Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Conditional Major, Operating
Permit: F-23-023
Cobb-Vantress, LLC
Cobb-Vantress Albany Feed Mill
1475 Burkesville Road
Albany, KY 42602
June 15, 2023
Yelena Goldin, Reviewer

SOURCE ID:	21-053-00007
AGENCY INTEREST:	119204
ACTIVITY:	APE20230002

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SECTION 1 - SOURCE DESCRIPTION

SIC Code and description: 2048, Prepared Feed and Feed Ingredients

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

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

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

County: Clinton
Nonattainment Area ☒ N/A ☐ PM10 ☐ PM2.5 ☐ CO ☐ NOX ☐ SO2 ☐ Ozone ☐ Lead
If yes, list Classification:

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

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

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

PTE* greater than 25 tpy for combined HAP ☒ Yes ☐ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Cobb-Vantress Albany Feed Mill owned by Cobb-Vantress, LLC is a feed mill facility located in Clinton County, Kentucky. Grain and other dry ingredients are received via truck and rail. The grain is then processed by a hammermill to create a mash. The mash and dry ingredients are weighed and mixed together to form the pellet mash. The pellet mash is then formed into the finished feed by the pellet mill and coolers. The finished feed is stored in silos and then loaded out via truck.

SECTION 2 – CURRENT APPLICATION

Permit Number: F-23-023 Activity: APE20230002

Received: 6/2/2023 Application Complete Date(s): 6/16/2023

Permit Action: ☒ Initial ☐ Renewal
☐ Revision (Select one of the following)
☐ Section 12. Actions that Require a Permit or Permit Revision in Advance
☐ Section 13. Actions that Do Not Require a Permit Revision in Advance
☐ Section 14. Change of Ownership or Name of Permittee

Description of Action:
On January 6, 2023, the source submitted a renewal application for their state-origin permit (S-13-100). During the review of the renewal application, the Division conducted an analysis of the impact of the potential Formaldehyde emissions under 401 KAR 63:020. Based on that analysis, the following solutions were proposed by the Division in order to mitigate the potential impact of the Formaldehyde emissions and demonstrate compliance with the 401 KAR 63:020 standard:

- A source-wide limit on formaldehyde emissions to not exceed 0.824 tpy;
- In lieu of this limit, the permittee may construct a new exhaust stack for EU 017 at a height no less than 170 feet above ground level.

On March 24, 2023, the source submitted a proposal to move the stack for EU 017 closer to the 167 ft mill tower and extend the stack height to 177 ft above ground level (10 feet above the tallest mill tower). This construction was intended to mitigate the downwash occurring due to the height of the stack relative to the mill towers.

During the renewal review process, the source also conducted internal testing for methanol and formaldehyde (both VOCs and HAPs) to more accurately determine potential emissions from the facility. The testing resulted in potential emissions of methanol and formaldehyde emissions increasing from initial estimates and exceeding 10 tpy source-wide.

On May 19, 2023, the source submitted modeling files to the Division for review that included the revised emission information and raising of the exhaust stack for EU 017 to a height of 177 feet above ground level. Using the provided information and proposed physical changes to the facility in the model and analysis, compliance with the 401 KAR 63:020 standard was demonstrated when limiting site-wide Formaldehyde emissions to less than 4.52 tons/yr at the proposed stack height of 177 ft at the new stack location (closer to the highest mill tower).

On June 2, 2023, as a result of the testing the source conducted, the source submitted an application for a conditional major permit requesting federally enforceable limits of VOC, any single HAP and combined HAP to be below major source thresholds.

- During the permitting process with the review of the modeling results, the Division made the following changes:
    - The permit and emission calculations were revised to more accurately reflect that the formaldehyde does not enter the process before mixing; therefore, Process ID #3 of EU

001 (Receiving System) and Process ID #2 of EU 006 (Grinding System) were removed as potential sources of Formaldehyde emissions.

- Permit language was updated to be consistent and clear.
- EU 003 (Grain Silos) was moved to Section C – Insignificant Activities due to the expected lack of emissions.
- EU 023 (Enclosed Systems (Batching, Mixing, Pellet Handling, and Finished Feed)) was updated to add 40 CFR 63, Subpart DDDDDDD as an applicable regulation and to move the following to Section C – Insignificant Activities due to the expected lack of emissions and not considered subject to the regulation:
  - Process ID #1 (4 Ground Corn Silos)
  - Process ID #3 (Major Ingredient Scale)
  - Process ID #4 (Minor Ingredient Scale)
- EU 025 (Liquid Storage Tank) was also moved to Section C – Insignificant Activities due to the low potential to emit.
- A limit was added into Section D of the permit to restrict source-wide Formaldehyde emissions to less than 4.52 tons per year on a rolling 12-month basis.
- The federally enforceable source-wide limits were included in Section D of the permit to limit emissions of VOC to less than 90 tpy, any single HAP to less than 9 tpy, and combined HAP to less than 22.5 tpy, each on a rolling 12-month basis.

F-23-023 Emission Summary		
Pollutant	2022 Actual (tpy)	F-23-023 PTE (tpy)
PT	3.910	5.651
PM_{10}	2.174	4.685
$PM_{2.5}$	1.075	2.516
CO	0.4062	5.712
NO_2	0.4615	11.68
SO_2	0.01119	0.0376
VOC	1.693**	117.9*
Greenhouse Gases (GHGs)		
Carbon Dioxide	536.6	7,604
Methane	0.0103	0.1433
Nitrous Oxide	0.009752	0.01433
CO_2 Equivalent (CO_2e)	539.8	7,611
HAPs/Toxics		
Total HAPs:	1.496	95.03*
Formaldehyde	1.247**	14.16*
Methanol	0.2478**	80.72*

*Note: The permit includes federally enforceable emission limitations to limit emissions below major source thresholds and for Formaldehyde to be in compliance with the 401 KAR 63:020 standard.

**Note: The actual emissions reported to KyEIS in 2022 do not reflect the updated emission factors provided by the facility in this renewal application.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Units: 011, 013, 015, 017, 019, 020, 023, 026				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	E = 2.34 for P ≤ 0.5 ton/hr E = $3.59P^{0.62}$ for P from 0.5 ton/hr to 30 ton/hr E = $17.31P^{0.16}$ for P > 30 ton/hr ≥ 95% Reduction	401 KAR 59:010, Section 3(2) 40 CFR 63.11621(e)	AP-42 Chapter 9.9.1	Operating and Properly Maintaining the Control Device The source is assumed to be in compliance with the PM emission limit, when the cyclone is operating and properly maintained.
	Opacity < 20%	401 KAR 59:010, Section 3(1)	AP-42 Chapter 9.9.1	Daily Visual Observations

Process Description:
EU 011 - Micro Bin System

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
1	Micro Bin System (16 Bins)	0.22	9/25/2013	Vents/ Enclosed
2	Micro Dry Ingredients Including Manganese	0.0093		

EU 013 - Mixing (Enclosed System)

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
1	Micro Surge Bin	0.22	9/25/2013	Totally Enclosed*
2	Mixer	40	9/25/2013	
3	Mixer Surge Bin	40	9/25/2013	

*Emissions are negligible

EU 015 - Pellet Handling (Enclosed System)

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
1	Pellet Mash Bins (2)	40	9/25/2013	Totally Enclosed*
2	Pellet Surge Bin	40	9/25/2013	
3	Pellet Bin Surge Hopper	40	9/25/2013	

Emission Units: 011, 013, 015, 017, 019, 020, 023, 026

*Emissions are negligible

EU 017 - Pellet Mill

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
1	Pellet Mill and Cooler	40	9/25/2013	Dual Cyclone System 017C
2	Pellet Mill (Additives)	40		Enclosed
3	Manganese	0.0093		Dual Cyclone System 017C

EU	Description	Capacity (tons/hr)	Construction Date	Control Device
019	Finished Feed Silos (10)	40	9/25/2013	Totally Enclosed*

*Emissions are negligible

EU 020 - Bulk Loadout

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
1	Truck Loadout	200	9/25/2013	Baghouse 020C; Partially Enclosed
2	Truck Loadout (Additives)	200		Partially Enclosed
3	Manganese	0.0093		Baghouse 020C; Partially Enclosed

EU 023 - Batching (Enclosed System)

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
2	Mash Rework Silos (2)	50	9/25/2013	Totally Enclosed*
5	Micro Surge Bin	0.22		
6	Mixer	40		
7	Mixer Surge Bin	40		
8	Pellet Mash Bins (2)	40		
9	Pellet Surge Bin	40		
10	Pellet Bin Surge Hopper	40		
11	Finished Feed Silos	40		

*Emissions are negligible

Emission Units: 011, 013, 015, 017, 019, 020, 023, 026

EU 026 – Central Vacuum System

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
1	Central Vacuum System (320 cfm)	39.95	1/1/2015	HEPA filter 026C
2	Manganese	39.95		

Applicable Regulation:

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

401 KAR 63:002 Section 2(4)(bbbbbb) 40 C.F.R. 63.11619 through 63.11627, Table 1, Subpart DDDDDDD, National Emissions Standards for Hazardous Air Pollutants for Area Sources: Prepared Feeds Manufacturing. This regulation is applicable to a prepared feeds manufacturing facility that uses a material containing chromium or a material containing manganese and is an area source of emissions of hazardous air pollutants (HAP). A prepared feeds manufacturing affected source is the collection of all equipment and activities necessary to produce animal feed from the point in the process where a material containing chromium or a material containing manganese is added, to the point where the finished animal feed product leaves the facility. This includes, but is not limited to, areas where materials containing chromium and manganese are stored, areas where materials containing chromium and manganese are temporarily stored prior to addition to the feed at the mixer, mixing and grinding processes, pelleting and pellet cooling processes, packing and bagging processes, crumblers and screens, bulk loading operations, and all conveyors and other equipment that transfer the feed materials throughout the manufacturing facility.

401 KAR 63:020, Potentially hazardous matter or toxic substances (**EU 017** and **EU 020** for additives only**)**

Comments:
For the equation E = rate of emission in lb/hr and P = process weight rate in tons/hour.
Hourly Emission Rate = [Monthly processing rate x Emission Factor as determined from AP-42 / (Hours of operation per month)] x (1 – control efficiency). Emissions Calculated using AP-42, Chapter 9.9 and other information provided by the applicant.
For EU 013, EU 015, EU 019 and EU 023, no emissions are expected due to the processes being completely enclosed but are subject to 40 CFR 63, Subpart DDDDDDD.

Emission Units: 001, 004 – 006				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	E = 2.34 for P ≤ 0.5 ton/hr E = $3.59P^{0.62}$ for P from 0.5 ton/hr to 30 ton/hr E = $17.31P^{0.16}$ for P > 30 ton/hr	401 KAR 59:010, Section 3(2)	AP-42 Chapter 9.9.1	Operating and Properly Maintaining the Control Device
	Opacity < 20%	401 KAR 59:010, Section 3(1)	N/A	Daily Visual Observations

Process Description:

EU 001 - Receiving System

Process ID	Description	Capacity (tons/hr)	Construction Date	Control Device
1	Truck Receiving (Grain and Dry Ingredients)	100	9/25/2013	Baghouse 002C; Process Enclosed
2	Rail Receiving (Grain and Dry Ingredients)	100		

EU	Description	Capacity (tons/hr)	Construction Date	Control Device
004	Dry Ingredient Silo (10)	100	9/25/2013	Baghouse 004C; Process Enclosed
005	Pneumatic Salt Receiving (8)	25	9/25/2013	Baghouse 005C; Process Enclosed
006	Grain Hammer Mill (Grain)	30	9/25/2013	Baghouse 006C; Process Enclosed

Applicable Regulations:

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

Comments:

For the equation to determine PM Emission limit in 401 KAR 59:010, Section 3:
E = rate of emission in lb/hr and P = process weight rate in tons/hour. Emissions calculated using AP-42, Chapter 9.9 and other information provided by the applicant.

Emission Unit 021				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	No Visible Emissions Beyond Property Line	401 KAR 63:010	AP-42 Chapter 13.2.1 Equation (2)	Monitoring Precautions Taken to Prevent PM from Becoming Airborne By Dust Suppression

Process Description:

EU	Description	Capacity (tons/hr)	Construction Date
021	Paved Haul Road and Yard Area	200	9/25/2013

Applicable Regulation:
401 KAR 63:010, **Fugitive emissions**. This regulation applies to each affected facility that has defined fugitive emissions. Fugitive emissions are those emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

Comments:
Emissions calculated using AP-42 Chapter 13.2.1.

Emission Unit 022				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.56 lb/MMBtu	401 KAR 59:015, Section 4(1)(c)	AP-42 Chapter 1.4	Assumed based upon natural gas combustion
PM	20% opacity	401 KAR 59:015, Section 4(2)		Assumed based upon natural gas combustion
SO_2	2.98 lb/MMBtu	401 KAR 59:015, Section 5(1)(c)		Assumed based upon natural gas combustion

Process Description:

EU	Description	Capacity (MMBtu/hr)	Construction Date
022	Cleaver Brooks Boiler (250 HP) (Primary Fuel: Natural Gas, Backup Fuel: Fuel Oil No. 2)	10.159	9/25/2013

Applicable Regulations:
401 KAR 59:015, New Indirect Heat Exchangers. This regulation is applicable to indirect heat exchangers having a heat input capacity greater than one (1) million BTU per hour (MMBtu/hr) and

Emission Unit 022
250 MMBtu/hr or less commenced on or after April 9, 1972. **401 KAR 60:005, Section 2(2)(d) 40 C.F.R. 60.40c through 60.48c (Subpart Dc), Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units**. This regulation is applicable to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has the maximum design heat capacity of 100 million British thermal units per hour (MMBtu/hr) or less, but greater than or equal to 10 MMBtu/hr. **Comments:** **401 KAR 63:002, Section 2(4)(jjjjj) 40 C.F.R. 63.11193 through 63.11237, Tables 1 through 8 (Subpart JJJJJJ), National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources.** This regulation is applicable to industrial, commercial, or institutional boilers that are located at, or is part of, an area source of hazardous air pollutants (HAP). Gas fired boilers as defined in this subpart are exempt from this regulation. Emissions calculated using AP-42 Chapter 1.4-1,2,3,4 and 40 CFR 98, Subpart C.

Emission Unit 24				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
NO_x	2.0 g/HP-hr	40 CFR 60, Subpart JJJJ Table 1	AP-42 Chapter 3.2	Certified Engine
CO	4.0 g/HP-hr	40 CFR 60, Subpart JJJJ Table 1		Certified Engine
VOC	1.0 g/HP-hr	40 CFR 60, Subpart JJJJ Table 1		Certified Engine

Process Description:

EU	Description	Capacity (MMscf/hr)	Construction Date
24	228 HP Emergency Generator (4 Cycle Lean Burn, 0.15 MW)	0.0075	9/25/2015

Applicable Regulations:

401 KAR 60:005, Section 2(2)(eeee) 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJ), Standards of Performance for Stationary Spark Ignition Internal Combustion Engines. This regulation is applicable to spark ignition (SI) internal combustion engines (ICE) that are constructed after June 12, 2006 and are manufactured after January 1, 2009.

401 KAR 63:002, Section 2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This regulation is applicable to all

Emission Unit 24
stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. **Comments:** Emissions calculated using AP-42 Chapter 3.2-2 and 40 CFR 98, Subpart C.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

EP	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of Compliance Testing
-	-	-	-	-	-	-	-	-	-	-

Footnotes:

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
90 tpy of VOC emissions	To preclude 401 KAR 52:020	Source-wide
9.0 tpy of Individual HAP emissions	To preclude 401 KAR 52:020	Source-wide
22.5 tpy of Combined HAP emissions	To preclude 401 KAR 52:020	Source-wide
4.52 tpy of Formaldehyde emissions	401 KAR 63:020	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Units
401 KAR 59:010, *New process operations*.	001, 004, 005, 006, 007, 011, 013, 015, 017, 019, 020, 023, 026
401 KAR 59:015, *New indirect heat exchangers.*	022
401 KAR 60:005, Section 2(2)(d) 40 C.F.R. 60.40c through 60.48c (Subpart Dc), *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*.	022
401 KAR 60:005, Section2(2)(eeee) 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJJJ), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*.	24
401 KAR 63:002, Section2(4)(eeee) 40 C.F.R. 63.6580 through 63.6675, Tables 1a through 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines***.**	24
401 KAR 63:002, Section 2(4)(bbbbbb) 40 C.F.R. 63.11619 through 63.11627, Table 1 (Subpart DDDDDDD), *National Emission Standards for Hazardous Air Pollutants for Area Sources: Prepared Feeds Manufacturing.*	011, 013, 015, 017, 019, 020, 023, 026
401 KAR 63:010, *Fugitive emissions.*	021
401 KAR 63:020, *Potentially hazardous matter or toxic substances.*	017, 020

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 52:020, *Title V permits*	Source-wide

Table D - Summary of Non Applicable Regulations:

N/A

Air Toxic Analysis
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

The Division for Air Quality (Division) performed a modeling analysis using AERMOD on February 6, 2023 of potentially hazardous matter or toxic substances (Formaldehyde and Methanol) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. The predicted maximum residential impact was compared against the November 2022 RSL table for residential air.

Based on the parameters and modeling assumptions utilized, the predicted maximum residential impact of Methanol is in compliance with the 401 KAR 63:020 standard. The predicted maximum residential impact of Formaldehyde is not in compliance with the 401 KAR 63:020 when evaluated using the maximum potential to emit for the facility. To demonstrate compliance with 401 KAR 63:020, the Division determined that the source must limit source-wide potential to emit (PTE) for Formaldehyde to 0.824 tons per year (tpy) or, alternatively, construct a new exhaust stack for EU 17 at a height no less than 170 feet above ground level.

On May 19, 2023, a revised modeling analysis was submitted by the facility and evaluated by the Division that included a change in the location of the exhaust stack for EU 017 to closer to the highest mill tower, and raising the stack to a height of 177 feet above ground level (10 ft above the highest mill tower). Compliance with 401 KAR 63:020 is demonstrated using these revised stack parameters and limiting the source-wide emissions of Formaldehyde to less than 4.52 tpy. These revised requirements for compliance with 401 KAR 63:020 for Formaldehyde have been included in Section D of the permit (F-23-023).

Single Source Determination
N/A

SECTION 5 - PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action
S-13-100	Initial	APE20130001	9/24/2013	10/1/2013	Construction/Operating Permit for a Feed Mill
S-13-100 R1	Revision	APE20140001	2/26/2015	4/16/2015	Addition of Additives Containing up to 33% Formaldehyde as Material Handled
S-13-100 R2	Revision	APE20150002	10/29/2015	12/7/2015	Addition of an Emergency Generator
S-13-100 R3	Revision	APE20180002 APE20180004	9/27/2018 12/14/2018	1/13/2019	Revision of the Formaldehyde Solution Handled; Addition of a Fuel Oil Burner to EU 022

SECTION 6 – PERMIT APPLICATION HISTORY:
N/A

APPENDIX A – ABBREVIATIONS AND ACRONYMS

Btu – British thermal unit
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HF – Hydrogen Fluoride (Gaseous)
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NO_x – Nitrogen Oxides
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PTE – Potential to Emit
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds