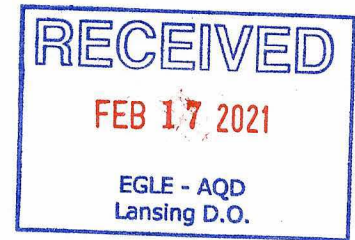




ZFS Ithaca, LLC



SUBMITTED VIA EMAIL

February 17, 2021

Ms. Michelle Luplow
MDEQ – Air Quality Division
Lansing District Office
Constitutional Hall, First Floor South
525 W. Allegan
P.O. Box 30242
Lansing MI 48909

Re: Malfunction Abatement Plan and Preventative Maintenance Plan
ZFS Ithaca, LLC (P0788)

Dear Ms. Luplow:

Please see the updated Malfunction Abatement Plan and Preventative Maintenance Plan for ZFS Ithaca, LLC. Several equipment normal operating ranges have changed. The facility has also updated its inventory of spare parts. If you have any questions regarding this plan, please contact me at bridgetter@zfsinc.com or 616-879-1711.

Sincerely,

ZFS Ithaca, LLC

A handwritten signature in cursive script that reads 'Bridgette L. Rillema'.

Bridgette L. Rillema
Environmental Manager

Enclosure



MALFUNCTION ABATEMENT PLAN AND PREVENTATIVE MAINTENANCE PLAN

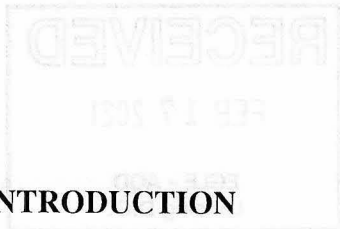


ZFS Ithaca, LLC

ZFS ITHACA, LLC

JANUARY 7, 2020

REVISED FEBRUARY 8, 2021



1.0 INTRODUCTION

This malfunction abatement plan and preventative maintenance plan has been prepared in accordance with Michigan Department of Environmental Quality (MDEQ) Act 451, Rule 336.1911 "Malfunction Abatement Plans." Compliance with the Malfunction Abatement Plan/Preventative Maintenance Plan (MAP/PMP) is based on maintaining equipment in good operating order.

ZFS Ithaca, LLC is responsible for preparing and maintaining a preventative maintenance program for control equipment. Preventative maintenance schedules have been established based on manufacturer's recommendations, permit requirements, and plant operating experience. Qualified individuals will perform inspections, maintenance, and repairs.

In general, all equipment used for control of air emissions will be operated and maintained to the extent possible to prevent, detect, and correct any failures or malfunctions that could result in emissions exceeding the levels specified in the renewable operating permit issued to ZFS Ithaca, LLC by MDEQ's Air Quality Division.

2.0 SOURCE DESCRIPTION

The emission sources, air pollution control equipment, and emissions to be controlled from facility are as follows.

Emission Source	Control Equipment	Stacks	Emissions Controlled
EUSHIPRECEIVE	Baghouse	SVSHIPRECEIVE	Particulate Matter
EUHANDLING	Oil Application System	N/A	Particulate Matter
EUPREP	Jet Dryer Baghouse A Jet Dryer Baghouse B Exhaust Filter VSC Cyclone A VSC Cyclone B Whole Bean Cyclone Secondary Cyclone CCD Cyclone CCC Cyclone Flaker Cyclone	SVPREP	Particulate Matter
EUHULLGRINDING	Baghouse	SVHULLGRINDING	Particulate Matter
EUMEALGRINDING	Baghouse	SVMEALGRINDING	Particulate Matter
EUPELLETIZING	Cyclone	SVPELLETIZING	Particulate Matter
EUHULLSTORAGE	Baghouse #1 Baghouse #2 Baghouse #3 Baghouse #4	SVHULLSTORAGE	Particulate Matter
EUHULLLOADOUT	Baghouse #1 Baghouse #2	SVHULLLOADOUT	Particulate Matter
EULOADOUT	Baghouse	SVLOADOUT	Particulate Matter
EUINGREDIENTS	Baghouse	SVLOADOUT	Particulate Matter
EUDC	Dryer Cyclone #1 Dryer Cyclone #2 Dryer Cyclone #3 Cooler Cyclone	SVDC	Particulate Matter
EUEXTRACTION	Mineral Oil System	SVEXTRACTION	VOC
EUBOILER1 & EUBOILER2	N/A	SVBOILER1 & SVBOILER2	N/A

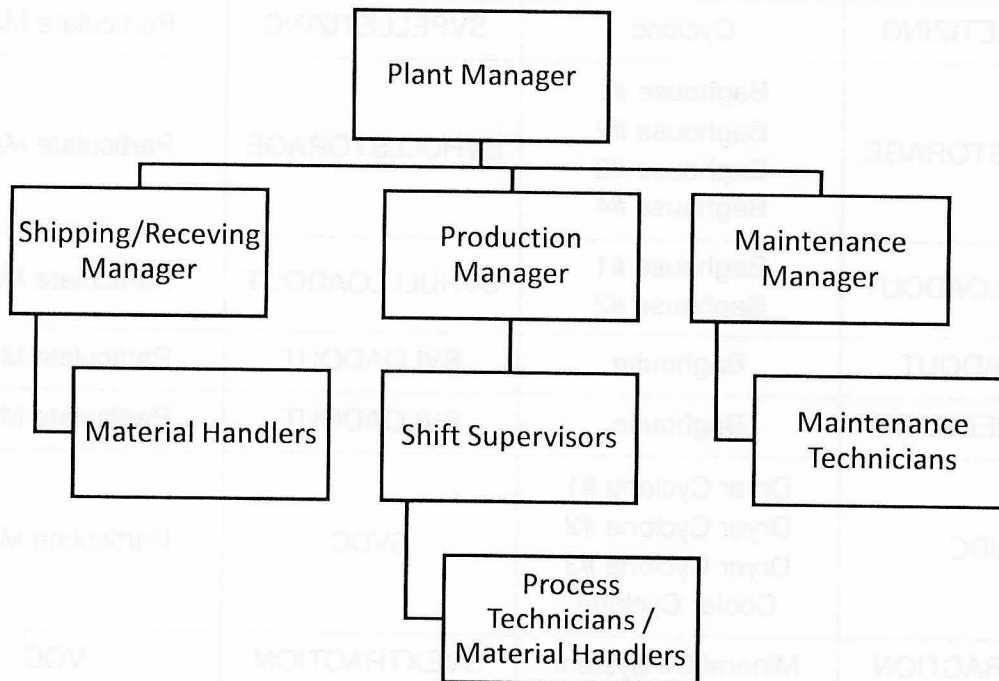
3.0 PREVENTATIVE MAINTENANCE PROGRAM (Rule 911(2)(a))

3.1 Responsible Personnel

The responsible personnel for the preventative maintenance program at ZFS Ithaca, LLC.

Position	Responsibility
Plant Manager	Overall operations
Production Manager, Shipping/Receiving Manager and Maintenance Manager	Overall operations and maintenance for their respective areas
Shift Supervisor(s)	Training, maintaining documentation, corrective actions, oversight of process operators, and general maintenance
CMMS Administrator	Spare parts inventory, maintaining documentation
Process Technicians, and Material Handlers	Pollution control equipment monitoring, malfunction response, routine inspections, preventative maintenance inspections
Maintenance Technicians	Repairs, routine inspections, preventative maintenance
EHS Manager	Maintaining documentation, reporting to the MDEQ

An organizational chart of supervisory personnel at ZFS Ithaca, LLC that are responsible for overseeing the inspection, maintenance, and repair of equipment are identified below.



3.2 Equipment Inspections

ZFS Ithaca depends on proper operation of equipment to ensure reliability, efficiency, production, and compliance. Preventative maintenance and monitoring are key components to ensuring the overall wellbeing of the facility.

Preventative maintenance includes equipment inspections, scheduled replacement of parts, and maintaining inventory of critical spare parts. The frequency of inspections and monitoring varies based on the nature of the task. Replacement of parts is regularly scheduled to occur during semi-annual plant shut downs, or will occur as the direct and immediate result of a malfunction that compromises the equipment's ability to function efficiently or within the specified parameters.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUSHIPRECEIVE – BAGHOUSE

1. General Description of EUSHIPRECEIVE Baghouse

The grains receiving and shipping building has many pieces of equipment that use vacuum for dust control. This exiting air contains dust composed of grain, hull, and pod particulate which must be cleaned from the air before it can be discharged to the atmosphere. This particulate laden air passes through filter bags which are contained in a baghouse. The baghouse uses a rotating sweep that is attached to an air chamber to pulse the filter bags intermittently with a shot of air in order to drop the collected particulate from the bags. This material is then discharged out of an airlock into a conveyor where it is reintroduced back into the seed unloading receiving conveyors (drags). The exit air is now clean and leaves the baghouse through a stack (SVSHIPRECEIVE).

Equipment Details:

- Kice Industries, Inc. Model # CR344-12n
- 49,000 SCFM
- Maximum Pressure Differential of 20" w.c.
- 344 filter bags, each 4 ¾" ID x 144" long, 10.5 oz.
- Baghouse discharges particulate into the seed unloading receiving conveyors (drags) using a Rotary Airlock.
- Equipment discharging air to emissions control equipment include seed receiving pits, loadout bin, loadout spout and receiving bucket elevators.

Normal Operating Range: Pressure must be between 0.5 inch water column and 8 inches water column.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating within the range of 0.5 – 8 inches of water column.

3. Operating and Maintenance

- a. No shipping or receiving equipment will be put into operation if the baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouse.
- c. A digital differential pressure gauge is used to monitor operation of the baghouse.
- d. If at any point during operation the baghouse is shut down for any reason, all receiving equipment that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouse will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouse and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 344 Filter bags
- b. 10 Filter cages
- c. Self-lubricating roller chain
- d. 1 Connecting Link-#60 Chain
- e. 1 Offset Link-60# Chain
- f. 1 Poly Chain Belt
- g. 1 Vacuum Motor
- h. 1 Cyclodrive Box & Quill Mount Bracket
- i. 1 Gauge, Magnehelic
- j. 1 Rotary Airlock Bearing
- k. 6 V-Belt, 8VX1250
- l. 2 V-Belt, 3VX560
- m. 1 Motor, 25 HP, 3600 RPM
- n. 1 SM Gearmotor
- o. 2 Screw Conveyor Bearing

Any questions, concerns, malfunctions, or problems are to be reported to the Shipping/Receiving Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUHANDLING – OIL APPLICATION SYSTEM

1. General Description of EUHANDLING – Oil Application System

Grain coming into the facility often contains dust and other debris. The process of unloading and conveying grain can cause this dust to become airborne. To prevent dust from becoming airborne, refined soybean oil is added to the grain in the unloading conveyors to bind dust to the grain. This occurs prior to the grain transitioning to the bucket elevators. The refined soybean oil is supplied to the oil application system from a 10,000 gallon carbon steel double walled tank that is insulated and heat traced. A Martin Engineering Surfactant Dust System applies the refined soybean oil. The system works when the sensors detect grain within a conveyor; solenoids open; and soybean oil is applied. The system has the capability of applying up to 80 gallons an hour with each of the unloading drags receiving up to 20 gallons.

Equipment Details:

- Martin Engineering Surfactant Dust System
- Capacity to apply 80 gallons of oil an hour

Normal Operating Range: Application rate of 0.5 – 2.0 gallons refined soybean oil per 1,000bu of grain. When operating within this range, equipment will be considered to be operating properly.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the oil addition system is in operation.

3. Operating and Maintenance

- a. No receiving equipment will be put into operation if the oil application system is not in service.
- b. Sensors within the oil addition system will send an alarm to the HMI/DCS if there is a no flow event.
- c. If at any point during operation the oil application system is shut down for any reason, all receiving equipment that isn't automatically shut down by interlocks will be manually shut down.
- d. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- e. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The oil application system will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the oil application systems and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 100' Polyethylene Tubing- ½" OD
- b. 4 Push Lock ½ NPTM - ½ OD Tube (straight)
- c. 4 Push Lock ½ NPTM - ½ OD Tube (90°)
- d. 2 Solenoid Rebuild Kit
- e. 6-8 Nozzles
- f. 1 Pump

Any questions, concerns, malfunctions, or problems are to be reported to the Shipping/Receiving Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUPREP – JET DRYER BAGHOUSE A & B

1. General Description of EUPREP – JET DRYER BAGHOUSE A & B

The jet dryer removes dust and hulls from the bean flow during operation. The air which exits the jet dryer typically contains particulates from soybeans and hulls. This particulate laden air passes through filter bags which are contained in a baghouse. The baghouse uses a rotating sweep that is attached to an air chamber to pulse the filter bags intermittently with a shot of air in order to drop the collected particulate from the bags. This material is then discharged out of an airlock into a conveyor where it is reintroduced back into the process. The exit air is now clean and leaves the baghouse through the common stack, SVPREP. .

Equipment Details:

- Schenck Process, LLC / 144MCF416
- Filter A – FLT-20840 S/N: 1100343725-010-1
- Filter B – FLT-20940 S/N: 1100343725-020-1
- 48,000 CFM each
- Differential pressure range between 0.5-10" w.c.
- 402 filter bags, each 144" long
- Baghouse discharges particulate to the hull stream for grinding (hammermills).
- Equipment discharging air to emissions control equipment include jet dryers, where Jet Dryer A is connected to Baghouse A and Jet Dryer B is connected to Baghouse B.

Normal Operating Range:

- Pressure must be between 0.5 inches water column and 10 inches water column.
- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating within the range of 0.5 – 10 inches of water column.

If the visible emissions from SVPREP are less than 10% opacity, the baghouses are sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that a baghouse may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The jet dryers will not be put into operation if the associated baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouse.
- c. A magnehelic differential pressure gauge is used to monitor operation of the baghouse.
- d. If at any point during operation the baghouse is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouse will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouse and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 402 Filter bags
- b. 10 Filter cages
- c. 1 Gauge, Magnehelic
- d. 1 Rotary Airlock Bearing
- e. 1 Screw Conveyor Bearing
- f. 1 Diaphragm Assembly
- g. 1 Inlet Tee Assembly
- h. 1 Spring (3" O.D.)
- i. 1 Sure Flex Sleeve
- j. 1 Sprocket Assembly
- k. 5 Blankout Plugs
- l. 1 Explosion Vent and Sensor
- m. 1 Blower
- n. 1 Rotary Bin Indicator

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUPREP – EXHAUST FILTER BAGHOUSE

1. General Description of EUPREP – EXHAUST FILTER BAGHOUSE

The exhaust filter baghouse provides dust control for the rotary magnet and bucket elevator for soybean cleaning as well as dust control for air existing from the following control devices: whole bean cyclone, secondary cyclone, CCD cyclone, and CCC cyclone. Air entering the exhaust filter baghouse may contain dust, bean, or hull particulate which must be cleaned before it can be discharged. This particulate laden air passes through filter bags which are contained in a baghouse. The baghouse uses a rotating sweep that is attached to an air chamber to pulse the filter bags intermittently with a shot of air in order to drop the collected particulate from the bags. This material is then discharged out of an airlock into a conveyor where it is reintroduced back into the hull process. The exit air is now clean and leaves the baghouse through the common stack, SVPREP.

Equipment Details:

- Schenck Process, LLC / 144MCF416
- FLT-21710 S/N: 1100343725-050-1
- 47,000 CFM
- Differential pressure range between 0.5-10" w.c.
- 416 filter bags, each 144" long
- Baghouse discharges particulate to the hull stream for grinding (hammermills).
- Equipment discharging air to emissions control equipment include the whole bean cyclone, secondary cyclone, rotary magnet, bucket elevator, CCD cyclone, and CCC cyclone.

Normal Operating Range:

- Pressure must be between 0.5 inches water column and 10 inches water column.
- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating within the range of 0.5 – 10 inches of water column.

If the visible emissions from SVPREP are less than 10% opacity, the baghouses are sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that a baghouse may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The equipment that aspirates to the exhaust filter will not be put into operation if the associated baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouse.
- c. A magnehelic differential pressure gauge is used to monitor operation of the baghouse.
- d. If at any point during operation the baghouse is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouse will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouse and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 416 Filter bags
- b. 10 Filter cages
- c. 1 Gauge, Magnehelic
- d. 1 Rotary Airlock Bearing
- e. 1 Screw Conveyor Bearing
- f. 1 Diaphragm Assembly
- g. 1 Inlet Tee Assembly
- h. 1 Spring (3" O.D.)
- i. 1 Sure Flex Sleeve
- j. 1 Sprocket Assembly
- k. 5 Blankout Plugs
- l. 1 Explosion Vent and Sensor
- m. 1 Blower
- n. 1 Rotary Bin Indicator

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUPREP – VSC CYCLONES A AND B

1. General Description of EUPREP – VSC CYCLONES A & B

The vertical seed conditioner (VSC) slowly heats up soybeans as they pass from the top of the VSC to the bottom of the VSC over and around low pressure steam coils. Air flow through the VSC helps condition and facilitate migration of moisture throughout the beans to properly condition the soybean. Loose hulls and other particulates on the soybeans may fall off during bean conditioning. These hulls are captured in the VSC cyclone and recycled into the soybean process stream. The VSC cyclones exhaust to the common stack SVPREP

Equipment Details:

- Schenck Process LLC, H96 Collector
- Cyclone A: CY-20540 S/N: 1100343725-070-1
- Cyclone B: CY-20740 S/N: 1100343725-070-2
- 28,000 CFM each
- Cyclone discharges particulate into the soybean stream entering the jet dryers.
- Equipment discharging air to emissions control equipment include VSC Cyclones A and B, where each VSC is connected to a dedicated cyclone.

Normal Operating Range:

- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

If the visible emissions from SVPREP are less than 10% opacity, the cyclones are sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that a cyclone may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The VSC that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation a cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclones will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclones and their monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUPREP – WHOLE BEAN CYCLONE

1. General Description of EUPREP – WHOLE BEAN CYCLONE

The whole bean cyclone cleans dust laden air from soybean cleaning and aspiration equipment. The cyclone spins any particulate out and allows the clean air to move up and out the cyclone for further filtration at the Exhaust Filter Baghouse. The cyclone discharges the collected particulate matter out of a rotary valve which routes the particulate matter back in with the hull stream.

Equipment Details:

- Schenck Process LLC H85 Collector
- CY-20355 S/N: 1100343725-060-1
- 20,500 CFM
- Cyclone discharges particulate to the hull stream for grinding (hammermills).
- Equipment discharging air to emissions control equipment includes the scalparater and whole bean aspirators.

Normal Operating Range:

- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

If the visible emissions from SVPREP are less than 10% opacity, the cyclone is sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that the cyclone may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The equipment that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation the cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclone will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN
For:
EUPREP – SECONDARY CYCLONE

1. General Description of EUPREP – SECONDARY CYCLONE

The secondary cyclone cleans dust laden air from the hull screeners and secondary aspirators. The cyclone spins any particulate out and allows the clean air to move up and out the cyclone for further filtration at the Exhaust Filter Baghouse. The cyclone discharges the collected particulate matter out of a rotary valve which routes the particulate matter back in with the hull stream.

Equipment Details:

- Schenck Process LLC 1HE27 Collector
- CY-21755 S/N: 1100343725-100-1
- 4,000 CFM
- Cyclone discharges particulate to the hull stream for grinding (hammermills).
- Equipment discharging air to emissions control equipment include hull screeners and secondary aspirators.

Normal Operating Range:

- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

If the visible emissions from SVPREP are less than 10% opacity, the cyclone is sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that the cyclone may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The equipment that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation the cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclone will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUPREP – CCD CYCLONE

1. General Description of EUPREP – CCD CYCLONE

The CCD cyclone cleans dust laden air from two Cascade dryers. The cyclone spins any particulate out and allows the clean air to move up and out the cyclone for further filtration at the Exhaust Filter Baghouse. The cyclone discharges the collected particulate matter out of a rotary valve which routes the particulate matter back in with the hull stream.

Equipment Details:

- Schenck Process LLC H96 Collector
- CY-21125 S/N: 1100343725-080-1
- 27,000 CFM
- Cyclone discharges particulate to the hull stream for cleaning and aspiration
- Equipment discharging air to emissions control equipment include two (2) cascade dryers

Normal Operating Range:

- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

If the visible emissions from SVPREP are less than 10% opacity, the cyclone is sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that the cyclone may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The equipment that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation the cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclone will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUPREP – CCC CYCLONE

1. General Description of EUPREP – CCC CYCLONE

The CCC cyclone cleans dust laden air from two Cascade coolers. The cyclone spins any particulate out and allows the clean air to move up and out the cyclone for further filtration at the Exhaust Filter Baghouse. The cyclone discharges the collected particulate matter out of a rotary valve which routes the particulate matter back in with the hull stream.

Equipment Details:

- Schenck Process LLC H96 Collector
- CY-21155 S/N: 1100343725-150-1
- 27,000 CFM
- Cyclone discharges particulate to the hull stream for cleaning and aspiration
- Equipment discharging air to emissions control equipment include two (2) cascade coolers

Normal Operating Range:

- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

If the visible emissions from SVPREP are less than 10% opacity, the cyclone is sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that the cyclone may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The equipment that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation the cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclone will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN
For:
EUPREP – FLAKER CYCLONE

1. General Description of EUPREP – FLAKER CYCLONE

The facility contains flaking equipment which converts soy bean cracks into soy flakes. A flaker fan draws heated fresh air through flaker aspiration before entering into a cyclone. The cyclone pulls particulate out and allows cleaned air to move up and out of the cyclone to the fan which discharges to a common stack (SVPREP). The cyclone discharges the collected particulate matter out of a rotary valve which routes the material back to the process.

Equipment Details:

- Schenck Process LLC H85 Collector
- CY-21420 S/N: 1100343725-110-1
- 22,000 CFM
- Cyclone discharges particulate into the flake stream leaving the flakers and feeding extraction.
- Equipment discharging air to emissions control equipment include seven (7) flakers.

Normal Operating Range:

- Visible emissions from SVPREP must be less than 10% opacity
 - There are multiple piece of equipment that also route emissions to a common stack (SVPREP), and therefore a visible emissions reading of 10% or greater may also be the result of a malfunction with other equipment.

2. Particulate Control

If the visible emissions from SVPREP are less than 10% opacity, the cyclone is sufficiently controlling particulate matter. Should the visible emissions be greater than 10% opacity, this is an indication that the cyclone may be malfunctioning. However, there are multiple piece of equipment that also route emissions to SVPREP. Therefore, visible emissions of greater than 10% opacity indicates that any control device in EUPREP with emissions to SVPREP may be malfunctioning.

3. Operating and Maintenance

- a. The equipment that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation the cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclone will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN
For:
EUHULLGRINDING BAGHOUSE

1. General Description of EUHULLGRINDING BAGHOUSE

The EUHULLGRINDING baghouse provides dust control for the two hammermills that grind hulls. This particulate laden air passes through filter bags which are contained in a baghouse. The baghouse uses an air manifold to pulse the filter bags intermittently with a shot of air in order to drop the collected particulate from the bags. This material is then discharged out an airlock and reintroduced into the hull stream. The clean exit air from the baghouse leaves through the stack SVHULLGRINDING.

Equipment Details:

- Schenck Process LLC 144LST64
- FLT-21875
- 6,500 ACFM
- Differential pressure range between 0.5-10" w.c.
- 64 filter bags, each 144" long
- Baghouse discharges particulate into the hull stream feeding the pelletizing equipment
- Equipment discharging air to emissions control equipment include two (2) hammermills that grind hulls.

Normal Operating Range: Pressure must be between 0.5 inch water column and 10 inches water column. The visible emissions from the stack of the baghouse must be less than 5% opacity.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating within the range of 0.5 – 10 inches of water column and the visible emissions from the stack are less than 5% opacity.

3. Operating and Maintenance

- a. EUHULLGRINDING will not be put into operation if the baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouse.
- c. A magnehelic differential pressure gauge is used to monitor operation of the baghouse.
- d. If at any point during operation the baghouse is shut down for any reason, all equipment that aspirates to the baghouse that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouse will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouse and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 64 Filter bags
- b. 10 Filter cages
- c. 1 of Each Replacement Belt
- d. 1 Rotary Airlock Bearing
- e. 1 Rotary Airlock
- f. 1 Blower
- g. 1 Poppet Valve
- h. 1 Timer
- i. 1 Gauge, Magnehelic

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUMEALGRINDING BAGHOUSE

1. General Description of EUMEALGRINDING BAGHOUSE

The facility uses various equipment to sort and size soybean meal. The meal sorting and sizing process is aspirated, and particulate laden air passes through filter bags which are contained in a baghouse. The baghouse filters are pulsed intermittently with a shot of air in order to drop the collected particulate from the bags. This material is then discharged out of an airlock and introduced back into the process. The air that exhausts from the baghouse discharges to the atmosphere through stack SVMEALGRINDING.

Equipment Details:

- Schenck Process LLC 144MCF255-226
- FLT-21690 S/N: 1100343725-030-1
- 19,500 CFM
- Differential pressure range between 0.5-10" w.c.
- 255 filter bags, each 144" long
- Baghouse discharges particulate into the meal stream feeding meal storage
- Equipment discharging air to emissions control equipment include three (3) hammermills that grind meal.

Normal Operating Range: Pressure must be between 0.5 inch water column and 10 inches water column. The visible emissions from the stack of the baghouse must be less than 5% opacity.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating within the range of 0.5 – 10 inches of water column and the visible emissions from the stack are less than 5% opacity.

3. Operating and Maintenance

- a. EUMEALGRINDING will not be put into operation if the baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouse.
- c. A magnehelic differential pressure gauge is used to monitor operation of the baghouse.
- d. If at any point during operation the baghouse is shut down for any reason, all equipment that aspirates to the baghouse that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouse will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouse and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 255 Filter bags
- b. 10 Filter cages
- c. 1 Gauge, Magnehelic
- d. 1 Rotary Airlock Bearing
- e. 1 Screw Conveyor Bearing
- f. 1 Diaphragm Assembly
- g. 1 Inlet Tee Assembly
- h. 1 Spring (3" O.D.)
- i. 1 Sure Flex Sleeve
- j. 1 Sprocket Assembly
- k. 5 Blankout Plugs
- l. 1 Explosion Vent and Sensor
- m. 1 Blower
- n. 1 Rotary Bin Indicator

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:
EUPelletizing CYCLONE

1. General Description of EUPelletizing CYCLONE

The facility contains pelletizing equipment which converts soy bean hulls into pellets. Dust laden air from this process is cleaned by the pelletizing cyclone. The cyclone pulls particulate out and allows cleaned air to move up and out of the cyclone to the fan which discharges to stack SVPELLETIZING. The cyclone discharges the collected particulate matter out of a rotary valve which routes the material back to the hull stream.

Equipment Details:

- Schenck Process LLC 1HE43 Collector
- 9,500 CFM
- Cyclone discharges particulate into the hull stream feeding the pelletizing equipment
- Equipment discharging air to emissions control equipment include pelletizing.

Normal Operating Range: Visible emissions from the stack of the cyclone must be less than 15% opacity

2. Particulate Control

If the visible emissions from the stack of the cyclone are less than 15% opacity, the cyclone is sufficiently controlling particulate matter.

3. Operating and Maintenance

- a. The equipment that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation the cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclone will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUHULLSTORAGE BAGHOUSE #1, #2, #3, and #4

1. General Description of EUHULLSTORAGE BAGHOUSE #1, #2, #3, and #4

Soybean hulls are a product generated during the soybean preparation process. The hulls are transferred through the process and to a storage bin. During transfer, dust is generated within the equipment. This particulate laden air passes through filter bags which are contained in a baghouse. The baghouse filters are pulsed intermittently with air in order to drop the collected particulate from the bags. This material is then discharged back into the storage bin. The air that exhausts from the baghouse through a stack (SVHULLSTORAGE 1, SVHULLSTORAGE 2, SVHULLSTORAGE 3, OR SVHULLSTORAGE 4) where it is released to the atmosphere.

Equipment Details:

- Schenck Process LLC 72ST36
- Baghouse #1 – FLT-50225 S/N: 1100349117-050-1
- Baghouse #2 – FLT-50235 S/N: 1100349117-050-2
- Baghouse #3 – FLT-50245 S/N: 1100349117-050-3
- Baghouse #4 – FLT-50255 S/N: 1100349117-050-4
- 1,600 CFM each
- Differential pressure is greater than zero.
- 36 filter bags, each 72" long
- Baghouses discharge particulate into the storage bin that they are connected to
- Each baghouse is attached to a separate hull storage bin and controls emissions during transfer of hulls into and out of the bin

Normal Operating Range: Pressure must be greater than zero. The visible emissions from the stack of the baghouse should be 0% opacity.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating at a differential pressure greater than zero and there are no visible emissions from the stack.

3. Operating and Maintenance

- a. EUHULLSTORAGE will not be put into operation if the baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouses.
- c. A digital differential pressure gauge is used to monitor operation of each baghouse.
- d. If at any point during operation a baghouse is shut down for any reason, all equipment that aspirates to the baghouse that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouses will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouses and their monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 36 Filter bags
- b. 10 Filter cages
- c. 1 Gauge, Magnehelic
- d. 1 Rotary Airlock Bearing
- e. 1 Screw Conveyor Bearing
- f. 1 Diaphragm Assembly
- g. 1 Inlet Tee Assembly
- h. 1 Spring (3" O.D.)
- i. 1 Sure Flex Sleeve
- j. 1 Sprocket Assembly
- k. 5 Blankout Plugs
- l. 1 Explosion Vent and Sensor
- m. 1 Blower
- n. 1 Rotary Bin Indicator

Any questions, concerns, malfunctions, or problems are to be reported to the Shipping/Receiving Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUHULLLOADOUT BAGHOUSE #1 and #2

1. General Description of EUHULLLOADOUT BAGHOUSE #1 and #2

Soy bean hulls are a product generated during the soybean preparation process. The hulls are transferred through the process and to a storage bin. During transfer, dust is generated within the equipment. This particulate laden air passes through filter bags which are contained in a baghouse. The baghouse filters are pulsed intermittently with air in order to drop the collected particulate from the bags. This material is then discharged back into the storage bin. The air exhausts from the baghouse through a stack (SVHULLLOADOUT 1 OR SVHULLLOADOUT 2) where it is released to the atmosphere.

Equipment Details:

- Schenck Process LLC 72ST36
- Baghouse #1 – FLT-50415 S/N: 1100349117-070-1
- Baghouse #2 – FLT-50425 S/N: 1100349117-070-2
- 1,600 CFM each
- Differential pressure greater than zero.
- 36 filter bags, each 72" long
- Baghouses discharge particulate into the storage bin that they are connected to
- Each baghouse is attached to a separate hull storage bin and controls emissions during transfer or hulls into and out of the bin

Normal Operating Range: Pressure must be greater than zero. The visible emissions from the stack of the baghouses should be 0% opacity.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating at a differential pressure greater than zero and there are no visible emissions from the stack.

3. Operating and Maintenance

- a. EUHULLLOADOUT will not be put into operation if the baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouses.
- c. A digital differential pressure gauge is used to monitor operation of each baghouse.
- d. If at any point during operation a baghouse is shut down for any reason, all equipment that aspirates to the baghouse that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouses will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouses and their monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 36 Filter bags
- b. 10 Filter cages
- c. 1 Gauge, Magnehelic
- d. 1 Rotary Airlock Bearing
- e. 1 Screw Conveyor Bearing
- f. 1 Diaphragm Assembly
- g. 1 Inlet Tee Assembly
- h. 1 Spring (3" O.D.)
- i. 1 Sure Flex Sleeve
- j. 1 Sprocket Assembly
- k. 5 Blankout Plugs
- l. 1 Explosion Vent and Sensor
- m. 1 Blower
- n. 1 Rotary Bin Indicator

Any questions, concerns, malfunctions, or problems are to be reported to the Shipping/Receiving Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN
For:
EULOADOUT BAGHOUSE

1. General Description of EULOADOUT BAGHOUSE

The meal loadout building has several pieces of equipment that use vacuum for dust control. The exiting air that contains dust, bean, hull, and meal particulate must be cleaned before it can be discharged. This particulate laden air passes through filter bags which are contained in a baghouse. The baghouse uses a rotating sweep that is attached to an air chamber to pulse the filter bags intermittently with a shot of air in order to drop the collected particulate from the bags. This material is then discharged out of an airlock and into the meal inventory. The exit air is now clean and leaves the baghouse through a stack (SVLOADOUT).

Equipment Details:

- Schenck Process LLC 144MCF204-194
- FLT-50850 S/N: 1100349117-050-1
- 15,750 CFM
- Differential pressure between 0.2-8.0" w.c.
- 204 filter bags, each 144" long
- Baghouse discharges particulate to flat storage
- Equipment discharging air to emissions control equipment include transfer equipment for loading meal.

Normal Operating Range: Pressure must be between 0.2 inch water column and 8 inches water column. The visible emissions from the stack of the baghouses should be 0% opacity.

The EUINGREDIENTS Baghouse also routes to the same stack as EULOADOUT (SVLOADOUT). Therefore, a visible emissions greater than 0% may also be the result of a malfunction with EUINGREDIENTS.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating within the range of 0.2 – 8 inches of water column and there are no visible emissions from the stack.

3. Operating and Maintenance

- a. EULOADOUT will not be put into operation if the baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouses.
- c. A digital differential pressure gauge is used to monitor operation of each baghouse.
- d. If at any point during operation a baghouse is shut down for any reason, all equipment that aspirates to the baghouse that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouses will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouse and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 204 Filter bags
- b. 10 Filter cages
- c. 1 Gauge, Magnehelic
- d. 1 Rotary Airlock Bearing
- e. 1 Screw Conveyor Bearing
- f. 1 Diaphragm Assembly
- g. 1 Inlet Tee Assembly
- h. 1 Spring (3" O.D.)
- i. 1 Sure Flex Sleeve
- j. 1 Sprocket Assembly
- k. 5 Blankout Plugs
- l. 1 Explosion Vent and Sensor
- m. 1 Blower
- n. 1 Rotary Bin Indicator

Any questions, concerns, malfunctions, or problems are to be reported to the Shipping/Receiving Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:
EURINGREDIENTS BAGHOUSE

1. General Description of EURINGREDIENTS BAGHOUSE

The process of receiving incoming ingredients to be blended with the soybean meal can generate dust. The dust is collected through a vacuum system. The collected air passes through filter bags which are contained in a baghouse. The baghouse uses a rotating sweep that is attached to an air chamber to pulse the filter bags intermittently with a shot of air in order to drop the collected particulate from the bags. This material is then discharged out of an airlock and into the flat storage building for inclusion with soybean meal. The exit air from the baghouse leaves through the same stack as EULOADOUT (SVLOADOUT).

Equipment Details:

- Schenck Process LLC 144MCF204-194
- FLT-50950
- 17,100 CFM
- Differential pressure between 0.2-8.0" w.c.
- 204 filter bags, each 144" long
- Baghouse discharges particulate into flat storage
- Emissions routed to control equipment include emissions generated from receiving ingredients.

Normal Operating Range: Pressure must be between 0.2 inch water column and 8.0 inches water column. The visible emissions from the stack of the baghouses should be 0% opacity.

The EURINGREDIENTS Baghouse also routes to the same stack as EULOADOUT (SVLOADOUT). Therefore, a visible emissions reading greater than zero may also be the result of a malfunction with EULOADOUT.

2. Particulate Control

Particulate matter is considered to be sufficiently controlled when the baghouse is operating within the range of 0.2 – 8.0 inches of water column and there are no visible emissions from the stack.

3. Operating and Maintenance

- a. EUINGREDIENTS will not be put into operation if the baghouse is not in service.
- b. During operation, the differential pressure across the bags will be monitored continuously throughout the day, and recorded once a day to validate the proper operation of the baghouses.
- c. A digital differential pressure gauge is used to monitor operation of each baghouse.
- d. If at any point during operation a baghouse is shut down for any reason, all equipment that aspirates to the baghouse that isn't automatically shut down due to interlocks will be manually shut down.
- e. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- f. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The baghouses will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the baghouse and its monitoring devices will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 204 Filter bags
- b. 10 Filter cages
- c. 1 Gauge, Magnehelic
- d. 1 Rotary Airlock Bearing
- e. 1 Screw Conveyor Bearing
- f. 1 Diaphragm Assembly
- g. 1 Inlet Tee Assembly
- h. 1 Spring (3" O.D.)
- i. 1 Sure Flex Sleeve
- j. 1 Sprocket Assembly
- k. 5 Blankout Plugs
- l. 1 Explosion Vent and Sensor
- m. 1 Blower
- n. 1 Rotary Bin Indicator

Any questions, concerns, malfunctions, or problems are to be reported to the Shipping/Receiving Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUDC CYCLONES: DRYER CYCLONE #1, #2, #3, and COOLER CYCLONE

1. General Description of EUDC CYCLONES: DRYER CYCLONE #1, #2, #3, and COOLER CYCLONE

After the solvent has been removed from the meal, it is toasted, dried, and cooled. The DC (dryer/cooler) equipment serves to dry and then cool meal. In drying, the Dryer fan blows fresh air in through a heater in to the three dryer trays of the DC. This air pushes moisture out of the meal and then moves the airflow out the ducts. Each tray contains its own duct. The three ducts then discharge into their own cyclones. The cyclones spin any particulate out and allows the clean air to move up and out the cyclones to a common stack (SVDC). The cyclones discharge the collected particulate matter out of a rotary valve which routes the particulate matter back in with the meal stream.

Similar to the dryer system, the Cooler fan blows fresh air in to the cooler tray of the DC. This air pushes heat out of the meal and then moves the airflow out of the duct. The duct then discharges into a cyclone. The cyclone spins any particulate out and allows the clean air to move up and out of the cyclone to a common stack (SVDC). The cyclone discharges the collected particulate matter out of a rotary valve which puts the particulate matter back in with the meal stream.

Equipment Details:

- Crown 71-00389-E09
- Cooler Cyclone – CY-31820
- Dryer Cyclone #1 – CY-31830
- Dryer Cyclone #2 – CY-31840
- Dryer Cyclone #3 – CY-31850
- 17,900 CFM each
- Cyclone discharges particulate into the meal stream for meal grinding.
- Equipment discharging air to emissions control equipment include the desolventizer toaster, dryers, and coolers.

Normal Operating Range: Visible emissions from the stack of the cyclone must be less than 15% opacity

2. Particulate Control

If the visible emissions from the stack of the cyclone are less than 15% opacity, the cyclone is sufficiently controlling particulate matter.

3. Operating and Maintenance

- a. The equipment that aspirates to the cyclone will not be put into operation if the associated cyclone is not in service.
- b. If at any point during operation the cyclone is shut down for any reason, corresponding equipment that isn't automatically shut down due to interlocks will be manually shut down.
- c. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- d. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The cyclone will be operated in accordance with good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 5 feet pitch roller chain and connecting links
- b. 1 Airlock motor
- c. 1 Airlock rebuild kit
- d. 2 Airlock bearings
- e. 5 sq. ft. of tile and adhesive

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUEXTRACTION – MINERAL OIL SYSTEM

1. General Description of EUEXTRACTION – MINERAL OIL SYSTEM

The hexane vapors in the discharge air of the extraction process are absorbed into the mineral oil absorber. Mineral oil is used to absorb the hexane vapors by cascading over packing material in the absorber column. The hexane laden oil is then pumped and heated up with an oil interchanger and then with a heater. Next the mineral oil is stripped of hexane through the mineral oil stripper. The mineral oil stripper is under vacuum by means of the evaporator condenser which then reintroduces the condensed hexane back into the process as a liquid. The stripped mineral oil then is pumped back through the interchanger and a cooler. The cooled mineral oil then enters the top of the absorber and the process repeats. Hexane vapors not captured by the mineral oil absorber exhaust to the atmosphere through the vent fan (SVVENTFAN).

Equipment Details:

- Crown Mineral Oil Absorber
- Crown 71-00389-E27 Heat Exchanger
- Durco M3 2K3x1.5-10ARV Mineral Oil Pump
- Equipment discharging to emissions control equipment include the Mineral Oil Scrubber and Vent Condenser.

Normal Operating Range: The typical LEL operating range of the main gas vent is between 0% - 50%. The sparge deck temperature is normally above 195°F. When operating within these ranges, equipment will be considered to be operating properly.

2. Hexane Emissions Control

The LEL is monitored out of the vent fan stack using a gas detector. The LEL value is recorded at least four (4) times per day while operating.

3. Operating and Maintenance

- a. No equipment in EUEXTRACTION will be put into operation if the Mineral Oil System is not in service.
- b. If at any point during operation the Mineral Oil System is shut down for any reason, corresponding equipment in EUEXTRACTION that isn't automatically shut down due to interlocks will be manually shut down.
- c. The system is monitored regularly to check the temperatures, flows, pressures, and vacuums in the system when operating.
- d. If equipment is operating outside the normal recommended range, refer to Appendix A - Malfunction Response Summary to determine source of malfunction and how to correct malfunction. Internal staff will be notified to rectify the situation. Notify Shift Supervisor and fill out the Malfunction Report form in Appendix C.
- e. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

4. Malfunction Prevention and Abatement Plan

- a. The mineral oil system will be operated in accordance with manufacturer's specifications and good engineering practices.
- b. Routine maintenance and inspection of the cyclone and its monitoring device(s) will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- a. 1 barrel of unused Mineral Oil
- b. 1 pump
- c. 1 motor
- d. 1 set of spare plates for heat exchanger

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

MALFUNCTION ABATEMENT PLAN/PREVENTATIVE MAINTENANCE PLAN

For:

EUBOILER1 & EUBOILER2

1. General Description of Boilers

Boilers supply heat and steam to the process. Boilers operate independent of each other, but may operate simultaneously if needed.

Equipment Details:

- Manufacturer: Johnston
- Boiler 1 Model # 11378-01
- Boiler 2 Model # 11378-02
- 95,000,000 BTU each
- Fire natural gas only

2. Control

There are no air-cleaning or control devices on the boilers.

3. Operating and Maintenance

ZFS staff monitor the steam output of each boiler and make operational adjustments based on process needs. If a boiler is operating abnormally and not providing the desired steam, ZFS will contact a 3rd party to evaluate the boiler operation.

ZFS does not perform maintenance or repairs on the boilers. For a checklist regarding regularly scheduled preventative maintenance, refer to Appendix B - Preventative Maintenance Work Plan.

ZFS staff conduct periodical checks of the boiler to ensure equipment is operating normally. If an abnormality is detected, ZFS will contact a 3rd party to evaluate the issue and make appropriate repairs or adjustments as necessary. Operating issues include, but are not limited to:

- Abnormal sounds from within the boiler
- Unusual color from the flame in the boiler
- Valve or pump not operating correctly
- Any leaks in piping or boiler
- Any measuring device not operating correctly

4. Malfunction Prevention and Abatement Plan

- a. The boilers will be operated in accordance with manufacturer's specifications and good engineering practices.
- b. Routine maintenance and inspection of the boilers will be conducted in accordance with the maintenance plan developed by ZFS Ithaca, LLC. All maintenance work performed will be documented. Maintenance records will be kept on file for five (5) years from the date of maintenance activity.

5. Inventory

- 1 natural gas regulating valve
- 3 PSVs for each boiler (6 in total)

ZFS does not keep additional spare parts in inventory for the boilers. ZFS will use a 3rd party contractor to provide necessary parts for maintenance and repair of the boilers.

Any questions, concerns, malfunctions, or problems are to be reported to the Production Manager.

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUSHIPRECEIVE

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag House	Kice Industries / CR344-12N	Differential Pressure	0.5 - 8" of Water Column	Low Differential Pressure	Bags malfunction due to failure or improper seating	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct.
					Tube sheet integrity is compromised	Repair or replace tube sheet
				High Differential Pressure	Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUHANDLING

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Oil Application System	Martin Engineering	Flow	0.5 - 2.0 gpm per 1,000 bushels	No Oil Flow	No Inventory	Order oil
					Valve Misalignment	Re-align valve
					Pump Malfunction	Check power and fuses
						Repair or replace pump
					Solenoid Malfunction	Check power to coil
						Repair or replace solenoid
					Photo Eye Dirty or Malfunction	Clean photo eye
						Check power to photo eye
						Replace photo eye
					Clogged tube or nozzle	Clear blockage
Replace hose						
Oil Application System	Martin Engineering	Flow	0.5 - 2.0 gpm per 1,000 bushels	Low Oil Flow	Valve Misalignment	Re-align valve
					Pump Malfunction	Check power and fuses
						Repair or replace pump
					Solenoid Malfunction	Check power to coil
						Repair or replace solenoid
					Photo Eye Dirty or Malfunction	Clean photo eye
						Check power to photo eye
						Replace photo eye
					Clogged tube or nozzle	Clear blockage
						Replace hose
High Flow Oil	Faulty nozzle	Inspect and correct if possible				
		Replace				

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUPREP - Jet Dryer Baghouse A and B

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process, LLC / 144MCF416	Differential Pressure	0.5-10" w.c.	Low Differential Pressure	Bags malfunction due to failure or improper seating	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct.
				High Differential Pressure	Tube sheet integrity is compromised	Repair or replace tube sheet
					Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary.
						Check that volume of air to the filter has not decreased.
						Inspect bags and replace fouled bags as needed.

* Note: Equipment routes air to SVPREP which contains an opacity monitoring requirement - more information is on EUPREP - SVPREP

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUPREP - EXHAUST FILTER

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process, LLC / 144MCF416	Differential Pressure	0.5-10" w.c.	Low Differential Pressure	Bags malfunction due to failure or improper seating	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct.
					Tube sheet integrity is compromised	Repair or replace tube sheet
				High Differential Pressure	Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.

* Note: Equipment routes air to SVPREP which contains an opacity monitoring requirement - more information is on EUPREP - SVPREP

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action. Multiple pieces of equipment discharge air through the common stack (SVPREP), which must be monitored for opacity. Therefore, should the opacity parameter fall outside of the normal range, staff could investigate any of the equipment in this table to diagnose and correct the issue. Staff may be able to correct the issue without checking every piece of equipment listed in the table.

EUPREP - SVPREP

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
EUPREP - JET DRYER (2 Bag Houses)	Schenck Process, LLC / 144MCF416	Opacity	< 10%	Visible emissions > 10%	Bags malfunction due to failure or improper seating	Shut down, find problem, and correct
EUPREP - EXHAUST FILTER (Bag House)	Schenck Process, LLC / 144MCF416	Opacity	< 10%	Visible emissions > 10%	Bags malfunction due to failure or improper seating	Shut down, find problem, and correct
EUPREP - VSC CYCLONES	Schenck Process LLC / H96 Collector	Opacity	<10%	Visible emissions > 10%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed
EUPREP - WHOLE BEAN CYCLONE	Schenck Process LLC / H85 Collector	Opacity	<10%	Visible emissions > 10%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed
EUPREP - SECONDARY CYCLONE	Schenck Process LLC / 1HE27 Collector	Opacity	<10%	Visible emissions > 10%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed
EUPREP - CCD CYCLONE	Schenck Process LLC / H96 Collector	Opacity	<10%	Visible emissions > 10%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed
EUPREP - CCC CYCLONE	Schenck Process LLC / H96 Collector	Opacity	<10%	Visible emissions > 10%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed
EUPREP - FLAKER CYCLONE	Schenck Process LLC / H85 Collector	Opacity	<10%	Visible emissions > 10%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUHULLGRINDING BAGHOUSE

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process LLC / 144LST64	Differential Pressure	0.5-10" w.c.	Low Differential Pressure	Bags malfunction due to failure or improper seating	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct.
					Tube sheet integrity is compromised	Repair or replace tube sheet
Bag Houses	Schenck Process LLC / 144LST64	Differential Pressure	0.5-10" w.c.	High Differential Pressure	Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.
					Bags malfunction due to failure or improper seating	Shut down, find problem, and correct
Bag Houses	Schenck Process LLC / 144LST64	Opacity	< 5%	Visible emissions > 5%	Bags malfunction due to failure or improper seating	Shut down, find problem, and correct
					Bags malfunction due to failure or improper seating	Shut down, find problem, and correct

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUMEALGRINDING BAGHOUSE

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process LLC / 144MCF255-226	Differential Pressure	0.5-10" w.c.	Low Differential Pressure	Bags malfunction due to failure or improper seating	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct.
					Tube sheet integrity is compromised	Repair or replace tube sheet
Bag Houses	Schenck Process LLC / 144MCF255-226	Differential Pressure	0.5-10" w.c.	High Differential Pressure	Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.
					Visible emissions > 5%	Shut down, find problem, and correct

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUPELLETIZING CYCLONE

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Cyclone	Schenck Process LLC / 1HE43 Collector	Opacity	< 15%	Visible emissions > 15%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUHULLSSTORAGE BAGHOUSE #1, #2, #3, and #4

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process LLC / 72ST36	Differential Pressure	> 0	Low Differential Pressure	Bags malfunction due to failure or improper seating Tube sheet integrity is compromised	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct. Repair or replace tube sheet
				High Differential Pressure	Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.
		Opacity	No Visible Emissions	Visible emissions > 0%	Bags malfunction due to failure or improper seating	Shut down, find problem, and correct

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUHULLLOADOUT BAGHOUSE #1 and #2

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process LLC / 72ST36	Differential Pressure	> 0	Low Differential Pressure	Bags malfunction due to failure or improper seating	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct.
				High Differential Pressure	Tube sheet integrity is compromised	Repair or replace tube sheet
					Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.
		Opacity	No Visible Emissions	Visible emissions > 0%	Bags malfunction due to failure or improper seating	Shut down, find problem, and correct

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EULOADOUT BAGHOUSE

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process LLC / 144MCF204-194	Differential Pressure	0.2-8.0" w.c.	Low Differential Pressure	Bags malfunction due to failure or improper seating Tube sheet integrity is compromised	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct. Repair or replace tube sheet
				High Differential Pressure	Bags are blinding off or clogging due to issues or over saturation	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.
		Opacity*	No Visible Emissions	Visible emissions > 0%	Bags malfunction due to failure or improper seating	Shut down, find problem, and correct

* Note: The EULOADOUT Baghouse routes to the same stack as the EUINGREDIENTS Baghouse. If visible emissions are observed, this may be caused by the EUINGREDIENTS Baghouse and not the EULOADOUT Baghouse

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUINGREDIENTS BAGHOUSE

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Bag Houses	Schenck Process LLC / 144MCF204-194	Differential Pressure	> 0	Low Differential Pressure	Bags malfunction due to failure or improper seating	Inspect bag(s) / cage(s) to see if there is a failure. If so, repair/correct.
				High Differential Pressure	Tube sheet integrity is compromised	Repair or replace tube sheet
		Opacity*	No Visible Emissions	Visible emissions > 0%	Bags malfunction due to failure or improper seating	Inspect cleaning mechanism system to ensure it is working properly. Correct if necessary. Check that volume of air to the filter has not decreased. Inspect bags and replace fouled bags as needed.

* Note: The EUINGREDIENTS Baghouse routes to the same stack as the EULOADOUT Baghouse. If visible emissions are observed, this may be caused by the EULOADOUT Baghouse and not the EUINGREDIENTS Baghouse

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUDC CYCLONES #1, #2, #3, and #4

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Cyclone	Crown / 71-00389-E09	Opacity	< 15%	Visible emissions > 15%	Airlock not discharging material	Dislodge bridging material to open flow through airlock Inspect and repair airlock as needed

EMERGENCY RESPONSE

Emergency response procedures are based on the following assumptions:

1. All personnel are trained in emergency procedures.

2. All personnel are familiar with the location of emergency equipment.

3. All personnel are familiar with the location of the fire alarm pull station.

4. All personnel are familiar with the location of the fire extinguisher.

5. All personnel are familiar with the location of the first aid kit.

6. All personnel are familiar with the location of the spill kit.

7. All personnel are familiar with the location of the emergency exit.

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before preceding to physical action

EU EXTRACTION

Control Device	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Mineral Oil System	Crown	LEL (Lower Explosive Limit)	< 50%	LEL > 50%	Vent fan pulling too hard on system	Cut back speed of vent fan
					DT vaccum is unbalanced	Adjust sparge steam flow
					Extractor vaccum is unbalanced	Inlet temperature of flakes are too high, decrease flake temperature
						Hexane temperature is too high, decrease hexane temperature
					Mineral oil absorber is not at the correct temperature (70-90F)	Correct the temperture on the stripper side
						Get proper cooling water flow through heat exchanger
						Clean the interchanger and/or cooler
					Mineral oil stripper is not at the correct temperature (215-240F)	Adjust mineral oil heater
						Inspect the steam trap for debris
						Clean out the mineral oil heater
						Adjust sparge steam flow
					Mineral oil system is not at the correct flow rate	Inspect/Repair hot mineral oil pump
						Inspect/Repair cold mineral oil pump
						Clear any blockages in the lines
						Clean out heater, interchanger, and/or cooler
						Clean out the packing in the absorber and/or stripper
Refill the system with mineral oil						
Leak in the system	Check all associated equipment for possible leaks					
Sparge steam on Mineral Oil Stripper not working correctly	Check metering valve					
	Check the sparge steam needle valve and make sure enough steam is flowing.					
	Check steam trap and make sure its operating properly					
Mineral oil level in aborber is too high	Check cold oil pump					
	clean the strainer					
	Check mineral oil flow in cooler interchanger					
Water in mineral oil in absorber	Drain water from absorber					

Malfunction Response Summary

All corrective actions are based on checking the instrumentation before proceeding to physical action

EUBOILER1 & EUBOILER2

Equipment	Manufacturer / Model	Monitoring Parameter	Parameter Range	Malfunction Detection	Possible Malfunctions	Corrective Actions
Boiler 1	Johnston / 11378-01	If a boiler is not providing the desired amount of steam, ZFS will contact a 3rd party to evaluate the boiler operation. ZFS does not perform maintenance or repairs on the boilers.				
Boiler 2	Johnston / 11378-02					

Preventative Maintenance Work Plan
 APPENDIX B

PREVENTATIVE MAINTENANCE WORK PLAN

Frequency	Description
Yearly	Check the electrical system and verify proper operation.
Monthly	Check the driver, including the timing belt drive from the speed reducer for timing at every year.
Monthly	Check the fan motor and check the bearings in the fan or transfer for operation. Add grease as recommended by the manufacturer during maintenance.
Monthly	Check the general condition of motor and bearings for proper operation. Add grease as recommended by the manufacturer during maintenance.
Monthly	Inspect the expansion joint for air to verify that they are in good operating condition.
Yearly	Check the grease in the wind motor.
Yearly	Inspect the cooling water for the MW and date for water and replace as necessary.
Yearly	Inspect the electrical heating the motor and replace as necessary.
Yearly	Inspect the bearings.

Preventative Maintenance Work Plan
EUSHIPRECEIVING BAGHOUSE #1

MAINTENANCE ACTIVITY	FREQUENCY
Check the cleaning manifold(sweep) and verify proper operation	Monthly
Check the drives, including the timing belt drive from the speed reducer for damage or excessive wear	Monthly
Check the fan motor and turntable bearings in the clean air chamber for proper rotation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Check the general suction fan, motor and bearings for proper operation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Inspect the explosion vent panels to verify that they are in good operating conditions	Monthly
Check the grease in the speed reducer	Yearly
Inspect the cleaning manifold UHMW skid plate for wear, and replace as necessary	Yearly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan EUHANDLING

MAINTENANCE ACTIVITY	FREQUENCY
Confirm corresponding flow on flowmeter and know if nozzles are operational and open	Bi-Monthly
Conduct visual inspection of pump cabinet, manifold, tubes and fittings. Check for leaks or worn items.	Bi-Monthly
Conduct visual inspection of nozzle operation	Bi-Monthly

Note: Bi-Monthly = Every two (2) months

Preventative Maintenance Work Plan
EUPREP Jet Dryer Baghouse A and B

MAINTENANCE ACTIVITY	FREQUENCY
Check the cleaning manifold(sweep) and verify proper operation	Monthly
Check the drives, including the timing belt drive from the speed reducer for damage or excessive wear	Monthly
Check the fan motor and turntable bearings in the clean air chamber for proper rotation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Check the general suction fan, motor and bearings for proper operation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Inspect the explosion vent panels to verify that they are in good operating conditions	Monthly
Check the grease in the speed reducer	Yearly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan
EUPREP - Exhaust Filter

MAINTENANCE ACTIVITY	FREQUENCY
Check the cleaning manifold(sweep) and verify proper operation	Monthly
Check the drives, including the timing belt drive from the speed reducer for damage or excessive wear	Monthly
Check the fan motor and turntable bearings in the clean air chamber for proper rotation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Check the general suction fan, motor and bearings for proper operation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Inspect the explosion vent panels to verify that they are in good operating conditions	Monthly
Check the grease in the speed reducer	Yearly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan
VSC CYCLONES A & B

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUPREP - WHOLE BEAN CYCLONE

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUPREP - SECONDARY CYCLONE

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUPREP - CCD CYCLONE

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUPREP - CCC CYCLONE

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUPREP - FLAKER CYCLONE

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUHULLGRINDING BAGHOUSE

MAINTENANCE ACTIVITY	FREQUENCY
Check the general suction fan, motor and bearings for proper operation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Inspect the explosion vent panels to verify that they are in good operating conditions	Monthly
Check the pinch valve (explosion prevention valve) on the suction side of the main fan	Monthly
Check the sock blower for proper operation	Monthly
Check the solenoid bank for proper operation and timing	Monthly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan
EUPelletizing Cyclone

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUMEALGRINDING BAGHOUSE

MAINTENANCE ACTIVITY	FREQUENCY
Check the cleaning manifold(sweep) and verify proper operation	Monthly
Check the drives, including the timing belt drive from the speed reducer for damage or excessive wear	Monthly
Check the fan motor and turntable bearings in the clean air chamber for proper rotation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Check the general suction fan, motor and bearings for proper operation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Inspect the explosion vent panels to verify that they are in good operating conditions	Monthly
Check the pinch valve (explosion prevention valve) on the suction side of the main fan	Monthly
Check the grease in the speed reducer	Yearly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan
EU EXTRACTION - MINERAL OIL SYSTEM

MAINTENANCE ACTIVITY	FREQUENCY
Check oil level in pumps	Monthly
Check pumps and pump seals	Monthly
Grease pump motors	Annually
Clean/boil out absorber	Annually
Clean/boil out stripper	Annually

Preventative Maintenance Work Plan

EUDC CYCLONES #1, #2, #3, and #4

MAINTENANCE ACTIVITY	FREQUENCY
Oil airlock chain	Monthly
Grease airlock bearings	Monthly
Inspect and clean out ductwork as needed	Semiannually
Inspect and clean out cyclone as needed	Semiannually

Note: Semiannually maintenance activities are typically conducted during schedule shutdowns in Spring and Fall each year.

Preventative Maintenance Work Plan
EUHULLSSTORAGE BAGHOUSE #1, #2, #3, and #4

MAINTENANCE ACTIVITY	FREQUENCY
Check for dust in the clean air outlet from filter	Monthly
Check filter hopper for moisture, build-up, or bridging	Monthly
Open petcock on the compressed air header and check for moisture	Monthly
Check fan and motor bearings for excessive heat	Monthly
Check filter bags for signs of excessive wear or build-up	Monthly
Check for signs of moisture throughout entire filter	Monthly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan

EUHULLLOADOUT BAGHOUSE #1 and #2

MAINTENANCE ACTIVITY	FREQUENCY
Check for dust in the clean air outlet from filter	Monthly
Check filter hopper for moisture, build-up, or bridging	Monthly
Open petcock on the compressed air header and check for moisture	Monthly
Check fan and motor bearings for excessive heat	Monthly
Check filter bags for signs of excessive wear or build-up	Monthly
Check for signs of moisture throughout entire filter	Monthly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan
EULOADOUT BAGHOUSE

MAINTENANCE ACTIVITY	FREQUENCY
Check the cleaning manifold(sweep) and verify proper operation	Monthly
Check the drives, including the timing belt drive from the speed reducer for damage or excessive wear	Monthly
Check the fan motor and turntable bearings in the clean air chamber for proper rotation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Check the general suction fan, motor and bearings for proper operation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Inspect the explosion vent panels to verify that they are in good operating conditions	Monthly
Check the grease in the speed reducer	Yearly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan
EUINGREDIENTS BAGHOUSE

MAINTENANCE ACTIVITY	FREQUENCY
Check the cleaning manifold(sweep) and verify proper operation	Monthly
Check the drives, including the timing belt drive from the speed reducer for damage or excessive wear	Monthly
Check the fan motor and turntable bearings in the clean air chamber for proper rotation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Check the general suction fan, motor and bearings for proper operation. Add grease as recommended by the motor and bearing manufacturers	Monthly
Inspect the explosion vent panels to verify that they are in good operating conditions	Monthly
Check the grease in the speed reducer	Yearly
Inspect the turntable bearing for wear and replace as necessary	Yearly
Replace filter socks/bags	Yearly

Preventative Maintenance Work Plan
EUBOILER1 & EUBOILER2

MAINTENANCE ACTIVITY	FREQUENCY
CSD-1	Semiannually
Internal Inspection	Annually
Test PSVs	Annually

*All maintenance, and the frequency at which it occurs, is conducted by the manufacturer of the boilers and/or other 3rd party

Preventative Maintenance Work Plan
SUBSYSTEMS & SUBSETS

FREQUENCY	MAINTENANCE ACTIVITY
Annually	APPENDIX C
Annually	MALFUNCTION REPORT
Annually	

* All maintenance and the frequency at which it occurs is conducted by the manufacturer of the
product unless otherwise stated.

MALFUNCTION REPORT FORM

Equipment Involved	Date and Time of Incident	Date and Time Incident Resolved
Nature of Incident		

Describe the incident and how it was noticed.

Describe the repairs made to remediate the incident.

What was the cause of the incident

Estimated time out of compliance	What is the chance of it happening again?

What actions will be taken to prevent a recurrence?	By Whom	Date of Completion

Incident Investigated by:	Date
Employee Signature	Supervisor Signature

* Please attach additional notes or comments to this form.

