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AIR PERMITS SECTION
B&E

4/29/2013

Ms. Aimee Wilson
Air Permits Section (6PD-R)
U.S. Environmental Protection Agency
1445 Ross Avenue
Dallas, Texas 75202

Re: Revised Application Pages
Greenhouse Gas Prevention of Significant Deterioration Permit
ONEOK Hydrocarbon, L.P.
Mont Belvieu NGL Fractionation Plant

Dear Ms. Wilson:

On behalf of ONEOK Hydrocarbon, L.P., I am submitting revised application pages for the above-referenced permit application. These revisions are a result of refining the application based on the latest design data, and in responding to specific questions regarding cooling tower BACT from EPA staff. An updated air dispersion modeling analysis will be submitted under separate cover.

ONEOK is committed to working closely with EPA staff to facilitate the timely review of this application and issuance of a permit. To that end, if you have any questions or need any additional information during the course of your review please do not hesitate to contact Ms. Terrie Blackburn at (918) 561-8052 or by email at Terrie.Blackburn@oneok.com.

Respectfully,

Scott Schingen
Vice President – NGL Fractionation and Storage

Attachment

cc: Ms. Melanie Magee, EPA Region 6, Dallas, w/enclosure

ATTACHMENT**REVISED APPLICATION PAGES**

As stated in the cover letter, ONEOK Hydrocarbon, L.P. has re-evaluated and refined the permitting bases. As a result, the represented hot oil heater firing rates are increasing based on the latest data sheet provided by the burner vendor. The hot oil heater allowable emissions are also grouped on the summary tables. All application pages affected by these changes are included in this attachment.

Environmental Protection Agency – Region 6
Greenhouse Gas PSD Permit Application

ONEOK Hydrocarbon, L.P.
Mont Belvieu NGL Fractionation Plant

Mont Belvieu, Chambers County
TCEQ Regulated Entity No. RN106123714
TCEQ Customer No. CN603674086

September 2012
Revised: April 2013

Prepared and Approved by:



Jason M. Graves, P.E.
Principal Engineer



Waid Corporation dba Waid Environmental
Certificate of Registration No. F-58



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**Texas Commission on Environmental Quality
Form PI-1 General Application for
Air Preconstruction Permit and Amendment**

III. Type of Permit Action Requested (continued)

H. Federal Operating Permit Requirements (30 TAC Chapter 122 Applicability) (continued)

2. Identify the type(s) of FOP(s) issued and/or FOP application(s) submitted/pending for the site. (check all that apply)

GOP Issued ☐ GOP application/revision application submitted or under APD review ☐

SOP Issued ☐ SOP application/revision application submitted or under APD review ☐

IV. Public Notice Applicability

A. Is this a new permit application or a change of location application? ☒ YES ☐ NO

B. Is this application for a concrete batch plant? If Yes, complete V.C.1 – V.C.2. ☐ YES ☒ NO

C. Is this an application for a major modification of a PSD, nonattainment, FCAA 112(g) permit, or exceedance of a PAL permit? ☒ YES ☐ NO

D. Is this application for a PSD or major modification of a PSD located within 100 kilometers or less of an affected state or Class I Area? ☐ YES ☒ NO

If Yes, list the affected state(s) and/or Class I Area(s).

E. Is this a state permit amendment application? If Yes, complete IV.E.1. – IV.E.3.

1. Is there any change in character of emissions in this application? ☐ YES ☐ NO

2. Is there a new air contaminant in this application? ☐ YES ☐ NO

3. Do the facilities handle, load, unload, dry, manufacture, or process grain, seed, legumes, or vegetables fibers (agricultural facilities)? ☐ YES ☐ NO

F. List the total annual emission increases associated with the application (*list all that apply and attach additional sheets as needed*):

Volatile Organic Compounds (VOC):

Sulfur Dioxide (SO₂):

Carbon Monoxide (CO):

Nitrogen Oxides (NO_x):

Particulate Matter (PM):

PM₁₀ microns or less (PM₁₀):

PM_{2.5} microns or less (PM_{2.5}):

Lead (Pb):

Hazardous Air Pollutants (HAPs):

Other speciated air contaminants **not** listed above: CO₂e = 233,000 TPY

Texas Federal Implementation Plan (FIP), the site is a major source of GHG emissions, and the proposed changes constitute a major modification for GHG emissions. Therefore, this separate application for a PSD permit is being submitted to EPA for this Project pursuant to the Texas greenhouse gas permitting FIP to authorize greenhouse gas emissions associated with the Project.

During their review of the GHG permit application, EPA requested that emissions of criteria pollutants that exceed the PSD significance level be evaluated as triggering PSD review. As a result of this request, ONOK has re-evaluated and refined our permitting emissions basis. The revised emission calculations which have been submitted to TCEQ demonstrate that project emissions of each criteria pollutant are below the applicable PSD significance threshold for evaluation as a major modification. The project remains subject to PSD review for GHG emissions.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Table 1(a) Emission Point Summary

Date:	September 2012, Revised April 2013	Permit No.:	TBD	Regulated Entity No.:	RN106123714
Area Name:	Mont Belvieu NGL Fractionation Plant	Customer Reference No.:	CN603674086		

Review of applications and issuance of permits will be expedited by supplying all necessary information requested on this Table.

AIR CONTAMINANT DATA					
1. Emission Point			2. Component or Air Contaminant Name	3. Air Contaminant Emission Rate	
(A) EPN	(B) FIN	(C) Name		(A) Pounds per Hour	(B) TPY
H-04	H-04	Hot Oil Heater 4	CO ₂ e		215,314
H-05	H-05	Hot Oil Heater 5	CO ₂ e		
H-06	H-06	Hot Oil Heater 6	CO ₂ e		
H-04/H-05/H-06	VENTS	Frac-2 Process Vents to Heaters	CO ₂ e		15,000
FL-01	FL-01	Flare (Frac-2 Contribution)	CO ₂ e		1,301
CT-04	CT-04	Frac-2 Cooling Tower	CO ₂ e		Work Practice Standard
ENG-05	ENG-05	Frac-2 Emergency Generator	CO ₂ e		43
ENG-06	ENG-06	Frac-2 Firewater Pump	CO ₂ e		
FUG-03	FUG-03	Frac-2 Equipment Leak Fugitives	CO ₂ e		Work Practice Standard
FL-01	MSS-FL-2	MSS-Flaring (Frac-2 Contribution)	CO ₂ e		Work Practice Standard
MSS-FUG-2	ATM-MSS-2	MSS-Degassing (Frac-2 Contribution)	CO ₂ e		Work Practice Standard

EPN = Emission Point Number
FIN = Facility Identification Number

TCEQ-10153 (Revised 04/08) Table 1(a)
This form is for use by sources subject to air quality permit requirements and may be revised periodically. (APDG 5178 v5)

ONEOK HYDROCARBON, L.P.
MONT BELVIEU NGL FRACTIONATION PLANT
PERMIT APPLICATION - PLANT EXPANSION

SEPTEMBER 2012
REVISED: APRIL 2013

ONEOK Frac-2 Emissions Summary

FIN	EPN	Description	Previously Authorized	Proposed	Increase/(Decrease)	Basis of Change
			(tons/yr)	(tons/yr)	(tons/yr)	
Proposed New Equipment/Emissions						
H-04	H-04	Hot Oil Heater 4	0	215,314	215,314	New Emissions Unit
H-05	H-05	Hot Oil Heater 5	0			New Emissions Unit
H-06	H-06	Hot Oil Heater 6	0			New Emissions Unit
VENTS	H-04/H-05/H-06	Frac-2 Process Vents to Heaters	0	15,000	15,000	New Emissions Unit
FL-01	FL-01	Flare (Frac-2 Contribution)	0	1,301	1,301	Modified Emissions Unit
CT-04	CT-04	Frac-2 Cooling Tower	0	0.34	0.34	New Emissions Unit
ENG-05	ENG-05	Frac-2 Emergency Generator	0	8	8	New Emissions Unit
ENG-06	ENG-06	Frac-2 Firewater Pump	0	35	35	New Emissions Unit
FUG-03	FUG-03	Frac-2 Equipment Leak Fugitives	0	10.6	11	New Emissions Unit
MSS-FL-2	FL-01	MSS-Flaring (Frac-2 Contribution)	0	978	978	Modified Emissions Unit
ATM-MSS-2	MSS-FUG-2	MSS-Degassing (Frac-2 Contribution)	0	21	21	New Emissions Unit
Total			-	233,000	233,000	

ONEOK HYDROCARBON, L.P.
MONT BELVIEU NGL FRACTIONATION PLANT
PERMIT APPLICATION - PLANT EXPANSION

SEPTEMBER 2012
REVISED: APRIL 2013

Hot Oil Heater 4

EPN: H-04

FIN: H-04

Annual Average Duty: 140 MM Btu/hr (HHV)
Maximum Duty: 154 MM Btu/hr (24-hr average, HHV)
Hours of Operation: 8760 hr/yr
Fuel Heating Value: 1000 Btu/scf (HHV basis, natural gas average)
Fuel F-Factor: 8710 dscf/MM Btu (HHV) 40 CFR Part 60, Appendix A, Table 19-2 value for natural gas

Pollutant	Assumed MW	Emission Factor				Emissions		GWP	CO2e	
		lb/MM scf	lb/MM Btu	ppmvd @ 3% O2	Source	lb/hr	(ton/yr)		lb/hr	(ton/yr)
CH4			0.00220		40 CFR 98 Subpart C, Table C-2	0.3	1.4	21.00	7	29
CO2			116.9		40 CFR 98 Subpart C, Table C-1	18,000	71,700	1.00	18,000	71,700
N2O			0.00022		40 CFR 98 Subpart C, Table C-2	0.0	0.1	310.00	11	42
Total CO2e									18,018	71,771

Notes

1. lb/hr Emissions = Maximum Duty * Emission Factor
2. ton/yr Emissions = Annual Average Duty * Annual Operating Hours* Emission Factor / 2000

ONEOK HYDROCARBON, L.P.
MONT BELVIEU NGL FRACTIONATION PLANT
PERMIT APPLICATION - PLANT EXPANSION

SEPTEMBER 2012
REVISED: APRIL 2013

Hot Oil Heater 5

EPN: H-05
FIN: H-05

Annual Average Duty: 140 MM Btu/hr (HHV)
Maximum Duty: 154 MM Btu/hr (24-hr average, HHV)
Hours of Operation: 8760 hr/yr
Fuel Heating Value: 1000 Btu/scf (HHV basis, natural gas average)
Fuel F-Factor: 8710 dsct/MM Btu (HHV) 40 CFR Part 60, Appendix A, Table 19-2 value for natural gas

Pollutant	Assumed MW	Emission Factor			Source	Emissions		GWP	CO2e	
		lb/MM scf	lb/MM Btu	ppmvd @ 3% O2		lb/hr	(ton/yr)		lb/hr	(ton/yr)
CH4			0.00220		40 CFR 98 Subpart C, Table C-2	0.3	1.4	21.00	7	29
CO2			116.9		40 CFR 98 Subpart C, Table C-1	18,000	71,700	1.00	18,000	71,700
N2O			0.00022		40 CFR 98 Subpart C, Table C-2	0.0	0.1	310.00	11	42
Total CO2e									18,018	71,771

Notes

1. lb/hr Emissions = Maximum Duty * Emission Factor
2. ton/yr Emissions = Annual Average Duty * Annual Operating Hours * Emission Factor / 2000

ONEOK HYDROCARBON, L.P.
MONT BELVIEU NGL FRACTIONATION PLANT
PERMIT APPLICATION - PLANT EXPANSION

SEPTEMBER 2012
REVISED: APRIL 2013

Hot Oil Heater 6

EPN: H-06

FIN: H-06

Annual Average Duty: 140 MM Btu/hr (HHV)
Maximum Duty: 154 MM Btu/hr (24-hr average, HHV)
Hours of Operation: 8760 hr/yr
Fuel Heating Value: 1000 Btu/scf (HHV basis, natural gas average)
Fuel F-Factor: 8710 dscf/MM Btu (HHV) 40 CFR Part 60, Appendix A, Table 19-2 value for natural gas

Pollutant	Assumed MW	Emission Factor			Source	Emissions		GWP	CO ₂ e	
		lb/MM scf	lb/MM Btu	ppmvd @ 3% O ₂		lb/hr	(ton/yr)		lb/hr	(ton/yr)
CH ₄			0.00220		40 CFR 98 Subpart C, Table C-2	0.3	1.4	21.00	7	28
CO ₂			116.9		40 CFR 98 Subpart C, Table C-1	18,000	71,700	1.00	18,000	71,700
N ₂ O			0.00022		40 CFR 98 Subpart C, Table C-2	0.0	0.1	310.00	11	42
Total CO ₂ e									18,018	71,771

Notes

1. lb/hr Emissions = Maximum Duty * Emission Factor
2. ton/yr Emissions = Annual Average Duty * Annual Operating Hours* Emission Factor / 2000

Based on the cost analysis, ONEOK has determined that the added capital and operating cost of implementing CCS for the new heaters would make the proposed Project as a whole economically infeasible. The estimated capital cost for the new unit is about \$400 million. Annualized, this equates to about \$40 million, so the cost of CCS would increase the cost of the project (or reduce the rate of return) by about 40%.

In addition to being unavailable, technically infeasible, and not cost-effective, the implementation of CCS also results in significant adverse collateral energy and environmental impacts. The increased energy consumption for the CCS system would completely negate any efficiency savings from implementing efficient design and operational practices for the heaters themselves. The additional regeneration heater demand would result in additional increases for all other criteria pollutant emissions and creates another GHG source which would have to be captured.

Step 5: Select the BACT.

In the fifth step, the most effective control option, based on the impacts quantified in Step 4, is proposed as BACT for the pollutant and emission unit under review. For the hot oil heaters, ONEOK proposes use of the top and only remaining options as BACT, which are to implement energy efficient design and operating practices and burn low-carbon fuel (by using natural gas, recovered flare gas, and process vent gases). The proposed form of the emission limitations is summarized in the following table:

Category	Demonstration
Limitations	Greenhouse gas emissions from the group of hot oil heaters will be limited to 215,314 tons CO ₂ e per year on a 365-day rolling average. The hot oil heaters will maintain a minimum efficiency by maintaining a maximum stack exit temperature of 385 degrees F on a 365-day rolling average basis, excluding periods of start-up and shutdown.
	In accordance with 40 C.F.R. Part 63, Subpart DDDDD, the permittee will conduct annual tune-up (burner inspection and cleaning, flame inspection and optimization, air-to-fuel ratio, and CO optimization).
Monitoring Requirements	The permittee shall maintain compliance with 40 C.F.R. Part 98, Subpart C including flow monitoring of fuel usage and fuel gas analysis. The permittee shall maintain a flue gas temperature monitor to continuously record flue gas exit temperature on each hot oil heater while the heaters are in service.
Compliance Demonstration	The permittee shall calculate compliance with the 365-day rolling average limitations following the procedures specified in 40 C.F.R. Part 98, Subpart C, with a conversion from metric tons to short tons.

BACT for Cooling Towers

GHG emissions from cooling towers are the result of potential leaks from heat exchangers into cooling water which would be stripped and emitted from the cooling towers associated with the proposed Project. Methane is present in variable concentrations in process streams, with highest concentrations in natural gas. Because methane is a GHG, the analysis focuses on mitigating methane emissions from leaks into cooling water.

Step 1: Identify all available control technologies.

In reviewing the resources outlined above, the following technologies were identified as potentially available for the cooling towers in this application:

Technology	Description	Availability
Cooling Tower Monitoring and Repair	This technology consists of monthly monitoring of the cooling water to detect leaks, and subsequent repair of any exchangers that that have been determined to be leaking.	Available

As shown in the table above, the only technology identified is considered available, and will be evaluated in Step 2.

In addition to the technologies identified by ONEOK, EPA specifically requested that the following technologies be evaluated for availability and technical feasibility for controlling GHG emissions in this application. Note that although these technologies are listed in the RACT/BACT/LAER Clearinghouse, they have been listed there because they are potential control strategies for particulate emissions, not for VOC or GHG emissions. Details are outlined below.

Technology	Description	Availability for GHG Control
Low cycles of concentration	By using a higher rate of makeup water, the concentration of total dissolved solids in the recirculating water stream can be reduced. This reduces particulate matter in the cooling water drift.	Not available – This technology has no impact on GHG emissions. This would also increase wastewater discharge.
Acid and blowdown control	By carefully controlling the acid addition and cooling tower water blowdown rate, the concentration of total dissolved solids in the recirculating water stream can be reduced. This reduces particulate matter in the cooling water drift.	Not available – This technology has no impact on GHG emissions.
Pretreatment of make-up water	By pre-treating make-up water, the concentration of total dissolved solids in the recirculating water stream can be reduced. This reduces particulate matter in the cooling water drift.	Not available – This technology has no impact on GHG emissions.

Technology	Description	Availability for GHG Control
Once through seawater cooling	By using seawater as a cooling medium, the recirculating cooling tower could be eliminated. However, any GHG leaks from heat exchangers would still leak into the seawater cooling medium, and would be emitted to the air at the same rate.	Not available – This technology has no impact on GHG emissions, and the site is not adjacent to the ocean.
Air cooling	By using air as a cooling medium, the recirculating cooling tower could be eliminated. However, any GHG leaks from heat exchangers would still leak into the air, and would be emitted at the same rate from equipment leak fugitives. In addition, using air cooling in this region would force distillation processes to be operated at higher temperatures and pressures. As a result, using air cooling would increase the required firing rate of the hot oil heaters and would increase overall GHG emissions.	Not available – This technology would increase GHG emissions. Emissions would be quantified as increased equipment leak fugitives and heater GHG emissions.

Since none of these additional technologies are available for use in reducing GHG emissions, they have not been considered in Steps 2-5 of the BACT analysis.

Step 2: Eliminate technically infeasible options.

The second step requires the evaluation of the technical feasibility of each control option identified in Step 1 with respect to source-specific factors. Technologies that are determined to be infeasible are eliminated from further consideration. Based on the options carried forward from Step 1, the following table summarizes technical feasibility.

Technology	Description	Feasibility
Cooling Tower Monitoring and Repair	This technology consists of monthly monitoring of the cooling water to detect leaks, and subsequent repair of any exchangers that that have been determined to be leaking.	Technically Feasible

As shown in the table above, the only technology identified is considered feasible, and will be evaluated in Step 3.

Step 3: Rank remaining control technologies.

As part of the third step, all remaining control technologies not eliminated in Step 2 are ranked and then listed in order of overall control effectiveness for the pollutant under review, with the most effective control alternative at the top. In this case, implementation of cooling tower monitoring and repair is ranked at the top of the list as the only available and technically feasible control option available. Quantifying the reduction potential is not necessary.

ATTACHMENT IX.A

NEW SOURCE PERFORMANCE STANDARDS (NSPS)

The New Source Performance Standards (NSPS) in 40 CFR Part 60, **Subpart Db (steam generating units)**, Subpart IIII (stationary compression ignition engines), and Subpart OOOO (crude oil and natural gas production, transmission and distribution) are applicable to this facility. ONEOK will comply with the control, monitoring, reporting, and recording requirements of all applicable NSPS.



TABLE 1F
AIR QUALITY APPLICATION SUPPLEMENT

Permit No.: To Be Assigned	Application Submittal Date: September 18, 2012
Company: ONEOK Hydrocarbon, L.P.	
RN: RN106123714	Facility Location: 11350 Fitzgerald
City: Baytown	County: Chambers
Permit Unit I.D.: Mont Belvieu NGL Fractionation Plant	Permit Name: Mont Belvieu NGL Fractionation Plant
Permit Activity: ☐ New Source ☒ Modification	
Project or Process Description: Mont Belvieu NGL Fractionation Plant Expansion	

Complete for all Pollutants with a Project Emission Increase.	POLLUTANTS							
	Ozone		CO	PM ₁₀	NO _x	SO ₂	Other ¹ CO ₂ e	Other ¹
	VOC	NO _x						
Nonattainment? (yes or no)							NO	
Existing site PTE (tpy)?							221,000	
Proposed project emission increases (tpy from 2F) ³							233,000	
Is the existing site a major source? ² If not, is the project a major source by itself? (yes or no)							YES	
If site is major, is project increase significant?							YES	
If netting required, estimated start of construction?	April 2013							
Five years prior to start of construction	April 2008				contemporaneous			
Estimated start of operation	~October 2014				period			
Net contemporaneous change, including proposed project, from Table 3F. (tpy)							454,000	
FNSR APPLICABLE? (yes or no)							YES	

¹ Other PSD pollutants.

² Nonattainment major source is defined in Table 1 in 30 TAC 116.12(11) by pollutant and county. PSD thresholds are found in 40 CFR § 51.166(b)(1).

³ Sum of proposed emissions minus baseline emissions, increases only. Nonattainment thresholds are found in Table 1 in 30 TAC 116.12(11) and PSD thresholds in 40 CFR § 51.166(b)(23).

The representations made above and on the accompanying tables are true and correct to the best of my knowledge.

 Signature	VP- NGL FRACTIONATION + STORAGE Title	4/29/2013 Date
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TABLE 2F
PROJECT EMISSION INCREASE

Pollutant ⁽¹⁾ : CO2e				Permit: To Be Assigned						
Baseline Period: NA				to NA						
			A		B					
	Affected or Modified Facilities ⁽²⁾		Permit No.	Actual Emissions ⁽³⁾	Baseline Emissions ⁽⁴⁾	Proposed Emissions ⁽⁵⁾	Projected Actual Emissions	Difference (B-A) ⁽⁶⁾	Correction ⁽⁷⁾	Project Increase ⁽⁸⁾
	FIN	EPN								
1	H-04	H-04		0	0	71,771		71,771		71,771
2	H-05	H-05		0	0	71,771		71,771		71,771
3	H-06	H-06		0	0	71,771		71,771		71,771
4	VENTS	H-04/H-05/H-06		0	0	15,000		15,000		15,000
5	FL-01	FL-01		0	0	1,301		1,301		1,301
6	CT-04	CT-04		0	0	0.34		0.34		0.34
7	ENG-05	ENG-05		0	0	8		8		8
8	ENG-06	ENG-06		0	0	35		35		35
9	FUG-03	FUG-03		0	0	11		11		11
10	MSS-FL-2	FL-01		0	0	978		978		978
11	ATM-MSS-2	MSS-FUG-2		0	0	21		21		21
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