

Commonwealth of Kentucky
Division for Air Quality
STATEMENT OF BASIS / SUMMARY

Title V/Synthetic Minor, Construction/Operating
Permit: V-26-044

Dyno Nobel Inc.
400 Bickford Road
Graham, KY 42344

October 12, 2026
Colby Freeman Reviewer

SOURCE ID:	21-177-00067
AGENCY INTEREST:	3241
ACTIVITY:	APE20260001

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 2892, Explosives

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: Chemical process plants, except ethanol production facilities producing ethanol by natural fermentation under NAICS codes 325193 or 312140

County: Muhlenberg

Nonattainment Area ☒ N/A ☐ PM₁₀ ☐ PM_{2.5} ☐ CO ☐ NO_x ☐ SO₂ ☐ Ozone ☐ Lead
If yes, list Classification: N/A

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☒ PM₁₀ ☒ PM_{2.5} ☒ CO ☒ NO_x ☒ SO₂ ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☒ PM₁₀ ☒ PM_{2.5} ☒ CO ☒ NO_x ☒ SO₂ ☐ VOC

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

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

*PTE does not include self-imposed emission limitations.

Description of Facility:

The Dyno Nobel facility in Graham, Kentucky consists of two manufacturing areas on a single contiguous property. Historically, Dyno Nobel manufactures pentaerythritol tetranitrate (PETN) for use in explosives in the PETN manufacturing area. In 2026, the Graham Kentucky Trinitrotoluene (TNT) Manufacturing Facility was proposed to be constructed.

In the PETN manufacturing area, pentaerythritol and nitric acid are combined to form crystallized PETN after which, water is used to wash the surface of the PETN. Acetone is then used to dissolve the PETN and release any trapped nitric acid (occluded acid). Anhydrous ammonia is then bubbled through the solution to neutralize the nitric acid before the solution is recrystallized. Potassium hydroxide is also used for wastewater treatment. Different grades of PETN are determined based on moisture content. Nitric acid emissions at the facility are controlled with wet scrubbers at EP5, EP6, and EP11. Acetone emissions are controlled by condensers at EP13 and EP7. Nitric acid is recovered in EP08 using concentrated sulfuric acid and the diluted sulfuric acid is re-concentrated in EP09. Acetone is also recovered in EP10.

The TNT Manufacturing Facility includes the TNT Production Unit, Acid Recovery Unit (ARU), Thermal Destruction Unit (TDU), and various raw material handling and supporting utilities.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: V-26-044

Activities: APE20260001

Received: June 2, 2026

Application Complete Date(s): August 3, 2026

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

Construction/Modification Requested? ☒ Yes ☐ No NSR Applicable? ☐ Yes ☒ No

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

Description of Action:

The Division received an application for an Initial Title V/Synthetic Minor Construction/Operating Permit on June 2, 2026. The application requested construction and operational authority for a new TNT Manufacturing Facility to be built in a separate area of the existing Dyno Nobel property in Graham, Kentucky. The new facility will include raw material handling and storage areas, TNT production area, acid recovery, a hazardous waste incinerator (Thermal Destruction Unit) and supporting utilities.

The Thermal Destruction Unit (TDU-1) is subject to 40 CFR 63, Subpart EEE. Pursuant to 40 CFR 63.1200(a)(3), area sources subject to 40 CFR 63, Subpart EEE are subject to the requirement to apply for and obtain a title V permit unless the permitting authority chooses to exclude such source on a case-by-case basis. The Division did not elect to exclude Dyno Nobel from this requirement.

With construction of the new units, the uncontrolled PTE of pollutants subject to 401 KAR 51:017 (CO, NO_x, PT, and Sulfur Oxides (SO_x, which includes SO₂ and SO₃)) exceeds the major source threshold under 401 KAR 51:017. The facility accepted source-wide emission limitations on these pollutants to limit emissions to less than 90 tpy for each pollutant to preclude the applicability of 401 KAR 51:017. These limitations effectively prevent the facility from being a major source under title V, as the source remains an area source for HAP. Thus, 40 CFR 64, Compliance Assurance Monitoring (CAM) is not applicable to any units at the facility.

V-26-044 Emission Summary				
Pollutant	2025 Actual (tpy)	Previous PTE S-25-064 (tpy)	Change (tpy)	Revised PTE V-26-044 (tpy)
CO	1.35	4.18	26.06	30.24 (435.11) ^a
NO _x	0.54	1.89	76.39	78.28 (1,709.45) ^a
PT	0.18	0.50	48.16	48.66 ^b
PM ₁₀	0.18	0.50	47.20	47.70 ^b
PM _{2.5}	0.17	0.49	46.96	47.45 ^b
SO ₂	0.01	0.03	17.83	17.86 (174.36) ^a
VOC	0.14	0.36	13.01	13.37 (63.94) ^c
Lead	7.9x10 ⁻⁶	2.25x10 ⁻⁵	1.07x10 ⁻⁴	1.29x10 ⁻⁴
SO _x	--	--	--	21.32 (214.36) ^a
Greenhouse Gases (GHGs)				
Carbon Dioxide	1,914	5,918	27,843	33,761
Methane	0.04	0.11	0.50	0.61
Nitrous Oxide	0.004	0.01	0.05	0.06
CO ₂ Equivalent (CO ₂ e)	1,916	5,924	27,870	33,794
Hazardous Air Pollutants (HAPs) and Toxic Air Pollutants (TAPs)				
Dinitrotoluene	--	--	--	0.001 (3.24) ^c
Hydrochloric Acid	--	--	--	0.72 ^b
Toluene	--	0.002	9.49	9.49
Sulfuric Acid		9.53	0	9.53
Combined HAPs:	0.008	0.126	11.02	11.15 (20.91) ^c

^a Controlled PTE (uncontrolled PTE). The permit includes federally-enforceable source-wide emission limitations (<90 tpy) and control equipment operating requirements to preclude 401 KAR 51:017.

^b Controlled PTE. The permit includes unit specific federally-enforceable emission limitations and control equipment operating requirements to preclude 401 KAR 51:017.

^c Controlled PTE (uncontrolled PTE). Control of VOCs, including dinitrotoluene, required by federally-enforceable emission limitation.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

PETN Plant: Emission Units 005 (EP5) through 014 (EP14)					
Pollutant	Emission Unit	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Nitric Acid	005, 006, 008	10.94 lb/hr Total	401 KAR 63:021, Section 1	68.7 lb/ton Material Balance	See Comments
	011			118 lb/ton Material Balance	
Ammonia	007	1.624 lb/hr Total		0.02835 lb/ton Material Balance	
Initial Construction Date: 005 – 04/91; 007 – 05/88; 006, 008, 009, 010, 012, 013 – 01/81; 014 – 09/94; 011 – 01/81, new tank for 011 (TF344/B15) added in 2013, new tank for 013 (TF530/B19) added in 2015					
Process Description:					
005 (EP5) – Crude PETN Manufacture, PETN-2, PETN-4					
Crude pentaerythritol tetranitrate (PETN) is manufactured at this emission point. The affected facilities that manufacture crude PETN are: Feed Hooper (H101C), Nitrator (R102C), Cooler (R103C), Spent Acid Filter (F111C), Spent Acid Vacuum Tank, Slurry Vessel (R112C), Final Filter, Acid Water Vacuum Tank, Two (2) Vacuum Pumps, and Nitric Acid Day Tank (T106).					
Controls: Wet scrubber controlling nitric acid (90% efficiency).					
006 (EP6) – Cap Grade PETN Manufacture/Nitration, PETN-1, PETN-3					
Cap Grade PETN is manufactured at this emission point. The affected facilities that manufacture cap grade PETN are: Feed Hooper (H101), Nitrator (R102), Cooler (R103), Spent Acid Filter (F111), Spent Acid Vacuum Tank, Slurry Vessel (R112), Two (2) Pumps, Nitric Acid Day Tank (B401), Acetone Day Tank (B402), and Potassium Hydroxide Day Tank (B203).					
Controls: Wet scrubber controlling nitric acid (90% efficiency).					
007 (EP7) – Cap Grade PETN Manufacture/Crystallization, PETN-6					
Cap Grade PETN is manufactured at this emission point. The affected facilities that manufacture cap grade PETN are: Acetone day tank (T208), Transport Filter (F202), Through Drain tank (DV157A), Separator Pot, Vacuum tank (VT212), Dissolver (R203), Three (3) Crystallizers (R204, R205, R206), Final Filter (F207), Spent Acetone Vacuum Tank (VT217), Superfine Dissolver (SFD-1), Superfine Nutsche Filter (SFN-1), Packout Nutsche Filter, and Reclaim Dissolver (R4201).					
Controls: Condenser controlling acetone (90% efficiency).					
008 (EP8) – Nitric Acid Recovery Process, ABS-1					
Nitric acid is recovered at this emission point. The affected facilities that recover nitric acid are: Two (2) overhead feed tanks (T301/B1, T302/B2), Evaporator (E302/B3), Extraction Column (C306/K1), Bleaching Column (C308/K2), Separation Tank (T350/B4), Density Tank (T349/B5), Two (2) Condensers (X307/W2, X311.2/W6.2), two (2) heaters (X303/W1, X309/W4), and two (2) coolers (X328.1/W3.1, X328.2/W3.2).					

PETN Plant: Emission Units 005 (EP5) through 014 (EP14)

009 (EP9) – Sulfuric Acid Recovery Process, SAC-1

Sulfuric acid is recovered at this emission point. The affected facilities that recover sulfuric acid are: Heater (X329/W7), Evaporator Pot (E302/B7), Immersion Pot (T331/B8), One (1) condenser, Vacuum Pot (T337/B9), and Separation Tank (T348).

010 (EP10) – Acetone Recovery Process, APV-1

Acetone is recovered at this emission point. The affected facilities that recover acetone are: Spent Acetone Day Tank (T503), Overhead Condenser (X507), Feed Preheater (X504), Two (2) Heaters (X505A, X505B, X530), Distillation Column (C506), AC99 Reflux Tank (T508), and Condensate Tank (T517) and Acetone Distillation Vapor Cooler (X515).

011 (EP11) – Tank Farm/Four Nitric Acid Tanks:

Nitric Acid is stored at this emission point. The affected facilities that store nitric acid are:

Tank TF340/B18 (8,500 gal. Capacity)

Tank TF342/B14 (8,500 gal. Capacity)

Tank TF346/B19 (8,500 gal. Capacity)

Tank TF344/B15 (10,800 gal. Capacity) (Constructed 2013)

Controls: Wet scrubber controlling nitric acid (95% efficiency).

012 (EP12) – Tank Farm/Three Sulfuric Acid Tanks:

Sulfuric Acid is stored at this emission point. The affected facilities that store sulfuric acid are:

Tank TF340/B (2,500 gal. Capacity)

Tank TF333/B10 (2,500 gal. Capacity)

Tank TF338/B17 (8,500 gal. Capacity)

Tank Farm/Sulfuric Acid Pipeline equipment: Sixty six (66) flanges, twenty one (21) valves and six (6) pumps.

013 (EP13) – Tank Farm/Four Acetone Tanks:

Acetone is stored at this emission point. The affected facilities that store acetone are:

Tank TF501/B18 (9,000 gal. Capacity)

Tank TF510/B14 (9,000 gal. Capacity)

Tank TF520/B15 (9,000 gal. Capacity)

Tank TF530-B19 (9,000 gal. Capacity) (Constructed: 2015)

Controls: Condenser controlling acetone (70% efficiency).

014 (EP14) – Tank Farm/Potassium Hydroxide Tank:

Potassium Hydroxide is stored at this emission point.

One (1) 8,500 gal. capacity Potassium Hydroxide tank.

Tank Farm/Potassium Hydroxide Pipeline equipment: Three (3) flanges, three (3) valves and one (1) pump.

NOTE - The pipeline equipment count listed above reflects an accurate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment continues to comply with the applicable requirements listed below, and the changes do not cause a significant increase of emissions or potential to emit.

PETN Plant: Emission Units 005 (EP5) through 014 (EP14)

Applicable Regulation:

401 KAR 63:020, *Potentially hazardous matter or toxic substances* [State-Origin Requirement] applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. This applies to the HAP/Toxic emissions from emission units 007, 009, 010, 012, and 013.

401 KAR 63:021, *Existing sources emitting toxic air pollutants* [State-Origin Requirement]. Pursuant to 401 KAR 63:021, Section 1, a source in existence on January 19, 1999 which was issued a permit pursuant to 401 KAR 50:035 with conditions based on 401 KAR 63:021 or 401 KAR 63:022 shall continue to comply with all conditions based on 401 KAR 63:021 or 401 KAR 63:022 unless it can demonstrate that a condition is no longer necessary to protect human health and the environment. Emission units 005, 006, 007, 008, and 011 are subject to existing emission limitations pursuant to 401 KAR 63:021.

Comments:

For emission unit 012, the SO_x emission factors for breathing and working losses are 0.06386 lb/1000 gallon-years and 0.352 lb/1000 gallons respectively, from AP-42 Chapter 7. The emission factors for the fugitive pipe components flanges, valves, and pumps are 13.2714, 140.5, and 546 lb/component per hr respectively from SOCM I leaking factors.

Permit S-05-151 imposed emission limitations on Nitric Acid, Sulfuric Acid, and Ammonia pursuant to 401 KAR 63:021. These limitations would continue to be in place unless it can be demonstrated that the limitations are no longer necessary to protect human health and the environment. However, the emission limitation for sulfuric acid (1.624 lb/hr) has been demonstrated to no longer be necessary to protect human health and the environment and was removed from permit S-25-064.

While sulfuric acid is not on the list of hazardous air pollutants table listed in 401 KAR 63:060, it is on the Regional Screening Level table as a toxic air pollutant. However, AERMOD screening was performed on January 12, 2021, showing that 401 KAR 63:020 is in compliance for sulfuric acid. The regional screening level for sulfuric acid and stack information for which sulfuric acid is emitted from have not changed since 2021. Therefore, it has been demonstrated that the sulfuric acid limitation is no longer necessary to protect human health and the environment.

The facility has not demonstrated that the nitric acid limitation is no longer necessary to protect human health and the environment. Therefore, the Nitric Acid limitation has remained in permit V-26-044. Continued compliance shall be demonstrated by maintaining scrubber parameters above the minimums established in the one-time performance test (CMN20260001 & CMN20260002). The performance test failed to establish controlled nitric acid emission factors for Emission Units 005 and 006 as required. However, there was a large margin of compliance as combined emissions were <10% of the limit. Emission Unit 006 demonstrated an emission rate <33% of the maximum indicated by the previously estimated emission factor.

Emission Unit IA6 (EP IA6) – Gasoline Tank

Initial Construction Date: March 1993

Process Description:

Capacity:	550 gallons
Liquid Stored:	Gasoline
Maximum Annual Throughput:	3,200 gallons per year
Controls:	None

Applicable Regulation:

401 KAR 63:002, Section 2(4)(ddddd), 40 C.F.R. 63.11110 through 63.11132, Tables 1 through 3 (**Subpart CCCCCC**), *National Emission Standards for Hazardous Air Pollutants for Source Category: Gasoline Dispensing Facilities*. Applies to gasoline dispensing facilities (GDF) located at an area source, including each storage tank.

Comments:

The permittee is subject to the requirements for GDFs with a monthly throughput of less than 10,000 gallons of gasoline. Records must be maintained to demonstrate throughput remains below 10,000 gallons per month.

Emission Unit 017 (EP17) – Ajax Indirect Heat Exchanger				
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)(a)	7.6 lb/mmscf (AP-42, Ch. 1.4)	Assumed while burning natural gas
	20% opacity	401 KAR 59:015, Section 4(2)	N/A	
SO ₂	3.0 lb/mmBtu	401 KAR 59:015, Section 5(1)(a)	0.60 lb/mmscf (AP-42, Ch. 1.4)	
Initial Construction Date: 03/2000				
Process Description: 017 (EP17) – Ajax Indirect Heat Exchanger Model: Ajax Maximum Continuous Rating: 1.05 mmBtu/hr Power: 25 hp Fuel: Natural Gas Only Control: None				
Applicable Regulation: 401 KAR 59:015 , <i>New indirect heat exchangers</i> applies to indirect heat exchangers having a heat input capacity greater than one (1) mmBtu/hr commenced on or after April 9, 1972. Emission unit 017 has a heat input capacity greater than one (1) mmBtu/hr and meets the definition of indirect heat exchangers. Therefore, the requirements of 401 KAR 59:015 apply. 401 KAR 63:020 , <i>Potentially hazardous matter or toxic substances</i> applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. This applies to the HAP/toxics emissions from emission unit 017.				
Comments: 401 KAR 60:005, Section 2(2)(d) , 40 C.F.R. 60.40c through 60.48c (Subpart Dc), <i>Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units</i> applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 mmBtu/hr or less, but greater than 10 mmBtu/hr. Emission unit 017 has a heat input capacity less than 10 mmBtu/hr; therefore, 40 CFR 60, Subpart Dc does not apply. 401 KAR 63:002, Section 2(4)(iii) , 40 C.F.R. 63.7480 through 63.7575, Tables 1 through 13 (Subpart DDDDD), <i>National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters</i> applies to each industrial, commercial, or institutional boiler or process heater as defined in 40 CFR 63.7575 that is located at, or is part of, a major source of HAP. Emission unit 017 is not subject to Subpart DDDDD because the facility is not a major source of HAP. 401 KAR 63:002, Section 2(4)(jjjjj) , 40 C.F.R. 63.11193 through 63.11237, Tables 1 through 8 (Subpart JJJJJJ), <i>National Emission Standards for Hazardous Air Pollutants for Industrial,</i>				

Emission Unit 017 (EP17) – Ajax Indirect Heat Exchanger

Commercial, and Institutional Boilers Area Sources applies to industrial, commercial, or institutional boilers as defined in 40 CFR 63.11237 that are located at, or are part of, an area source of hazardous air pollutants (HAP), as defined in 40 CFR 63.2, except as specified in 40 CFR 63.11195. Pursuant to 40 CFR 63.11195(e), a gas-fired boiler as defined in 40 CFR 63.11237 is not subject to 40 CFR 63, Subpart JJJJJJ. Emission unit 017 only burns natural gas. Therefore, it is a gas-fired boiler and 40 CFR 63, Subpart JJJJJJ does not apply.

Emission Unit 019 (EP19) – Hurst Indirect Heat Exchanger, Emission Unit UTIL-1 – 34.7 mmBtu/hr RENTECH Natural Gas Boiler				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	EU 019:0.54 lb/mmBtu; EU UTIL-1: 0.39 lb/mmBtu	401 KAR 59:015, Section 4(1)(c)	7.6 lb/mmscf (AP-42, Ch. 1.4)	Assumed while burning natural gas
	20% opacity	401 KAR 59:015, Section 4(2)	N/A	
SO ₂	EU 019: 2.83 lb/mmBtu; EU UTIL-1: 1.60 lb/mmBtu	401 KAR 59:015, Section 5(1)(c)2.b.	0.60 lb/mmscf (AP-42, Ch. 1.4)	
Initial Construction Date: 019: 09/2021; UTIL-1: Proposed 12/2026				
019 (EP19) – Hurst Indirect Heat Exchanger				
Model:		Series 500 Sect. 1 Steam with Low NO _x Burners/Flue Gas Recirculation		
Maximum Continuous Rating:		10.5 mmBtu/hr		
Primary Fuel:		Natural Gas		
Control:		None		
UTIL-1 – 36.3 mmBtu/hr RENTECH Natural Gas Boiler				
Model:		Rentech TRD-1-40 (or equivalent) with Low NO _x Burners		
Maximum Continuous Rating:		34.7 mmBtu/hr		
Primary Fuel:		Natural Gas		
Control:		None		
Applicable Regulation:				
401 KAR 59:015, <i>New indirect heat exchangers</i> applies to indirect heat exchangers having a heat input capacity greater than one (1) mmBtu/hr commenced on or after April 9, 1972. Emission units 019 and UTIL-1 have heat input capacities greater than one (1) mmBtu/hr and meet the definition of indirect heat exchangers. Therefore, the requirements of 401 KAR 59:015 apply.				
401 KAR 60:005, Section 2(2)(d), 40 C.F.R. 60.40c through 60.48c (Subpart Dc), <i>Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units</i> applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 mmBtu/hr or less, but greater than 10 mmBtu/hr. Emission units 019 and UTIL-1 were constructed after June 9, 1989 and have heat input capacities greater than 10 mmBtu/hr and less than 100 mmBtu. Therefore 40 CFR 60, Subpart Dc is applicable.				
401 KAR 63:020, <i>Potentially hazardous matter or toxic substances</i> applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. This applies to the				

**Emission Unit 019 (EP19) – Hurst Indirect Heat Exchanger,
Emission Unit UTIL-1 – 34.7 mmBtu/hr RENTECH Natural Gas Boiler**

HAP/toxics emissions from both Emission units 019 and UTIL-1.

Comments:

401 KAR 63:002, Section 2(4)(iii), 40 C.F.R. 63.7480 through 63.7575, Tables 1 through 13 (**Subpart DDDDD**), *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters* applies to each industrial, commercial, or institutional boiler or process heater as defined in 40 CFR 63.7575 that is located at, or is part of, a major source of HAP. Emission units 019 and UTIL-1 are not subject to Subpart DDDDD because the facility is not a major source of HAP.

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* applies to industrial, commercial, or institutional boilers as defined in 40 CFR 63.11237 that are located at, or are part of, an area source of hazardous air pollutants (HAP), as defined in 40 CFR 63.2, except as specified in 40 CFR 63.11195. Emission unit 019 is located at an area source of HAP. However, pursuant to 40 CFR 63.11195(e), gas-fired boilers are not subject to 40 CFR 63, Subpart JJJJJJ. Emission unit 019 was originally equipped to burn No. 2 Fuel Oil as a secondary fuel, but the ability to burn No. 2 Fuel Oil has been removed from the unit. Therefore, pursuant to 40 CFR 63.11195(e), Emission unit 019 is a gas-fired boiler as defined in 40 CFR 63.11237 and is not subject to 40 CFR 63, Subpart JJJJJJ.

Emission factors for natural gas combustion are based on AP-42 Chapter 1.4; Table 1.4-1 for CO and NO_x (for boilers using low NO_x burners/Flue gas recirculation; Table 1.4-2 for SO₂, VOC, PM, PM₁₀, PM_{2.5}, and lead; and Table 1.4-3 for HAP. GHG emissions are from 40 CFR 98, Subpart C, Tables C1 and C2. See Appendix B for total source heat input capacity used to calculate the emission limits pursuant to 401 KAR 59:015.

UTIL-2 – Fire Water Pump Engine				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
NMHC + NO _x	4.0 g/KW-hr (3.0 g/hp-hr)	40 CFR 60.4205(c); Table 4 to 40 CFR 60, Subpart IIII; Model years 2009+, maximum engine power 300≤HP<600	NMHC: 3.28 lb/Mgal NO _x :101.50 lb/Mgal Subpart IIII Limit and Vendor Factors	Purchasing a certified engine, installed and configured according to manufacturer specs, except as permitted by 40 CFR 60.4211(g)
CO	3.5 g/KW-hr (2.6 g/hp-hr)		91.69 lb/Mgal Subpart IIII Limit	
PM	0.20 g/KW-hr (0.15 g/hp-hr)		5.24 lb/Mgal Subpart IIII Limit	
Initial Construction Date: December 2026 (Proposed)				
Process Description:				
Model:		Clarke Model C18H0-UFAD38 (or equivalent)		
Manufacturer Date:		2025		
Construction Date:		December 2026 (Proposed)		
Maximum Fuel Consumption:		34 gallons/hr		
Power:		542 hp (404 kW-h)		
Fuel:		Diesel		
Control:		None		
Applicable Regulation:				
401 KAR 60:005, Section 2(2)(oooo), 40 C.F.R. 60.4200 through 60.4219, Tables 1 through 8 (Subpart IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.				
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.				
Comments:				
Pursuant to 40 CFR 63.6590(c)(1), a new stationary RICE located at an area source of HAP emissions must meet the requirements of 40 CFR part 63 by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines. No further requirements apply for such engines under 40 CFR part 63. Emission factors for criteria pollutants (except NO _x , CO, VOC, and PT) and HAPs are based on AP-42 Tables 3.3-1 and 3.3-2, respectively. NO _x , CO, VOC, and PT emission factors are based on the applicable emission limitations of 40 CFR 60, Subpart IIII. The NO _x and VOC emission factors were adjusted from the limits based on the ratio of vendor factors provided in the application. GHG emission factors are from 40 CFR 98, Tables C1 and C2.				

UTIL-3 & 4 – 1475 hp, 4SLB, Natural Gas, Emergency Generator Engines 1 & 2				
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; (160 ppmvd @ 15% O ₂)	40 CFR 60.4233(e); Table 1 to 40 CFR 60, Subpart JJJJ; Emergency engines with maximum engine power HP≥130	578.46 lb/MMscf; Subpart JJJJ limit	Purchasing an engine certified engine and demonstrating compliance according to 60.4243(a); or Purchasing a non-certified engine and demonstrate compliance according to 40.4243(b)(2)(ii)
CO	4.0 g/hp-hr; (540 ppmvd @ 15% O ₂)		1,156.92 lb/MMscf; Subpart JJJJ limit	
VOC	1.0 g/hp-hr; (86 ppmvd @ 15% O ₂)		289.23 lb/MMscf; Subpart JJJJ limit	
Initial Construction Date: December 2026 (Proposed)				
Process Description:				
Model:		Generac MG1000 (or equivalent)		
Type:		4-Stroke Rich Burn (4SLB)		
Model Year:		2025 or later (Proposed)		
Construction Date:		December 2026 (Proposed)		
Power:		1475 hp		
Fuel:		Natural Gas		
Control:		None		
Applicable Regulation:				
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.				
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.				
Comments:				
Pursuant to 40 CFR 63.6590(c)(1), a new stationary RICE located at an area source of HAP emissions must meet the requirements of 40 CFR part 63 by meeting the requirements of 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under 40 CFR part 63. Emission factors for NO _x , CO, and VOC are conservatively based on the corresponding Subpart JJJJ limits. Emission factors for other criteria pollutants and HAPs are based on AP-42 Table 3.2-2. GHG emission factors are from 40 CFR 98, Subpart C, Tables C1 and C2.				

RMH-1A – Toluene Tank

Initial Construction Date: December 2026 (Proposed)

Process Description:

Capacity:	31,304 gallons (118.50 m ³)
Type:	Vertical Fixed Roof
Liquid Stored:	Toluene
Maximum Annual Throughput:	1,219,392 gallons per year
Maximum True Vapor Pressure:	~0.60 psia (4.13 kPa)
Controls:	Vapor Balance Loading System

Applicable Regulation:

401 KAR 60:005 Section 2(2)(s), 40 C.F.R. 60.110c through 60.117c (**Subpart Kc**), *Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023* is applicable to each storage vessel greater than or equal to 20,000 gallons (75.7 cubic meters) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification commenced after October 4, 2023. RMH-1A is a storage vessel greater than 20,000 gallons that is used to store a VOL (toluene), therefore the requirements for 40 CFR 60, Subpart Kc apply.

State Origin Requirement:

401 KAR 63:020, *Potentially hazardous matter or toxic substances*. Applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. Toluene, a HAP, is emitted by the Toluene Tank.

Comments:

The maximum true vapor pressure of toluene does not meet the criteria of 40 CFR 60.110c(c)(1), (c)(2), (d)(1), or (d)(2), therefore the storage vessel is subject to 40 CFR 60.113c(d), if applicable, and 60.115c(b) (see 40 CFR 60.110c(f)). The permittee must determine the maximum true vapor pressure of the VOL stored (40 CFR 60.113c(d)) and maintain records of the dimensions and capacity of the storage vessel (40 CFR 60.115c(b)).

RMH-1B – Fugitive Equipment Leaks in Toluene Service

Initial Construction Date: December 2026 (Proposed)

Process Description:

Equipment Type	Process Area		
	TNT	ARU	Tanks / RMH
Light Liquid Valves	3	5	50
Light Liquid Pumps	-	1	3
Connectors	15	21	75
Open Ended Lines	-	-	2
Gas/ Vapor Pressure Relief Valves	-	3	1
Sampling Systems	-	-	2

NOTE - The pipeline equipment count listed above reflects an accurate count of the equipment as of the date of issuance of this permit but is not intended to limit the permittee to the exact numbers specified. The permittee may add or remove pipeline equipment without a permit revision as long as the equipment continues to comply with the applicable requirements listed below and the changes do not result in a significant increase in emissions on potential to emit.

Applicable Regulation:

401 KAR 60:005, Section 2(2)(iii), 40 C.F.R. 60.480b through 60.489b, (**Subpart VVb**), *Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023*. Applies to the group of all equipment within a process unit for which construction commenced after April 25, 2023. The process unit is components assembled to produce, as intermediate or final products, one or more of the chemicals listed in 40 CFR 60.489. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product. The facility contains a process unit which produces DNT, a listed chemical, as an intermediate.

State Origin Requirement:

401 KAR 63:020, *Potentially hazardous matter or toxic substances*. Applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. Toluene, a HAP, is potentially emitted by fugitive emission components in toluene service.

Comments:

Emissions estimated using EPA 453/R-95-017, Table 2-1 SOCM I Emission Factors.

RMH-2 – Oleum Operations

Initial Construction Date: December 2026 (Proposed)

Process Description:

RMH-2 – Oleum Operations

RMH-2A - Oleum Tank

Capacity: 45,358 gallons
Liquid Stored: Oleum
Maximum Annual Throughput: 2,423,016 gallons per year
Controls: Oleum Scrubber (02-Z0006)

RMH-2B – Oleum Tanker Truck

Liquid Service: Oleum
Controls: Oleum Scrubber (02-Z0006)

RMH-2C – Oleum Blending Surge Tank

Liquids Blended: Oleum and Sulfuric Acid
Maximum Annual Throughput: 2,423,016 gallons per year
Controls: Oleum Scrubber (02-Z0006) (during blending)
Vapor Balance Loading System (during oleum loading)

Applicable Regulation:

401 KAR 63:020, *Potentially hazardous matter or toxic substances* (State-Origin Requirement). Applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. Sulfur Trioxide (SO₃), a TAP, is emitted from the RMH-2 operations.

Comments:

Operation of the oleum scrubber is required at all times in order for control to be credited for source-wide emission calculations of SO_x as required in Section D of the permit.

RMH-4 – Tanks Controlled by the Nitric Acid Scrubber

Initial Construction Date: December 2026 (Proposed)

Process Description:

RMH-4 – Tanks Controlled by the Nitric Acid Scrubber

RMH-4A – 98% Nitric Acid Tank

Capacity: 42,575 gallons
Liquid Stored: Concentrated (98%) Nitric Acid
Maximum Annual Throughput: 2,401,992 gallons per year
Controls: Nitric Acid Scrubber

RMH-4B – Weak Nitric Acid Tank

Capacity: 8,338 gallons
Liquid Stored: Diluted (55%) Nitric Acid
Maximum Annual Throughput: 1,282,464 gallons per year
Controls: Nitric Acid Scrubber

RMH-4C – Spent Acid Tank

Capacity: 56,559 gallons
Liquid Stored: Blend of Sulfuric, Nitric, & Nitrous Acids, Water, and Trace Organics
Maximum Annual Throughput: 5,493,804 gallons per year
Controls: Nitric Acid Scrubber

Applicable Regulation:

401 KAR 63:020, *Potentially hazardous matter or toxic substances* (State-Origin Requirement). Applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. Sulfuric Acid (H₂SO₄), a TAP, is emitted from the RMH-4 operations.

Comments:

RMH-4 is not an insignificant activity due to PTE for NO_x of greater than 5 tpy. NO_x emission factors are based on vapor liquid equilibrium and the volume of gases vented due to thermal venting and tank filling.

NO_x Absorption Column/Thermal Oxidizer Control Train TNT-1 – Nitration + Washers 1 & 2; ARU-1– Acid Recovery Unit; RMH-5 – NA50 Tank				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
VOC	Reduce emissions of TOC (minus methane and ethane) by 98 wt%, or to 20 ppmv dry basis corrected to 3% O ₂	40 CFR 60.662a(a) and Item 1.a. of Table 1 to 40 CFR 60, Subpart NNNa; 40 CFR 60.702a(a) and Item 1.a. of Table 1 to 40 CFR 60, Subpart RRRa	<u>ARU-1:</u> ID #1: 0.181 lb/ton, 99.96% CE, vendor process modeling ID #2: 5.5 lb/ mmscf, AP-42 Table 1.4-2 <u>TNT-1:</u> ID #2: 10 lb/ton, literature data	Initial performance test and subsequent performance tests no later than 60 calendar months. Establishing and maintaining parameters for the NO _x Absorption Column and Thermal Oxidizer
Initial Construction Date: Proposed 12/2026 TNT-1 – Nitration + Washers 1 & 2 Description: Toluene, weak nitric acid (WNA) and oleum are fed to the Extractor and nitration reactors (nitrators). Toluene is fed to the Extractor and Nitrator #1 and oleum is fed to the final nitrator. WNA is fed to the Nitrator #1 and concentrated nitric acid (CNA) is fed to subsequent nitrators. To form TNT, three nitro groups must be added to the toluene molecule. The introduction of the first nitro group to form MNT is carried out at low temperatures with weak nitric acid. Increasingly higher temperatures and stronger acids are then required for the stepwise conversion of MNT to DNT then DNT to TNT through subsequent nitrators. The nitrators are cylindrical vessels each provided with an agitator, cooling coil and a liquid-to-liquid dynamic separator. Crude TNT and spent acid leave the system in a constant flow. Steam, nitrogen, nitrogen oxide (NO _x), carbon monoxide (CO), carbon dioxide (CO ₂), and other organics are vented from the nitrators to the NO _x Absorber and the Thermal Oxidizer in the Acid Recovery Unit (ARU) area. Tetranitromethane (TNM), a VOC generated as a byproduct of nitration, is controlled by the Thermal Oxidizer. NO _x generated from the combustion of TNM is not controlled by the NO _x Absorber. The purification of crude TNT involves the removal of mineral acids, oxidation products and unsymmetrical TNT. Each Washer is a cylindrical vessel provided with agitator, heating jacket (circulating hot water) and a liquid-to-liquid Dynamic Separator. The removal of mineral acids and some of the oxidation products is accomplished by washing the molten TNT with hot water in Washers #1 & 2. Washers #1 & 2 are also vented to the NO _x Absorber and Thermal Oxidizer in the ARU area. Manufacturer: CWR Process ID 1 – TNT Manufacturing Maximum Throughput: 4.07 tons/hr Controls: NO _x Absorption Column (Packed bed scrubber) Thermal Oxidizer Process ID 2 – TNM Control Maximum Throughput: 1.10 tons/hr *TNT Produced Controls: Thermal Oxidizer				

NO_x Absorption Column/Thermal Oxidizer Control Train
TNT-1 – Nitration + Washers 1 & 2; ARU-1– Acid Recovery Unit; RMH-5 – NA50 Tank

ARU-1 – Acid Recovery Unit

Description:

The purpose of the Acid Recovery Unit (ARU) is to remove contaminants from spent acids and recover useful materials that can be recycled back to the TNT production process. The ARU area receives spent acid containing nitric acid, sulfuric acid, water, MNT and DNT from Nitration. The ARU area includes the NO_x Absorber which is a scrubber for NO_x from nitration operations and the other ARU process units. Process steps in the ARU include the Denitration Unit (DENI), Organic Stripper, Sulfuric Acid Concentrators, Nitric Acid Concentrators (NAC), NO_x Absorber, and Extraction Unit (Emission Unit ARU-2). The NO_x Absorber is a control device for NO_x only.

Manufacturer: De Dietrich

Process ID 1 – Acid Recovery Unit Vents

Maximum Throughput: 4.05 tons/hr

Controls: NO_x Absorption Column (Packed bed scrubber)
Thermal Oxidizer

Process ID 2 – Thermal Oxidizer Burner

Manufacturer: UOP Honeywell

Supplemental Fuel: Natural Gas

Maximum continuous rating: 2.4 MMBtu/hr

RMH-5 – NA50 Tank

Description:

The weak nitric acid from the Nitric Acid Scrubber and NO_x Absorber are stored in the NA50 Tank before being processed to CNA in the ARU NAC.

Capacity: 8,616 gallons

Liquid Stored: Diluted (50%) Nitric Acid

Maximum Annual Throughput: 809,424 gallons per year

Controls: NO_x Absorption Column (Packed bed scrubber)

Applicable Regulation:

401 KAR 60:005, Section 2(2)(yyy), 40 C.F.R. 60.660a through 60.670a, Tables 1 through 4 (**Subpart NNNa**), *Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023*. (Applies to ARU-1). Applies to each combination of two or more distillation units and the common recovery system into which its vent stream is discharged that is part of a process unit that produces any of the chemicals listed in 40 CFR 60.667a. Distillation operations occur at the DENI and organic stripper, which means each is a distillation unit. Both units discharge their vent streams to the NO_x Absorption column, a common recovery system. DNT is a listed chemical produced as an intermediate.

401 KAR 60:005, Section 2(2)(dddd), 40 C.F.R. 60.660a through 60.670a, Tables 1 through 4 (**Subpart RRRa**), *Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023*. (Applies to TNT-1). Applies to each combination of two or more reactor processes and the common recovery system into which its vent stream

NO_x Absorption Column/Thermal Oxidizer Control Train

TNT-1 – Nitration + Washers 1 & 2; ARU-1– Acid Recovery Unit; RMH-5 – NA50 Tank

is discharged that is part of a process unit that produces any of the chemicals listed in 40 CFR 60.707a. The nitrators are reactors as they are unit operations in which one or more chemicals, or reactants other than air, are combined or decomposed in such a way that their molecular structures are altered and one or more new organic compounds are formed. DNT is a listed chemical produced as an intermediate.

State-Origin Requirements:

401 KAR 63:020, *Potentially hazardous matter or toxic substances*. (Applies to ARU-1). Applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. HAPs are emitted from the ARU and from combustion of natural gas in the Thermal Oxidizer Burner.

Precluded Regulation:

401 KAR 51:017, *Prevention of significant deterioration of air quality*

Comments:

RMH-5 is included in the NO_x Absorption Column/Thermal Oxidizer Control Train portion of Section B of the permit because it vents through the same control equipment and stack as ARU-1 and TNT-1, although no specific regulations apply.

The DENI and organic stripper which comprise the Distillation Unit in ARU-1 subject to 40 CFR 60, Subpart NNNa includes a condenser for recovery of DNT and other organics. The definition for a Distillation Unit under 40 CFR 60.661a includes the device or vessel in which distillation operations occur and accessories (such as a condenser), plus any associated recovery system. Recovery devices means an individual unit of equipment, such as a condenser, capable of and used for the purpose of recovering chemicals for use, reuse, or sale. In this case, the condenser functions as an accessory under the Distillation Unit and is not an individual unit of equipment falling under the definition of a recovery device. Thus, the monitoring requirements for condensers in Table 2 to 40 CFR 60, Subpart NNNa are not included in the permit.

The NO_x absorber does not control or recover VOC's and is not required to be monitored or tested for VOC/TOC control under 40 CFR Subparts NNNa or RRRa. Due to uncertainty regarding the formation of TNM during nitration, the various streams of NO_x controlled, parameters affecting NO_x control, and the high level of NO_x control required to meet the source-wide limits, the Division required NO_x CEMS and periodic sampling (weekly) for TNM following the NO_x absorber. For compliance with source-wide emission limits, the permittee shall sum emissions monitored by the NO_x CEMS with NO_x assumed to be emitted from combustion of TNM and NO_x from natural gas combustion in the TO burner based on AP-42, Table 1.4-1 to account for all sources of NO_x from the ARU-1 stack. As provided in Section D of the permit, emission factors provided in the application may be used for any time periods in which NO_x CEMS data is not available.

TNT-1, Process ID 02 accounts for emissions of TNM and combustion of TNM in the Thermal Oxidizer. Literature indicates TNM is formed as a byproduct during nitration at a rate of 0.5 lb / 100 lb TNT produced (Millar, 2007 - *Elimination of Redwater Formation from TNT Manufacture*). This corresponds to the VOC emission factor of 10 lb / ton TNT produced. NO_x emissions from combustion of TNM are calculated from a mass balance assuming all TNM is combusted and all nitrogen present in TNM is emitted as NO₂. If the NO_x CEMS is located between the NO_x absorption column and the Thermal Oxidizer, testing will be required to confirm that NO_x emissions do not exceed the 9.39 lb/ton NO_x

NO_x Absorption Column/Thermal Oxidizer Control Train
TNT-1 – Nitration + Washers 1 & 2; ARU-1– Acid Recovery Unit; RMH-5 – NA50 Tank

emission factor derived from this calculation.

ARU-2– Solvent Extraction Unit

Initial Construction Date: Proposed 12/2026

ARU-2 – Solvent Extraction Unit

Description:

The Acid Recovery Unit (ARU) area also includes an extraction system that extracts organics from wastewater. The Extraction Unit uses fresh toluene to strip organics in the organic contaminated condensate from the ARU Organic Stripper and then this is sent to TNT Nitration. Some exhaust is vented to atmosphere. Emissions from the Solvent Extraction Unit consist of short, infrequent emissions of toluene when pressure is relieved.

Applicable Regulation:

401 KAR 63:020, *Potentially hazardous matter or toxic substances*. [State-Origin Requirement] Applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided that such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division. Toluene, a HAP, is emitted from ARU-2.

Comments:

The PTE for VOC and toluene is estimated based on the expected partial pressure of toluene in the main vent line (not at the discharge of the guard condenser) and release rates typical of infrequent release events for 8760 hours per year.

TDU-1– Thermal Destruction Unit				
Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Dioxins and furans	0.11 ng TEQ/dscm corrected to 7% O ₂	40 CFR 63.1219(b)(1)(i)	4.01 E-10 lb/ton, vendor performance guarantee	Comprehensive performance test, confirmatory performance test, and OPLs (40 CFR 63.1209(k))
Mercury	8.1 µg/dscm, corrected to 7 % O ₂	40 CFR 63.1219(b)(2)	4.0 E-5 lb/ton, 26.04% CE, waste characteristics and vendor guarantee	Comprehensive performance test and feedrate limit (40 CFR 63.1209(l))
LVM (Cd, Pb, Se) (combined)	23 µg/dscm, corrected to 7 % O ₂	40 CFR 63.1219(b)(3)	0.013 lb/ton, 99.37% CE, waste characteristics and vendor guarantee	Comprehensive performance test, OPLs, and feedrate limits (40 CFR 63.1209(n))
SVM (As, Be, and Cr) (combined)	23 µg/dscm, corrected to 7 % O ₂	40 CFR 63.1219(b)(4)	0.0028 lb/ton, 98.7% CE, waste characteristics and vendor guarantee	Comprehensive performance test, OPLs, and feedrate limits (40 CFR 63.1209(n))
CO; and/or Hydrocarbons (HC)	100 ppmv CO (hourly rolling average), dry basis corrected to 7 % O ₂ ; and/or 10 ppmv (hourly rolling average), dry basis corrected to 7 % O ₂ and reported as propane	40 CFR 63.1219(b)(5)(i)	CO: 0.66 lb/ton, AP-42 Natural Gas Combustion; HC: 0.068 lb/ton, vendor guarantee	CO CEMS; and Highest hourly rolling average HC level achieved during DRE test and DRE OPLs, or an “equivalent DRE test” and separate OPLs (see 40 CFR 63.1206(b)(6))
HCl and chlorine gas (combined)	21 ppmv, expressed as a chloride (Cl ⁻) equivalent, dry basis, corrected to 7% O ₂	40 CFR 63.1219(b)(6)	1.18 lb/ton, 90% CE, vendor guarantee	Comprehensive performance test, OPLs and feedrate limits (40 CFR 63.1209(o))
PM	0.0016 gr/dscf, corrected to 7 % O ₂	40 CFR 63.1219(b)(7)	163.73 lb/ton, 99.992% CE, DSI feedrate and vendor guarantee	Comprehensive performance test, OPLs, and bag leak detection

TDU-1– Thermal Destruction Unit				
PM	0.23 g/dscm (0.1 gr/dscf), corrected to 12% CO ₂	401 KAR 59:020, Section 3(2)(b)	163.73 lb/ton, 99.992% CE, DSI feedrate and vendor guarantee	Correct PM emissions to 12% CO ₂ during initial comprehensive performance test, comply with OPLs of Subpart EEE
PM	20% opacity	401 KAR 59:020, Section 3(1)	N/A	Visual observation schedule
POHCs	99.99% DRE	40 CFR 63.1219(c)(1)	N/A	DRE testing during the initial comprehensive performance test and OPLs (40 CFR 63.1209(j))

Initial Construction Date: Proposed 12/2026

TDU-1 – Thermal Destruction Unit

Description:

The Thermal Destruction Unit (TDU) system is a technology designed to destroy the Red Water hazardous waste stream that contains a variety of sulfur and nitrogen bound salts formed in the production of TNT. The Red Water waste stream is injected via air atomized nozzles after the flame. Combustion chamber exhaust gas is routed to a dry sorbent injection (DSI) system to treat SO₂ and SO₃ by injection of sodium bicarbonate. The SO_x scrubbed flue gas then passes through the baghouse/HEPA filter for removal of solids. NO_x is controlled by Selective Catalytic Reduction (SCR) via ammonia injection. Prior to ammonia injection, the gas is directly heated in the natural-gas fired SCR burner chamber.

Manufacturer:	Honeywell UOP Callidus
Model:	UOP Honeywell nViro
Construction Date:	December 2026 (Proposed)
Maximum Waste Throughput:	1.4 tons/hr
Primary Burner Fuel:	Natural Gas
Primary Burner Rating:	11 MMBtu/hr
SCR Burner Fuel:	Natural Gas
SCR Burner Rating	0.7 MMBtu/hr
Controls:	Dry Sorbent Injection (DSI)
	Baghouse (BAG)
	HEPA Filter (HEP)
	Selective Catalytic Reduction (SCR)

Applicable Regulation:

401 KAR 59:020, New incinerators. Applies to each incinerator commenced on or after the applicable classification date. Under 401 KAR 59:020, an incinerator is any furnace used in the process of burning waste for the purpose of reducing the volume of the waste by removing combustible matter. The TDU burns red water waste and is therefore an affected facility subject to this regulation.

401 KAR 63:002, Section 2(4)(rr), 40 C.F.R. 63.1200 through 63.1221, Table 1, and Appendix A (**Subpart EEE**), *National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors*. The provisions of this regulation apply to hazardous waste combustors, including hazardous waste incinerators. Hazardous waste incinerator means a device defined as an incinerator in 40 CFR 260.10 and that burns hazardous waste at any time. For purposes of this regulation, the hazardous waste

TDU-1– Thermal Destruction Unit

incinerator includes all associated firing systems and air pollution control devices, as well as the combustion chamber equipment. Red Water is a hazardous waste and the TDU is an enclosed device that uses controlled flame combustion and does not meet any of the exemptions to the incinerator definition at 40 CFR 260.10.

Comments:

401 KAR 59:010, *New process operations*, does not apply because the TDU is subject to an emission standard with respect to particulates under 40 CFR 63, Subpart EEE. The definition for “hazardous waste incinerator” for Subpart EEE includes all associated firing systems and air pollution control devices. The SCR preheat burner is contained in the SCR burner chamber and thus any particulate emissions exit the common stack and are covered by the particulate matter emission standards of Subpart EEE.

The permittee must comply with the particulate matter emission standards of Subpart EEE to preclude 401 KAR 51:017. The alternative to the particulate matter standard of 40 CFR 63.1219(e) would not, on its own, ensure compliance with the 90 tpy sourcewide emission limitation for particulate matter. If the alternative to the particulate matter standard is necessary, the permittee would need to apply for a permit revision. At that time, compliance with the 90 tpy sourcewide emission limitation and applicability of 401 KAR 59:010 would be revisited.

The permittee must submit and comply with an SCR control plan upon initial startup. The purpose of this plan is to ensure that, at all times, the permittee operates and maintains the SCR system in a manner that satisfies the general duty to minimize emissions established by Section E of the permit, and that the NO_x emission factor established in the application and initial performance test is representative of actual operations. The permittee must maintain records of this plan along with any modifications made during the plan review process, monitor and record parameters as described in the plan. Following the initial submittal and approval, any requested changes to the plan will be processed according to the requirements of 401 KAR 52:020. For example, a change that meets the criteria under 401 KAR 52:020, Section 18(1) may qualify as a Section 502(b)(10) change.

The permittee must ensure proper operation of the DSI system for control of SO_x at all times when hazardous waste is fed to or remains in the combustion chamber. This is demonstrated through compliance with the dry scrubber operating parameter limits of 40 CFR 63.1209(o)(4)(i) and (ii) and documenting the sorbent properties in relation to the control of SO_x.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements/Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
005	2000 Wet Scrubber	Controlled Nitric Acid EF	401 KAR 63:021	Initial	Modified Method 26A	10.94 lb/hr from EUs 005, 006 & 011 combined	0.04 lb/hr	Scrubber Liquid Flowrate and pH	CMN20260002	05/08/26
006	1000 Wet Scrubber	Controlled Nitric Acid EF	401 KAR 63:021	Initial	Modified Method 26A		0.83 lb/hr	Scrubber Liquid Flowrate and pH		02/25/26
011	K4 Wet Scrubber	Controlled Nitric Acid EF	401 KAR 63:021	Initial	Modified Method 26A		0.13 lb/hr	Scrubber Liquid Flowrate and pH		02/24/26
TNT-1 and ARU-1	NO _x Absorber and Thermal Oxidizer	TOC Control Efficiency; Minimum firebox temp.	40 CFR 60.664a and 40 CFR 60.704a	Initial; Subsequent no later than 60 calendar months	1 or 1A; 2, 2A, 2C, or 2D; 3A; 18;	Reduce TOC (minus methane and ethane) by 98 wt% or to 20 ppmv	TBD	TBD	TBD	TBD

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
TNT-1	Thermal Oxidizer	CO EF, Control Efficiency	401 KAR 52:020, Section 10 to preclude 401 KAR 51:017	Initial; Subsequent no later than 60 calendar months	1 or 1A; 2, 2A, 2C, or 2D; 3A; 10 or 10B;	Source-wide CO <90 tpy	TBD	TBD	TBD	TBD
TDU-1	DSI, BAG, HEP, SCR	Comprehensive PT (Comp PT): OPLs	40 CFR 63.1207	Initial; Subsequent no later than 61 months after commencing the previous CPT	Specified by 40 CFR 63.1208 (b)	Specified by 40 CFR 63.1219 (b) and (c)	TBD	OPLs established according to 40 CFR 63.1219: TBD	TBD	TBD
TDU-1	DSI, BAG, HEP, SCR	Confirm-atory PT	40 CFR 63.1207	No sooner than 18 and no later than 31 months after commencing the previous Comp PT	Specified by 40 CFR 63.1208 (b)	Specified by 40 CFR 63.1219 (b) and (c)	TBD	N/A	TBD	TBD

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
90 tpy each of CO, NO _x , PT/PM ₁₀ /PM _{2.5} and SO _x emissions	401 KAR 52:020, <i>Title V permits</i> ; To preclude major source status under 401 KAR 51:017	Source-wide

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 59:015 , <i>New indirect heat exchangers</i>	017, 019, UTIL-1
401 KAR 59:020 , <i>New incinerators</i>	TDU-1
401 KAR 60:005, Section 2(2)(d) , 40 C.F.R. 60.40c through 60.48c (Subpart Dc), <i>Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units</i>	019, UTIL-1
401 KAR 60:005 Section 2(2)(s) , 40 C.F.R. 60.110c through 60.117c (Subpart Ke), <i>Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023</i>	RMH-1A
401 KAR 60:005, Section 2(2)(iii) , 40 C.F.R. 60.480b through 60.489b, (Subpart VVb), <i>Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023.</i>	RMH-1B
401 KAR 60:005, Section 2(2)(yyy) , 40 C.F.R. 60.660a through 60.670a, Tables 1 through 4 (Subpart NNNa), <i>Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023.</i>	ARU-1
401 KAR 60:005, Section 2(2)(dddd) , 40 C.F.R. 60.660a through 60.670a, Tables 1 through 4 (Subpart RRRa), <i>Standards of Performance for Volatile Organic Compound (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes for Which Construction, Reconstruction, or Modification Commenced After April 25, 2023.</i>	TNT-1
401 KAR 60:005, Section 2(2)(oooo) , 40 C.F.R. 60.4200 through 60.4219, Tables 1 through 8 (Subpart IIII), <i>Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.</i>	UTIL-2
401 KAR 60:005, Section 2(2)(eeee) , 40 C.F.R. 60.4230 through 60.4248, Tables 1 through 4 (Subpart JJJJ), <i>Standards of Performance for Stationary Spark Ignition Internal Combustion Engines.</i>	UTIL-3, UTIL-4

Applicable Regulations	Emission Unit
401 KAR 63:002, Section 2(4)(rr) , 40 C.F.R. 63.1200 through 63.1221, Table 1, and Appendix A (Subpart EEE), <i>National Emission Standards for Hazardous Air Pollutants from Hazardous Waste Combustors</i> .	TDU-1
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), <i>National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines</i> .	UTIL-2, UTIL-3, UTIL-4
401 KAR 63:020 , <i>Potentially hazardous matter or toxic substances</i>	007, 009, 010, 012, 013, 014, 017, 019, UTIL-1, RMH-1A, RMH-1B, RMH-2, RMH-4, ARU-1, ARU-2
401 KAR 63:021 , <i>Existing sources emitting toxic air pollutants</i>	005, 006, 007, 008, 011

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 51:017 , <i>Prevention of significant deterioration of air quality</i>	Source-wide

Table D - Summary of Non Applicable Regulations:

None

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS (CONTINUED)

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*

The Division for Air Quality (Division) has performed modeling using SCREEN View on August 6, 2026 and AERMOD on August 10, 2026 of potentially hazardous matter or toxic substances (Acetonitrile; Ammonia; Benzene; Biphenyl; Cumene; Dinitrotoluene; Ethylbenzene; Hexane/N-Hexane; Manganese, Total (as Mn); Methyl Ethyl Ketone; Naphthalene; Nickel, Total (as Ni); Sulfuric Acid; Sulfur Trioxide; Trichloroethylene; Toluene; and Xylenes (M,P,O)) that may be emitted by the facility based upon the process rates, material formulations, stack heights and other pertinent information provided by the applicant. Based upon this information, the Division has determined that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – COMPLIANCE ASSURANCE MONITORING

40 CFR 64, *Compliance assurance monitoring* (CAM) applies to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit if the unit satisfies all of the following criteria:

- (1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 CFR 64.2(b)(1);
- (2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and
- (3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

The permittee has requested source-wide emission limitations of 90 tpy for PT/PM₁₀/PM_{2.5}, CO, NO_x, and sulfur oxides (SO_x) to preclude 401 KAR 51:017. In effect, these source-wide emission limitations also prevent the source from being a major source for Title V applicability purposes, which is the major source definition referred to by 40 CFR 64. The permittee is required to obtain a Title V permit by 40 CFR 63, Subpart EEE and is not a major source for HAPs. Therefore, the three listed criteria do not require evaluation for each pollutant-specific emission unit.

SECTION 6 – PERMITTING HISTORY

Permit	Permit Type	Activity #	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
S-05-151	Initial	APE2050003	7/25/2005	11/29/2005	Initial Operating Permit	N/A
S-05-151 R1	Minor Revision	APE20130001	10/19/2013	12/20/2013	Replacement of a nitric acid tank	N/A
S-15-055	Renewal	APE20150001	6/10/2015	10/26/2015	Permit Renewal	N/A
S-15-055 R1	Revision	APE20160001	11/16/2016	2/24/2017	Addition of a PE Blending operation to Insignificant Activities	N/A
S-15-055 R2	Revision	APE20200003	2/3/2021	7/27/2021	Addition of an existing 1.05 mmBtu/hr boiler and 8 Insignificant Activities.	N/A
	Revision	APE20210001	3/19/2021		Removal of 8.37 mmBtu/hr boiler and addition of a new 39.5 mmBtu/hr temp boiler	N/A
S-15-055 R3	Revision	APE20210002	8/26/2021	12/3/2021	Removal of temp boiler and addition of 10.5 mmBtu/hr boiler	N/A
S-25-064	Renewal	APE20250001	7/11/2025	11/14/2025	Renewal Permit. Removed Fuel Oil as secondary fuel for emission unit 019. Updated processes of emission units 006, 007, 008, 009, 010, 013. Removed 401 KAR 63:021 limitation for Sulfuric Acid.	N/A

SECTION 7 – PERMIT APPLICATION HISTORY

N/A

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS	– Ambient Air Quality Standards
As	– Arsenic
BACT	– Best Available Control Technology
Be	– Beryllium
Btu	– British thermal unit
CAM	– Compliance Assurance Monitoring
CE	– Control Efficiency
CEMS	– Continuous Emissions Monitoring System
Cd	– Cadmium
CO	– Carbon Monoxide
Cr	– Chromium
Division	– Kentucky Division for Air Quality
DRE	– Destruction and Removal Efficiency
Dscf	– Dry standard cubic foot
Dscm	– Dry standard cubic meter
ESP	– Electrostatic Precipitator
GHG	– Greenhouse Gas
g	– Gram
gr	– Grain
HAP	– Hazardous Air Pollutant
HCl	– Hydrogen Chloride
HF	– Hydrogen Fluoride (Gaseous)
Hg	– Mercury
LVM	– Low volatile metal
MSDS	– Material Safety Data Sheets
mmHg	– Millimeter of mercury column height
NAAQS	– National Ambient Air Quality Standards
NESHAP	– National Emissions Standards for Hazardous Air Pollutants
NO _x	– Nitrogen Oxides
NSR	– New Source Review
OPLs	– Operating Parameter Limits
Pb	– Lead
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
POHC	– Principle Organic Hazardous Constituent
PSD	– Prevention of Significant Deterioration
PTE	– Potential to Emit
Se	– Selenium
SO ₂	– Sulfur Dioxide
SVM	– Semivolatile metal
TEQ	– Toxic Equivalents (see definition in 40 CFR 63.1201(a))
TF	– Total Fluoride (Particulate & Gaseous)
µg	– Microgram
VOC	– Volatile Organic Compounds

APPENDIX B – INDIRECT HEAT EXCHANGER EMISSIONS LIMITATIONS

EU	Fuel	Capacity (MMBtu/hr)	Construction Date	Notes/ Removal Date	Basis for PM Limit	Total Heat Input Capacity for PM Limit (MMBtu/hr)	Basis for SO₂ Limit	Total Heat Input Capacity for SO₂ Limit (MMBtu/hr)
015	Natural Gas; #2 Fuel Oil	8.37	1981	Out of Commission March 2021	401 KAR 59:015 Section 4(1)(a)	8.37	401 KAR 59:015 Section 5(1)(c)2.	8.37
017	Natural Gas	1.05	March 2000	-	401 KAR 59:015 Section 4(1)(a)	9.42	401 KAR 59:015 Section 5(1)(b)1.	9.42
018	Natural Gas	39.5	March 18, 2021	Removed September 2021	401 KAR 59:015 Section 4(1)(c)	40.55	401 KAR 59:015 Section 5(1)(c)2.b.	40.55
019	Natural Gas	10.5	September 2021	Removed No. 2 Fuel Oil APE20250001	401 KAR 59:015 Section 4(1)(c)	11.55	401 KAR 59:015 Section 5(1)(c)2.b.	11.55
UTIL-1	Natural Gas	34.7	Proposed (Dec. 2026)	-	401 KAR 59:015 Section 4(1)(c)	46.25	401 KAR 59:015 Section 5(1)(c)2.b.	46.25