



Steven L. Beshear
Governor

**Energy and Environment Cabinet
Department for Environmental Protection**

Leonard K. Peters
Secretary

Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, Kentucky 40601
www.air.ky.gov

March 28, 2011

CERTIFIED MAIL [7004 2890 0003 4166 8413]
Return Receipt Requested

Babcock & Wilcox Conversion Services, LLC
Attn: Michelle M. Riechert, Environment, Safety & Health Director
1020 Monarch Street, Suite 300
Lexington, KY 40513

Re: Application for an Administrative Amendment
Permittee Name: Babcock & Wilcox Conversion Services, LLC
Source Name: Depleted Uranium Hexafluoride Conversion Facility
Source ID: 21-145-00091
Agency Interest: 49944
Activity: APE20110001
Permit: F-10-035 R1

Dear Ms. Reichert:

This letter is in response to an application for an operator/permit holder change that was received by this office on March 17, 2011. Division records have been updated to reflect the requested operator change from Uranium Disposition Services, LLC to Babcock & Wilcox Conversion Services, LLC. Your new permit and associated revised documents are enclosed with this letter.

Thank you for your assistance in maintaining accurate and up-to-date information regarding your source. If there are any questions regarding this matter, please contact Sandra Cooke at 564-3999, x-4502

Sincerely,

Benita Stephens
Document Processing Specialist II
Permit Review Branch

BS/SMC
Enclosures

**Commonwealth of Kentucky
Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, KY 40601**

FINAL PERMIT DETERMINATION
Conditional Major, Operating
Permit: F-10-035 R1

On the Application Submitted By:
Babcock & Wilcox Conversion Services, LLC

For

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

5600 Hobbs Road
Paducah, KY 42001

Review and Analysis By: Sandra M. Cooke

March 24, 2011

Source ID:	21-145-00091	Activity:	APE20110001
Agency Interest:	49944	Application Received:	3/17/2011
County:	McCracken	Application Complete:	3/24/2011
Regional Office:	Paducah	SIC Code:	2819

ATTACHMENTS:

**ATTACHMENT A - EXECUTIVE SUMMARY
ATTACHMENT B - PERMIT STATEMENT OF BASIS
ATTACHMENT C - FINAL PERMIT
ATTACHMENT D - PERMIT APPLICATION SUMMARY FORM**

Commonwealth of Kentucky
Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, KY 40601

FINAL PERMIT DETERMINATION
Conditional Major, Operating
Permit: F-10-035 R1

ATTACHMENT A - EXECUTIVE SUMMARY

Commonwealth of Kentucky
Division for Air Quality
EXECUTIVE SUMMARY

FINAL
Conditional Major, Operating
Permit: F-10-035 R1
Depleted Uranium Hexafluoride Conversion Facility
Paducah, KY 42001
March 24, 2011
Sandra M. Cooke, Reviewer

SOURCE ID:	21-145-00091
AGENCY INTEREST:	49944
ACTIVITY:	APE20110001

ADMINISTRATIVE PERMIT AMENDMENT — F-10-035 R1:

On March 17, 2011, the Division received an application for an administrative revision changing the operator and permit holder for this facility from Uranium Disposition Services, LLC to Babcock & Wilcox Conversion Services, LLC. The application for the change affirmed that no operational changes, currently required by the permit, would be made at the time of transfer nor would changes be made without conforming to permit amendment procedures. The effective date of responsibility transfer is March 29, 2011. The permit has been revised to reflect the new permit holder and a few minor changes have been made for clarity regarding the dates of the initial permit, renewal permit and this revision.

SOURCE DESCRIPTION:

The proprietary process to be used to convert spent uranium at this facility 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 will also be used on the U.S. Department of Energy (DOE) reserve in Portsmouth, Ohio. AREVA NP has combined with Burns and Roe, an engineering and construction firm, and Duratek, of Oak Ridge Tennessee, to form Uranium Disposition Services, LLC (UDS) that is responsible for the design, construction and operation of this proposed facility. With the application submittals for the initial permit, which was issued on October 14, 2005, UDS requested confidentiality for the processes and specific equipment to be used in this project and the Division agreed. 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*. During the application process for the renewal, which was issued on February 21, 2011, the Division determined that confidential treatment of information about the processes and facility was still warranted, therefore, only a brief description of the facility has been included here:

Four Parallel process lines are used to convert depleted uranium hexafluoride (DUF₆),

currently stored in cylinders by DOE, to uranium oxide powder, aqueous hydrogen fluoride (HF), and calcium fluoride (CaF₂). The process takes the material through vaporization, conversion, HF recovery, and off-gas scrubbing. The resultant high purity HF is collected and marketed. The remaining low-level uranium oxide powder is loaded into emptied UF₆ cylinders for disposal. CaF₂ is generated during the regeneration of potassium hydroxide (KOH). The facility has only two emission points, the first of which, emission point 01, is the stack of the Conversion Facility Building. This concrete 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 a High Efficiency Particulate Air (HEPA) filter, assure containment of gasses. This building also houses the Oxide Handling Systems. Piping and vessels provide primary containment for this function and vented hoods collect and send any emissions through a pre-filter, a HEPA filter, and then the final HEPA bank before exhausting out the stack. The cylinder modification and stabilization systems are also contained in this facility. A controlled ventilation system, containing pre-filters and HEPA filters, will handle all building and process gasses prior to venting to the final HEPA exhaust filter bank and the monitored facility stack. Emission point 01 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 gasses, 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.

All HF will be sold at the 55% strength resulting from the conversion process. The aqueous HF acid produced during this process will be periodically pumped from the HF receiver tanks to the HF storage tanks for subsequent load-out. These tanks are 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 Emission Point 02. The tanks, and all equipment involved with processing or storing aqueous HF, are designed for acid service. No radioactive materials enter this process or are vented through Emission Point 02.

PUBLIC AND U.S. EPA REVIEW (RENEWAL ISSUANCE):

On October 12, 2010, the public notice on availability of the draft renewal permit and supporting material for comments by persons affected by the plant was published in *The Paducah Sun* in Paducah, Kentucky. In addition, notification of the issuance of the draft permit was sent to the United States Environmental Protection Agency (U.S. EPA) on October 13, 2010 via e-mail. The public comment period expired 30 days from the date of publication.

Comments were received from Uranium Disposition Services, Inc. (the source) on November 17, 2010. Attachment B lists the comments received, and the Division's response to each comment. A minor change was made to the permit as a result of the comments received; however, in no case were any emissions standards, or any monitoring, recordkeeping or reporting requirements relaxed.

PERMIT CLARIFICATIONS (RENEWAL ISSUANCE):

As a result of the Division's internal review of the renewal draft documents, it was determined that a clarification was necessary to ensure that source emissions would be held below the Ambient Air Quality Standards, as established in 401 KAR 53:010, for total fluorides, which includes HF. The limit for total fluorides should have been included in the initial Title V permit, F-05-015.

In addition, since some fluoride salts may be considered HAPs, it became necessary to include the limit of 22.5 tons per year, on a rolling monthly average, for total fluorides in order for the facility to remain a minor source. As a result, changes were made to the draft of this renewal permit to clarify that both HF and total fluoride emissions would have to be tested and shown to meet specific limits and Ambient Air Quality Standards.

Finally, the time allowed between the initial testing (Hot Functional Test 002) to establish HF and total fluorides emissions, reporting to the Division, and installation of a continuous monitoring device, if necessary, was standardized to the 45 days required under permit **SECTION G – GENERAL PROVISIONS, 5.c Testing Requirements**.

**Commonwealth of Kentucky
Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, KY 40601**

**FINAL PERMIT DETERMINATION
Conditional Major, Operating
Permit: F-10-035 R1**

ATTACHMENT B - PERMIT STATEMENT OF BASIS

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

Final
Conditional Major, Operating
Permit: F-10-035 R1
Depleted Uranium Hexafluoride Conversion Facility
Paducah, KY 42001
March 24, 2011

Sandra M. Cooke, Reviewer

SOURCE ID:	21-145-00091
AGENCY INTEREST:	49944
ACTIVITY:	APE20110001

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SOURCE DESCRIPTION:

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stored in cylinders by DOE, to uranium oxide powder, aqueous hydrogen fluoride (HF), and calcium fluoride (CaF₂). The process takes the material through vaporization, conversion, HF recovery, and off-gas scrubbing. The resultant high purity HF is collected and marketed. The remaining low-level uranium oxide powder is loaded into emptied UF₆ cylinders for disposal. CaF₂ is generated during the regeneration of potassium hydroxide (KOH). The facility has only two emission points, the first of which, emission point 01, is the stack of the Conversion Facility Building. This concrete 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 a High Efficiency Particulate Air (HEPA) filter, assure containment of gasses. This building also houses the Oxide Handling Systems. Piping and vessels provide primary containment for this function and vented hoods collect and send any emissions through a pre-filter, a HEPA filter, and then the final HEPA bank before exhausting out the stack. The cylinder modification and stabilization systems are also contained in this facility. A controlled ventilation system, containing pre-filters and HEPA filters, will handle all building and process gasses prior to venting to the final HEPA exhaust filter bank and the monitored facility stack. Emission point 01 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 gasses, 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.

All HF will be sold at the 55% strength resulting from the conversion process. The aqueous HF acid produced during this process will be periodically pumped from the HF receiver tanks to the HF storage tanks for subsequent load-out. These tanks are 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 Emission Point 02. The tanks, and all equipment involved with processing or storing aqueous HF, are designed for acid service. No radioactive materials enter this process or are vented through Emission Point 02.

APPLICABLE REGULATIONS:

401 KAR 52:030, Federally enforceable permits for non-major sources.

401 KAR 53:010. Ambient air quality standards. Applicable with respect to Gaseous Fluorides and Total Fluorides from each affected facility.

401 KAR 57:002. 40 C.F.R. Part 61 national emission standards for hazardous air pollutants, that incorporates, by reference, 40 C.F.R. Part 61, Subpart A, *General Provisions* and 40 C.F.R. Part 61, Subpart H, *National Emission Standards For Emissions of Radionuclides Other than Radon from Department of Energy Facilities*. Applicable with respect to uranium and any other radionuclides from each affected facility.

401 KAR 59:010. New process operations. Applicable with respect to particulate emissions from

each affected facility commenced on or after July 2, 1975.

401 KAR 63:010. Fugitive emissions. Applicable with respect to each affected facility as an apparatus which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division.

401 KAR 63:020. Potentially hazardous matter or toxic substances. Applicable with respect to Gaseous Fluorides, Total Fluorides, Uranium and any other Radionuclides from each affected facility.

PRECLUDED REGULATIONS:

401 KAR 52:020, Title V permits. This permittee has agreed to limit emissions of HF, a Hazardous Air Pollutant (HAP), below 9 tons and emissions of Total Fluorides to not more than 22.5 tons per year on a rolling twelve-month basis to preclude the applicability of Title V requirements. The facility is also receiving a Conditional Major Permit, under 401 KAR 63:030, Federally enforceable permits for non-major sources, to ensure federal enforceability of radionuclide requirements.

COMMENTS:

EMISSIONS AND CONTROL ANALYSIS:

At the time of this renewal, construction has been completed and the facility is ready for functional testing. Prior to issuance of the initial construction permit for this project, analyzes of the various potential air pollutants were performed. Emission factors were based on AREVA NP's operating experience at the Reactor Fuel Fabrication Facility in Richland, Washington. The source provided credible calculations utilizing conservative assumptions to the Division in estimating emissions expected from the Paducah, Kentucky facility. Initial testing and continuous radionuclide monitoring of the new facility will be used to verify emissions estimates and to ensure compliance with regulatory emissions requirements.

Radionuclides and Particulate

The emission of particulate from the Conversion Building would be in the form of the Oxide Powder. At an approximate process weight rate of 3 Tons (English)/Hour, the particulate allowed by 401 KAR 59:010 would be 7.09 lb/hr. However, since this material is of a (low-level) radioactive nature, the effective dose equivalent may become the ruling factor for this emission. That is, the maximum allowable particulate may actually be well below the 7.09 lb/hr allowed by 401 KAR 59:010.

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 CFE 61.93(4)*ii*, and continuous monitoring is included in the design specification of the facility and is emphasized in the permit.

Emissions from the process are routed through a pre-filter, HEPA filter, and final HEPA bank before exhausting out the stack. This set-up will provide a removal efficiency of 99.997% for particulate (uranium) emission control. In addition, the ventilation system will maintain the process building under negative pressure to prevent fugitive emissions.

Other transuranics and impurities

UDS cites its experience at the Richland, Washington site to show that other radionuclides, besides uranium, may be present in the depleted cylinders. Possible radionuclides include some transuranics (TRU) and technetium. Of these, only the neptunium is volatile. All other components would stay in the heel of the cylinder during vaporization and would not exit the cylinder. The cylinder heel would then be disposed of in a low level waste site. A neptunium impurity, which is volatile, would react just like uranium and become a solid oxide in the conversion unit. It would process through the facility along with the uranium oxide and would be entrapped by the same filtering systems that prevent the release of excess amounts of uranium. AREVA NP cited the Richland experience where they were able to process TC-99 levels up to 20 times the level of uranium in the DUF₆ material and elevated TRU contaminants up to 30 times as active as the level of uranium in the DUF₆ materials without adverse affects on the operation or maintenance of their facility.

HF

UDS analyzed the potential impact of site-related and regional sources of HF on ambient air concentrations near the proposed project through 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 permittee is required to measure actual HF emissions from EP 01 (Conversion Facility Building). Within 30 days of this testing, the permittee must use the HF emissions data, in Division approved air dispersion modeling, to demonstrate that the predictions were correct and that ambient air quality standards will be met. Should the modeling prove otherwise, the permittee is required to install continuous HF monitoring at the stack. Parametric monitoring of control equipment is required regardless of the outcome of the modeling. All HF emissions from the process building (EP 01), as will be routed through caustic scrubbers with a removal efficiency of 99.5% while the HF emissions associated with the HF Loading Area and Tanks (EP 02) will be captured and routed through dedicated scrubbers/control equipment with a removal rate of 97.5%.

Construction Particulate

Construction of the project is complete and the facility is ready for functional testing. However, during the construction phase, and at the Division's request, UDS also provided an analysis of potential Paducah reservation soil contaminants that could possibly become airborne during the construction phase of the project. The soil in the area in which the Conversion facility will be built was examined during the Northwest Plume Investigation, the Groundwater Phase IV Investigation

and the WAG 28 Remedial Investigation projects on the Paducah site. Borings of soil from the target area had been taken and analyzed during these earlier investigations and the results of these were used in the UDS assessment of construction site soils. Conservative assumptions and worst-case scenarios were used in the new analysis of potential organic, airborne metals and airborne radionuclide exposure to the public during facility construction. The results show concentrations for these three types of pollutants at 6, 4 and 1 order of magnitude below any level of concern for that pollutant, respectively. Although this potential pathway of exposure is of no concern for the public, the source will still be under requirements to minimize dust generation and construction site run-off in accordance with 401 KAR 63:010, Fugitive emissions.

EMISSION AND OPERATING CAPS DESCRIPTION:

To preclude application of Title V requirements, the source has voluntarily agreed to limit emissions of HF to not more than 9 tons and emissions of Total Fluorides to not more than 22.5 tons per year on a rolling twelve-month basis.

Radionuclide (uranium oxide powder) release shall be limited below that amount which would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr as defined and prescribed in 40 CFR 61 Subpart H (61.90 through 61.7).

**Commonwealth of Kentucky
Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, KY 40601**

FINAL PERMIT DETERMINATION
Conditional Major, Operating
Permit: F-10-035 R1

ATTACHMENT C - FINAL PERMIT

**Commonwealth of Kentucky
Energy and Environment Cabinet
Department for Environmental Protection
Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, Kentucky 40601
(502) 564-3999**

Final

**AIR QUALITY PERMIT
Issued under 401 KAR 52:030**

Permittee Name: Babcock & Wilcox Conversion Services, LLC
Mailing Address: 1020 Monarch Street, Suite 300, Lexington, KY
40513

Source Name: Depleted Uranium Hexafluoride Conversion
Facility
Mailing Address: 5600 Hobbs Road
Paducah, KY 42001

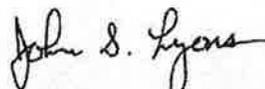
Source Location: U.S. Department of Energy Paducah Site

Permit ID: F-10-035 R1
Agency Interest #: 49944
Activity ID: APE20110001
Review Type: Conditional Major, Operating
Source ID: 21-145-00091

Regional Office: Paducah Regional Office
130 Eagle Nest Drive
Paducah, KY 42003
(270) 898-8468

County: McCracken

Application
Complete Date: September 29, 2010
Issuance Date: February 21, 2011
Revision Date: March 25, 2011
Expiration Date: February 21, 2016



**John S. Lyons, Director
Division for Air Quality**

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	Permit type	Activity#	Complete Date	Issuance Date	Summary of Action
F-10-035	Renewal	APE20100001	9/29/2010	2/21/2011	Permit Renewal
F-10-035 R1	Revision	APE20110001	3/24/2011	3/25/2011	Administrative Amendment to Change Operator

SECTION A - PERMIT AUTHORIZATION

Pursuant to a duly submitted application the Kentucky Division for Air Quality (Division) hereby authorizes the operation of the equipment described herein in accordance with the terms and conditions of this permit. This permit has been issued under the provisions of Kentucky Revised Statutes (KRS) Chapter 224 and regulations promulgated pursuant thereto.

The permittee shall not construct, reconstruct, or modify any affected facilities without first submitting a complete application and receiving a permit for the planned activity from the permitting authority, except as provided in this permit or in 401 KAR 52:030, Federally-enforceable permits for non-major sources.

Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Kentucky Energy and Environment Cabinet (Cabinet) or any other federal, state, or local agency.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS

01 (U001) Conversion Facility Building

Process Description:

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 will also be used on the U.S. Department of Energy (DOE) reserve in Portsmouth, Ohio. Four Parallel process lines are used to convert depleted uranium hexafluoride (DUF_6), currently stored in cylinders by DOE, to uranium oxide powder, aqueous hydrogen fluoride (HF), and calcium fluoride (CaF_2). The process takes the material through vaporization, conversion, HF recovery, and off-gas scrubbing. The resultant high purity HF is collected and marketed. The remaining low-level uranium oxide powder is loaded into emptied UF_6 cylinders for disposal. CaF_2 is generated during the regeneration of potassium hydroxide (KOH).

Emission point 01 is the stack of the Conversion Facility Building. This concrete building is kept at a negative pressure relative to the outside ambient pressure. A Heating Ventilating and Air Conditioning (HVAC) system will maintain the negative pressure and process all building and off-gas ventilation. The facility also houses the Oxide Handling Systems. Piping and vessels provide primary containment for this function and vented hoods collect and send any emissions through a pre-filter, a High Efficiency Particulate Air (HEPA) filter, and then the final HEPA exhaust filter bank before exhausting out the stack. The cylinder modification and stabilization systems are also contained in this facility. A controlled ventilation system, utilizing an 80% recirculation rates as well as pre-filters and HEPA filters, will handle all building and process gasses prior to venting to the final HEPA exhaust filter bank and the monitored facility stack. This emission point accounts for the majority of all process emissions.

Individual Equipment Descriptions:

Process Line 1:

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

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

Process Line 3:

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

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

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Process Line 4:

Control For Oxide Powder: Containment, In Process Filters, HVAC Collection, Pre-filters, Final HEPA Bank
Control for HF: Primary Caustic Scrubber, Secondary Scrubber (common to lines 1-4), 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. Applicable with respect to Gaseous Fluorides (HF) and Total Fluorides from each affected facility.

401 KAR 57:002. 40 C.F.R. Part 61 national emission standards for hazardous air pollutants, that incorporates, by reference, 40 C.F.R. Part 61, Subpart A, *General Provisions* and 40 C.F.R. Part 61, Subpart H, *National Emission Standards For Emissions of Radionuclides Other than Radon from Department of Energy Facilities*. Applicable with respect to uranium and any other radionuclides from each affected facility.

401 KAR 59:010. New process operations. Applicable with respect to particulate emissions from each affected facility commenced on or after July 2, 1975.

401 KAR 63:010. Fugitive emissions. Applicable with respect to each affected facility as an apparatus which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division.

401 KAR 63:020. Potentially hazardous matter or toxic substances. Applicable with respect to Gaseous Fluorides, Total Fluorides, Uranium and any other Radionuclides from each affected facility.

1. Operating Limitations:

- a. The building shall be maintained at a negative pressure relative to the outside ambient pressure.
- b. The Conversion Building stack uranium, HF and total fluorides control equipment parameter monitors shall be in continuous operation during operation of exhaust equipment.
- c. The Primary Scrubbers and the common Secondary Scrubber shall be installed, maintained, and operated in accordance with manufacturer's specifications; and always operated within the caustic flow rate and caustic concentration ranges necessary for emissions compliance as established during initial emissions testing.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

- d. All HEPA filters and the Final HEPA filter exhaust bank shall be installed, maintained, and operated in accordance with manufacturer’s specifications; and always operated within the pressure drop range necessary for emissions compliance as established during initial emissions testing.

Compliance Demonstration Method:

- 1) See Monitoring Requirements, below.
- 2) Maintain a data file noting dates and times when the above requirements are not met (e.g. excursions in flow rates and pressures outside established ranges for compliance) and include in semi-annual reports.

2. Emission Limitations:

a. Radionuclides:

The emissions of radionuclides from this source to the ambient air shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr as defined and prescribed in 40 CFR 61 Subpart H (61.90 through 61.97).

Compliance Demonstration Method:

To determine compliance with this standard, radionuclide emissions shall be determined and effective dose equivalent values to members of the public shall be calculated using the most recent stack data and the CAP-88 computer model or alternate pre-approved model annually.

b. Particulate:

The following emission limitations for particulate matter are established pursuant to 401 KAR 59:010, Section 3 (2):

Emission Point	Affected Facility	Nominal Capacity (tons/hr)	Maximum Allowable Emission Rate (lbs/hr)
01 (01)	Conversion Facility Building	3.0	7.09

Hourly emission of particulate matter from a control device or stack of any affected unit shall not exceed the following limits:

- For process weights < 0.5 tons/hour: 2.34 lbs/hour
- For process weight < 30 tons/hour: $E'_{PM_j} = 3.59P_j^{0.62}$
- For process weights ≥ 30 tons/hour: $E'_{PM_j} = 17.31P_j^{0.16}$

Where j is the unit, E'_{PMj} is the allowable particulate emission rate for unit j (pounds/hour) and P_j is the average process weight for unit j (tons/hour).

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

Compliance Demonstration Method:

Compliance with the production-based hourly particulate emission limit is based on the following table and proper operation of the unit and controls:

Emission Point	Affected Facility	Maximum Allowable Emission Rate (lbs/hr)	Maximum Controlled Emission Rate (lbs/hr)
01 (01)	Conversion Facility Building	7.09	0.0001117

c. HF and Total Fluorides:

The Hydrogen Fluorides produced by this facility are considered Federal Hazardous Air Pollutants (HAPs). Also, a few fluoride salts, a potential component of Total Fluorides, may be HAPs

In accordance with 401 KAR 63:020, the facility shall not emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants and must comply with Ambient Air Quality Standards as established in 401 KAR 53: 010. In addition, for the facility to remain a minor source, emissions of HF must be less than 9 tons per year and emissions of Total Fluorides must remain below 22.5 tpy, each on a rolling 12-month average.

Compliance Demonstration Method:

- 1) The source is in compliance with 401 KAR 63:020 based on the projected rates of emissions of airborne toxics provided in the application submitted by the source. If the source alters processes, process rates, material formulations, or any other factor that would result in increased emissions of these previously evaluated airborne toxics, or the emission of airborne toxics not previously evaluated by the Division, the source shall submit the appropriate application forms pursuant to 401 KAR 52:030, Section 3(1)(a)] along with modeling to show that the facility will remain in compliance with 401 KAR 63:020.
- 2) The source is in compliance with 401 KAR 53:010 based on the projected emission rates of HF and Total Fluorides given in the application submitted by the source. The projected rates must be verified as meeting the applicable Ambient Air Quality Standards during testing as outlined in section 3. **Testing Requirements**, below. If the source alters process rates, material formulations, or any other factor that would result in an increase of HF or Total Fluoride emissions, the source shall submit the appropriate application forms and modeling to show that the facility will remain in compliance with 401 KAR 53:010. Submissions shall be made in a timely manner pursuant to 401 KAR 52:030.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

d. Opacity:

Pursuant to 401 KAR 59:010, Section 3, No person shall cause, suffer, allow, or permit any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity.

Compliance Demonstration Method:

Compliance with the opacity standard shall be determined by the permittee performing a qualitative visual observation of the opacity of emissions at each stack no less than weekly and maintaining a log of the observations. If visible emissions from the stacks are seen (not including condensed water in the plume), then an inspection of control equipment shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the permittee shall determine the opacity using Reference Method 9 and if the opacity limit is not exceeded, the process may continue to operate. If the opacity limit is exceeded, the process shall be shut down and shall not operate again until repairs have been made that result in no visible emissions from the process during operation.

3. **Testing Requirements:**

- a. During initial start-up activities (defined as Hot Functional Test 002), the permittee shall install, calibrate, maintain and operate, according to manufacturer's specification, a continuous emissions monitoring device to determine the level of Uranium exiting the Conversion Building stack and interlock systems to shutdown processes when leaks or other problems occur. The critical level to alarm and/or trip process shutdown for each device shall be established during these preliminary emissions testing activities.
- b. During initial start-up activities (defined as Hot Functional Test 002), the permittee shall measure emissions to determine the level of HF and Total Fluorides exiting the Conversion Building stack. Within 45 days of this initial start-up testing, the results of this HF and Total Fluorides monitoring shall be used in Division approved air dispersion modeling and submitted to the Division to demonstrate compliance with ambient air quality standards and to determine if permanent, continuous direct monitoring of HF and Total Fluoride emissions will be required.
- c. Critical parameters and operating ranges for all control equipment shall be established during initial emission testing (defined as Hot Functional Test 002). These established parameters must be kept on record, on-site, and must be readily available for inspection.

4. **Specific Monitoring Requirements:**

a. Radionuclides (Uranium):

- 1) For any facility that is a source of radioactive emissions, the term "as low as reasonably achievable" (ALARA) means that the emission of radionuclides will be

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

kept as low as is reasonably achievable taking into account the state of technology, the economics of improvements in relation to benefits to the public health and safety, other societal and socioeconomic considerations, and in relation to the utilization of sources of radiation in the public interest. Therefore, in accordance with the principals of ALARA, the negative pressure of the Conversion Building necessary to provide containment for the process shall be continuously monitored and alarmed for excursions outside established operating parameters. The optimal operating parameters for the HVAC system shall be established during initial emissions testing, and the permittee shall install, calibrate, maintain and operate according to manufacturer's specification, monitoring devices to determine the building pressure relative to the outside ambient pressure as well as those parameters critical to the optimal operation of the HVAC equipment. The established parameters shall be kept on record for inspection and excursions outside the parameters shall be recorded and reported to the Paducah Regional Office within 30 days in accordance with permit **SECTION F-MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS**, item 8, below.

- 2) The permittee shall install, calibrate, maintain and operate, according to manufacturer's specification, monitoring devices to determine the pressure drop across each HEPA Filter and Final HEPA Filter Exhaust Bank during the operation of the facility. A maximum pressure drop across each filter device shall be established during preliminary emissions testing. The established parameters and monitoring results shall be kept on record for inspection.
- 3) The permittee shall install, calibrate, maintain and operate, according to manufacturer's specification, a continuous emissions monitoring device to determine the level of Uranium exiting the Conversion Building stack and interlock systems to shutdown processes when leaks or other problems occur. The critical level to alarm and/or trip process shutdown for each device shall be established during preliminary emissions testing. The established levels and excursions that alarm or cause shutdown shall be kept on record for inspection. The permittee shall also follow procedures in 40 CFR 60.93, Emission monitoring and test procedures.

b. HF and Total Fluorides:

- 1) During initial testing (defined as Hot Functional Test 002), stack emissions shall be monitored to determine the rates of HF and Total Fluorides exiting the Conversion Facility stack. Within 45 days of this testing, the results of the monitoring shall be used, in Division approved air dispersion modeling, to determine compliance with the ambient air quality standards with regard to HF and Total Fluorides emissions. Should the results show that HF or Total Fluorides emissions during the test result in airborne concentrations that are more than 90% of the applicable standard, the permittee shall install, calibrate, maintain and operate according to manufacturer's specification a permanent continuous monitoring device to determine the level(s) of HF and/or Total Fluorides exiting the Conversion Building stack and interlock systems to shutdown processes when leaks or other problems occur that could cause

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

an exceedence of the ambient air quality standard. The critical level to alarm and/or trip process shutdown for the device shall be established in accordance with the results of the preliminary emissions testing. The established levels and excursions that alarm or cause shutdown shall be kept on record for inspection. The permittee shall also follow procedures in 40 CFR 60.93, Emission monitoring and test procedures. Should the results of the preliminary testing show that the amount of HF and/or Total Fluorides exiting the stack will result in ambient concentrations that are less than 90% of the applicable standard, permanent continuous stack monitoring for emissions shall not be required for the emission that meets the standard.

- 2) The permittee shall also install, calibrate, maintain and operate according to manufacturer's specification monitoring devices to determine the caustic flow and caustic concentration in each scrubber during the operation of the respective line. The minimum flow and concentration of caustic (as determined by a pH measurement) in the device shall be established during preliminary emissions testing. Control equipment parameters shall be continuously monitored. The established parameters and monitoring results shall be kept on record for inspection.

c. Opacity:

Compliance with the opacity standard shall be determined by the permittee performing a qualitative visual observation of the opacity of emissions at each stack no less than weekly and maintaining a log of the observations. See the Compliance Demonstration Method under section 2.d Emission Limitations, above, for additional information.

5. Specific Recordkeeping Requirements:

- a. The permittee shall maintain records of established operating parameter limits for scrubbers, HEPA filters, Final HEPA Exhaust Filter Bank, and the HVAC system.
- b. The permittee shall maintain records of the monitoring of established critical parameters for the control devices, i.e. records of caustic flow rate, caustic concentration for each operating scrubber, records of pressure drop across each operating pre-filter, HEPA Filter and of the Final HEPA Exhaust Bank, any alarm or safety-interlock process shutdowns, and all results of stack monitoring.
- c. The permittee shall maintain records of daily throughput of DUF6 into the facility, daily throughput of Uranium Oxide out of the facility, daily hours of operation, and records of in-stack monitoring for Uranium Oxide, as well as for HF and/or Total Fluorides if required for these latter two emissions.
- d. Annual effective dose calculations, including inputs and assumptions, shall be kept available for inspection.

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

6. Specific Reporting Requirements:

In accordance with 401 KAR 57: 002, a duplicate of monitoring reports and modeling results submitted to the U.S. Environmental Protection Agency (EPA) as required under 40 C.F.R. 61.94 (Subpart H), shall be submitted to the Division.

7. Specific Control Equipment Operating Conditions:

- a. As established in 1. Operating Limits, above, the HVAC system must be functioning and maintain a negative building pressure during process operation. If the HVAC system (exhaust fan) is inoperable, the process operation must be shutdown or stopped.
- b. All scrubbers and HEPA filters must be fully operational during the operation of any process line with which it is directly associated.

8. Alternate Operating Scenarios

None

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

02 (U002) HF Loading Area

Process Description:

The 55% Hydrogen Fluoride byproduct from the conversion process will be gathered in HF receiver tanks located in the conversion facility. The HF will be periodically pumped from these tanks to the HF Storage Tanks, which are located in a secondary containment sump just outside the Conversion Building, for subsequent load out for transportation. The air displaced in filling of the storage tanks or transport vehicles will be vented back through a dedicated caustic scrubber and other pollution control devices until it is released to the atmosphere through Emission Point 02. No radioactive materials enter this process or exit through Emission Point 02.

Individual Equipment Descriptions:

HF Storage/Load-Out Tanks:
HF service designed lines and equipment
Leak detection instrumentation
Caustic scrubber and pollution control devices

APPLICABLE REGULATIONS:

401 KAR 53:010. Ambient air quality standards. Applicable with respect to Gaseous Fluorides (HF) and Total Fluorides from each affected facility.

401 KAR 59:010. New process operations. Applicable with respect to particulate emissions from each affected facility commenced on or after July 2, 1975.

401 KAR 63:010. Fugitive emissions. Applicable with respect to each affected facility as an apparatus which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division.

401 KAR 63:020. Potentially hazardous matter or toxic substances. Applicable with respect to Gaseous Fluorides and Total Fluorides from each affected facility.

1. Operating Limitations:

- a. The HF Loading Area caustic scrubber shall be in continuous operation during the filling and/or emptying of the HF storage tanks.
- b. The HF tank leak monitors shall be in continuous operation during operation of the neutralization equipment.
- c. The HF Loading Area caustic scrubber shall be installed, maintained, and operated in accordance with manufacturer's specifications; and always operated within the caustic low rate and caustic concentration ranges necessary for emissions compliance as

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

established during initial emissions testing.

2. Emission Limitations:

a. HF:

The Hydrogen Fluorides produced by this facility are considered Federal Hazardous Air Pollutants. In accordance with 401 KAR 63:020, the facility shall not emit potentially hazardous matter or toxic substances in such quantities or duration as to be harmful to the health and welfare of humans, animals and plants and must comply with Ambient Air Quality Standards as established in 401 KAR 53:010.

Compliance Demonstration Method

The source is in compliance with 401 KAR 63:020 based on the projected emission rates of toxics given in the application submitted by the source. If the source alters process rates, material formulations, or any other factor that would result in an increase of toxic emissions or the addition of toxic emissions not previously evaluated by the Division, the source shall submit the appropriate application forms pursuant to 401 KAR 52:030, Section 3(1)(a), along with modeling to show that the facility remains in compliance with 401 KAR 63:020.

The source is in compliance with 401 KAR 53:010 based on the projected emission rate of HF given in the application submitted by the source. If the source alters process rates, material formulations, or any other factor that would result in an increase of HF emissions, the source shall submit the appropriate application forms and modeling to show that the facility remains in compliance with 401 KAR 53:010.

Submissions shall be made in a timely manner pursuant to 401 KAR 52:030.

b. Particulate:

Pursuant to 401 KAR 59:010, Section (3)(2), emissions of particulate from this facility shall not exceed 7.09 lb/hr.

Compliance Demonstration Method:

The source is in compliance with 401 KAR 59:010 based on the projected emission rates and type of emissions given in the application submitted by the permittee. If the permittee alters process rates, material, or any other factor that would result in a increase of emissions, the permittee shall submit the appropriate application forms and modeling to show that the facility will remain in compliance with 401 KAR 53:010. Submissions shall be made in a timely manner pursuant to 401 KAR 52:030.

c. Opacity:

Pursuant to 401 KAR 59:010, Section 3, no person shall cause, suffer, allow, or permit

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

any continuous emission into the open air from a control device or stack associated with any affected facility which is equal to or greater than twenty (20) percent opacity.

Compliance Demonstration Method:

The source is assumed to be in compliance with opacity limits and leak detection equipment shall alarm if the tanks leak. However, should visible emissions in the area be seen (not including condensed water vapor), then an inspection of control equipment shall be initiated and corrective action taken. If visible emissions are present after the corrective action, the process shall be shut down and shall not operate again until repairs have been made that result in no visible emissions from the process during operation.

3. Testing Requirements:

Critical parameters and operating ranges for all control equipment shall be established during initial emission testing. These established parameters must be kept on record on-site.

4. Specific Monitoring Requirements:

a. HF:

- 1) The HF tanks shall be continuously monitored for HF leaks in the storage tank areas and for HF leaks and high levels during operations of the storage/load-out facility.
- 2) The permittee shall install, calibrate, maintain and operate according to manufacturer's specification monitoring devices to determine the caustic flow and caustic concentration in the scrubber during the operation of the facility. The minimum flow and concentration of caustic (as determined by a pH measurement) in the device shall be established during preliminary emissions testing. The established parameters and monitoring results shall be kept on record for inspection.

b. Opacity:

There are no specific regular monitoring requirements with regard to opacity. However, should visible emissions be noted in the HF loading area, permittee shall take corrective action as outlined in 2.c Emission Limitations, above.

5. Specific Recordkeeping Requirements:

The permittee shall maintain records of established critical parameters for the control devices, i.e. caustic flow rate, caustic concentration for the scrubber, as well as records of continuous monitoring data and any alarms or interlock-caused process shutdowns which occurred.

6. Specific Reporting Requirements:

None

SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS (CONTINUED)

7. Specific Control Equipment Operating Conditions:

None

8. Alternate Operating Scenarios:

None

SECTION C - INSIGNIFICANT ACTIVITIES

The following listed activities have been determined to be insignificant activities for this source pursuant to 401 KAR 52:030, Section 6. Although these activities are designated as insignificant the permittee must comply with the applicable regulation. Process and emission control equipment at each insignificant activity subject to an opacity standard shall be inspected monthly and a qualitative visible emissions evaluation made. Results of the inspection, evaluation, and any corrective action shall be recorded in a log.

	<u>Description</u>	<u>Generally Applicable Regulation</u>
1.	Storage Tanks	401 KAR 63:010, Fugitive emissions
2.	Haul Roads and Off-loading Areas	401 KAR 63:010, Fugitive emissions
3.	Cylinder Storage Area	None
4.	4 Gas Reformation Units (H2GEN)	401 KAR 63:010, Fugitive emissions

SECTION D - SOURCE EMISSION LIMITATIONS AND TESTING REQUIREMENTS

1. As required by Section 1b of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26; compliance with annual emissions and processing limitations contained in this permit, shall be based on emissions and processing rates for any twelve (12) consecutive months.
2. Source-wide Radionuclides, Uranium Oxide, CaF₂ solids, HF, and Total Fluoride emissions, measured by applicable reference methods, or an equivalent or alternative method specified in 40 C.F.R. Chapter I, or by a test method specified in the state implementation plan shall not exceed the respective limitations specified herein.
3. The emissions of radionuclides from this source to the ambient air shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr as defined and prescribed in 40 CFR 61 Subpart H (61.90 through 61.97).
4. Source-wide emissions of HF and Total Fluorides must comply with Ambient Air Quality Standards as established in 401 KAR 53:010. Additionally, for the facility to remain a minor source, total emissions of HF shall be less than 9 tons per year and total emissions for Total Fluorides shall be less than 22.5 tons per year on a rolling twelve month basis.

Compliance Demonstration Method:

During initial testing (defined as Hot Functional Test 002), a monitoring device shall be used to determine the rates of HF and Total Fluorides exiting the Conversion Facility stack. The results of the monitoring shall be used in Division approved air dispersion modeling to demonstrate compliance with the ambient air quality standards with regard to HF and Total Fluorides emissions. [See Permit **SECTION B - EMISSION POINTS, EMISSION UNITS, APPLICABLE REGULATIONS, AND OPERATING CONDITIONS**, Emission Point **01 (U001) Conversion Facility Building**]. Based on the emission rates of HF and Total Fluorides given in the application submitted by the permittee, the source should be in compliance with 401 KAR 53:010. If the permittee alters the process, materials, or any other factor that would result in an increase of HF and Total Fluoride emissions, the permittee shall submit the appropriate application forms and air dispersion modeling to show that the facility will remain in compliance with 401 KAR 53:010. Submissions shall be made in a timely manner pursuant to 401 KAR 52:030.

5. During load out activities for all products and byproducts, permittee shall take all precautions to prevent fugitive emissions and shall follow the requirements of 401 KAR 63:010, Fugitive emissions.

SECTION E - SOURCE CONTROL EQUIPMENT REQUIREMENTS

Pursuant to 401 KAR 50:055, Section 2(5), at all times, including periods of startup, shutdown and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Division which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS

1. Pursuant to Section 1b-IV-1 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030 Section 26, when continuing compliance is demonstrated by periodic testing or instrumental monitoring, the permittee shall compile records of required monitoring information that include:
 - a. Date, place (as defined in this permit), and time of sampling or measurements;
 - b. Analyses performance dates;
 - c. Company or entity that performed analyses;
 - d. Analytical techniques or methods used;
 - e. Analyses results; and
 - f. Operating conditions during time of sampling or measurement.
2. Records of all required monitoring data and support information, including calibrations, maintenance records, and original strip chart recordings, and copies of all reports required by the Division for Air Quality, shall be retained by the permittee for a period of five (5) years and shall be made available for inspection upon request by any duly authorized representative of the Division for Air Quality [401 KAR 52:030, Section 3(1)(f)1a, and Section 1a-7 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
3. In accordance with the requirements of 401 KAR 52:030, Section 3(1)f, the permittee shall allow authorized representatives of the Cabinet to perform the following during reasonable times:
 - a. Enter upon the premises to inspect any facility, equipment (including air pollution control equipment), practice, or operation;
 - b. To access and copy any records required by the permit;
 - c. Sample or monitor, at reasonable times, substances or parameters to assure compliance with the permit or any applicable requirements.Reasonable times are defined as during all hours of operation, during normal office hours; or during an emergency.
4. No person shall obstruct, hamper, or interfere with any Cabinet employee or authorized representative while in the process of carrying out official duties. Refusal of entry or access may constitute grounds for permit revocation and assessment of civil penalties.
5. Summary reports of any monitoring required by this permit shall be submitted to the Regional Office listed on the front of this permit at least every six (6) months during the life of this permit, unless otherwise stated in this permit. For emission units that were still under construction or which had not commenced operation at the end of the 6-month period covered by the report and are subject to monitoring requirements in this permit, the report shall indicate that no monitoring was performed during the previous six months because the emission unit was not in operation [Sections 1b-V-1 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS (CONTINUED)

6. The semi-annual reports are due by January 30th and July 30th of each year. All reports shall be certified by a responsible official pursuant to 401 KAR 52:030, Section 22. If continuous emission and opacity monitors are required by regulation or this permit, data shall be reported in accordance with the requirements of 401 KAR 59:005, General Provisions, Section 3(3). All deviations from permit requirements shall be clearly identified in the reports.
7. In accordance with the provisions of 401 KAR 50:055, Section 1, the owner or operator shall notify the Regional Office listed on the front of this permit concerning startups, shutdowns, or malfunctions as follows:
 - a. When emissions during any planned shutdowns and ensuing startups will exceed the standards, notification shall be made no later than three (3) days before the planned shutdown, or immediately following the decision to shut down, if the shutdown is due to events which could not have been foreseen three (3) days before the shutdown.
 - b. When emissions due to malfunctions, unplanned shutdowns and ensuing startups are or may be in excess of the standards, notification shall be made as promptly as possible by telephone (or other electronic media) and shall be submitted in writing upon request.
8. The owner or operator shall report emission related exceedances from permit requirements including those attributed to upset conditions (other than emission exceedances covered by Section F.7 above) to the Regional Office listed on the front of this permit within 30 days. Deviations from permit requirements, including those previously reported under F.7 above, shall be included in the semiannual report required by F.6 [Sections 1b-V, 3 and 4 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
9. Pursuant to 401 KAR 52:030, Section 21, the permittee shall annually certify compliance with the terms and conditions contained in this permit by completing and returning a Compliance Certification Form (DEP 7007CC) (or an alternative approved by the regional office) to the Regional Office listed on the front of this permit in accordance with the following requirements:
 - a. Identification of each term or condition;
 - b. Compliance status of each term or condition of the permit;
 - c. Whether compliance was continuous or intermittent;
 - d. The method used for determining the compliance status for the source, currently and over the reporting period.
 - e. For an emissions unit that was still under construction or which has not commenced operation at the end of the 12-month period covered by the annual compliance certification, the permittee shall indicate that the unit is under construction and that compliance with any applicable requirements will be demonstrated within the timeframes specified in the permit.

SECTION F - MONITORING, RECORDKEEPING, AND REPORTING REQUIREMENTS (CONTINUED)

- f. The certification shall be postmarked by January 30th of each year. Annual compliance certifications shall be mailed to the Division for Air Quality, Paducah Regional Office, 130 Eagle Nest Drive, Paducah, KY 42003.

10. In accordance with 401KAR 52:030, Section 3(1)(d), the permittee shall provide the Division with all information necessary to determine its subject emissions within 30 days of the date the Kentucky Emissions Inventory System (KYEIS) emissions survey is mailed to the permittee. If a KYEIS emissions survey is not mailed to the permittee, then the permittee shall comply with all other emissions reporting requirements in this permit.

11. The Cabinet may authorize the temporary use of an emission unit to replace a similar unit that is taken off-line for maintenance, if the following conditions are met:
 - a. The owner or operator shall submit to the Cabinet, at least ten (10) days in advance of replacing a unit, the appropriate Forms DEP7007AI to DD that show:
 - (1) The size and location of both the original and replacement units; and
 - (2) Any resulting change in emissions;
 - b. The potential to emit (PTE) of the replacement unit shall not exceed that of the original unit by more than twenty-five (25) percent of a major source threshold, and the emissions from the unit shall not cause the source to exceed the emissions allowable under the permit;
 - c. The PTE of the replacement unit or the resulting PTE of the source shall not subject the source to a new applicable requirement;
 - d. The replacement unit shall comply with all applicable requirements; and
 - e. The source shall notify Regional office of all shutdowns and start-ups.
 - f. Within six (6) months after installing the replacement unit, the owner or operator shall:
 - (1) Re-install the original unit and remove or dismantle the replacement unit; or
 - (2) Submit an application to permit the replacement unit as a permanent change.

SECTION G - GENERAL PROVISIONS

1. General Compliance Requirements

- a. The permittee shall comply with all conditions of this permit. A noncompliance shall be a violation of 401 KAR 52:030, Section 3(1)(b), and a violation of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act). Noncompliance with this permit is grounds for enforcement action including but not limited to the termination, revocation and reissuance, revision, or denial of a permit [Section 1a-2 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- b. The filing of a request by the permittee for any permit revision, revocation, reissuance, or termination, or of a notification of a planned change or anticipated noncompliance, shall not stay any permit condition [Section 1a-5 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- c. This permit may be revised, revoked, reopened and reissued, or terminated for cause in accordance with 401 KAR 52:030, Section 18. The permit will be reopened for cause and revised accordingly under the following circumstances:
 - (1) If additional applicable requirements become applicable to the source and the remaining permit term is three (3) years or longer. In this case, the reopening shall be completed no later than eighteen (18) months after promulgation of the applicable requirement. A reopening shall not be required if compliance with the applicable requirement is not required until after the date on which the permit is due to expire, unless this permit or any of its terms and conditions have been extended pursuant to 401 KAR 52:030, Section 12;
 - (2) The Cabinet or the United States Environmental Protection Agency (U. S. EPA) determines that the permit must be revised or revoked to assure compliance with the applicable requirements;
 - (3) The Cabinet or the U. S. EPA determines that the permit contains a material mistake or that inaccurate statements were made in establishing the emissions standards or other terms or conditions of the permit.

Proceedings to reopen and reissue a permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of the permit for which cause to reopen exists. Reopenings shall be made as expeditiously as practicable. Reopenings shall not be initiated before a notice of intent to reopen is provided to the source by the Division, at least thirty (30) days in advance of the date the permit is to be reopened, except that the Division may provide a shorter time period in the case of an emergency.
- d. The permittee shall furnish information upon request of the Cabinet to determine if cause exists for modifying, revoking and reissuing, or terminating the permit; or to determine compliance with the conditions of this permit [Sections 1a- 6 and 7 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- e. Emission units described in this permit shall demonstrate compliance with applicable requirements if requested by the Division [401 KAR 52:030, Section 3(1)(c)].

SECTION G - GENERAL PROVISIONS (CONTINUED)

- f. The permittee, upon becoming aware that any relevant facts were omitted or incorrect information was submitted in the permit application, shall promptly submit such supplementary facts or corrected information to the permitting authority [401 KAR 52:030, Section 7(1)].
- g. Any condition or portion of this permit which becomes suspended or is ruled invalid as a result of any legal or other action shall not invalidate any other portion or condition of this permit [Section 1a-11 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- h. The permittee shall not use as a defense in an enforcement action the contention that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance [Section 1a-3 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- i. All emission limitations and standards contained in this permit shall be enforceable as a practical matter. All emission limitations and standards contained in this permit are enforceable by the U.S. EPA and citizens except for those specifically identified in this permit as state-origin requirements. [Section 1a-12 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- j. This permit shall be subject to suspension if the permittee fails to pay all emissions fees within 90 days after the date of notice as specified in 401 KAR 50:038, Section 3(6) [Section 1a-9 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- k. Nothing in this permit shall alter or affect the liability of the permittee for any violation of applicable requirements prior to or at the time of permit issuance [401 KAR 52:030, Section 11(3)].
- l. This permit does not convey property rights or exclusive privileges [Section 1a-8 of the *Cabinet Provisions and Procedures for Issuing Federally-Enforceable Permits for Non-Major Sources* incorporated by reference in 401 KAR 52:030, Section 26].
- m. Issuance of this permit does not relieve the permittee from the responsibility of obtaining any other permits, licenses, or approvals required by the Cabinet or any other federal, state, or local agency.
- n. Nothing in this permit shall alter or affect the authority of U.S. EPA to obtain information pursuant to Federal Statute 42 USC 7414, Inspections, monitoring, and entry.
- o. Nothing in this permit shall alter or affect the authority of U.S. EPA to impose emergency orders pursuant to Federal Statute 42 USC 7603, Emergency orders.

SECTION G - GENERAL PROVISIONS (CONTINUED)

- p. This permit consolidates the authority of any previously issued PSD, NSR, or Synthetic Minor source preconstruction permit terms and conditions for various emission units and incorporates all requirements of those existing permits into one single permit for this source.
- q. Pursuant to 401 KAR 52:030, Section 11, a permit shield shall not protect the owner or operator from enforcement actions for violating an applicable requirement prior to or at the time of permit issuance. Compliance with the conditions of this permit shall be considered compliance with:
 - (1) Applicable requirements that are included and specifically identified in this permit; and
 - (2) Non-applicable requirements expressly identified in this permit.

2. Permit Expiration and Reapplication Requirements

- a. This permit shall remain in effect for a fixed term of five (5) years following the original date of issue. Permit expiration shall terminate the source's right to operate unless a timely and complete renewal application has been submitted to the Division at least six (6) months prior to the expiration date of the permit. Upon a timely and complete submittal, the authorization to operate within the terms and conditions of this permit, including any permit shield, shall remain in effect beyond the expiration date, until the renewal permit is issued or denied by the Division [401 KAR 52:030, Section 12].
- b. The authority to operate granted through this permit shall cease to apply if the source fails to submit additional information requested by the Division after the completeness determination has been made on any application, by whatever deadline the Division sets [401 KAR 52:030, Section 8(2)].

3. Permit Revisions

- a. Minor permit revision procedures specified in 401 KAR 52:030, Section 14(3), may be used for permit revisions involving the use of economic incentive, marketable permit, emission trading, and other similar approaches, to the extent that these minor permit revision procedures are explicitly provided for in the State Implementation Plan (SIP) or in applicable requirements and meet the relevant requirements of 401 KAR 52:030, Section 14(2).
- b. This permit is not transferable by the permittee. Future owners and operators shall obtain a new permit from the Division for Air Quality. The new permit may be processed as an administrative amendment if no other change in this permit is necessary, and provided that a written agreement containing a specific date for transfer of permit responsibility coverage and liability between the current and new permittee has been submitted to the permitting authority within ten (10) days following the transfer.

4. Construction, Start-Up, and Initial Compliance Demonstration Requirements

No construction authorized by this permit.

SECTION G - GENERAL PROVISIONS (CONTINUED)

5. Testing Requirements

- a. Pursuant to 401 KAR 50:045, Section 2, a source required to conduct a performance test shall submit a completed Compliance Test Protocol form, DEP form 6028, or a test protocol a source has developed for submission to other regulatory agencies, in a format approved by the cabinet, to the Division's Frankfort Central Office a minimum of sixty (60) days prior to the scheduled test date. Pursuant to 401 KAR 50:045, Section 7, the Division shall be notified of the actual test date at least Thirty (30) days prior to the test.
- b. Pursuant to 401 KAR 50:045, Section 5, in order to demonstrate that a source is capable of complying with a standard at all times, any required performance test shall be conducted under normal conditions that are representative of the source's operations and create the highest rate of emissions. If [When] the maximum production rate represents a source's highest emissions rate and a performance test is conducted at less than the maximum production rate, a source shall be limited to a production rate of no greater than 110 percent of the average production rate during the performance tests. If and when the facility is capable of operation at the rate specified in the application, the source may retest to demonstrate compliance at the new production rate. The Division for Air Quality may waive these requirements on a case-by-case basis if the source demonstrates to the Division's satisfaction that the source is in compliance with all applicable requirements.
- c. Results of performance test(s) required by the permit shall be submitted to the Division by the source or its representative within forty-five days or sooner if required by an applicable standard, after the completion of the fieldwork.

6. Acid Rain Program Requirements

- a. If an applicable requirement of Federal Statute 42 USC 7401 through 7671q (the Clean Air Act) is more stringent than an applicable requirement promulgated pursuant to Federal Statute 42 USC 7651 through 7651o (Title IV of the Act), both provisions shall apply, and both shall be state and federally enforceable.

7. Emergency Provisions

- a. Pursuant to 401 KAR 52:030, Section 23(1), an emergency shall constitute an affirmative defense to an action brought for noncompliance with the technology-based emission limitations if the permittee demonstrates through properly signed contemporaneous operating logs or other relevant evidence that:
 - (1) An emergency occurred and the permittee can identify the cause of the emergency;

SECTION G - GENERAL PROVISIONS (CONTINUED)

- (2) The permitted facility was at the time being properly operated;
 - (3) During an emergency, the permittee took all reasonable steps to minimize levels of emissions that exceeded the emissions standards or other requirements in the permit; and,
 - (4) The permittee notified the Division as promptly as possible and submitted written notice of the emergency to the Division within two (2) working days of the time when emission limitations were exceeded due to an emergency. The notice shall include a description of the emergency, steps taken to mitigate emissions, and the corrective actions taken.
 - (5) Notification of the Division does not relieve the source of any other local, state or federal notification requirements.
- b. Emergency conditions listed in General Provision G.7.a above are in addition to any emergency or upset provision(s) contained in an applicable requirement [401 KAR 52:030, Section 23(3)].
- c. In an enforcement proceeding, the permittee seeking to establish the occurrence of an emergency shall have the burden of proof [401 KAR 52:030, Section 23(2)].

8. Ozone depleting substances

- a. The permittee shall comply with the standards for recycling and emissions reduction pursuant to 40 CFR 82, Subpart F, except as provided for Motor Vehicle Air Conditioners (MVACs) in Subpart B:
- (1) Persons opening appliances for maintenance, service, repair, or disposal shall comply with the required practices contained in 40 CFR 82.156.
 - (2) Equipment used during the maintenance, service, repair, or disposal of appliances shall comply with the standards for recycling and recovery equipment contained in 40 CFR 82.158.
 - (3) Persons performing maintenance, service, repair, or disposal of appliances shall be certified by an approved technician certification program pursuant to 40 CFR 82.161.
 - (4) Persons disposing of small appliances, MVACs, and MVAC-like appliances (as defined at 40 CFR 82.152) shall comply with the recordkeeping requirements pursuant to 40 CFR 82.166.
 - (5) Persons owning commercial or industrial process refrigeration equipment shall comply with the leak repair requirements pursuant to 40 CFR 82.156.
 - (6) Owners/operators of appliances normally containing 50 or more pounds of refrigerant shall keep records of refrigerant purchased and added to such appliances pursuant to 40 CFR 82.166.
- b. If the permittee performs service on motor (fleet) vehicle air conditioners containing ozone-depleting substances, the source shall comply with all applicable requirements as specified in 40 CFR 82, Subpart B, *Servicing of Motor Vehicle Air Conditioners*.

SECTION G - GENERAL PROVISIONS (CONTINUED)

9. Risk Management Provisions

- a. The permittee shall comply with all applicable requirements of 401 KAR Chapter 68, Chemical Accident Prevention, which incorporates by reference 40 CFR Part 68, Risk Management Plan provisions. If required, the permittee shall comply with the Risk Management Program and submit a Risk Management Plan to:

RMP Reporting Center
P.O. Box 1515
Lanham-Seabrook, MD 20703-1515.

- b. If requested, submit additional relevant information to the Division or the U.S. EPA.

SECTION H - ALTERNATE OPERATING SCENARIOS

None

SECTION I - COMPLIANCE SCHEDULE

None

**Commonwealth of Kentucky
Division for Air Quality
200 Fair Oaks Lane, 1st Floor
Frankfort, KY 40601**

**FINAL PERMIT DETERMINATION
Conditional Major, Operating
Permit: F-10-035 R1**

ATTACHMENT D - PERMIT APPLICATION SUMMARY FORM

**Commonwealth of Kentucky
Division for Air Quality**

PERMIT APPLICATION SUMMARY FORM

Completed by: Sandra M. Cooke

GENERAL INFORMATION:

Name:	Babcock & Wilcox Conversion Services, LLC
Address:	1020 Monarch Street, Suite 300 Lexington, KY 40513
Date application received:	March 17, 2011
SIC Code/SIC description:	2819
Source ID:	21-145-00091
Agency Interest:	49944
Activity:	APE20110001
Permit:	F-10-035 R1

APPLICATION TYPE/PERMIT ACTIVITY:

<input type="checkbox"/> Initial issuance	<input type="checkbox"/> General permit
<input checked="" type="checkbox"/> Permit modification	<input checked="" type="checkbox"/> Conditional major
<input checked="" type="checkbox"/> Administrative	<input type="checkbox"/> Title V
<input type="checkbox"/> Minor	<input type="checkbox"/> Synthetic minor
<input type="checkbox"/> Significant	<input type="checkbox"/> Operating
<input type="checkbox"/> Permit renewal	<input checked="" type="checkbox"/> Construction/operating

COMPLIANCE SUMMARY:

<input type="checkbox"/> Source is out of compliance	<input type="checkbox"/> Compliance schedule included
<input type="checkbox"/> Compliance certification signed	<input checked="" type="checkbox"/> Not constructed yet

APPLICABLE REQUIREMENTS LIST:

<input type="checkbox"/> NSR	<input type="checkbox"/> NSPS	<input checked="" type="checkbox"/> SIP
<input type="checkbox"/> PSD	<input checked="" type="checkbox"/> NESHAPS	<input type="checkbox"/> Other
<input type="checkbox"/> Netted out of PSD/NSR	<input type="checkbox"/> Not major modification per 401 KAR 51:001, 1(116)(b)	

MISCELLANEOUS:

- Acid rain source
- Source subject to 112(r)
- Source applied for federally enforceable emissions cap
- Source provided terms for alternative operating scenarios
- Source subject to a MACT standard
- Source requested case-by-case 112(g) or (j) determination
- Application proposes new control technology
- Certified by responsible official
- Diagrams or drawings included
- Confidential business information (CBI) submitted in application
- Pollution Prevention Measures
- Area is non-attainment (list pollutants):

EMISSIONS SUMMARY:

POLLUTANT	ACTUAL (TPY)	POTENTIAL (TPY) *
PM/PM10	<1	16.35*
HAPS		
HF (664-39-3)	0.7	16.33*
RADIONUCLIDES (URANIUM)	.000003 (.0006 LB/YR)	.011* (22 LB/YR)

*Potential includes a catastrophic bounding case including several safety and containment system simultaneous failures. This is not considered a credible occurrence. Also, the Hydrogen Fluoride, listed as a HAP, is the expected marketable product from this process; therefore the assumption of no removal of HF from the vapor released to atmosphere is not credible. Finally, the building itself will be kept at negative pressure relative to the outside to provide secondary containment of all releases.

ADMINISTRATIVE PERMIT AMENDMENT — F-10-035 R1:

On March 17, 2011, the Division received an application for an administrative revision changing the operator and permit holder for this facility from Uranium Disposition Services, LLC to Babcock & Wilcox Conversion Services, LLC. The application for the change affirmed that no operational changes, currently required by the permit, would be made at the time of transfer nor would changes be made without conforming to permit amendment procedures. The effective date of responsibility transfer is March 29, 1011. The permit has been revised to reflect the new permit holder.

SOURCE DESCRIPTION:

The Depleted Uranium Hexafluoride Conversion Facility will convert depleted uranium hexafluoride, currently in storage cylinders on the DOE Paducah site, into uranium oxide powder, aqueous hydrogen fluoride and calcium fluoride. The low-level radioactive uranium oxide will be returned to stabilized cylinders and disposed of at a low-level waste facility. The hydrogen fluoride and possibly the calcium fluoride will be sold to industrial users of these chemicals. AREVA NP's proprietary process will be used for this conversion and this facility will be similar to the one currently operating at the AREVA NP facility in Richland, Washington.

This application for revision of the original construction/operating permit was submitted to change the design of the facility. All hydrogen fluoride (HF) resulting from the process will be sold at original strength (55 %), so no further processing of the HF will be required and none will be neutralized. This eliminates the need for the second building and several pieces of equipment and moves Emission Point 02 to the HF Storage and Loading Area. Air displaced during the filling of the HF tanks and transportation vehicles will now be routed through a dedicated caustic scrubber and other control devices rather than routed for scrubbing through the Neutralization Building or the Conversion Building. This change actually reduces the originally predicted concentrations of HF in the surrounding atmosphere. In addition, this revision removes the requirement to closely monitor the temperature across the HEPA pre-filters and filters. Temperatures in the ambient areas around the HEPA filters are maintained at approximately 80° F with controls to ensure temperatures do not exceed 100°F. The process itself is maintained around 93° F. Since HEPA filters use a glass fiber, efficiency is not affected by temperature. The filters will continue to work until either the bonding materials or the glass fibers themselves breakdown and/or melt. An event that could cause a

temperature high enough to cause a breakdown in a HEPA filter, such as a fire, would cause the safety systems to shut down the process long before a melting temperature could be reached. There would be no flow across the filters by the time a temperature high enough to affect efficiency could be reached. At the other temperature extreme, cold causing the formation of crystals within the filter, and thereby reducing efficiency, is not plausible because the process temperature itself is around 93 °F and the automatic controls, with temperature sensors, would shut down the process before it could become cold enough to cause any problem. The automatic safety systems for the process, coupled with the controlled HVAC and emergency systems within the building itself make monitoring and recording temperatures across the HEPAs meaningless for compliance purposes. The most important parameter to monitor to ensure efficiency across the filters is the pressure, as a change in pressure can indicate clogging or breach (puncture). Pressure monitoring remains in the permit.

EMISSIONS AND OPERATING CAPS DESCRIPTIONS:

Emissions of Hydrogen Fluoride (a HAP and/or Toxic) to the atmosphere shall be limited to less than 9 tons per year and emissions for Total Fluorides shall be less than 22.5 tons per year on a rolling twelve-month basis. Radionuclide (uranium oxide powder) release shall be limited below that amount which would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr as defined and prescribed in 40 CFR 61 Subpart H (61.90 through 61.7).