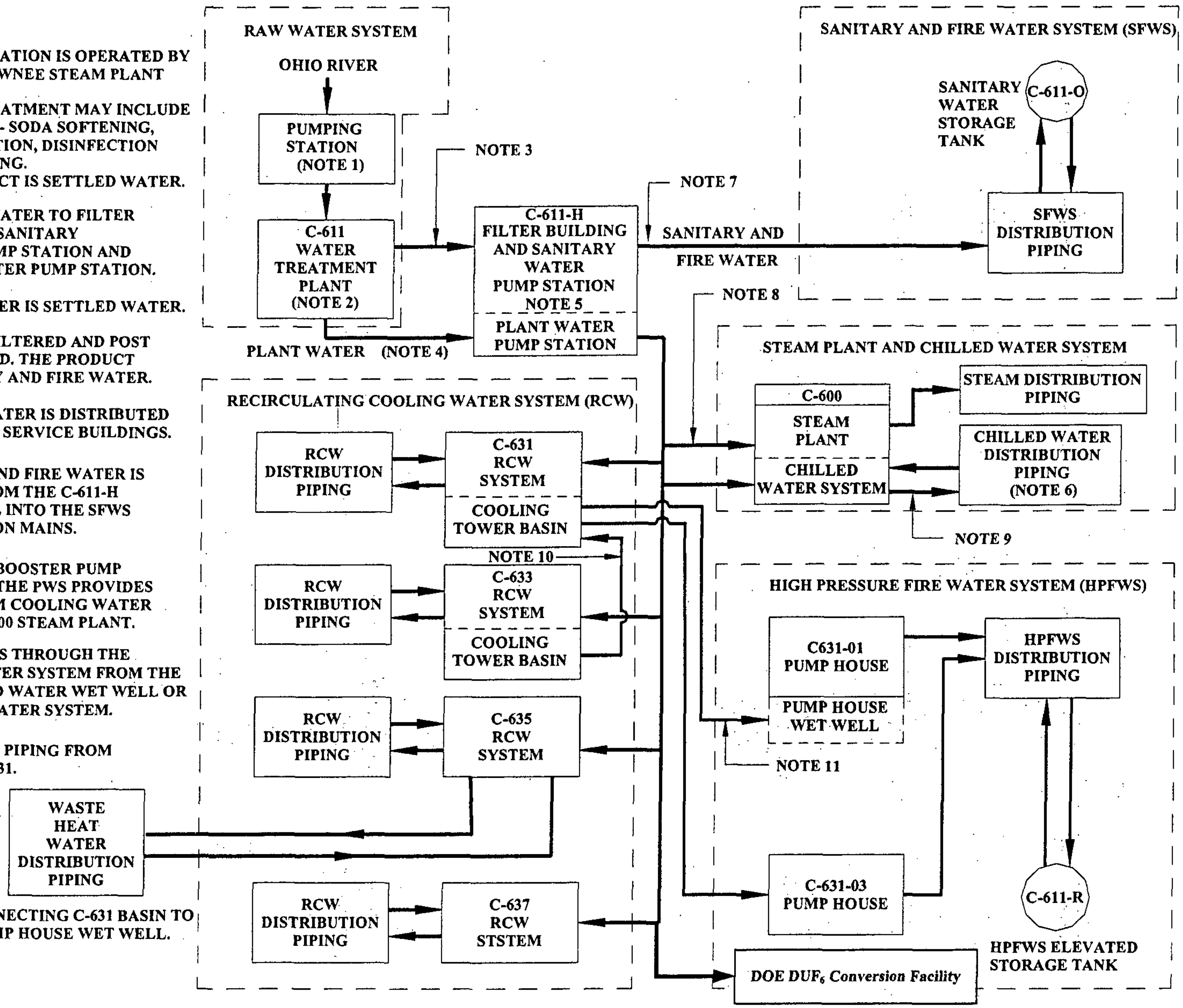

Figure 3.9-8. Plant Water System Inter-Connections

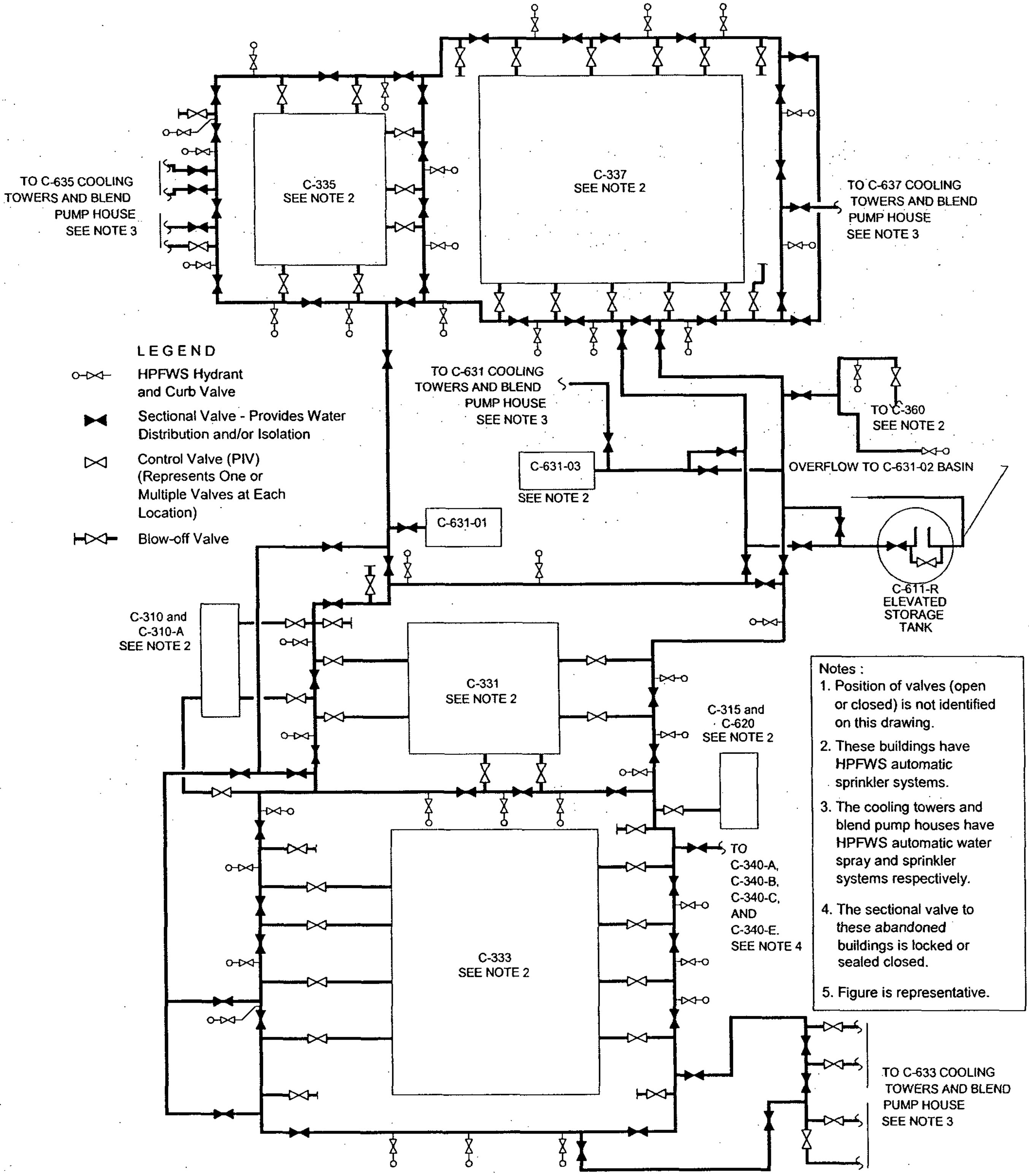

Figure 3.9-9. High Pressure Fire Water System

Table 3.13-3. Fuel Oil Storage

Location	Fire Protection	Maximum Quantity (gallons)	Dike	Use
C-601-A	Auto. foam sys.	420,000	Yes	Fuel to boilers
C-601-B	Auto. foam sys.	420,000	Yes	Fuel to boilers
Text Deleted				

Table 3.13-4. Propane Storage

Location and No. of Tanks	Fire Protection	Maximum Quantity (gallons)	Barricaded	Use
C-750 N (2)	Fire extinguisher	1,000	Yes	To fill LPG tanks on light trucks
C-710 N	None	1,000	Yes	Labs
Text Deleted				
C-400 (2)	None	1,000	Yes	Generator
Text Deleted				

Runoff includes all runoff from building roof drains, parking lots, roads, and facility grounds.

Flow diagrams depicting contributors for USEC outfalls monitored for radionuclides, other than those that handle only surface runoff, are presented in Figures 5.1-8 through 5.1-15.

There is no direct contact between UF_6 and water in any of the cascade enrichment facilities. Water effluents from these buildings are noncontaminated unless a release or other unusual event occurs that may result in the contamination of an effluent stream. If contamination is suspected, the water is collected for sampling and analysis and, if necessary, treatment prior to discharge.

Contaminated water is generated in C-400 and, in small quantities, in C-720 and the C-710 laboratory. Contaminated waste streams are identified and are routinely collected for treatment prior to discharge.

The C-400 and C-409 facilities generate the majority of and process radiologically contaminated wastewaters. These wastes include solutions for the radiological decontamination of equipment and UF_6 storage cylinders. Prior to discharge, decontamination solutions are processed in one of the waste treatment units located in C-400 or C-409. Contaminated wastewaters from other sources (e.g., laboratory solutions, spill cleanup solutions) are also processed in C-400 or C-409. Treated wastewaters from these facilities are discharged through outfall 008. Details of these waste treatment systems are provided in the Radioactive Waste Management program included as part of this application.

Other process wastewaters known to be radiologically contaminated above the limits for release to unrestricted areas are collected, stored, and then treated in the C-400 wastewater treatment facilities to remove radionuclides prior to reuse or discharge.

The C-400 laundry and safety equipment cleaning wastewaters are discharged directly to the on-site sewage treatment plant, which discharges to a sampled outfall, Outfall 008.

Wastewaters treated to remove radiological contamination must meet the limits in Column 2, Table 2 of Appendix B of 10 CFR 20 prior to discharge.

The C-616 Wastewater Treatment Facility treats the RCW blowdown from the cooling towers for phosphorous. Effluent from the treatment process discharges to the C-616-F lagoon which then discharges to the DOE Outfall 001. Nonprocess wastewater, process wastewater, and rain runoff from various sources are also pumped to the C-616-F lagoon via the C-616-C lift station located in the north/south diversion ditch. Figure 5.1-8 provides a flow diagram that identifies these sources.

The C-615 Sewage Treatment Plant treats sewage and various nonradioactive process effluents identified in Figure 5.1-7 for discharge through Outfalls 004 and 008. The influent flows through a comminutor and grit basket for size reduction into the primary basin. Liquid from the primary basin flows to the trickling filter. From the trickling filter, a portion of the liquid flows to the primary basin for recycle and a portion flows to the secondary basin. The effluent from the secondary basin is chlorinated and flows to Outfall 004. Outfall 004 flows in Outfall 008 before being discharged. A sodium thiosulfate feed station dechlorinates Outfall 004.

The C-611 Water Treatment Plant (Outfall 006) uses a conventional treatment process coupled with lime softening to treat water from the Ohio River for use in the plant's cooling and drinking water systems. Sludge from the lime softening process is discharged to the C-611-V lagoon for settling. The C-611-V sludge lagoon overflows into the C-611-Y fullflow lagoon and then discharges through Outfall 006 to Big Bayou Creek. Figure 5.1-10 shows the two lagoons and the outfall.

Outfall 008 discharges nonprocess wastewater and rain runoff from buildings and terrain on the west side of the facility in addition to sanitary wastewater from the C-615 sewage treatment plant. Figure 5.1-11 shows the configuration of the processes discharging to this outfall. The 008 ditch is equipped with an underflow dam that consists of a dam, quiet zone, and weir. Adjacent to the dam is an oil containment pond. The dam creates a quiet zone to allow oil and other buoyant materials to separate from the water. A skirted oil boom diverts floated materials to a slightly submerged float-controlled weir. Most of the ditch flow underflows the floating boom and then overflows the dam. Diverted materials flow to the containment pond and remain there for manual skimming as necessary. An underflow dam maintains the water level in the containment area. A sodium thiosulfate feed station dechlorinates water discharging through Outfall 008.

Outfall 009 discharges nonprocess wastewater and rain runoff from building and terrain on the southwest side of the plant. Figure 5.1-12 schematically shows the sources of the wastewater. A sodium thiosulfate feed station dechlorinates the water discharge through Outfall 009.

The C-617 lagoon collects water from four outfalls on the east side of the plant (Outfalls 002, 010, 011, and 012) for dechlorination. Sodium thiosulfate is added to the lagoon to dechlorinate the water, and then the water is discharged through Outfall 010 or 011 to Little Bayou Creek. Outfalls 002, 010, 011, and 012 collect nonprocess wastewater from buildings on the east side of the plant. Each outfall ditch is equipped with a lift station to pump the effluents to the C-617 lagoon. The lift stations are designed to handle normal operational flow only. When moderate to heavy rainfall occurs at the site, the resulting runoff will overflow the lift station sumps and will discharge through the four outfalls to Little Bayou Creek. The configurations of Outfalls 002, 010, 011, and 012 and the C-617 lagoon are presented schematically in Figures 5.1-9, 5.1-13, 5.1-14, and 5.1-15.

Outfall 013 collects and discharges rain runoff from terrain on the southeast corner of the plant including the C-745 cylinder storage yards.

Much of the UF_6 entering from the rupture is expected to react with water vapor in air and be exhausted out the oil sump vent. Release of UF_6 or UO_2F_2 and HF from the oil sump vent will activate the UF_6 detection system (an AEF) and general building alarms. The UF_6 detection system for the pump installation will automatically shutdown the pump and isolate the system from the downstream high pressure UF_6 source. Although not all pump trip systems on the Normetex pump are credited as AEFs, the Normetex discharge block valve closure that is activated due to a pump trip is credited as an AEF. When a signal is sent to the pump to trip the pump, the discharge block valve is required to close to isolate the pump from backflow of high pressure UF_6 into the pump. The backflow of UF_6 into the pump could challenge the integrity of the internal bellows and allow UF_6 to enter the pump oil reservoir.

The Normetex pumps effectively satisfy the double contingency principle for nuclear criticality safety. Two NCS parameters, moderation and mass, associated with operation of the Normetex pumps are controlled to maintain subcriticality. Moderation is controlled by maintaining the integrity of the UF_6/oil barrier in the pump. The pump is designed such that the process gas and oil regions are separate. A failure of this barrier will result in the potential for mixing the uranium with a moderating material. The uranium mass is controlled in this operation through the actions of the automatic and manual pump shutdown and isolation systems (AEFs). In the event of a rupture of the barrier, these systems will function to stop and isolate the pump, thus limiting the amount of uranium which can be released.

The AEFs identified for Normetex pumps are the High Oil Pressure Trip, Low Oil Flow Trip, the C-310 Normetex Pump Discharge Block Valve Closure or pump trip and the UF_6 Leak Detection System. See Section 3.15 for details including safety classification.

2.5 Product Withdrawal Accumulators

The two liquid UF_6 accumulators which serve the product withdrawal system are located in C-310A. The accumulators provide a surge volume for the UF_6 product withdrawal process.

Administrative controls and passive barriers have been incorporated to prevent a criticality from occurring in the product withdrawal accumulators. Moderation control, as described above for the product cylinders, is the primary barrier to criticality in the accumulators. Uranium enriched to 6 wt % ^{235}U or less cannot achieve criticality unless moderation is present. Since UF_6 readily reacts with moisture to form UO_2F_2 and HF, it is necessary to keep the cascade free of moisture. Therefore, the system design preclude introduction of moisture into the cascade. The only mechanisms for moisture to enter the system are for the moisture to come through the product withdrawal pumps from the cascade, for the system to leak (wet air inleakage), or for purge gas (N_2 or air) laden with moisture to be misdirected into the UF_6 product header. An evaluation of moderation intrusion via plant air or nitrogen used as a purge gas has shown that this is not a credible pathway to criticality.

The temperature and pressure in the withdrawal system are maintained to keep the HF concentration low enough that the H/U ratio in the system is low. This is assured through administrative controls and passive design features.

There are no AEFs identified for filling product cylinders.

2.6 Sampling Station at Product Withdrawal

The sampling cabinet located in the product withdrawal room provides a safe method of sampling liquid UF_6. Samples are withdrawn from the cylinder fill line into small favorable geometry 2S cylinders or sample tubes. The 2S cylinders or sample tubes are then transferred to the laboratory for analysis. The 2S cylinders and sample tubes may be re-fed to the cascade.

There are no AEFs identified.

Administrative controls and passive barriers have been incorporated to prevent a criticality from occuring during product withdrawal samping operations. Volume, geometry, mass, moderation, and interaction are the primary controls used to ensure criticality safety.

In order for the criticality to be possible, multiple failures would need to occur simultaneously. Therefore, the double contingency principle is met.

2.7 Cylinder Burping/Sodium Fluoride Traps

After the liquid UF_6 product has cooled and solidified, the cylinder is connected to a manifold at the C-310 burping station or to the product withdrawal station to exhaust remaining light gases from the cylinder. The gases pulled from the cylinder can be exhausted to either the cascade purge system or to the NaF traps. The sodium fluoride traps in C-310 are used to remove UF_6 in evacuated gases originating from product cylinders. Impurities, which can be a mixture of nitrogen, hydrogen fluoride, intermediate gases, R-114, etc., are entrained in the liquid UF_6 as it is withdrawn into the product cylinders. This material is evacuated (burped) from the cylinders through NaF traps or back to the cascade. The small quantities of UF_6 evacuated with the impurities are absorbed by the NaF pellets in the traps until pellet saturation occurs. The NaF pellets are then regenerated by heating the traps and using a sweeping purge to evacuate the UF_6 and return it to the C-310 cascade.

In C-360, solid 30B cylinders are pressure checked to determine if cylinder pressure is within shipping pressure requirements. If pressure exceeds requirements, cylinder burping occurs to meet specifications. Burping in C-360 involves connecting the solid 30B cylinder to a manifold at the burping station to exhaust non-condensible gases from the cylinder to the evacuation drums or directly to the cascade evacuation system via a tie line.

Administrative controls and passive barriers have been incorporated to prevent a criticality from occurring in the cylinder burping operation in C-310 and C-360 and for the sodium fluoride traps in C-310. Enrichment, geometry and interaction are the primary controls used to maintain criticality safety of the C-310 burping operation and sodium fluoride traps. Trap geometries are safe for specified enrichments. Moderation and mass control are the primary control used to maintain criticality safety on the C-360 burping operation.

2.12 C-333A, C-337A Autoclave Air Capture Systems

The autoclave air capture systems in the C-333A and C-337A feed facilities are used to capture airborne UF_6 and its UO_2F_2 and HF reaction products. The use of the systems as industrial vacuums is not approved.

Administrative controls and passive barriers are implemented to prevent a criticality from occurring in the autoclave air capture systems. There are no AEFs in use for these systems. The limiting upset for the use of the autoclave air capture systems is the breach of a liquid-filled UF_6 cylinder. This event can be caused by an operational failure (e.g., failure to close the cylinder valve before removing the pigtail) or the loss of the physical integrity of the cylinder valve. Geometry is the primary parameter controlled to maintain criticality safety of the autoclave air capture systems.

In order for a criticality to be possible, multiple independent events would have to occur simultaneously; therefore, the double contingency principle is met.

2.13 Fixed High Efficiency Filter Systems (HEFS)

The HEPA filters in the fixed (i.e., in-place) HEFS remove airborne uranium particulate produced by a UF_6 release.

Administrative controls, and passive barriers have been incorporated to prevent a criticality from occurring in the fixed HEFS. The criticality accident scenario associated with the C-310 and C-360 HEFS involves deposits of fissile material greater than a subcritical mass. Mass, moderation, and interaction are the controls used to ensure criticality safety. Administrative controls, such as visual inspection or non-destructive assay analysis, are used to ensure criticality safety in the C-310 and C-360 fixed HEFS.

In order for a criticality to be possible, multiple contingency events would need to occur simultaneously. Therefore, the double contingency principle is met, and there are no AEFS.

2.14 Sampling, Transfer, and Refeeding Operations in the C-360 Toll Transfer and Sampling Facility

The C-360 Toll Transfer and Sampling Facility provides systems for the receiving, sampling, transferring and shipping of UF_6 cylinders. Samples are withdrawn from the UF_6 cylinders into small, volume controlled 2S cylinders or sample tubes. The samples are then transferred to the Laboratory for analysis. Once the analysis is complete, the samples and metal cold traps associated with the mass spectrometry equipment are returned to the C-360 facility for refeeding to the cascade. 1S cylinders may also be refed to the cascade.

The liquid UF_6 handling equipment is relied on to prevent a liquid UF_6 release which could result in a criticality if sufficient water was able to react with the fissile material.

The levelator and scale cart are designed with a minimum capacity of 20 tons. The interlock switch between the levelator and the scale cart air supply prevents movement of the cylinder if the levelator is not in its full upright position. The rail stops on the levelator prevent rolling the scale cart and the cylinder off the end of the lift.

The UF_6 Release Detection System - C-360 Laboratory Area (Zone 1) provides for detection of UF_6 and isolation of autoclave containment valves upon detection of UF_6 in the laboratory at one of two detectors. The UF_6 release detection system in zone 4 provides for detection of UF_6 and closure of two transfer block valves and the cylinder valve upon detection of UF_6 at the transfer station. This AEF stops the flow of liquid UF_6 from the parent cylinder to the daughter cylinder. These AEFs limits a liquid UF_6 release to acceptable levels.

Administrative controls and passive barriers have been incorporated to prevent a criticality from occurring in the C-360 sample, transfer, and refeeding operations. Volume, geometry, mass, moderation, and interaction are the primary controls used to ensure criticality safety.

In order for a criticality to be possible, multiple contingency events would need to occur simultaneously. The double contingency principle is met. The Liquid UF_6 Cylinder Handling Equipment, Levelator/Scale Cart Interlock UF_6 Release Detection System - Laboratory (Zone 1) and transfer station (zone 4) are identified as AEFs. See Section 3.15 for details including safety classification.

2.15 C-360 ^{99}Tc Trapping System

The purpose of the ^{99}Tc trapping system is to reduce ^{99}Tc impurity concentrations to within customer defined limits. Liquid UF_6 may be diverted through the traps during transfer to a daughter cylinder.

Administrative controls and passive barriers have been incorporated to prevent a criticality from occuring in this system. Geometry and interaction controls are the primary controls utilized to maintain criticality safety of this system.

In order for a criticality to be possible, multiple contingency events would need to occur simultaneously. The double contingency principle is met, and there are no AEFs identified for the ^{99}Tc trapping system.

3.0 C-400 and C-409 Chemical Recovery/Precipitation and Decontamination Operations

Some of the C-400 and C-409 decontamination and uranium recovery equipment has the possibility for criticality. Therefore, controls are implemented to prevent criticality accidents. The equipment analyses are presented in the following sections.

3.1 C-400 Spray Booth

The C-400 spray booth is used to clean contaminated equipment. The cleaning system uses high-pressure process water to rinse surface contamination from equipment to be decontaminated. The system consists of a spray booth with a drain; nominal 10-inch diameter wash solution storage tanks; supply and return pumps; filters; a high-pressure jetwash system; a ventilation system; and associated piping and spraying fixtures. Solution stored in nominal 10-inch diameter solution storage tanks is eventually sent to a uranium recovery system.

Administrative controls, passive barriers, and AEFs have been incorporated to prevent a criticality from occurring in the C-400 Spray Booth.

The contaminated wash solution in the tanks is transferred to a uranium recovery/precipitation system periodically. The two systems available are the C-400 uranium recovery and the C-409 uranium precipitation systems. Transfer to the C-400 receiving and storage system may be done after two independent representative samples have shown that the uranium enrichment of the contaminated wash

Outside of the process buildings there are three areas where liquid UF_6 is routinely handled. These are C-333A, C-337A, and C-360. In each of these buildings cylinders are heated by steam in enclosed autoclaves to liquify UF_6. The autoclaves have some hydraulic controls, but the hydraulic fluid has a flashpoint of greater than 400°F. Combustible loading in these noncombustible buildings is low and the buildings are sprinklered. Other fire hazards are limited to typical industrial equipment.

There are no significant quantities of flammable liquids used in the process. The incidental use of these liquids are primarily for maintenance and support activities and they are handled using procedures that are based on the guidance of NFPA 30.

Hot work operations are normal in the maintenance activities associated with the operation of the process. These operations are controlled by a hot work program.

The cable tunnels connect the switch houses, process buildings, and central control facility. The tunnels at PGDP were evaluated in September, 1966 and again in May, 1970 and were determined to be low risk installations, as described below. No major modifications and changes have occurred in these tunnels since the evaluations were performed. The tunnels are approximately seven feet wide and seven feet high and contain approximately 75 cables mainly for control and communications, though some 440 V AC and 250 V DC circuits do exist. All cables are insulated for 600 volts except for communications cables that are located in a separate low voltage tray. All cables have neoprene or PVC jackets which are considered flame retardant. The vast majority of the cables carry negligible currents and do not produce measurable heat. There are very few cable splices.

Cell control functions are located in the ACR, the LCC and the CCF and are redundant. Therefore, the effect of a loss of cables due to a fire in a cable tunnel would be at most an operational inconvenience. All circuits are protected by fuses or circuit breakers where concern exists for short circuits. All materials of construction used in the tunnels are noncombustible including twelve (six on each side) solid transite cable trays on about one foot spacing. These trays have been maintained clean and free of debris and/or combustibles. Transient combustible loadings are small and limited in magnitude. The only reasonable source of ignition is electrical in origin and its probability is very small.

5.4.1.2 Hazard Evaluation

Fire hazards for major buildings are surveyed annually (listed in Section 5.4.1.1) by fire protection engineering staff and are documented in a building survey. The fire hazard evaluation activity consists of two major parts — the annual building survey and the Chapter 4 accident analysis. The survey is an inspection and analysis with a focus on fire protection. These surveys provide for a formal review and periodic evaluation of the occupancy and the fire protection of a given facility.

The building survey includes a review of the emergency egress paths for the facility. The review of the emergency egress paths is accomplished using the intent of NFPA 101, Life Safety Code as guidance. Process buildings do not comply with the travel distances due to the size of the building. A technical study has indicated that exit arrangements are adequate because of the low occupancy levels, large number of exits, large building volumes, and fixed fire protection in the buildings.

Completing a building survey consists of these elements:

- Identify building construction.
- Define fire areas.
- Evaluate fire cutoffs or barriers.
- Determine exposures to the structure or facility.
- Describe building function including occupancy classification.
- Assess ordinary building hazards such as ventilation and heating systems.
- Discuss processes including any special equipment or special operation.
- Assess special hazards, such as flammable liquid processes, high piled storage, and classified electrical installations.
- Review fire protection and installed detection equipment as well as special features of fire protection in the building.
- Develop a list of issues or recommendations for the facility manager regarding fire protection issues. These are tracked to resolution.
- Review emergency egress paths

Survey elements involving building design, construction, and operation are reviewed annually by the Fire Protection Engineering staff, but are not included in the survey report unless changes have occurred from the baseline survey.

Chapter 4 contains these elements:

- Accident analysis, including major fire scenarios.
- The effect of the fire protection system in controlling the fire scenarios.
- Toxic and radiological hazards from a release regardless of the initiator.

Hazard evaluations performed in this manner have served the site's fire protection program satisfactorily in the past by identifying issues and problems facilitating the continuation of a successful and safe fire protection program.

5.4.1.3 Pre-fire Planning

Pre-fire plans have been developed for major buildings (listed in Section 5.4.1.1). Each pre-fire plan indicates the locations of connections to sprinkler systems, sprinkler control valves, and fire hydrants. Special hazard areas are also identified. These plans are reviewed by Fire Services annually.

5.4.2 Fixed Fire Suppression and Fire Detection Systems

The plant fire alarm system monitors fire alarms in all important buildings and structures (a listing of these is maintained by Fire Services) and provides alarm indication to the C-300 Plant Control Facility, the C-200 Fire and Guard Building, and the C-303 Supervisory Control and Data Acquisition Building. The C-300 facility is manned by Operations personnel around the clock and is one of the fire alarm monitoring locations. If either the C-200 building or C-303 building is used in lieu of C-300, then that fire alarm panel will be continuously monitored, and have the capability to be in contact with the C-300 facility. These alarms include: waterflow alarms from the sprinkler systems; manual pull stations located throughout the site; and other special detection systems such as smoke, heat, and CO_2 discharge. Annual testing of a sprinkler system (see Section 5.4.4) includes the actuation of a water flow alarm by the sprinkler system alarm valve. This alarm valve will only initiate the alarm on sustained water flow due to a time delay. The time delay feature "filters" out flow pulses, which might be caused by short-lived pressure transients in the system, and thus only alarms on a valid water flow. The time delay settings meet the 90-second response criteria consistent with NFPA 25 and 72. All alarms can be received and acknowledged at the primary and both of the backup monitoring locations. This provides for prompt dispatch of emergency response

5.4.5 Staffing and Training

Fire emergency response is primarily handled by an on-site fire department (Fire Services). This is a fully staffed Fire Services section with fire officers and firefighters. Emergency response to the entire site is provided by this group under the incident command of the Plant Shift Superintendent (PSS) or his designee. Response capability of Fire Services includes, among other things, fire, rescue, emergency medical, process problems, spills, and confined space problems.

Fire Services personnel provide emergency response services and redundant firefighting capability to back up the automatic fire detection and suppression systems installed throughout the site. The normal minimum scheduled shift staffing is four personnel. In addition to their response functions, Fire Services personnel are responsible for conducting (or witnessing) the testing and inspection of fire protection systems and related equipment.

Fire Services is organized with fire officers and firefighters. The fire officers are first-line managers responsible for daily management of the firefighters including the testing program, training, alarm receiving, and emergency response. Fire officers have at least five years experience in fire service with management and leadership training.

Fire Services personnel are on-site at all times and are trained and equipped to handle anticipated types of emergencies. Firefighters receive training that meets requirements for state certification. Emergency medical response personnel meet requirements for state certification as emergency medical technician (these are usually also firefighters).

Training Development Administrative Guides (TDAG) are maintained that describe training provided to emergency response personnel. Training needs are reviewed annually and the training program modified to meet identified needs. The identification of changes needed to the Fire Services training program comes from the result of drills and exercise feedback, the acquisition of new equipment, or new techniques that come to light through the on-going professional development of staff personnel. Training records are kept of the training activities. Training is based on national standard emergency response methodology with site specific training on issues unique to the site. Qualified instructors provide a range of classroom and hands-on training to maintain standards of performance for all response personnel.

Specific training activities include firefighting, hazardous material response, confined space rescue, emergency medical response, radiological emergencies, and rescue. There is a live fire training facility on-site to augment firefighting training. Drills are conducted quarterly as part of the plant emergency plan.

Additional support for Fire Services personnel includes an on-site Plant Emergency Squad as described in the Emergency Plan. The on-site Plant Emergency Squad is on call for response to assist at emergency scenes. They receive training for the type of activities they may be called upon to perform. In addition, there are mutual aid agreements with off-site local fire agencies. Plant employees receive initial and biennial fire safety training as part of general employee training. This includes emergency reporting, facility evacuation, and fire extinguisher familiarization.

5.4.6 Fire Investigation, Permits, and Procedures

5.4.6.1 Impairment Control

Valves on the water system supplying the fire suppression systems are controlled through a written permit system. This permit system is controlled by Fire Services and therefore Fire Services is notified of the impairment of fire suppression systems. Only groups authorized by Fire Services may operate fire protection valves.

This permit system provides for the notification of the facility custodian (for fire watch), the reason for the impairment, the supervisor authorizing valving, system restoration time, and supervisor responsible for restoring the system. Compensatory actions will be initiated when TSR-identified process building sprinkler systems are out of service. Fire protection systems taken out of service for scheduled/unscheduled maintenance are returned to service as soon as the maintenance is completed.

5.4.6.2 Fire Protection Engineering

A fire protection engineer is available on staff to evaluate the fire hazards of changes to maintenance and process systems, provide in-house consultation, and also perform the building surveys of major process buildings as described in Section 5.4.1.2.

The fire protection engineer also assists in the development of project design criteria, performs designs reviews, establishes specification requirements, participates in some fire investigations, and conducts routine engineering consultation as necessary. The fire protection engineer is part of project design teams and routinely reviews project design packages to ensure applicable fire safety issues are addressed, including construction, egress, facility protection, separation of fire areas, detection systems, and special hazard protection.

5.4.6.3 Hot Work Program

A hot work program is in place to ensure that cutting, welding, and other hot work conducted in areas not designed or approved for such processes will be done in a manner that is consistent with industry fire prevention practices. This includes procedures, permits, pre-job inspections, fire watcher standby during hot work, and post-job fire watches to prevent delayed ignition of any combustibles. Fire watchers receive training and hands-on fire extinguisher practice. First-Line managers are trained on fire safety and are authorized to write hot work permits. Open hot work permits are tracked. The information is used to determine where hot work would need to be suspended during sprinkler system outages. The information is also used by Fire Services to conduct field surveillances of work during routine building inspections and when concerns or unusual circumstances exist.

5.6 CHEMICAL SAFETY

United States Enrichment Corporation (USEC) operations at PGDP require radioactive, hazardous, and toxic chemicals to support the basic process of uranium enrichment. The enrichment process uses, consumes, combines, and manufactures various hazardous, flammable, reactive, and toxic chemicals. Pursuant to 10 CFR Part 76.87(c)(11), the Technical Safety Requirements (TSRs) include appropriate references to address chemical safety. The Safety Analysis Report (SAR) describes the technical basis program requirements for chemical safety, the integration of chemical safety with uranium enrichment operations, and describes the management systems used by PGDP for chemical safety. The TSRs identify those requirements for control of chemicals and commit to the chemical safety controls described in this section.

5.6.1 Introduction

The PGDP chemical safety controls are limited to non-radiological materials. Radiological materials, safety analyses, and the toxicity of uranium are addressed in Chapter 4 and Section 5.3.

Chemical safety at PGDP consists of the integration of environmental, safety, and health management systems to address chemical safety. Chemical safety controls are designed to mitigate the adverse effects of the toxic materials used in the enrichment process to workers, the public, and the environment. To achieve this objective, safety analyses, process hazard analyses, and industrial hygiene and safety programs are utilized. Chemical safety utilizes existing plant programs rather than developing new or specifically tailored programs. These referenced programs may or may not contain direct references to chemical safety.

The basis for the application of the different controls, commensurate with risk, begins with the identification of chemicals under OSHA standards. Further review in the 10 CFR 76.68 review process is performed as necessary. Thus, for some chemicals, very specific Q controls may be deemed necessary and other chemicals, under a graded approach, are deemed not to require even the application of AQ controls.

Section 6.1 identifies the roles and responsibilities for the Safety and Health program, including Chemical Safety, receipt and control of hazardous materials, environmental matters, and fire protection. Chemical safety incorporates technical and administrative controls to manage risk. In Section 5.6.13, the chemical safety control strategy is discussed further and the additional controls and requirements utilized to protect workers and the general public from chemical hazards are identified.

5.6.2 Section Deleted

5.6.3 Operating Procedures

Plant procedures are prepared in accordance with the requirements of a formal procedure system. The procedure process and program, described in Section 6.11, is applicable to all plant procedures. The procedure program controls the development, review and approval, revision process, distribution, and procedure configuration management.

Alarm response procedures are written for those alarms that alarm remotely in addition to locally. All the alarms are present to aid in the detection and mitigation of releases for production purposes only, but they are not credited with that function for the purposes of the accident analysis.

5.6.3.1 Sitewide Safety Program Procedures

Safety and health program procedures, applicable to the entire site, are processed in accordance with the plant procedure program discussed in Section 6.11. The industrial hygiene and safety programs used for chemical safety and implemented by sitewide program procedures include:

- Lockout/TagOut (LO/TO) Program
- Confined Space Entry Program
- Safety and Health Work Permit Program
- Hot Work Program
- Personnel Protective Equipment (PPE) Program
- Signs/Labeling/Tagging Program
- Safety Training Programs

These safety and health programs apply to chemical safety as described in the program implementation documents.

5.6.4 Training

Employee training is conducted by a dedicated training organization. The plant training programs, as described in this section and Section 6.6, apply to chemical safety. The Training group provides basic plant entry training, general employee training, and technical job specific training as required by plant operations.

Cascade operators, chemical operators, maintenance, management, and emergency response personnel have pre-requisite training requirements needed for initial job qualification. Personnel who operate, maintain, manage, handle, and have emergency response duties for the chemicals covered by

Table 6.9-1. Event notification and reporting criteria applicable to USEC. (continued)

Criteria	Notification/ Reporting Time	Reporting Requirement Reference (10 CFR Section)
I. Unplanned Medical Treatment of Individual with Radioactive Contamination		
An event that requires unplanned medical treatment at a medical facility of an individual with radioactive contamination on the individual's clothing or body.	24 Hours 60 Day (W)	76.120(c)(3) 76.120(d)(2)**
J. Safety Equipment Failure/Actuations		
1. An event in which equipment is disabled or fails to function as designed when:		
a. The equipment is required by a TSR to prevent releases, prevent exposures to radiation and radioactive materials exceeding specified limits, mitigate the consequences of an accident, or restore this facility to a pre-established safe condition after an accident;	24 Hours 60 Day (W)	76.120(c)(2)(i) 76.120(d)(2)**
b. The equipment is required by a TSR to be available and operable and either should have been operating or should have operated on demand; **and**		76.120(c)(2)(ii) 76.120(d)(2)**
c. No redundant equipment is available and operable to perform the required safety function.		76.120(c)(2)(iii) 76.120(d)(2)**

**Reference: NRC letter, "Paducah Gaseous Diffusion Plant – Exemption from Requirement for Submitting Written Event Reports in 30 Days (TAC NOS. L32179 and L32181)", dated November 15, 2002.

Table 6.9-1. Event notification and reporting criteria applicable to USEC. (continued)

Criteria	Notification/ Reporting Time	Reporting Requirement Reference (10 CFR Section)
J. Safety Equipment Failure/Actuations (continued)		
2. USEC shall notify the NRC within 24 hours of any automatic or manual actuation of a Q safety system that results from an event or condition that has the potential for significant impact on the health or safety of personnel. Events having the potential for significant impact are those events where actual plant conditions existed that the system was designed to protect against. The intent of this reporting requirement is to ensure that the NRC is notified of those events where a Q safety system was actuated, either manually or automatically, in response to a valid signal. Per discussions with NRC staff, this reporting requirement specifically excludes the reporting of: A. Actuations which result from and are part of a pre-planned sequence during testing or operation; B. The actuation is invalid and: (1) Occurs while the system is properly removed from service; (2) Occurs after the safety function has already been completed; C. Actuations caused by invalid signals (e.g., non-safety system signal, instrument drift, spurious signals, human error, or other invalid signals). Invalid Q safety system actuations are documented and evaluated through the Problem Reporting System.	24 Hours 60 Day (W)	
K. Safeguards Events		
1. USEC, being subject to the provisions of Section 73.67 shall notify the NRC Operations Center within **1 hour** of discovery of the safeguards events described in paragraph I(a)(1) of Appendix G to this part [10 CFR 73].	1 Hour 60 Day (W)	73.71(b)(1) 73.71(b)(2)

EMERGENCY PLAN
LIST OF EFFECTIVE PAGES

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iii	133	2-4	123
iv	133	2-5	106
v	123	2-6	123
vi	114		
vii	8	3-1	46
viii	51	3-2	83
ix	51	3-3	8
x	111	3-4	8
xi	51	3-5	60
xii	2	3-6	1
1-1	60	4-1	129
1-2	81	4-2	118
1-3	123	4-3	114
1-3a	123		
1-3b	123		
1-4	111	4-4	103
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1-7	127	4-7	95
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1-10	26	4-10	1
1-11	26	4-11	21
1-12	1	4-12	3
1-13	1		
1-14	1	5-1	103
1-15	111	5-2	8
1-16	1	5-3	8
1-17	111	5-4	2
1-18	1	5-5	2
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1-24	1	5-13	8
		5-14	1
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6-8	1	B-2	1
7-1	114	C-1	60
7-2	96	C-2	1
7-3	100		
7-4	114	D-1	103
7-5	95	D-2	51
7-6	133	D-3	51
		D-4	44
8-1	1		
8-2	1	E-1	24
		E-2	24
9-1	44		
9-2	51		
10-1	103		
10-2	1		

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

Exercise controllers and evaluators are trained on 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 check and update of necessary telephone numbers.

7.4 CRITIQUES

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

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

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

7.5 PROGRAM AUDIT

The Emergency Management Program is audited in accordance with Section 2.18 of the Quality Assurance Program to ensure adequate and effective program function. This ensures that changes in plant layout are included in revisions to the Plan. The scope of the audit includes the Plan and the EPIPs, training activities, exercise deficiencies, emergency facilities, equipment, and supplies, and those records associated with off-site support agency interface.

Selection of audit team members and audit team familiarization is as required by Quality Assurance procedures. Audit personnel do not have direct responsibilities for implementing the Emergency Management Program and are qualified according to Quality Assurance procedures. Lead auditor qualification and requalification is performed in accordance with Supplement 2S-3 to ASME NQA-1-1989.

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

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

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

The Environmental, Safety and Health Manager or designee is responsible for planning and scheduling the inventory and inspection of designated emergency equipment and supplies and ensures that identified deficiencies are corrected in a reasonable period of time. Scope, responsibilities, and frequencies for inventories and inspections of designated emergency equipment and supplies are specifically described in plant procedures.

A two-way radio network and two telephones systems, including the telephones in the EOC, are in daily use at the plant and, therefore, are effectively tested on a continual basis.

Adequate 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 and emergency air supplies, vehicles, and administrative supplies.

Emergency response vehicles (i.e., fire, HAZMAT, E-Squad, and plant ambulances) are maintained as required by Fire Services and Maintenance procedures. Emergency equipment and supplies provided on emergency response vehicles are inspected and inventoried as required by plant procedures.

Emergency equipment and supplies provided on emergency response vehicles include instruments, demand respirators, self-contained breathing apparatus, firefighting equipment and gear, medical equipment, rescue equipment, HAZMAT response materials, and supplemental lighting. Emergency equipment stored in building C-300 is inspected and inventoried quarterly. Materials and supplies with rated shelf-lives are tracked and replaced as required in Emergency Management, Fire Services, Health Physics, or Industrial Hygiene and Safety procedures. Emergency instruments are operationally tested quarterly and after each use. Normal plant use two-way radios are used for emergency response.

Sufficient reserves of emergency equipment and instruments are available to replace emergency equipment that is removed for calibration or repair. A summary report of each inventory and inspection is prepared and submitted as Emergency Management documentation.

7.7 LETTERS OF AGREEMENT

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

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2.2-4	65
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SECTION 2.2 SPECIFIC TSRs FOR UF_6 FEED FACILITIES (C-333-A AND C-337-A

2.2.4 GENERAL LIMITING CONDITIONS FOR OPERATION

2.2.4.13 AUTOCLAVE MANUAL ISOLATION SYSTEM

SURVEILLANCE REQUIREMENTS:

Surveillance		Frequency
SR 2.2.4.13-1	Perform functional test of the system actuation devices.	Annually

BASIS:

The autoclave manual isolation system provides the means to remotely isolate all facility autoclaves in the event of a UF_6 release from a line outside the autoclave containment boundary. The system consists of two (within the feed facilities) actuation devices located in the OMR and at the cylinder yard crane bay exit (the most likely point of egress from the autoclave area), and one remotely located actuation device in the associated cascade building ACR. Actuating the system will initiate closure of all containment valves for each of the autoclaves within the affected facility. In the event of a UF_6 release from a line outside the autoclave containment boundary, the operator, while exiting the facility in accordance with the "see-and-flee" policy, would actuate the system to isolate the release point from the UF_6 source and limit the amount of material released. Closure of valves XV-503, CV-504, XV-505, CV-511, and CV-510 isolate a cylinder within an autoclave from piping outside the containment boundary thereby eliminating the source of UF_6 available for release.

The autoclave manual isolation system closes the same containment valves as those described in TSR 2.2.3.1 for the autoclave high pressure isolation system. Therefore, the operability and surveillance requirements for these valves are included in Section 2.2.3.1. TSR surveillance 2.2.4.13-1 is not required to include the actual closure of all of the containment valves on all autoclaves simultaneously. Testing of all autoclaves in a facility will verify operability of the manual isolation system. Containment valve closure is verified quarterly by the performance of the TSR surveillance requirement 2.2.3.1-2.

If condition D is entered and action D.3 is selected from among the three options, the 72 hour time limitation for completing action D.3.2 provides a limit for how long the AMIS may be out of service under Condition D. If Required Action D.3.2 can not be satisfactorily accomplished within the 72 hour time limit, then Required Action D.1 or D.2 shall be taken immediately upon expiration of the 72 hour time period. [Note: Required Action D.1 or D.2 may be taken immediately upon entering Condition D, or any time thereafter to satisfy the required action for Condition D.] [SAR Sections 3.15.2.2, 4.3.2.2.4, and 4.3.2.2.10]

USEC
A Global Energy Company

April 6, 2012
GDP 12-0011

Ms. Catherine Haney
Director, Office of Nuclear Material Safety and Safeguards
Attention: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Paducah Gaseous Diffusion Plant (PGDP)
Docket No. 70-7001, Certificate No. GDP-1
Transmittal of 2012 Annual Update to Certification Application USEC-01 (Proprietary)

> INFORMATION TRANSMITTED HEREWITH IS PROTECTED FROM PUBLIC DISCLOSURE AS CONFIDENTIAL COMMERCIAL OR FINANCIAL INFORMATION AND/OR TRADE SECRETS PURSUANT TO 10 CFR 2.390 AND 9.17(a)(4)

Dear Ms. Haney:

By separate letter of the same date (Letter GDP 12-0012), the United States Enrichment Corporation (USEC) is submitting to the Nuclear Regulatory Commission (NRC) the 2012 Annual Update to the certification documents for the PGDP, which is Revision 133 to USEC-01, Application for United States Nuclear Regulatory Commission Certification, Paducah Gaseous Diffusion Plant. As described in letter GDP 12-0012, certain portions of Revision 133 contain confidential commercial or financial information or trade secrets that are exempt from public disclosure pursuant to Section 1314 of the Atomic Energy Act of 1954, as amended, and 10 CFR 2.390 and 9.17(a)(4).

In accordance with 10 CFR 76.33(e), proprietary versions of the documents listed below are being submitted with this letter. USEC specifically requests the following enclosed documents be withheld from public disclosure:

> United States Enrichment Corporation, Paducah Gaseous Diffusion Plant, Fundamental Nuclear Materials Control Plan (FNMCP), (Proprietary), correction to Revision 129.
>
> United States Enrichment Corporation, Gaseous Diffusion Plant Security Program (GDPSP), (Proprietary), Revision 133.

The enclosed USEC affidavit provides the information required by 10 CFR 2.390(b)(4).

The information contained in USEC letter GDP 12-0012 dated April 6, 2012 (including the accompanying oath and affirmation), is hereby incorporated by reference into this letter.

USEC Inc.
6903 Rockledge Drive, Bethesda, MD 20817-1818
Telephone 301-564-3200 Fax 301-564-3205 www.usec.com

Should you have any questions regarding this matter, please contact me at (301) 564-3250. There are no new commitments contained in this submittal.

Sincerely,

S. A. Toelle

Steven A. Toelle
Director, Regulatory Affairs

Enclosures: 1. Affidavit

2. USEC-01, Application for United States Nuclear Regulatory Commission Certification, Paducah Gaseous Diffusion Plant, Revision 133, PROPRIETARY

cc: R. DeVault (DOE)	USEC-01, Copy Number 641
D. Hartland, NRC Region II	1 copy
J. Calle, NRC Region II	USEC-01, Copy Numbers 442, 664
T. Liu, NRC Project Manager	2 copies
NRC Senior Resident Inspector – PGDP	USEC-01, Copy Number 697

<u>Distribution</u>:

bcc (w/o):
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R. Van Namen, HQ
HQ-RA

FILE: h:\nra\letters.nrc\hq\gdp12-0011

Enclosure 1
GDP 12-0011

Affidavit

AFFIDAVIT OF STEVEN A. TOELLE
SUPPORTING APPLICATION TO WITHHOLD FROM
PUBLIC DISCLOSURE CERTAIN PORTIONS OF
REVISION 127 TO USEC-01
APPLICATION FOR UNITED STATES
NUCLEAR REGULATORY COMMISSION CERTIFICATION
PADUCAH GASEOUS DIFFUSION PLANT

I, Steven A. Toelle, Director, Regulatory Affairs, of the United States Enrichment Corporation (USEC), having been duly sworn, do hereby affirm and state:

1. I have been authorized by USEC to (a) review the information owned by USEC which is referenced herein relating to the Paducah Gaseous Diffusion Plant and which USEC seeks to have withheld from public disclosure pursuant to section 147 of the Atomic Energy Act (AEA), as amended, 42 U.S.C. § 2167, and 10 CFR 2.390(a)(3), 2.390(a)(4), 2.390(d)(1) and 9.17(a)(4), and (b) apply for the withholding of such information from public disclosure by the Nuclear Regulatory Commission (NRC) on behalf of USEC.

Fundamental Nuclear Materials Control Plan

2. Pursuant to 10 CFR 76.35(h), USEC has prepared a "Fundamental Nuclear Materials Control Plan (FNMCP), Paducah Gaseous Diffusion Plant" which describes the measures used by USEC at the Paducah plant to control and account for special nuclear material that USEC uses, possesses, or has access to. USEC is submitting a correction to this plan to the NRC as submitted with Revision 129 September 16, 2011, to its application for a certificate of compliance for the Paducah plant under 10 CFR Part 76.

3. 10 CFR 2.390(d)(1) states that correspondence and reports to or from the NRC containing information concerning an applicant's material control and accounting program for special nuclear material not otherwise designated as Safeguards Information or classified as National Security Information or Restricted Data are deemed to be confidential commercial or financial information exempt from public disclosure. The FNMCP contains such information. Accordingly, USEC requests that the correction to Revision 129 of the "Fundamental Nuclear Materials Control Plan (FNMCP)" be withheld from public disclosure pursuant to section 147 of the AEA, 42 U.S.C. § 2167, and 10 CFR 2.390(a)(3), 2.390(d)(1) and 9.17(a)(4).

Gaseous Diffusion Plant Security Program

4. Pursuant to 10 CFR 76.35(i), 10 CFR 76.35(j), and 10 CFR 76.35(k) USEC has prepared a "Gaseous Diffusion Plant Security Program (GDPSP)" which describes the measures used by USEC at the Paducah plant to a) protect off-site shipments of special nuclear material of low strategic significance; b) physically protect special nuclear material that the corporation uses, possesses, or has access to at fixed sites; and c) physically protect and control classified matter. USEC is submitting changes to this plan to the NRC as part of Revision 133, March 30, 2012, to its application for a certificate of compliance for the Paducah plant under 10 CFR Part 76.

5. 10 CFR 2.390(d)(1) states that correspondence and reports to or from the NRC containing information concerning an applicant's physical protection or material control and accounting program for special nuclear material not otherwise designated as Safeguards Information or classified as National Security Information or Restricted Data are deemed to be confidential commercial or financial information exempt from public

disclosure. The GDPSP contains such information. Accordingly, USEC requests that the Revision 133 changes to the "Gaseous Diffusion Plant Security Program (GDPSP)" be withheld from public disclosure pursuant to section 147 of the AEA, 42 U.S.C. § 2167, and 10 CFR 2.390(a)(3), 2.390(d)(1) and 9.17(a)(4).

6. Steven A. Toelle, having been duly sworn, hereby confirms that I am the Director, Regulatory Affairs of USEC, that I am authorized on behalf of USEC to review the information attached hereto and to sign and file with the Nuclear Regulatory Commission this affidavit and the attachments hereto, and that the statements made and matters set forth herein are true and correct to the best of my knowledge, information, and belief.

S. A. Toelle

Steven A. Toelle

On this 6th day of April 2012, the individual signing above personally appeared before me, is known by me to be the person whose name is subscribed to within the instrument, and acknowledged that he executed the same for the purposes therein contained.

In witness hereof I hereunto set my hand and official seal.

Joan M. Hadro

Joan M. Hadro, Notary Public
State of Maryland, Montgomery County
My commission expires December 13, 2013