

OKLAHOMA DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

MEMORANDUM

August 22, 2025

TO: Lee Warden, P.E., Permits and Engineering Group Manager

THROUGH: Phillip Martin, P.E., Engineering Manager, Existing Source Permits Section

THROUGH: Junru Wang, P.E., Existing Source Permits Section

FROM: Aaron Ozbirn, E.I., Engineering Section

SUBJECT: Evaluation of Construction Permit Application No. 2017-0429-C (M-4)
Redcliff Midstream, LLC
Redcliff Plant (Facility ID: 17351)
Latitude: 36.21268°N, Longitude: 99.15668°W
Section 18, Township 20N, Range 18W, Woodward County, Oklahoma
Directions: From the intersection of Broadway St. and Main St. in Mutual, OK,
travel east 1 mile on Main St., then travel 1.2 miles on N2160 Rd., and the facility
entrance is on the west side of the road.

SECTION I. INTRODUCTION

Redcliff Midstream, LLC (Redcliff) has requested a construction modification to their Redcliff Plant (SIC 1321/NAICS 211130) located in Woodward County. The facility is currently operating under individual minor source operating Permit No. 2017-0429-O (M-1), issued on August 4, 2020. Redcliff is adding four (4) 1,000-bbl stabilized condensate tanks, renaming the equipment unit IDs, updating emissions from the tank, loading, flares, dehydration unit, compressor blowdowns, and fugitives, and adding a previously omitted 20% safety factor to an amine unit flare stream.

The facility is a “synthetic minor” source of emissions.

SECTION II. PROCESS DESCRIPTION

The Redcliff Plant is a 240-MMSCFD natural gas processing facility comprised of an amine unit, glycol dehydration unit, mole sieve beds, a cryogenic process, compression, and associated process equipment.

Inlet gas streams enter the facility through an inlet separator where initial liquids separation occurs before being sent to the amine treater (AMINE-1). In the amine process, the gas stream passes through the contactor vessel where CO₂ and H₂S are absorbed and removed. The rich amine is sent through a flash tank where off-gases are sent back to the inlet. The rich amine is then regenerated in a heated still where the vent emissions, made up of primarily CO₂ and H₂S, are sent to the acid gas flare (FL-993) for destruction. The amine unit is heated using the amine plant reboiler (H-782).

The natural gas stream is then routed to the triethylene glycol dehydration process (DEHY-1). In the dehydration process, gas passes through a contactor vessel where water is absorbed by the glycol. The rich glycol then goes through a flash tank, and generated vapors are captured and recycled while the rich glycol continues to the still where heat from stabilizer/dehy heater (H-783) is used to boil off the water and regenerate the glycol. The water vapor boiled off of the rich glycol stream passes through a condenser to recover hydrocarbon compounds that are inadvertently boiled off with the water vapor. The non-condensable gases are sent to an enclosed flare (FL-993) for destruction.

The natural gas stream then enters the mole sieve dehydration beds to further reduce the water content. The mole sieve beds are periodically regenerated by the mole sieve regen heater (H-741), and the regeneration gas is captured and recycled back. Next, the natural gas stream is routed through the cryogenic process, including a propane chiller, an expander, and a demethanizer tower, and natural gas liquids (NGL) are recovered. Heat is provided by a cryo plant trim reboiler (H-781) and a stabilizer/dehy heater (H-783) at 300°F and 500°F, respectively. The NGLs are routed into a pipeline, and the natural gas stream is compressed by residue compressors (C-171 – C-175, C-177, and C-151, C-153) before being sent to a sales line. Compressor blowdown emissions from C-151 and C-153 are vented to atmosphere (BD). Compressor blowdown emissions from C-171 – C-175 and C-177 are sent to flare (FL-991) for destruction.

Condensate generated during the gas processing steps is sent to a condensate stabilizer before being routed to four (4) atmospheric 400-bbl (TK-1 – TK-4) and four (4) 1,000-bbl (TK-5 – TK-8) condensate tanks. Produced water generated during the process is sent to two (2) atmospheric 400-bbl produced water tanks (PW-1 – PW-2). Vapors generated in these tanks are routed to an enclosed flare (FL-994) for destruction. Vapors from the condensate stabilizer are recycled to the inlet during normal operations. Stabilizer emissions are routed to a flare during emergency situations.

Condensate and produced water are trucked off-site (LOAD-1 – LOAD-2). Condensate and produced water storage tank emissions are captured with at least 98% efficiency and routed to an enclosed flare (FL-994) for at least 98% combustion. Loading emissions are captured with at least 70% efficiency and routed to an enclosed flare (FL-994) for at least 98% combustion. Fugitive emissions from equipment leaks (FUG) also occur.

Flare FL-991 is also used to control all potential relieving scenarios in the plant. Purge gas is supplied to the FL-991 flare header at a rate necessary to maintain positive pressure in the flare header and prevent air ingress from the flare tip.

SECTION III. EQUIPMENT

The following is a list of current equipment.

Point	Equipment Type	Size/Rating	Control		Manufacture or Installation Date	Subject to NSPS or NESHAP?	
			Type	Efficiency		No	If Yes, specify Subpart
C-171	Caterpillar G3608A4	2,500-HP	Ox. Catalyst	Complies with JJJJ	2017	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	2,500-HP	-	-	7/2017	-	NSPS OOOOa
C-172	Caterpillar G3608A4	2,500-HP	Ox. Catalyst	Complies with JJJJ	2017	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	2,500-HP	-	-	7/2017	-	NSPS OOOOa
C-173	Caterpillar G3608A4	2,500-HP	Ox. Catalyst	Complies with JJJJ	2018	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	2,500-HP	-	-	3/2018	-	NSPS OOOOa
C-174	Caterpillar G3608A4	2,500-HP	Ox. Catalyst	Complies with JJJJ	2018	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	2,500-HP	-	-	9/2018	-	NSPS OOOOa
C-175	Caterpillar G3608A4	2,500-HP	Ox. Catalyst	Complies with JJJJ	2018	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	2,500-HP	-	-	9/2018	-	NSPS OOOOa
C-177	Caterpillar G3606A4	1,875-HP	Ox. Catalyst	Complies with JJJJ	2017	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	1,875-HP	-	-	8/2017	-	NSPS OOOOa
C-151	Caterpillar G3306TA	203-HP	NSCR	Complies with JJJJ	2018	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	203-HP	-	-	1/2009	X	-
C-153	Caterpillar G3306TA	203-HP	NSCR	Complies with JJJJ	2024	-	NSPS JJJJ/ NESHAP ZZZZ
	Recip. Comp.	203-HP	-	-	9/2010	X	-

Point	Equipment Type	Size/Rating	Control		Manufacture or Installation Date	Subject to NSPS or NESHAP?	
			Type	Efficiency		No	If Yes, specify Subpart
DEHY-1	Dehydration Unit	240-MMSCFD	Still: Enclosed Flare; Flash - Recycle	Capture: 100% Control: 98%	2017	-	NESHAP HH (records only)
AMINE-1	Amine Unit	240-MMSCFD	Still: Enclosed Flare; Flash - Recycle	Capture: 100% Control: 98%	2017	-	NSPS OOOOa (records only)
H-741	Mole Sieve Regen Heater	10.4-MMBTU/hr	-		2017	-	NSPS Dc (records only)
H-781	Cryo Plant Trim Reboiler	18.32-MMBTU/hr	-		2017	-	NSPS Dc (records only)
H-782	Amine Plant Reboiler	27.7-MMBTU/hr	-		2017	-	NSPS Dc (records only)
H-783	Stabilizer/Dehy Heater	25.72-MMBTU/hr	-		2017	X	-
TK-1	Stabilized Condensate Storage Tank	400-bbl	Enclosed Flare	Capture: 98% Control: 98%	2017	X	-
TK-2	Stabilized Condensate Storage Tank	400-bbl	Enclosed Flare	Capture: 98% Control: 98%	2017	X	-
TK-3	Stabilized Condensate Storage Tank	400-bbl	Enclosed Flare	Capture: 98% Control: 98%	2017	X	-

Point	Equipment Type	Size/Rating	Control		Manufacture or Installation Date	Subject to NSPS or NESHAP?	
			Type	Efficiency		No	If Yes, specify Subpart
TK-4	Stabilized Condensate Storage Tank	400-bbl	Enclosed Flare	Capture: 98% Control: 98%	2017	X	-
TK-5	Stabilized Condensate Storage Tank	1,000-bbl	Enclosed Flare	Capture: 98% Control: 98%	2025	X	-
TK-6	Stabilized Condensate Storage Tank	1,000-bbl	Enclosed Flare	Capture: 98% Control: 98%	2025	X	-
TK-7	Stabilized Condensate Storage Tank	1,000-bbl	Enclosed Flare	Capture: 98% Control: 98%	2025	X	-
TK-8	Stabilized Condensate Storage Tank	1,000-bbl	Enclosed Flare	Capture: 98% Control: 98%	2025	X	-
PW-1	Produced Water Tank	400-bbl	Enclosed Flare	Capture: 98% Control: 98%	2017	X	-
PW-2	Produced Water Tank	400-bbl	Enclosed Flare	Capture: 98% Control: 98%	2017	X	-

Point	Equipment Type	Size/Rating	Control		Manufacture or Installation Date	Subject to NSPS or NESHAP?	
			Type	Efficiency		No	If Yes, specify Subpart
LOAD-1	Oil Truck Loading	-	Enclosed Flare	Capture: 70% Control: 98%	-	X	-
LOAD-2	Produced Water Truck Loading	-	Enclosed Flare	Capture: 70% Control: 98%	-	X	-
FL-994	Enclosed Flare – Tanks and Truck Loading	-	-	-	2017	X	-
FL-993	Enclosed Flare – Dehy / Amine Still Vents	-	-	-	2017	X	-
FL-991	Flare – ESD / BD	-	-	-	2017	X	-
FUG	Fugitive Emissions	-	-	-	-	-	NSPS 0000a, NSPS 0000b
BD	Compressor Blowdowns	-	-	-	-	X	-

SECTION IV. FACILITY-SPECIFIC OR REPRESENTATIVE SAMPLE

TANKS

The facility has provided a facility-specific sample that is less than three years old for each piece of equipment whose emissions are based on a sample.

DEHYDRATION UNIT

Glycol Dehydrator Considerations	Yes	No
The facility submitted a facility-specific extended gas analysis of the inlet gas.	X	
The sample was no older than three (3) calendar years at the time of submittal.		X

AMINE UNIT

The applicant did not request any emission changes for the amine unit from the last operating permit; therefore, no facility-specific or representative sample is needed for this unit.

FUGITIVES

Natural Gas Processing Plant Fugitive Considerations	Yes	No
The facility submitted a facility-specific sample of the inlet gas.	X	
The facility did not submit a liquid sample and assumed 100% VOC content for the liquid service components.		X
The facility submitted a facility-specific sample of the VOC containing liquid.	X	
The sample was no older than three (3) calendar years at the time of submittal.	X	

SECTION V. EMISSIONS

All emissions calculations are based on continuous operation (8,760 hours per year), unless otherwise noted.

ENGINES

Estimated emissions from the compressor engines (C-171, C-172, C-173, C-174, C-175, and C-177) and H₂CO are based on the manufacturer’s data. Estimated emissions from the compressor engines (C-151 and C-153) are based on NSPS Subpart JJJJ limits for NO_x, CO, and VOC, and manufacturer’s data for H₂CO. Since H₂CO is not included in JJJJ limits and manufacturing data for VOC, H₂CO is added to the VOC emissions to represent total VOC for the engines.

Controlled Engine Emission Factors

Point	NO _x	Control	CO	Control	VOC	Control	H ₂ CO	Control
	g/hp-hr	%	g/hp-hr	%	g/hp-hr	%	g/hp-hr	%
C-171	0.40	-	0.45	82	0.27	-	0.048	70
C-172	0.40	-	0.45	82	0.27	-	0.048	70
C-173	0.40	-	0.45	82	0.27	-	0.048	70
C-174	0.40	-	0.45	82	0.27	-	0.048	70
C-175	0.40	-	0.45	82	0.27	-	0.048	70
C-177	0.40	-	0.45	82	0.32	-	0.048	75
C-151	1.00	94	2.00	88	0.70	-	0.05	80
C-153	1.00	94	2.00	88	0.70	-	0.05	80

Individual Engine Emissions

Point	NO _x		CO		VOC ⁽¹⁾		H ₂ CO		PM	
	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
C-171, C-172, C-173, C-174, C-175	2.20	9.66	2.48	10.86	1.75	7.68	0.26	1.16	0.19	0.83
C-177	1.65	7.24	1.86	8.15	1.52	6.65	0.20	0.86	0.14	0.63
C-151, C-153	0.45	1.96	0.90	3.92	0.34	1.47	0.02	0.10	0.04	0.16

1. Emissions for VOC include H₂CO.

AMINE UNIT

Emission estimates from the amine, methyl diethanolamine (MDEA), unit's regenerator vent and flash tank are based on ProMax process simulator. Emissions from the amine unit regenerator still vent and flash tank are routed to flare FL-993 for control.

Amine Unit

Parameter	Data
Type of Amine	MDEA
Inlet Gas Flow Rate, MMSCFD	240
Inlet Gas H ₂ S Concentration, ppmv	6
Outlet Gas H ₂ S Concentration, ppmv	Negligible
Lean Amine Pump Design Capacity, gpm	265
Lean Amine Recirculation Rate Input, gpm	265
Amine Unit Inlet Gas Temperature, °F	67
Amine Unit Inlet Gas Pressure, psig	978
Amine Solution Concentration, wt. %	-
Regenerator Vent	
Potential VOC Emissions, TPY	65.78
Control Method	Enclosed Flare
VOC/H ₂ S Control Efficiency, %	98
H ₂ S to SO ₂ Conversion Efficiency, %	98
Flash Tank	

Parameter	Data
Flash Tank Temperature, °F	108
Flash Tank Pressure, psig	70
Control Method	Recycle
VOC/H ₂ S Control Efficiency, %	100
H ₂ S to SO ₂ Conversion Efficiency, %	100
Total Emissions	
VOC, TPY	1.32
H ₂ S, TPY	0.58
SO ₂ , TPY	53.31

TEG DEHYDRATION UNIT

Emission estimates from the TEG dehydration unit’s flash tank and regenerator still vent are based on the Gas Research Institute (GRI) program GLYCalc Version 4.0, an inlet gas analysis, and continuous operation. The dehydration unit is equipped with a flash tank on the rich glycol stream. Flash tank off-gasses are recycled/recompressed to the inlet with a 100% overall control efficiency. The vapors from the dehydration unit’s regenerator still vent are routed to a condenser then to a flare. Emissions from the dehydration unit’s regenerator still vent were calculated with a 98% overall control efficiency for VOC. The emissions include a safety factor of 50%.

Dehydration Units

Parameter	DEHY-1
Type of Glycol	TEG
Dry Gas Flow Rate, MMscf/d	240
Glycol Pump Type	Electric
Lean Glycol Pump Design Capacity, gpm	32
Lean Glycol Recirculation Rate Input, gpm	32
Regenerator Vent	
Control	Condenser/Flare
Condenser Outlet Temperature, °F	120
Potential VOC Emissions, TPY	394.30
Overall Combustion Efficiency, %	98
Controlled VOC Emissions, TPY	5.11
Flash Tank	
Flash Tank Temperature, °F	100
Flash Tank Pressure, psig	70
Control Method	Recycle
Potential VOC Emissions, TPY ⁽¹⁾	0.00
VOC Control Efficiency, %	100
Controlled VOC Emissions, TPY	0.00
Total VOC Emissions	
Total Potential VOC Emissions, TPY ⁽¹⁾	394.30
Total VOC Emissions, TPY	5.11
Total VOC Emissions with 50% safety factor	7.67

1. Since the recycle and recompression system for the flash tank is not considered an add-on control, the control efficiency is included in the potential emissions. All other potential emissions are uncontrolled.

Dehydration Unit Still Vent Emissions

Pollutant	Uncontrolled Emissions, TPY ⁽¹⁾	Combustion Efficiency, %	lb/hr	Controlled Emissions, TPY ⁽³⁾
VOC	394.30	98%	1.75	7.76 ⁽⁴⁾
Benzene	45.01	98%	0.20	0.87
Toluene	72.80	98%	0.19	0.85
Ethylbenzene	0.00	98%	0.01	0.04 ⁽²⁾
Xylene	23.46	98%	0.02	0.10
n-Hexane	13.50	98%	0.07	0.30
2,2,4-Trimethylpentane	0.00	98%	0.01	0.04 ⁽²⁾
Total HAP	154.77	98%	0.50	2.20

1. Emissions based on 8,760 hours uncontrolled.
2. Ethylbenzene and 2,2,4-Trimethylpentane were not present in the inlet gas analysis, therefore 0.01 lb/hr and 0.04 TPY have been added to allow for composition changes.
3. Controlled emission rate includes reductions attributed to the condenser and an added 50% safety factor.
4. Includes added 0.08 TPY VOC from conservative estimate of Ethylbenzene and 2,2,4-Trimethylpentane.

HEATER EMISSIONS

Emissions are based on AP-42 (7/98), Section 1.4, manufacturer’s data, a gas heating value of 1,020 BTU/SCF, and the ratings shown in the following table.

Heater/Reboiler Emission Factors

ID#	NO _x ⁽¹⁾	CO ⁽¹⁾	VOC ⁽²⁾
	lb/MMBtu	lb/MMBtu	lb/MMBtu
H-741	0.040	0.041	0.00054
H-781	0.033	0.041	0.00054
H-782	0.033	0.041	0.00054
H-783	0.033	0.041	0.00054

1. Emission factor based on manufacturer’s data.
2. Emission factor based on AP-42.

Heater/Reboiler Emissions

ID#	Rating	NO _x		CO		VOC	
	MMBTUH	lb/hr	TPY	lb/hr	TPY	lb/hr	TPY
H-741	10.40	0.42	1.82	0.43	1.87	0.06	0.25
H-781	18.32	0.60	2.65	0.75	3.29	0.10	0.43
H-782	27.70	0.91	4.00	1.14	4.97	0.15	0.65
H-783	25.72	0.85	3.72	1.05	4.62	0.14	0.61

FLARE EMISSIONS

NO_x and CO emissions from the enclosed flares were calculated based on AP-42 (02/18) Section 13.5 and mass balance. Pilot gas NO_x, CO and VOC emissions were calculated using AP-42 (07/98) Section 1.4 and the pilot ratings. Per vendor specifications, both flares FL-993 and FL-991 need purge gas to prevent oxygen ingress to the flare systems. Flare FL-994 does not specify purge gas because the flare includes a blower. Purge gas emissions were included for flares FL-993 and

FL-991 stream emissions. PM emissions are considered negligible for nonsmoking flares and therefore are not included.

Flare Stream Combustion Emissions

Point	Total Gas Combusted MMBtu/hr	Emission Factor lb/MMBtu		NO _x TPY	CO TPY
		NO _x ⁽¹⁾	CO ⁽¹⁾		
FL-994	0.51	0.068	0.31	0.15	0.68
FL-993	3.00	0.068	0.31	0.89	4.07
FL-991	0.93	0.068	0.31	0.28	1.26

⁽¹⁾ Based on AP-42 (02/18), Tables 13.5-1 and 13.5-2 for Industrial Flares.

Flare Pilot Emissions

Point	Pilot Rating (MMBtu/hr)	Emission Factor ⁽¹⁾ lb/MMBtu			NO _x TPY	CO TPY	VOC TPY
		NO _x	CO	VOC			
FL-994	0.01	0.098	0.082	0.0054	0.01	<0.01	<0.01
FL-993	0.13	0.098	0.082	0.0054	0.06	0.05	1.48 ⁽²⁾
FL-991	0.31	0.098	0.082	0.0054	0.13	0.11	0.01

⁽¹⁾ Based on AP-42 (07/98), Tables 1.4-1 and 1.4-2 for Natural Gas Combustion.

⁽²⁾ Includes purge gas from the combustion of propane at 16.85 lb/hr or 73.80 TPY of VOC resulting in 1.48 TPY added to the pilot stream.

Total Flare Emissions

ID#	Process Point(s)	NO _x TPY	CO TPY	VOC TPY
FL-994	Enclosed Flare (Tank/Loading Control)	0.16	0.69	2.25 ⁽¹⁾
FL-993	Enclosed Flare (Dehy/Amine Control)	0.95	4.11	10.56 ⁽²⁾
FL-991	ESD Flare (Blowdown Control)	0.41	1.37	0.02 ⁽³⁾

⁽¹⁾ Includes uncombusted emissions from tanks / loading.

⁽²⁾ Uncombusted dehy emissions include a 50% safety factor.

⁽³⁾ Includes uncombusted emissions from compressor blowdowns.

STORAGE TANKS

Working and breathing emissions from the four (4) 400-bbl (TK-1 through TK-4) along with the four (4) 1,000-bbl (TK-5 through TK-8) stabilized condensate storage tanks and two (2) 400-bbl produced water tanks (PW-1 and PW-2) were calculated using AP-42 (6/20), Section 7.1 equations and maximum throughputs listed below. Gasoline RVP 11 was selected for the condensate tanks to model emissions. Produced water was conservatively assumed to contain 1% condensate. Flash emissions from produced water tanks were calculated using a flash gas analysis with gas to oil ratio; no flashing emissions were predicted for condensate tanks due to stabilizers. Emissions of

stabilized condensate and produced water storage tanks are controlled by an enclosed flare (FL-994) with a 98% capture efficiency and 98% destruction efficiency.

TK-1 – TK-4 and TK-5 – TK-8 Emissions, Per Tank

Parameter	TK-1 – TK-4	TK-5 – TK- 8
Throughput, gal/yr	2,646,341	2,646,341
Flash Calculation Method/Tool	N/A	N/A
Working/Breathing Method/Tool	AP-42 (6/20), Section 7.1	AP-42 (6/20), Section 7.1
Working/Breathing Emissions, TPY	5.59	10.09
Flash Emissions, TPY ⁽¹⁾	-	-
Control Type	Flare	Flare
Capture Efficiency	98%	98%
Control Efficiency	98%	98%
VOC Emissions Emitted at Tank, TPY	0.11	0.20
VOC Emissions Emitted at Flare, FL-994, TPY	0.11	0.20
Total VOC Emissions, TPY	0.22	0.40

1. Condensate is stabilized before being sent to tank and produces no flash emissions.

PW-1 and PW-2 Emissions, Per Tank

Parameter	Data
Throughput, gal/yr	383,250
Flash Calculation Method/Tool	Flash analysis with GOR
Working/Breathing Method/Tool	AP-42 (6/20), Section 7.1
Working/Breathing Emissions, TPY	3.05
Flash Emissions, TPY	0.02
Control Type	Flare
Capture Efficiency	98%
Control Efficiency	98%
VOC Emissions Emitted at Tank, TPY	0.06
VOC Emissions Emitted at Flare, FL-994, TPY	0.06
Total VOC Emissions, TPY	0.12

TRUCK LOADING

Emissions from loading condensate and produced water into tank trucks (LOAD-1 and LOAD-2) were estimated using AP-42 (6/08), Section 5.2, Equation 1, annual throughputs, and loading parameters listed in the table below.

Loading Parameters and Emissions

Point	LOAD-1	LOAD-2
Liquids Loaded	Stabilized Condensate	Produced Water
Throughput, gal/yr	21,170,730	766,500

Point	LOAD-1	LOAD-2
Saturation Factor	0.6	0.6
Temp., °R	523.72	523.72
TVP, psia	6.4938	0.3316
MW, lb/lbmol	65.00	19.84
VOC Weight Percentage, %	100	100
Emission Factor, lb/10 ³ gal ⁽¹⁾	6.03	0.09
Loading Losses, TPY	63.78	0.04
Capture Efficiency	70%	70%
Combustion Efficiency	98%	98%
VOC Emissions at Truck, TPY	19.14	0.01
VOC Emissions at FL-994, TPY	0.89	<0.01
Total VOC Emissions, TPY	20.03	0.01

1. Final factor considering any VOC reduction stated for methane/ethane.

FUGITIVE EMISSIONS

Fugitive VOC emissions are based on EPA’s *1995 Protocol for Equipment Leak Emission Estimates* (EPA-453/R-95-017, 1995), an estimated percent C3+ (16.54 wt% for gas service and 99.99 wt% for heavy oil and light oil service), and an estimated number of components. Redcliff stated that the facility utilizes Leak Detection and Repair (LDAR) and the control efficiencies are 97% for valves, 30% for connectors and flanges, and 85% for pump seals based on Texas Commission on Environmental Quality (TCEQ) guidance for LDAR programs (Program 28VHP).

Fugitive Emissions

Point	VOC, TPY
FUG	12.25

COMPRESSOR BLOWDOWNS

Uncontrolled blowdown emissions from compressor engines C-151 and C-153 are based on a blowdown value of 5,000 scf per event, 96 events per year for a total of 480,000 scf per year. Blowdown emissions from compressor engines C-171 – C-175, C-177, and C-178 are controlled by flare FL-991 and are based on a blowdown value of 14,986 scf per event, 344 events per year for a total of 5,155,184 scf per year. Uncombusted emissions are shown at FL-991.

FACILITY-WIDE EMISSIONS

Facility-Wide Emissions

Point	Description	NO _x	CO	VOC	SO ₂	PM	H ₂ S
		TPY	TPY	TPY	TPY	TPY	TPY
C-171	2,500-hp Caterpillar G3608A4 ⁽¹⁾	9.66	10.86	7.68 ⁽³⁾	0.05	0.83	-
C-172	2,500-hp Caterpillar G3608A4 ⁽¹⁾	9.66	10.86	7.68 ⁽³⁾	0.05	0.83	-
C-173	2,500-hp Caterpillar G3608A4 ⁽¹⁾	9.66	10.86	7.68 ⁽³⁾	0.05	0.83	-
C-174	2,500-hp Caterpillar G3608A4 ⁽¹⁾	9.66	10.86	7.68 ⁽³⁾	0.05	0.83	-
C-175	2,500-hp Caterpillar G3608A4 ⁽¹⁾	9.66	10.86	7.68 ⁽³⁾	0.05	0.83	-
C-177	1,875-hp Caterpillar G3606A4 ⁽¹⁾	7.24	8.15	6.65 ⁽³⁾	0.04	0.63	-
C-151	203-hp Caterpillar G3306TA ⁽²⁾	1.96	3.92	1.47 ⁽³⁾	0.01	0.16	-
C-153	203-hp Caterpillar G3306TA ⁽²⁾	1.96	3.92	1.47 ⁽³⁾	0.01	0.16	-
DEHY-1	240-MMSCFD Dehydration Unit	-	-	7.76	-	-	-
AMINE-1	240-MMSCFD Amine Unit	-	-	1.32	53.31	-	0.58
H-741	10.40-MMBtu/hr Mole Sieve Regenerator Heater	1.82	1.87	0.25	0.03	0.34	-
H-781	18.32-MMBtu/hr Cryo Plant Trim Reboiler	2.65	3.29	0.43	0.05	1.04	-
H-782	27.70-MMBtu/hr Amine Plant Reboiler	4.00	4.97	0.65	0.07	1.58	-
H-783	25.72-MMBtu/hr Stabilizer / Dehy Heater	3.72	4.62	0.61	0.07	1.46	-
TK-1	400-bbl Stabilized Condensate Storage Tank	-	-	0.22 ⁽⁴⁾	-	-	-
TK-2	400-bbl Stabilized Condensate Storage Tank	-	-	0.22 ⁽⁴⁾	-	-	-
TK-3	400-bbl Stabilized Condensate Storage Tank	-	-	0.22 ⁽⁴⁾	-	-	-
TK-4	400-bbl Stabilized Condensate Storage Tank	-	-	0.22 ⁽⁴⁾	-	-	-
TK-5	1000-bbl Stabilized Condensate Storage Tank	-	-	0.40 ⁽⁴⁾	-	-	-
TK-6	1000-bbl Stabilized Condensate Storage Tank	-	-	0.40 ⁽⁴⁾	-	-	-
TK-7	1000-bbl Stabilized Condensate Storage Tank	-	-	0.40 ⁽⁴⁾	-	-	-
TK-8	1000-bbl Stabilized Condensate Storage Tank	-	-	0.40 ⁽⁴⁾	-	-	-
PW-1	400-bbl Produced Water Storage Tank	-	-	0.12 ⁽⁴⁾	-	-	-
PW-2	400-bbl Produced Water Storage Tank	-	-	0.12 ⁽⁴⁾	-	-	-
LOAD-1	Stabilized Condensate Truck Loading	-	-	20.03 ⁽⁴⁾	-	-	-
LOAD-2	Produced Water Truck Loading	-	-	0.01 ⁽⁴⁾	-	-	-
FL-994	0.52-MMBtu/hr Enclosed Flare (Tank/Loading)	0.16	0.69	<0.01	<0.01	<0.01	-
FL-993	3.13-MMBtu/hr Enclosed Flare (Dehy/Amine)	0.95	4.11	1.48	-	<0.01	-
FL-991	1.23-MMBtu/hr ESD Flare (Blowdown Control)	0.41	1.37	0.02	<0.01	0.01	-

Point	Description	NO _x	CO	VOC	SO ₂	PM	H ₂ S
		TPY	TPY	TPY	TPY	TPY	TPY
FUG	Fugitive Emissions	-	-	12.25	-	-	-
BD	Compressor Blowdowns (controlled)	-	-	0.03	-	-	-
Total		73.15	91.22	95.56	53.81	9.54	0.58
Permit No. 2017-0429-O (M-1) Emissions		71.42	86.42	93.99	45.32	9.51	0.58
Change in Emission		1.73	4.80	1.57	8.49	0.03	-

1. Equipped with Oxidation Catalyst
2. Equipped with NSCR
3. Includes H₂CO.
4. Includes both uncaptured and uncombusted emissions.
5. Includes 20% safety factor for the amine unit (previously omitted from 2017-0429-C (M-3)).

HAP EMISSIONS

The internal combustion engines have emissions of hazardous air pollutants, the most significant being formaldehyde. Emissions of formaldehyde for the engines are calculated based on manufacturer data with the listed reduction from the controls.

Engine Formaldehyde Emissions

Point	Description	Control	H ₂ CO	
		%	lb/hr	TPY
C-171	2,500-hp Caterpillar G3608A4 w/OC	70	0.26	1.16
C-172	2,500-hp Caterpillar G3608A4 w/OC	70	0.26	1.16
C-173	2,500-hp Caterpillar G3608A4 w/OC	70	0.26	1.16
C-174	2,500-hp Caterpillar G3608A4 w/OC	70	0.26	1.16
C-175	2,500-hp Caterpillar G3608A4 w/OC	70	0.26	1.16
C-177	1,875-hp Caterpillar G3606A4 w/OC	75	0.20	0.86
C-151	203-hp Caterpillar G3306TA w/NSCR	80	0.02	0.10
C-153	203-hp Caterpillar G3306TA w/NSCR	80	0.02	0.10
TOTAL			1.57	6.86

Facility-Wide HAP Emissions

Pollutant	Emissions (TPY)
Acetaldehyde	4.05
Acrolein	2.51
Benzene	2.19 ⁽²⁾
Ethylbenzene	0.30
Formaldehyde	6.88 ⁽¹⁾
Methanol	1.25
N-Hexane	3.07
Toluene	2.29
Xylenes	0.79
Other HAPs	0.75
Total HAP	24.08

⁽¹⁾ Includes potential formaldehyde emissions from heaters and reboilers.

⁽²⁾ Individual emission sources do not exceed 1 TPY of benzene.

The total HAP emissions from the equipment at the facility are 24.08 TPY. Therefore, the individual and the total emissions of HAPs do not exceed the major source thresholds of 10/25 TPY.

VI. OKLAHOMA AIR POLLUTION CONTROL RULES

OAC 252:100-1 (General Provisions) [Applicable]
 Subchapter 1 includes definitions but there are no regulatory requirements.

OAC 252:100-2 (Incorporation by Reference) [Applicable]
 This subchapter incorporates by reference applicable provisions of Title 40 of the Code of Federal Regulations listed in OAC 252:100, Appendix Q. These requirements are addressed in the

“Federal Regulations” section.

OAC 252:100-3 (Air Quality Standards and Increments) [Applicable]
Primary Standards are in Appendix E and Secondary Standards are in Appendix F of the Air Pollution Control Rules. At this time, all of Oklahoma is in attainment of these standards.

OAC 252:100-5 (Registration, Emission Inventory, and Annual Operating Fees) [Applicable]
Subchapter 5 requires sources of air contaminants to register with Air Quality, file emission inventories annually, and pay annual operating fees based upon total annual emissions of regulated pollutants. Required annual information (Turn-Around Document) shall be provided to Air Quality.

OAC 252:100-7 (Permits for Minor Facilities) [Applicable]
Subchapter 7 sets forth the permit application fees and the basic substantive requirements of permits for minor facilities. Since controlled criteria pollutant emissions are less than 100 TPY for each pollutant, and emissions of HAP will not exceed 10 TPY for any one HAP or 25 TPY for any aggregate of HAP, the facility is defined as a “synthetic minor” source.

OAC 252:100-9 (Excess Emissions Reporting Requirements) [Applicable]
Except as provided in OAC 252:100-9-7(a)(1), the owner or operator of a source of excess emissions shall notify the Director as soon as possible but no later than 4:30 p.m. the following working day of the first occurrence of excess emissions in each excess emission event. No later than thirty (30) calendar days after the start of any excess emission event, the owner or operator of an air contaminant source from which excess emissions have occurred shall submit a report for each excess emission event describing the extent of the event and the actions taken by the owner or operator of the facility in response to this event. Request for mitigation, as described in OAC 252:100-9-8, shall be included in the excess emission event report. Additional reporting may be required in the case of ongoing emission events and in the case of excess emissions reporting required by 40 CFR Parts 60, 61, or 63.

OAC 252:100-13 (Open Burning) [Applicable]
Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in this subchapter.

OAC 252:100-19 (Particulate Matter) [Applicable]
Section 19-4 regulates emissions of PM from new and existing fuel-burning equipment, with emission limits based on maximum design heat input rating. Fuel-burning equipment is defined in OAC 252:100-19 as any internal combustion engine or gas turbine, or other combustion device used to convert the combustion of fuel into usable energy. Thus, the engines and the heaters are subject to the requirements of this subchapter. OAC 252:100, Appendix C specifies a PM emission limitation of 0.60 lbs/MMBTU for all equipment at this facility with a heat input rating of 10-MMBTUH or less. OAC 252:100, Appendix C specifies a PM emission limitation for all equipment at this facility with a heat input rating of greater than 10-MMBTUH, but less than 1,000-MMBTUH based on the following calculation: $E = 1.0428080X^{-0.238561}$, where E is the allowable emission rate and X is the maximum heat input. Table 3.2-2 of AP-42 (7/00) lists the total PM emissions from 4-stroke, lean-burn, natural gas-fired engines to be 0.01 lbs/MMBTU. Table 3.2-3 of AP-42 (7/00) lists the total PM emissions from 4-stroke, rich-burn, natural gas-fired engines to be 0.02 lbs/MMBTU. This

permit requires the use of natural gas for all fuel-burning equipment to ensure compliance with Subchapter 19.

Equipment	Maximum Heat Input (MMBtu/hr)	Emissions (lbs/MMBtu)	
		Appendix C	Potential
Five (5) 2,500-hp Caterpillar G3608A4 w/OC	19.01 each	0.52	0.01
One (1) 1,875-hp Caterpillar G3606A4 w/OC	14.40	0.55	0.01
Two (2) 203-hp Caterpillar 3306TA w/NSCR	1.82 each	0.60	0.02
18.32-MMBtu/hr Cryo Plant Trim Reboiler	18.32	0.52	< 0.01
25.72-MMBtu/hr Stabilizer/Dehy Heater	25.72	0.48	< 0.01
27.70-MMBtu/hr Amine Plant Reboiler	27.70	0.47	< 0.01
10.40-MMBtu/hr Mole Sieve Regenerator Heater	10.40	0.597	< 0.01

Section 19-12 limits emissions of particulate matter from industrial processes and direct-fired fuel-burning equipment based on their process weight rates. Since there are no significant particulate emissions from the nonfuel-burning processes at the facility compliance with the standard is assured without any special monitoring provisions.

OAC 252:100-25 (Visible Emissions and Particulates) [Applicable]
 No discharge of greater than 20% opacity is allowed except for short-term occurrences that consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity. When burning natural gas, there is very little possibility of exceeding these standards.

OAC 252:100-29 (Fugitive Dust) [Applicable]
 No person shall cause or permit the discharge of any visible fugitive dust emissions beyond the property line on which the emissions originate in such a manner as to damage or interfere with the use of adjacent properties, or cause air quality standards to be exceeded, or interfere with the maintenance of air quality standards. Under normal operating conditions, this facility will not cause a problem in this area, so it is not necessary to require specific precautions to be taken.

OAC 252:100-31 (Sulfur Compounds) [Applicable]
Part 2 limits the ambient air concentration of H₂S emissions from any facility to 0.2 ppmv (24-hour average) at standard conditions which is equivalent to 283 µg/m³. Based on modeling conducted for the general permit for oil and gas facilities, controlled amine units (still vent routed to a flare) at minor facilities are unlikely to exceed the H₂S ambient air concentration limit. Also, since the ambient impacts of H₂S from the engines, heaters, and boilers is so low, and there are no significant emissions of H₂S from the condensate or “sweet” crude oil storage, the facility as a whole would be in compliance with the H₂S ambient air concentration limit.
Part 5 limits sulfur dioxide emissions from new fuel-burning equipment (constructed after July 1, 1972). For gaseous fuels the limit is 0.2 lb/MMBtu heat input averaged over 3 hours. For fuel gas having a gross caloric value of 1,000 Btu/scf, this limit corresponds to fuel sulfur content of 1,185 ppmv at API standard conditions (60°F). This permit will require the use of gaseous fuel with sulfur content less than 162 ppmv to ensure compliance with Subchapter 31.
Part 5 also limits hydrogen sulfide (H₂S) emissions from new petroleum or natural gas process equipment (constructed after July 1, 1972). H₂S contained in the waste gas stream from any petroleum or natural gas process equipment shall be reduced by 95% by removal or by being

oxidized to SO₂ prior to being emitted to the ambient air. This requirement shall not apply if a facility's emissions of H₂S do not exceed 0.3 lb/hr, two-hour average.

Based on the inlet gas stream estimate of 6 ppmv of H₂S, the amine unit waste gas stream without controls potentially contains 5.498 lb/hr of H₂S. The waste gas will be sent to an enclosed flare with a 98% destruction efficiency. The H₂S emissions emitted to the atmosphere after flare control are estimated to be 0.13 lb/hr, which is below the 0.3 lb/hr threshold, and therefore, does not require further reduction by controls.

Part 5 also requires the owner or operator to install, maintain, and operate an alarm system that will signal a malfunction for all thermal devices used to control H₂S emissions from petroleum and natural gas processing facilities regulated under this subparagraph. The Specific Conditions require an alarm system.

Part 5 also requires a sulfur recovery unit prior to the release of gas to the ambient air if the sulfur content of the acid gas stream from a gas sweetening unit or refinery process is greater than 0.54 LT/D. Alternatively, any gas sweetening unit or petroleum refinery process equipment with an emission rate of 100 lb/hr or less of SO_x expressed as SO₂, two-hour average, shall be considered to be below this threshold.

The estimated SO₂ Emissions after Control of H₂S are 12.17 lb/hr which is less than the 100 lb/hr threshold and therefore, does not require a sulfur recovery unit.

The Specific Conditions require the applicant to perform the following to demonstrate compliance with this subpart.

- a. The permittee shall install, maintain, and operate an alarm system that will signal a malfunction for all thermal devices used to control H₂S emissions.
- b. The permittee shall install a properly functioning flash tank to recycle emissions.
- c. The permittee shall test the H₂S concentration of the inlet gas at least once each calendar month using a "stain tube" analysis or similar method to determine the H₂S concentration to within 0.5 ppmv.
- d. Throughput of the amine unit shall not exceed 240 MMSCFD (monthly average).
- e. The amine unit shall process inlet gas with a concentration of 6.0 ppmv H₂S or less.
 - (1) If the H₂S concentration of the inlet gas is 6.0 ppmv or higher, the permittee shall use an approved process simulator to determine the H₂S emissions in lb/hr from the amine unit.
- f. Exhaust from the amine unit's still vent shall be directed to an enclosed flare with a 98% destruction efficiency for H₂S destruction.
- g. The H₂S emissions from the flare shall not exceed 0.3 lb/hr (two-hour average).

OAC 252:100-33 (Nitrogen Oxides)

[Not Applicable]

This subchapter limits new gas-fired fuel-burning equipment with rated heat input greater than or equal to 50 MMBTUH to emissions of 0.2 lbs of NO_x per MMBTU. There will be no equipment items that exceed the 50 MMBTUH threshold.

OAC 252:100-35 (Carbon Monoxide) [Not Applicable]

This subchapter affects gray iron cupolas, blast furnaces, basic oxygen furnaces, petroleum catalytic cracking units, and petroleum catalytic reforming units. There will be no affected sources.

OAC 252:100-37 (Volatile Organic Compounds) [Applicable]

Part 3 requires storage tanks constructed after December 28, 1974, with a capacity of 400 gallons or more and storing a VOC with a vapor pressure greater than 1.5 psia to be equipped with a permanent submerged fill pipe or with an organic vapor recovery system. The four (4) 400-bbl (TK-1 through TK-4) along with the four (4) 1000-bbl (TK-5 through TK-8) stabilized condensate storage tanks and two (2) 400-bbl produced water storage tanks (PW-1 and PW-2) at this facility are equipped with permanent submerged fill pipes.

Part 3 requires VOC loading facilities with a throughput equal to or less than 40,000 gallons per day to be equipped with a system for submerged filling of tank trucks or trailers if the capacity of the vehicle is greater than 200 gallons. This facility does not have the physical equipment (loading arm and pump) to conduct this type of loading and is not subject to this requirement.

Part 5 limits the VOC content of coating of parts and products. This facility will not normally conduct coating or painting operations except for routine maintenance of the facility and equipment, which is not an affected operation.

Part 7 requires fuel-burning and refuse-burning equipment to be operated to minimize emissions of VOC. The equipment at this location will be subject to this requirement.

Part 7 also requires effluent water separators which receive water containing more than 200 gallons per day of any VOC to be equipped with vapor control devices. There will be no effluent water separator at this location.

OAC 252:100-42 (Toxic Air Contaminants (TAC)) [Applicable]

This subchapter regulates TAC that are emitted into the ambient air in areas of concern (AOC). Any work practice, material substitution, or control equipment required by the Department prior to June 11, 2004, to control a TAC, shall be retained, unless a modification is approved by the Director. Since no AOC has been designated there are no specific requirements for this facility at this time.

OAC 252:100-43 (Testing, Monitoring, and Recordkeeping) [Applicable]

This subchapter provides general requirements for testing, monitoring and recordkeeping and applies to any testing, monitoring or recordkeeping activity conducted at any stationary source. To determine compliance with emissions limitations or standards, the Air Quality Director may require the owner or operator of any source in the state of Oklahoma to install, maintain and operate monitoring equipment or to conduct tests, including stack tests, of the air contaminant source. All required testing must be conducted by methods approved by the Air Quality Director and under the direction of qualified personnel. A notice-of-intent to test and a testing protocol shall be submitted to Air Quality at least 30 days prior to any EPA Reference Method stack tests. Emissions and other data required to demonstrate compliance with any federal or state emission limit or standard, or any requirement set forth in a valid permit shall be recorded, maintained, and submitted as required by this subchapter, an applicable rule, or permit requirement. Data from any required testing or monitoring not conducted in accordance with the provisions of this subchapter shall be considered invalid. Nothing shall preclude the use, including the exclusive use, of any

credible evidence or information relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

VII. FEDERAL REGULATIONS

NSPS, 40 CFR Part 60 [Subparts Dc, JJJJ, and OOOOa Applicable]
Subpart Dc, Small Steam Generating Units. This subpart affects boilers with a rated heat input between 10 and 100 MMBtu/hr (2.9 and 29 megawatts) that commenced construction, reconstruction, or modification after June 9, 1989. H-741, H-781, and H-782 will only be subject to recordkeeping provisions for gas-fired units under this subpart. H-783 has a heat input capacity within the applicable range, but the unit is considered a process heater and is therefore not subject.

Subpart Kb, VOL Storage Vessels. This subpart regulates hydrocarbon storage tanks larger than 19,813-gallons capacity and built after July 23, 1984 and on or before October 4, 2023. The 400-bbl tanks at this facility have capacities that are less than 19,813-gallons; therefore, they are not subject to this subpart. The 1,000-bbl tanks at this facility will be constructed after October 4, 2023; therefore, they will not be subject to this subpart.

Subpart Kc, VOL Storage Vessels. This subpart regulates hydrocarbon storage tanks larger than 20,000-gallons capacity and built after October 4, 2023. The 400-bbl tanks were built before October 4, 2023; therefore, they are not subject to this subpart. The 1,000-bbl tanks at this facility have capacities greater than 20,000-gallons, however, they store condensate prior to custody transfer and have capacities less than 420,000-gallons; therefore, they are exempt from this subpart per §60.110c(b)(4).

Subpart GG, Stationary Gas Turbines. This subpart sets standards for stationary gas turbines; however, the compressors here are powered by reciprocating engines.

Subpart KKK, Equipment Leaks of VOC from Onshore Natural Gas Processing Plants. This subpart sets standards for natural gas processing plants which are defined as any site engaged in the extraction of natural gas liquids from field gas, fractionation of natural gas liquids, or both. All equipment has been constructed after the August 23, 2011, applicability date of NSPS Subpart OOOO (which replaced Subpart KKK) and is not subject to this subpart.

Subpart LLL, Onshore Natural Gas Processing: SO₂ Emissions. This subpart sets standards for natural gas sweetening units. The gas sweetening unit was constructed after the August 23, 2011, applicability date and is not subject to this subpart.

Subpart JJJJ, Stationary Spark Ignition Internal Combustion Engines (SI-ICE). This subpart promulgates emission standards for all new SI engines ordered after June 12, 2006, and all SI engines modified or reconstructed after June 12, 2006, regardless of size. The specific emission standards (either in g/hp-hr or as a concentration limit) vary based on engine class, engine power rating, lean-burn or rich-burn, fuel type, duty (emergency or non-emergency), and numerous manufacture dates. Engines C-171, C-172, C-173, C-174, C-175, C-177, C-151, C-153 were manufactured after June 12, 2006. Therefore, they are subject to this subpart and the permit

requires compliance with all applicable requirements of this subpart.

Owners and operators of certified engines may demonstrate compliance by operating and maintaining their stationary engine and after-treatment control device (if any) according to the manufacturer’s emission-related written instructions and do not have to conduct any performance testing. Owners and operators of all SI engines (certified and non-certified) must keep records of maintenance conducted on the engine. If an owner or operator of a certified engine does not follow the manufacturer’s emission-related operation and maintenance instructions, that engine is considered a non-certified engine and is subject to performance testing, unless the engine is less than 100 HP. Owners and operators of non-certified engines, which include certified engines operating in a non-certified manner, must keep a maintenance plan. An initial performance test must be conducted within the first year of operation for any certified engine operating in a non-certified manner that is equal to or greater than 100 HP. In addition, non-certified engines, including certified engines operating in a non-certified manner, that are greater than 500 HP must conduct the initial performance test, and a performance test every 8,760 hours of operation or every 3 years thereafter, whichever comes first. The applicable standards of Table 1 of Subpart JJJJ are listed as follows.

**Emission Standards from Table 1, Subpart JJJJ, g/hp-hr
For Non-Emergency SI Natural Gas Engines**

Rated Power (HP)	Mfg. Date	NO _x	CO	VOC
100 ≤ HP < 500	7/1/2008	2.0	4.0	1.0
	1/1/2011	1.0	2.0	0.7
HP ≥ 500	7/1/2007	2.0	4.0	1.0
	7/1/2010	1.0	2.0	0.7

Subpart OOOO, Standards of Performance for Crude Oil and Natural Gas Facilities for Which Construction, Modification or Reconstruction Commenced After August 23, 2011, and on or Before September 18, 2015. The following table outlines the applicability of the subpart.

NSPS Subpart OOOO Applicability

§60.5365 section	Applicable? Y/N	Affected Facility	Comment
(a)	N	Gas well	Not at a wellsite
(b)	N	Centrifugal compressor using wet seals	Not applicable
(c)	N	Reciprocating compressor	Before 8/23/11 or After 9/18/15
(d)		Pneumatic controller:	
	N	(1) between wellhead and point of custody transfer or an oil pipeline, bleed rate > 6 SCFH	After 9/18/15
	N	(2) between wellhead and point of custody transfer to the natural gas transmission or storage segment, bleed rate > 6 SCFH	After 9/18/15
	N	(3) located at natural gas processing plant, continuous bleed	After 9/18/15
(e)	N	Storage vessel with the potential for VOC emissions ≥ 6 TPY	After 9/18/15
(f)	N	Group of all equipment in a process unit located at a gas plant	After 9/18/15
(g)	N	Sweetening units located at gas processing plants	After 9/18/15
(h)	N	Well completion following hydraulic refracturing	Not at a wellsite

Subpart OOOOa, Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced After September 18, 2015, and on or Before December 6, 2022. The following table outlines the applicability of the subpart.

NSPS Subpart OOOOa Applicability

§60.5365a section	Applicable? Y/N	Affected Facility	Comment
(a)	N	Well	Not at a wellsite
(b)	N	Centrifugal compressor using wet seals	Not applicable
(c)	Y	Reciprocating compressor	Compressors C-171, C-172, C-173, C-174, C-175, and C-177
(d)		Pneumatic controller:	
	N	(1) not located at a plant, bleed rate > 6 SCFH	Not applicable
	N	(2) located at a gas plant, continuous bleed	Devices use instrument air
(e)	N	Storage vessel with the potential for VOC emissions ≥ 6 TPY	FELs < 6 TPY
(f)	N	Group of all equipment in a process unit located at a gas plant	Is a gas plant
(g)	Y	Sweetening units located at gas processing plants	Subject
(h)		Pneumatic pump:	
	N	(1) gas-driven diaphragm pump at a gas plant	No pump present
	N	(2) gas-driven diaphragm pump at a well site	Not at a wellsite
(i)	N	Fugitive emissions components at a well site	Not at a wellsite
(j)	N	Fugitive emissions components at a compressor station	Not at a compressor station

Subpart OOOOb, Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced After December 6, 2022. The following table outlines the applicability of the subpart.

NSPS Subpart OOOOb Applicability

§60.5365b section	Applicable? Y/N	Affected Facility	Comment
(a)	N	Well	Not at a wellsite
(b)	N	Centrifugal compressor using wet seals	Not applicable
(c)	N	Reciprocating compressor	Before 12/6/2022
(d)	N	Process controllers operated with zero methane and VOC emissions	Not applicable
(e)	N	Tank Battery with the potential for VOC emissions ≥ 6 TPY and/or methane emissions ≥ 20 TPY	LPEs < 6 TPY VOC and < 20 TPY Methane
(f)	N	Group of all equipment in a process unit located at a gas plant	Not applicable
(g)	N	Sweetening units located at gas processing plants	Not applicable
(h)		Pneumatic pump:	
	N	(1) gas-driven diaphragm pump at a gas plant	Before 12/6/2022
	N	(2) gas-driven diaphragm pump at a well site	Not at a wellsite
(i)	N	Fugitive emissions components at a well site	Not at a wellsite
(j)	N	Fugitive emissions components at a compressor station	Not at a compressor station

At the time of permit issuance, NSPS Subpart OOOOb is currently under review by EPA. If federal legislation, rulemaking, or a court ruling invalidates all, or part of, OOOOb, the invalidated

portions will no longer be applicable through this permit. In the interim, DEQ will exercise enforcement discretion as appropriate.

NESHAP, 40 CFR Part 61

[Not Applicable]

There will be no emissions of any of the regulated pollutants: arsenic, asbestos, benzene, beryllium, coke oven emissions, mercury, radionuclides, or vinyl chloride except for trace amounts of benzene. Subpart J, Equipment Leaks of Benzene, concerns only process streams that contain more than 10% benzene by weight. No process streams will contain more than a trace of benzene.

NESHAP, 40 CFR Part 63

[Subparts HH and ZZZZ Applicable]

Subpart HH, Oil and Natural Gas Production Facilities. This subpart applies to triethylene glycol dehydration units at area sources and affected emission points that are located at facilities that are major sources of HAP emissions and either process, upgrade, or store hydrocarbons prior to the point of custody transfer or prior to which the natural gas enters the natural gas transmission and storage source category. For the purposes of this subpart, natural gas enters the natural gas transmission and storage source category after the natural gas processing plant, when present. If no natural gas processing plant is present, natural gas enters the natural gas transmission and storage source category after the point of custody transfer. DEHY-1 is considered an affected unit at an area source, but it is exempt from the requirements of §63.764(d)(2) since the actual average emissions of benzene from the glycol dehydration unit process vent to the atmosphere are less than 0.90 Mg (1.0 TPY), as determined by the procedures specified in §63.772(b)(2). However, the facility must maintain records of the de minimis determination as required by §63.774(d)(1).

Subpart HHH, affects Natural Gas Transmission and Storage Facilities that are major sources of HAP. Since this facility is a production facility, this subpart does not apply.

Subpart ZZZZ, Reciprocating Internal Combustion Engines (RICE). This subpart affects any existing, new, or reconstructed stationary RICE located at a major or area source of HAP emissions. Owners and operators of the following new or reconstructed RICE must meet the requirements of Subpart ZZZZ by complying with either 40 CFR Part 60 Subpart IIII (for CI engines) or 40 CFR Part 60 Subpart JJJJ (for SI engines):

- 1) Stationary RICE located at an area source;
- 2) The following Stationary RICE located at a major source of HAP emissions:
 - i) 2SLB and 4SRB stationary RICE with a site rating of ≤ 500 brake HP;
 - ii) 4SLB stationary RICE with a site rating of < 250 brake HP;
 - iii) Stationary RICE with a site rating of ≤ 500 brake HP which combust landfill or digester gas equivalent to 10% or more of the gross heat input on an annual basis;
 - iv) Emergency or limited use stationary RICE with a site rating of ≤ 500 brake HP; and
 - v) CI stationary RICE with a site rating of ≤ 500 brake HP.

No further requirements apply for engines subject to NSPS under this part. A stationary RICE located at an area source of HAP emissions is new if construction commenced after June 12, 2006. Based on emission calculations, this facility is an area source of HAP. Engines C-171, C-172, C-173, C-174, C-175, C-177, C-151, and C-153 were constructed after June 12, 2006. They comply with the requirements of Subpart ZZZZ by complying with NSPS Subpart JJJJ.

Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial and Institutional Boilers and Process Heaters at major sources of HAPs. Because this facility is an area source, this subpart does not apply.

Subpart JJJJJ, Industrial, Commercial, and Institutional Boilers. This subpart affects new and existing boilers located at area sources of HAP, except for gas-fired boilers. Boiler means an enclosed device using controlled flame combustion in which water is heated to recover thermal energy in the form of steam or hot water. There are no boilers located at this facility.

SECTION VIII. COMPLIANCE

TIER CLASSIFICATION AND PUBLIC REVIEW

This application has been determined to be Tier I based on the request for a construction modification regarding a minor source facility. The draft permit will undergo public notice on the DEQ's web site as required in OAC 252:4-7-13(g). The public, tribal governments, and the EPA will have 30 days to comment on the draft permit. Permits available for public review and comment are found at this location: <https://www.deq.ok.gov/permits-for-public-review/>.

The applicant has submitted an affidavit that they are not seeking a permit for land use or for any operation upon land owned by others without their knowledge. The affidavit certifies that the applicant has a current lease given to accomplish the permitted purpose.

FEE PAID

A fee of \$2,000 for the individual minor facility construction permit has been paid.

COMPLIANCE AND ENFORCEMENT CASES

There are no active Air Quality compliance or enforcement issues concerning this facility.

SECTION IX. SUMMARY

The facility has demonstrated the ability to comply with the requirements of the several air pollution control rules and regulations. Ambient air quality standards are not threatened at this site. There are no active Air Quality compliance or enforcement issues. Issuance of this construction permit is recommended, contingent on public review.

DRAFT

**PERMIT TO CONSTRUCT
AIR POLLUTION CONTROL FACILITY
SPECIFIC CONDITIONS**

**Redcliff Midstream, LLC
Redcliff Plant**

Permit No. 2017-0429-C (M-4)

The permittee is authorized to construct in conformity with the specifications submitted to the Air Quality Division on December 19, 2024. The Evaluation Memorandum dated August 22, 2025, explains the derivation of applicable permit requirements and estimates of emissions; however, it does not contain operating limitations or permit requirements. Commencing construction or operations under this permit constitutes acceptance of, and consent to, the conditions contained herein.

1. a. Points of emissions and limitations for each point.

Point	Description	NO _x		CO		VOC		H ₂ CO
		lb/hr	TPY	lb/hr	TPY	lb/hr	TPY	TPY
C-171	2,500-hp Caterpillar G3608A4 ⁽¹⁾	2.20	9.66	2.48	10.86	1.75	7.68 ⁽³⁾	1.16 ⁽⁴⁾
C-172	2,500-hp Caterpillar G3608A4 ⁽¹⁾	2.20	9.66	2.48	10.86	1.75	7.68 ⁽³⁾	1.16 ⁽⁴⁾
C-173	2,500-hp Caterpillar G3608A4 ⁽¹⁾	2.20	9.66	2.48	10.86	1.75	7.68 ⁽³⁾	1.16 ⁽⁴⁾
C-174	2,500-hp Caterpillar G3608A4 ⁽¹⁾	2.20	9.66	2.48	10.86	1.75	7.68 ⁽³⁾	1.16 ⁽⁴⁾
C-175	2,500-hp Caterpillar G3608A4 ⁽¹⁾	2.20	9.66	2.48	10.86	1.75	7.68 ⁽³⁾	1.16 ⁽⁴⁾
C-177	1,875-hp Caterpillar G3606A4 ⁽¹⁾	1.65	7.24	1.86	8.15	1.52	6.65 ⁽³⁾	0.86 ⁽⁴⁾
C-151	203-hp Caterpillar G3306TA ⁽²⁾	0.45	1.96	0.89	3.92	0.34	1.47 ⁽³⁾	0.10 ⁽⁴⁾
C-153	203-hp Caterpillar G3306TA ⁽²⁾	0.45	1.96	0.89	3.92	0.34	1.47 ⁽³⁾	0.10 ⁽⁴⁾

1. Equipped with Oxidation Catalyst
2. Equipped with NSCR
3. Includes H₂CO.
4. Compliance with the CO emission limits for the engines in this permit is deemed compliance with the formaldehyde emission limits. This permit requires periodic testing of CO emissions from the engines to demonstrate compliance with the formaldehyde limits.

Point	Description	VOC	CH ₄
		TPY	TPY
TK-1	400-bbl Condensate Storage Tanks	0.88	-
TK-2	400-bbl Condensate Storage Tanks		
TK-3	400-bbl Condensate Storage Tanks		
TK-4	400-bbl Condensate Storage Tanks		
PW-1	400-bbl Produced Water Storage Tanks	0.24	-
PW-2	400-bbl Produced Water Storage Tanks		
TK-5	1,000-bbl Condensate Storage Tank	1.60	19.9
TK-6	1,000-bbl Condensate Storage Tank		
TK-7	1,000-bbl Condensate Storage Tank		
TK-8	1,000-bbl Condensate Storage Tank		

Point	Description	NO _x	CO	VOC	SO ₂	H ₂ S
		TPY	TPY	TPY	TPY	TPY
DEHY-1	240-MMSCFD Dehydration Unit	-	-	7.76	-	-
AMINE-1	240-MMSCFD Amine Unit	-	-	1.32	53.31	0.58
H-741	10.40-MMBtu/hr Mole Sieve Regenerator Heater	1.82	1.87	0.25	-	-
H-781	18.32-MMBtu/hr Cryo Plant Trim Reboiler	2.65	3.29	0.43	-	-
H-782	27.70-MMBtu/hr Amine Plant Reboiler	4.00	4.97	0.65	-	-
H-783	25.72-MMBtu/hr Stabilizer / Dehy Heater	3.72	4.62	0.61	-	-
LOAD-1	Stabilized Condensate Truck Loading	-	-	20.03	-	-
LOAD-2	Produced Water Truck Loading	-	-	0.01	-	-
FL-994	0.52-MMBtu/hr Enclosed Flare (Tank/Loading)	0.16	0.69	0.01	-	-
FL-993	3.13-MMBtu/hr Enclosed Flare (Dehy/Amine)	0.95	4.11	1.48	-	-
FL-991	1.23-MMBtu/hr ESD Flare (Blowdown Control)	0.41	1.37	0.02	-	-
BD	Compressor Blowdowns	-	-	0.03	-	-

- All fuel burning equipment shall be fueled only with pipeline-grade natural gas or field gas with sulfur content not greater than 162 ppmv. Compliance can be shown by the following methods: for pipeline grade natural gas, a current gas company bill; for other gaseous fuel, a current lab analysis, gas contract, tariff sheet, etc. Compliance shall be demonstrated at least once per calendar year.
- The permittee shall be authorized to operate this facility continuously (24 hours per day, every day of the year).
- Each engine at the facility shall have a permanent identification plate attached that is accessible and legible, which shows the make, model number, and serial number. The operating permit application shall supply the serial numbers for each engine.
- Engines (C-171, C-172, C-173, C-174, C-175, and C-177) shall be operated with the exhaust gas passing through a properly functioning oxidation catalyst. Engines (C-151 and C-153) shall be operated with the exhaust gas passing through a properly functioning non-selective catalytic reduction.
- The permittee shall conduct an initial test of NO_x and CO emissions from any engine listed in S.C. #1 or any replacement engine; other than (1) an Emergency Use Engine (i.e., any engine that drives an emergency power generator, peaking power generator, firewater pump, or other emergency use equipment and operates no more than 500 hours per year), or (2) any engine equal to or less than 250 horsepower (hp). The initial test must be performed within 180 days of engine startup. Testing shall be conducted using EPA reference methods, if applicable, or a portable analyzer in accordance with a protocol meeting the requirements of the latest AQD "Portable Analyzer Guidance" document, or an equivalent method approved by AQD.
- At least twice per calendar year, the permittee shall conduct tests of NO_x and CO emissions from any controlled engine greater than 250 hp. Testing shall be conducted using EPA reference methods, if applicable, or a portable analyzer in accordance with a protocol meeting the requirements of the latest AQD "Portable Analyzer Guidance" document, or an equivalent method approved by AQD. Testing is required for any controlled engine greater than 250 hp that runs for more than 440 hours during a semi-annual period. A semi-annual period is defined

as a calendar semi-annual period (i.e., January through June & July through December). Each semi-annual test shall be separated by at least 120 days. In the first year of operation, any engine started after March 31st only requires one test regardless of hours operated. The initial test may be counted as the first semi-annual test of an engine.

8. Replacement of any equipment with emissions specified in this permit are authorized under OAC 252:100-7-15(a)(2)(C), provided the replacement unit does not require a change in any emission limit and the owner or operator notifies the DEQ in writing within fifteen (15) days of the startup of the replacement unit. The replacement unit shall meet the definition under OAC 252:100-7-1.1. Installation of an "affected facility," "affected source," or "new source" as those terms are defined in 40 CFR Section 60.2, 40 CFR Section 63.2, and 40 CFR Section 61.02, respectively, that is subject to an emission standard, equipment standard, work practice standard or recordkeeping requirement in a federal NSPS (40 CFR Part 60) or a federal NESHAP (40 CFR Parts 61 and 63) shall comply with all applicable requirements.
9. When periodic compliance testing shows exhaust emissions from the engines in excess of the lb/hr limits in Specific Condition No. 1, the permittee shall comply with the provisions of OAC:252:100-9 for excess emissions.
10. The amine unit is subject to OAC 252:100 Subchapter 31 and shall demonstrate compliance as follows.
 - a. The permittee shall install, maintain, and operate an alarm system that will signal a malfunction for all thermal devices used to control H₂S emissions.
 - b. The permittee shall install a properly functioning flash tank to recycle emissions.
 - c. The permittee shall test the H₂S concentration of the inlet gas at least once each calendar month using a "stain tube" analysis or similar method to determine the H₂S concentration to within 0.5 ppmv.
 - d. Throughput of the amine unit shall not exceed 240 MMSCFD (monthly average).
 - e. The amine unit shall process inlet gas with a concentration of 6.0 ppmv H₂S or less.
 - (1) If the H₂S concentration of the inlet gas exceeds 6.0 ppmv, the permittee shall use an approved process simulator to determine the H₂S emissions in lb/hr from the amine unit.
 - f. Exhaust from the amine unit's still vent shall be directed to an enclosed flare with a 98% destruction efficiency for H₂S removal.
 - g. The H₂S emissions from the flare shall not exceed 0.30 lb/hr (two-hour average).
11. The glycol dehydration unit DEHY-1 shall be installed, maintained and operated in accordance with applicable state and federal rules, including but not limited to the following requirements:
 - a. The natural gas throughput of the glycol dehydration unit shall not exceed 240 MMSCFD, monthly average.
 - b. The lean glycol circulation rate for the unit shall not exceed 32 gallons per minute (gpm).
 - c. The glycol dehydration unit shall be equipped with a vent stream condenser.
 - d. All emissions from the glycol dehydration unit's still vent shall be routed to the condenser.
 - e. The off-gases from the condenser shall be routed to a flare or to an equally-effective device (overall combustion efficiency of 98%).

- f. The glycol dehydration unit shall be equipped with a flash tank on the rich glycol stream. The off-gases from the overhead of the flash tank shall be routed back to the station inlet gas stream (suction side of compressors).
- g. An alternative system to control VOC emissions from the still vent may be utilized provided that it achieves the same or greater level of efficiency.
- h. The lean glycol circulation rate shall be monitored and recorded at least once every calendar month, as follows.
 - Circulation rate, as found (gal/min, strokes/min) _____
 - Circulation rate, as left (gal/min, strokes/min) _____
 - Date of inspection _____
 - Inspected by _____
- i. As an alternative to (h). This requirement shall be waived if the dehydration unit is equipped with a glycol recirculation pump with a capacity that does not exceed 32 gpm. If so, the capacity of the pump shall be shown on the pump or performance data for the model of pump that verifies the maximum pump rate shall be maintained and available for inspection.
- j. Still vent HAP emission limits for the dehydration unit.

Pollutant	Emissions (TPY)
Benzene	0.87
Ethylbenzene	0.04
n-Hexane	0.30
Toluene	0.85
Xylenes	0.10
2,2,4-trimethylpentane	0.04
Total HAP	2.20

- 12. The condensate storage tanks shall each be operated with submerged fill pipes. Condensate throughput at the facility shall not exceed 10,585,365 gallons (12-month rolling total) for each tank battery (TK-1 through TK-4 and TK-5 through TK-8). Produced water throughput at the facility shall not exceed 766,500 gallons (12-month rolling total).
- 13. All VOC emissions from the tanks shall be routed to the enclosed flare or equivalent with a 98% capture efficiency and 98% destruction efficiency. The flare shall be operated as follows:
 - a. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.
 - b. Records of pilot flame(s) outages shall be maintained along with the time and duration of all periods during which the pilot flame is/are absent.
- 14. Crude oil or condensate and produced water loading shall be conducted using a vapor collection system which is designed to collect the vapors displaced from the tank truck during loading of crude oil or condensate. The loading operations, vapor collection system, and vapor disposal system shall be operated in accordance with the following:
 - a. When loading crude oil or condensate and produced water into tank trucks, the tank trucks shall be bottom loaded with hatches closed (vapor tight), and the storage tank

- hatches and atmosphere vents shall be closed (vapor tight).
- b. When loading crude oil or condensate and produced water into tank trucks, a vapor collection line shall be connected from the tank truck to the vapor collection system and shall route all vapors generated during loading to the vapor collection system.
 - c. All loading and vapor lines shall be equipped with fittings that make vapor-tight connections, and which must be closed when disconnected or which close automatically when disconnected.
 - d. A means shall be provided to prevent VOC drainage from the loading device when it is removed from any tank truck or trailer, or to accomplish complete drainage before removal.
 - e. The vapor collection systems shall be properly maintained and operated with a maximum assumed collection efficiency of 70%.
 - f. The owner or operator shall act to assure that the terminal's and the tank truck's vapor collection systems are connected during each loading of a tank truck at the affected facility. Examples of actions to accomplish this include training drivers in the hookup procedures and posting visible reminder signs at the affected loading racks.

For Vapor collection and control systems:

- g. The vapor disposal system shall route all vapors to a flare with a minimum destruction efficiency of 98%.
 - h. When loading crude oil or condensate, the presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.
 - i. Records of pilot flame(s) outages during loading operations shall be maintained along with the time and duration of all periods during which the pilot flame is/was absent.
15. Facility blowdowns are limited to controlled 5,155,184 scf per year and uncontrolled 480,000 scf per year.
16. For any and all subject equipment items, the permittee shall comply with NSPS, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Crude Oil and Natural Gas Production, Transportation, and Distribution, for all affected facilities located at this site.
- a. § 60.40c Applicability and designation of authority.
 - b. § 60.41c Definitions.
 - c. § 60.42c Standards for sulfur dioxide (SO₂).
 - d. § 60.43c Standard for particulate matter (PM).
 - e. § 60.44c Compliance and performance test methods and procedures for sulfur dioxide.
 - f. § 60.45c Compliance and performance test methods and procedures for particulate matter.
 - g. § 60.46c Emission monitoring for sulfur dioxide.
 - h. § 60.47c Emission monitoring for particulate matter.
 - b. § 60.48c Reporting and recordkeeping requirements.
17. The permittee shall comply with all applicable requirements of NSPS, Subpart JJJJ, Standards of Performance for Stationary Compression Ignition Internal Combustion Engines, for any of the engines subject to these requirements, including, but not limited to, the following.

- a. § 60.4230 Am I subject to this subpart?
 - b. § 60.4233 What emission standards must I meet if I am an owner or operator of a stationary SI internal combustion engine?
 - c. § 60.4234 How long must I meet the emission standards if I am an owner or operator of a stationary SI internal combustion engine?
 - d. § 60.4235 What fuel requirements must I meet if I am an owner or operator of a stationary SI gasoline fired internal combustion engine subject to this subpart?
 - e. § 60.4236 What is the deadline for importing or installing stationary SI ICE produced in the previous model year?
 - f. § 60.4237 What are the monitoring requirements if I am an owner or operator of an emergency stationary SI internal combustion engine?
 - g. § 60.4243 What are my compliance requirements if I am an owner or operator of a stationary SI internal combustion engine?
 - h. § 60.4244 What test methods and other procedures must I use if I am an owner or operator of a stationary SI internal combustion engine?
 - i. § 60.4245 What are my notification, reporting, and recordkeeping requirements if I am an owner or operator of a stationary SI internal combustion engine?
 - j. § 60.4246 What parts of the General Provisions apply to me?
 - k. § 60.4248 What definitions apply to this subpart?
16. The permittee shall comply with all applicable requirements in NSPS, Subpart OOOOa, Crude Oil and Natural Gas Facilities. This subpart affects the following sources that commence construction, reconstruction, or modification on or after September 18, 2015, and on or before December 6, 2022, including, but not limited to, the following.
- a. § 60.5360a What is the purpose of this subpart?
 - b. § 60.5365a Am I subject to this subpart?
 - c. § 60.5370a When must I comply with this subpart?
 - d. § 60.5375a What GHG and VOC standards apply to well affected facilities?
 - e. § 60.5380a What GHG and VOC standards apply to centrifugal compressor affected facilities?
 - f. § 60.5385a What GHG and VOC standards apply to reciprocating compressor affected facilities?
 - g. § 60.5390a What GHG and VOC standards apply to pneumatic controller affected facilities?
 - h. § 60.5393a What GHG and VOC standards apply to pneumatic pump affected facilities?
 - i. § 60.5395a What VOC standards apply to storage vessel affected facilities?
 - j. § 60.5397a What fugitive emissions GHG and VOC standards apply to the affected facility which is the collection of fugitive emissions components at a well site and the affected facility which is the collection of fugitive emissions components at a compressor station?
 - k. § 60.5398a What are the alternative means of emission limitations for GHG and VOC from well completions, reciprocating compressors, the collection of fugitive emissions components at a well site and the collection of fugitive emissions components at a compressor station?
 - l. § 60.5400a What equipment leak GHG and VOC standards apply to affected facilities at an onshore natural gas processing plant?
 - m. § 60.5401a What are the exceptions to the equipment leak GHG and VOC standards for

- affected facilities at onshore natural gas processing plants?
- n. § 60.5402a What are the alternative means of emission limitations for GHG and VOC equipment leaks from onshore natural gas processing plants?
 - o. § 60.5405a What standards apply to sweetening unit affected facilities at onshore natural gas processing plants?
 - p. § 60.5406a What test methods and procedures must I use for my sweetening unit affected facilities at onshore natural gas processing plants?
 - q. § 60.5407a What are the requirements for monitoring of emissions and operations from my sweetening unit affected facilities at onshore natural gas processing plants?
 - r. § 60.5408a What is an optional procedure for measuring hydrogen sulfide in acid gas—Tutwiler Procedure?
 - s. § 60.5410a How do I demonstrate initial compliance with the standards for my well, centrifugal compressor, reciprocating compressor, pneumatic controller, pneumatic pump, storage vessel, collection of fugitive emissions components at a well site, and collection of fugitive emissions components at a compressor station, and equipment leaks and sweetening unit affected facilities at onshore natural gas processing plants?
 - t. § 60.5411a What additional requirements must I meet to determine initial compliance for my covers and closed vent systems routing emissions from centrifugal compressor wet seal fluid degassing systems, reciprocating compressors, pneumatic pump and storage vessels?
 - u. § 60.5412a What additional requirements must I meet for determining initial compliance with control devices used to comply with the emission standards for my centrifugal compressor, and storage vessel affected facilities?
 - v. § 60.5413a What are the performance testing procedures for control devices used to demonstrate compliance at my centrifugal compressor, pneumatic pump and storage vessel affected facilities?
 - w. § 60.5415a How do I demonstrate continuous compliance with the standards for my well, centrifugal compressor, reciprocating compressor, pneumatic controller, pneumatic pump, storage vessel, collection of fugitive emissions components at a well site, and collection of fugitive emissions components at a compressor station affected facilities, and affected facilities at onshore natural gas processing plants?
 - x. § 60.5416a What are the initial and continuous cover and closed vent system inspection and monitoring requirements for my centrifugal compressor, reciprocating compressor, pneumatic pump, and storage vessel affected facilities?
 - y. § 60.5417a What are the continuous control device monitoring requirements for my centrifugal compressor, pneumatic pump, and storage vessel affected facilities?
 - z. § 60.5420a What are my notification, reporting, and recordkeeping requirements?
 - aa. § 60.5421a What are my additional recordkeeping requirements for my affected facility subject to GHG and VOC requirements for onshore natural gas processing plants?
 - bb. § 60.5422a What are my additional reporting requirements for my affected facility subject to GHG and VOC requirements for onshore natural gas processing plants?
 - cc. § 60.5423a What additional recordkeeping and reporting requirements apply to my sweetening unit affected facilities at onshore natural gas processing plants?
 - dd. § 60.5425a What parts of the General Provisions apply to me?
 - ee. § 60.5430a What definitions apply to this subpart?
 - ff. § 60.5432a How do I determine whether a well is a low pressure well using the low pressure well equation?
17. The permittee shall comply with all applicable requirements of NESHAP, Subpart HH,

National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities, for each affected dehydration unit including but not limited to the following:

- i. An owner or operator of a glycol dehydration unit that meets the exemption criteria in § 63.764(e)(1)(i) or § 63.764(e)(1)(ii) shall maintain the records specified in §§ 63.774(d)(1)(i) or (d)(1)(ii), as appropriate, for that glycol dehydration unit.
18. The permittee shall comply with all applicable requirements of the NESHAP (40 CFR Part 63) for Stationary Reciprocating Internal Combustion Engines (RICE), Subpart ZZZZ, for each affected engine including but not limited to:
- a. § 63.6580 What is the purpose of subpart ZZZZ?
 - b. § 63.6585 Am I subject to this subpart?
 - c. § 63.6590 What parts of my plant does this subpart cover?
 - d. § 63.6595 When do I have to comply with this subpart?
 - e. § 63.6603 What emission limitations and operating limitations must I meet if I own or operate an existing stationary CI RICE located at an area source of HAP emissions?
 - f. § 63.6605 What are my general requirements for complying with this subpart?
 - g. § 63.6625 What are my monitoring, installation, operation, and maintenance requirements?
 - h. § 63.6630 How do I demonstrate initial compliance with the emission limitations and operating limitations?
 - i. § 63.6640 How do I demonstrate continuous compliance with the emission limitations and operating limitations?
 - j. § 63.6650 What reports must I submit and when?
 - k. § 63.6655 What records must I keep?
 - l. § 63.6660 In what form and how long must I keep my records?
 - m. § 63.6665 What parts of the General Provisions apply to me?
 - n. § 63.6670 Who implements and enforces this subpart?
 - o. § 63.6675 What definitions apply to this subpart?
19. The permittee shall comply with the following legally and practicably enforceable (LPE) limit requirements for tank battery TK-5 through TK-8:
- a. Cumulative emissions from all storage vessels within a tank battery shall be limited to 6 TPY of VOC and 20 TPY of methane, calculated on a 12-month rolling total.
 - b. Compliance can be demonstrated by keeping records of the following:
 - i. A monthly quantitative throughput volume of the storage vessel affected facility.
 - ii. The composition of tank contents and any process stream (actual or representative consistent with DEQ policy as established by the Director) necessary to perform the stated calculations below.
 - iii. Emission calculation methods for working, breathing, and flashing emissions approved by the Director.
 - iv. Process operating parameters, including temperatures and pressures relied on in the compliance calculations.

- v. The method, if any, used to capture emissions, and divert emissions to a process and/or route emissions to a control device.
 - vi. Calculations showing that, given the tank contents, throughput, and process operating parameters (including downtime), the emissions from the tank battery will not exceed the LPE limits for VOC or methane.
- c. If one or more of the following control devices is used to ensure compliance, the permittee shall comply with the listed operational and parametric limits for the associated control device:
- i. If using a nonassisted flare:
 - 1. All emissions shall be routed through a closed vent system from the storage vessel affected facility to the flare with a combustion destruction efficiency of at least 95%.
 - 2. The flare shall meet the following applicable requirements of 40 CFR § 60.18: visible emissions requirements in § 60.18(c)(1); the pilot flame requirements in § 60.18(c)(2); the heating value requirements in § 60.18(c)(3)(ii); exit velocity requirements in § 60.18(c)(4); and the operational requirements in § 60.18(e).
 - ii. If using a nonassisted enclosed combustion device:
 - 1. All emissions shall be routed through a closed vent system from the storage vessel affected facility to the combustor with a combustion destruction efficiency of at least 95%
 - 2. The combustor shall meet the following applicable requirements for flares in 40 CFR § 60.18: visible emissions requirements in § 60.18(c)(1); the pilot flame requirements in § 60.18(c)(2); the heating value requirements in § 60.18(c)(3)(ii); and the operational requirements in § 60.18(e).
 - 3. The combustor shall use the maximum design capacity (MMBTUH) of the gases combusted as established by the manufacturer or operator during a performance test
 - iii. If using a VRU:
 - 1. All emissions shall be captured through a closed vent system from the storage vessel affected facility to the VRU process.
 - 2. All openings of the storage vessels shall be closed and sealed (e.g., covered by a gasketed lid, cap, or other appropriate methods) during normal operation.
- d. The following emission reductions associated with the chosen control device shall only be included in the emission calculations to show compliance with the VOC and methane limits established in this Specific Condition when the following initial and periodic and/or continuous monitoring requirements are met:

- i. If using a nonassisted flare or enclosed combustion device the permittee shall:
 1. Perform an initial visible emission observation of the flare or enclosed combustion device using Method 22 in Appendix A of 40 CFR Part 60, with a minimum observation time of six (6) minutes, within 60 days of initial operation.
 2. Continuously monitor at least once every five minutes for the presence of a pilot flame or combustion flame using a device (including, but not limited to, a thermocouple, ultraviolet beam sensor, or infrared sensor) capable of detecting that the pilot or combustion flame is present at all times. An alert must be sent whenever the pilot or combustion flame is unlit.
 3. Perform an initial, and semi-annually thereafter, determination of the net heating value of the gasses combusted using the equation in 40 CFR § 60.18(f)(3), GPA Method 2261, or other approved method.
 4. For a flare, perform an initial, and semi-annually thereafter, determination of the exit velocity of the gasses combusted, calculated by dividing the volumetric flowrate by the unobstructed (free) cross sectional area of the flare tip. Volumetric flowrate shall be determined by Method 2 in Appendix A of 40 CFR Part 60, or a generally accepted model or calculation methodology.
 5. For an enclosed combustion device, perform an initial, and semi-annually thereafter, demonstration that the actual heat content (MMBTUH) of the gases combusted are within the design values established by the manufacturer or operator during a performance test. The heat content of the combusted gases shall be determined by a generally accepted model or calculation methodology.
 6. Whenever the closed vent system, flare, or enclosed combustion device experiences outages and/or downtime, maintain calculations of associated emissions for the purpose of determining compliance with the VOC and methane limits in this Specific Condition.
- ii. If using a VRU, whenever the closed vent system and/or VRU experiences outages and/or downtime, the permittee shall maintain calculations of associated emissions for the purpose of determining compliance with the VOC and methane limits in this Specific Condition.
- e. The permittee shall report any exceedances of these limits in accordance with DEQ guidance.
- f. Recordkeeping must be updated monthly and maintained for a period of five (5) years, including:
 - i. Records of contents stored.
 - ii. Monthly and 12-month rolling total throughputs.
 - iii. Records of parameters monitored as required in subparagraph (b) and (c) of this Specific Condition above.

- iv. Monthly and 12-month rolling total emissions calculations used to demonstrate compliance.
 - v. Times and emissions when the system used to comply with the LPE limits is not operating in accordance with the requirements established in this Specific Condition.
 - vi. Records of all periods of uncontrolled venting.
 - vii. Equipment specifications, manuals, and/or maintenance records, as appropriate.
20. The permittee shall keep records as follows. These records shall be retained on-site or at a local field office for a period of at least five years following dates of recording and shall be made available to regulatory personnel upon request.
- a. Periodic testing for NO_x and CO exhaust from each engine.
 - b. Operating hours for each engine if less than 440 hours per semi-annual period and not tested.
 - c. Natural gas throughput for the dehydration unit (MMSCFD, monthly average).
 - d. Log of periods that the dehydration unit is operated without controls and other operational records when operated without controls.
 - e. Facility condensate and produced water throughput (monthly and 12-month rolling total).
 - f. For the fuel(s) burned, the appropriate document(s) as described in Specific Condition No. 2.
 - g. Amine unit operation records required by Specific Condition No. 10.
 - h. Lean glycol recirculation rate (monthly).
 - i. Truck loading operations records required by Specific Condition No. 14.
 - j. Number of Compressor blowdowns (monthly and 12-month rolling totals).
 - k. Records as required by NSPS, Subpart Dc.
 - l. Records as required by NSPS, Subpart JJJJ.
 - m. Records as required by NSPS, Subpart OOOOa.
 - n. Records as required by NSPS, Subpart OOOOb.
 - o. Records as required by NESHAP, Subpart HH.
 - p. Records as required by NESHAP, Subpart ZZZZ.
 - q. Records required by Specific Condition No. 19.
21. The permittee shall apply for a modified operating permit within 180 days of operation start-up of any new unit authorized by this permit.



PERMIT

AIR QUALITY DIVISION
STATE OF OKLAHOMA
DEPARTMENT OF ENVIRONMENTAL QUALITY
707 N. ROBINSON, SUITE 4100
P.O. BOX 1677
OKLAHOMA CITY, OKLAHOMA 73101-1677

Permit No. 2017-0429-C (M-4)

Redcliff Midstream, LLC,

Having complied with the requirements of the law, is hereby granted permission to construct within the boundaries of the Redcliff Plant located in Section 18, Township 20N, Range 18W, Woodward County, Oklahoma, subject to Standard Conditions dated February 13, 2020, and Specific Conditions, both attached.

In the absence of commencement of construction, this permit shall expire 18 months from the issuance date, except as authorized under Section B of the Standard Conditions.

DRAFT

Lee Warden, P.E.

Permits and Engineering Group Manager

Date

Redcliff Midstream, LLC
Attn: Mr. Greg Clark
1722 Routh Street, Suite 1300
Dallas, TX 75201

Re: Permit No. **2017-0429-C (M-4)**
Redcliff Plant (Facility ID: 17351)
Section 18, Township 20N, Range 18W
Woodward County, Oklahoma

Dear Mr. Clark:

Enclosed is the permit authorizing construction of the referenced facility. Please note that this permit is issued subject to certain standard and specific conditions that are attached.

Also note that you are required to annually submit an emissions inventory for this facility. An emissions inventory must be completed through DEQ's electronic reporting system by April 1st of every year. Any questions concerning the submittal process should be referred to the Emissions Inventory Staff at (405) 702-4100.

Thank you for your cooperation in this matter. If you have any questions, please refer to the permit number above and contact me at Aaron.Ozbirn@deq.ok.gov or at (405) 702-4206.

Sincerely,



Aaron Ozbirn, E.I.,
Existing Source Permits Section
AIR QUALITY DIVISION

Enclosures

**MINOR SOURCE PERMIT TO OPERATE / CONSTRUCT
AIR POLLUTION CONTROL FACILITY
STANDARD CONDITIONS
(February 13, 2020)**

- A. The issuing Authority for the permit is the Air Quality Division (AQD) of the Oklahoma Department of Environmental Quality (DEQ) in accordance with and under the authority of the Oklahoma Clean Air Act. The permit does not relieve the holder of the obligation to comply with other applicable federal, state, or local statutes, regulations, rules, or ordinances. This specifically includes compliance with the rules of the other Divisions of DEQ: Land Protection Division and Water Quality Division.
- B. A duly issued construction permit or authorization to construct or modify will terminate and become null and void (unless extended as provided in OAC 252:100-7-15(g)) if the construction is not commenced within 18 months after the date the permit or authorization was issued, or if work is suspended for more than 18 months after it is commenced. [OAC 252:100-7-15(f)]
- C. The recipient of a construction permit shall apply for a permit to operate (or modified operating permit) within 180 days following the first day of operation. [OAC 252:100-7-18(a)]
- D. Unless specified otherwise, the term of an operating permit shall be unlimited.
- E. Notification to the Air Quality Division of DEQ of the sale or transfer of ownership of this facility is required and shall be made in writing by the transferor within 30 days after such date. A new permit is not required. [OAC 252:100-7-2(f)]
- F. The following limitations apply to the facility unless covered in the Specific Conditions:
1. No person shall cause or permit the discharge of emissions such that National Ambient Air Quality Standards (NAAQS) are exceeded on land outside the permitted facility. [OAC 252:100-3]
 2. All facilities that emit air contaminants are required to file an emission inventory and pay annual operating fees based on the inventory. Instructions are available on the Air Quality section of the DEQ web page. www.deq.ok.gov [OAC 252:100-5]
 3. Deviations that result in emissions exceeding those allowed in this permit shall be reported consistent with the requirements of OAC 252:100-9, Excess Emission Reporting Requirements. [OAC 252:100-9]
 4. Open burning of refuse and other combustible material is prohibited except as authorized in the specific examples and under the conditions listed in the Open Burning subchapter. [OAC 252:100-13]
 5. No particulate emissions from new fuel-burning equipment with a rated heat input of 10 MMBTUH or less shall exceed 0.6 lbs/MMBTU. [OAC 252:100-19]
 6. No discharge of greater than 20% opacity is allowed except for short-term occurrences which consist of not more than one six-minute period in any consecutive 60 minutes, not to exceed three such periods in any consecutive 24 hours. In no case shall the average of any six-minute period exceed 60% opacity. [OAC 252:100-25]
 7. No visible fugitive dust emissions shall be discharged beyond the property line on which the emissions originate in such a manner as to damage or to interfere with the use of adjacent

- properties, or cause air quality standards to be exceeded, or interfere with the maintenance of air quality standards. [OAC 252:100-29]
8. No sulfur oxide emissions from new gas-fired fuel-burning equipment shall exceed 0.2 lbs/MMBTU. No existing source shall exceed the listed ambient air standards for sulfur dioxide. [OAC 252:100-31]
 9. Volatile Organic Compound (VOC) storage tanks built after December 28, 1974, and with a capacity of 400 gallons or more storing a liquid with a vapor pressure of 1.5 psia or greater under actual conditions shall be equipped with a permanent submerged fill pipe or with an organic material vapor-recovery system. [OAC 252:100-37-15(b)]
 10. All fuel-burning equipment shall at all times be properly operated and maintained in a manner that will minimize emissions of VOCs. [OAC 252:100-37-36]
- G. Any owner or operator subject to provisions of NSPS shall provide written notification as follows: [40 CFR 60.7 (a)]
1. A notification of the date construction (or reconstruction as defined under §60.15) of an affected facility is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.
 2. A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in §60.14(e). This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Administrator may request additional relevant information subsequent to this notice.
 3. A notification of the actual date of initial start-up of an affected facility postmarked within 15 days after such date.
 4. If a continuous emission monitoring system is included in the construction, a notification of the date upon which the test demonstrating the system performance will commence, along with a pretest plan, postmarked no less than 30 days prior to such a date.
- H. Any owner or operator subject to provisions of NSPS shall maintain records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of an affected facility or any malfunction of the air pollution control equipment. [40 CFR 60.7 (b)]
- I. Any owner or operator subject to the provisions of NSPS shall maintain a file of all measurements and other information required by this subpart recorded in a permanent file suitable for inspection. This file shall be retained for at least five years following the date of such measurements, maintenance, and records. [40 CFR 60.7 (f)]
- J. Any owner or operator subject to the provisions of NSPS shall conduct performance test(s) and furnish to AQD a written report of the results of such test(s). Test(s) shall be conducted within 60 days after achieving the maximum production rate at which the facility will be operated, but not later than 180 days after initial start-up. [40 CFR 60.8]

Department of Environmental Quality (DEQ)
Air Quality Division (AQD)
Acronym List
11-21-2024

ACFM	Actual Cubic Feet per Minute	GAL	Gallon (gal)
AD	Applicability Determination	GDF	Gasoline Dispensing Facility
AFRC	Air-to-Fuel Ratio Controller	GEP	Good Engineering Practice
API	American Petroleum Institute	GHG	Greenhouse Gases
ASTM	American Society for Testing and Materials	GR	Grain(s) (gr)
AVO	Audio, Visual, or Olfactory	H₂CO	Formaldehyde
		H₂S	Hydrogen Sulfide
BACT	Best Available Control Technology	HAP	Hazardous Air Pollutants
BAE	Baseline Actual Emissions	HC	Hydrocarbon
BBL	Barrel(s)	HCFC	Hydrochlorofluorocarbon
BHP	Brake Horsepower (bhp)	HFR	Horizontal Fixed Roof
BTEX	Benzene, Toluene, Ethylbenzene, Xylene	HON	Hazardous Organic NESHAP
BTU	British thermal unit (Btu)	HP	Horsepower (hp)
		HR	Hour (hr)
C&E	Compliance and Enforcement	I&M	Inspection and Maintenance
CAA	Clean Air Act	IBR	Incorporation by Reference
CAM	Compliance Assurance Monitoring	ICE	Internal Combustion Engine
CAS	Chemical Abstract Service		
CAAA	Clean Air Act Amendments	LAER	Lowest Achievable Emission Rate
CC	Catalytic Converter	LB	Pound(s) [Mass] (lb, lbs, lbm)
CCR	Continuous Catalyst Regeneration	LB/HR	Pound(s) per Hour (lb/hr)
CD	Consent Decree	LDAR	Leak Detection and Repair
CEM	Continuous Emission Monitor	LNG	Liquefied Natural Gas
CFC	Chlorofluorocarbon	LT	Long Ton(s) (metric)
CFR	Code of Federal Regulations	LPE	Legally and Practicably Enforceable
CI	Compression Ignition		
CNG	Compressed Natural Gas	M	Thousand (Roman Numeral)
CO	Carbon Monoxide or Consent Order	MAAC	Maximum Acceptable Ambient Concentration
COA	Capable of Accommodating	MACT	Maximum Achievable Control Technology
COM	Continuous Opacity Monitor	MM	Prefix used for Million (Thousand-Thousand)
D	Day	MMBTU	Million British Thermal Units (MMBtu)
DEF	Diesel Exhaust Fluid	MMBTUH	Million British Thermal Units per Hour (MMBtu/hr)
DG	Demand Growth	MMSCF	Million Standard Cubic Feet (MMscf)
DSCF	Dry Standard (At Standard Conditions) Cubic Foot (Feet)	MMSCFD	Million Standard Cubic Feet per Day
		MSDS	Material Safety Data Sheet
EGU	Electric Generating Unit	MWC	Municipal Waste Combustor
EI	Emissions Inventory	MWe	Megawatt Electrical
EPA	Environmental Protection Agency	NA	Nonattainment
ESP	Electrostatic Precipitator	NAAQS	National Ambient Air Quality Standards
EUG	Emissions Unit Group	NAICS	North American Industry Classification System
EUSGU	Electric Utility Steam Generating Unit	NESHAP	National Emission Standards for Hazardous Air Pollutants
		NH₃	Ammonia
FCE	Full Compliance Evaluation	NMHC	Non-methane Hydrocarbon
FCCU	Fluid Catalytic Cracking Unit	NGL	Natural Gas Liquids
FEL	Federally Enforceable Limit(s)		
FIP	Federal Implementation Plan		
FR	Federal Register		
GACT	Generally Achievable Control Technology		

NO₂	Nitrogen Dioxide	RICE	Reciprocating Internal Combustion Engine
NO_x	Nitrogen Oxides	RO	Responsible Official
NOI	Notice of Intent	ROAT	Regional Office at Tulsa
NSCR	Non-Selective Catalytic Reduction	RVP	Reid Vapor Pressure
NSPS	New Source Performance Standards		
NSR	New Source Review		
O₃	Ozone	SCC	Source Classification Code
O&G	Oil and Gas	SCF	Standard Cubic Foot
O&M	Operation and Maintenance	SCFD	Standard Cubic Feet per Day
O&NG	Oil and Natural Gas	SCFM	Standard Cubic Feet per Minute
OAC	Oklahoma Administrative Code	SCR	Selective Catalytic Reduction
OC	Oxidation Catalyst	SER	Significant Emission Rate
OGI	Optical Gas Imaging	SI	Spark Ignition
		SIC	Standard Industrial Classification
PAH	Polycyclic Aromatic Hydrocarbons	SIP	State Implementation Plan
PAE	Projected Actual Emissions	SINCR	Selective Non-Catalytic Reduction
PAL	Plant-wide Applicability Limit	SO₂	Sulfur Dioxide
Pb	Lead	SO_x	Sulfur Oxides
PBR	Permit by Rule	SOP	Standard Operating Procedure
PCB	Polychlorinated Biphenyls	SRU	Sulfur Recovery Unit
PCE	Partial Compliance Evaluation	T	Tons
PEA	Portable Emissions Analyzer	TAC	Toxic Air Contaminant
PFAS	Per- and Polyfluoroalkyl Substance	TEG	Triethylene Glycol
PM	Particulate Matter	THC	Total Hydrocarbons
PM_{2.5}	Particulate Matter with an Aerodynamic Diameter <= 2.5 Micrometers	TPY	Tons per Year
PM₁₀	Particulate Matter with an Aerodynamic Diameter <= 10 Micrometers	TRS	Total Reduced Sulfur
POM	Particulate Organic Matter or Polycyclic Organic Matter	TSP	Total Suspended Particulates
ppb	Parts per Billion	TV	Title V of the Federal Clean Air Act
ppm	Parts per Million	µg/m³	Micrograms per Cubic Meter
ppmv	Parts per Million Volume	US EPA	U. S. Environmental Protection Agency
ppmvd	Parts per Million Dry Volume	VFR	Vertical Fixed Roof
PSD	Prevention of Significant Deterioration	VMT	Vehicle Miles Traveled
psi	Pounds per Square Inch	VOC	Volatile Organic Compound
psia	Pounds per Square Inch Absolute	VOL	Volatile Organic Liquid
psig	Pounds per Square Inch Gage	VRT	Vapor Recovery Tower
		VRU	Vapor Recovery Unit
RACT	Reasonably Available Control Technology	YR	Year
RATA	Relative Accuracy Test Audit	2SLB	2-Stroke Lean Burn
RAP	Regulated Air Pollutant or Reclaimed Asphalt Pavement	4SLB	4-Stroke Lean Burn
RFG	Refinery Fuel Gas	4SRB	4-Stroke Rich Burn