

Appendix 20: CDPHE APCD Permit Application and Modification



March 24, 2014

Ms. Stephanie Chaousy
Colorado Department of Public Health and Environment
Air Pollution Control Division
4300 Cherry Creek Drive South APCD-SS-B1
Denver, CO 80246-1530

**RE: Liquids Handling Hub Permit Modifications
Encana Oil & Gas (USA) Inc.**

Dear Ms. Chaousy:

Encana Oil & Gas (USA) Inc. (Encana) is submitting the following modifications to the Liquids Handling Hub (The Hub). As the engineering designs for this facility have come more into focus then the air permits will need to be changed. The facility will now consist of:

- 3, 35,000 bbl oil tanks which will all be equipped with internal floating roves.
- 2, 5,000 bbl water storage tanks that will be routed to a combustor for emission control.
- Condensate loadout which will be controlled by a combustor; this equipment will have two combustors for control with only one operating at a time and the other backing up.
- Fugitive Emissions from equipment leaks, and
- Heaters. The facility will require roughly 24 mmbtu/hr of heat input. It is to be decided whether the site will consist of 2- 100% separators with 24 mmbtu of heat input each with only one running at a time and the other as backup or if the facility will consist of 3, 50% separators with 12 mmbtu of heat input and only 2 operating at a time. IN order to account for this uncertainty, I requested 2 100% heaters and one 50% heater to truly reflect worst case scenario. Encana will then cancel the 50% permit or modify the 2 100% permits in the final approval process.

The facility will be a synthetic minor for Title V and NANSR status.

Please let me know if you need any additional information. If you should have any questions please contact me at (720) 876-3513.

Sincerely,

Paul Buck
Air Quality Specialist, SRBU

Encana Oil & Gas (USA) Inc.

Republic Plaza 307 = 17th Street Suite 1700 Denver CO 80202 USA 303.623.2300 encana.com

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Midstream Condensate Tank Battery

Permit Number: _____ [Leave blank unless APCD has already assigned a permit # & AIRS ID] **Emission Source AIRS ID:** _____ / _____ / _____
Facility Equipment ID: Oil Storage Tanks [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. **NAICS, or SIC Code:** 1311
Source Name: Liquids Handling Hub
Source Location: Intersection of County Rd 6 and County Rd 5 **County:** Weld **Change process or equipment** ☐ **Change company name** ☐
Mailing Address: Republic Plaza 370 17th St. Suite 1700 **Elevation:** 5,040 **Feet** **Change permit limit** ☐ **Transfer of ownership** ☐ **Other** ☐
Person To Contact: Adam Berig **Phone Number:** (720) 876-3884
E-mail Address: adam.berig@encana.com **Fax Number:** (720) 876-4884

Section 02 – Requested Action (Check applicable request boxes)

☒ **Request for NEW individual permit or newly reported emission source**
☐ **Request MODIFICATION to existing permit (check each box below that applies)**
☐ **Update 5-Year APEN term without change to permit limits or previously reported emissions**

For new or reconstructed sources, the projected startup date is: 01 / 01 / 2014

Section 03 – General Information

Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year
General description of equipment and purpose: Condensate Storage Tanks
 Do any of the condensate storage tanks have a capacity $\geq 10,000$ bbl?
 Are you requesting ≥ 20 ton/yr VOC emissions, or are uncontrolled actual emissions ≥ 20 ton/yr? (If "Yes", Regulation No. 7, Section XVII.C will apply)
 Is this unit located at a stationary source that is considered a Major Source of Hazardous Air Pollutant (HAP) emissions?
 Will this equipment be operated in any NAAQS nonattainment area? (<http://www.cdphpe.state.co.us/ap/attainment.htm>)

^A If "Yes", the tank(s) may be subject to Regulation No. 7, Sections III, IV, & VI, and Regulation No. 6, Part A, Subpart Kb or Ka. Provide an applicability determination of these rules.
^B If "Yes", the tank(s) may be subject to Regulation No. 7, Section XIIA or XIIB. Provide an applicability determination of these rules.

Section 04 – Tank Battery Information¹

Number of tanks: 3 (35,000 bbl each) **Total tank capacity (bbl):** 105,000
Condensate throughput: 9,125,000 bbl/year **Actual calendar year:** ☒ Yes ☐ No **bbl/year**
Is actual annual average hydrocarbon liquid throughput ≥ 500 bbl/day? ☒ Yes ☐ No
 • If "yes" above, identify the gas-to-oil ratio: _____ m³/liter
Are "flash" emissions anticipated from the tank(s)? ☐ Yes ☒ No

API gravity: _____ degrees
Reid Vapor Pressure: 12 psi **True Vapor Pressure:** 9.5 psia @ 60 °F

¹ See PS Memo 05-01 for information on condensate tank permitting and identification of parameters used to calculate emissions. (<http://www.cdphpe.state.co.us/ap/download/ps/05-01.pdf>)
² Requested values will become permit limitations.
³ Hydrocarbons can "flash" into the vapor phase due to a reduction in pressure on the hydrocarbon liquids.

Additional Information Required: ☐ Attach a pressurized pre-flash condensate extended gas analysis. RVP & API analysis of the post-flash oil
☐ Attach E&P Tanks input & emission estimate documentation (or equivalent simulation report/test results)
☒ Attach EPA TANKS emission analysis if emission estimates do not contain working/breathing losses

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

This notice is valid for five (5) years. Submit a revised APEN prior to expiration of five-year term, or when a significant change is made (increase production, new equipment, change in fuel type, etc).

Mail this form along with a check for \$152.90 per APEN and \$250 for each general permit registration to:
Colorado Department of Public Health & Environment
APCD-SS-BI
4300 Cherry Creek Drive South
Denver, CO 80246-1530

For guidance on how to complete this APEN form:

Air Pollution Control Division: (303) 692-3150
 Small Business Assistance Program (SBAP): (303) 692-3148 or (303) 692-3175

APEN forms: <http://www.cdphpe.state.co.us/ap/download/forms.html>

☒ Check box to request copy of draft permit prior to issuance.
☒ Check box to request copy of draft permit prior to public notice.

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Midstream Condensate Tank Battery

Permit Number: _____ Emission Source AIRS ID: _____ / _____ / _____

Section 05 – Stack Information (Combustion stacks must be listed here)

Operator Stack ID No.	Stack Base Elevation (feet)	Stack Discharge Height Above Ground Level (feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)
Oil Tanks						

Direction of stack outlet (check one): ☐ Vertical ☐ Vertical with obstructing raincap
 Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____
☐ Other: Length (inches) = _____

Section 07 – Control Device Information

<input type="checkbox"/> Condenser used for control of the tank battery. Type: _____ Make/Model: _____ Temperature (°F): _____ Maximum: _____ Average: _____ Requested VOC & HAP Control Efficiency: _____ % <input type="checkbox"/> VRU used for control of the tank battery. Size: _____ Make/Model: _____ Requested VOC & HAP Control Efficiency: _____ % Annual time that VRU is bypassed (emissions vented): _____ %	<input type="checkbox"/> Combustion Device used for control of the tank battery. Type: _____ Make/Model/Serial #: _____ VOC & HAP Control Efficiency: _____ Requested: _____ % Minimum temp. to achieve requested control: _____ °F Constant pilot light? <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Closed loop system used for control of the tank battery. Description: _____ <input checked="" type="checkbox"/> Describe Any Other: Floating Roof Tanks	Rating: _____ MMBtu/hr Manufacturer Guaranteed: _____ % Waste gas heat content: _____ Btu/scf Pilot burner rating: _____ MMBtu/hr
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Section 08 – Emissions Inventory Information & Emission Control Information

Emission Factor Documentation attached			Data year for actual calendar yr. emissions below & throughput in Sec. 04 (e.g. 2007): _____						
Pollutant	Control Device Description		Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴	Requested Permitted Emissions ⁵		Estimation Method or Emission Factor Source
	Primary	Secondary		Uncontrolled Basis	Units		Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
NO _x	Identify in Section 07			0.00338668	lb/bbl				EPA Tanks
VOC									
CO									
Benzene									
Toluene									
Ethylbenzene									
Xylene									
n-Hexane									

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

⁴ Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

⁵ If Requested Permitted Emissions is left blank, the APCD will calculate emissions based on the information supplied in sections 03 - 08.

Section 09 – Applicant Certification – I hereby certify that all information contained herein and information submitted with this application is complete, true and correct. If this is a registration for coverage under general permit GP01, I further certify that this source is and will be operated in full compliance with each condition of general permit GP01.

Signature of Person Legally Authorized to Supply Data _____ Date **3/20/2014** _____ Name of Legally Authorized Person (Please print) **Adam Berig** _____ Lead, Air Quality _____ Title _____

Condensate Throughput and Emission Sheet

Company:

Encana Oil & Gas (USA) Inc.

Location: CR 5 and CR 6, Weld

Site/Facility Name:

The Hub

County: Weld

Source AIRS ID:

Field: Wattenberg

Daily Oil Throughput	25,000.00	bbl
Annual Throughput	9,125,000.00	bbl

Daily Water Throughput	5,000.00	bbl
Annual Water Throughput	1,825,000.00	bbl

Number of Oil Tanks	3.00	
Oil Tank Capacity	35,000.00	bbl

Assumptions

RVP 12.00

Tank Volume (gallons)

1470000

EPA Tanks Using Floating Roof

Assumptions
Internal Floating Roof
Double Deck Roof
Welded together
Don't know 1° or 2° seals- will use most conservative of vapor seal for 1° seal and 2° seals

Inputs	
Throughput per tank per year (bbl)	3,041,666.67
Tank diameter (ft)	100.00

127750000 Gallons

VOC Emissions for 1 tank (lbs)	10301.14
Total VOC Emissions (tons/ yr)	15.45171
Corresponding Emission Factor (lb/bbl)	0.003386676

Note: this value is conservative*

*we are unsure of tank construction parameters so we assume most conservative values given dual seals as detailed in assumptions above

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Hydrocarbon Liquid Loading

Please use the Fuel Dispensing Station APEN to report emissions from service stations and fleet refueling stations.

Permit Number:

[Leave blank unless APCD has already assigned a permit # & AIRS ID]

Emission Source AIRS ID:

Facility Equipment ID: Condensate Loadout

[Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. NAICS, or SIC Code: 1311

Source Name: Liquids Handling Hub

Source Location: Intersection of CR 5 and CR 6 County: Weld Change process or equipment ☐ Change company name ☐ Other ☐

Mailing Address: Republic Plaza 370 17th St. Suite 1700 Elevation: 5040 Feet Change permit limit ☐ Transfer of ownership ☐

Denver, CO

Person To Contact: Adam Berig Phone Number: (720) 876-3884

E-mail Address: Adam.Berig@encana.com Fax Number: (720) 876-4884

Addl. Info. & Notes:

Section 02 – Requested Action (Check applicable request boxes)

☒ Request for NEW permit or newly reported emission source

☐ Request MODIFICATION to existing permit (check each box below that applies)

☐ Change process or equipment ☐ Change company name

☐ Change permit limit ☐ Transfer of ownership ☐ Other

☒ Request to limit HAPs with a Federally enforceable limit on PTE

☐ Request APEN update only (check the box below that applies)

☐ Revision to actual calendar year emissions for emission inventory

☐ Update 5-Year APEN term without change to permit limits or previously reported emissions

Section 03 – General Information

For existing sources, operation began on:

Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year

For new or reconstructed sources, the projected startup date is: 7/1/2014

General description of equipment and purpose:

Condensate Loadout into Trucks from floating roof tanks

► Is this source located at an oil and gas exploration and production site?

If yes, does this source load less than 10,000 gallons of crude oil per day on an annual average, splash fill less than 6750 BBL of condensate (hydrocarbon liquids that have an API gravity of 40 degrees or greater) per year or submerge fill less than 16,308 BBL of condensate per year?

► Is this source located at a facility that is considered a Major Source of Hazardous Air Pollutant (HAP) emissions?

► Will this equipment be operated in any NAAQS nonattainment area? (<http://www.cdphe.state.co.us/ap/attainment.html>)

► Does this source load gasoline into transport vehicles?

^A If "Yes", this source may be subject to 40 CFR 63, Subparts EEEE, CC, and R. Provide an applicability determination of these rules.

^B If "Yes", this source may be subject to Regulation No. 3, Part B, Section III.D.2. Provide an applicability determination of these rules.

^C If "Yes", this source may be subject to Regulation No. 7, Section V.L.C. 40 CFR 63 Subpart BBBB or Subpart XX. Provide an applicability determination of these rules.

Section 04 – Loading Information

Product Loaded: Condensate

This product is loaded from tanks at this facility into:

Tank Trucks (e.g., "rail tank cars," or "tank trucks")

Number of Loading Bays:

Pump Capacity in Each Bay:

gallons /min.

► If this APEN is being filed for vapors displaced from cargo carrier, complete the following:

Annual Volume Loaded: Requested¹: 9,125,000 bbl/year Actual calendar year: 52.45 °F

Saturation Factor²: 0.6 Average Temperature of Bulk Liquid Loaded: 58 Lb/lb-mol

True Vapor Pressure: 7.6 psia @ 60 °F Molecular Weight of Displaced Vapors: 58

► If this APEN is being filed for vapor losses from pressurized loading lines, complete the following:

Loads per year: Requested¹: 0.6 #/yr. Actual Calendar Year: 58 #/yr. Product Density: 58 Lb/ft³

Load Line Volume³: 0.6 Ft³/truckload Vapor Recovery Line Volume³: 58 Ft³/truckload

¹ Requested values will become permit limitations.

² Please refer to AP-42, Table 5.2-1 for information on saturation factors (found online at: <http://www.epa.gov/ttn/chief/ap42/ch05/index.html>).

³ List the total volume for all lines in each category and attach your calculations of these volumes.

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

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Mail this form along with a check for \$152.90 to:

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(303) 692-3148 or
(303) 692-3175

APEN forms: <http://www.cdphe.state.co.us/ap/downloadforms.html>

Application status: <http://www.cdphe.state.co.us/ap/ss/sspcpt.html>

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Hydrocarbon Liquid Loading

Please use the Fuel Dispensing Station APEN to report emissions from service stations and fleet refueling stations.

Permit Number: _____

Emission Source AIRS ID: _____

Section 05 – Stack Information (Combustion stacks must be listed here)

Operator Stack ID No.	Stack Base Elevation (feet)	Stack Discharge Height Above Ground Level (feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)
L.O.						

Direction of stack outlet (check one): ☐ Vertical ☐ Vertical with obstructing raincap
 Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____
☐ Other: Length (inches) = _____ Width (inches) = _____

Section 06 – Stack (Source, if no combustion) Location (Datum & either Lat/Long or UTM)

Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)
				GPS

Section 07 – Control Device Information

☐ **Vapor Recovery Unit (VRU)** used for control of the loadout emissions.
 Size: _____ Make/Model: _____ Rating: _____ MMBtu/hr
 Requested VOC & HAP Control Efficiency: _____ %
 Annual time that VRU is bypassed (emissions vented): _____ %
 The VRU recycles loadout emissions to: _____
☐ Describe Any Other: _____

☒ **Combustion Device** used for control of the loadout emissions.
 Type: **Enclosed combustor** Make/Model/Serial #: **TBD**
 VOC & HAP Control Efficiency: Requested: **97** % Manufacturer Guaranteed: **98+** %
 Minimum temp. to achieve requested control: _____ of Waste gas heat content: _____ Btu/scf
 Constant pilot light? ☒ Yes ☐ No Pilot burner rating: _____ MMBtu/hr

Section 08 – Emissions Inventory Information & Emission Control Information

☒ Emission Factor Documentation attached Data year for actual calendar year emissions below & throughput in Sec. 04 (e.g. 2007): _____

Pollutant	Control Device Description		Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions ⁵		Estimation Method or Emission Factor Source
	Primary	Secondary		Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
NO _x	Identify in Section 07									
VOC			0.27	lb/bbl				1232.29	36.97	AP-42
CO										
Benzene			0.0025	lb/bbl				11.58	0.35	AP-42
Toluene			0.0045	lb/bbl				20.46	0.61	AP-42
Ethylbenzene			0.00019	lb/bbl				0.86	0.03	Ap-42
Xylene	0.047	lb/bbl				9.00	0.27	Ap-42		
n-Hexane	0.0063	lb/bbl				28.71	0.86	Ap-42		

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

⁴ Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

⁵ If Requested Permitted Emissions is left blank, the APCD will calculate emissions based on the information supplied in sections 03 - 08.

Section 09 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct.

Signature of Person Legally Authorized to Supply Data _____ Date _____

Adam Berig _____
 Name of Legally Authorized Person (Please print)

Lead, Air Quality _____
 Title

The Hub
EnCana Oil & Gas Company
Condensate Loadout Calcs

CR 5 and CR 6, Weld
Weld County, CO

Truck Loadout - Detailed Emissions Calculations

Equipment Information

Source ID Number:	LOAD-1	Permit Status:	Pending
Description:	Condensate Loadout	SCC:	
AIRS ID:			
Coordinates:	UTM		
Northing:			
Easting:			
Source Location Zone:			
Status:	Not Yet Built	Throughput Value (bbl/yr)	9,125,000.00
Liquid Temperature (°F):	52.45	Throughput Value (gal/yr):	383,250,000.00
Vapor Pressure (psia):	7.6	Molecular Weight (lb/lb-mole):	58.00
Truck Volume (gal):	1500	Saturation Factor:	0.6
Load Frequency (trucks/yr):	255500	Load Duration (min/truck):	60.00
Load Rate (gal/min):	25	Emission Controls:	
		Percent VOC Control:	97

Loading Loss (lb/1000 gal) = $(12.46 \cdot S \cdot P \cdot M) / T$ (AP-42 Section 5.2 (1/95)) where:

S = Saturation Factor = dedicated normal service
P = True Vapor Pressure of liquid loaded*, psia
M = Molecular Weight of Vapors, lb/lb-mole
T = Temp. of bulk liquid loaded, deg. R = (deg. F + 460)

Loading Loss (lb VOC/1000 gal) = **6.43** lb/1000 gal
0.021338

Potential Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Uncontrolled Emissions (lb/yr) (tpy)		Controlled Emissions (lb/yr) (tpy)		Source of Emission Factor
VOC	6.43	383250000.00	2464572.20	1232.29	73937.17	36.97	AP42

HAPs	Reporting Bin		Uncontrolled Emissions (lb/yr) (tpy)		Controlled Emissions (lb/yr) (tpy)		Source of Emission Factor
	Reporting Bin	Wt % of VOC	(lb/yr)	(tpy)	(lb/yr)	(tpy)	
Benzene	A	0.94	23166.98	11.58	695.01	0.35	
Toluene	C	1.66	40911.90	20.46	1227.36	0.61	
Ethylbenzene	C	0.07	1725.20	0.86	51.76	0.03	
Xylene	C	0.73	17991.38	9.00	539.74	0.27	
n-Hexane	C	2.33	57424.53	28.71	1722.74	0.86	

Short Term Emissions Calculation

	Loading Freq (trucks/yr)	Loading Duration (min/truck)	Annual Hours of Operation (hrs/yr)	Hourly Emissions (lb/hr)
VOC	255500	60	255500.00	0.29

Notes

Notes Date:

EF VOC	6.43	lb/1000 gal	0.270090104	lb/bbl
EF Benzene	0.06045	lb/1000 gal	0.002538847	lb/bbl
Toluene	0.10675	lb/1000 gal	0.004483496	lb/bbl
Ethylbenzene	0.00450	lb/1000 gal	0.000189063	lb/bbl
Xylene	0.04694	lb/1000 gal	0.001971658	lb/bbl
n-Hexane	0.14984	lb/1000 gal	0.006293099	lb/bbl

2014.03.18 APEN - Produced Water Tank Battery Mod.doc

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Produced Water Tank Battery

Permit Number: _____

Emission Source AIRS ID: _____

Section 05 – Stack Information (Combustion stacks must be listed here)

Operator Stack ID No.	Stack Base Elevation (feet)	Stack Discharge Height Above Ground Level (feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)
P.W. Tank						

Direction of stack outlet (check one): ☐ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Down ☐ Other (Describe): _____

Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____ ☐ Other: Length (inches) = _____ Width (inches) = _____

Section 06 – Stack (Source, if no combustion) Location (Datum & either Lat/Long or UTM)

Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)

Section 07 – Control Device Information

☐ **Condenser** used for control of the tank battery. Type: _____ Make/Model: _____ Rating: _____ MMBtu/hr

Temperature (°F): _____ Maximum: _____ Average: _____

Requested VOC & HAP Control Efficiency: _____ %

☐ **VRU** used for control of the tank battery. Size: _____ Make/Model: _____

Requested VOC & HAP Control Efficiency: **95** %

Annual time that VRU is bypassed (emissions vented): **0** %

☒ **Combustion Device** used for control of the tank battery. Type: **Enclosed Combustor** Make/Model/Serial #: _____

VOC & HAP Control Efficiency: Requested: **95** % Manufacturer Guaranteed: **98+** %

Minimum temp. to achieve requested control: _____ °F Waste gas heat content: _____ Btu/scf

Constant pilot light? ☒ Yes ☐ No Pilot burner rating: _____ MMBtu/hr

☐ **Closed loop system** used for control of the tank battery. Description: _____

☐ Describe Any Other: _____

Section 08 – Emissions Inventory Information & Emission Control Information

☐ Emission Factor Documentation attached Data year for actual calendar yr. emissions below & throughput in Sec. 04 (e.g. 2007): _____

Pollutant	Control Device Description		Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions ⁵		Estimation Method or Emission Factor Source	
	Primary	Secondary		Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)		
NO _x	Identify in Section 07										
VOC											
CO											
Benzene											
Toluene											
Ethylbenzene											
Xylene											
n-Hexane											

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

⁴ Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

⁵ If Requested Permitted Emissions is left blank, the APCD will calculate emissions based on the information supplied in sections 03 - 08.

Section 09 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct. If this is a registration for coverage under general permit GP05, I further certify that this source is and will be operated in full compliance with each condition of general permit GP05.

Signature of Person Legally Authorized to Supply Data _____

03/20/2013

Date

Adam Berig

Name of Legally Authorized Person (Please print)

Lead, Air Quality

Title

Projected Produced Water Production

The Hub

Design Capacity of Facility 1825000 bbl/yr

	E.F. (lb/bbl)	Actual Emissions	
		uncontrolled	controlled
VOC (ton/yr)	0.262	239.08	11,953.75
Benzene (lbs/yr)	0.007	12,775.00	638.75
n-Hexane (lbs/yr)	0.022	401,500.00	2,007.5

Assumes 95% control with enclosed combustor

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General¹

Permit Number: _____

[Leave blank unless APCD has already assigned a permit # & AIRS ID]

Emission Source AIRS ID: _____ / _____ / _____

Facility Equipment ID: Heater 1 [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc.

Source Name: Liquids Handling Hub

NAICS, or
SIC Code: 1311

Source Location: Intersection of County Rd 6 and County Rd 5

County: Weld

Elevation: 5,040 Feet

Portable Source
Home Base:

Mailing Address: Republic Plaza 370 17th St., Suite 1700

ZIP Code: 80202

Denver, CO

Person To Contact: Adam Berig

Phone Number: (720) 876-3884

E-mail Address: adam.berig@encana.com

Fax Number: (720) 876-4884

Additional
Info. &
Notes:

Section 03 – General Information

For existing sources, operation began on: _____ / _____ / _____

Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year

General description of equipment and purpose: Heater for 3-phase separator

For new or reconstructed sources, the projected startup date is: 07 / 01 / 2014

Will this equipment be operated in any NAAQS nonattainment area?²

(<http://www.colorado.gov/cdphe/attainment>)

☒ Yes ☐ No ☐ Don't know

Section 04 – Processing/Manufacturing Equipment Information & Material Use

Description of equipment³:

Manufacturer:

Model No.:

Serial No.:

Description	Actual Level (For Data Year)	Annual Requested Permitted Level ¹ (Specify Units)	Design Process Rate (Specify Units/Hour)
Natural Gas	210.24	mmsef	24 mmmbtu/hr
Raw Materials:			
Finished Products:			
Other Process:			

¹You will be charged an additional APEN fee if APEN is filled out incorrectly or information is missing and requires re-submittal.

²If additional space is required, please attach a separate list of equipment, materials and throughput.

³ Requested values will become permit limitations. Requested level should consider process growth over the next five years.

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

This notice is valid for five (5) years. Submit a revised APEN prior to expiration of five-year term, or when a significant change is made (increase production, new equipment, change in fuel type, etc).

Mail this form along with a check for \$152.90 to:

Colorado Department of Public Health & Environment

APCD-SS-BI

4300 Cherry Creek Drive South

Denver, CO 80246-1530

For guidance on how to complete this APEN form:

Air Pollution Control Division:

Small Business Assistance Program (SBAP):

(303) 692-3150

(303) 692-3148 or

(303) 692-3175

APEN forms: <http://www.colorado.gov/cdphe/APENforms>

Application status: <http://www.colorado.gov/cdphe/permitstatus>

☒ Check box to request copy of draft permit prior to issuance.

☒ Check box to request copy of draft permit prior to public notice.

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General¹

Permit Number: _____ Emission Source AIRS ID: _____ / _____ / _____

Section 05 – Emission Release Information (Attach a separate sheet with relevant information in the event of multiple releases; provide datum & either Lat/Long or UTM)

Operator Stack ID No.	Base Elevation (feet)	Discharge Height Above Ground Level (Feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)	Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)
Heater 1											

Direction of outlet (check one): ☒ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Other (Describe): _____

Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____ ☐ Other: Length (inches) = _____ Width (inches) = _____

Section 06 – Combustion Equipment & Fuel Consumption Information

Company equipment Identification No.: _____ Manufacturer: _____ Model: _____ Serial No.: _____

Fuel Type	Design Input Rate (10 ⁶ Btu/hr)	Actual Level (For Data Year)	Annual Requested Permitted Level ² (Specify Units)	Fuel Heating Value (Indicate: Btu/lb, Btu/gal, Btu/SCF)	Percent by Weight		Seasonal Fuel Use (% of Annual Use)		
					Sulfur	Ash	Dec-Feb	Mar-May	Jun-Aug Sep-Nov
Natural Gas	24		211 mmscf	1000 btu/scf	0	0	25	25	25 25

²Requested values will become permit limitations. Requested level should consider process growth over the next five years.

Section 07 – Emissions Inventory Information & Emission Control Information

Attach any emission calculations and emission factor documentation to this APEN form.

☐ Emission Factor Documentation attached Data year for actual calendar yr, emissions below & throughput above (e.g. 2007): _____

Pollutant	Control Device Description		Overall Collection Efficiency	Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions		Estimation Method or Emission Factor Source
	Primary	Secondary			Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
TSP					7.6	lb/mmscf			0.80		AP42
PM ₁₀											
PM _{2.5}											
SO _x											
NO _x					100	lb/mmscf			10.51		AP42
VOC					5.5	lb/mmscf			0.6		AP42
CO					84	lb/mmscf			8.83		AP42

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

¹You will be charged an additional APEN fee if APEN is filled out incorrectly or information is missing and requires re-submittal.

⁴Annual emission fees will be based on actual emissions reported here.

Section 08 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct.

Signature of Person Legally Authorized to Supply Data _____ Date 03/22/2014 _____ Adam Berig _____ Lead, Air Quality _____ Title _____

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General¹

Permit Number: _____ **Facility Equipment ID:** Heater 2 **Emission Source AIRS ID:** _____ / _____ / _____
 [Leave blank unless APCD has already assigned a permit # & AIRS ID] [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. **NAICS, or SIC Code:** 1311
Source Name: Liquids Handling Hub
Source Location: Intersection of County Rd 6 and County Rd 5 **County:** Weld **Elevation:** 5,040 **Feet**
Portable Source Home Base: _____
Mailing Address: Republic Plaza 370 17th St., Suite 1700 **ZIP Code:** 80202
Denver, CO
Person To Contact: Adam Berig **Phone Number:** (720) 876-3884
E-mail Address: adam.berig@encana.com **Fax Number:** (720) 876-4884

Additional Info. & Notes:

Section 03 – General Information

For existing sources, operation began on: _____ / _____ / _____ For new or reconstructed sources, the projected startup date is: 07 / 01 / 2014
Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year
General description of equipment and purpose: Heater for 3-phase separator

Will this equipment be operated in any NAAQS nonattainment area? (http://www.colorado.gov/cdphe/attainment) ☒ Yes ☐ No ☐ Don't know

Section 04 – Processing/Manufacturing Equipment Information & Material Use

Description	Actual Level (For Data Year)	Annual Requested Permitted Level ³ (Specify Units)	Design Process Rate (Specify Units/Hour)
Natural Gas	210.24	mmscf	24 mmbtu/hr
Raw Materials:			
Finished Products:			
Other Process:			

¹You will be charged an additional APEN fee if APEN is filled out incorrectly or information is missing and requires re-submittal.

²If additional space is required, please attach a separate list of equipment, materials and throughput.

³ Requested values will become permit limitations. Requested level should consider process growth over the next five years.

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

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APEN forms: <http://www.colorado.gov/cdphe/APENforms>

Application status: <http://www.colorado.gov/cdphe/permitstatus>

☒ Check box to request copy of draft permit prior to issuance.

☒ Check box to request copy of draft permit prior to public notice.

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General¹

Permit Number: _____ Emission Source AIRS ID: _____ / _____ / _____

Section 05 – Emission Release Information (Attach a separate sheet with relevant information in the event of multiple releases; provide datum & either Lat/Long or UTM)

Operator Stack ID No.	Base Elevation (feet)	Discharge Height Above Ground Level (Feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)	Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)
Heater 2											

Direction of outlet (check one): ☒ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Down ☐ Other (Describe): _____

Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____ ☐ Other: Length (inches) = _____ Width (inches) = _____

Section 06 – Combustion Equipment & Fuel Consumption Information

Company equipment Identification No.: _____ Manufacturer: _____ Model: _____ Serial No.: _____

Fuel Type	Design Input Rate (10 ⁶ Btu/hr)	Actual Level (For Data Year)	Annual Requested Permitted Level ² (Specify Units)	Fuel Heating Value (Indicate: Btu/lb, Btu/gal, Btu/SCF)	Percent by Weight		Seasonal Fuel Use (% of Annual Use)			
					Sulfur	Ash	Dec-Feb	Mar-May	Jun-Aug	Sep-Nov
Natural Gas	24		211 mmSCF/yr	1000 btu/scf	0	0	25	25	25	25

²Requested values will become permit limitations. Requested level should consider process growth over the next five years.

Section 07 – Emissions Inventory Information & Emission Control Information

Attach any emission calculations and emission factor documentation to this APEN form.

☐ Emission Factor Documentation attached

Data year for actual calendar yr. emissions below & throughput above (e.g. 2007): _____

Pollutant	Control Device Description		Overall Collection Efficiency	Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions		Estimation Method or Emission Factor Source
	Primary	Secondary			Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
TSP					7.6	lb/mmSCF			0.80		AP42
PM ₁₀											
PM _{2.5}											
SO _x											
NO _x					100	lb/mmSCF			10.51		AP42
VOC					5.5	lb/mmSCF			0.58		AP42
CO					84	lb/mmSCF			8.83		AP42

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

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Signature of Person Legally Authorized to Supply Data _____ Date 03/22/2014 _____ Adam Berig _____ Name of Legally Authorized Person (Please print) _____ Lead, Air Quality _____ Title _____

Encana Oil & Gas (USA) Inc.

Liquids Handling Hub

Heaters - Detailed Emissions Calculations

Equipment Information

Source ID Number:
Description: Separator Heaters
AIRS ID:
Coordinates:
Northing:
Easting:
Source Location Zone:

Manufacturer:
Model Number:
Serial Number:
Manufacture Date:
Permit Status:
SCC:

Status: Not Yet Built
Ext. Comb Type:
Fuel Type: Natural Gas
Equipment Usage:
Configuration:
Heat Input Fuel (mmbtu/hr): 24
Fuel Heat Value (btu/scf): 1000.00
Potential fuel usage (MMscf/yr): 210.24
Fuel meter required per 40 CFR Part 60, Subpart Dc

Stack Parameters

Height (ft):
Diameter (ft):
Temperature (°F):
Flow (ACFM):
Velocity (ft/s):
Stack Outlet Orientation:
Raincap:

Emission Controls: Control Model

Control Efficiency
Nitrogen Oxides (%):
Carbon Monoxide (%):
VOC (%):
Formaldehyde (%):
Other HAPs (%):

Potential operation: 8760 hr/yr

Potential Emissions

Pollutant	Uncontrolled Emission Factor		Nominal Rating (MMBtu/hr)	Hrs of Operation (hrs/yr)	Uncontrolled Emissions		Controlled Emissions			Source of Emission Factor
	EF	Units			(lb/hr)	(tpy)	EF (lb/MMscf)	(lb/hr)	(tpy)	
Nitrogen Oxides	100	lb/MMscf	24	8760	2.40	10.51				AP42
Carbon Monoxide	84	lb/MMscf	24	8760	2.02	8.83				AP42
VOC	5.5	lb/MMscf	24	8760	0.13	0.58				AP42
PM ₁₀	7.6	lb/MMscf	24	8760	0.18	0.80	---	---	---	AP42
SO ₂	0.6	lb/MMscf	24	8760	0.01	0.06	---	---	---	AP42

HAPs	Uncontrolled Emission Factor		Nominal Rating (MMBtu/hr)	Hrs of Operation (hrs/yr)	Uncontrolled Emissions		Controlled Emissions		Reporting Source of Emission Factor Bin	
	EF	Units			(lb/yr)	(tpy)	(lb/yr)	(tpy)		
Formaldehyde	0.0750	lb/MMscf	24.00	8760	15.77	0.008			A	AP42
Benzene	0.0021	lb/MMscf	24.00	8760	0.44	0.000			A	AP42
Toluene	0.0034	lb/MMscf	24.00	8760	0.71	0.000			C	AP42
n-Hexane	1.8000	lb/MMscf	24.00	8760	378.43	0.189			C	AP42
										AP42
										AP42
										AP42

Sample Calculations:

lb/MMscf Emission Factor: $(84 \text{ lb/MMscf CO}) / (1000 \text{ Btu/scf}) \times (24 \text{ MMBtu/hr}) \times (8760 \text{ hr/yr}) / (2000 \text{ lb/ton})$
= 8.83 tpy CO

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General¹

Permit Number: _____ [Leave blank unless APCD has already assigned a permit # & AIRS ID] **Emission Source AIRS ID:** _____ / _____ / _____
Facility Equipment ID: Heater 3 [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. **NAICS, or SIC Code:** 1311
Source Name: Liquids Handling Hub
Source Location: Intersection of County Rd 6 and County Rd 5 **County:** Weld
Elevation: 5,040 **Feet**
Portable Source Home Base: _____
Mailing Address: Republic Plaza 370 17th St., Suite 1700 **ZIP Code:** 80202
Denver, CO
Person To Contact: Adam Berig **Phone Number:** (720) 876-3884
E-mail Address: adam.berig@encana.com **Fax Number:** (720) 876-4884

Section 03 – General Information

For existing sources, operation began on: _____ / _____ / _____ **For new or reconstructed sources, the projected startup date is:** 07 / 01 / 2014
Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year
General description of equipment and purpose: Heater for 3-phase separator

Will this equipment be operated in any NAAQS nonattainment area? ☒ Yes ☐ No ☐ Don't know
<http://www.colorado.gov/cdphe/attainment>

Section 04 – Processing/Manufacturing Equipment Information & Material Use

Description of equipment: _____ **Model No.:** _____ **Serial No.:** _____
Manufacturer: _____

Description	Actual Level (For Data Year)	Annual Requested Permitted Level ³ (Specify Units)	Design Process Rate (Specify Units/Hour)
Natural Gas	105.12	mmscf	12 mmmbtu/hr
Raw Materials:			
Finished Products:			
Other Process:			

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APEN forms: <http://www.colorado.gov/cdphe/APENforms>

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☒ Check box to request copy of draft permit prior to issuance.

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AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General¹

Permit Number: _____ Emission Source AIRS ID: _____ / _____ / _____

Section 05 – Emission Release Information (Attach a separate sheet with relevant information in the event of multiple releases; provide datum & either Lat/Long or UTM)

Operator Stack ID No.	Base Elevation (feet)	Discharge Height Above Ground Level (Feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)	Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)
Heater 3											

Direction of outlet (check one): ☒ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Down ☐ Other (Describe): _____

Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____ ☐ Other: Length (inches) = _____ Width (inches) = _____

Section 06 – Combustion Equipment & Fuel Consumption Information

Company equipment Identification No.: _____ Manufacturer: _____ Model: _____ Serial No.: _____

Fuel Type	Design Input Rate (10 ⁶ Btu/hr)	Actual Level (For Data Year)	Annual Requested Permitted Level ² (Specify Units)	Fuel Heating Value (Indicate: Btu/lb, Btu/gal, Btu/SCF)	Percent by Weight		Seasonal Fuel Use (% of Annual Use)		
					Sulfur	Ash	Dec-Feb	Mar-May	Jun-Aug Sep-Nov
Natural Gas	12		106 mmscf	1000 btu/scf	0	0	25	25	2 25

² Requested values will become permit limitations. Requested level should consider process growth over the next five years

Section 07 – Emissions Inventory Information & Emission Control Information

Attach any emission calculations and emission factor documentation to this APEN form.

☐ Emission Factor Documentation attached Data year for actual calendar yr. emissions below & throughput above (e.g. 2007): _____

Pollutant	Control Device Description		Overall Collection Efficiency	Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions		Estimation Method or Emission Factor Source
	Primary	Secondary			Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
TSP					7.6	lb/mmscf			0.40		AP42
PM ₁₀											
PM _{2.5}											
SO _x											
NO _x					100	lb/mmscf			5.26		AP42
VOC					5.5	lb/mmscf			0.29		AP42
CO					84	lb/mmscf			4.42		AP42

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

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Signature of Person Legally Authorized to Supply Data _____ Date 03/22/2014 _____ Adam Berig _____ Lead, Air Quality _____ Title _____ Name of Legally Authorized Person (Please print)

Encana Oil & Gas (USA) Inc.

Liquids Handline Hub

Heaters - Detailed Emissions Calculations

Equipment Information

Source ID Number:

Description:

AIRS ID:

Coordinates:

Northing:

Easting:

Source Location Zone:

Separator Heaters

Manufacturer:

Model Number:

Serial Number:

Manufacture Date:

Permit Status:

SCC:

Status:

Not Yet Built

Ext. Comb.Type:

Fuel Type:

Equipment Usage:

Configuration:

Heat Input Fuel (mmbtu/hr):

12

Fuel Heat Value (btu/scf)

1000.00

Potential fuel usage (MMscf/yr):

105.12

Fuel meter required per 40 CFR Part 60, Subpart Dc

Stack Parameters

Height (ft):

Diameter (ft):

Temperature (°F):

Flow (ACFM):

Velocity (ft/s):

Stack Outlet Orientation:

Raincap:

Control Model

Emission Controls:

Control Efficiency

Nitrogen Oxides (%):

Carbon Monoxide (%):

VOC (%):

Formaldehyde (%):

Other HAPs (%):

Potential operation:

8760

hr/yr

Potential Emissions

Pollutant	Uncontrolled Emission Factor		Nominal Rating (MMBtu/hr)	Hrs of Operation (hrs/yr)	Uncontrolled Emissions		Controlled Emissions			Source of Emission Factor
	EF	Units			(lb/hr)	(tpy)	EF (lb/MMscf)	(lb/hr)	(tpy)	
Nitrogen Oxides	100	lb/MMscf	12	8760	1.20	5.26				AP42
Carbon Monoxide	84	lb/MMscf	12	8760	1.01	4.42				AP42
VOC	5.5	lb/MMscf	12	8760	0.07	0.29				AP42
PM ₁₀	7.6	lb/MMscf	12	8760	0.09	0.40	---	---	---	AP42
SO ₂	0.6	lb/MMscf	12	8760	0.01	0.03	---	---	---	AP42

HAPs	Uncontrolled Emission Factor		Nominal Rating (MMBtu/hr)	Hrs of Operation (hrs/yr)	Uncontrolled Emissions		Controlled Emissions		Reporting Source of Emission Factor Bin
	EF	Units			(lb/yr)	(tpy)	(lb/yr)	(tpy)	
Formaldehyde	0.0750	lb/MMscf	12.00	8760	7.88	0.004			A AP42
Benzene	0.0021	lb/MMscf	12.00	8760	0.22	0.000			A AP42
Toluene	0.0034	lb/MMscf	12.00	8760	0.36	0.000			C AP42
n-Hexane	1.8000	lb/MMscf	12.00	8760	189.22	0.095			C AP42
									AP42
									AP42
									AP42
									AP42

Sample Calculations:

lb/MMscf Emission Factor: $(84 \text{ lb/MMscf CO}) / (1000 \text{ Btu/scf}) \times (12 \text{ MMBtu/hr}) \times (8760 \text{ hr/yr}) / (2000 \text{ lb/ton})$
= **4.42 tpy CO**



Colorado Department
of Public Health
and Environment

Colorado Department of Public Health and Environment
Air Pollution Control Division

Facility Wide Emissions Inventory Form

Ver September 10, 2008

Form APCD-102

Company Name: Ingersoll Rand & Co. (USA) Inc.
Source Name: Ingersoll Rand Building 100
Source AHS ID:

AHS ID	Equipment Description	Uncontrolled Potential to Emit (PTE)										Controlled Potential to Emit (PTE)														
		Criteria (TPY)					HAPs (lb/yr)					Criteria (TPY)					HAPs (lb/yr)									
		TSP	PM10	PM2.5	SO2	NOx	CO	BZ	Tol	EB	NH3	TSP	PM10	PM2.5	SO2	NOx	CO	BZ	Tol	EB	NH3	HCHO	Acr	n-Hex	Meth	2,2,4-TMP
Permitted Sources/Subject																										
AHS Only - Permit Emission Sources																										
APEN Only Subtotal																										
APEN Emission / Indefinite sources																										
Total AP Sources =																										
Uncontrolled HAPs Summary (TPY) = 18.0 20.5 0.5 5.0 0.0																										
Controlled HAPs Summary (TPY) = 0.0																										
Controlled Total, All HAPs (TPY) = 0.0																										

Footnotes:
1. This form should be completed to include both existing sources and all proposed new or modifications to existing emissions sources.
2. If the emissions source is new, then enter "proposed" under the Permit No. and AHS ID data columns.
3. HAP abbreviations include:
BZ = Benzene
Tol = Toluene
EB = Ethylbenzene
Xyl = Xylene
HCHO = Formaldehyde
Acr = Acrylonitrile
n-Hex = n-Hexane
Meth = Methanol
2,2,4-TMP = 2,2,4-trimethylpentane
Acetal = Acetaldehyde
Acr = Acrylonitrile
n-Hex = n-Hexane
Meth = Methanol
4. APEN Emission/Indefinite Sources should be included when warranted.

LIQUIDS HANDLING HUB REGULATORY ANALYSIS

1.0 Federal New Source Review

The federal New Source Review program applies to new or modified sources in both attainment and non-attainment areas that result in emission increases in excess of specified thresholds.

Weld County is designated as non-attainment for ozone, so sources in this area are potentially subject to Non-Attainment New Source Review (NNSR) if emissions of NO_x or VOC are in excess of 100 tpy. The proposed facility will emit less than 100 tpy of both NO_x and VOC and will therefore not trigger NNSR. Regulation 3 Part D, Section II.A.24.e states that, “fugitive emission of a stationary source shall not be included in determining for any purposes of this section whether it is a major stationary source...” Therefore the potential emissions from this facility are less than 100 tons and it is not subject to NNSR.

Specific source types are subject to PSD review if their potential to emit (PTE) exceeds 100 tons per year (tpy) of any criteria air pollutant. All other source types are subject to PSD review if their PTE exceeds 250 tpy. This facility is not one of the specific source types and does not exceed a PTE of 250 tpy of any criteria pollutant; therefore, it is not subject to PSD review.

The EPA recently passed the Green House Gas (GHG) Tailoring Rule. This rule sets the PSD threshold for GHGs. Sources with a PTE equal to or greater than 100,000 tpy of CO₂ equivalent (CO_{2e}) and greater than 250 tpy of GHGs. are subject to New Source Review. This facility will emit CO_{2e} emissions under 100,000 tpy; therefore, this facility will not be subject to New Source Review for GHGs.

2.0 Federal Operating Permits

Sources are required to obtain a Part 70 Title V Operating Permit if they are a major source of emissions. A major source is defined as a stationary source that emits or has the potential to emit 10 tpy of any single hazardous air pollutant (HAP), 25 tpy of total HAPs, or 100 tpy of any criteria air pollutant. This facility will not emit any criteria or HAP pollutant above the specified thresholds and is therefore, not required to obtain a Title V operating permit. Regulation 3 Part A, Section I.B.25.b states that, “fugitive emission shall not be considered in determining whether a source is a major source for purposes of this Section...” Therefore the potential emissions from this facility are less than 100 tons and it is not subject to Title V.

For GHG emissions, a major source is defined as a stationary source that emits or has the potential to emit 100,000 tpy CO_{2e} and 100 tpy GHG. This facility will emit less than 100,000 tpy CO_{2e} and is therefore, not a major source of GHG emissions.

3.0 New Source Performance Standards

40 CFR Part 60 Subpart A - General Provisions

New Source Performance Standards (NSPS) Subpart A, General Provisions, applies to any stationary source that contains an affected facility to which a NSPS is applicable. As discussed below, this facility is subject to subpart Kb; therefore, the requirements of Subpart A apply.

NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Dc applies to each steam generating unit for which construction, modification, or reconstruction commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). 40 CFR 60.41c states:

"Steam generating unit means a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. This term includes any duct burner that combusts fuel and is part of a combined cycle system. This term does not include process heaters as defined in this subpart."

The steam generating unit on site will be rated at 2 MMBtu/hr. There are no steam generating units with a design heat input capacity in excess of 10.0 MMBtu/hr; therefore, NSPS Subpart DC does not apply.

NSPS Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction or Modification Commenced After July 23, 1984

NSPS Subpart Kb applies to each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.

There is an exemption for storage tanks with a design capacity less than or equal to 1,589.874 m^3 (1000 bbl) used for petroleum or condensate stored, processed, or treated prior to custody transfer. These tanks are too large for this exemption so the facility is subject to this subpart.

The facility is subject to the following requirements or subpart Kb:

60.112b Standard for volatile organic compounds (VOC)

§60.112b (a)(1)(i): the internal floating roof will rest or float on the surface of the liquid inside the storage vessel at all times except when the tank is being emptied or refilled.

60.112b(a)(1)(ii): The tanks will be equipped with seals that meet the requirements of paragraphs, A, B or C. However, as the tanks have not been ordered yet Encana cannot confirm which type of seal will be used.

60.112b (a) (1) (iv): all openings except leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells and stub drains will be equipped with a cover or lid and will remain closed at all times when the device is in actual use.

60.112 b (a) (1) (v): automatic bleeder vents shall be equipped with a gasket and will be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports

60.112 b (a) (1) (vi): Rim space vents shall be equipped with a gasket and will be set to open only when the floating roof is not floating or at manufacturer's recommended setting.

60.112 b (a) (1) (vii): Each penetration of the internal floating roof for the purpose of sampling will be a sample well. The sample well will have a slit fabric cover that covers at least 90 percent of the opening.

60.112b (a) (1) (viii) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof will have a flexible fabric sleeve or seal or a gasket sliding cover.

60.112b (a) (1) (ix) Each penetration of the internal floating roof that allows for passage of a ladder will have a gasketed sliding cover.

60.113b Testing and Procedures

60.113b (a) (1): after installing the roof, Encana will visually inspect the internal floating roof, the primary seal and the secondary seal prior to filling the vessel with VOL. If holes or tears are discovered then they will be fixed prior to filling the tank.

If the roof is equipped with a liquid mounted or mechanical shoe primary seal or a double seal system then the testing will follow the procedures outlined in 60.113b (a) (2) or 60.113b (a) (3), respectively.

60.113b (a) (4): the floating roof and seals, gaskets, slotted membranes and sleeve seals will be inspected each time the tank is emptied. All necessary fixes will be made prior to refilling the tank with VOL. This will take place on the time frame specified per the requirements in 60.113 (a) (2) or 60.113 (a) (3), depending on the seal type of the tank.

60.113b (a) (5): the administrator will be notified at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required.

60.115b Reporting and recordkeeping requirements

60.115b (a) (1): Encana will furnish the administrator with a report that describes the control equipment and certifies control equipment meets the specifications in §60.112b (a) (1)

60.115b (a) (2): A record of the inspection performed as required by this subpart. Each record will identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment.

60.115b (a) (3): If any of the defects described in 60.113b(a)(2) are detected during the annual visual inspection required by this subpart, a report will be furnished to the administrator within 30 days of the inspection.

60.115b (a) (4): After each inspection required by this subpart that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment

defects listed in the subpart a report will be furnished to the administrator within 30 days of the inspection.

60.116b Monitoring of operations

60.116b(a): All required records will be kept for 2 years

60.116b (b): records of the dimension of the storage vessel and analysis showing the capacity of the storage vessel.

60.116b (c): record of the VOL stored, the period of storage and maximum true vapor pressure of that VOL during the respective storage period.

60.116b (e): the maximum true vapor pressure will be determined using ambient temperature.

60.116b (e) (2): maximum true vapor pressure will be determined using the methods outlined in this subpart.

40 CFR Part 60 Subpart KKK - Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants

NSPS Subpart KKK applies to equipment leak components at onshore natural gas processing plants that commenced construction after January 20, 1984. A natural gas processing plant is defined in Subpart KKK as any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both [40 CFR 60.631]. This facility will not process natural gas and so is not subject to this subpart

40 CFR Part 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS Subpart JJJJ applies to stationary spark ignition internal combustion engines that commence construction after June 12, 2006, where the engines are manufactured:

- On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP);
- On or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP;
- On or after July 1, 2008, for engines with a maximum engine power less than 500 HP; or
- On or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP).

There will be no internal combustion engines on site so this subpart does not apply.

40 CFR Part 60 Subpart OOOO- Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

NSPS Subpart OOOO, §60.5395 applies to all condensate storage tanks with VOC emissions equal to or greater than 6 tons per year. Emissions from each tank will be less than 6 tons per year so this facility will not be subject to this subpart.

4.0 National Emission Standards for Hazardous Air Pollutants

40 CFR Part 63 Subpart HH - National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities

National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart HH applies to oil and natural gas production facilities that are major and area sources of HAPs. A major source is defined as a stationary source that emits or has the potential to emit 10 tpy of any single HAP or 25 tpy of total HAPs, and an area source is any stationary source of HAPs that is not a major source [40 CFR 63.2]. This facility is designated as an area source of HAPs. For area sources, the potentially affected sources are triethylene glycol dehydration units.

There are no TEG dehydrators on site so this facility is not subject to either HH major source or area source requirements.

40 CFR Part 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines

NESHAP Subpart ZZZZ applies to stationary reciprocating internal combustion engines (RICE) at major or area sources of HAP emissions. There are no internal combustion engines at the facility so the facility is not subject to this subpart.

5.0 State Regulations

Regulation 3, Part A, Section II

Regulation 3, Part A, Section II describes when an Air Pollutant Emission Notice (APEN) must be submitted for new, modified, and existing sources. APENs are included in this application for all non-APEN-exempt sources: internal floating roof condensate storage tanks, produced water storage tanks, condensate loadout, combustor and emissions from fugitive equipment leaks.

Regulation 3, Part B

Regulation 3, Part B describes the requirements for Construction Permits. This application requests one Construction Permit for the non-exempt sources: internal floating roof condensate storage tanks, produced water storage tanks, condensate loadout, combustor and emissions from fugitive equipment leaks.

Regulation 3, Part C

Regulation 3, Part C describes the requirements for Operating Permits. Regulation 3 Part A, Section I.B.25.b states that, "fugitive emission shall not be considered in determining whether a source is a major source for purposes of this Section..." This facility is a synthetic minor facility; therefore, it is not subject to the provisions of Regulation 3, Part C.

Regulation 3, Part D

Regulation 3, Part D describes the requirements for major stationary source new source review and prevention of significant deterioration. Regulation 3 Part D, Section II.A.24.e states that, "fugitive emission of a stationary source shall not be included in determining for any purposes of

this section whether it is a major stationary source..." This facility is not subject to new source review at this time.

Regulation 6

Regulation 6 incorporates by reference the EPA's New Source Performance Standards (NSPS). NSPS applicability is discussed in Section 3.0.

Regulation 7, Section III

This facility is subject to Regulation 7, Section III.A which states that All storage tank gauging devices, anti-rotation devices, accesses, seals, hatches, roof drainage systems, support structures, and pressure relief valves shall be maintained and operated to prevent detectable vapor loss except when opened, actuated, or used for necessary and proper activities (e.g. maintenance). Such opening, actuation, or use shall be limited so as to minimize vapor loss.

Detectable vapor loss shall be determined visually, by touch, by presence of odor, or using a portable hydrocarbon analyzer. When an analyzer is used, detectable vapor loss means a VOC concentration exceeding 10,000 ppm. Testing and monitoring shall be conducted as in Section VIII.C.3.

Regulation 7, Section XII

Regulation 7, Section XII.C.1.b states that all condensate collection, storage, processing and handling operations, regardless of size, shall be designed, operated and maintained so as to minimize leakage of volatile organic compounds to the atmosphere to the maximum extent practicable. This facility is subject to this section. By installing and properly maintaining the floating roof tanks, this facility will be in compliance with this subpart.

Regulation 7, Section XII.C.1.c states that all air pollution control equipment used to demonstrate compliance with this Section XII must meet a control efficiency of at least 95% unless otherwise provided in Section XII.D.2.B. Failure to properly install, operate, and maintain air pollution control equipment at the locations indicated in the Division-approved spreadsheet shall be a violation of this regulation. Based on the inclusion of the spreadsheet language in this section, this condition applies only to those facilities subject to Section XII.D. This facility is not subject to XII.D as discussed below and so is not subject to this.

Regulation 7, Section XII.D applies to owners or operators of any new or modified atmospheric condensate storage tank at exploration and production sites shall collect and control emissions by routing emissions to and operating air pollution control equipment..." This facility is not an exploration and production site so is not subject to this requirement.

Regulation 7, Section VI

Regulation 7, Section XII.B.2.a.(ii) states that owner or operator of a fixed roof tank equipped with an internal floating roof shall perform certain operating and maintenance. For the most part, Encana will comply with this regulation by complying with NSPS subpart Kb. The major difference is that the inspections of the tank and cover must be performed every 6 months in Regulation 7, not semi-annually per the federal subpart. Encana will coordinate this so that an inspection covers both regulations.



August 7, 2013

Colorado Department of Public Health and Environment
Air Pollution Control Division
4300 Cherry Creek Drive South APCD-SS-B1
Denver, CO 80246-1530

**RE: Liquids Handling Hub Permit Application
Encana Oil & Gas (USA) Inc.**

Dear Sir or Madam:

Encana Oil & Gas (USA) Inc. (Encana) is submitting APENs and permit application for condensate storage tanks, produced water storage tanks, condensate loadout and a combustor for the Liquids Handling Hub (The Hub) located near Erie at the intersection of County Roads 5 and 6. The Hub is a centralized liquids handling and loadout facility. Wells in the surrounding area will route pressurized water and condensate to this facility. All liquid into the facility will be routed through a separator vessel and to storage. Both water and condensate will be trucked out of the facility.

The facility will consist of (4) 44,500 bbl condensate internal floating roof storage tanks, (6) 750 bbl produced water tanks controlled by an electric VRU, hydrocarbon loadout and a combustor that controls emissions from the loadout operations. The facility will be a synthetic minor for Title V and NANSR status.

Please let me know if you need any additional information. If you should have any questions please contact me at (720) 876-3513.

Sincerely,

A handwritten signature in blue ink that reads "Paul Buck". The signature is written in a cursive, flowing style.

Paul Buck
Air Quality Specialist, SRBU

Encana Oil & Gas (USA) Inc.

Republic Plaza 307 – 17th Street Suite 1700 Denver CO 80202 USA 303.623.2300 encana.com



Oil & Gas Industry Construction Permit Application Completeness Checklist

Ver. September 28, 2009

Company Name: Encana Oil and Gas (USA) Inc.**Source Name:** Liquids Handling Hub**Date:** 08/08/2013

Are you requesting a facility wide permit for multiple emissions points? Yes ☐ No ☒

In order to have a complete application, the following attachments must be provided, unless stated otherwise. If application is incomplete, it will be returned to sender and filing fees will not be refunded.

Attachment	Application Element	Applicant	APCD
A	APEN Filing Fees	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B	Air Pollutant Emission Notice(s) (APENs) & Application(s) for Construction Permit(s) – APCD Form Series 200	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C	Emissions Calculations and Supporting Documentation	<input checked="" type="checkbox"/>	<input type="checkbox"/>
D	Company Contact Information - Form APCD-101	<input checked="" type="checkbox"/>	<input type="checkbox"/>
E	Ambient Air Impact Analysis <input type="checkbox"/> Check here if source emits only VOC (Attachment E not required)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
F	Facility Emissions Inventory – Form APCD-102 <input type="checkbox"/> Check here if single emissions point source (Attachment F not required)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
G	Process description, flow diagram and plot plan of emissions unit and/or facility <input type="checkbox"/> Check here if single emissions point source (Attachment G not required)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
H	Operating & Maintenance (O&M) Plan – APCD Form Series 300 <input type="checkbox"/> Check here if true minor emissions source or application is for a general permit (Attachment H not required)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
I	Regulatory Analysis <input type="checkbox"/> Check here to request APCD to complete regulatory analysis (Attachment I not required)	<input checked="" type="checkbox"/>	<input type="checkbox"/>
J	Colorado Oil and Gas Conservation Commission (COGCC) 805 Series Rule Requirements– Form APCD-105 <input checked="" type="checkbox"/> Check here if source is not subject to COGCC 805 Series requirements (Attachment J not required)	<input type="checkbox"/>	<input type="checkbox"/>

Send Complete Application to: **Colorado Department of Public Health & Environment**
APCD-SS-B1
4300 Cherry Creek Drive South
Denver, Colorado 80246-1530

Check box if facility is an existing Title V source: ☐ Send an additional application copy
 Check box if refined modeling analysis included: ☐ Send an additional application copy

Attachment A

APEN Filing Fees

Fees totaling \$764.50

encana

natural gas

Encana Oil & Gas (USA) Inc.
370 17th Street, Suite 1700 (303) 623-2300
Denver, CO 80202

PRODUCTION ACCOUNT

CITIBANK N.A.
One Penn's Way
New Castle, DE 19720
62-20/311

No. **946847**

PAY EXACTLY **\$764dols50cts**

Seven Hundred and Sixty Four Dollars & 50/100 Cents

TO
THE
ORDER
TO.

COLORADO DEPT. OF PUBLIC HEALTH & ENVIRONMENT

4300 Cherry Creek Dr S
Denver CO 80246-1530
United States

VOID IF NOT PRESENTED FOR PAYMENT WITHIN 180 DAYS

CHECK NUMBER	DATE	PAY EXACTLY
0000946847	Aug-07-2013	\$764.50



[Handwritten Signature]
[Handwritten Initials]

ORIGINAL DOCUMENT CONTAINS ARTIFICIAL WATERMARK ON BACK — HOLD AT AN ANGLE TO VIEW: FACE OF DOCUMENT IS A BLUE BACKGROUND NOT A WHITE BACKGROUND.

⑈0000946847⑈ ⑆031100209⑆ 38694634⑈

encana.

natural gas

Encana Oil & Gas (USA) Inc.
370 17th Street, Suite 1700 (303) 623-2300
Denver, CO 80202

Page 1 of 1

VENDOR NAME	VENDOR NO.	CHECK DATE	CHECK NUMBER	NET AMOUNT
COLORADO DEPT. OF PUBLIC HEALTH & ENVIRONMENT	2124988	Aug-07-2013	0000946847	\$764.50

VOUCHER	VENDOR INV. #	INV. DATE	TOTAL AMOUNT	PRIOR PMTS & DISCOUNTS	NET AMOUNT
14826015	2124988-073013D	07/30/13	764.50	.00	764.50
APEN Fees for COR Hub					
TOTAL INVOICES PAID			764.50	.00	764.50

Attachment B

APENs

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Midstream Condensate Tank Battery

Permit Number: _____ [Leave blank unless APCD has already assigned a permit # & AIRS ID] **Emission Source AIRS ID:** _____ / _____ / _____
Facility Equipment ID: Condensate Storage Tanks [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. **NAICS, or SIC Code:** 1311
Source Name: Liquids Handling Hub
Source Location: Intersection of County Rd 6 and County Rd 5 **County:** Weld
Elevation: 5,040 **Feet**
ZIP Code: 80202
Mailing Address: Republic Plaza 370 17th St. Suite 1700
Denver, CO
Person To Contact: Adam Berig **Phone Number:** (720) 876-3884
E-mail Address: adam.berig@encana.com **Fax Number:** (720) 876-4884

Section 03 – General Information

For existing sources, operation began on: _____ / _____ / _____ **For new or reconstructed sources, the projected startup date is:** 01 / 01 / 2014
Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year
General description of equipment and purpose: Condensate Storage Tanks

- ▶ Do any of the condensate storage tanks have a capacity $\geq 10,000$ bbl?
- ▶ Are you requesting ≥ 20 ton/yr VOC emissions, or are uncontrolled actual emissions ≥ 20 ton/yr? (If "Yes", Regulation No. 7, Section XVII.C will apply)
- ▶ Is this unit located at a stationary source that is considered a Major Source of Hazardous Air Pollutant (HAP) emissions?
- ▶ Will this equipment be operated in any NAAQS nonattainment area? (<http://www.cdphe.state.co.us/ap/attainment.html>)

^A If "Yes", the tank(s) may be subject to Regulation No. 7, Sections III, IV, & VI, and Regulation No. 6, Part A, Subpart Kb or Ka. Provide an applicability determination of these rules.
^B If "Yes", the tank(s) may be subject to Regulation No. 7, Section XII.A or XII.B. Provide an applicability determination of these rules.

Section 04 – Tank Battery Information¹

Number of tanks: 4 (44,500 bbl each) **Total tank capacity (bbl):** 178,000
Condensate throughput: Requested²: 10074000 bbl/year **Actual calendar year:** Yes ☐ No
Is actual annual average hydrocarbon liquid throughput ≥ 500 bbl/day? ☒ Yes ☐ No
 • If "yes" above, identify the gas-to-oil ratio: _____ m³/liter
Are "flash"³ emissions anticipated from the tank(s)? ☐ Yes ☒ No
API gravity: _____ degrees
Reid Vapor Pressure: 12 psi **True Vapor Pressure:** 9.5 psia @ 60 °F

¹ See PS Memo 05-01 for information on condensate tank permitting and identification of parameters used to calculate emissions. (<http://www.cdphe.state.co.us/ap/download/ps05-01.pdf>)
² Requested values will become permit limitations.
³ Hydrocarbons can "flash" into the vapor phase due to a reduction in pressure on the hydrocarbon liquids.

Additional Information Required: ☐ Attach a pressurized pre-flash condensate extended gas analysis, RVP & API analysis of the post-flash oil
☐ Attach E&P Tanks input & emission estimate documentation (or equivalent simulation report/test results)
☒ Attach EPA TANKS emission analysis if emission estimates do not contain working/breathing losses

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

This notice is valid for five (5) years. Submit a revised APEN prior to expiration of five-year term, or when a significant change is made (increase production, new equipment, change in fuel type, etc).
Mail this form along with a check for \$152.90 per APEN and \$250 for each general permit registration to:
Colorado Department of Public Health & Environment
APCD-SS-B1
4300 Cherry Creek Drive South
Denver, CO 80246-1530
 For guidance on how to complete this APEN form:
 Air Pollution Control Division: (303) 692-3150
 Small Business Assistance Program (SBAP): (303) 692-3148 or (303) 692-3175
 APEN forms: <http://www.cdphe.state.co.us/ap/download/forms.html>

☒ Check box to request copy of draft permit prior to issuance.
☒ Check box to request copy of draft permit prior to public notice.

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Midstream Condensate Tank Battery

Permit Number: _____ Emission Source AIRS ID: _____ / _____ / _____

Section 05 – Stack Information (Combustion stacks must be listed here)

Operator Stack ID No.	Stack Base Elevation (feet)	Stack Discharge Height Above Ground Level (feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)
Cond. Tanks						

Direction of stack outlet (check one): ☐ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Down ☐ Other (Describe): _____
 Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____ ☐ Other: Length (inches) = _____ Width (inches) = _____

Section 07 – Control Device Information

☐ **Condenser** used for control of the tank battery.
 Type: _____ Make/Model: _____
 Temperature (°F): Maximum: _____ Average: _____
 Requested VOC & HAP Control Efficiency: _____ %
☐ **VRU** used for control of the tank battery.
 Size: _____ Make/Model: _____
 Requested VOC & HAP Control Efficiency: _____ %
 Annual time that VRU is bypassed (emissions vented): _____ %

☐ **Combustion Device** used for control of the tank battery.
 Type: _____ Make/Model/Serial #: _____ Rating: _____ MMBtu/hr
 VOC & HAP Control Efficiency: _____ % Requested: _____ % Manufacturer Guaranteed: _____ %
 Minimum temp. to achieve requested control: _____ °F Waste gas heat content: _____ Btu/scf
 Constant pilot light? ☐ Yes ☐ No Pilot burner rating: _____ MMBtu/hr
☐ **Closed loop system** used for control of the tank battery.
 Description: _____
☒ **Describe Any Other: Floating Roof Tanks**

Section 08 – Emissions Inventory Information & Emission Control Information

☐ Emission Factor Documentation attached _____ Data year for actual calendar yr. emissions below & throughput in Sec. 04 (e.g. 2007): _____

Pollutant	Control Device Description		Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions ⁵		Estimation Method or Emission Factor Source
	Primary	Secondary		Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
NO _x	Identify in Section 07									
VOC				0.00447619	lb/bbl			22.54656		EPA Tanks
CO										
Benzene										
Toluene										
Ethylbenzene										
Xylene										
n-Hexane										
Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.										

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

⁴ Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

⁵ If Requested Permitted Emissions is left blank, the APCD will calculate emissions based on the information supplied in sections 03 - 08.

Section 09 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct. If this is a registration for coverage under general permit GP01, I further certify that this source is and will be operated in full compliance with each condition of general permit GP01.

Signature of Person Legally Authorized to Supply Data _____
 Date 8/8/2013 _____
 Name of Legally Authorized Person (Please print) Adam Berig _____
 Title _____
 Lead, Air Quality _____

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Produced Water Tank Battery

Permit Number: _____

[Leave blank unless APCD has already assigned a permit # & AIRS ID]

Emission Source AIRS ID: _____

Facility Equipment ID: Produced Water Tanks [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. NAICS, or SIC Code: 1311
 Source Name: Liquids Handling Hub
 Source Location: County Rd 5 and County Rd 6 County: Weld Change process or equipment ☐ Change company name ☐
 Mailing Address: Republic Plaza 370 17th St. Suite 1700 Elevation: 5040 Feet Change permit limit ☐ Transfer of ownership ☐
Denver, CO ZIP Code: 80202
 Person To Contact: Adam Berig Phone Number: (720) 876-3884
 E-mail Address: Adam.Berig@encana.com Fax Number: (720) 876-4884

Section 03 – General Information

For existing sources, operation began on: _____

Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year

General description of equipment and purpose: Produced Water Storage Tanks

- ▶ Do these storage tanks contain less than 1% by volume crude oil on an annual average basis?
- ▶ Are these produced water tanks located at a commercial facility that accepts oil production wastewater for processing?
- ▶ Are these produced water tanks subject to Colorado Oil and Gas Conservation Commission (COGCC) 805 series rules? If so, submit Form APCD-105.
- ▶ Is this source located in an ozone non-attainment area?

Section 04 – Tank Battery Information¹

Number of tanks: 6 (750 bbl each) Total tank capacity (bbl): 4,500
 Produced Water throughput: 1,204,500 bbl/year Actual calendar year: _____
 ▶ Are "Flash"³ emissions anticipated from these tanks? ☒ Yes ☐ No
 ▶ Is this tank located at an exploration & production (E&P) site?⁴ ☐ Yes ☒ No
 ▶ Is this tank located at a non-E&P, midstream or downstream site?⁴ ☒ Yes ☐ No

¹ See PS Memo 09-02 for information on produced water tank permitting. (<http://www.cdphe.state.co.us/ap/download/ps09-02.pdf>)

² Requested values will become permit limitations.

³ Hydrocarbons contained in the produced water can "flash" into the vapor phase due to a reduction in pressure on the liquids.

⁴ See PS Memo 09-02 for definitions of E&P, non-E&P, midstream and downstream. (<http://www.cdphe.state.co.us/ap/download/ps09-02.pdf>)

Additional Information Required:

- ☐ Attach supporting documentation if site specific emissions factors developed and supplied on APEN.

Section 02 – Requested Action (Check applicable request boxes)

- ☒ Request for NEW individual permit or newly reported emission source
- ☐ Request MODIFICATION to existing permit (check each box below that applies)
 - ☐ Change process or equipment ☐ Change company name
 - ☐ Change permit limit ☐ Transfer of ownership
- ☐ Request for coverage under GENERAL PERMIT number GP05
- ☐ Request APEN update only (check the box below that applies)
 - ☐ Revision to actual calendar year emissions for emission inventory
 - ☐ Update 5-Year APEN term without change to permit limits or previously reported emissions

Addl. Info. & Notes: _____

For new or reconstructed sources, the projected startup date is: 01/01/2014

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

This notice is valid for five (5) years. Submit a revised APEN prior to expiration of five-year term, or when a significant change is made (increase production, new equipment, change in fuel type, etc).

Mail this form along with a check for \$152.90 per APEN for non-E&P, midstream and downstream sources or \$152.90 for up to five (5) APENs for E&P sources and \$250 for each general permit registration to:

Colorado Department of Public Health & Environment
APCD-SS-BI

4300 Cherry Creek Drive South
Denver, CO 80246-1530

For guidance on how to complete this APEN form:

Air Pollution Control Division: (303) 692-3150
 Small Business Assistance Program (SBAP): (303) 692-3148 or (303) 692-3175

APEN forms: <http://www.cdphe.state.co.us/ap/download/forms.html>
 Application status: <http://www.cdphe.state.co.us/ap/ss/sspcpt.html>

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Produced Water Tank Battery

Permit Number: _____

Emission Source AIRS ID: _____

Section 05 – Stack Information (Combustion stacks must be listed here)

Operator Stack ID No.	Stack Base Elevation (feet)	Stack Discharge Height Above Ground Level (feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)
P.W. Tank						

Direction of stack outlet (check one): ☐ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Down ☐ Other (Describe): _____

Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____ ☐ Other: Length (inches) = _____ Width (inches) = _____

Section 07 – Control Device Information

☐ **Condenser** used for control of the tank battery.

Type: _____ Make/Model: _____

Temperature (°F): Maximum: _____ Average: _____

Requested VOC & HAP Control Efficiency: _____ %

☒ **VRU** used for control of the tank battery.

Size: _____ Make/Model: _____

Requested VOC & HAP Control Efficiency: 95 %

Annual time that VRU is bypassed (emissions vented): 0 %

☐ **Combustion Device** used for control of the tank battery.

Type: _____ Make/Model/Serial #: _____

VOC & HAP Control Efficiency: _____ %

Minimum temp. to achieve requested control: _____ °F

Constant pilot light? ☐ Yes ☐ No

☐ **Closed loop system** used for control of the tank battery.

Description: _____

☐ Describe Any Other: _____

Rating: _____ MMBtu/hr

Manufacturer Guaranteed: _____ %

Waste gas heat content: _____ Btu/scf

Pilot burner rating: _____ MMBtu/hr

Section 06 – Stack (Source, if no combustion) Location (Datum & either Lat/Long or UTM)

Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)

Section 08 – Emissions Inventory Information & Emission Control Information

☐ Emission Factor Documentation attached Data year for actual calendar yr. emissions below & throughput in Sec. 04 (e.g. 2007): _____

Pollutant	Control Device Description		Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions ⁵		Estimation Method or Emission Source
	Primary	Secondary		Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
NO _x	Identify in Section 07									
VOC				0.262	lb/bbl			157.79	7.89	State-Issued E.F.
CO										
Benzene				0.007	lb/bbl			4.23	0.21	State-Issued E.F.
Toluene										
Ethylbenzene										
Xylene										
n-Hexane				0.022	lb/bbl			13.25	0.66	State-Issued E.F.

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

⁴ Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

⁵ If Requested Permitted Emissions is left blank, the APCD will calculate emissions based on the information supplied in sections 03 - 08.

Section 09 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct. If this is a registration for coverage under general permit GP05, I further certify that this source is and will be operated in full compliance with each condition of general permit GP05.

Signature of Person Legally Authorized to Supply Data _____

8/7/2013

Date

Adam Berig

Name of Legally Authorized Person (Please print)

Lead, Air Quality

Title

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Hydrocarbon Liquid Loading

Please use the Fuel Dispensing Station APEN to report emissions from service stations and fleet refueling stations.

Permit Number: _____ Emission Source AIRS ID: _____
 Facility Equipment ID: _____ [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. NAICS, or SIC Code: 1311
 Source Name: Liquids Handling Hub
 Source Location: Intersection of CR 5 and CR 6 County: Weld Change process or equipment ☐ Change company name
 Mailing Address: Republic Plaza 370 17th St. Suite 1700 Elevation: 5040 Feet Change permit limit ☐ Transfer of ownership ☐ Other
Denver, CO
 Person To Contact: Adam Berig Phone Number: (720) 876-3884
 E-mail Address: Adam.Berig@encana.com Fax Number: (720) 876-4884

Section 03 – General Information

For existing sources, operation began on: _____

Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year

General description of equipment and purpose: Condensate Loadout into Trucks from floating roof tanks

► Is this source located at an oil and gas exploration and production site?

If yes, does this source load less than 10,000 gallons of crude oil per day on an annual average, splash fill less than 6750 BBL of condensate (hydrocarbon liquids that have an API gravity of 40 degrees or greater) per year or submerge fill less than 16,308 BBL of condensate per year?

► Is this source located at a facility that is considered a Major Source of Hazardous Air Pollutant (HAP) emissions?

► Will this equipment be operated in any NAAQS nonattainment area? (<http://www.cdphe.state.co.us/ap/attainmentmain.html>)

► Does this source load gasoline into transport vehicles?

^A If "Yes", this source may be subject to 40 CFR 63, Subparts EEEE, CC, and R. Provide an applicability determination of these rules.

^B If "Yes", this source may be subject to Regulation No. 3, Part B, Section III.D.2. Provide an applicability determination of these rules.

^C If "Yes", this source may be subject to Regulation No. 7, Section VI.C, 40 CFR 63 Subpart BBBBBB or Subpart XX. Provide an applicability determination of these rules.

For new or reconstructed sources, the projected startup date is: 1/1/2014

Addl. Info. & Notes:

Section 04 – Loading Information

Product Loaded: Condensate

This product is loaded from tanks at this facility into: Tank Trucks (e.g., "rail tank cars," or "tank trucks")

Number of Loading Bays: _____ Pump Capacity in Each Bay: _____ gallons/min.

► If this APEN is being filed for vapors displaced from cargo carrier, complete the following:

Annual Volume Loaded: Requested: 10,074,000 bbl/year Actual calendar year: _____ bbl/year

Saturation Factor²: 0.6 Average Temperature of Bulk Liquid Loaded: 50.23 °F

True Vapor Pressure: 9.5 psia @ 60 °F Molecular Weight of Displaced Vapors: 64.00 Lb/lb-mol

► If this APEN is being filed for vapor losses from pressurized loading lines, complete the following:

Loads per year: Requested: _____ #/yr. Actual Calendar Year: _____ #/yr. Product Density: _____ Lb/ft³

Load Line Volume³: _____ Ft³/truckload Vapor Recovery Line Volume³: _____ Ft³/truckload

¹ Requested values will become permit limitations.

² Please refer to AP-42, Table 5.2-1 for information on saturation factors (found online at: <http://www.epa.gov/ttn/chief/ap42/ch05/index.html>).

³ List the total volume for all lines in each category and attach your calculations of these volumes.

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

This notice is valid for five (5) years. Submit a revised APEN prior to expiration of five-year term, or when a significant change is made (increase production, new equipment, change in fuel type, etc).

Mail this form along with a check for \$152.90 to:

Colorado Department of Public Health & Environment
APCD-SS-BI
4300 Cherry Creek Drive South
Denver, CO 80246-1530

For guidance on how to complete this APEN form:

Air Pollution Control Division: (303) 692-3150
 Small Business Assistance Program (SBAP): (303) 692-3148 or (303) 692-3175

APEN forms: <http://www.cdphe.state.co.us/ap/downloadforms.html>

Application status: <http://www.cdphe.state.co.us/ap/ss/sspcept.html>

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Hydrocarbon Liquid Loading

Please use the Fuel Dispensing Station APEN to report emissions from service stations and fleet refueling stations.

Permit Number: _____

Emission Source AIRS ID: _____

Section 05 – Stack Information (Combustion stacks must be listed here)

Operator Stack ID No.	Stack Base Elevation (feet)	Stack Discharge Height Above Ground Level (feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)
L.O.						

Direction of stack outlet (check one): ☐ Vertical ☐ Circular with obstructing raincap

Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____

Section 07 – Control Device Information

☐ Vapor Recovery Unit (VRU) used for control of the loadout emissions.

Size: _____ Make/Model: _____

Requested VOC & HAP Control Efficiency: _____ %

Annual time that VRU is bypassed (emissions vented): _____ %

The VRU recycles loadout emissions to: _____

☐ Describe Any Other: _____

☒ Combustion Device used for control of the loadout emissions.

Type: Enclosed combustor Make/Model/Serial #: TBD

VOC & HAP Control Efficiency: Requested: 97 % Manufacturer Guaranteed: _____ %

Minimum temp. to achieve requested control: _____ °F Waste gas heat content: _____ Btu/scf

Constant pilot light? ☒ Yes ☐ No Pilot burner rating: _____ MMBtu/hr

Rating: _____ MMBtu/hr

Section 08 – Emissions Inventory Information & Emission Control Information

☒ Emission Factor Documentation attached

Data year for actual calendar year emissions below & throughput in Sec. 04 (e.g. 2007): _____

Pollutant	Control Device Description		Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ⁴		Requested Permitted Emissions ⁵		Estimation Method or Emission Factor Source
	Primary	Secondary		Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
NO _x	Identify in Section 07			0.373	lb/bbl			1876.47	56.29	AP-42
VOC				0.00350	lb/bbl			17.64	0.53	AP-42
CO				0.00618	lb/bbl			31.15	0.93	AP-42
Benzene				0.000261	lb/bbl			1.31	0.04	AP-42
Toluene				0.00272	lb/bbl			13.70	0.41	AP-42
n-Hexane				0.00868	lb/bbl			43.72	1.31	AP-42

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

⁴ Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

⁵ If Requested Permitted Emissions is left blank, the APCD will calculate emissions based on the information supplied in sections 03 - 08.

Section 09 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct.

Signature of Person Legally Authorized to Supply Data

8/7/2013

Date

Adam Berig

Name of Legally Authorized Person (Please print)

Lead, Air Quality

Title

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Fugitive Component Leak Emissions

Permit Number: _____ Emission Source AIRS ID: _____ / _____
Facility Equipment ID: _____ [Leave blank unless APCD has already assigned a permit # & AIRS ID] _____
[Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil & Gas (USA) Inc. NAICS, or SIC Code: 1311
Source Name: Liquids Handling Hub
Source Location: County Rd 5 and County Rd. 6 County: Weld Change process or equipment ☐ Change company name ☐
Elevation: 5,040 Feet Change permit limit ☐ Transfer of ownership ☐ Other ☐
Mailing Address: Republic Plaza 370 17th St., Suite 1700 ZIP Code: 80202
Denver, CO
Person To Contact: Adam Berig Phone Number: (720) 876-3884
E-mail Address: adam.berig@encana.com Fax Number: (720) 876-4884

Section 03 – General Information

For existing sources, operation began on: _____ / _____ / _____
Normal Hours of Source Operation: 24 hours/day 7 days/week 52 weeks/year
Brief description of equipment associated with these components: Central condensate storage facility

Will this equipment be operated in any NAAQS nonattainment area?
(<http://www.cdphe.state.co.us/ap/attainment.html>) ☒ Yes ☐ No ☐ Don't know

Section 04 – Regulatory Information

Is this equipment subject to NSPS 40 CFR Part 60, Subpart KKK? ☐ Yes ☒ No ☐ Don't know
Is this equipment subject to NESHAP 40 CFR Part 63, Subpart HH? ☐ Yes ☒ No ☐ Don't know
List any other NSPS or NESHAP Subpart that applies to this equipment: _____

Section 05 – Stream Constituents

Identify the VOC & HAP content of each applicable stream.

Stream	VOC (wt. %)	Benzene (wt. %)	Toluene (wt. %)	Ethylbenzene (wt. %)	Xylene (wt. %)	n-Hexane (wt. %)
Gas	100					
Heavy Oil (or Heavy Liquid)	NA					
Light Oil (or Light Liquid)	100					
Water/Oil						

☐ Submit a representative gas and liquid extended analysis (including BTEX) to support emission calculations

FORM APCD-203

Section 02 – Requested Action (Check applicable request boxes)

☒ Request for NEW permit or newly reported emission source
☐ Request MODIFICATION to existing permit (check each box below that applies)
☐ Change process or equipment ☐ Change company name
☐ Change permit limit ☐ Transfer of ownership ☐ Other
☐ Request to limit HAPs with a Federally enforceable limit on PTE
☐ Request APEN update only (check the box below that applies)
☐ Revision to actual calendar year emissions for emission inventory
Update 5-Year APEN term without change to permit limits or previously reported emissions ☐

Additional Info. & Notes: _____

For new or reconstructed sources, the projected startup date is: 01 / 01 / 2014

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

This notice is valid for five (5) years. Submit a revised APEN prior to expiration of five-year term, or when a significant change is made (increase production, new equipment, change in fuel type, etc).

Mail this form along with a check for \$152.90 to:

Colorado Department of Public Health & Environment
APCD-SS-BI
4300 Cherry Creek Drive South
Denver, CO 80246-1530

For guidance on how to complete this APEN form:

Air Pollution Control Division: (303) 692-3150
Small Business Assistance Program (SBAP): (303) 692-3148 or (303) 692-3175

APEN forms: <http://www.cdphe.state.co.us/ap/downloadforms.html>

Application status: <http://www.cdphe.state.co.us/ap/ss/sspcpt.html>

☒ Check box to request copy of draft permit prior to issuance.
☒ Check box to request copy of draft permit prior to public notice.

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – Fugitive Component Leak Emissions

Permit Number: _____ Emission Source AIRS ID: _____ / _____ / _____
 Section 06 – Location Information (Provide Datum and either Lat/Long or UTM) Section 07 – Leak Detection & Repair (LDAR) & Control Information

Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)

Check appropriate boxes to identify LDAR program conducted at this site:
☐ LDAR per NSPS KKK ☒ No LDAR program
☐ Other: _____

If LDAR per NSPS KKK with 10,000 ppmv leak definition:
☐ Monthly monitoring. Control: 88% gas valve, 76% lt. liq. valve, 68% lt. liq. pump
☐ Quarterly monitoring. Control: 70% gas valve, 61% lt. liq. valve, 45% lt. liq. pump

Section 08 – Emission Factor Information

Identify the emission factor used to estimate emissions under "E.F." along with the units relating to the emission factor (e.g. lb/hr/component).

☐ Check this box if you used Table 2-4 of U.S. EPA's 1995 Protocol for Equipment Leak Emission Estimates to estimate emissions. You do not need to enter the emission factors below if checked.

Equipment Type	Gas			Heavy Oil (or Heavy Liquid)			Light Oil (or Light Liquid)			Water/Oil		
	Count ¹	E.F.	Units	Count ¹	E.F.	Units	Count ¹	E.F.	Units	Count ¹	E.F.	Units
Connectors	100	0.00041	lb/hr-comp				150	0.000463	lb/hr-comp			
Flanges	152	0.000860	lb/hr-comp				258	0.00011	lb/hr-comp			
Open-Ended Lines	0						12	0.0014	lb/hr-comp			
Pump Seals	0						4	0.02866	lb/hr-comp			
Valves	70	0.009921	lb/hr-comp				117	0.005512	lb/hr-comp			
Other	28	0.019401	lb/hr-comp									

¹Count shall be the actual or estimated number of components in each type of service used to calculate the "Actual Calendar Year Emissions" below. ☐ Estimated Count ☐ Actual Count conducted on the following date: _____

Section 09 – Emissions Inventory Information & Emission Control Information

☐ Emission Factor Documentation attached

Data year for actual calendar year emissions below (e.g. 2007): _____

Pollutant	Control Device Description		Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ²		Requested Permitted Emissions ³		Estimation Method or Emission Factor Source
	Primary	Secondary		Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
VOC	Identify in Section 07			Identify in Section 08				20.51		EPA-453/R95-017
Benzene										
Toluene										
Ethylbenzene										
Xylene										
n-Hexane										

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

² Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

³ You may request permitted emissions in excess of actual emissions to account for component count and gas composition variability. If Requested Permitted Emissions is left blank, emissions will be based on info. in Sec. 03 - 09.

Section 10 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct.

Signature of Person Legally Authorized to Supply Data Adam Berig Date 8/8/2013 Name of Legally Authorized Person (Please print) Adam Berig Title Lead, Air Quality

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General

Permit Number: _____

[Leave blank unless APCD has already assigned a permit # & AIRS ID]

Emission Source AIRS ID: _____

_____ / _____

Facility Equipment ID: Combustor [Provide Facility Equipment ID to identify how this equipment is referenced within your organization.]

Section 01 – Administrative Information

Company Name: Encana Oil Gas (USA) Inc.

Source Name: Liquids Handling Hub NAICS, or SIC Code: 1311

Source Location: County Rd 5 and County Rd. 6

County: Weld

Elevation: 5,040 Feet

Portable Source
Home Base:

Mailing Address: 370 17th St. Suite 1700

ZIP Code: 80202

Denver, CO

Person To Contact: Adam Berig

Phone Number: (720) 876-3884

E-mail Address: adam.berig@encana.com

Fax Number: (720) 876-4484

Additional
Info. &
Notes:

Section 03 – General Information

For existing sources, operation began on: _____ / _____ / _____

Normal Hours of Source Operation: 12 hours/day 7 days/week 52 weeks/year

General description of equipment and purpose: Combustor controlling emissions from truck loadout

For new or reconstructed sources, the projected startup date is: 01 / 01 / 2014

Will this equipment be operated in any NAAQS nonattainment area?
(<http://www.cdphe.state.co.us/ap/attainmentmain.html>)

☒ Yes ☐ No ☐ Don't know

Section 04 – Processing/Manufacturing Equipment Information & Material Use

Description of equipment¹:

Manufacturer: TBD

Model No.: TBD

Serial No.: TBD

	Description	Actual Level (For Data Year)	Annual Requested Permitted Level ² (Specify Units)	Design Process Rate (Specify Units/Hour)
Raw Materials:				
Finished Products:				
Other Process:				

¹If additional space is required, please attach a separate list of equipment, materials and throughputs.

²Requested values will become permit limitations. Requested level should consider process growth over the next five years.

Colorado Department of Public Health and Environment Air Pollution Control Division (APCD)

This notice is valid for five (5) years. Submit a revised APEN prior to expiration of five-year term, or when a significant change is made (increase production, new equipment, change in fuel type, etc).

Mail this form along with a check for \$152.90 to:

Colorado Department of Public Health & Environment

APCD-SS-B1

4300 Cherry Creek Drive South

Denver, CO 80246-1530

For guidance on how to complete this APEN form:

Air Pollution Control Division: (303) 692-3150

Small Business Assistance Program (SBAP): (303) 692-3148 or (303) 692-3175

APEN forms: <http://www.cdphe.state.co.us/ap/downloadforms.html>

Application status: <http://www.cdphe.state.co.us/ap/ss/ssept.html>

☒ Check box to request copy of draft permit prior to issuance.

☒ Check box to request copy of draft permit prior to public notice.

AIR POLLUTANT EMISSION NOTICE (APEN) & Application for Construction Permit – General

Permit Number: _____ Emission Source AIRS ID: _____ / _____ / _____

Section 05 – Emission Release Information (Attach a separate sheet with relevant information in the event of multiple releases; provide datum & either Lat/Long or UTM)

Operator Stack ID No.	Base Elevation (feet)	Discharge Height Above Ground Level (Feet)	Temp. (°F)	Flow Rate (ACFM)	Velocity (ft/sec)	Moisture (%)	Horizontal Datum (NAD27, NAD83, WGS84)	UTM Zone (12 or 13)	UTM Easting or Longitude (meters or degrees)	UTM Northing or Latitude (meters or degrees)	Method of Collection for Location Data (e.g. map, GPS, GoogleEarth)
Comb. 1											

Direction of outlet (check one): ☐ Vertical ☐ Vertical with obstructing raincap ☐ Horizontal ☐ Down ☐ Other (Describe): _____
 Exhaust Opening Shape & Size (check one): ☐ Circular: Inner Diameter (inches) = _____ ☐ Other: Length (inches) = _____ Width (inches) = _____

Section 06 – Combustion Equipment & Fuel Consumption Information

Company equipment Identification No.: _____ Manufacturer: _____ Model: _____ Serial No.: _____

Fuel Type	Design Input Rate (10 ⁶ Btu/hr)	Actual Level (For Data Year)	Annual Requested Permitted Level ² (Specify Units)	Fuel Heating Value (Indicate: Btu/lb, Btu/gal, Btu/SCF)	Percent by Weight Sulfur Ash	Seasonal Fuel Use (% of Annual Use) Dec-Feb Mar-May Jun-Aug Sep-Nov
Natural Gas				1000 btu/scf		25 25 25 25

²Requested values will become permit limitations. Requested level should consider process growth over the next five years.

Section 07 – Emissions Inventory Information & Emission Control Information

Attach any emission calculations and emission factor documentation to this APEN form.

☐ Emission Factor Documentation attached Data year for actual calendar yr. emissions below & throughput above (e.g. 2007): _____


Pollutant	Control Device Description		Overall Collection Efficiency	Control Efficiency (% Reduction)	Emission Factor		Actual Calendar Year Emissions ³		Requested Permitted Emissions ⁴		Estimation Method or Emission Factor Source
	Primary	Secondary			Uncontrolled Basis	Units	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	Uncontrolled (Tons/Year)	Controlled (Tons/Year)	
TSP											
PM ₁₀											
PM _{2.5}											
SO _x											
NO _x					1.21	lb/hr			5.24		TCEQ Flare
VOC											
CO					4.76	lb/hr			20.84		TCEQ Flare

Please use the APCD Non-Criteria Reportable Air Pollutant Addendum form to report pollutants not listed above.

³ Annual emission fees will be based on actual emissions reported here. If left blank, annual emission fees will be based on requested emissions.

⁴ If Requested Permitted Emissions is left blank, the APCD will calculate emissions based on the information supplied in sections 03 - 07.

Section 08 – Applicant Certification - I hereby certify that all information contained herein and information submitted with this application is complete, true and correct.

Signature of Person Legally Authorized to Supply Data:  Date: 8/7/2013 Name of Legally Authorized Person (Please print): Adam Berig Lead, Air Quality Title

Attachment C

Emission Calculations and Supporting Documentation

Condensate Throughput and Emission Sheet

Company:

Encana Oil & Gas (USA) Inc.

Location:

CR 5 and CR 6, Weld

Site/Facility Name:

The Hub

County:

Weld

Source AIRS ID:

Field:

Wattenberg

Daily Oil Throughput	27,600.00	bbl
Annual Throughput	10,074,000.00	bbl
Daily Water Throughput	3,300.00	bbl
Annual Water Throughput	1,204,500.00	bbl
Number of Oil Tanks	4.00	
Oil Tank Capacity	44,500.00	bbl

Assumptions
RVP 12.00

EPA Tanks Using Floating Roof

Assumptions

Internal Floating Roof

Double Deck Roof

Welded together

Don't know 1° or 2° seals- will use most conservative of vapor seal for 1° seal and no 2° seal

Note: the identical tank and throughput with fixed roof tank has emissions of roughly 2,000,000 lbs. The floating roof represents greater than 95% control

Inputs	
Throughput per tank per year (bbl)	2,518,500.00
Tank diameter (ft)	100.00

VOC Emissions for 1 tank (lbs) 11273.28

Total VOC Emissions (tons/ yr) 22.54656

Corresponding Emission Factor (lb/bbl) 0.004476188

Note: this value is very conservative*

*we are unsure of tank construction parameters so we assume most conservative values as detailed in assumptions above

TANKS 4.0.9d
Emissions Report - Detail Format
Tank Identification and Physical Characteristics

Identification

User Identification:	The Hub
City:	Denver
State:	Colorado
Company:	
Type of Tank:	Internal Floating Roof Tank
Description:	

Tank Dimensions

Diameter (ft):		100.00
Volume (gallons):		1,869,000.00
Turnovers:		56.60
Self Supp. Roof? (y/n):	Y	
No. of Columns:		0.00
Eff. Col. Diam. (ft):		0.00

Paint Characteristics

Internal Shell Condition:	Light Rust
Shell Color/Shade:	Gray/Light
Shell Condition:	Good
Roof Color/Shade:	Gray/Light
Roof Condition:	Good

Rim-Seal System

Primary Seal:	Vapor-mounted
Secondary Seal:	None

Deck Characteristics

Deck Fitting Category:	Typical
Deck Type:	Welded

Deck Fitting/Status**Quantity**

Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	1
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1
Roof Leg or Hanger Well/Adjustable	32
Sample Pipe or Well (24-in. Diam.)/Slit Fabric Seal 10% Open	1
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1

Meteorological Data used in Emissions Calculations: Denver, Colorado (Avg Atmospheric Pressure = 12.12 psia)

TANKS 4.0.9d
Emissions Report - Detail Format
Liquid Contents of Storage Tank

The Hub - Internal Floating Roof Tank
Denver, Colorado

Mixture/Component	Month	Daily Liquid Surf Temperature (deg F)			Liquid Bulk Temp (deg F)	Vapor Pressure (psia)			Vapor Mol Weight	Liquid Mass Fract	Vapor Mass Fract	Mol Weight	Basis for Vapor Pressure Calculations
		Avg	Min	Max		Avg	Min	Max					
Gasoline (RVP 12)	All	58.16	47.20	69.12	52.45	6.1362	N/A	N/A	64.0000			92.00	Option 4: RVP=12, ASTM Slope=3

TANKS 4.0.9d
Emissions Report - Detail Format
Detail Calculations (AP-42)

The Hub - Internal Floating Roof Tank
Denver, Colorado

Annual Emission Calculations

Rim Seal Losses (lb):	7,486.8181
Seal Factor A (lb-mole/ft-yr)	6.7000
Seal Factor B (lb-mole/ft-yr (mph)*h)	0.2000
Value of Vapor Pressure Function	0.1746
Vapor Pressure at Daily Average Liquid Surface Temperature (psia)	6.1362
Tank Diameter (ft)	100.0000
Vapor Molecular Weight (lb/lb-mole)	64.0000
Product Factor:	1.0000
Withdrawal Losses (lb):	199.4954
Number of Columns	0.0000
Effective Column Diameter (ft)	0.0000
Annual Net Throughput (gal/yr)	105,777,000.0000
Shell Coingage Factor (bbl/1000 sqft)	0.0015
Average Organic Liquid Density (lb/gal)	5.6000
Tank Diameter (ft)	100.0000
Deck Fitting Losses (lb):	3,596.9661
Value of Vapor Pressure Function	0.1746
Vapor Molecular Weight (lb/lb-mole)	64.0000
Product Factor:	1.0000
Total Roof Fitting Loss Fact. (lb-mole/yr)	321.0000
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft)	0.0000
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr)	0.0000
Deck Seam Length Factor (1/sqft)	0.0000
Tank Diameter (ft)	100.0000
Vapor Molecular Weight (lb/lb-mole)	64.0000
Product Factor:	1.0000
Total Losses (lb):	11,273.2816

Roof Fitting/Status	Quantity	Roof Fitting Loss Factors		m	Losses (lb)
		KFa (lb-mole/yr)	KFb (lb-mole/(yr mph*h))		
Access Hatch (24-in. Diam.)/Unbolted Cover, Ungasketed	3	35.00	5.90	1.20	402.2768
Automatic Gauge Float Well/Unbolted Cover, Ungasketed	1	14.00	5.40	1.10	156.4410
Roof Leg or Hanger Well/Adjustable	32	7.90	0.00	0.00	2,824.8770
Sample Pipe or Well (24-in. Diam.)/Silb Fabric Seal 10% Open	1	12.00	0.00	0.00	134.0923
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	1	6.20	1.20	0.94	66.2610

TANKS 4.0.9d
Emissions Report - Detail Format
Individual Tank Emission Totals

Emissions Report for: Annual

The Hub - Internal Floating Roof Tank
Denver, Colorado

	Losses(lbs)				
Components	Rim Seal Loss	Withdrawl Loss	Deck Fitting Loss	Deck Seam Loss	Total Emissions
Gasoline (RVP 12)	7,486.82	199.50	3,586.97	0.00	11,273.28

Projected Produced Water Production

The Hub

Design Capacity of Facility 1204500 bbl/yr

	E.F. lb/bbl	Actual Emissions	
		uncontrolled	controlled
VOC (ton/yr)	0.262	157.79	7.889475
Benzene (lbs/yr)	0.007	8431.50	421.575
n-Hexane (lbs/yr)	0.022	26499.00	1324.95

Assumes 95% control with VRU

The Hub
EnCana Oil & Gas Company
Condensate Loadout Calcs

CR 5 and CR 6, Weld
Weld County, CO

Truck Loadout - Detailed Emissions Calculations

Equipment Information

Source ID Number: LOAD-1 Permit Status: Pending
Description: Condensate Loadout SCC:
AIRS ID:
Coordinates: UTM
Northing:
Easting:
Source Location Zone:

Status: Not Yet Built
Liquid Temperature (°F): 52.45 From Tanks
Vapor Pressure (psia): 9.5
Truck Volume (gal): 1500
Load Frequency (trucks/yr): 282072
Load Rate (gal/min): 25
Throughput Value (bbl/yr) 10,074,000.00
Throughput Value (gal/yr): 423,108,000.00
Molecular Weight (lb/lb-mole): 64.00
Saturation Factor: 0.6
Load Duration (min/truck): 60.00
Emission Controls:
Percent VOC Control: 97

Loading Loss (lb/1000 gal) = $(12.46 \cdot S \cdot P \cdot M) / T$ (AP-42 Section 5.2 (1/95)) where:

S = Saturation Factor = dedicated normal service
P = True Vapor Pressure of liquid loaded*, psia
M = Molecular Weight of Vapors, lb/lb-mole
T = Temp. of bulk liquid loaded, deg. R = (deg. F + 460)

Loading Loss (lb VOC/1000 gal) = 8.87 lb/1000 gal
0.021338

Potential Emissions

Pollutant	Loading Loss (lb/1000 gal)	Throughput (gal/yr)	Uncontrolled Emissions (lb/yr)	(tpy)	Controlled Emissions (lb/yr)	(tpy)	Source of Emission Factor
VOC	8.87	423108000.00	3752948.56	1876.47	112588.46	56.29	AP42

HAPs	Reporting Bin	Wt % of VOC	Uncontrolled Emissions (lb/yr)	(tpy)	Controlled Emissions (lb/yr)	(tpy)	Source of Emission Factor
Benzene	A	0.94	35277.72	17.64	1058.33	0.53	
Toluene	C	1.66	62298.95	31.15	1868.97	0.93	
Ethylbenzene	C	0.07	2627.06	1.31	78.81	0.04	
Xylene	C	0.73	27396.52	13.70	821.90	0.41	
n-Hexane	C	2.33	87443.70	43.72	2623.31	1.31	

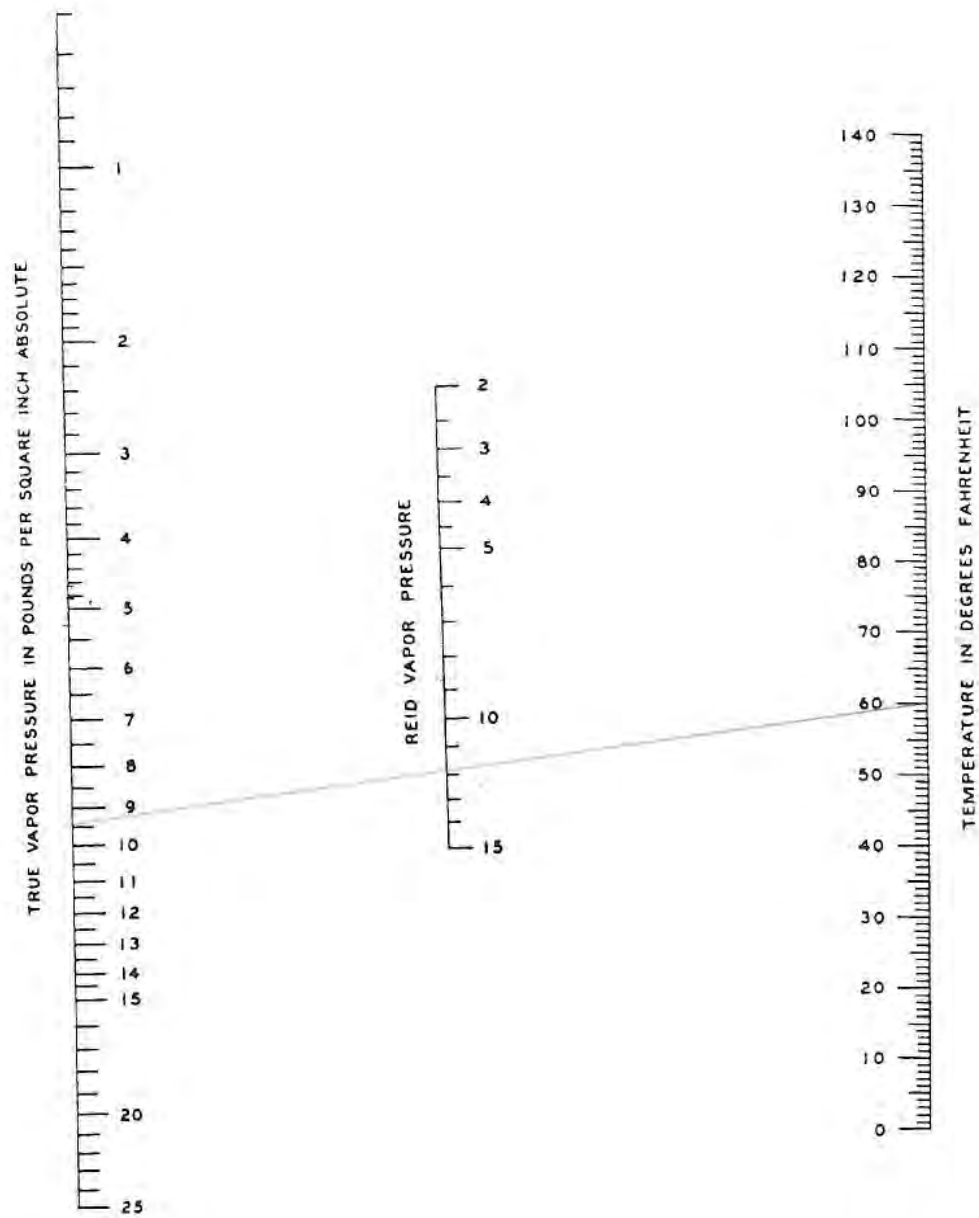
Short Term Emissions Calculation

	Loading Freq (trucks/yr)	Loading Duration (min/truck)	Annual Hours of Operation (hrs/yr)	Hourly Emissions (lb/hr)
VOC	282072	60	282072.00	0.40

Notes **Notes Date:**

EF VOC	8.87	lb/1000 gal	0.372538074	lb/bbl
EF Benzene	0.08338	lb/1000 gal	0.003501858	lb/bbl
Toluene	0.14724	lb/1000 gal	0.006184132	lb/bbl
Ethylbenzene	0.00621	lb/1000 gal	0.000260777	lb/bbl
Xylene	0.06475	lb/1000 gal	0.002719528	lb/bbl
n-Hexane	0.20667	lb/1000 gal	0.008680137	lb/bbl

Attachment A
American Petroleum Institute Nomograph
(API 2518)



True Vapor Pressures (P) of Crude Oils (2 psi to 15 psi RVP)

Fugitives - Detailed Emissions Calculations
The Hub
Encana Oil & Gas (USA) Inc.

Weid County, CO

Equipment Information

Source ID Number:

Description:

AIRS ID:

Coordinates:

Latitude:

Longitude:

Permit Status:

Facility-wide Fugitives

Latitude/Longitude

39.87126111

-108.525561

Notes:

Assumed 100 weight percent of VOC for gas to be conservative

HAPS based on typical values seen in the DJ

Status:

Active

Component Type	Emission Factor (kg/hr/source)	Emission Factor (lb/hr/source)	Source Count	Percent VOC	Hours of Operation	Control Factor (%)	Total HC Emissions (lb/hr)	Total VOC Emissions (lb/hr)	Total VOC Emissions (tpy)
Connectors - gas	0.0002	0.000441	100	100.00%	8760	0%	0.04	0.0441	0.19
Flanges - gas	0.00039	0.000860	152	100.00%	8760	0%	0.13	0.1307	0.57
OEL - Gas	0.002	0.004409	0	100.00%	8760	0%	0.00	0.0000	0.00
Valve - gas	0.0045	0.009921	70	100.00%	8760	0%	0.69	0.6945	3.04
Other - Gas	0.0088	0.019401	28	100.00%	8760	0%	0.54	0.5432	2.38
Connectors - light liq.	0.00021	0.000463	150	100.00%	8760	0%	0.07	0.0694	0.30
Flanges - light liq.	0.00011	0.000243	258	100.00%	8760	0%	0.06	0.0626	0.27
OEL - light liq.	0.0014	0.003086	12	100.00%	8760	0%	0.04	0.0370	0.16
Pump seals - light liq.	0.013	0.028660	4	100.00%	8760	0%	0.11	0.1146	0.50
Valves - light liq.	0.0025	0.005512	117	100.00%	8760	0%	0.64	0.6449	2.82
Other - light liq.	0.0075	0.016535	0	100.00%	8760	0%	0.00	0.0000	0.00
Total Emissions:							2.34	10.25	

Source EPA-453/R95-017, Table 2-4 emission factors converted to lb/hr-component

Safety Factor of 2 20.51

Potential operation:

8760 hr/yr

HAPs	Weight %	Pollutant Emissions (lb/hr)	Pollutant Emissions (lb/yr)	Pollutant Emissions (tpy)	Reporting Bin	Source of Emission Factor	Safety Factor of 2
Carbon Dioxide	0.07%	0.00	14.15	0.007		EPA	0.014
Methane	57.98%	1.36	11890.41	5.945		EPA	11.890
n-Hexane	0.47%	0.01	96.32	0.048	C	EPA	0.096
Toluene	0.02%	0.00	3.51	0.002	C	EPA	0.004
Xylenes	0.02%	0.00	3.75	0.002	C	EPA	0.004
Benzene	0.01%	0.000	1.17	0.001	A	EPA	0.001
Ethylbenzene	0.00%	0.00	0.16	0.000	C	EPA	0.000
n-Hexane	0.47%	0.01	96.32	0.048	C	EPA	0.096

Not Reportable
Not Reportable
Not Reportable
Not Reportable
Not Reportable

Sample Calculations:

$$(70 \text{ Valves - gas}) \times (0.00992079 \text{ lb/hr/source}) \times (8760 \text{ hr/yr}) \times (100 \% \text{ VOC}) \times (100 - 0 \% \text{ Control}) / (2000 \text{ lb/ton})$$
$$= 3.04 \text{ tpy VOC}$$

Combustion Device (Tank and Loadout Control)
The Hub
Encana Oil & Gas (USA) Inc.

Source ID	Combustor	Stack Height	ft
Description	Combustor	Stack Temp.	deg F
Manufacturer	Unknown	Stack Flow	acfm
Model	Unknown	Stack Velocity	ft/min
Serial #	Unknown	Stack Base	ft
Manufacture Date	Unknown		
Fuel Heat Value	1000 Btu/scf	Latitude	deg
Pilot Flow Rate	25 scf/hr	Longitude	deg
Pilot Heat Input	0.03 MMBtu/hr	or	
Pilot Potential Operation	8760 hr/yr	UTM Zone	
Pilot Potential Fuel Usage	0.22 MMscf/yr	UTM Northing	m
Destruction Efficiency	97 %	UTM Easting	m
		Datum	

Emissions from Pilot Combustion

Pollutant	CAS Number	Emission Factor (lb/MMscf)	(lb/hr)	(lb/yr)	(ton/yr)	Source of Emission Factor
NOx		100	0.01	87.60	0.05	AP-42 ¹
CO		84	0.01	87.60	0.05	AP-42 ¹
VOC		5.5	0.01	87.60	0.05	AP-42 ²
SO2		0.6	0.01	87.60	0.05	AP-42 ²
PM		7.6	0.01	87.60	0.05	AP-42 ²
2-Methylnaphthalene	91-57-6	2.40E-05	0.0001	0.8760	0.0005	AP-42 ³
3-Methylchloranthrene	56-49-5	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
7,12-Dimethylbenz(a)anthracene		1.60E-05	0.0001	0.8760	0.0005	AP-42 ³
Acenaphthene	83-32-9	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Acenaphthylene	208-96-8	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Anthracene	120-12-7	2.40E-06	0.0001	0.8760	0.0005	AP-42 ³
Benz(a)anthracene	56-55-3	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Benzene	71-43-2	2.10E-03	0.0001	0.8760	0.0005	AP-42 ³
Benzo(a)pyrene	50-32-8	1.20E-06	0.0001	0.8760	0.0005	AP-42 ³
Benzo(b)fluoranthene	205-99-2	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Benzo(g,h,i)perylene	191-24-2	1.20E-06	0.0001	0.8760	0.0005	AP-42 ³
Benzo(k)fluoranthene	205-82-3	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Chrysene	218-01-9	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Dibenzo(a,h)anthracene	53-70-3	1.20E-06	0.0001	0.8760	0.0005	AP-42 ³
Dichlorobenzene	25321-22-6	1.20E-03	0.0001	0.8760	0.0005	AP-42 ³
Fluoranthene	206-44-0	3.00E-06	0.0001	0.8760	0.0005	AP-42 ³
Fluorene	86-73-7	2.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Formaldehyde	50-00-0	7.50E-02	0.0001	0.8760	0.0005	AP-42 ³
n-Hexane	110-54-3	1.80E+00	0.0001	0.8760	0.0005	AP-42 ³
Indeno(1,2,3-c,d)pyrene	193-39-5	1.80E-06	0.0001	0.8760	0.0005	AP-42 ³
Naphthalene	91-20-3	6.10E-04	0.0001	0.8760	0.0005	AP-42 ³
Phenanthrene	85-01-8	1.70E-05	0.0001	0.8760	0.0005	AP-42 ³
Pyrene	129-00-0	5.00E-06	0.0001	0.8760	0.0005	AP-42 ³
Toluene	108-88-3	3.40E-03	0.0001	0.8760	0.0005	AP-42 ³
Arsenic	7440-38-2	2.00E-04	0.0001	0.8760	0.0005	AP-42 ⁴
Beryllium	7440-41-7	1.20E-05	0.0001	0.8760	0.0005	AP-42 ⁴
Cadmium	7440-43-9	1.10E-03	0.0001	0.8760	0.0005	AP-42 ⁴
Chromium	7440-47-3	1.40E-03	0.0001	0.8760	0.0005	AP-42 ⁴
Cobalt	7440-48-4	8.40E-05	0.0001	0.8760	0.0005	AP-42 ⁴
Manganese	7439-96-5	3.80E-04	0.0001	0.8760	0.0005	AP-42 ⁴
Mercury	7439-97-6	2.60E-04	0.0001	0.8760	0.0005	AP-42 ⁴
Nickel	7440-02-0	2.10E-03	0.0001	0.8760	0.0005	AP-42 ⁴
Selenium	7782-49-2	2.40E-05	0.0001	0.8760	0.0005	AP-42 ⁴
Total HAPs			0.0033	28.9080	0.0165	

¹ EPA AP-42, Volume I, Fifth Edition, July 1998, Table 1.4-1

² EPA AP-42, Volume I, Fifth Edition, July 1998, Table 1.4-2

³ EPA AP-42, Volume I, Fifth Edition, July 1998, Table 1.4-3

⁴ EPA AP-42, Volume I, Fifth Edition, July 1998, Table 1.4-4

The Hub
Encana Oil & Gas (USA) Inc. Continued

Vents to Combustion Device

Vent Stream	Flow Rate (scf/hr)	Operation (hr/yr)	Flow Rate (MMscf/yr)	Heat Value (Btu/scf)	Heat Rate (MMBtu/yr)
Loading Emissions	2547.72	8760	22.32	3397	75821.4

Emissions from Combusting Vent Gas

Vent Stream	NOx (lb/hr)	NOx (tpy)	CO (lb/hr)	CO (tpy)
Loading Emissions	1.195	5.235	4.758	20.841
Total	1.20	5.24	4.76	20.84

Note: NOx emission factor, 0.138 lb/MMBtu, and CO emission factor, 0.5496 lb/MMBtu, from TNRCC Flares and Vapor Oxidizers, Table 4 Flare Factors

Total Emissions

Vent Stream	NOx (lb/hr)	NOx (tpy)	CO (lb/hr)	CO (tpy)	VOC (lb/hr)	VOC (tpy)
Loading Emissions	1.195	5.235	4.758	20.841	See Loading Calcs	
Pilot Emissions	0.010	0.050	0.010	0.050	87.60	0.05
Total	1.21	5.24	4.76	20.84		

Combustion Device (Tank and Loadout Control)
The Hub
Encana Oil & Gas (USA) Inc.

BTU Calculation for input into Combustor Emissions

Total Emissions 3,765,180.0 lb/yr AP-42
 Vapor MW 64 lb/lbmol Tanks run

58830.9375 lbmol/yr

Ts 519.67 °R 60°F
 Ps 14.7 psia
 R 10.731

Volume Vented per tank 22318051.5 scf/yr

8760 hr/yr

2547.72 scf/hr

	MW	Heat Value BTU/SCF
Butane	58.122	3010.8
Vapor	64	3299.19
Pentane	72.149	3699

Heat Value of Vent Gas **3,299 BTU/SCF**

Attachment D

Company Contact Information



Company Contact Information Form

Ver. September 10, 2008

Company Name: Encana Oil and Gas (USA) Inc.

Source Name: Liquids Handling Hub

Permit Contact¹:	Adam Berig		
Address:	370 17 th St., Suite 1700		
	Street		
	Denver	CO	80202
	City	State	Zip
Phone Number:	720-876-3884		
Fax Number:	720-876-4884		
E-mail:	adam.berig@encana.com		

Compliance Contact²:	Adam Berig		
Address:	370 17th St., Suite 1700		
	Street		
	Denver	CO	80202
	City	State	Zip
Phone Number:	720-876-3884		
Fax Number:	720-876-4884		
E-mail:	adam.berig@encana.com		

Billing Contact: (Permit Fees)³	Adam Berig		
Address:	370 17th St., Suite 1700		
	Street		
	Denver	CO	80202
	City	State	Zip
Phone Number:	720-876-3884		
Fax Number:	720-876-4884		
E-mail:	adam.berig@encana.com		

Billing Contact: (Annual Fees)⁴	Adam Berig		
Address:	370 17th St., Suite 1700		
	Street		
	Denver	CO	80202
	City	State	Zip
Phone Number:	720-876-3884		
Fax Number:	720-876-4884		
E-mail:	adam.berig@encana.com		

Check how would you like to receive your permit fee invoice?

Mail: ☒E-mail: ☒Fax: ☐

Footnotes:

¹ The permit contact should be the point of contact for technical information contained in the permit application. This may be a company representative or a consultant.² The compliance contact should be the point of contact for discussing inspection and compliance at the permitted facility.³ The billing contact (Permit fees) should be the point of contact that should receive the invoice for fees associated with processing the permit application & issuing the permit. (Reg. 3, Part A, Section VI.B)⁴ The billing contact (Annual fees) should be the point of contact that should receive the invoices issued on an annual basis for fees associated with actual emissions reported on APENs for the facility. (Reg. 3, Part A, Section VI.C)

Attachment E

Ambient Air Quality Analysis

Ambient Air Impact Analysis

The Colorado Department of Public Health and Environment Colorado Modeling Guideline for Air Quality Permits, dated August 20, 2010, states that the preliminary air impact analysis for construction permit applications can be done using quantitative (modeling) or qualitative (non-modeling) methods.

Table 1, Modeling Thresholds, describes that modeling is usually warranted for sources that meet any of the following criteria:

- Carbon Monoxide (CO) emissions equal to or greater than 100 tons per year (tpy) or 23 pounds per hour
- Nitrogen Oxides (NO_x) emissions equal to or greater than 40 tpy or 0.46 pounds per hour
- Sulfur Dioxide (SO₂) emissions equal to or greater than 40 tpy or 0.46 pounds per hour
- Particulate Matter (PM₁₀) emission equal to or greater than 15 tpy or 82 pounds per day
- Lead emissions equal to or greater than 0.6 tpy or 100 pounds per month
- Sources of SO₂, PM₁₀, CO, or Pb where a substantial portion of the new or modified emissions have poor dispersion characteristics (e.g., rain caps, horizontal stacks, fugitive releases, 12 or building downwash¹³) in close proximity to ambient air at the site boundary
- Sources of SO₂, PM₁₀, CO, or Pb located in complex terrain (e.g., terrain above stack height in close proximity to the source)
- Sources located in areas with poor existing air quality
- Modifications at existing major stationary sources, including grandfathered sources that have never been modeled before.

This project will result in emissions which are below the modeling thresholds. Therefore, no further analysis is needed at this time.

Attachment F

Facility Emission Inventory

Colorado Department
of Public Health
and Environment

Facility Wide Emissions Inventory Form

Ver. September 10, 2008

Company Name:	Encarna Oil & Gas (USA) Inc.
Source Name:	The Hub
Source AIRS ID:	

APES ID		Equipment Description	Uncontrolled Potential to Emit (PTE)										Controlled Potential to Emit (PTE)																	
			TSR	PM10	PM2.5	CO	VOC	BZ	Tol	EB	XSt	BCED	Acro	n-Hex	Meth	324-TNAP	TSR	PM10	PM2.5	CO	VOC	BZ	Tol	EB	XSt	BCED	Acro	n-Hex	Meth	324-TNAP
		Control Tanks					23.5													23.5										
		Water Tanks					157.8													7.9	422									1,335
		Landfill					1876.5	32,278	62,299	2,627	27,397								56.5	1,058	1,869	79	822							2,623
		Combustor				5.1	20.8												5.1	20.8										
		Fugitive					20.5													20.5										

Footnotes:

1. This form should be completed to include both existing sources and all proposed new sources or modifications to existing emissions sources. If the emissions source is new then enter "proposed" under the Permit No. and AHS ID data columns.
2. HAP abbreviations include:
- | | |
|---------------------|----------------------------------|
| BZ = Benzene | 224-TMP = 2,2,4-Trimethylpentane |
| Tol = Toluene | Acetal = Acetaldehyde |
| Sty = Styrene | Acet = Acetic acid |
| Xyl = Xylenes | MeOH = Methanol |
| HCHO = Formaldehyde | |
3. APEN Exempt/Insignificant Sources should be included when warranted.

2,2,4-TMP = 2,2,4-Trimethylpentane
Acetal = Acetaldehyde
Acro = Acrolein
n-Hex = n-Hexane
Meth = Methanol

HCHO = Formaldehyde

Attachment G

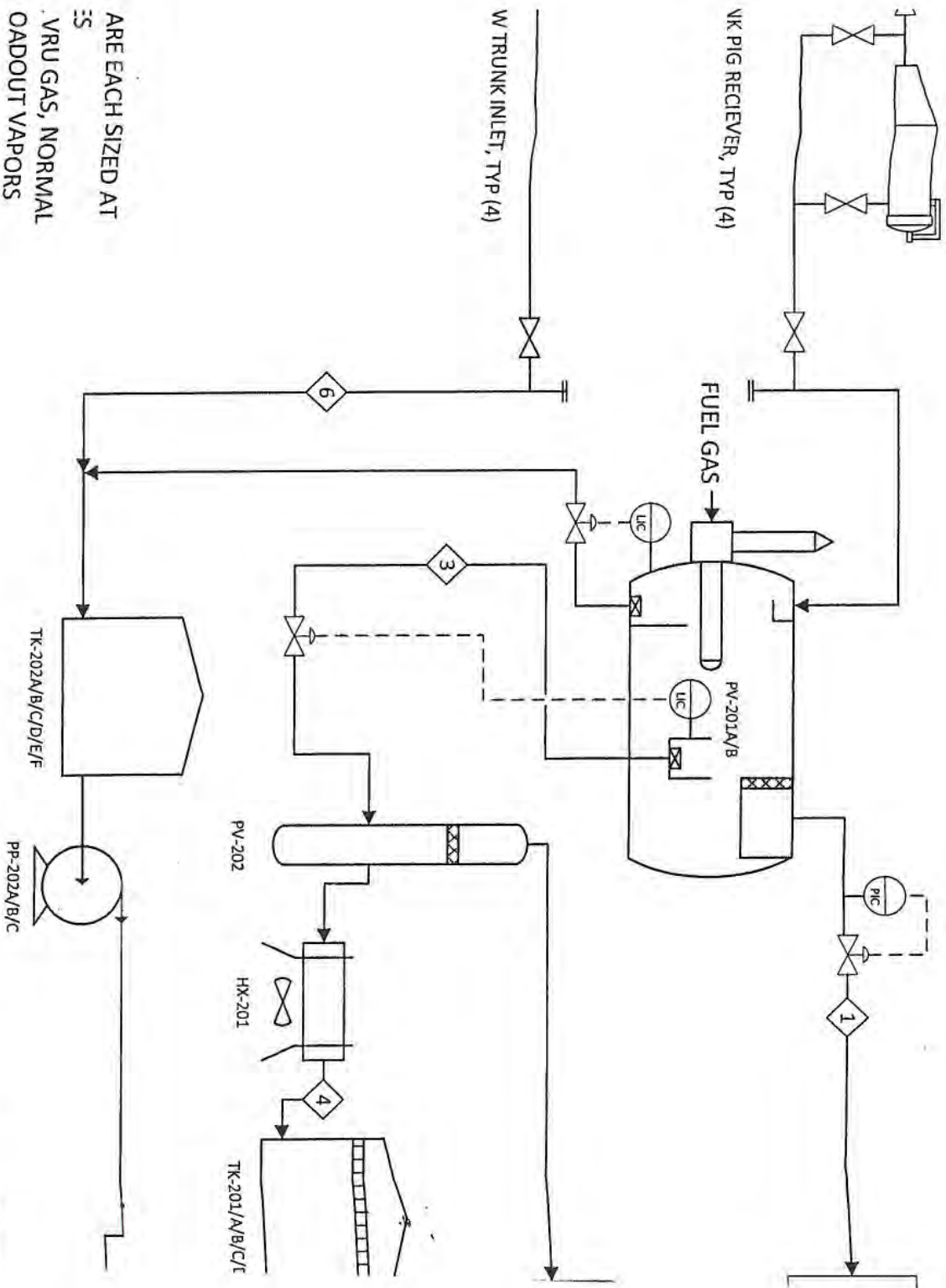
Process Description, Flow Diagram, and Plot Plan



Liquids Handling Hub Process Flow Description

Liquid from surrounding wells will be routed to the Combined Operations Recovery Hub (COR Hub) by utilizing the pressure in the formation. All pressurized liquid is routed to an inlet separator, which will flash the liquid to about 3 psi. Vapors from the separator will be routed to a gas sales line through an electric VRU. From the separator, water is routed to the storage tanks on site. The condensate is routed through a vapor recovery tower and then through a fin fan cooler prior to entering the floating roof tanks at atmospheric pressure.

Condensate will be loaded into trucks from the floating roof tanks via electric pumps. Vapors that are evolved from the trucks during loadout will be routed to the enclosed combustor on site.



2	3	4	5	6	7	8	9
2.56	-	-	-	-	0.81	0.04	-
-	20602	20025	20025	3338	-	-	3338
130	150	120	120	100	120	120	120
150	50	20	100	120	150	ATM	100

TK-202A/B/C/D/E/F, PRODUCED WATER STORAGE TANKS
750 BBL API 12B, 15'-6" D x 24' H (NOMINAL)

PP-202A/B/C/D/E/F, PRODUCED WATER LOADOUT PUMP
DESIGN DP: 100 PSIG @ 100 GPM
MOTOR: 10 HP

PV-202, 72" II DP: 75 f

PP-201A/B/C, DESIGN

TK-201A/B/C/D, 44,500 BBL, API INTERN

Attachment H

Regulatory Analysis

LIQUIDS HANDLING HUB REGULATORY ANALYSIS

1.0 Federal New Source Review

The federal New Source Review program applies to new or modified sources in both attainment and non-attainment areas that result in emission increases in excess of specified thresholds. Weld County is designated as non-attainment for ozone, so sources in this area are potentially subject to Non-Attainment New Source Review (NNSR) if emissions of NO_x or VOC are in excess of 100 tpy. The proposed facility will emit less than 100 tpy of both NO_x and VOC and will therefore not trigger NNSR. Regulation 3 Part D, Section II.A.24.e states that, “fugitive emission of a stationary source shall not be included in determining for any purposes of this section whether it is a major stationary source...” Therefor the potential emissions from this facility are less than 100 tons and it is not subject to NNSR.

Specific source types are subject to PSD review if their potential to emit (PTE) exceeds 100 tons per year (tpy) of any criteria air pollutant. All other source types are subject to PSD review if their PTE exceeds 250 tpy. This facility is not one of the specific source types and does not exceed a PTE of 250 tpy of any criteria pollutant; therefore, it is not subject to PSD review.

The EPA recently passed the Green House Gas (GHG) Tailoring Rule. This rule sets the PSD threshold for GHGs. Sources with a PTE equal to or greater than 100,000 tpy of CO₂ equivalent (CO_{2e}) and greater than 250 tpy of GHGs. are subject to New Source Review. This facility will emit CO_{2e} emissions under 100,000 tpy; therefore, this facility will not be subject to New Source Review for GHGs.

2.0 Federal Operating Permits

Sources are required to obtain a Part 70 Title V Operating Permit if they are a major source of emissions. A major source is defined as a stationary source that emits or has the potential to emit 10 tpy of any single hazardous air pollutant (HAP), 25 tpy of total HAPs, or 100 tpy of any criteria air pollutant. This facility will not emit any criteria or HAP pollutant above the specified thresholds and is therefore, not required to obtain a Title V operating permit. Regulation 3 Part A, Section I.B.25.b states that, “fugitive emission shall not be considered in determining whether a source is a major source for purposes of this Section...” Therefor the potential emissions from this facility are less than 100 tons and it is not subject to Title V.

For GHG emissions, a major source is defined as a stationary source that emits or has the potential to emit 100,000 tpy CO_{2e} and 100 tpy GHG. This facility will emit less than 100,000 tpy CO_{2e} and is therefore, not a major source of GHG emissions.

3.0 New Source Performance Standards

40 CFR Part 60 Subpart A - General Provisions

New Source Performance Standards (NSPS) Subpart A, General Provisions, applies to any stationary source that contains an affected facility to which a NSPS is applicable. As discussed below, this facility is subject to subpart Kb; therefore, the requirements of Subpart A apply.

NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

NSPS Subpart Dc applies to each steam generating unit for which construction, modification, or reconstruction commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 MMBtu/hr) or less, but greater than or equal to 2.9 MW (10 MMBtu/hr). 40 CFR 60.41c states:

“Steam generating unit means a device that combusts any fuel and produces steam or heats water or heats any heat transfer medium. This term includes any duct burner that combusts fuel and is part of a combined cycle system. This term does not include process heaters as defined in this subpart.”

The steam generating unit on site will be rated at 2 MMBtu/hr. There are no steam generating units with a design heat input capacity in excess of 10.0 MMBtu/hr; therefore, NSPS Subpart DC does not apply.

NSPS Subpart Kb, Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for which Construction, Reconstruction or Modification Commenced After July 23, 1984

NSPS Subpart Kb applies to each storage vessel with a capacity greater than or equal to 75 cubic meters (m^3) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984.

There is an exemption for storage tanks with a design capacity less than or equal to 1,589.874 m^3 (1000 bbl) used for petroleum or condensate stored, processed, or treated prior to custody transfer. These tanks are too large for this exemption so the facility is subject to this subpart.

The facility is subject to the following requirements of subpart Kb:

60.112b Standard for volatile organic compounds (VOC)

§60.112b (a)(1)(i): the internal floating roof will rest or float on the surface of the liquid inside the storage vessel at all times except when the tank is being emptied or refilled.

60.112b(a)(1)(ii): The tanks will be equipped with seals that meet the requirements of paragraphs, A, B or C. However, as the tanks have not been ordered yet Encana cannot confirm which type of seal will be used.

60.112b (a) (1) (iv): all openings except leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells and stub drains will be equipped with a cover or lid and will remain closed at all times when the device is in actual use.

60.112 b (a) (1) (v): automatic bleeder vents shall be equipped with a gasket and will be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports

60.112 b (a) (1) (vi): Rim space vents shall be equipped with a gasket and will be set to open only when the floating roof is not floating or at manufacturer's recommended setting.

60.112 b (a) (1) (vii): Each penetration of the internal floating roof for the purpose of sampling will be a sample well. The sample well will have a slit fabric cover that covers at least 90 percent of the opening.

60.112b (a) (1) (viii) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof will have a flexible fabric sleeve or seal or a gasket sliding cover.

60.112b (a) (1) (ix) Each penetration of the internal floating roof that allows for passage of a ladder will have a gasketed sliding cover.

60.113b Testing and Procedures

60.113b (a) (1): after installing the roof, Encana will visually inspect the internal floating roof, the primary seal and the secondary seal prior to filling the vessel with VOL. If holes or tears are discovered then they will be fixed prior to filling the tank.

If the roof is equipped with a liquid mounted or mechanical shoe primary seal or a double seal system then the testing will follow the procedures outlined in 60.113b (a) (2) or 60.113b (a) (3), respectively.

60.113b (a) (4): the floating roof and seals, gaskets, slotted membranes and sleeve seals will be inspected each time the tank is emptied. All necessary fixes will be made prior to refilling the tank with VOL. This will take place on the time frame specified per the requirements in 60.113 (a) (2) or 60.113 (a) (3), depending on the seal type of the tank.

60.113b (a) (5): the administrator will be notified at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required.

60.115b Reporting and recordkeeping requirements

60.115b (a) (1): Encana will furnish the administrator with a report that describes the control equipment and certifies control equipment meets the specifications in §60.112b (a) (1)

60.115b (a) (2): A record of the inspection performed as required by this subpart. Each record will identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment.

60.115b (a) (3): If any of the defects described in 60.113b(a)(2) are detected during the annual visual inspection required by this subpart, a report will be furnished to the administrator within 30 days of the inspection.

60.115b (a) (4): After each inspection required by this subpart that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment

defects listed in the subpart a report will be furnished to the administrator within 30 days of the inspection.

60.116b Monitoring of operations

60.116b(a): All required records will be kept for 2 years

60.116b (b): records of the dimension of the storage vessel and analysis showing the capacity of the storage vessel.

60.116b (c): record of the VOL stored, the period of storage and maximum true vapor pressure of that VOL during the respective storage period.

60.116b (e): the maximum true vapor pressure will be determined using ambient temperature.

60.116b (e) (2): maximum true vapor pressure will be determined using the methods outlined in this subpart.

40 CFR Part 60 Subpart KKK - Standards of Performance for Equipment Leaks of VOC From Onshore Natural Gas Processing Plants

NSPS Subpart KKK applies to equipment leak components at onshore natural gas processing plants that commenced construction after January 20, 1984. A natural gas processing plant is defined in Subpart KKK as any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products, or both [40 CFR 60.631]. This facility will not process natural gas and so is not subject to this subpart

40 CFR Part 60 Subpart JJJJ - Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

NSPS Subpart JJJJ applies to stationary spark ignition internal combustion engines that commence construction after June 12, 2006, where the engines are manufactured:

- On or after July 1, 2007, for engines with a maximum engine power greater than or equal to 500 HP (except lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP);
- On or after January 1, 2008, for lean burn engines with a maximum engine power greater than or equal to 500 HP and less than 1,350 HP;
- On or after July 1, 2008, for engines with a maximum engine power less than 500 HP; or
- On or after January 1, 2009, for emergency engines with a maximum engine power greater than 19 KW (25 HP).

There will be no internal combustion engines on site so this subpart does not apply.

40 CFR Part 60 Subpart OOOO- Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution

NSPS Subpart OOOO, §60.5395 applies to all condensate storage tanks with VOC emissions equal to or greater than 6 tons per year. Emissions from each tank will be less than 6 tons per year so this facility will not be subject to this subpart.

4.0 National Emission Standards for Hazardous Air Pollutants

40 CFR Part 63 Subpart HH - National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities

National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart HH applies to oil and natural gas production facilities that are major and area sources of HAPs. A major source is defined as a stationary source that emits or has the potential to emit 10 tpy of any single HAP or 25 tpy of total HAPs, and an area source is any stationary source of HAPs that is not a major source [40 CFR 63.2]. This facility is designated as an area source of HAPs. For area sources, the potentially affected sources are triethylene glycol dehydration units.

There are no TEG dehydrators on site so this facility is not subject to either HH major source or area source requirements.

40 CFR Part 63 Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines

NESHAP Subpart ZZZZ applies to stationary reciprocating internal combustion engines (RICE) at major or area sources of HAP emissions. There are no internal combustion engines at the facility so the facility is not subject to this subpart.

5.0 State Regulations

Regulation 3, Part A, Section II

Regulation 3, Part A, Section II describes when an Air Pollutant Emission Notice (APEN) must be submitted for new, modified, and existing sources. APENs are included in this application for all non-APEN-exempt sources: internal floating roof condensate storage tanks, produced water storage tanks, condensate loadout, combustor and emissions from fugitive equipment leaks.

Regulation 3, Part B

Regulation 3, Part B describes the requirements for Construction Permits. This application requests one Construction Permit for the non-exempt sources: internal floating roof condensate storage tanks, produced water storage tanks, condensate loadout, combustor and emissions from fugitive equipment leaks.

Regulation 3, Part C

Regulation 3, Part C describes the requirements for Operating Permits. Regulation 3 Part A, Section I.B.25.b states that, "fugitive emission shall not be considered in determining whether a source is a major source for purposes of this Section..." This facility is a synthetic minor facility; therefore, it is not subject to the provisions of Regulation 3, Part C.

Regulation 3, Part D

Regulation 3, Part D describes the requirements for major stationary source new source review and prevention of significant deterioration. Regulation 3 Part D, Section II.A.24.e states that, "fugitive emission of a stationary source shall not be included in determining for any purposes of

this section whether it is a major stationary source...” This facility is not subject to new source review at this time.

Regulation 6

Regulation 6 incorporates by reference the EPA’s New Source Performance Standards (NSPS). NSPS applicability is discussed in Section 3.0.

Regulation 7, Section XII

Regulation 7, Section XII.C.1.b states that all condensate collection, storage, processing and handling operations, regardless of size, shall be designed, operated and maintained so as to minimize leakage of volatile organic compounds to the atmosphere to the maximum extent practicable. This facility is subject to this section. By installing and properly maintaining the floating roof tanks, this facility will be in compliance with this subpart.

Regulation 7, Section XII.C.1.c states that all air pollution control equipment used to demonstrate compliance with this Section XII must meet a control efficiency of at least 95% unless otherwise provided in Section XII.D.2.B. Failure to properly install, operate, and maintain air pollution control equipment at the locations indicated in the Division-approved spreadsheet shall be a violation of this regulation. Based on the inclusion of the spreadsheet language in this section, this condition applies only to those facilities subject to Section XII.D. This facility is not subject to XII.D as discussed below and so is not subject to this.

Regulation 7, Section XII.D applies to owners or operators of any new or modified atmospheric condensate storage tank at exploration and production sites shall collect and control emissions by routing emissions to and operating air pollution control equipment...” This facility is not an exploration and production site so is not subject to this requirement.

Regulation 7, Section XVII

Regulation 7, Section XVII describes the statewide requirements for oil and gas operations and natural gas-fired reciprocating internal combustion engines. This section applies to atmospheric condensate storage tanks, glycol natural gas dehydrators, and natural gas fired reciprocating internal combustion engines. Condensate tanks, dehydrators and internal combustion engines that are subject to an emissions control requirement in a federal maximum achievable control technology (MACT) standard under 40 CFR Part 63, a Best Available Control Technology (BACT) limit, or a New Source Performance Standard (NSPS) under 40 CFR Part 60 are not subject to this Section XVII

Atmospheric Condensate Tanks

Atmospheric condensate storage tanks with uncontrolled actual emissions of volatile organic compounds equal to or greater than 20 tpy based on a rolling twelve-month total are required to operate air pollution control equipment that has an average control efficiency of at least 95% for VOCs.

The internal floating roofs on the condensate storage tanks are controls that achieve greater than 95% control. A fixed roof condensate storage tank with identical throughput and dimension values as one of the internal floating roof tanks on site would have emissions of 2,296,645.73 lbs/yr. Emission total of 114,832.29 lbs would reflect a 95%

control. Emissions from one internal floating roof tank is 11,273.28, which is greater than 95% control and complies with this subpart.

Regulation 8

Regulation 8 incorporates by reference the EPA's National Emission Standards for Hazardous Air Pollutants (NESHAPs). NESHAP applicability is discussed in Section 4.0.

Attachment I

Operating and Maintenance Plans



Liquids Handling Hub Operating and Maintenance Plan

The Division does not yet have a general O&M Plan for condensate loadout so Encana respectfully submits the attached Plan.

Loadout

All emissions from truck loadout will be routed to a combustor on site. Encana will perform the following operating and maintenance to ensure that the combustor on site is meeting > 97% control of emissions.

- Encana will follow the manufacturer- recommended maintenance procedures for the combustor.
- The combustor will be built with redundant pilot lights to ensure that a pilot light will be present at all times.
- The facility will be manned 24 hours. The operator will be able to confirm that the combustor has a pilot light at all times in the control room.
 - If the combustor loses a pilot, the operator will immediately take corrective actions.

Internal Floating Roof Tanks

The internal floating roof tanks are covered by Subpart Kb. Encana will comply with Kb in lieu of an O&M Plan for this point.



Operating and Maintenance Plan Template for Condensate and Mixed Liquid Storage Tanks

Ver. September 10, 2008

The Air Pollution Control Division (Division) developed this Operating and Maintenance Plan (O&M Plan) for condensate and mixed liquid storage tanks permitted at synthetic minor facilities in the State of Colorado. An O&M Plan shall be submitted with the permit application. One O&M Plan may be used for multiple tanks at one facility if each are controlled and monitored in the same manner. If the O&M Plan template is completed correctly, the Division will approve the O&M Plan and a construction permit will be issued with the requirement to follow the O&M Plan as submitted. If the template is not completed correctly, the Division will work with the facility to make corrections. Once a construction permit is issued, the facility operator must comply with the requirements of the O&M Plan upon commencement of operation. Operators are not required to use this template. Independent case specific O&M Plans may be developed and submitted for approval with the permit application. However, the Division encourages the use of this template to expedite the permit application approval process.

Submittal Date: 08/08/2013

Section 1 - Source Identification

For new permits some of this information (i.e. Facility AIRS ID, Facility Equipment ID, Permit Number, and AIRS Point ID) may not be known at the time of application. Please only fill out those fields that are known and leave the others blank.

Company Name: Encana Oil & Gas (USA) Inc. Facility Location: CR 5 and CR 6 in Weld County
Facility Name: Liquids Handling Hub Facility AIRS ID (for existing facilities) _____

Units Covered by this O&M form

Facility Equipment ID	P.W. Tanks					
Permit Number						
AIRS Point ID						
Tank Type ^a	Water					
Controlled (Y/N)	Y					

^a Tank types include condensate (C) and mixed liquid (ML)

Section 2 - Maintenance Schedules

Check one of the following:

- ☒ Facility shall follow manufacturer recommendations for the operation and maintenance of equipment and control devices. These schedules and practices, as well as any maintenance records showing compliance with these recommendations, shall be made available to the Division upon request.
- ☐ Facility shall follow individually developed maintenance practices and schedules for the operation and maintenance of equipment and control devices. These schedules and practices, as well as any maintenance records showing compliance with these recommendations, shall be made available to the division upon request and should be consistent with good air pollution control practices for minimizing emissions as defined in the New Source Performance Standard (NSPS) general conditions.

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Section 3 - Monthly Emission Modeling or Calculations

The following box must be checked for O&M plan to be considered complete.

- ☒ The source will calculate emissions based on the methods and emission factors provided in the permit application and approved by the division, as reflected in the construction permit. *Please see the operation and maintenance plan guidance document for further details and examples of emission calculations.*

Section 4 – General Monitoring Requirements

All condensate collection, storage, processing and handling operations, regardless of size, shall be designed, operated and maintained to minimize leakage of volatile organic compounds to the atmosphere to the maximum extent practicable.

Table 1 below details the schedule on which the source must monitor each of the listed operating parameters depending on the requested permitted emissions at the facility. Check the appropriate box based on the facility wide permitted VOC emissions.

Table 1		
Parameter	Monitoring Frequency	
	<input checked="" type="checkbox"/> Permitted Facility Emissions \geq 80 tpy VOC	<input type="checkbox"/> Permitted Facility Emissions < 80 tpy VOC
<i>water</i> Condensate Throughput	Monthly	Monthly
Separator Temperature (if present)	Weekly	Monthly
Separator Pressure (if present)	Weekly	Monthly

Table 2 outlines condensate and mixed liquid throughput monitoring methods. The source must chose one primary monitoring method and, optionally, may chose up to two backup methods. Check each box that applies.

Table 2		
Primary	Back-up	Condensate or Mixed Liquid Throughput Monitoring Method
<input checked="" type="checkbox"/>		Inlet meter(s)
<input type="checkbox"/>	<input type="checkbox"/>	Tank level measurements which take into account all additions and loadout activity
<input type="checkbox"/>	<input checked="" type="checkbox"/>	Sales or haul tickets
<input type="checkbox"/>	<input type="checkbox"/>	Other (to be approved by the division): attach method explanation and sample calculations

Section 5 - Emission Control or Recycling Equipment Monitoring Requirements

If a control device is used then leakage of VOCs to the atmosphere must be minimized as follows:

- Thief hatch seals shall be inspected for integrity annually and replaced as necessary;
- Thief hatch covers shall be weighted and properly seated;
- Pressure relief valves (PRV) shall be inspected annually for proper operation and replaced as necessary;
- PRVs shall be set to release at a pressure that will ensure flashing, working and breathing losses (as applicable) are routed to the control device under normal operating conditions;
- Annual inspections shall be documented with an indication of status, a description of any problems found, and their resolution.

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Table 3 below details the monitoring frequency for control equipment depending on the type of control equipment used and the requested permitted emissions at the facility. Check the appropriate box for "Monitoring Frequency" based on the facility-wide permitted VOC emissions. In addition, indicate storage tank emissions controls by checking the appropriate boxes.

Table 3				
Emissions Control or Recycling Method		Parameter	Monitoring Frequency	
			<input type="checkbox"/> Permitted Facility Emissions ≥ 80 tpy VOC	<input type="checkbox"/> Permitted Facility Emissions < 80 tpy VOC
Thermal Oxidizer	<input type="checkbox"/>	Combustion Chamber Temperature ^b	Daily	Weekly
Combustor or Flare	<input type="checkbox"/>	Pilot Light Monitoring ^c	Daily	Weekly
		Method 22 Readings	Daily	Weekly
Recycled or Closed Loop System (Including Vapor Recovery Units)	<input checked="" type="checkbox"/>	To be determined by the source and approved by the division ^d		
Re-routed to Reboiler Burner	<input type="checkbox"/>	To be determined by the source and approved by the division ^e		

^b Minimum Thermal Oxidizer Combustion Chamber Temperature

If the facility uses a thermal oxidizer to control emissions then the minimum combustion chamber temperature shall be: *Select one of the following options from Table 4:*

Table 4		
<input type="checkbox"/>	1400 ° F	
<input type="checkbox"/>	° F	Based on manufacturer specifications. Specifications must be submitted with the permit application and made available to the Division upon request
<input type="checkbox"/>	Based on testing performed. The test data shall be submitted and attached to the O&M Plan	

^c Pilot Light Monitoring Options

If the facility uses a Combustor or Flare then the source must indicate the method by which the presence of a pilot light will be monitored in Table 5. One primary method for Pilot Light Monitoring must be checked and, optionally, up to two backup methods may be checked.

Table 5		
Primary	Back-up	Monitoring Method
<input type="checkbox"/>	<input type="checkbox"/>	Visual Inspection
<input type="checkbox"/>	<input type="checkbox"/>	Optical Sensor
<input type="checkbox"/>	<input type="checkbox"/>	Auto-Igniter Signal
<input type="checkbox"/>	<input type="checkbox"/>	Thermocouple

^d Recycled or Closed Loop System Monitoring Plan

In the space provided below please provide a brief description of the emission control or recycling system, including an explanation of how the system design ensures that emissions are being routed to the appropriate system at all times, or during all permitted runtime.

The Vapors from the Produced Water Tanks will be compressed via electrically powered VRU and routed to the sales line. This facility will use line power for the VRU. If the facility loses power, it will be shut in and all equipment will fail closed

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so there will be no emissions.

^e Reboiler Burner Control Monitoring Plan

In the space provided below please provide a brief description of the emission control system, including an explanation of how the system design ensures that emissions are being held or rerouted when the reboiler is not firing.

Section 6 – Recordkeeping Requirements

The following box must be checked for O&M plan to be considered complete.

☐

Synthetic minor sources are required to maintain maintenance and monitoring records for the requirements listed in sections 2, 3, 4 and 5 for a period of 2 years. If an applicable Federal NSPS, NESHAP or MACT requires a longer record retention period the operator must comply with the longest record retention requirement.

Section 7 - Additional Notes and O&M Activities

Please use this section to describe any additional notes or operation and maintenance activities.

Note: These templates are intended to address operation and maintenance requirements of the State of Colorado for equipment operated at synthetic minor facilities. If the facility or equipment is subject to other state or federal regulations with duplicative requirements, the source shall follow the most stringent regulatory requirement.