Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
Permit: F-26-016

Mission Conversion Services Alliance, LLC –
Depleted Uranium Hexafluoride Conversion Facility
5509 Hobbs Road
Paducah, KY 42001

June 11, 2026
Eric Amdahl, Reviewer

SOURCE ID:	21-145-00091
AGENCY INTEREST:	49944
ACTIVITY:	APE20260001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 2819, Industrial Inorganic Chemicals, NEC (except activated carbon and charcoal, alumina, recovering sulfur from natural gas, and inorganic dyes)

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☒ Yes ☐ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: McCracken
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead
If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant ☐ Yes ☒ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☐ Yes ☒ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☒ Yes ☐ No
If yes, list which pollutant(s): Hydrofluoric Acid

PTE* greater than 25 tpy for combined HAP ☐ Yes ☒ No
*PTE does not include self-imposed emission limitations.

Description of Facility:
The proprietary process used to convert depleted uranium was developed and is owned by AREVA NP. The process is currently in use at a site in Richland, Washington that is licensed by the U.S. Nuclear Regulatory Commission and is also used on the U.S. Department of Energy (DOE) reserve in Portsmouth, Ohio. AREVA NP combined with Burns and Roe, an engineering and construction firm, and Duratek, of Oak Ridge Tennessee, to form Uranium Disposition Services, LLC (UDS) that was responsible for the design, construction and originally for the operation of the facility. The operator and permit holder for this facility changed from Uranium Disposition Services, LLC to BWXT Conversion Services LLC (BWXT) on March 29, 2011. The operator and permit holder for this facility changed from BWXT Conversion Services LLC (BWXT) to Mid-America Conversion Services, LLC (MCS) on February 1, 2017. The operator and permit holder for this facility changed from Mid-America Conversion Services, LLC (MCS) to Mission Conversion Services Alliance, LLC (MCSA) on October 1, 2025.

With the application submittals for the initial permit, which was issued on October 14, 2005, UDS had requested confidentiality for the processes and specific equipment to be used in this project, and the Division concurred. The unique nature of the processes and facility are within the scope of *trade secret* as claimed and the project is therefore entitled to confidential treatment pursuant to 400 KAR 1:060, *Confidentiality of records or other information furnished to or obtained by the Natural Resources and*

Environmental Protection Cabinet. Therefore, only a brief description of the facility has been included here:

Four Parallel process lines are used to convert depleted uranium hexafluoride (DUF_6), currently stored in cylinders by DOE, to uranium oxide powder, hydrofluoric acid, and calcium fluoride (CaF_2). The process takes the material through vaporization, conversion, hydrofluoric acid recovery, and off-gas scrubbing. The resultant high purity hydrofluoric acid is collected and marketed. The remaining low-level depleted uranium oxide powder is loaded into emptied UF_6 cylinders for beneficial reuse or disposition. CaF_2 is generated during the regeneration of potassium hydroxide (KOH).

The facility has only two main emission points, the first of which, Emission Unit 01 (U001), is the Building Exhaust System stack of the Conversion Building. The Building Exhaust System removes a percentage of air from each of the three process area HVAC systems (HV-001, FN-053, and HV-003). The Building Exhaust System is also directly connected to several process exhaust blowers located throughout the building. All air to be exhausted travels to the exhaust room plenum where it is pulled through a bank of HEPA filters by a centrifugal fan and exhausted from the building through a steel stack located on the Conversion Building Roof.

U001 accounts for the majority of all process emissions. Many safety systems, in addition to the controlled ventilation system and containments, are incorporated into the design throughout the facility to prevent releases of gases, solids, or liquids to the building interior or to the environment. Central control systems monitor all aspects of the conversion process, including temperature and pressure, and automatic building monitors check for chemical leaks. Pressure vessels are designed to American Society of Mechanical Engineers (ASME) standards and fail-safe design, in the event of power or instrument air loss, is used for valving and control systems.

Emission Unit 02 (U002) is the hydrofluoric acid Loading Area. Hydrofluoric acid produced during the conversion process is collected in hydrofluoric acid receiver tanks located in the Conversion Building. The hydrofluoric acid is pumped to the Storage Tanks for subsequent load-out. Each of these tanks is located within a secondary containment sump with leak detection and continuously operated detectors monitoring the air near the tanks. Air that is displaced during the filling and emptying of the hydrofluoric acid Storage Tanks and transport vessels is directly vented through dedicated scrubbers/control equipment. The exit from the scrubber/control equipment in this area is designated as U002. The tanks, and all equipment involved with processing or storing hydrofluoric acid, are designed for acid service. No radioactive materials enter this process or are vented through U002.

EU 03 (U003), Standby Diesel Generator, is an emergency stationary engine with a rated capacity of 755 HP constructed in 2007.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: F-26-016 Activity: APE20260001

Application Received: 1/27/2026 Application Complete Date(s): 3/27/2026

Permit Action: ☐ Initial ☒ Renewal ☐ Significant Rev ☐ Minor Rev ☐ Administrative

Construction/Modification Requested? ☐Yes ☒No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:
Mission Conversion Services Alliance (MCSA) – Depleted Uranium Hexafluoride Conversion Facility applied for the renewal of their Conditional Major Permit, F-21-018 R3. There are no requested construction or changes to the permit.

F-26-016 Emission Summary		
Pollutant	2025 Actual (tpy)	PTE F-26-016 (tpy)
CO	0.003	0.17
NOx	0.033	1.80
PT	0.013	0.0705
PM_{10}	0.013	0.0705
$PM_{2.5}$	0.012	0.0705
SO_2	0.0001	0.0063
VOC	0.002	0.101
Lead	0.0	0
Greenhouse Gases (GHGs)		
Carbon Dioxide	3.7	202
Methane	0.0	0.0082
Nitrous Oxide	0.0	0.00164
CO_2 Equivalent (CO_2e)	3.7	203
Hazardous Air Pollutants (HAPs)		
Hydrofluoric Acid	0.042	0.133
Uranium	0.0000004	0.00000141
Combined HAPs:	0.042	0.135

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit 01 (U001): Conversion Facility Building				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	• $P \leq 0.5$ ton/hr = 2.34 lb/hr • $0.5 < P \leq 30$ ton/hr = $3.59 \times P^{0.62}$ lb/hr	401 KAR 59:010, Section 3(2)	1.365 lb/ton; mass balance	Assumed based on the potential to emit of the process
Opacity	20% opacity	401 KAR 59:010, Section 3(1)(a)	N/A	Weekly qualitative observations, recordkeeping

Initial Construction Date: 9/26/2005

Process Description:
Emission Unit 01 (U001) is the Building Exhaust System stack of the Conversion Building. U001 collects four air exhaust streams:

(1) Vaporization Area HVAC System (HV-001)

The vaporization area of the Conversion Building consists of the following rooms or areas: Vaporization Room, Cylinder Transfer Area, Evacuation Cylinder Room, and the Decontamination Room and Monitor Area. The air handling unit (AHU) for this area provides conditioned air to maintain the temperature in the areas listed. All recirculated air is passed through a nuclear filtration system HEPA filter bank. Under Revision 2 of the permit, the facility installed a new Evacuation Header System (EVH) to remove the heals in the cylinders. The vacuum pumps that currently perform evacuations shall be removed once the new system, which uses a cold box during the evacuation, is fully installed and tested. The cold box evacuation will result in small amounts of non-condensable gases and UF6 being generated. Emissions will be directed to Alumina Chemical Trap stations designed to remove UF6 before routing through the existing HVAC system and banks of HEPA filtering. Final discharge is through the main stacks. Note that during the brief time that both the EVH and the existing vacuum pumps are operational, the two systems shall not run concurrently.

(2) HVAC System (FN-053)

FN-053 serves the Cylinder Preparation and Hot Shop Area, the Cylinder Fill Area, the Hot Lab, and the Powder Transfer Room.

There is no AHU for this System. A recirculation fan is used to take clean return air, from the Cylinder Preparation/Hot Shop and Cylinder Fill Areas, and mix this air with outside air. The Powder Transfer Room is exhausted directly to the final nuclear filtration system HEPA filter bank. There are also a few “Hot Spots” in the Hot Shop that are directly exhausted to the final nuclear filtration system HEPA filter bank as well. All recirculated air is passed through a nuclear filtration system HEPA filter bank.

(3) Conversion Area HVAC System (HV-003)

The Conversion Area consists of the following areas: Lower Conversion Area, Intermediate

Emission Unit 01 (U001): Conversion Facility Building

Conversion Area, and Upper Conversion Area.

The AHU for the Conversion Area provides conditioned air to maintain the temperature in the areas listed above. All recirculated air is passed through a nuclear filtration system HEPA filter bank.

(4) Process Off-gas Scrubber (POS) System Exhaust

The Process Off-gas Scrubber (POS) System uses KOH scrubbers, and one secondary scrubber common to all KOH scrubbers, to remove HF from the incoming off-gas. Off-gas enters a KOH scrubber venturi eductor where it is contacted by a high pressure KOH stream. The two-phase mixture discharges into the scrubber tank where the liquid separates from the off-gas. The off-gas flows upward through a packed column where the off-gas is scrubbed and the HF is neutralized to potassium fluoride (KF). The off-gas then flows through a condenser and is transferred by a blower to the backup scrubber inlet. The operation of the secondary scrubber is similar to that of the KOH scrubbers, except that the secondary scrubber does not have a venturi eductor. The off-gas from the secondary scrubber is routed through a condenser and is transferred by a blower to the final nuclear filtration system HEPA filter bank.

With the exception of the POS system within the areas described above (HV-001, FN-053, HV-003) there are areas designated as "Hot Spots" where there exists an intermittent potential for a small amount of DUF6 or uranium oxide contamination to occur. These "Hot Spots" are provided with snorkels or hoods that are connected directly to the building exhaust system, thus preventing the potentially contaminated air from being recirculated. As an added precaution, the air pulled from the "Hot Spots" passes through a HEPA filter assembly located in the process space before travelling on to the building exhaust HEPA filters.

This HEPA filtration is the primary engineered design feature used to avoid accumulation of oxide powder and other contaminants in the large HVAC ducts. In each case where this technique is implemented, the hood or other potentially contaminated area is vented to a room (local) HEPA filter bank, then the vent duct is routed directly to the exhaust filter bank (no recirculation). This is done for two reasons: first to avoid buildup of contaminated material in the duct between the hood and the main HEPA bank and second to avoid gross contamination of the main HEPA bank.

Maximum Capacity: 30,891 tons of DUF_6 processed/yr.

Individual Equipment Descriptions:

Process Line 1:

Control For Oxide Powder: Containment, In Process Filters, HVAC Collection, Pre-filters, Final HEPA Bank

Control for HF: Process Off-gas System (POS) Primary Caustic Scrubber, POS Secondary Scrubber (common to lines 1-4), Final HEPA Bank

Process Line 2:

Control For Oxide Powder: Containment, In Process Filters, HVAC Collection, Pre-filters, Final HEPA Bank

Control for HF: Process Off-gas System (POS) Primary Caustic Scrubber, POS Secondary Scrubber (common to lines 1-4), Final HEPA Bank

Emission Unit 01 (U001): Conversion Facility Building

Process Line 3:

Control For Oxide Powder: Containment, In Process Filters, HVAC Collection, Pre-filters, Final HEPA Bank

Control for HF: Process Off-gas System (POS) Primary Caustic Scrubber, POS Secondary Scrubber (common to lines 1-4), Final HEPA Bank

Process Line 4:

Control For Oxide Powder: Containment, In Process Filters, HVAC Collection, Pre-filters, Final HEPA Bank

Control for HF: Process Off-gas System (POS) Primary Caustic Scrubber, POS Secondary Scrubber (common to lines 1-4), Final HEPA Bank

Evacuation Header System:

Control: HEPA Filter, Final HEPA Bank

Oxide Handling System:

Control: Vented Hood, Pre-filter, HEPA Filter, Final HEPA Bank

Applicable Regulations:
401 KAR 53:010, *Ambient air quality standards,* applies to fluoride emissions.

401 KAR 59:010, *New process operations,* applies to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.

40 CFR 61, Subpart H, *National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities*, applies to operations at any facility owned or operated by the Department of Energy that emits any radionuclide other than radon-222 and radon-220 into the air.

State-Origin Requirements:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Comments:
For U001, the overall system of HEPA Filters provides a 100% capture efficiency and a 99.97% control efficiency (emission reduction) for the oxide powder (particulate). To ensure that the filters operate properly and maintain compliance with emissions limitations, the permit includes requirements that the filters be installed, maintained and operated in accordance with the manufacturer's specifications and that they always be operated within the parameters (i.e. pressure drop range) established as critical during testing. These HEPA filters include the following:

Table 1

KyEIS Control ID#	Control Equipment Description
UH001	HEPA Filter (FL-011): Recirculation Filter – Vaporization Area
UH002	HEPA Filter (FL-012): Recirculation Filter Cylinder Prep/Filling Area
UH003	HEPA Filter (FL-013 & 014): Recirculation Filter – Conversion Area
UH004	HEPA Filter (FL-025-028): Vaporization Exhaust
UH005	HEPA Filter (FL-025-028): Powder Transfer Room

Emission Unit 01 (U001): Conversion Facility Building

UH006	HEPA Filter (FL-037 & 038): Welding Hood & Cylinder Prep Area Exhaust
UH007	HEPA Filter (FL-001): Conversion Building Main Exhaust Filter Bank
UH008	HEPA Filter (FL-039A & 039B): Oxide Powder Hopper Filters
UH009	HEPA Filter (FL-054): Conversion Units Cooling Jacket
UH010	HEPA Filter (FL-830, FL-120A & B): Stabilization & Vaporization Exhaust

In addition, the concrete Conversion Building is kept at a negative pressure relative to the outside ambient pressure. Continuous welded-joint piping used for much of the process provides containment protection. Where flanged connections are required, hotboxes, vented through HEPA filters, assure containment of gases. Piping and vessels provide primary containment for many functions and vented hoods collect and send emissions through the controlled ventilation system.

The POS system includes eight primary scrubbers that feed one secondary scrubber. Each one of the eight primary scrubbers feed the one secondary is 96.5% HF of gas removal efficient, yet the secondary scrubber is 85.3% efficient. Repair and preventative maintenance of any one POS primary scrubber is allowed for an operating process line as long as the POS backup (secondary) scrubber is operating as designed.

Emissions are calculated based on the designed mass balance for the plant, and using the specified control efficiencies for the control equipment in the application.

Emission Unit 2 (U002): HF Loading Area				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	• $P \leq 0.5$ ton/hr = 2.34 lb/hr • $0.5 < P \leq 30$ ton/hr = $3.59 \times P^{0.62}$ lb/hr	401 KAR 59:010, Section 3(2)	0.646 lb/1000 gal; assumed to be equal to fluoride emissions	Assumed based on the potential to emit of the process
Opacity	20% opacity	401 KAR 59:010, Section 3(1)(a)	N/A	Assumed when leak detection equipment is used

Initial Construction Date: 9/26/2005

Process Description:
Hydrofluoric acid produced during the conversion process is collected in six HF receiver tanks located in the Conversion Building. The HF is pumped to the HF Storage Tanks for subsequent load-out. Each of these tanks is located within a secondary containment sump with leak detection and continuously operated detectors monitoring the air near the tanks. Air that is displaced during the filling and emptying of the HF Storage Tanks and transport vessels is directly vented through dedicated scrubbers/control equipment. The exit from the scrubber/control equipment in this area is designated as U002. The tanks, and all equipment involved with processing or storing hydrofluoric acid, are designed for acid service. No radioactive materials enter this process or are vented through U002.

Individual Equipment Descriptions:
6 HF Storage Tanks
HF service designed lines and equipment
Leak detection instrumentation
Maximum Capacity: 3,328,800 gal 66% hydrofluoric acid/yr, combined
Controls: Caustic Scrubber (US010)

Applicable Regulations:
401 KAR 53:010, *Ambient air quality standards,* applies to fluoride emissions.

401 KAR 59:010, *New process operations,* applies to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.

Comments:
Emissions calculated using TANKS 4.09: 10,000 gal capacity for each tank, a maximum working volume of 13,000 gal, and 54 turnovers/yr. The caustic scrubber has a control efficiency of 97.5%. Loading trucks from these tanks uses vapor balancing and scrubbing. PM emissions are conservatively assumed to be equal to fluorides emissions.

Emission Unit 3 (U003): Standby Diesel Generator

Initial Construction and/or Modification Date: 2/2017

Process Description:
An emergency stationary engine.
Fuel: Diesel
Rated Capacity: 755 HP
Construction Commenced: 2007
Controls: None

Applicable Regulations:
401 KAR 60:005, Section 2(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, applies to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in 40 CFR 60.4200(a)(1) through (4). For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines,* applies to stationary RICE at a major or area source of HAP emissions.

Comments:
NO_x, CO, and PM emission factors are based on provided by EPA Tier 2 certification for the unit. It is assumed that PM=PM_{10}=$PM_{2.5}$. VOC and SO_2 emissions are based on the information provided AP-42 Table 3.4-1. HAPs emission factors are based on the information provided in AP-42 Table 3.4-3. GHG emission factors are based on the information provided in 40 CFR 98, Tables C-1 and C-2. Emissions are calculated using 500 hours of operation per year to account for potential emergency operation.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
U001[1.]	Caustic Scrubber	HF	401 KAR 53:010	Initial	Method 26A	9 tpy	Below Detection Limit	3 lines running; 1.4055 Mg/hr	CMN20140001	2/25/2014-2/26/2014

Footnotes:

1. This was initial testing required to determine compliance with ambient air quality standards with regard to HF and total fluoride emissions. 45 days after the initial testing, results of the monitoring were used in air dispersion modeling to determine compliance with the ambient air quality standards. A limit of 90% of the applicable standard for an individual HAP was established as the permit limit. If the permittee exceeded the permit limit during the initial testing, additional monitoring and testing requirements would have been established. However, the results were well below the standard.

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
9.0 tpy of individual HAP emissions	To preclude major source status for HAP and 401 KAR 52:020, *Title V permits*	Source-wide
22.5 tpy of combined HAP emissions	To preclude major source status for HAP and 401 KAR 52:020, *Title V permits*	Source-wide
10 mrem/yr dose equivalent	40 CFR 61, Subpart H	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 53:010, *Ambient air quality standards,* applies to fluoride emissions.	Source-wide
401 KAR 59:010, *New process operations*, applies to each affected facility, associated with a process operation, which is not subject to another emission standard with respect to particulates, commenced on or after July 2, 1975.	U001, U002
401 KAR 60:005, Section 2(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, applies to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in 40 CFR 60.4200(a)(1) through (4). For the purposes of this subpart, the date that construction commences is the date the engine is ordered by the owner or operator.	U003
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines,* applies to stationary RICE at a major or area source of HAP emissions.	U003
401 KAR 63:020, *Potentially hazardous matter or toxic substances,* applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality.	U001, U002

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
40 CFR 61, Subpart H, *National Emission Standards for Emissions of Radionuclides Other Than Radon from Department of Energy Facilities*, applies to operations at any facility owned or operated by the Department of Energy that emits any radionuclide other than radon-222 and radon-220 into the air. Under 40 CFR 61, Subpart H, only release points with the potential to discharge radionuclides in quantities that could cause a dose in excess of 1 percent of the standard must be continuously monitored. The results of the monitoring and calculated emissions are used to determine the total yearly dose of radiation coming from the facility that could impact a member of the public. Under 40 CFR 61, Subpart H, the maximum allowed public effective dose equivalent (EDE) due to exposure has been established at 10 millirem (mrem) per year from any DOE facility. Annual dose is determined through a computer modeling program that uses measurement of radionuclide releases as well as calculated amounts based on known emission factors, process knowledge, engineering estimates, and other U.S. EPA approved methods. The annual dose to the maximally exposed member of the public from the PGDP facility, including contributions from both enrichment activities by U.S. Enrichment Corporation and from DOE site remediation, waste storage and other activities, was at 0.012 mrem for 2006, or around 1/1000th of the dose allowed under federal law. The 10 mrem radiation dose limit is site-wide and applies to all three entities on the PGDP property, including DOE, FRNP, and the Depleted Uranium Hexafluoride (DUF_6) Conversion Facility. MCSA must annually calculate its' contribution to the dose and include the dose resulting from the DOE owned/managed activities on the PGDP reservation in an annual National Emission Standards for Hazardous Air Pollutants (NESHAP) report to U.S. EPA and the Division. There is currently no increment allotment of the dose limit to individual entities on the site. Because of the radioactive nature of the particulate, a NESHAP analysis was performed by the facility using conservative assumptions, a credible controlled and uncontrolled release, an Appendix D calculation (under 40 CFR 61 Subpart H), and a Worst Case Scenario release that includes a catastrophic, simultaneous failure of several safety systems to provide a bounding case. Results of the credible accidental releases show that public exposure to radiation, resulting from such releases, would be well below 1% of the standard level established in 40 CFR 61.92. However, the releases analyzed that are not deemed credible, but were included to provide a bounding case, show there is a possibility to exceed 1% of the standard level. Therefore, constant monitoring is required, in accordance with 40 CFR 61.93(e), and continuous monitoring is included in the design specification of the facility and is emphasized in the permit.	U001

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
In addition to the limits and requirements imposed by the Division, the source also employs administrative, procedural and passive controls to minimize radionuclide emissions from site activities in accordance with the NRC's As Low As Reasonably Achievable (ALARA) principles. The entire Paducah site is also subject to the requirements of the Kentucky Cabinet for Health and Family Services Department for Public Health Radioactive Materials Section. This Commonwealth agency retains jurisdiction over radiation hazards in the state and promulgates its own regulations with regard to ALARA requirements and any radioactive materials that cross out of the boundary of the DOE-owned site.	

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 52:020, *Title V permits*. This regulation is precluded by the source accepting source-wide emission limitations on HAP emissions below the major source threshold.	Source-wide

Table D - Summary of Non Applicable Regulations:

Non Applicable Regulations	Emission Unit
N/A	

Air Toxic Analysis

401 KAR 53:010, *Ambient air quality standards*
The potential impact of site-related and regional sources of HF on ambient air concentrations near the proposed project were previously analyzed though the use of the ISC3 air dispersion model. Using all sources within 50 kilometers of the Paducah Gaseous Diffusion Plant Site as well as the predicted amount of HF emissions from the new facility show that predicted concentrations are within the 12 and 24 hour standards established in 401 KAR 53:010. During initial start-up activities, the source was required to measure actual HF emissions from EP 01 (Conversion Facility Building). Within 30 days of the testing, the source was also required to use the HF emissions data, in Division approved air dispersion modeling, to demonstrate that the predictions were correct and that ambient air quality standards would be met. This has been completed and it has been concluded that continuous HF monitoring is not required. All HF emissions from the Conversion Building (EP 01), are routed through caustic scrubbers with a removal efficiency of 99.5% while the HF emissions associated with the HF Loading Area (EP 02) will be captured and routed through scrubbers/control equipment with a removal rate of 97.5%. Parametric monitoring of control equipment is required regardless of the modeling.

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*
The Division for Air Quality (Division) has previously performed AERMOD modeling of potentially hazardous matter or toxic substances that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Since this modeling, emissions at the facility have remained the same. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity #	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
F-05-015	Initial	APE20040003	3/17/2005	10/14/2005	Initial Construction Permit	N/A
F-05-015 R1	Sig Revision	APE20070001	5/30/2007	10/12/2007	Removal of temp monitoring at U002	N/A
F-10-035	Renewal	APE20100001	9/29/2010	2/21/2011	Renewal	N/A
F-10-035 R1	Admin Amend	APE20110001	3/24/2011	3/25/2011	Change in Operator	N/A
F-15-042	Renewal	APE20150002	11/18/2015	3/17/2016	Renewal	N/A
F-15-042	Admin Amend	APE20170002	1/24/2017	1/30/2017	Change in Operator	N/A
F-21-018	Renewal	APE20200001	10/30/2020	7/27/2021	Renewal	N/A
F-21-018 R1	Admin Amend	APE2023001	10/22/2023	2/9/2024	Addition of Autoclaving	N/A
F-21-018 R2	Minor Revision	APE20240002	9/20/2024	1/9/2025	Administrative Amendment to Add a Cylinder Evacuation Process as Part of Emission Unit 01, minor correction to Table 01-2	N/A
F-21-018 R3	Admin Amend	APE20250001	9/24/2025	10/31/2025	Change of owner from Mid-America Conversion Services, LLC to Mission Conversion Services Alliance, LLC	N/A

SECTION 6 – PERMIT APPLICATION HISTORY

None

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS – Ambient Air Quality Standards
BACT – Best Available Control Technology
Btu – British thermal unit
CAM – Compliance Assurance Monitoring
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
ESP – Electrostatic Precipitator
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HF – Hydrogen Fluoride (Gaseous)
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NO_x – Nitrogen Oxides
NSR – New Source Review
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PSD – Prevention of Significant Deterioration
PTE – Potential to Emit
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds