

## **SECTION 7: CONTROL DEVICE MALFUNCTION PREVENTION AND ABATEMENT PLANS**

- 1. Feed System Baghouse**
- 2. SAG Mill Scrubber**
- 3. Leach System Scrubber**
- 4. DE Bag Breaker Dust Filter**
- 5. Uranium Precipitation Scrubber**
- 6. Vanadium Precipitation Scrubber**
- 7. Vanadium Packaging Scrubber**
- 8. Vanadium Dryer Dust Collector**

## **1. FEED SYSTEM BAGHOUSE**

# MALFUNCTION PREVENTION AND ABATEMENT PLAN

For:

**FEED SYSTEM AREA FARR BAGHOUSE**

**Control Device ID: 110-STK-01**

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## **1. General Description of Feed System Area Baghouse**

The feed system area, including grizzly screen and apron feeder, are connected to a baghouse, which is anticipated to be supplied by Farr Air Pollution Control. The baghouse model is anticipated to be Farr Model GS72/60 or similarly designed equipment. This baghouse will contain 60 filters with HemiPleat filter technology.

## **2. Particulate Control Efficiency**

The Farr baghouse is designed to control particulate emissions less than 10 microns with a 99% control efficiency.

## **3. Operation and Maintenance Instructions**

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

## **4. Malfunction Prevention and Abatement Plan**

- 4.1. The baghouse will be operated in accordance with manufacturer's specifications and good engineering practice.
- 4.2. Routine maintenance and inspection of the baghouse will be conducted in accordance with the manufacturer's written maintenance instructions and maintenance schedule. All maintenance work performed on the baghouse will be documented in either hard copy or electronic format according to internal company operating procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.

## **MALFUNCTION PREVENTION AND ABATEMENT PLAN**

**For:**

**FEED SYSTEM AREA FARR BAGHOUSE**

**Control Device ID: 110-STK-01**

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- 4.3. The baghouse will be designed to assure operation of the system at an acceptable air-to-cloth ratio for maintaining the required level of particulate removal without excessive pressure drop when one (1) compartment is out-of-service for maintenance.
- 4.4. The baghouse may be equipped with an operable pressure drop measuring device. Pressure drop readings shall be taken and recorded daily on days that the baghouse is operating. The daily pressure drop reading shall be compared with the manufacturer's or engineer's recommended operating range for the baghouse. Documentation of the recommended operating range for each system shall be maintained and made available to the Division upon request. Readings that are outside the recommended operating range will be investigated; any maintenance work resulting from such investigation will be documented
- 4.5. The baghouse may be equipped with other monitoring devices to ensure proper operation. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.6. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.

## **2. SAG MILL SCRUBBER**

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**WET VENTURI SCRUBBER (Vibratory Feeder and SAG Mill)**  
**Control Device ID: 120-DCS-01**

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**1. General Description of 120-DCS-01**

The vibratory feeder and SAG Mill will utilize a water scrubber, which is anticipated to be supplied by Heil Process Equipment. The make and model of this system is anticipated to be Series 770, size 18 or similarly designed equipment.

The vibratory feeder and SAG Mill will have a variable throat venturi water scrubber for the control of particulate matter. Scrubber air will vent to the atmosphere through a 12 inch diameter by 35 foot high stack.

**2. Acid and Particulate Control Efficiency**

The wet venturi scrubber is designed to control particulate emissions less than 5 microns with a 99% control efficiency.

**3. Operation and Maintenance Instructions**

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

**4. Malfunction Prevention and Abatement Plan**

- 4.1. The scrubber will be operated in accordance with manufacturer's specifications and good engineering practice.
- 4.2. Routine maintenance and inspection of the scrubber will be conducted in accordance with the manufacturer's written maintenance instructions and maintenance schedule. All maintenance work performed on the scrubber will be

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**WET VENTURI SCRUBBER (Vibratory Feeder and SAG Mill)**  
**Control Device ID: 120-DCS-01**

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documented in either hard copy or electronic format according to internal company operating procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.

- 4.3. The scrubber may be equipped with an operable pressure drop measuring device. Pressure drop readings shall be taken and recorded daily on days that scrubber 120-DCS-01 is operating. The daily pressure drop reading shall be compared with the manufacturer's or engineer's recommended operating range for the scrubber. Documentation of the recommended operating range for each system shall be maintained and made available to the Division upon request. Readings that are outside the recommended operating range will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.4. The scrubber may be equipped with other monitoring devices, such as a pH probe, recirculation flow rate gauge, or makeup water flow rate gauge to achieve maximum particulate removal efficiencies and proper operation of the scrubber. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.5. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.

### **3. LEACH SYSTEM SCRUBBER**

# MALFUNCTION PREVENTION AND ABATEMENT PLAN

For:

WET VENTURI SCRUBBER (LEACH SCRUBBER)

Control Device ID: 220-GHS-01

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## 1. General Description of 220-GHS-01

The pre-leach and leach tank area will utilize a water scrubber, which is anticipated to be supplied by Heil Process Equipment. The make and model of this system is anticipated to be Series 770, size 18 or similarly designed equipment.

The control device is a variable throat venturi type scrubber designed for removing sulfuric acid emissions and trace radionuclide emissions from the pre-leach and leach tank vent stream. Two pre-leach tanks and eight leach tanks are connected to the control device. The control device will vent to the atmosphere through a 12 inch diameter by 35 foot high stack. The aqueous material collected in the scrubber is pumped to the counter current decantation (CCD) thickener #1 where it will be recycled into the CCD process flow along with the resulting process stream from the leach system.

## 2. Acid Control Efficiency

The wet venturi scrubber is designed to control acid stream emissions and trace radionuclides with a 99% control efficiency.

## 3. Operation and Maintenance Instructions

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

## 4. Malfunction Prevention and Abatement Plan

- 4.1. The scrubber will be operated in accordance with manufacturer's specifications and good engineering practice.

## **MALFUNCTION PREVENTION AND ABATEMENT PLAN**

**For:**

**WET VENTURI SCRUBBER (LEACH SCRUBBER)**

**Control Device ID: 220-GHS-01**

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- 4.2. Routine maintenance and inspection of the scrubber will be conducted in accordance with the manufacturer's written maintenance instructions and maintenance schedule. All maintenance work performed on the scrubber will be documented in either hard copy or electronic format according to internal company operating procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.
- 4.3. The scrubber may be equipped with an operable pressure drop measuring device. Pressure drop readings shall be taken and recorded daily on days that scrubber 220-GHS-01 is operating. The daily pressure drop reading shall be compared with the manufacturer's or engineer's recommended operating range for the scrubber. Documentation of the recommended operating range for each system shall be maintained and made available to the Division upon request. Readings that are outside the recommended operating range will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.4. The scrubber may be equipped with other monitoring devices, such as a pH probe, recirculation flow rate gauge, or makeup water flow rate gauge to achieve maximum chemical removal efficiencies and proper operation of the scrubber. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.5. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.

#### **4. DE BAG BREAKER DUST FILTER**

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**DIATOMACEOUS EARTH BAG BREAKER DUST FILTER**  
**Control Device ID: 410-BBB-01**

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**1. General Description of 410-BBB-01 Filter**

The bag breaker system is anticipated to be supplied by Dynamic Air, Inc. The make and model of this system is anticipated to be BagBuster™ Bag Breaker/Filter Series 319, Model 1032 or similarly designed equipment.

A cartridge dust filter (CDF) is incorporated with the diatomaceous earth bag breaker. While the operator manually breaks the bags, negative air pressure pulls air through the grating, under and away from the operator. This air, which may contain particulate matter, passes through a replaceable cartridge filter to separate the material from the air. The cartridge filter is periodically and automatically cleaned using reverse jet pulsed air. The clean air is then exhausted into the atmosphere and the collected material is saved and dropped back into the process hopper.

**2. Particulate Control Efficiency**

The BagBuster™ is designed to control particulate emissions less than 10 microns with a 99% control efficiency.

**3. Operation and Maintenance Instructions**

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

**4. Malfunction Prevention and Abatement Plan**

- 4.1. The CDF will be operated in accordance with manufacturer's specifications and good engineering practice.

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**DIATOMACEOUS EARTH BAG BREAKER DUST FILTER**  
**Control Device ID: 410-BBB-01**

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- 4.2. Routine maintenance and inspection of the CDF will be conducted in accordance with the manufacturer's written maintenance instructions and maintenance schedule. All maintenance work performed on the CDF will be documented in either hard copy or electronic format according to internal company operating procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.
- 4.3. The BagBuster™ may be equipped with monitoring devices, such as a vacuum suction gauge, to ensure proper operation of the CDF. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.4. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.

## **5. URANIUM PRECIPITATION SCRUBBER**

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**WET VENTURI SCRUBBER (URANIUM PRECIPITATION TANKS)**  
**Control Device ID: 530-GHS-01**

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**1. General Description of 530-GHS-01 Filter**

The uranium precipitation tanks will utilize a water scrubber, which is anticipated to be supplied by Heil Process Equipment. The make and model of this system is anticipated to be Series 770, size 18 or similarly designed equipment.

The uranium precipitation tanks will use a variable throat venturi type scrubber for the control of potential acid mists and uranium particulates. Sulfuric acid emissions from the precipitation tanks are considered negligible because the free acid in solution is estimated to be 0.001%. Thus, the precipitation tank vent stream that this device controls does not require an APEN and this form is for informational purposes and to keep record of all control devices. Particulate emissions may be in the form of trace radionuclides. Scrubber air will vent to the atmosphere through a 12 inch diameter by 35 foot high stack.

**2. Acid and Particulate Control Efficiency**

The wet venturi scrubber is designed to control particulate emissions less than 5 microns and acid vapors with a 99% control efficiency.

**3. Operation and Maintenance Instructions**

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**WET VENTURI SCRUBBER (URANIUM PRECIPITATION TANKS)**  
**Control Device ID: 530-GHS-01**

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**4. Malfunction Prevention and Abatement Plan**

- 4.1. The scrubber will be operated in accordance with manufacturer's specifications and good engineering practice.
- 4.2. Routine maintenance and inspection of the scrubber will be conducted in accordance with the manufacturer's written maintenance instructions and maintenance schedule. All maintenance work performed on the scrubber will be documented in either hard copy or electronic format according to internal company operating procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.
- 4.3. The scrubber may be equipped with an operable pressure drop measuring device. Pressure drop readings shall be taken and recorded daily on days that scrubber 530-GHS-01 is operating. The daily pressure drop reading shall be compared with the manufacturer's or engineer's recommended operating range for the scrubber. Documentation of the recommended operating range for each system shall be maintained and made available to the Division upon request. Readings that are outside the recommended operating range will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.4. The scrubber may be equipped with other monitoring devices, such as a pH probe, recirculation flow rate gauge, or makeup water flow rate gauge to achieve maximum chemical and particulate removal efficiencies and proper operation of the scrubber. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.5. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.

## **6. VANADIUM PRECIPITATION SCRUBBER**

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**PACKED BED WET SCRUBBER (VANADIUM PRECIPITATION SCRUBBER)**  
**Control Device ID: 730-GHS-01**

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**1. General Description of 730-GHS-01**

The vanadium precipitation tank area will utilize a wet scrubber, which is anticipated to be supplied by Heil Process Equipment. The make and model of this system is anticipated to be Series 730, size 16 or similarly designed equipment.

The control device is a packed bed wet scrubber designed for removing particulates and ammonia from the vanadium precipitation process. This scrubber is connected to the vanadium precipitation tanks, vanadium belt filter, vanadium steam dryer, and rotary kiln. Scrubber air will vent to the atmosphere through an 8 inch diameter by 35 foot high stack.

**2. Acid Control Efficiency**

The packed bed wet scrubber is designed to control acid stream emissions and trace radionuclides with a 99% control efficiency.

**3. Operation and Maintenance Instructions**

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

**4. Malfunction Prevention and Abatement Plan**

- 4.1. The scrubber will be operated in accordance with manufacturer's specifications and good engineering practice.

## **MALFUNCTION PREVENTION AND ABATEMENT PLAN**

**For:**

**PACKED BED WET SCRUBBER (VANADIUM PRECIPITATION SCRUBBER)**

**Control Device ID: 730-GHS-01**

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- 4.2. Routine maintenance and inspection of the scrubber will be conducted in accordance with the manufacturer's written maintenance instructions and maintenance schedule. All maintenance work performed on the scrubber will be documented in either hard copy or electronic format according to internal company operating procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.
- 4.3. The scrubber may be equipped with an operable pressure drop measuring device. Pressure drop readings shall be taken and recorded daily on days that scrubber 730-GHS-01 is operating. The daily pressure drop reading shall be compared with the manufacturer's or engineer's recommended operating range for the scrubber. Documentation of the recommended operating range for each system shall be maintained and made available to the Division upon request. Readings that are outside the recommended operating range will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.4. The scrubber may be equipped with other monitoring devices, such as a pH probe, recirculation flow rate gauge, or makeup water flow rate gauge to achieve maximum chemical and particulate removal efficiencies and proper operation of the scrubber. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.5. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.

## **7. VANADIUM PACKAGING SCRUBBER**

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**WET VENTURI SCRUBBER (VANADIUM PACKAGING SCRUBBER)**  
**Control Device ID: 730-GHS-02**

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**1. General Description of 730-GHS-02**

The vanadium packaging area will utilize a wet scrubber, which is anticipated to be supplied by Heil Process Equipment. The make and model of this system is anticipated to be Series 770, size 24 or similarly designed equipment.

The control device is a wet venturi scrubber designed for removing particulates from the vanadium packaging area. This scrubber is connected to the vanadium fusion furnace, casting wheel, and packaging system. Scrubber air will vent to the atmosphere through a 16 inch diameter by 35 foot high stack. Captured particles and water from the scrubber are circulated back to the pre-leach thickener tank.

**2. Acid Control Efficiency**

The wet venture scrubber is designed to control particulate emissions and trace radionuclides with a 99% control efficiency.

**3. Operation and Maintenance Instructions**

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

**4. Malfunction Prevention and Abatement Plan**

- 4.1. The scrubber will be operated in accordance with manufacturer's specifications and good engineering practice.
- 4.2. Routine maintenance and inspection of the scrubber will be conducted in accordance with the manufacturer's written maintenance instructions and

**MALFUNCTION PREVENTION AND ABATEMENT PLAN**  
**For:**  
**WET VENTURI SCRUBBER (VANADIUM PACKAGING SCRUBBER)**  
**Control Device ID: 730-GHS-02**

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maintenance schedule. All maintenance work performed on the scrubber will be documented in either hard copy or electronic format according to internal company operating procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.

- 4.3. The scrubber may be equipped with an operable pressure drop measuring device. Pressure drop readings shall be taken and recorded daily on days that scrubber 730-GHS-02 is operating. The daily pressure drop reading shall be compared with the manufacturer's or engineer's recommended operating range for the scrubber. Documentation of the recommended operating range for each system shall be maintained and made available to the Division upon request. Readings that are outside the recommended operating range will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.4. The scrubber may be equipped with other monitoring devices, such as a pH probe, recirculation flow rate gauge, or makeup water flow rate gauge to achieve maximum particulate removal efficiencies and proper operation of the scrubber. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.5. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.

## **8. VANADIUM DRYER DUST COLLECTOR**

# MALFUNCTION PREVENTION AND ABATEMENT PLAN

For:

## VANADIUM DRYER DUST COLLECTOR

Control Device ID: 730-DCS-01

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### 1. General Description of 730-DCS-01

The vanadium dryer will incorporate a dust collector (DC) which is anticipated to be manufactured by Bepex Particle Processing Technology. The make and model of the vanadium dryer is anticipated to be a Bepex Solidaire Model SJS 30/20 or similarly designed equipment. The incorporated dust collector will collect fines on the filter bags and use reverse pulse back to the Solidaire system.

### 2. Particulate Control Efficiency

The Solidaire dust collector is designed to control particulate emissions less than 10 microns with a 99% control efficiency.

### 3. Operation and Maintenance Instructions

The Supplement to APEN for Air Pollution Control Equipment requires:

- 1) Copies of Operation and Maintenance Instructions supplied by the manufacturer, and
- 2) A malfunction and abatement plan for the pollution control system.

Since an O&M Plan is not available from the manufacturer at this time, the following information will be provided in the future:

- a. Per Colorado Regulation No. 3, Part B, Section III.G.7, Energy Fuels Resources (EFR) will furnish the Division with an operating and maintenance plan for all control equipment and control practices prior to issuance of final construction permit approval (within 180 days following commencement of operation).
- b. A copy of the operation and maintenance instructions from the actual equipment supplier will be provided to APCD prior to commencement of operation.
- c. A draft malfunction and abatement plan is included below.

### 4. Malfunction Prevention and Abatement Plan

- 4.1. The DC will be operated in accordance with manufacturer's specifications and good engineering practice.
- 4.2. Routine maintenance and inspection of the DC will be conducted in accordance with the manufacturer's written maintenance instructions and maintenance schedule. All maintenance work performed on the DC will be documented in either hard copy or electronic format according to internal company operating

## **MALFUNCTION PREVENTION AND ABATEMENT PLAN**

**For:**

**VANADIUM DRYER DUST COLLECTOR**

**Control Device ID: 730-DCS-01**

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procedures. Maintenance records will be kept for a minimum of five (5) years from the date of the maintenance activity.

- 4.3. The DC will be designed to allow optimal operation of the system at an acceptable air-to-cloth ratio for maintaining the required level of particulate removal without excessive pressure drop when one (1) compartment is out-of-service for maintenance.
- 4.4. The DC may be equipped with an operable pressure drop measuring device. Pressure drop readings shall be taken and recorded daily on days that DC 730-DCS-01 is operating. The daily pressure drop reading shall be compared with the manufacturer's or engineer's recommended operating range for the DC. Documentation of the recommended operating range for each system shall be maintained and made available to the Division upon request. Readings that are outside the recommended operating range will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.5. The DC may be equipped with other monitoring devices to ensure proper operation of the DC. Any out-of-range reading from a monitoring device will be investigated; any maintenance work resulting from such investigation will be documented.
- 4.6. Additions and/or modifications to this Plan may be appropriate following completion of the final design, and/or receipt of the manufacturer's recommended operating and maintenance procedures. If any of these factors necessitate changes to this Plan, EFR shall submit a revised Plan to the Division. Such Plan shall be approved or denied with cause by the Division within thirty (30) days of receipt of the revised Plan. If the facility does not receive correspondence from the Division within the thirty days, the Plan shall be deemed approved by the Division. The facility shall not operate under the terms of any revised Plan until such Plan has been approved by the Division. Any approved Plan revisions shall be incorporated as a revised permit condition.