

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT ENGINEERING AND COMPLIANCE DIVISION PERMIT APPLICATION EVALUATION AND CALCULATIONS	PAGES 9	PAGE 1
	APPL NO 509018, 530309, 531598	DATE 6-11-15
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APPLICATIONS IN THIS BATCH

A/N 509018: VAPOR RECOVERY SYSTEM
A/N 530309: RECLAIM (NOX)/TV REVISION (DE MINIMUS SIGNIFICANT)
A/N 531598: RULE 462 PLAN

(see draft permit(s))

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INTRODUCTION:

This facility is a NOx RECLAIM/TV facility

SFPP Colton functions as bulk loading/unloading and pipeline transfer station. It delivers petroleum products via loading racks and pipelines to customers in the southeast California region. The company receives petroleum products from three in-bound pipelines from its Watson station that is part of the pipeline distribution network from Los Angeles refineries.

Because the SFPP terminal functions as a distribution center for petroleum products, it is also responsible for blending of petroleum products to specifications before delivery to customers. To provide this formulation service, SFPP uses inline blending of the petroleum products before the product is loaded into tanker trucks, railcars, or pipeline.

These applications were submitted as follows:

A/N	Previous A/N : P/O	Equipment	Reason for application
509018	474550 : G25285 (connect to new rack 7, add flow meter) 457805:F84349 (remove refrigeration system) 322070 (update CARB limits, update language regarding direct/by-pass mode) 304684 (P/C only) replace burner rated at 46.8 with new John Zink 78 mmbtu/hr T _≥ 1400 deg	VRS – Afterburner, 78 mmbtu, 1250 scfm, propane pilot	Allow the VRS to be operated at temp lower than 1400 deg and still show compliance with all reqmts. (change of conditions)

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530309		RECLAIM/TV Facility Permit	TV Revision (De Minimus Significant)
531598	324943	Rule 462 CMS Plan	Change strip recorder to electronic recorder

There have been one NOV and one NC within the last two years for this facility. Facility is currently in compliance.

There are no schools within 1000 feet of this facility.

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A/N 509018
VAPOR RECOVERY SYSTEM

HISTORY/BACKGROUND:

This application (A/N 509018) was submitted 3/18/10 as a change of conditions to A/N 474550 (issued P/C 4/23/09 in Section H of the Facility Permit and eventually issued a P/O 6/21/13) to allow the vapor recovery system (afterburner) to operate at a temperature lower than 1400 deg and still maintain emission levels, VOC destruction efficiency and TAC destruction efficiencies.

SFPP Colton operates a John Zink vapor recovery system rated at 1250 scfm with a propane pilot. This vapor control system controls vapors displaced during rack loading as well as tanks during degassing and/or refilling.

A source test performed June 25, 2010 by VOC Testing show the following results (Note that these results have been reviewed by AQMD Source Testing June 21, 2011 and results that were amended by Source Testing are in *italics*):

	T = 1500 deg	T = 1225 deg	T = 1000 deg	Allowable Limit
VOC <lb/1000 gal>	<i>0.007</i>	<i>0.01</i>	<i>0.022</i>	0.02
VOC % DRE	<i>99.93</i>	<i>99.85</i>	<i>99.8</i>	99.0
NOx <lb/hr	<i>3.20</i>	<i>3.29</i> (3.95 mg/L)	<i>2.96</i>	0.009 lb/1000 gal gasoline (RECLAIM EF)
CO <ppm>	<i><100</i> (4.95 lb/hr)	305 (20.04 lb/hr) (24.06 mg/L)	178 (15.61 lb/hr)	2000
Benzene <ppb>	<i><5</i>	29	185.5	

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<lb/hr>	0.00069	0.00531	0.0453	
Exhaust Flow Rate <dscfm>	11,178	14,825	19,786	
MICRres		0.182 E -06		1E-6
MICRcomm		0.0559 E-06		1E-6

Calculations:

$$\text{Mass rate lb/hr} = \frac{(\text{concentration ppm})(\text{exhaust flow rate})(\text{MW})}{(379 \times E6)}$$

The existing permit limits VOCs to 0.02 lb/1000 gallons (BACT requirement) and $\geq 99\%$ control efficiency (BACT requirement). At 1000 deg operating temperature, the control efficiency of 99.8% complies with current permit condition of 99%, but the VOC emission rate of 0.021 lb/1000 gallon is slightly above the BACT level of 0.02 lb/1000 gallons.

Subsequent Test Results:

	June 7, 2011 T = 1500 deg	May 30, 2012 T = 1500 deg	May 29, 2013 T = 1500 deg	Allowable Limit
VOC <lb/1000 gal>	0.0005	0.0006	0.0006	0.02
VOC % DRE	99.99	99.99	99.99	99.0
NOx <ppm> <lb/hr>	28.1 1.79	27.8 1.65	42.4 2.92	
CO <ppm> <lb/hr	3.3 0.12	3.08 3.14	3.9 0.12	2000

Criteria Pollutants from the combustion process:

(Assume AP-42 and EFB factors, except for NOx which is a RECLAIM EF)

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Heat Rating = 78 mmbtu/hr
Vapor flow = 1250 scfm
Gasoline Thruput limit = 5,400,000 gpd
All Product Thruput = 8,500,000 gpd

NO_x = (0.009 lb/1000 gal gas loaded)(5.4 mmgpd)
= 48.6 lb/day
*1/24 = 2.03 lb/hr
*365 = 17,739.0 lb/yr
*1/12 = 1478.25 lb/mo

CO = (0.2 lb/mmbtu)(78 mmbtu/hr)
= 15.6 lb/hr
*24 = 374.4 lb/day
*365 = 136,656 lb/yr
*1/12 = 11388 lb/mo
*1/30 = 380 lb/day (30-day)

SO_x = (0.83 lb/mmcf)(1250 scfm)(60 min/hr)(1E-6)
= 0.061 lb/hr
*24 = 1.49 lb/day
*365 = 545.3 lb/yr
*1/12 = 45 lb/mo
*1/30 = 1.5 lb/day (30-day)

PM₁₀ = (7.5 lb/mmscf)(1250 scfm)(60 min/hr)(1E-6)
= 0.56 lb/hr
*24 = 13.5 lb/day
*365 = 4927.5 lb/yr
*1/12 = 411 lb/mo
*1/30 = 13.7 lb/day (30-day)

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GHG Emissions: Assume gasoline emission factors from Tables C-1 and C-2 of CFR98

Gasoline -78 mmbtu/hr VRU Pollutants	General Combustion GHG EF <lb/mmbtu>	Emissions <lb/hr>
CO2	154.81	120750.18
CH4	0.0030	0.234
N2O	0.0006	0.0468

CO_{2e} = 1,056,188,602.56 lbs/yr = 528,094.3 tpy

Toxic Air Contaminants (TACs)

A Tier 3 Health Risk Assessment was performed with benzene emissions at 0.03396 lb/hr (@1125 deg to account for cooling immediately out of stack). See Excel Spreadsheet.

Stack height = 50 ft.

Residential receptor = 1635 ft = 498 m (from 10-25-10 map from KMLT)

Commercial receptor = 580 ft = 177 m (from 10-25-10 map from KMLT)

Results show that at this emission rate, MICR_{res} = 0.182 in a million and MICR_{comm} = 0.0559 in a million (both are less than one in a million). HIA and HIC are less than one.

Rules:

- 401: Visible emissions are not expected
- 402: Nuisance is not expected

462: This is a Class A facility required to meet a VOC emissions rate of 0.08 lb/1000 gallons loaded. Source tests show that the emissions are below 0.08 lb/1000 gallons. Compliance expected.

1149: This afterburner is subject to the 500 ppm VOC limitation during degassing operations. It is expected to comply with this rule.

Reg 13: There is no increase for this change of conditions.

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1303(a)(1) BACT: This afterburner is BACT/LAER for the loading racks. Emissions of VOC controlled by this afterburner are accounted for in the basic equipment permits (racks and sump). Only the emissions from the combustion of gasoline vapors (ie CO, etc) are entered on this application. Note that VOC BACT/LAER for this equipment is currently at 0.02 lb/1000 gallons and 99% DRE. Source test results show that at a temperature of 1225 deg and greater, the VOC emissions will be 0.01 lb/1000 gal with 99.85% DER. Compliance expected.

1303(b)(1&2) Offsets and Modeling: This control equipment is exempt from modeling and offsets per 1304(a)(5) Air Pollution Control Strategies

1303(b)(5)(A&D) Compliance Thru CEQA: This project is exempt per the responses on the 400 CEQA form

1401: Risk is below one in a million based on Tier 3 HRA.

40CFR60 SUBPART XX: This equipment will comply with the 35 mg/l limit as well as other applicable parts of the rule.

Reg XXX: This is a NOX RECLAIM facility as of April 1, 2013. There is no increase in NOx from this change of conditions and the NOx emissions factors remain the same.

Title V: This is a de minimus significant revision to an existing TV facility permit, since there was an increase in benzene emissions (HAP). Risk, even with this increase, is below one in a million.

RECOMMENDATION:

A Permit to Operate is recommended with the attached conditions after a 45 day EPA comment period.

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A/N 531598
RULE 462 CMS PLAN

INTRO/SUMMARY:

This application was submitted 1/04/12 to amend their existing CMS Plan (currently approved under A/N 324943) to change the “strip chart recorder” to an “electronic data recorder”.

Language referencing “strip chart recorder” will be modified to “electronic data recorder” and the following condition added:

THE RECORDING DEVICE SHALL ARCHIVE DATA IN A SECURE ENCRYPTED FORMAT TO NONVOLATILE DATA STORAGE. DATA SHALL BE RECORDED AT A FREQUENCY OF NOT LESS THAN ONCE PER MINUTE. THE RECORDER/SOFTWARE SHALL BE CAPABLE OF DISPLAYING AND PRINTING OUT PLOTS OF THE COMBUSTION TEMPERATURE WITHIN 3 HOURS OF A REQUEST. WHERE EXTERNAL STORAGE MEDIA IS USED, IT SHALL BE REPLACED AT A SUFFICIENT FREQUENCY TO ENSURE THAT THE AMOUNT OF STORED DATA IS AT NO MORE THAN 90% OF THE STORAGE CAPACITY OF THE MEDIA.

CONCLUSION:

This plan will comply with the requirements of Rule 462. A Conditional Plan approval is recommended after a 45-day EPA review period.