

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: On-site Inspection

N084269241

FACILITY: Gage Products Company		SRN / ID: N0842
LOCATION: 625 Wanda Avenue, FERNDALE		DISTRICT: Warren
CITY: FERNDALE		COUNTY: OAKLAND
CONTACT: Julie Mileskiy , Environmental Manager		ACTIVITY DATE: 08/30/2023
STAFF: Iranna Konanahalli	COMPLIANCE STATUS: Compliance	SOURCE CLASS: SM OPT OUT
SUBJECT: FY 202 SM (former ROP) CMS Scheduled Inspection of Gage Products Company ("Gage"), located at 625 Wanda St. FERNDALE, MI 48220-2657.		
RESOLVED COMPLAINTS:		

Gage Products Company (N0842)
625 Wanda St.
FERNDALE, MI 48220-2657

Operations: Gage operates at 515, 625, 721 & 821 Wanda Avenue, Ferndale (Oakland County: # 63). Besides, **Dell Marking Systems**, who rents property from Gage Products Company, is also located on-site. Dell performs its independent, sparate and distinct ink manufacturing operations.

NAICS Code: **325998** All Other Miscellaneous Chemical Product and Preparation Manufacturing.

Contacts:

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Active permit: AQD issued ROP (< 90 tpy) & NESHAP / MACT (specifically NESHAP / MACT **DD** or **2D**) Synthetic Minor Permit-to-Install (PTI) No. **64-18B** (Paul Schleusener) dated May 30, 2019, upon voiding **MI-ROP-N0842-2013** (Void: May 24, 2019), because US EPA's once-in-always-in (OIAI) has been rescinded effective February 08, 2018.

Once-in-Always-in [OIAI] Policy: According to May 16, 1995, EPA memorandum entitled “Potential to Emit for MACT Standards – Guidance on Timing Issues” from John Seitz, Director of OAQPS, Major Sources of HAPs on the “first compliance date” are required to comply permanently with the applicable MACT standard to ensure that maximum achievable reductions in toxic emissions are achieved and maintained. In other words, in order not to be a major source, the company should have obtained federally enforceable permit limiting its potential-to-emit (PTE) below major source threshold for HAPs before the first compliance date (timeliness). In addition, Clean Air Act (CAA), as amended, requires all major sources to obtain a Title V (RO) permit.

2018 US EPA OIAI policy has been repealed / rescinded: Effective on February 8, 2018, As is explained in the US EPA memorandum, the plain language of the definitions of “major source” in CAA section 112(a)(1) and of “area source” in CAA section 112(a)(2) compels the conclusion that a major source becomes an area source at such time that the source takes an enforceable limit on its potential to emit (PTE) hazardous air pollutants (HAP) below the major source thresholds (i.e., 10 tons per year (tpy) of any single HAP or 25 tpy of any combination of HAP). In such circumstances, a source that was previously classified as major, and which so limits its PTE, will no longer be subject either to the major source MACT or other major source requirements that were applicable to it as a major source under CAA section 112. The guidance signed on January 25, 2018, supersedes that which was contained in the May 1995 Seitz Memorandum.

As a result of the repeal of **OIAI policy** and subsequent issuance of ROP NESHAP / MACT Synthetic Minor Permit-to-Install (PTI) No. **64-18B** dated May 30, 2019, Gage Products is NOT subject to Major NESHAP / MACT including **NESHAP / MACT DD** (40 CFR 63 Subpart DD) National **Emission Standards for Hazardous Air Pollutants: Off-Site Waste and Recovery Operations (OSWRO)**.

NOT subject to NSPS Kb: Gage replaced eight storage tanks that are now covered by PTI No. 64-18B. None of the existing tanks are subject to the federal New Source Performance Standard (NSPS) for storage tanks in 40 CFR Part 60, Subpart Kb Subpart (Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced before July 23, 1984. Nor are any of the new tanks subject to NSPS Kb. All the new tanks are smaller than the minimum capacities of NSPS Kb standard.

Subject to NSPS Kb: : EUTank69, EUTank71, EUTank78, EUTank79, EUTank80, EUTank81 (FGNSPSLargeTanks). VOC emissions from the tanks are controlled by a Condenser System (CDFUELSCOND)

Condensers (2): In the entire Gage plant, there are two (2) condensers in all. Each condenser (one large FUELS and one small REMANUFACTURING based upon Heat Transfer (HT) surface area) is a counter-current Shell and Tube Heat Exchanger (S&THE) with chilled ethylene glycol (30-40%). Et. Glycol, a solute, is added for the purposes of especially *freezing point depression* (to prevent freezing in winter months) and *boiling point elevation* as well. Each temperature change (ΔT_b (K_b) & ΔT_f (K_f)) is proportional to the molality of the solution m (moles per kg), where K_b & K_f are proportionality constants. As explained later in this report, gas exhaust temperature does NOT meet the permit limit but, however, chilled Ethylene Glycol outlet meets its separate temperature limit.

Sec. 114 letter: US EPA (Michael D. Harris, Region 5) requested information pursuant to the Section 114(a) of Clean Air Act to determine whether the emission source is complying with 40 C.F.R Part 60, Subparts Kb, VV (Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry Mod after January 5, 1981, and before November 8, 2006), VVa (Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry Mod after November 7, 2006), and NNN or 3N (Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (SOCMI) Distillation Operations). The information requested is mostly about emissions test for FUELS condenser (CDFUELSCOND). The test is required determine the control efficiency of the tank's condenser by quantifying the mass emission rate of volatile organic compounds (VOC) at the condenser **inlet** and at the condenser **outlet** during maximum loading conditions while routing all VOC vapors and gases discharged from each tank to the tanks condenser. The test is pending as of September 2023. US EPA has not approved the test protocol yet (September 2023). On September 22, 2023, Gage submitted a revised protocol per US EPA request. RWDI is performing the test via inlet & outlet concentration and mass measurements of VOC. EGLE-AQD has determined in its permitting process that equipment leak standards are not applicable.

NSPS Dc boilers: The boilers (2: natural gas-fired Cleaver Brooks boilers, each with a design heat input rating of 29.3 million Btu's per hour.) are subject to federal New Source Performance Standards (NSPS Dc) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). Only NSPS Dc requirement for pipeline quality natural gas fired boilers (no fuel oil backup) is fuel natural gas usage recordkeeping. Gage complies with this requirement via annual MAERS submittal.

NESHAP / MACT 6J: Two (2) steam boilers (EUBOILER1 & EUBOILER2) may be subject to: NESHAP / Boiler MACT / MACT 6J, 40 CFR Part 63, Subpart JJJJJJ / 6J National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers, Page 15554, Federal Register / Vol. 76, No. 54 / Monday, March 21, 2011 / Rules and Regulations / Final rule. This rule does NOT apply to boilers that burn only gaseous fuels or any solid waste. This NESHAP / MACT 6J rule does NOT apply to boilers that burn only gaseous fuels or any solid waste. A gas-fired boiler that periodically fires liquid fuels during gas curtailment and supply emergencies or for periodic (not to exceed a total of 48 hours during any calendar year) testing is still considered a gas-fired boiler. AQD has decided not to take delegation of the area source MACT standards and, therefore, no attempt has been made to evaluate the Gages's compliance with NESHAP / MACT 6J.

The following notification requirements may apply:

1. Initial Notification: no later than September 17, 2011
2. Notification of Compliance Status subject to tune-ups: No later than July 19, 2012

On **August 30, 2023**, I conducted a level-2 **FY 202 SM** (former ROP) **CMS Scheduled Inspection** of Gage Products Company ("Gage"), located at 625 Wanda St., FERNDALE,

MI 48220-2657. The inspection was conducted to determine compliance with federal Clean Air Act; Article II, Part 55, Air Pollution Control, of the Natural Resources and Environmental Protection Act, 1994 PA 451; Michigan Department of Environment, Great Lakes and Energy, Air Quality Division (EGLE-AQD) administrative rules; and Permit-to-Install (PTI) No. **64-18B** dated May 30, 2019, upon voiding **MI-ROP-N0842-2013** (Void: May 24, 2019), with nearly 90 tons of VOC per year VOC limit.

During the inspection, **Byron Beatie**, Director of EHS & Community Relations and **Julie Milesky** Environmental Manager, assisted me. Milesky is responsible for keeping the records.

Founded in 1936 and headquartered in Ferndale, Michigan, Gage's fully licensed Resource Conservation and Recovery Act (RCRA Part B) facility remanufactures chemical waste and "off-spec" solvent streams to original product specifications. Gage principally serves automotive assembly plants by helping automotive manufacturers recycle clean-up and purge solvents of assembly and body painting operations especially e-coat, primer surfacer (PS), basecoat (BC), clearcoat (CC).

Purge solvents laden with paint solids and dirt are received from automakers' typically from car/truck assembly plants. The purge solvents are processed and purified to clean purge solvents standards and returned to automakers for reuse in the assembly plants as clean-up and purge solvents. The purge solvents never become fuels and Gage's automotive fuels business is a separate small-scale blending operation.

Gage is first confirmed Recyclers of hazardous secondary material (HSM) from paint-system waste material and the first verified recycler in the state of Michigan. Gage is a US EPA Resource Conservation and Recovery Act (RCRA) Hazardous Waste Recycling facility with ISO 17025:2017 accreditation. Gage promotes environmentally sustainable manufacturing via purge / clean-up solvent remanufacturing and toll blending systems. Gage serves most automakers (e.g., Ford Motor Company, General Motors, FCA Fiat-Chrysler, Honda, Renault-Nissan, Volkswagen, Honda, Toyota, KIA, Hyundai, Aston Martin, Bentley, Ferrari, Daimler AG, Land Rover, Jaguar, BMW, Subaru, Mitsubishi, Suzuki, Volvo, Tesla) for their purge / clean-up solvent recycling needs. Gage also serves Tier-2 auto suppliers such as Flex-N-Gate, Lacks Trim, Magna, etc. Gage, in addition, has alliances with a numerous major paint suppliers such as BASF, PPG.

Gage purchases raw materials, specifically from petroleum refineries, to manufacture custom fuels for emission-control testing. Gage installed a new octane testing lab, which commenced operation on January 6, 2020. The laboratory uses two small tabletop engines for octane testing different fuel blends. The tabletop octane testing engines appear to be exempt from R 336.1201 per R 336.1283(2)(b) because the engines are laboratory equipment. Julie stated that the potential-to-emit (PTE) from these engines is less than one ton per year. The **Octane** testing laboratory equipment is hardly used as all testing occurs at automakers' test facilities.

Gage Products Company provides a variety of toll manufacturing solutions as well.

Gage owns and operates:

1. Blending organic solvents to produce purge solvents for automotive paint operations.

2. Tank farm with storage and blend tanks (including five limited storage hazardous waste tanks). Gage does **not** have RCRA TSDf Permit with < 90 days storage limit.
3. Product filling
4. Tote cleaning
5. Tanker truck cleaning
6. Remanufacturing used purge solvents including the following equipment:
 - Two thin-film evaporators
 - Distillation unit
 - Two natural gas-fired boilers
7. Blending specialty cleaning and chemical materials (including fuels), both water and solvent

PTI No. 64-18B Emission Units (EUs)

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification	Flexible Group ID
EUTank69	97-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb.	1987	FGNSPSLargeTanks, FGTANKFARM
EUTank70	101-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb.	1987	FGTANKFARM
EUTank71	101-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb.	1987	FGNSPSLargeTanks, FGTANKFARM
EUTank78	130-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb.	1998	FGNSPSLargeTanks, FGTANKFARM
EUTank79	130-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb.	1998	FGNSPSLargeTanks, FGTANKFARM
EUTank80	130-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb.	1998	FGNSPSLargeTanks, FGTANKFARM
EUTank81	130-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb.	1998	FGNSPSLargeTanks, FGTANKFARM
The above, as noted, are	NSPS Kb tanks		
EUTANKS	Tanks used for several purposes including blending raw materials and storing products and	1/1/1975 5/30/2019	FGTANKFARM

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
	wastes of the remanufacturing process. Tanks included in this emission unit are ID numbers 1-24, 28, 32-40, 52-68, 77, 90 and 91.		
EUTANKS: Not NSPS			
EUDRUMFILLING	Filling operation in 1, 2 and 5 gallon pails, and 55 gallon drums. The products are filled and shipped off.	1/1/1975	FGTANKFARM
EUTOTEFILLING	Tote filling operations.	1/1/1975	FGTANKFARM
Vapor balance system is used when required based upon vapor pressure (VP)			
EUTANKERFILLING	Filling product into tanker operations.	1/1/1975	FGTANKFARM
Trucks: Vapor balance if required based upon vapor pressure of organic liquid.			
EUOLDEVAPORATOR	Thin film evaporator system used to recycle a variety of blended solvents.	1/1/1987	FGREMANUFACTURE
EUNEWEVAPORATOR	Thin film evaporator system used to recycle a variety of blended solvents.	11/01/1993	FGREMANUFACTURE
Thin film evaporators (of four, two old (1987) TFEs are permanently idled in-situ for about 10 years) are first step to separate solvents from solids. Next step is distillation to remove undesirable light ends such as methanol. Two old thin film evaporators (1987) are not used at all in the past decade. Only new (1993) thin film evaporators (Nos. 1 & 2) are used. The emissions from thin film evaporators and distillation are vented to REMANUFACTURING chilled Ethelene Glycol condenser. Thin-film evaporator (TFE) employs a continuous distillation / evaporation technology. Dirty solvents fall as a thin film via gravity (usually) in pipes and heat is transferred utilizing steam to supply mandatory latent heat / enthalpy of evaporation. Evaporated solvents are condensed and recycled as purge / clean up solvents for auto assembly plants. Heavy ends and solids are disposed of as RCRA Waste. An agitated thin film evaporators (ATFE) technology is also available. For ease of cleaning via high velocity detergent water, tube side almost always has dirty fluid. In brief, such an evaporator is a heat exchanger (HE). HE must be periodically cleaned to maintain economical overall heat transfer coefficient (U). Like vacuum distillation in petroleum refining, vacuum may be applied to TFE to reduce boiling points when needed for heat sensitive materials. Concentrate is taken out from the bottom.			
Vertical and horizontal thin-film evaporators may use cylindrical and conical heating jackets as well to supply mandatory enthalpy of evaporation. Vacuum may be applied to reduce boiling points (BP).			
EUDISTILLATION	Distillation unit for processing product from the thin film evaporators and remanufacturing incoming material. A primary condenser is integral to the design of this emission unit. This emission unit includes the receiver tanks that hold	1/1/1987	FGREMANUFACTURE

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
	distillation product before transfer to EUTANKS.		
Lighter ends are separated out before shipping out purge solvents. Methanol, IPA, acetone, etc.			
EUSPECIALTY	Specialty products manufacturing including water-based cleaners, solvent-based cleaners, booth coatings, strippers, and fuel blending.	1/1/1987	FGSPECIALTY
EUBOILER1	Cleaver Brooks boiler with a design heat input rating of 29.3 million Btu's per hour. The boiler is capable of burning natural gas, and liquid fuels as noted in FGBOILERS.	9/1/1992	FGBOILERS
EUBOILER2	Cleaver Brooks boiler with a design heat input rating of 29.3 million Btu's per hour. The boiler is capable of burning natural gas, and liquid fuels as noted in FGBOILERS.	9/1/1992	FGBOILERS

NSPS Dc Boilers. NG only. No fuel oil backup.

As the boilers (EUBOILER1 & EUBOILER2) were installed in CY 1992 (after June 9, 1989); The boilers (Nos. 1 & 2) are subject to federal New Source Performance Standards (NSPS Dc) for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR, Part 60, Subpart Dc). In addition, pursuant to Rule 336.1282((2)b)(i), the boilers burning sweet natural gas (up to 50 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install). Pursuant to Rule 336.1282(2)(b)(ii), the fuel oil fired boilers (up to 20 million BTU per hour) are exempt from Rule 336.1201 (Permit-to-Install) subject to the condition that fuel oil (limited to No.1 and No.2) burnt has sulfur content no greater than 0.40 percent by mass

Nevertheless, the boilers are part of the permit as ROP out requirement.

Boiler Nos. 1 & 2 are **not** capable of burning liquid fuels. Gage complies with NSPS Dc recordkeeping via submitting NG usage and corresponding combustion products emissions to MAERS / MIENVIRO.

EU515TKS	5,000-gallon storage tanks 25, 26, 27, 29, 30, and 31 and 7,500-gallon storage tank 93 located inside the 515 Building used for storage of lower vapor pressure materials (cyclohexane and materials with a vapor pressure of not more than 1.5 psia at actual storage conditions). The conservation vents are	2011	FGTKS, FGFUELBLEND
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Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
	set at 0.5 psi to reduce emissions.		
	The tanks are located 515 Wanda St.		
EUHIVPTKS	13,000-gallon storage tanks 209 and 210 located in the southwest corner of the Western Jewell Containment Area used to store high vapor pressure materials, like isopentane and natural gasoline. The conservation vents are set at 10 psi and routed to the vent condenser to reduce emissions; this also controls the filling losses.	2008	FGTKS, FGFUELBLEND
EU9600TKS	9,600-gallon storage tanks 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, and 222 located in the Western Jewell Containment Area. The conservation vents are set at 0.5 psi and routed to the vent condenser to reduce emissions; this also controls the filling losses.	2009	FGTKS, FGFUELBLEND
	About 40 conservation vents are controlled by FUELS condensers (CDFUELSCOND).		
EU9600BLEND	9,600-gallon blending tanks 229, 231, 232, 233, 234 and 235 located in the existing tank farm. The conservation vents are set at 0.5 psi and routed to the vent condenser to reduce emissions; this also controls the filling losses.	2010	FGBLEND, FGFUELBLEND
EUNEBLEND	1,000-gallon blending tank 661 and 1,800-gallon blending tanks 662 and 663 located in the northeast corner of the main tank farm. The conservation vents are set at 0.5 psi and routed to the vent condenser to reduce emissions; this also controls the filling losses.	2008	FGBLEND, FGFUELBLEND
EU515BLEND	Four 7,500-gallon blending tanks 92, 94, 95 & 96 located in the 515 building.	2010	FGBLEND, FGFUELBLEND
EUTOTE&DRUM	Tote and drum filling of diesel fuel products from FGFUELBLEND.	2008	FGFUELBLEND

Emission Unit ID	Emission Unit Description (Including Process Equipment & Control Device(s))	Installation Date / Modification Date	Flexible Group ID
EUTANKER	Emissions are released through the drum packaging local exhaust system. Tanker truck filling. Emissions from filling trucks with fuel blends with a Reid vapor pressure equal to or greater than 4.0 psia and which are used for automotive fuel are routed to the vent condenser.	2009	FGFUELBLEND
EU2000BLEND	Three 2,000-gallon blending tanks (tank numbers 255, 256, and 257) located in Fill House #4 on the 731 Wanda St. building. The conservation vents are set at 2.5 psig pressure and 1.5 inches of water vacuum. The tanks vent to a common drop-out tank outside of Fill House #6. Truck transfers into and out of the tanks are controlled by a vapor balance system.	2016	FGSPECIALTY
EU33KTKS	33,000-gallon storage tanks 203, 204, 205, 206, 207, and 208 located west of the 515 Building. The tanks are connected to a closed-vent system at the outlet of the conservation vent. The conservation vents are set at 12.5 psi and routed to a drop out tank (receiver) and fuel condenser to control emissions from filling and breathing losses.	2016	FGTKS, FGFUELBLEND

Both heavy ends (practically solids) and light ends go the waste tanks (90-day RCRA storage limit as Gage does not possess TSDF permit). Distillation unit (Fill House No. 2 or REMANUFACTURING) is used to separate light ends (non-recyclables) from recyclable purge / clean-up solvents.

PTI No. 64-18B, EUTank70 (FGTANKFARM)

101-cubic meter capacity storage tank used to store product and subject to 40 CFR Part 60, Subpart Kb or **NSPS Kb**.

VOC control: Conservation vents (Vent Condenser or Fuels Condenser)

Gage Products provided records of the dimensions of EUTANK70 and an analysis showing the capacity. Gage Products is required to maintain records of the Volatile Organic Liquid (VOL) stored in each tank when storing a liquid with a maximum true vapor pressure greater than or equal to 15.0 kPa. Per the records provided, EUTank70 is only used to store product WR0134, which has a vapor pressure of 5.33 kPa (PTI No. 64-18B EUTank70, VI.2: 5.33 (actual) << 15.0 (limit) kPa). The VENTS are safety vents designed to release pressure to ward off explosion.

Gage **never** stored in the tank an organic liquid with true vapor pressure that is anywhere near 27.6 kPa, and hence Gage never notified AQD. (PTI No. 64-18B EUTank70, VII.1: notification when storing VOL VP \geq 27.6 kPa)

PTI No. 64-18B, EU-TOTE&DRUM

EU-TOTE&DRUM: Tote and drum filling of diesel fuel products from FGFUELBLEND. Emissions are released through the drum packaging local exhaust system.

No VOC control.

Gage has developed and implemented written procedures to minimize emissions from EUTOTE&DRUM, including line draining, spill prevention, and spill clean-up. Gage keeps monthly and annual records of the amount and vapor pressure of each product group. Gage calculates VOC emission rate from EUTOTE&DRUM monthly and annual basis.

May 2023: The emissions from gasoline-like (154 kgal) and diesel (20 kgal) filling operations are: 152 & 0.0 pounds of VOC per annum based upon May 2023..

PTI No. 64-18B, EU-TANKER

EU-TANKER (F-GFUELBLEND): Tanker truck filling. Emissions from filling trucks with fuel blends with a Reid vapor pressure (RVP) equal to or greater than 4.0 psia and which are used for automotive fuel are routed to the vent condenser.

VOC Control: Vent condenser system (CDFUELSCOND) and vapor balance system for transfers to tanker trucks of fuel blends with a Reid vapor pressure equal to or greater than 4.0 psia and which are used for automotive fuel.

The vent CDFUELSCOND condenser system installed and operational. The vent condenser is located near the LSF covered area and the chiller is adjacent to the boiler building. Submerged fill pipe requirement is achieved by filling all tankers from the bottom of the tanker truck.

May 2023: The emissions from tank filling operations are: 526 pounds of VOC per annum based upon May 2023 (765 kgal filled in 12-mo period ending May 2023).

PTI No. 64-18B, FG-NSPSLargeTanks

FG-NSPSLargeTanks (EUTank69, EUTank71, EUTank78, EUTank79, EUTank80, EUTank81): Storage tanks used to store product. Each tank in this flexible group has capacity between 75 and 151 cubic meters and is subject to 40 CFR Part 60, Subpart Kb.

VOC Control: Condenser system (CDFUELSCOND)

These NSPS Kb tanks are used to store products and waste from the remanufacturing processes involved in cleaning up dirty purge solvents such that the solvents are resold to automakers. The tanks are equipped with a closed vent system ducted to Ethelyn Glycol chilled condenser (CDFUELSCOND).

PTI No. 64-18B, FG-TANKFARM

FG-TANKFARM (EUTank69, EUTank70, EUTank71, EUTank78, EUTank79, EUTank80, EUTank81, EUTANKS, EUDRUMFILLING, EUTOTEFILLING, EUTANKERFILLING): Tank farm operation used for several purposes including blending raw materials, as well as storing products and wastes of the remanufacturing process. Tanks included in this emission unit are ID numbers 1-40, 52-71, 77-81, 90 and 91. Also included in this flexible group is the activity of filling 1, 2, 5 gallon pails, 55 gallon drums, totes, and tankers.

VOC Control: Conservation vents and vent condenser system (CDFUELSCOND) for Tanks 2, 3, 6, 7, 8, 9, 10, and 11. In all 40 vents are controlled.

PTI No. 64-18B, FG-TANKFARM, I.1-2

Pollutant	Limit	Time Period / Operating Scenario	Equipment	12-mo period ending in May 2023
1. VOC	22.0 tpy	12-month rolling time period as determined at the end of each calendar month	FG-TANKFARM	1,764 pounds (0.9 tons) of VOC 776 pounds (0.4 tons) of HAPs The emissions are based upon 25,122,662 gallons of throughput
2. Acetone	12.5 tpy ¹	12-month rolling time period as determined at the end of each calendar month	FG-TANKFARM	NA

PTI No. 64-18B, FG-TANKFARM, II.1

Material	Limit	Time Period / Operating Scenario	Equipment	12-mo period ending in May 2023
1. Total throughput*	58,124,000 gallons per year	12-month rolling time period as determined at the end of each calendar month	FG-TANKFARM	25,122,662 gallons of throughput Rounded to 25 << 58 million gallons

*Total throughput consists of the sum of the following quantities:

1. The amount of remanufacturing material received
2. The amount of remanufacturing material reclaimed
3. The amount of tank farm materials received
4. The amount of material blended
5. The amount of material packaged for shipment (product, not waste)
6. The amount of waste produced.

For each tank listed above conservation vent, the closed vent system, and the vent condenser system (CDFUELSCOND) are installed, maintained, and operated properly. After condensation control, the emissions are discharged via a stack known as SVFuelsCond (29.5')

PTI No. 64-18B, FG-BOILERS

FG-BOILERS (EUBOILER1, EUBOILER2): Two natural gas-fired Cleaver Brooks boilers, each with a design heat input rating of 29.3 million Btu's per hour.

The boilers can burn only pipeline quality sweet natural gas.

CY 2022: Gage burned in the boilers 37 MM SCF per year. Hence, Gage complying with NSPS Dc recordkeeping requirements for NG boilers.

The emissions of combustion products are discharged via 30-foot stacks known as SVBOILER1 & SVBOILER2.

PTI No. 64-18B, FG-REMANUFACTURE

FG-REMANUFACTURE (EU-OLDEVAPORATOR, EU-NEWEVAPORATOR, EUDISTILLATION) : Two thin film evaporators used to recycle a variety of blended solvents, and one distillation unit for processing product from the thin film evaporators and for remanufacturing incoming material.

As explained before, only new TFE (2) are used. The old units / TFE (2) are permanently idle in-place. The first thin film evaporator performs the gross step of separating the liquids from the solids. The second thin film evaporator removes water and distills the reclaimed solvent mix into fractional (typically not pure) components.

VOC Control

CDREMANCOND consists of two vacuum condensers, one associated with EUOLDEVAPORATOR/EUDISTILLATION and one associated with EUNEWEVAPORATOR. These emissions from the control condensers both exhaust to CDREMANFINALCOND.

CDREMANFINALCOND serves as the final condenser for EUOLDEVAPORATOR, EUNEWEVAPORATOR, and EUDISTILLATION.

Condensers (ethylene glycol chilled heat exchangers) serve a closed vent system. Each solvent recovery unit has separate Et. Glycol chilled heat exchanger / condenser.

PTI No. 64-18B, FG-REMANUFACTURE, I.1

Pollutant	Limit	Time Period / Operating Scenario	Equipment	12- mo ending in May 2023 Same units as the limit
1. VOC	3.5	Daily average determined by		1.1

Pollutant	Limit	Time Period / Operating Scenario	Equipment	12- mo ending in May 2023 Same units as the limit	
	pounds per hour	dividing daily emissions by hours of operation.	EUOLDEVAPORATOR, EUNEWEVAPORATOR, EUDISTILLATION		
2. VOC	12.1 tpy	Twelve month rolling time period as determined at the end of each calendar month.	EUOLDEVAPORATOR, EUNEWEVAPORATOR, EUDISTILLATION	2.65	

The monitoring system has been updated from an old-fashioned paper strip chart recorder to a state-of-the-art digital monitoring system with flat-screen displays, recordkeeping, and alarms. The electronic data logging system indicated the exhaust gas temperature of CDREMANFINALCOND was 43 < 54 ° F. The data logger has been installed and operating since 2013. The paper chart is still present as a backup.

During the inspection, Julie stated: Vent daily average outlet = 42 °F & glycol = 37 °F.

November 2013 stack test for combined TFE and distillation column emissions are: 0.391 < 3.5 pounds of VOC per hour based upon 1.747 ACFM 1.753 SCFM, 32,943 ppmv (Previously issue MI-ROP-N0842-2013 for Gage Products of Ferndale, Michigan. Stack sampling by H & H Monitoring, Inc. HHMI Project No. 0913-004 of December 2023).

VOC emissions are discharged via 37-foot stack known as SV-REMANUFACTURE

PTI No. 64-18B, FG-SPECIALTY

FG-FGSPECIALTY (EU2000BLEND, EUSPECIALTY): Specialty manufacturing processes consisting of storage totes, dispensers, agitators, mixers, and a baghouse, also including specialty products manufacturing including water-based cleaners, solvent-based cleaners, booth coatings, strippers, and fuel blending located in Fill Houses 3, 4, and 6 and in the laboratory, all on the 731 block. Equipment in this flexible group is not authorized to process material that is hazardous waste under state or federal law.

FG-SPECIALTY consists of storage totes, dispensers, agitators, mixers, and a baghouse, also including specialty products manufacturing including water-based cleaners, solvent-based cleaners, booth coatings, strippers, and fuel blending located in Fill Houses 3, 4, and 6 and the laboratory, all on the 731 block.

Small batch products. Gasoline and fuel blending. Water borne products.

VOC control:

EU-SPECIALTY:

1. CDBAGHOUSE for Fill House #6
2. Vapor balance when loading materials with Reid vapor pressure of 4.0 psia (27, 579 pascal (Pa) / 27.579 kPa) or greater.

EU-2000BLEND:

1. Conservation vents
2. Vapor balance system for truck transfers into and out of the blending tanks

PTI No. 64-18B, FG-SPECIALTY, I.1

Pollutant	Limit	Time Period / Operating Scenario	Equip	12- mo ending in May 2023	
1. VOC	8.0 tpy	Twelve month rolling time period as determined at the end of each calendar month.	FG-SPECIALTY	168 Pounds of VOC per month 29 Pounds of HAPs per moth	
2. Particulate Matter	0.10 pound per 1,000 pounds of exhaust gas (calculated on a dry gas basis)	Hourly	FG-SPECIALTY	NA	

PTI No. 64-18B, FG-SPECIALTY, II.1-2

Material	Limit	Time Period / Operating Scenario	Equipment	12- mo ending in May 2023 Same units as the limit	
1. Fuel produced	72,000 gallons per year	Twelve month rolling time period as determined at the end of each calendar month.	EU-2000BLEND	11,554 Rounded: 11.6 << 72 thousand gallons	
2. Total throughput	4,378,250 gallons per year	Twelve month rolling time period as determined at the end of each calendar month.	FG-SPECIALTY	1,599,958 Rounded: 1.6 << 4.4 million gallons	
<p>FGSPECIALTY consists of storage totes, dispensers, agitators, mixers, and a baghouse, also including specialty products manufacturing including water-based cleaners, solvent-based cleaners, booth coatings, strippers, and fuel blending located in Fill Houses 3, 4, and 6 and the laboratory, all on the 731 block. If throughput limits are met, VOC emissions limits deemed to have been met.</p> <p>Small batch products for automakers for testing purposes as refineries do not want to deal with such small laboratory purpose batches. Gasoline and fuel blending. Water borne products.</p>					

VOC emissions are discharged via 20-foot stack known as SV-2000Blend.

PTI No. 64-18B, FG-TKS

FG-TKS (EU515TKS, EU33KTKS, EUHIVPTKS, EU9600TKS)

VOC control:

1. EU515TKS: Conservation vents
2. EU33KTKS, EUHIVPTKS (CDFUELSCOND system), EU9600TKS: CDFUELSCOND

VOC emissions are discharged via 29.5-foot stack known as SV-FuelsCond

Solvent tanks.

Solids (pumpable with 40% solids and rest mostly solvents) are sent to cement kilns for energy recovery.

PTI No. 64-18B, FG-BLEND

FG-BLEND (EU-9600BLEND, EU-NEBLEND, EU-515BLEND): Blend tanks used in fuel blending expansion.

VOC Control

1. EU515BLEND: Conservation vents
2. EU9600BLEND, EUNEBLEND: Vent condenser system (CDFUELSCOND).

The tanks are strictly used for blending materials. No emission limit. No purchased raw material is stored in these tanks. Also, these tanks are not used to mix products from FG-REMANUFACTURE.

May 2023: VOC emissions are 119 (0.0595) & 1,010 (0.505) pounds (tons) per month and per year, respectively, based upon thruputs of 132,841 & 820,041 gallons per month and 12-month period, respectively.

VOC emissions are discharged via 29.5-foot stack known as SV-FuelsCond

PTI No. 64-18B, FG-FUELBLEND

FG-FUELBLEND (EU515TKS, EU33KTKS, EUHIVPTKS, EU9600TKS, EU9600BLEND, EUNEBLEND, EU515BLEND, EUTOTE&DRUM, EUTANKER): Fuel and solvent blending process related to fuel and solvent blending operations. Equipment in this flexible group is not authorized to process material that is hazardous waste under state or federal law.

VOC Control

1. EU515TKS, EU515BLEND: Conservation vents

- EU33KTKS, EUHIVPTKS, EU9600TKS, EU9600BLEND, EUNEBLEND, and the parts of EUTANKER that transfer fuel blends which have a Reid vapor pressure equal to or greater than 4.0 psia and which are used for automotive fuel: Vent condenser system (CDFUELSCOND)

PTI No. 64-18B, FG-FUELBLEND, I

Pollutant	Limit	Time Period / Operating Scenario	Equipment	12- mo ending in May 2023 Same units as the limit
1. VOC	21.0 tpy	12-month rolling time period as determined at the end of each calendar month	FG-FUELBLEND	1.764 tons (3,528 pounds) per 12-month period
May 2023: VOC emissions are based upon thruputs of 126,536 & 1,152,136 gallons per month & per 12-month period.				

I have determined, based upon reasonable inquiry, that the pressure settings on the conservation vents are permanently set by the manufacturer and are not adjustable by Gage.

PTI No. 64-18B, FG-FACILITY

FG-FACILITY: This FG covers all process equipment including equipment covered by other permits, grand-fathered equipment and exempt equipment.

PTI No. 64-18B, FG-FACILITY, I.1-3

Pollutant	Limit	Time Period / Operating Scenario	Equipment	12- mo ending in May 2023 Same units as the limit
1. Each individual HAP	9.9 tons per year	Twelve month rolling time period as determined at the end of each calendar month	FG-FACILITY	0.23 MEK 0.78 Toluene 1.66 MBK 2.08 Xylene 0.62 Ethyl Benzene 0.21 Methanol All in tons per 12-mo period
2. Aggregate HAPs	24.9 tons per year	Twelve month rolling time period as determined at the end of each calendar month	FG-FACILITY	7.33
3. Volatile organic compounds (VOC)	Less than 89.9 tons per year*	12-month rolling time period as determined at the end of each calendar month	FG-FACILITY	1.54 tpm 20.83 << 90 tpy

Pollutant	Limit	Time Period / Operating Scenario	Equipment	12- mo ending in May 2023 Same units as the limit
<p>*The enforceable restrictions that are associated with SC I.3 are found in FGFACILITY and in the special conditions for the following flexible groups:</p> <ol style="list-style-type: none"> 1. FG-TANKFARM 2. FG-REMANUFACTURE 3. FG-SPECIALTY 4. FG-FUELBLEND 				

Condensers (2) temperatures: In the entire Gage plant, there are two (2) condensers in all. Each condenser (one large FUELS and one small REMANUFACTURING based upon HE Heat Transfer (HT) surface area) is a counter-current Shell and Tube Heat Exchanger (S&THE) with chilled ethylene glycol (30-40%) as Heat Transfer Fluid (HTF). The permit allows exhaust temperature to exceed condenser exhaust gas temperature limit of of **42 °F** due to low flow or reverse flow provided chilled glycol outlet temperature of condenser is **30°F** or less. CDREMANFINALCOND also can exceed the limit of **54 °F** (exhaust gas) provided ethylene glycol chilled-water outlet temperature is **37 °F** or less. As stated before, the TEMPERAURE monitoring system has been updated from a paper strip chart recorder to a state-of-the-art digital monitoring system with flat screen displays, recordkeeping, and alarms. The data logger puts red highlighter on the temperature data that does NOT meet the gas exhaust temperature limit. However, NOT meeting vapor exhaust temperature limit is a common occurrence due to reverse flow.

At any rate, REMAN GLYCOL CHILLER EXIT TEMP ≈ 20 °F << **37 °F** and TKFARM GLYCOL CHILLER EXIT TEMP ≈ 5 << **30 °F**. Obviously, exhaust gas temperature is substantially influenced by outside ambient temperatures (about 80 °F in summer and about 30 °F in winter).

The entire temperature data was analyzed for January thru August 2023.

July 2023 temperature data summary in degrees Fahrenheit

REMAN GLYCOL CHILLER VENT TEMP:

MIN = 22.49 MAX = 76.48 RANGE = 53.99 MEAN = 14.7164664 MEDIAN = 34.06 STANDARD DEVIATION (P) = 7.634226016

REMAN GLYCOL CHILLER EXIT TEMP:

MIN = 15.9 MAX = 36.57 < **37** RANGE = 20.67 MEAN = 7.981175403 MEDIAN = 18.7 STANDARD DEVIATION (P) = 3.057520093

TKFARM GLYCOL CHILLER EXIT TEMP:

MIN = 0 MAX = 11.48 < **30** RANGE = 11.48 MEAN = 4.293475806 MEDIAN = 6.85 STANDARD DEVIATION (P) = 2.264826338

TKFARM GLYCOL CHILLER VENT TEMP:

MIN = 0 MAX = 89.41 RANGE = 89.41 MEAN = 44.20052016 MEDIAN
= 67.8 STANDARD DEVIATION (P) = 7.747274194

Conclusion

Gage is in compliance with Synthetic Minor (NESHAP / MACT DD) & ROP opt-out permit (PTI No. 64-18B).

NAME *J. S. Marshall*

DATE September 27, 2023

SUPERVISOR *Joyce*