

DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION
ACTIVITY REPORT: Scheduled Inspection

B546251150

FACILITY: Breitburn Operating L.P. - Rich Field Gas Plant		SRN / ID: B5462
LOCATION: 7770 McTaggart Rd, NORTH BRANCH		DISTRICT: Lansing
CITY: NORTH BRANCH		COUNTY: LAPEER
CONTACT: Eric Hasso , HSE Advisor I		ACTIVITY DATE: 10/29/2019
STAFF: Michelle Luplow	COMPLIANCE STATUS: Compliance	SOURCE CLASS: MAJOR
SUBJECT: Scheduled, announced inspection to determine compliance with MI-ROP-B5462-2014b		
RESOLVED COMPLAINTS:		

Inspected by: Michelle Luplow

Personnel Present: Duane Donnelly, Contractor for FIS/Plant Foreman (duane.donnelly@mavresources.com)

Other Personnel: Eric Hasso, HSE Advisor (eric.hasso@mavresources.com)

Purpose

Conduct an announced, scheduled, partial compliance evaluation (PCE) inspection of Breitburn Operating LP Rich Field Gas Plant site. Compliance was determined with Breitburn's Renewable Operating Permit, MI-ROP-B5462-2014b. This activity was done as part of a full compliance evaluation (FCE).

Facility Background/Regulatory Overview

Breitburn Rich Field has historically been a natural gas sweetening facility. Prior to December 2015, the sour gas produced from Breitburn's tank battery (B7394), located on Mowatt Rd in North Branch, was sent through lines directly to this site to be sweetened via H₂S removal (amine treatment). From the end of December 2015, through the present date, Breitburn has been sending all sour gas from the Mowatt Rd site directly to the Rich Field sweetening facility's flare to be combusted, converting the H₂S in the gas to SO₂. They are a major source, emitting over 15 tons of SO₂ on a monthly basis.

In the 2014 ROP Renewal, EUDEHYDRATOR (glycol dehydration unit), EUCOMP-ENG (natural gas-fired compressor engine), EUCOMP-BACKUP (natural gas-fired back-up engine to EUCOMP-ENG), and EUEMERGENCY-GEN (propane-fired emergency generator) were added to the ROP. These pieces of equipment were exclusively used for sweetening the gas. K. Bodmer, previous plant foreman, said during the last inspection that as of December 29, 2015 gas is no longer sent to the compressor, amine, or acid injection buildings, and therefore these pieces of equipment are no longer being used. During the last inspection, K. Bodmer also mentioned that Breitburn is tentatively considering stimulating the wells they have to increase production, which has also led to discussions of replacing the current amine treatment plant with a new one. I explained to K. Bodmer and sent an email to Carolann Knapp, previous EHS contact, reminding Breitburn to ensure that the tentative change of the amine plant is exempt from a permit to install, and if it is not, to apply for a new PTI for the new installation, prior to the equipment being installed.

MI-ROP-B5462-2014b is currently in-house for renewal and is considered administratively complete. The ROP expired September 18, 2019; however, because Breitburn submitted an administratively complete, timely ROP

renewal application, they have received a permit shield and will continue to operate under MI-ROP-B5462-2014b until their ROP has been renewed.

Within the ROP application, Breitburn requested that EUDEHYDRATOR, EUCOMP-BACKUP, and EUEMERGENCY-GEN be removed from the ROP. During this inspection I verified with Duane Donnelly that all equipment is still able to be operated with a bit of maintenance; therefore, it has been determined that at this time the equipment has not yet been rendered permanently inoperable and therefore all equipment will remain in the ROP until they have been rendered permanently inoperable or removed from the site. Table 1 contains a list of all equipment located onsite and details on why each is not considered dismantled/permanently inoperable.

Breitburn has the potential to emit over 100 tons of SO₂ per year and therefore is considered a major stationary source for PSD.

Inspection

On October 29, 2019 at approximately 9:00 a.m. I met with Duane Donnelly at the McTaggart Road (B5462) site. I provided D. Donnelly with the June 2019 Permit to Install Exemptions Handbook and explained to him that the items listed in this booklet, pending Rule 278 and Rule 278a demonstrations, are not required to obtain air permits. Later in the inspection we drove over to the Mowatt road site, where records are kept, to conduct a records review.

There were slight H₂S odors while onsite; however, non at a hazardous level. D. Donnelly was wearing an H₂S monitor which read 0 ppm while conducting the inspection. Sour gas was being sent to the flare and combusted during the inspection.

Table 1. Equipment located onsite

Equipment	Description	Dismantled?
EUDEHYDRATOR	Glycol dehydration rated at <85,000 scm/day	No All lines are hooked up. Valves just need to be opened in order for the dehydrator to operate. Maintenance may be required for it to operate properly.
EUCOMP-ENG	Ajax DPC 120 natural gas-fired spark ignition engine rated at 120 hp.	No All engines are hooked up; valves are all closed but can be opened to allow for start of the engines. No readiness testing has been conducted on these

<p>EUCOMP-BACKUP</p>	<p>Ajax DPC 280 natural gas-fired spark ignition engine rated at 280 hp. Serves as back-up to EUCOMP-ENG</p>	<p>units; units may require maintenance in order to operate.</p>
<p>EUEMERGENCY-GEN</p>	<p>Propane-fired spark ignition emergency generator rated at less than 50 hp</p>	
<p>Amine Treatment portion of EUGAS-TREATING</p>	<p>Amine plant that uses MDEA to remove H₂S from gas.</p>	<p>No Unit is still hooked up and able to be operated. Valves have been closed, but can be reopened to operate the unit.</p>
<p>EUGAS-TREATING</p>	<p>Gas treating, flare (for tail gas) and underground injection of tail gas</p>	<p>No Gas is being collected from wells at the Mowatt Rd site and sent to this plant for combustion of all gas in the flare</p>

EUGAS-TREATING

All gas is sent directly to the flare and burned. It is no longer treated for H₂S. D. Donnelly verified that they are flaring the gas 24 hours per day, seven days per week. He explained that the gas comes into the sweetening plant through one line from the well field (Mowatt Rd site, B7394) where they currently have 15 active wells and 14-15 injection wells. The gas is sent to a water knockout device before entering the old NaSH building where there is a digital and paper recorder readout system that records the instantaneous gas flow to the flare and the previous day's gas flow to the flare in mcf.

There are currently no Material Limits, Design/Equipment Parameters, or Testing/Sampling for EUGAS-TREATING.

Emission Limits & Monitoring/Recordkeeping

Sulfur dioxide emissions are limited to 2,227 lb/day from the flare. The H₂S concentration in the gas is required to be measured and recorded at least once per hour via gas chromatograph and the volumetric gas flow directed to the flare is required to be continuously measured and recorded. At this time, because there is no gas treatment at this facility, the gas flow coming into the plant is the same gas volumetric flow rate that is being sent to the flare. Appendix 7 of the ROP provides the following equation to be used to calculate daily SO₂ emissions in lb/day, based upon a 24-hour average:

$$\text{SO}_2 \text{ (lb/day)} = V \times (C/100\% \text{ sour gas}) \times (64 \text{ lb SO}_2/\text{mol H}_2\text{S}) \div (380 \text{ scf H}_2\text{S/mol H}_2\text{S})$$

V = inlet gas volume in scf sour gas per day

C = inlet gas hydrogen sulfide concentration in volume % (daily average)

D. Donnelly showed me the calculation that he uses to calculate Breitburns' daily SO₂ emissions:

$$\text{Mcf (flow to flare)} \times 1000 \times [\text{H}_2\text{S mole}\%] \times 0.1684$$

Breitburn uses the H₂S concentration in mole % to calculate emissions. According to AQD permit engineers, mol % and volume % are considered interchangeable when dealing with gases, therefore the use of mol% instead of vol% is acceptable. The equation they use is the same required in the ROP and therefore Breitburn appears to be using the correct equation to calculate their SO₂ emissions.

D. Donnelly said that H₂S concentration data is collected and recorded via gas chromatograph (which provides a real-time computer readout of the percent H₂S concentration) approximately every 15-19 minutes and the computer uses these data points to calculate a daily average, which D. Donnelly uses to calculate the daily SO₂ emissions. This frequency of data collection meets the data collection frequency requirement. During the inspection, I recorded the H₂S concentration from the chromatograph, as well as the instantaneous and previous days gas volumetric flow rates to the flare. See Table 2. I compared the data recorded during the inspection with the data provided in the October 2019 monthly SO₂ report (attached), and it appears that the recorded data is a day off from what is reported via the computer output report (also attached). I have notified Eric Hasso and spoke with D. Donnelly in person concerning this: it appears that the previous day's volumetric gas flow rate is used for the following day's SO₂ calculations. Future SO₂ emissions reports will be closely evaluated to ensure that the gas flow rate is recorded on the correct day.

Additionally, the volumetric flow rate is recorded on a continuous basis via a circular analog chart as well as continuously monitored via digital readout. It was noted during this inspection that Breitburn does not use the tenths place of the flow rate value to calculate SO₂ emissions. I explained to D. Donnelly during the inspection that the calculations should be done using the tenths place of the volumetric flow rate because this will impact the daily SO₂ emissions. For example, on October 14, 2019, the volumetric flow rate was 95.9 mcf, but only 95 mcf was recorded and used in the calculations. This resulted in a difference of approximately 12.5 lbs of SO₂; this alone is not a significant difference, except in cases where the daily SO₂ is close to the 2,227 lb limit. I informed D. Donnelly and emailed Eric Hasso, informing them that the tenths place should be used when calculating daily SO₂ emissions; that not only does it pose a risk for compliance at the daily level, but these emissions would also be underreported in MAERS. Breitburn is required to submit monthly reports on SO₂ daily emissions from the flare. AQD has reviewed all reports as they are received, and all monthly monitoring through November 2019 indicates that Breitburn has remained in compliance with the emission limit. . Breitburn has been well under the 2,227 lb/day limit (averaging approximately 1000 lbs below the daily limit on a daily basis). On average, Breitburn emits over 30,000 lbs (15 tons) of SO₂ per month. I will request from Eric Hasso that in addition to the volumetric

gas flow rate computer print out that Breitburn also begin submitting their daily average H₂S computer print outs as well.

Breitburn is required to use the gas chromatograph at all times to determine H₂S concentration in the gas stream, except in the event of maintenance, repair, or venting of flash gas to the flare. During these instances, an alternative stain-tube method can be used for H₂S determination. When using the stain tubes (Drager tubes) Breitburn must document the reason Drager tubes were used and the length of time they were used. During a previous inspection K. Bodmer said they use Drager tubes to determine the H₂S concentration when the GC is down for maintenance, etc. He said during these times, they check the H₂S concentration twice per day, but also use Drager tubes just after the power has gone out, to get one final reading on the gas while the wells are being shut in. Breitburn reports the reasons why Drager tubes were used within their monthly reports.

D. Donnelly said that Breitburn can control the quantity of gas going to the flare by shutting the casings/tubings on the wells; this will decrease the flow, which ultimately controls the quantity of SO₂ emissions.

Table 2. Volumetric Flow and H₂S Recorded Data

Instantaneous Digital Volumetric flow rate (MCF)	78.3
10/28/19 Average volumetric flow rate (MCF)	90.7
H ₂ S concentration from computer (gas chromatograph) for most recent hour (8:30 a.m., 10/29/19)	7.4 mol%
H ₂ S concentration from gas chromatograph – daily average for 10/28/19	7.4 mol%

Breitburn is in compliance with their Emission Limits and Monitoring/Recordkeeping requirements at this time.

Process/Operational Restrictions

All waste gas is required to be burned in the flare, injected back into productive formation or have equivalent control of H₂S and mercaptans. At this time, all inlet sour gas is sent to the flare (combusted 24 hours per day, 7 days per week).

The facility is required to have a pilot flame that can continuously burn and that is fueled only by sweet natural gas. A system to continuously monitor the flare pilot flame and to shut in the wells if the flare goes out is required to be installed.

K. Bodmer and D. Donnelly explained during the 2016 inspection, that they conducted maintenance on the flare in June 2016, installing a new thermocouple, and a new crown for the flame. D. Donnelly explained that anytime the process gas is cut off from the flare, including the period of time when the 2016 maintenance was being conducted, a pilot flame is lit that only burns sweet natural gas. This include the loss of power at the facility: an air compressor keeps the valve open to allow sour gas through the system. When the facility loses power, the emergency, ESD, system shuts the valve to prevent sour gas from entering the plant. The wells are also shut in at this time. D. Donnelly said the pilot is also ignited prior to allowing gas back into the plant after being shut down for flare maintenance. Any sweet natural gas that is burned at this site is what K. Bodmer explained as “buy-back” from Southeastern, who supplies natural gas to the surrounding community as well. D. Donnelly explained that when the heat input monitor reads 500 or less, an alarm goes off and the plant is automatically shut down. The gas lines will open up again when the heat input to the flare reaches 600.

Breitburn is also required to have H₂S sensors installed in every building housing the sweetening process and a visual alarm should be triggered when the H₂S concentration is at or about 50 ppm. They are also required to have the sensors automatically begin shutdown of the process inflow gas streams if the H₂S concentration is over 100 ppm. During previous inspections, K. Bodmer said that there are 4 main sweetening process buildings and each one has an H₂S monitor, which includes: 1 in the sweetening process building, 1 in the injection building, and 1 in the compressor building. We verified that there was one in compressor engine building during the 2014 inspection. K. Bodmer said the alarm is triggered at 20 ppm – their “low alarm” with a light, and the wells are shut in at 100 ppm “high alarm.” Gas no longer enters these buildings, as the sweetening process is no longer conducted.

Although not currently required in the ROP, Breitburn conducts annual calibrations on their monitoring devices for the volumetric gas flow into the facility. During the inspection I noted that the last time the gas meter had been calibrated was August 19, 2018. D. Donnelly said he would make a call to get the meter calibrated. On November 7, 2019 he informed me that the unit was calibrated.

A maintenance program shall be implemented and designed to prevent or mitigate odorous emissions from the storage tanks, vents, and all potential emission points at the source, and approved by the district supervisor. The plan is not required to be written. Per previous inspections conducted by Ken Terry, Breitburn’s daily log book entries, which record information about the status of the plant, has been considered an acceptable maintenance program; however, D. Donnelly said that they no longer use the daily logbook. Although not written, K. Bodmer explained during a previous inspection that Breitburn conducts visual walkthrough inspections of the plant every morning and up to 3-4 times per day. D. Donnelly explained that the walkthroughs include walking through every building to check for leaks, odors, etc to ensure all potential sources of odors are addressed, inspect the pipelines, any out of the ordinary odors, and wet or dark spots on the ground, which would indicate there is a leak. During these walkthroughs, if they detect odors, they identify where the leak is coming from and have procedures in place to fix those leaks. This is the procedure they conducted during the January 20, 2016 incident where they discovered a pinhole leak in the gas line. D. Donnelly said that 2017 was the last time they conducted maintenance on the gas line pipes. He said that new lines replaced the old – they found spots with corrosion. He said that they used leak clamps to seal the leak until they were able to bring in a new line to replace the corroded line. Based on this information it appears that the daily walkthroughs are sufficient for addressing odors from various point sources. During the inspection I saw no indicators that there were any leaks from the pipelines, but did detect faint H₂S odors at times, which D. Donnelly said could be coming from joints/gaskets on the lines.

Breitburn is in compliance with all Process/Operational Restrictions at this time.

Reporting

Reporting of the H₂S concentration monitoring data measured and recorded is required to be provided within 30 days following the end of the month which the data was collected. Breitburn is up-to-date with their monthly reporting; these reports are reviewed on a monthly basis and each report demonstrated compliance with the daily SO₂ emission limit. Volumetric flow rate into the plant and H₂S vol% is reported on a daily basis.

Annual and semi-annual reports are also required to be submitted. See the FCE summary report for complete details on each submission for the past year.

Breitburn is in compliance with all reporting requirements at this time.

Other Requirements

Breitburn is required to have fencing, warning signs or other deterrents to prevent unauthorized individuals from entering the site, in addition to posting at least one sign on each side of the property reading "Danger – Poison Gas." There are several "Danger – Poison Gas" signs located at the entrance of the facility (west side) on the fencing as well as on all sides of the fencing, with multiple signs posted for each side. Fencing encompasses the entire perimeter of the property. They also meet the requirement to have an emergency contact sign stating the emergency phone number for the facility manager, local and state police, and ambulance service. This sign is located at the entrance of the facility.

An emergency procedures plan is required with procedures to follow in the event of an emergency and it is required that the plan be reviewed prior to June 1 of each year by appropriate local emergency personnel. Breitburn staff, since being made aware that the plan should be updated with the most up-to-date emergency contact information, etc, submitted an initial Emergency Response Plan to the AQD on June 1, 2015 and an updated copy of the plan on August 18, 2016. The most recent copy was received November 20, 2019. Breitburn did not have the plan reviewed prior to June 1, 2019; upon my request, the November 20, 2019 copy was sent from Jim Beehler, Maverick Resources Sr EHS Analyst, with a note explaining that the plan was reviewed by the North Branch Fire Chief Ken Jentzen and Dan Kobylinski the field foreman for Lapeer on November 18, 2019 (see attached). They updated the Emergency Call list within the plan during this review. Because the plan was updated prior to my completion of this inspection report, a violation notice will not be sent for failure to conduct the review of the plan prior to June 1.

The emergency procedures plan includes emergency procedures for all Breitburn facilities across the nation; Michigan has its own section for counties containing Breitburn facilities. The first page of the Michigan section provides a 24-hour emergency phone number as well as office and home phone numbers of various Breitburn representatives, many of which are based in the Gaylord office; the Lapeer location has its own section, which includes contact information for the LEPC, and local fire and police departments, medical services, and spill response contractors. The 24-hour emergency phone number is supposed to be provided to residents in the area to call when they smell H₂S odors. The plan also includes a list of residents in the area and their phone numbers in case of an emergency or an evacuation needs to occur.

The AQD received a letter on June 1, 2016 dated May 25, 2016 acknowledging that on May 24, 2016 K. Bodmer and Ken Jentzen discussed the evacuation plan and informed K. Jentzen of the plans to shut down the sweetening side of the gas plant. Although we did not receive a letter for the 2017 annual review of the emergency procedures review, K. Bodmer kept a record of this, which I reviewed onsite. He documented that on 5/24/17 the North Branch Fire Department came out to review the plan. Six fire department officers were present for this review.

This emergency response plan is a different plan from the an H₂S Contingency Emergency Plan that is used to meet the Oil, Gas and Minerals Division (OGMD) requirements.

Breitburn is also required to report abnormal H₂S gas releases to the PEAS hotline (after hours), and to me directly if during normal business hours. I reminded D. Donnelly of this requirement. K. Bodmer said during the previous inspection that he has been reporting these incidents to Shaun Lehman of OGMD, but I reminded him that per the ROP he must also let me know of the abnormal H₂S gas releases so that I am aware of the situation before a complaint comes in. He acknowledged that he understood. All complaints, per a MOU between AQD and OOGM, that are related to the sweetening facility must go to AQD.

Although not required, D. Donnelly called me on 2 occasions to report abnormal conditions as the facility:

November 4, 2019: The vapor recovery unit (VRU) at the Mowatt Rd site malfunctioned. The VRU sucks gas off the top of the oil production and salt water tanks. The gauge on the VRU will tell it to shut off vacuum when a specific pressure is reached, and this failed; the VRU continued pulling vacuum on the tanks which caused it to pull air from outside the tanks into the gas line. D. Donnelly said that because of this, the concentration of H₂S in the gas going into the gas sweetening facility is much lower. D. Donnelly believes this would cause a false SO₂ reading for this day. I will wait for November's SO₂ monthly report to determine if this is the case.

November 15, 2019: The inlet separator at the tank battery sent an oil/water mixture to the gas line, causing the gas's volumetric flowrate into the sweetening plant to read at 278.2 mcf for the day, which, when multiplied by the daily average of H₂S in the gas, would appear to cause an exceedance in SO₂ emissions for this day. I am currently working with Eric Hasso to determine if we can back calculate to find a more accurate mcf number. At a minimum, I told Eric Hasso that this will need to be reported as a deviation in their annual and semi-annual reporting. D. Donnelly said that their typical flow into the plant is 78-80 mcf.

An MAP/PMP will be required in the renewed ROP and these types of instances will need to be addressed in the plans.

Breitburn is in compliance with the *Other Requirements* section at this time.

EUDEHYDRATOR

This unit uses glycol dehydration to remove water from the gas before it is sweetened. This unit is subject to the Area Source MACT Subpart HH; however, at this time the unit is no longer in operation. Breitburn is required to track the gas throughput into the unit, but at this time there is no throughput.

FGCOMPRESSOR

The unit includes 2 non-emergency natural gas-fired RICE. They are required to be maintained according to manufacturer's emission-related instructions and to have the engine oil and filter changed and inspecting spark plugs, hoses and belts every 4,320 operating hours or annually, whichever occurs first; It is my professional judgment that these maintenance activities do not need to take place because the units are no longer being used

to compress the gas. I do expect that if these units are ever to operate again, that maintenance be conducted prior to startup.

FGEMERGENCY-RICEMACT

This emergency engine is no longer being used, therefore it is my professional judgment that the maintenance checks and recordkeeping requirements for maintenance and hours operated required by the RICE MACT Subpart ZZZZ do not apply at this time. I expect that if this unit is run in the future, all required maintenance be conducted prior to startup.

Compliance Statement: Breitburn is in compliance with MI-ROP-B5462-2014b at this time.

NAME Michael Lynn

DATE 12/2/19

SUPERVISOR O. M.