

TECHNICAL REVIEW: AIR PERMIT BY RULE

Permit No.:	108301	Company Name:	Chesapeake Operating, Inc.	APD Reviewer:	Ms. Sandya Rani Bhaskara
Project No.:	195176	Unit Name:	Davis Family 1 42 Pad	PBR No(s).:	106.352 (I) (2/27/11) 106.512 (6/13/2001)

GENERAL INFORMATION			
Regulated Entity No.:	RN105067672	Project Type:	Permit by Rule Application
Customer Reference No.:	CN600514004	Date Received by TCEQ:	June 25, 2013
Account No.:		Date Received by Reviewer:	August 28, 2013
City/County:	Wheeler, Wheeler County	Physical Location:	from the oklahoma texas state line go nw on hwy 152 for 1.6 miles to cr 29 south on cr 29 travel 4.5 miles to site on right

CONTACT INFORMATION					
Responsible Official/ Primary Contact Name and Title:	Mr. Michael W Park District Manager	Phone No.:	(405) 935-7908	Email:	KHA.MACH@CHK.CO M
Technical Contact/ Consultant Name and Title:	Mr. Kha Mach, PE Corporate Air Engineer Coi	Phone No.:	(405) 935-7908	Email:	KHA.MACH@CHK.CO M

GENERAL RULES CHECK	YES	NO	COMMENTS
Is confidential information included in the application?		X	
Are there affected NSR or Title V permits for the project?		X	
Is each PBR > 25/250 tpy?		X	
Are PBR sitewide emissions > 25/250 tpy?		X	
Are there permit limits on using PBRs at the site?		X	
Is PSD or Nonattainment netting required?		X	
Do NSPS, NESHAP, or MACT standards apply to this registration?	X		Eng 1: NSPS JJJJ, MACT ZZZZ
Does NOx Cap and Trade apply to this registration?		X	
Is the facility in compliance with all other applicable rules and regulations?	X		
Is Registration Certified?	X		
Is the site handle sour oil or gas?		X	Receptor > 1320 ft
Did the company use a Simulator program (such as ProMax?)	X		
Is planned MSS included in the registration?	X		Blowdown emissions for ENG1

DESCRIBE OVERALL PROCESS AT THE SITE
Chesapeake Operating, Inc. (COI) owns and operates the Davis Family 1-42 Pad (Facility), which is located in Wheeler County, Texas. The Facility is an oil and natural gas gathering facility. Natural gas, oil, and produced water are produced from the wellhead at the Facility. Natural gas throughput is expected to be about 1,825 million standard cubic feet per year (MMSCFY). Oil production is expected to be about 5,840 barrels per year (BPY). Water production is estimated to be about 73,000 BPY. As line pressure decreases production may increase. Maximum daily production levels are expected to be as follows: 40 barrels oil per day (BOPD), 400 barrels water per day (BWPD), and 5 MMSCFD. COI will maintain sufficient records to demonstrate that actual emissions do not exceed the annual limits certified in this PBR. The oil, gas, and water flow from the wellhead to a production unit where separation occurs. The gas is sent to the sales pipeline, water flows into the water tank, and oil flows into the oil storage tanks. The oil and water are transferred offsite via trucks. The trucks are in dedicated normal service. A 145 Hp Caterpillar G3306 NA gas lift engine is used to lift gas and fluids out of the well. A ProMax process simulator run was used to estimate VOC flash emissions from the oil and water tanks. The ProMax run is based on samples pulled from the same reservoir as the Davis Family 1-42 facility, and uses the temperature (136°F) and pressure (110 psig) comparable to the site conditions. The equipment configuration used in the ProMax run is comparable to the equipment configuration at the Facility. The API gravity for Davis Family 1-42 is 50.0, which is similar to the API gravity of the sampled site. Both the Davis Family 1-42 site and the sampled site are natural gas sites with associated liquid hydrocarbons. Working and breathing losses from the tanks were estimated using Tanks 4.0.9d. The water tank breathing and working losses and truck loading losses assume all of the water is Gasoline RVP-8 and 1% of the calculated emissions are emitted. A site-specific gas analysis is used in the fugitive calculations. Periodically the engine may be shut down for various reasons, which could result in blowdown emissions. COI has conservatively estimated the number of blowdowns to be 20 per year. Approximately 1000 cubic feet of gas could be vented to the atmosphere during a blowdown. One blowdown could occur in a one hour period. Blowdown emissions are included in this submittal.

DESCRIBE PROJECT AND INVOLVED PROCESS
Chesapeake Operating, Inc. (COI) owns and operates the Davis Family 1-42 Pad in Wheeler County, Texas, which is currently authorized under Texas Commission on Environmental Quality (TCEQ) Permit by Rule (PBR) Registration No. 108301. 001 has prepared a PI-7-CERT submittal to update the registration and emissions certification for the Facility to reflect the addition of an engine, the removal of a combustor, and updated production levels. This registration is for a single scenario site. The changes occurred after February 27, 2011, and COI is not waiting for a response from the TCEQ prior to implementing this change.

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CATERPILLAR G3306 NA		
Inputs		
NO _x Emission Rate	0.32 lb/hr NO _x	0.040 g/sec
NO _x /NO ₂ Conversion Factor	0.2	
NO ₂ Emission Rate	0.064 lb/hr NO ₂	0.008 g/sec
Stack Height	10 ft	3.0480 m
Stack Inside Diameter	0.33 ft	0.1006 m
Stack Exit Velocity	127.83 ft/sec	38.9626 m/sec
Stack Gas Exit Temp	1,118 °F	876.4833 °K
Ambient Air Temp	--	293 °K
Receptor Height	0 ft	0 m
Urban/Rural	Rural	Rural
Downwash	None	None
Screen Modeling Results (hourly)		
Maximum Modeled Concentration		6.16 µg/m ³
Hourly Results		
Modeled Concentration		6.16 µg/m ³
Background Concentration		70.0 µg/m ³
Total Concentration		76.2 µg/m ³
Is Total Concentration less than 188 µg/m³?		Yes
Annual Results		
Conversion Factor (hourly to annual)		0.08
Annual Concentration		0.49 µg/m ³
Background Concentration		20.00 µg/m ³
Total Concentration		20.49 µg/m ³
Is Total Concentration less than 100 µg/m³?		Yes

ESTIMATED EMISSIONS														
EPN / Emission Source	VOC		NO _x		CO		PM ₁₀		PM _{2.5}		SO ₂		HCHO	
	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lbs/hr	tpy	lb/hr	tpy
FUG/Sitewide Fugitive	0.83	3.63												
PU/Production Unit	<0.01	0.02	0.07	0.31	0.06	0.26	0.01	0.04	0.01	0.04	<0.01	0.01		
TANK 1/Tank 1 - Produced Water	0.18	0.40												
TANK 2/Tank 2 - Crude Oil	4.83	8.69												
TANK 3/Tank 3 - Crude Oil	4.83	8.69												
C LOAD/Crude Loading	41.04	0.48												
PW LOAD/Produced Water Loading	0.41	0.06												
ENG 1/Caterpillar G3306 NA Engine	0.32	1.40	0.32	1.40	0.64	2.79	0.02	0.10	0.02	0.10	<0.01	0.02	0.10	0.42
ENG 1/Caterpillar G3306 NA Engine Blowdown	11.38	0.11												
TOTAL EMISSIONS (TPY):		23.48		1.71		3.05		0.14		0.14		0.03		0.42
MAXIMUM OPERATING SCHEDULE:	Hours/Day				Days/Week				Weeks/Year		Hours/Year		8760	

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	TECHNICAL REVIEWER	PEER REVIEWER	FINAL REVIEWER
SIGNATURE:			See Hard Copy.
PRINTED NAME:	Ms. Sandya Rani Bhaskara	Ms. Kristyn Bower	Ms. Anne M. Inman, P.E., Manager
DATE:	August 28, 2013	August 29, 2013	August 29, 2013