

Permit by Rule (PBR) Registration Technical Review

Company:	Phillips 66 Company	Registration No.:	177318
Nearest City:	Borger	Project No.:	378780
County:	Hutchinson	Project Type:	Initial
Project Reviewer:	Briannah Spooner	Regulated Entity No.:	RN102495884
Unit Name:	Borger Refinery	Customer Reference No.:	CN604065912
PBR No(s).:	106.262	Project Received Date:	August 22, 2024
Physical Location:	APPROXIMATELY 2 MILES NE OF THE CITY OF BORGER ON STATE HWY SPUR 119 N		

Project Overview / Process Description

Phillips 66 Company (Phillips 66) operates the Borger Refinery in Borger, Hutchinson County, Texas. The refinery is predominantly authorized under Flexible Permit No. 9868A / PSD-TX-102M7. Additional processes and units at this refinery operate under separate authorizations (New Source Review Permits, Standard Permits and Permits by Rule). The Methyl Mercaptan Plant is authorized under Permit No. 71385 and Title V Permit No. O2166. The proposed project involves the installation of new fugitive piping components for a dedicated anhydrous methyl mercaptan (MeSH) recycle loop stream from the MeSH distillation column to the reactor.

Installation of the proposed recycle loop will allow methyl mercaptan (MeSH) produced in Unit 45 to be recycled from the top of the MeSH column back to the feed of MeSH reactor using the new MeSH Recycle Pumps. This is done to allow for production of additional dimethyl sulfide (DMS). DMS is co-produced in Borger's Unit 45 & 46 during the production of MeSH. Overall production rates will not increase; this project simply allows for the balance of MeSH and DMS to be varied to meet product demands. The U45 MeSH unit is a facility that processes methanol and hydrogen sulfide to produce methyl mercaptan (MeSH), and the co-products, dimethyl sulfide (DMS) and dimethyl disulfide (DMDS). Additional products of reactions include water and light gases. The crude products from the reactor process are fed to separation equipment to recover H₂S, remove impurities from the product stream, and to separate MeSH product from DMS and DMDS coproducts. The products are sent offsite via pipeline to a chemical company for storage in their tanks.

The bypass line will allow a swing from MeSH production to dimethyl sulfide. This swing will not increase overall production but will allow the relative amounts of MeSH and DMS to be varied to meet product demands. There will be no increase in methanol or H₂S usage to U45.

There are no associated upstream or downstream impacts from this project. Inlet feed rates will remain unchanged and no additional heating or cooling will be required to process the recycled material. Products are sent offsite via pipeline.

This project should be incorporated into NSR 71385 at the next amendment or renewal.

Permit by Rule Requirements - 30 TAC Chapter 106

General Requirements

Registration Fee Reference No.:	Application fee: 718366 / 582EA000622624
Is this registration certified?	Yes
Is planned MSS included in the registration?	No
Are there affected NSR or Title V authorizations for the project?	Yes
<i>NSR and/or Title V authorizations: NSR 71385, Title V O2166</i>	
If there are affected Title V authorizations, is monitoring being submitted as part of this registration?	No
Are there any upstream or downstream affects associated with this registration?	No
Are associated upstream/downstream emissions either included in the registration OR within current permitted limits with no changes to underlying air authorizations for the applicable units regarding BACT, health and environmental impacts, or other representations.	NA
Are emissions for each PBR authorized facility less than the § 106.4(a)(1) limits?	Yes
Are total emissions from all sitewide PBR authorized facilities less than the § 106.4(a)(4) limits, OR has the site been subject to public notice requirements? NSR 71385 has been to public notice	Yes
Are there permit limits on using PBRs at the site?	Yes

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Is the facility in compliance with all other applicable rules and regulations?	Yes
Does the registration include an appropriate PBR workbook, and has the workbook been verified?	Yes

Federal Applicability

Does this project trigger a PSD or Nonattainment review?	No
Does the Major NSR applicability analysis include all associated upstream and/or downstream emissions?	NA
Are there any applicable standards under NSPS, NESHAP, or NESHAP for source categories (MACT)?	No

Permit by Rule Requirements - Compliance Demonstrations

PBR 106.262 Facilities (Emission and Distance Limitations)

- (a)(1) The facilities or changes will be located > 100 ft (**Actual: 1,500 ft**) from any off-site receptor.
- (a)(2) Total new or increased emissions authorized by this section are below E lb/hr, as determined using the equation $E = L/K$, and 5 tpy.
- (a)(3) Notification and all required documentation have been submitted.
- (a)(4) NA – No chemicals listed
- (a)(5) There will not be any changes or additions of any existing abatement equipment.
- (a)(6) Visible emissions will not exceed the 5.0 % opacity limit.
- (b) This registration is not for authorization for construction or to change a facility authorized under another section of this chapter or under standard permit.

Compliance History and Site Review

In accordance with 30 TAC Chapter 60, a compliance history report was reviewed on:	August 23, 2024
Site rating / classification: 3.73 / Satisfactory	Company rating / classification: 12.42 / Satisfactory
Has any action occurred on the basis of the compliance history or rating?	No
Did the Regional Office provide site approval and confirm distances?	NA

106.262(a)(2) Distance

Distance to nearest off-plant receptor (feet):	1500
K value:	24

106.262(a)(2) Emissions – Table 262

Chemical	Criteria Pollutant Designation	CAS No. (optional input)	L Value (mg/m ³)	E, maximum Hourly Emission Threshold (lb/hr)	Actual Emission Threshold (tpy)	Actual Hourly Increases (lb/hr)	Actual Annual Increase (tpy)	Meets Threshold?
Methyl Mercaptan	VOC	74-93-1	0.2	8.33E-03	3.65E-02	7.00E-03	3.00E-02	Yes
Methyl Sulfide	VOC	75-18-3	0.3	1.25E-02	5.48E-02	7.00E-03	3.00E-02	Yes

Total 106.261/262 Combined Emissions

	Total Hourly Emissions (lb/hr)	Total Annual Emissions (tpy)
Total Emissions:	0.01	0.03

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Emission Summary

EPN / Emission Source	VOC		NOx		CO		PM ₁₀		PM _{2.5}		SO ₂		Other	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
F-U45 / Unit 45 Fugitives	0.01	0.03												
TOTAL EMISSIONS (TPY):	--	0.03												
MAXIMUM OPERATING SCHEDULE:			Hours/Year										8,760	

Briannah Spooner

September 26, 2024

Ms. Briannah Spooner
Permit Reviewer
Rule Registration Section

Date

Michael Partee

September 26, 2024

Michael Partee, Manager
Rule Registrations Section
Air Permits Division
Section Manager

Date