

**DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
Permit Application Analysis
A0001300**

September 15, 2015

NAME OF FIRM: BP America Production Company

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Wamsutter, WY 82336

RESPONSIBLE OFFICIAL: Shanda Caldwell
Field Environmental Advisor

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TYPE OF OPERATION: multiple well, gas/condensate central production facility

FACILITY NAME: Tierney II Unit 24-70D PAD

FACILITY LOCATION: SE¼ NW¼ Section 24, T19N, R94W
Latitude: 41.61068° Longitude: -107.94280°
Sweetwater County, Wyoming

DATE FACILITY BECAME OPERATIONAL: 1/26/2015

REVIEWER: Heather Bleile, Air Quality Engineer

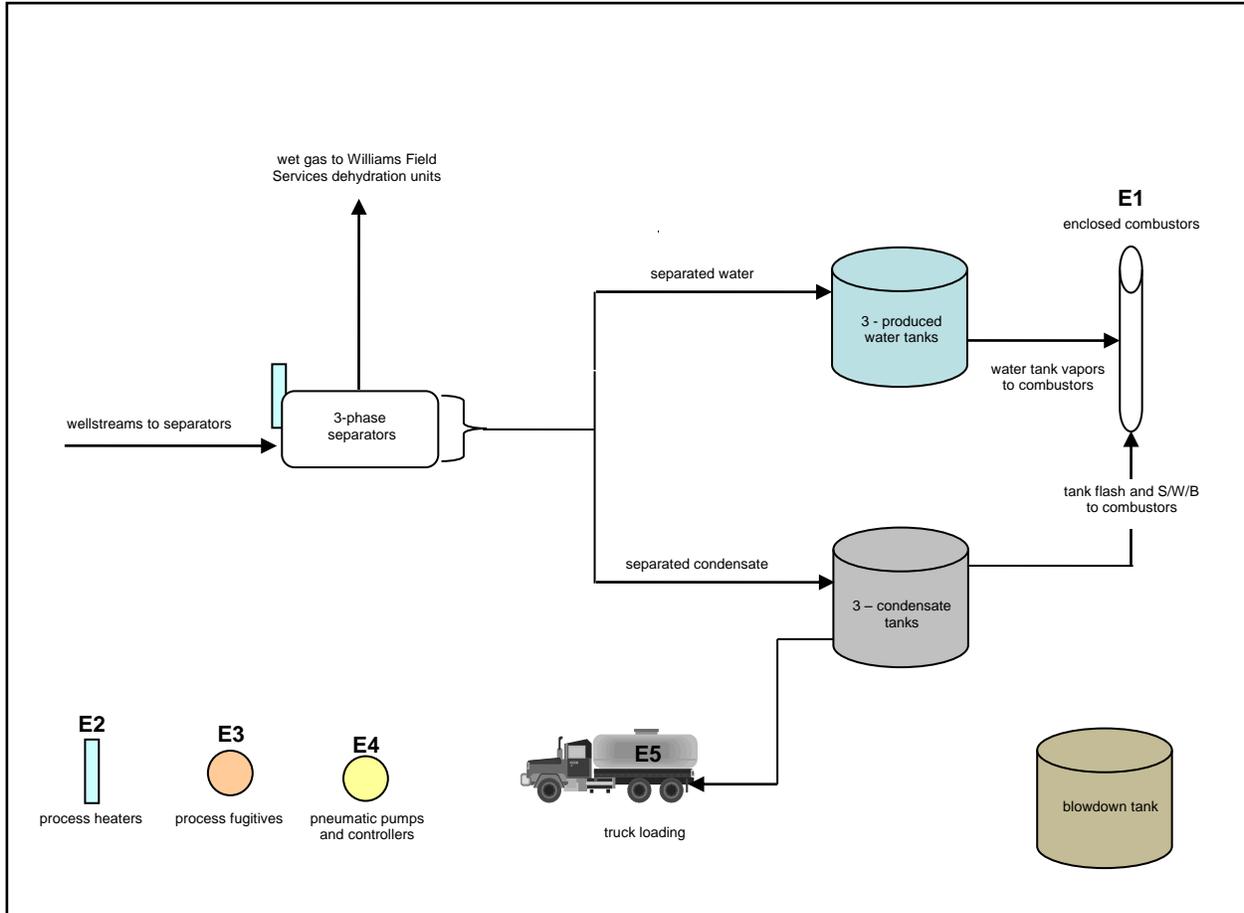
PURPOSE OF APPLICATION: BP America Production Company has applied for a permit to construct a new multiple well gas/condensate production facility, known as the Tierney II Unit 24-70D PAD, consisting of the Tierney II Unit 24-70D, 24-100D, 24-110D, 24-120D, 24-130D, 24-140D and 24-150D wells.

Production and equipment for the seven wells are co-located and/or shared and all associated air emissions are aggregated for permitting determinations.

The following equipment operates at this site:

- eight (8) three-phase separators
- seven (7) 1.0 million Btu per hour (MMBtu/hr) indirect heaters
- two (2) 0.5 MMBtu/hr indirect heaters
- three (3) 400-barrel (bbl) condensate tanks
- three (3) 400-bbl produced water tanks
- one (1) 400-bbl blowdown tank
- four (4) pneumatic heat medium pumps
- four (4) solar-powered chemical injection pumps
- thirty-seven (37) low-bleed pneumatic controllers
- four (4) smokeless combustion devices w/continuous pilot monitoring systems (controls condensate tank, active produced water tank and pneumatic pump emissions)
- tri-ethylene glycol (TEG) dehydration unit(s) owned and operated by Williams Field Services

PROCESS DESCRIPTION: The following is a simplified process schematic for this facility. A complete process description is found in the permit application.



ESTIMATED EMISSIONS: (summarized in the attached tables)

condensate storage tanks:

flashing and standing/working/breathing (S/W/B) losses:

Uncontrolled volatile organic compound (VOC) and hazardous air pollutant (HAP) emissions are estimated using the daily condensate production rate reported by the applicant and BP America’s Wamsutter Field emission equations for flashing and S/W/B losses. The equations were developed using HYSIS process simulation software and the average hydrocarbon composition of gas and condensate from area wells and were evaluated and approved by the Division.

$$\text{VOC (lb/bbl)} = (0.1131 * \text{separator pressure}) - 12.336$$

$$\text{HAP (lb/bbl)} = (0.0071 * \text{separator pressure}) - 0.9325$$

Controlled VOC and HAP emissions (**Emission Source E1, Process Flow Diagram**) are based on the reported 98% destruction efficiency of the smokeless combustion devices. Nitrogen oxide (NO_x) and carbon monoxide (CO) emissions are based on 0.14 lb NO_x/MMBtu and 0.035 lb CO/MMBtu and the calculated volume of incinerated vapors.

active produced water tanks: (Emission Source E1, Process Flow Diagram)

The Division is currently not requiring emission calculations for active produced water tanks. Vapors from the active produced water tanks are routed to the combustion devices for 98% control.

natural gas fired heaters: (Emission Source E2, Process Flow Diagram)

NO_x and CO emissions are based on AP-42 EF for fuel burners and heaters.

fugitive sources: (Emission Source E3, Process Flow Diagram)

VOC and HAP emissions are based on EPA and API EF and the number of fugitive sources at the well sites.

pneumatic pumps and controllers: (Emission Source E4, Process Flow Diagram)

Uncontrolled VOC and HAP emissions are based on reported pump gas usage/vent rates, the hydrocarbon composition of the motive gas and the reported pump operating hours.

Emissions associated with the no-bleed pneumatic liquid level controllers are considered insignificant.

Controlled pneumatic pump emissions are based on the reported 98% destruction efficiency of the combustion devices.

truck loading: (Emission Source E5, Process Flow Diagram)

VOC and HAP emissions are based on AP-42 EF and the projected condensate production rate.

dehydration unit(s):

Emissions associated with the dehydration unit are addressed in a separate application.

BEST AVAILABLE CONTROL TECHNOLOGY (BACT): The following table summarizes Presumptive BACT notice and control installation requirements under the 2013 Chapter 6, Section 2 Oil and Gas Production Facilities Permitting Guidance (C6 S2 Guidance).

Application, Emissions Controls, Monitoring	Date Due	Date Filed/Installed
Application	4/27/2015 (within 90-days of startup)	7/17/2015
Tank Emissions Control	1/26/2015 (upon startup)	1/26/2015
Continuous Monitoring	1/26/2015 (upon startup)	1/26/2015
Active Water Tank Emission Control	1/26/2015 (upon of startup)	1/26/2015
Pneumatic Pump Control	1/26/2015 (upon of startup)	1/26/2015
Low-Bleed Controllers	1/26/2015 (upon of startup)	1/26/2015

The application is approximately eleven (11) weeks late; therefore, emission reporting requirements under 2013 C6 S2 Guidance have not been met.

NEW SOURCE PERFORMANCE STANDARDS (NSPS): The condensate storage tanks at this facility are not subject to Subpart K, K_a or K_b because they are operated prior to custody transfer.

40 CFR part 60, subpart OOOO - *Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution* applies to any new, modified or reconstructed emission source installed after August 23, 2011 at oil and gas production and gas processing facilities. The Tierney II Unit 24-70D PAD is subject to 40 CFR part 60, subpart OOOO as the facility was constructed after the effective date.

PREVENTION OF SIGNIFICANT DETERIORATION (PSD): Emissions from this facility are less than the major source levels defined in WAQSR Chapter 6, Section 4.

CHAPTER 6, SECTION 3 (Operating Permit): Under the federally enforceable conditions of this permit, emissions from this facility are less than the major source levels defined in WAQSR Chapter 6, Section 3.

NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (MACT): Emissions from this facility are less than the major source levels of 10 TPY of any individual HAP and 25 TPY of any combination of HAPs; therefore this facility is not subject to Subpart HH requirements for oil and gas production facilities which are major sources of HAP emissions.

PROPOSED PERMIT CONDITIONS: The Division proposes to issue an Air Quality Permit to BP America Production Company for the Tierney II Unit 24-70D PAD with the following conditions:

1. Authorized representatives of the Division of Air Quality be given permission to enter and inspect any property, premise or place on or at which an air pollution source is located or being installed for the purpose of investigating actual or potential sources of air pollution and for determining compliance or non-compliance with any rule, regulation, standard, permit or order.
2. All substantive commitments and descriptions set forth in the application for this permit, unless superseded by a specific condition of this permit, are incorporated herein by this reference and are enforceable as a condition of this permit.
3. A permit to operate in accordance with WAQS&R Chapter 6, Section 2(a)(iii) is required after a 120-day start-up period in order to operate this facility.
4. All notifications, reports and correspondence required by the permit shall be submitted to the Stationary Source Compliance Program Manager, Air Quality Division, 122 West 25th Street, Cheyenne, WY 82002 and a copy shall be submitted to the District Engineer, Air Quality Division, 510 Meadowview Drive, Lander, WY 82520. Submissions may also be done electronically through <https://airimpact.wyo.gov> to satisfy requirements of this permit.
5. All records required under this permit shall be kept for a period of at least five (5) years and shall be made available to the Division upon request.

6. Periodic training on the proper operation of equipment, systems and devices used to contain, control, eliminate or reduce pollution shall be provided to company personnel whose primary job is to regularly ensure that facility production equipment is functional. The training shall provide these personnel with the ability to recognize, correct and report all instances of malfunctioning equipment, systems and devices associated with air pollution control. These equipment, systems and devices include, but are not limited to combustion units, reboiler overheads condensers, hydrocarbons liquids storage tanks, drip tanks, vent lines, connectors, fittings, valves, relief valves, hatches and any other appurtenance employed to, or involved with, eliminating, reducing, containing or collecting vapors and transporting them to a pollution control system or device.
7. Trained personnel shall perform, at a minimum, a quarterly site evaluation of the operation of the air pollution control equipment, systems and devices under Condition 6. The first quarterly site evaluation shall be conducted within the second quarter after issuance of this permit.
8. At least one of the quarterly evaluations per calendar year under Condition 7 shall include an evaluation of the facility for leaks from the equipment, systems and devices under Condition 6 using an optical gas imaging instrument. Monitoring utilizing the no detectable emissions test methods and procedures in 40 CFR §60.5416(b)(1) through (8) may be utilized to satisfy the requirements of this condition for the equipment, systems, and devices under Condition 6 in lieu of using an optical gas imaging instrument.
9. Notification shall be provided to the Division at least fifteen (15) days prior to each quarterly evaluation under Condition 7.
10. An annual preventative maintenance program shall be instituted to inspect and replace equipment, systems and devices under Condition 6 as necessary to ensure their proper operation.
11. Results of all inspections, evaluations and periodic monitoring shall be documented and maintained for review by the Division upon request. Digital files of any optical gas imaging instrument evaluations need not be maintained.
12. Vapors from all condensate tanks and all active produced water tanks, including tank flash and S/W/B vapors, shall be routed to the combustion devices to reduce the mass content of VOCs and HAPs in the tank vapors vented to the devices by at least ninety-eight percent (98%) by weight for at least one (1) year following the date of installation of the control devices, after which time the devices may be removed upon Division approval without permit modification provided it can be demonstrated that the current, uncontrolled, annualized VOC emission rate from the condensate tanks is less than, and will remain less than eight (8) tons per year.
13. The motive gas discharge line on each pneumatic pump shall be routed into a fuel gas supply line or any gas or liquid collection line which is ultimately routed into a closed system or emission control system or each pump shall be replaced with an electric, solar or air-operated pump or other device in order to reduce VOC emissions associated with the pump discharge gas stream by at least ninety-eight percent (98%) by weight.
14. All natural gas-operated pneumatic process controllers (temperature control, pressure control, level control, flow control, etc.) shall be low or no-bleed controllers, with low bleed defined as less than six (6) cubic feet per hour vent or bleed rate, or the controller discharge streams shall be routed into a closed loop system so there are no volatile organic compound or hazardous air pollutants emitted to the atmosphere.

15. The presence of the combustion device pilot flames shall be monitored using thermocouples and continuous recording devices or any other equivalent devices to detect and record the presence of the flames. Records shall be maintained noting periods during active well site operation when any of the pilot flames are not present. The records shall contain a description of the reason(s) for absence of the pilot flames and steps taken to return the pilot flames to proper operation.
16. The combustion devices shall be designed, constructed, operated and maintained to be smokeless per Chapter 3, Section 6(b)(i) of the WAQSR, with no visible emissions except for periods not to exceed a total of five (5) minutes during any two (2) consecutive hours as determined by 40 CFR part 60, appendix A, Method 22.
17. Emission control equipment, including the VOC and HAP emission control system or device, all vent lines, connections, fittings, valves, relief valves, hatches or any other appurtenance employed to contain and collect vapors and transport them to the emission control system or device, shall be maintained and operated during any time the wells are producing such that the emissions are controlled at all times. Records shall be maintained noting dates and durations of times during such operation when any VOC or HAP emissions control system or device or the associated containment and collection equipment is not functioning to control emissions as required by this permit.
18. BP America Production Company shall comply with all applicable requirements of 40 CFR part 60, subpart OOOO.

EQUIPMENT LIST

- eight (8) three-phase separators
- seven (7) 1.0 MMBtu/hr indirect heaters
- two (2) 0.5 MMBtu/hr indirect heaters
- three (3) 400-bbl condensate tanks
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EMISSIONS SUMMARY

Tierney II Unit 24-70D PAD (based on 48.8 BPD ¹ condensate production)				
SOURCE	EMISSIONS ² (TPY)			
	VOC	HAP	NO _x	CO
Condensate Storage Tanks				
UNCONTROLLED	167.1	9.1		
CONTROLLED	3.3	0.2	1.2	0.3
Pneumatic Pumps				
UNCONTROLLED	13.1	0.5		
CONTROLLED	0.3	insig	0.3	0.1
Process Heaters				
	insig	insig	3.8	3.2
Truck Loading				
	0.6	0.1		
Process Fugitives				
	7.6	1.1		
Pneumatic Liquid Level Controllers				
	insig	insig		
Total UNCONTROLLED Facility Emissions				
	188.4	10.8	3.8	3.2
Total CONTROLLED Facility Emissions				
	11.8	1.4	5.3	3.6

¹ current average daily production, submitted by BP America

² rounded to the nearest 0.1 ton