

**Texas Commission on Environmental Quality**  
**Readily Available Permit – Compressor Station**  
**Qualification Criteria**

The following qualification criteria must be met in order to submit an application for the Readily Available Permit – Compressor Station (RAP-Compressor). If the facility meets the conditions of this permit, the answer should be “Yes” to each of these criteria.

If the qualifying criteria are not met, or if the applicant does not agree with the RAP-Compressor Special Conditions, the applicant will receive notice that the application has been voided. If the application is voided for these reasons, the applicant should seek a different type of authorization as appropriate.

**I. General Requirements:**

- The project is for a compressor station.
- The project is at a greenfield site.
- The project is a minor source.
- The customer has a compliance history classification of Satisfactory or High.
  - Further information on compliance history classifications can be found at: [www.tceq.texas.gov/compliance/enforcement/compliance-history/about.html](http://www.tceq.texas.gov/compliance/enforcement/compliance-history/about.html).
  - Details on obtaining a compliance history report can be found at: [www.tceq.texas.gov/compliance/enforcement/compliance-history/get\\_report.html](http://www.tceq.texas.gov/compliance/enforcement/compliance-history/get_report.html).
- The facility will comply with the RAP - <https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/rap/rap-cnd.pdf> Compressor Special Conditions.
- The emission sources included in this RAP are limited to:
  - Six (6) compressor engines unless the site will be located in a county listed below;

Harris	3 engines
Brooks, Cameron, Dimmit, Duval, El Paso, Hidalgo, Jim Hogg, Kenedy, Kinney, La Salle, McMullen, Maverick, Starr, Val Verde, Webb, Willacy, Zapata, Zavala	4 engines
Aransas, Atascosa, Bandera, Bee, Bexar, Calhoun, Comal, DeWitt, Edwards, Frio, Gillespie, Goliad, Gonzales, Guadalupe, Jackson, Jim Wells, Karnes, Kendall, Kerr, Kleberg, Lavaca, Live Oak, Medina, Nueces, Real, Refugio, San Patricio, Uvalde, Victoria, Wilson	5 engines

- One (1) glycol reboiler;
- Fugitive emissions;
- Two (2) oil tanks
- One (1) dehydrator;
- Blowdown emissions;
- One (1) flare;
- Two (2) produced water tanks;
- Loading emissions;

- Cleaning emissions;
- Degassing emissions; and
- Maintenance, Startup and Shutdown (MSS) activities.
- The setback distance from the property line to the closest emission point must be at least 25 meters.

## II. Equipment Criteria

### A. Compressor Engine

Units must meet the following minimum discharge parameters:

Release height [feet (ft)]	30 ft
Diameter (ft)	1 ft
Temperature [degrees Fahrenheit (°F)]	992 °F
Velocity [feet per second (fps)]	107 fps

Units may not exceed the values listed below:

Rated brake power of engine [horsepower (hp)]	1380 hp
Max heat rate [million British thermal units per hour (MMBtu/hr)]	10.08 MMBtu/hr
Hours operation per year	8760 hrs/yr
Sulfur content of natural gas [grains per 100 dry standard cubic feet (gr/100 dscf)]	0.2 gr/100 dscf

Units may not exceed the emission factors listed below:

Nitrogen oxide (NO <sub>x</sub> )	0.7000 grams (g)/hp-hr*
Carbon monoxide (CO)	0.5000 g/hp-hr
Particulate matter (PM)	0.0100 pound (lb)/MMBtu
PM less than 10 microns in diameter (PM <sub>10</sub> )	0.0100 lb/MMBtu
PM less than 2.5 microns in diameter (PM <sub>2.5</sub> )	0.0100 lb/MMBtu
Volatile organic compounds (VOC)	0.0300 g/hp-hr
Sulfur dioxide (SO <sub>2</sub> )	0.0006 lb/MMBtu
Formaldehyde (CH <sub>2</sub> O)	0.0310 g/hp-hr

\*limited to 0.70 g/hp-hr or lower, depending on the manufacturer guarantee

The following practices and controls represent Best Available Control Technology (BACT):

- NO<sub>x</sub>: non-selective catalytic reduction system and an air-fuel ratio controller, limited to 0.70 g/hp-hr or lower, depending on the manufacturer guarantee
- CO: oxidation catalyst, limited to 0.50 g/hp-hr
- VOC: oxidation catalyst, fuel limited to natural gas only, limited to 0.03 g/hp-hr
- PM/PM<sub>10</sub>/PM<sub>2.5</sub>: fuel limited to natural gas only, good combustion practices
- SO<sub>2</sub>: fuel limited to natural gas only, fuel sulfur content limited to 0.2 gr per 100 dscf

- CH<sub>2</sub>O: fuel limited to natural gas only, good combustion practices

## B. Glycol Reboiler

Unit must meet the following minimum discharge parameters:

Release height (ft)	20 ft
Diameter (ft)	0.65 ft
Temperature (°F)	200 °F
Velocity (fps)	5.2 fps

Unit may not exceed the values listed below:

Max heat rate (MMBtu/hr)	1.5 MMBtu/hr
Hours operation per year	8760 hrs/yr
Fuel heating value (Btu/scf)	1020 Btu/scf

Unit may not exceed the emission factors listed below:

NO <sub>x</sub>	100 lb/MMscf
CO	84 lb/MMscf
PM	7.6 lb/MMscf
PM <sub>10</sub>	7.6 lb/MMscf
PM <sub>2.5</sub>	7.6 lb/MMscf
VOC	5.5 lb/MMscf
SO <sub>2</sub>	0.6 lb/MMscf
CH <sub>2</sub> O	0.075 lb/MMscf

The following practices and controls represent BACT:

- Add-on control is not economically reasonable given the size
- Best management practices
- Firing natural gas only

## C. Fugitives

Sources of emissions must meet the following minimum discharge parameter:

Release height (ft)	3 ft
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Each equipment type may not exceed the gas and oil production operations pound VOC per hour per source listed below:

Valves-gas	0.00992 lb VOC/hr/source
Relief valve-gas	0.0194 lb VOC/hr/source
Open-ended lines-gas	0.00441 lb VOC/hr/source
Connectors-gas	0.00086 lb VOC/hr/source

Sampling connectors-gas	0.00044 lb VOC/hr/source
Valves-light oil	0.0055 lb VOC/hr/source
Open-ended lines-light oil	0.00309 lb VOC/hr/source
Connectors-light oil	0.000243 lb VOC/hr/source
Sampling connectors-light oil	0.000463 lb VOC/hr/source
Flanges-light oil	0.243 lb VOC/hr/source

Each equipment type may not exceed the control efficiency percentages listed below:

Valves-gas	97%
Relief valve-gas	97%
Open-ended lines-gas	97%
Connectors-gas	30%
Sampling connectors-gas	30%
Valves-light oil	97%
Open-ended lines-light oil	97%
Connectors-light oil	30%
Sampling connectors-light oil	30%
Flanges-light oil	30%

The following practices and controls represent BACT:

- 28VHP Leak Detection and Repair monitoring program, which exceeds typical BACT requirements due to the impacts analysis

#### D. Oil Tank

All emissions from the oil tank(s) must be routed to the flare. Emission rate requirements listed on the flare tab must be adhered to.

Units may not exceed the values listed below:

Percent oil in throughput	100%
Potential oil throughput [barrels (bbl)/day]	125 bbl/day
Capacity of oil tank [gallons (gal)]	25,000 gal

Units may not exceed the emission factors listed below:

NO <sub>x</sub>	0.138 lb/MMBtu
CO	0.2755 lb/MMBtu

The following practices and controls represent BACT:

- Fixed-roof
- Submerged filled
- White or aluminum exterior surfaces
- Vented to the flare which will have a control efficiency of 98%
- Throughput limitation of 125 bbls per day and 10,000 bbls per rolling 12-months

### E. Dehydrator Vent

All emissions from the dehydrator must be routed to the flare. Emission rate requirements listed on the flare tab must be adhered to.

Unit may not exceed the emission factors listed below:

NO <sub>x</sub>	0.138 lb/MMBtu
CO	0.2755 lb/MMBtu

The following practices and controls represent BACT:

- Vented to the flare which will have a control efficiency of 98%

### F. Compressor Blowdowns

All emissions from the blowdowns must be routed to the flare. Emission rate requirements listed on the flare tab must be adhered to.

Source of emissions may not exceed the values listed below:

Blowdowns per hour per engine	1 blowdown/hr
Ideal volume per lb-mol [scf/lb-mole (mol)]	379.4
Number of blowdowns per engine per year	12 blowdowns/engine/year

Source of emissions may not exceed the emission factors listed below:

NO <sub>x</sub>	0.138 lb/MMBtu
CO	0.2755 lb/MMBtu

The following practices and controls represent BACT:

- Limited to twelve hours of blowdown activities per engine per year
- Limited to one engine per hour
- Emissions are routed back into the process or to the flare for control

### G. Flare

Unit must meet the following minimum discharge parameter:

Release height (ft)	25 ft
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Unit may not exceed the values listed below:

Fuel type	Field Gas
VOC molecular weight in field gas (lb/lb-mol)	21.87 lb/lb-mol
Sulfur content of fuel (gr/MMscf)	2000 gr/MMscf

Unit may not exceed the emission factors listed below:

NO <sub>x</sub>	0.138 lb/MMBtu
CO	0.2755 lb/MMBtu
SO <sub>2</sub>	2000 gr S/MMscf

The following practices and controls represent BACT:

- Provides 99% DRE for VOC compounds up to 3 carbons, 98% DRE for VOC compounds with 4 or more carbons
- Fires waste stream and supplemental natural gas
- Meets 40 CFR 60.18 requirements
- Continuous flow monitor
- Biannual waste stream sampling for VOC and Btu content with portable analyzer

#### H. Produced Water Tank

Units must meet the following minimum discharge parameter:

Release height (ft)	10 ft
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Units may not exceed the values listed below:

Percent oil in water throughput	1%
Potential water throughput (bbl/day)	125 bbl/day

The following practices and controls represent BACT:

- Fixed-roof
- Submerged filled
- White or aluminum exterior surfaces
- Throughput limitation of 125 bbls per day and 10,000 bbls per rolling 12-months

#### I. Truck Loading

Source of emissions must meet the following minimum discharge parameter:

Release height (ft)	10 ft
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Source of emissions may not exceed the values listed below:

Molecular weight of vapors (lb/lb-mol)	46.15 lb/lb-mol
True vapor pressure at 95°F (pounds per square inch absolute (psia)	6.79 psia*
Max hourly fill rate (bbl/hr)	200 bbl/hr

The following practices and controls represent BACT:

- Submerged fill
- Maximum fill rate: 125 barrels per hour

**J. Cleaning**

Source of emissions must meet the following minimum discharge parameter:

Release height (ft)	10 ft
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Source of emissions may not exceed the values listed below:

Tank volume of the largest tank (oil or produced water) (bbl)	500 bbl
Number of cleanings per year per oil tank	1 cleaning/tank/yr
Liquid heel (% volume of tank)	10%
M, Molecular weight of vapors (lb/lb-mol)	46.5 lb/lb-mol
P, True vapor pressure at 90°F (psia)	6.2 psia
P, True vapor pressure at average annual temp of liquid loaded (psia)	4 psia
Ave annual temp of liquid loaded (°F)	66.36°F
VOC concentration for produced water tanks (%)	1%
S, saturation factor	0.6
Safety factor	2
Number of vacuum trucks per tank per event	1 truck
Vacuum truck loading duration (hr/truck)	1 hr/truck

The following practices and controls represent BACT:

- Tanks are limited to one cleanout event per tank per year

**K. Degassing**

Source of emissions must meet the following minimum discharge parameter:

Release height (ft)	10 ft
Temperature (°F)	68°F

Source of emissions may not exceed the values listed below:

Atmospheric pressure [pounds per square inch (psi)]	14.7 psi
Oil tank capacity (bbl)	500 bbl
Oil mixture vapor pressure (psia)	4 psia
Molecular weight of oil mixture (lb/lb-mol)	46.15 lb/lb-mol
VOC weight fraction	0.86
Duration of activity (hr)	4 hrs

The following practices and controls represent BACT:

- All tanks are limited to a combined total of four hours of degassing per year

**L. Miscellaneous MSS**

Source of emissions may not exceed the values listed below:

Engine maintenance: engine oil changes and filter changes:

Temperature (°F)	212°F
Vapor pressure (psia)	0.001 psia
Saturation factor	1
Molecular weight (lb/lb-mol)	500 lb/lb-mol
Motor oil (gal/oil change)	112 gal/oil change
U wind speed [meters per second (m/s)]	3.52 m/s
Vapor pressure Pv [Pascal (Pa)]	10 Pa
Molecular weight [lb/lb-mole (mol)]	500 lb/lb-mol
Surface area Ap [meters squared (m <sup>2</sup> )]	1.48 m <sup>2</sup>
Evaporation time t (hrs)	10 hrs

Engine Maintenance: Changing engine rod packings:

Temperature (°F)	104°F
Vapor pressure (psia)	0.001 psia
Molecular weight (lb/lb-mol)	500 lb/lb-mol
VV Casing volume (ft <sup>3</sup> )	2.355 ft <sup>3</sup>
Ideal gas constant [psia-ft <sup>3</sup> /lb-mol-degrees Rankine (°R)]	10.73 psia-ft <sup>3</sup> /lb-mol-°R

Engine Maintenance: Changing wet and dry:

Temperature (°F)	104°F
Vapor pressure of material stored (psia)	0.001psia
Molecular weight (lb/lb-mol)	500 lb/lb-mol
VV Casing volume (ft <sup>3</sup> )	2.355 ft <sup>3</sup>
Ideal gas constant (psia-ft <sup>3</sup> /lb-mol-°R)	10.73 psia-ft <sup>3</sup> /lb-mol-°R



Dehydrator Maintenance: Replacement of Glycol Solution:

Temperature (°F)	68°F
Vapor pressure (psia)	0.001 psia
Saturation factor	
Molecular weight (lb/lb-mol)	62.07 lb/lb-mol
Glycol solution (gal/activity)	4000 gal/activity
VV Vessel volume (ft <sup>3</sup> )	2355 ft <sup>3</sup>
Ideal gas constant (psia-ft <sup>3</sup> /lb-mol-°R)	10.73 psia-ft <sup>3</sup> /lb-mol-°R

Glycol Reboiler Maintenance:

Temperature (°F)	100°F
Vapor pressure (psia)	10.5 psia
Molecular weight (lb/lb-mole)	66 lb/lb-mol
VV Vessel volume (ft <sup>3</sup> )	125.6 ft <sup>3</sup>
Ideal gas constant (psia-ft <sup>3</sup> /lb-mol-°R)	10.73 psia-ft <sup>3</sup> /lb-mol-°R

Additional Representations:

VOC type: (pick from list)	Crude oil or condensate, natural gas VOC, or other
Emission type: (pick from list)	Steady state (continuous), low pressure periodic, or high pressure periodic

The following practices and controls represent BACT:

- Limited duration, best management practices