

# Construction Permit Application Preliminary Analysis Summary

<b>Section 1 – Applicant Information</b>	
Company Name:	Noble Energy Inc.
Permit Number:	12WE2094
Source Location:	Wells Ranch EcoNode – Sec 25 SWNW Sec25 T6N R63W, Weld County (non-attainment)
Equipment Description:	Produced Water Storage
AIRS ID:	123-9586-009
Date:	September 25, 2014
Review Engineer:	Stephanie Chaousy
Control Engineer:	Chris Laplante

<b>Section 2 – Action Completed</b>				
	Grandfathered		Modification	APEN Required/Permit Exempt
X	CP1		Transfer of Ownership	APEN Exempt/Permit Exempt

<b>Section 3 – Applicant Completeness Review</b>				
Was the correct APEN submitted for this source type?	X	Yes		No
Is the APEN signed with an original signature?	X	Yes		No
Was the APEN filled out completely?	X	Yes		No
Did the applicant submit all required paperwork?	X	Yes		No
Did the applicant provide ample information to determine emission rates?	X	Yes		No
If you answered “no” to any of the above, when did you mail an Information Request letter to the source?				
On what date was this application complete?	April 23, 2014			

<b>Section 4 – Source Description</b>					
AIRS Point	Equipment Description				
009	Six (6) above ground 500 bbl atmospheric produced water storage tanks. Emissions from these tanks are controlled by an enclosed flare.				
Are “flash” emissions anticipated from these tanks?	X	Yes		No	
Is this tank located at an E&P site?	X	Yes		No	
Is this tank located at a non-E&P, midstream or downstream site?		Yes	X	No	
Is this a portable source?		Yes	X	No	
Is this location in a non-attainment area for any criteria pollutant?	X	Yes		No	
If “yes”, for what pollutant?		PM <sub>10</sub>		CO	X Ozone
Is this location in an attainment maintenance area for any criteria pollutant?		Yes	X	No	
If “yes”, for what pollutant? <b>(Note: These pollutants are subject to minor source RACT per Regulation 3, Part B, Section III.D.2)</b>		PM <sub>10</sub>		CO	Ozone

Is this source claiming exempt status for this source based on the fraction of oil in the stored water (less than 1% by volume crude oil on an average annual basis)?	<b>X</b>	<b>Yes</b>		No	
Are these produced water tanks located at a commercial facility that accepts oil production wastewater for processing?		Yes	<b>X</b>	<b>No</b>	
Are these produced water tanks subject to Colorado Oil and Gas Conservation Commission (COGCC) 805 Rule?		Yes	<b>X</b>	<b>No</b>	

<b>Section 5 – Emission Estimate Information</b>							
<b>AIRS Point</b>	<b>Emission Factor Source</b>						
<b>009</b>	<b>CDPHE Condensate Storage Tank Emission Factors; CDPHE Memo 09-02</b>						
Did the applicant provide actual process data for the emission inventory?				<b>X</b>	<b>Yes</b>		No
<b>Basis for Potential to Emit (PTE)</b>							
<b>AIRS Point</b>	<b>Process Consumption/Throughput/Production</b>						
<b>009</b>	<b>600,000 BBL per year (500,000 x 1.2) wastewater</b>						
<b>Basis for Actual Emissions Reported During this APEN Filing (Reported to Inventory)</b>							
<b>AIRS Point</b>	<b>Process Consumption/Throughput/Production</b>				<b>Data Year</b>		
<b>009</b>	<b>500,000 BBL per year wastewater</b>						
<b>Basis for Permitted Emissions (Permit Limits)</b>							
<b>AIRS Point</b>	<b>Process Consumption/Throughput/Production</b>						
<b>009</b>	<b>500,000 BBL per year wastewater</b>						
Does this source use a control device?			<b>X</b>	<b>Yes</b>		No	
<b>AIRS Point</b>	<b>Process</b>	<b>Control Device Description</b>			<b>% Reduction Granted</b>		
<b>009</b>	<b>01</b>	<b>Enclosed Flare</b>			<b>95</b>		

<b>Section 6 – Emission Summary (tons per year)</b>						
	<b>Point</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>	<b>CO</b>	<b>Single HAP</b>	<b>Total HAP</b>
PTE:	<b>009</b>	---	78.6	---	6.6 (Hexane)	8.7
Uncontrolled point source emission rate:	<b>009</b>	---	65.5	---	5.5 (Hexane)	7.3
Controlled point source emission rate:	<b>009</b>	---	3.3	---	0.3 (Hexane)	0.4

<b>Section 7 – Non-Criteria / Hazardous Air Pollutants</b>					
<b>Pollutant</b>	<b>CAS #</b>	<b>BIN</b>	<b>Uncontrolled Emission Rate (lb/yr)</b>	<b>Are the emissions reportable?</b>	<b>Controlled Emission Rate (lb/yr)</b>
Benzene	71432	A	3500	<b>Yes</b>	175
n-Hexane	110543	C	11000	<b>Yes</b>	550
Note: Regulation 3, Part A, Section II.B.3.b APEN emission reporting requirements for non-criteria air pollutants are based on actual emissions without credit for reductions achieved by control devices used by the operator.					

<b>Section 8 – Testing Requirements</b>				
Will testing be required to show compliance with any emission rate or regulatory standard?		Yes	X	No

<b>Section 9 – Source Classification</b>				
Is this a new previously un-permitted source?		Yes	X	No
What is this facility classification?		True Minor	X	Synthetic Minor
Classification relates to what programs?	X	Title V		PSD
			X	NA NSR
Is this a modification to an existing permit?	X	Yes		No
If “yes” what kind of modification?	X	Minor		Synthetic Minor
				Major

<b>Section 10 – Public Comment</b>				
Does this permit require public comment per CAQCC Regulation 3?		Yes	X	No

<b>Section 11 – Modeling</b>				
Is modeling required to demonstrate compliance with National Ambient Air Quality Standards (NAAQS)?		Yes	X	No
If “yes”, for which pollutants? Why?				

<b>AIRS Point</b>	<b>Section 12 – Regulatory Review</b>
	<u>Regulation 1 - Particulate, Smoke, Carbon Monoxide and Sulfur Dioxide</u>
009	<p><b>Section II.A.1</b> - Except as provided in paragraphs 2 through 6 below, no owner or operator of a source shall allow or cause the emission into the atmosphere of any air pollutant which is in excess of 20% opacity. This standard is based on 24 consecutive opacity readings taken at 15-second intervals for six minutes. The approved reference test method for visible emissions measurement is EPA Method 9 (40 CFR, Part 60, Appendix A (July, 1992)) in all subsections of Section II. A and B of this regulation.</p> <p><b>Section II.A.5</b> - Smokeless Flare or Flares for the Combustion of Waste Gases No owner or operator of a smokeless flare or other flare for the combustion of waste gases shall allow or cause emissions into the atmosphere of any air pollutant which is in excess of 30% opacity for a period or periods aggregating more than six minutes in any sixty consecutive minutes.</p>
	<u>Regulation 2 – Odor</u>
009	<p><b>Section I.A</b> - No person, wherever located, shall cause or allow the emission of odorous air contaminants from any single source such as to result in detectable odors which are measured in excess of the following limits: For areas used predominantly for residential or commercial purposes it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air.</p>
	<u>Regulation 3 - APENs, Construction Permits, Operating Permits, PSD</u>
009	<p><b>Part A-APEN Requirements</b></p> <p><b>Criteria Pollutants:</b> For criteria pollutants, Air Pollutant Emission Notices are required for: each individual emission point in a non-attainment area with uncontrolled actual emissions of one tons per year or more of any individual criteria pollutant (pollutants are not summed) for which the area is in non-attainment.</p> <p><b>(Applicant is required to file an APEN since emissions exceed 1 tons per year VOC)</b></p>
009	<p><b>Part B – Construction Permit Exemptions</b></p> <p><b>Even though applicant meets the categorical exemption since the stored produced water contains less than one percent by volume crude oil on an annual average (Reg. 3, Part B, Section II.D.1.m), the operator requested a permit so that Noble has a federally enforceable permit limit less than 6 TPY (NSPS OOOO requirements).</b></p>
	<u>Regulation 6 - New Source Performance Standards</u>
009	None

	<u>Regulation 7 – Volatile Organic Compounds</u>
<b>009</b>	<b>None</b>
	<u>Regulation 8 – Hazardous Air Pollutants</u>
<b>009</b>	<b>None</b>

<b>Section 13 – Aerometric Information Retrieval System Coding Information</b>							
Point	Process	Process Description	Emission Factor	Pollutant / CAS #	Fugitive (Y/N)	Emission Factor Source	Control (%)
<b>009</b>	<b>01</b>	Produced Water Storage Tanks	6.2381 lb/1000 gallons throughput	VOC	No	CDPHE PS Memo 09-02	95
			0.1667 lb/1000 gallons throughput	Benzene	No	CDPHE PS Memo 09-02	95
			0.5238 lb/1000 gallons throughput	n-Hexane	No	CDPHE PS Memo 09-02	95
<b>SCC</b>	<b>40400315 – Fixed Roof Tank, Produced Water, working+breathing+flashing losses</b>						

<b>Section 14 – Miscellaneous Application Notes</b>													
<b>AIRS Point</b>	<b>009</b>	<b>Produced Water Storage Tanks</b>											
<p>A permit-exempt/APEN-required letter was originally issued for this source. Even though applicant meets the categorical exemption since the stored produced water contains less than one percent by volume crude oil on an annual average (Reg. 3, Part B, Section II.D.1.m), the operator requested a permit so that Noble has a federally enforceable permit limit less than 6 TPY (minimize the NSPS OOOO requirements).</p> <p>State-Developed Emission factors in <b>lb/1000 gal</b> are:</p> <table border="1"> <thead> <tr> <th rowspan="2">County</th> <th colspan="3">Produced Water Tank Default Emission Factors (lb/1000 gal)</th> </tr> <tr> <th>VOC</th> <th>Benzene</th> <th>n-Hexane</th> </tr> </thead> <tbody> <tr> <td>Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer and Weld</td> <td>6.2381</td> <td>0.1667</td> <td>0.5238</td> </tr> </tbody> </table>			County	Produced Water Tank Default Emission Factors (lb/1000 gal)			VOC	Benzene	n-Hexane	Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer and Weld	6.2381	0.1667	0.5238
County	Produced Water Tank Default Emission Factors (lb/1000 gal)												
	VOC	Benzene	n-Hexane										
Adams, Arapahoe, Boulder, Broomfield, Denver, Douglas, Jefferson, Larimer and Weld	6.2381	0.1667	0.5238										

### Division Information

Engineer:	Stephanie Chaousy, PE
Control Engineer:	Chris Laplante
Review Date:	09/25/2014
Application Date:	04/23/2014

### Facility Identifiers

AIRs	Permit No.	12WE2317
	County #	123 Weld
	Facility #	9586
	Point #	010

### Section 01: Administrative Information

Company Name:		Noble Energy, Inc
Source Name:		TL-415817940
Source Location:		SWNW Sec 25 T6N R63W
SIC:		1311
Elevation (feet)		4600
Portable Source?		No
Portable Source Homepage		
Mailing Address	Address 1:	Noble Energy, Inc
	Address 2:	1625 Broadway, Suite 2200
	City, State Zip:	Denver, CO 80202
Person To Contact	Name:	Taryn Weiner
	Phone:	303-228-4362
	Fax:	303-228-4286
	Email:	tweiner@nobleenergyinc.com

AP-42: Chapter 5.2

Equation 1

$$L = 12.46 \cdot S \cdot P \cdot M \cdot T$$

L = loading losses in lb per 1000 gallons loaded

S = Saturation Factor

P = true vapor pressure of liquid loaded [psia]

M = molecular weight of vapors [lb/lb-mole]

T = temperature of bulk liquid loaded [deg. R]

1 degree Fahrenheit = 460.67 degree Rankine

S	0.6	Submerged loading: dedicated normal service
P	5.2	psia
M	66	lb/lb-mole
T	520	deg. R
L	4.93 lb/10 <sup>3</sup> gal	
	2.07E-01 lb/bbl	
Annual requested Throughput	76650000 gal/yr	
Annual requested VOC emissions	378203 lb/yr	
	189.10 tpy	uncontrolled
	9.46 tpy	controlled

### Regulatory Considerations

This facility is not considered a terminal (in Reg. 7) because average daily throughput will be below 20,000 gallons at 3,956 gallons per day.

This facility is not considered a bulk plant (in Reg. 7) because it does not distribute gasoline.

NCRPs Component	wt%	Uncontrolled		Controlled		E.F. lb/bbl	E.F. lb/1000 gal	Operator lb/yr	Operator lb/bbl	Operator lb/1000 gal
		lb/yr	3404	lb/yr	170.19					
Benzene	0.90%	3404	3404	170.19	170.19	0.0019	0.0444	3650	0.0020	0.0476
Toluene	1.30%	4917	4917	245.83	245.83	0.0027	0.0641	5475	0.0030	0.0714
Ethylbenzene	0.10%	378	378	18.91	18.91	0.0002	0.0049	0	0.0000	0.0000
Xylenes	0.50%	1891	1891	94.55	94.55	0.0010	0.0247	1825	0.0010	0.0238
n-hexane	1.60%	6051	6051	302.56	302.56	0.0033	0.0789	5475	0.0030	0.0714

\*Will use operator's emissions. I believe the discrepancy is due to rounding issues.

\*Assumed HAP concentrations from Table 3-2 of DOC#EPA-453/R-94-002a

### Division Information

Engineer:	Stephanie Chaousy, PE
Control Engineer:	Chris Laplante
Review Date:	09/25/2014
Application Date:	04/23/2014

### Facility Identifiers

AIRs	Permit No.	12WE2317
	County #	123 Weld
	Facility #	9586
	Point #	011

### Section 01: Administrative Information

Company Name:		Noble Energy, Inc
Source Name:		TL-415817940
Source Location:		SWNW Sec 25 T6N R63W
SIC:		1311
Elevation (feet)		4600
Portable Source?		No
Portable Source Homepage		
Mailing Address	Address 1:	Noble Energy, Inc
	Address 2:	1625 Broadway, Suite 2200
	City, State Zip:	Denver, CO 80202
Person To Contact	Name:	Taryn Weiner
	Phone:	303-228-4362
	Fax:	303-228-4286
	Email:	tweiner@nobleenergyinc.com

AP-42: Chapter 5.2

Equation 1

$$L = 12.46 \cdot S \cdot P \cdot M \cdot T$$

L = loading losses in lb per 1000 gallons loaded

S = Saturation Factor

P = true vapor pressure of liquid loaded [psia]

M = molecular weight of vapors [lb/lb-mole]

T = temperature of bulk liquid loaded [deg. R]

1 degree Fahrenheit = 460.67 degree Rankine

S	0.6	Submerged loading: dedicated normal service
P	5.2	psia
M	66	lb/lb-mole
T	520	deg. R
L	4.93 lb/10 <sup>3</sup> gal	
	2.07E-01 lb/bbl	
Annual requested Throughput	3570000 gal/yr	
Annual requested VOC emissions	17615 lb/yr	
	8.81 tpy	uncontrolled
	0.44 tpy	controlled

### Regulatory Considerations

This facility is not considered a terminal (in Reg. 7) because average daily throughput will be below 20,000 gallons at 3,956 gallons per day.

This facility is not considered a bulk plant (in Reg. 7) because it does not distribute gasoline.

NCRPs Component	wt%	Uncontrolled		Controlled		E.F.		Operator			
		lb/yr	lb/1000 gal	lb/yr	lb/1000 gal	lb/yr	lb/bbl	lb/1000 gal	lb/yr	lb/bbl	lb/1000 gal
Benzene	0.90%	159	0.0444	7.93	0.0019	170	0.0020	0.0476			
Toluene	1.30%	229	0.0641	11.45	0.0027	255	0.0030	0.0714			
Ethylbenzene	0.10%	18	0.0049	0.88	0.0002	0	0.0000	0.0000			
Xylenes	0.50%	88	0.0247	4.40	0.0010	85	0.0010	0.0238			
n-hexane	1.60%	282	0.0789	14.09	0.0033	255	0.0030	0.0714			

\*Will use operator's emissions. I believe the discrepancy is due to rounding issues.

\*Assumed HAP concentrations from Table 3-2 of DOC#EPA-453/R-94-002a

# Construction Permit Application Preliminary Analysis Summary

<b>Section 1 – Applicant Information</b>	
Company Name:	Noble Energy, Inc
Permit Number:	13WE1098
Source Location:	Battery #415817940 SWNW Sec25 T6N R63W, Weld County (non-attainment)
Equipment Description:	Point 007: 16-500 bbl condensate tanks
	Point 008: 2-500 bbl condensate tanks
AIRS ID:	123-9586
Date:	September 25, 2014
Review Engineer:	Stephanie Chaousy
Control Engineer:	Chris Laplante

<b>Section 2 – Action Completed</b>				
	Grandfathered		Modification	APEN Required/Permit Exempt
X	CP2		Transfer of Ownership	APEN Exempt/Permit Exempt

<b>Section 3 – Applicant Completeness Review</b>				
Was the correct APEN submitted for this source type?		Yes	X	No
Is the APEN signed with an original signature?	X	Yes		No
Was the APEN filled out completely?	X	Yes		No
Did the applicant submit all required paperwork?		Yes	X	No
Did the applicant provide ample information to determine emission rates?		Yes	X	No
If you answered “no” to any of the above, when did you mail an Information Request letter to the source?				
On what date was this application complete?	<b>April 23, 2014</b>			

<b>Section 4 – Source Description</b>					
<b>AIRS Point</b>	<b>Equipment Description</b>				
007	Sixteen (16) above ground 500 bbl atmospheric condensate storage tanks. Emissions from these tanks are closed by an enclosed flare.				
008	Two (2) above ground 500 bbl atmospheric condensate storage tanks. Emissions from these tanks are closed by an enclosed flare.				
Is this a portable source?		Yes	X	No	
Is this location in a non-attainment area for any criteria pollutant?	X	Yes		No	
If “yes”, for what pollutant?		PM <sub>10</sub>		CO	X Ozone
Is this location in an <i>attainment maintenance</i> area for any criteria pollutant?		Yes	X	No	
Is this source located in the 8-hour ozone non-attainment region? ( <b>Note: If “yes” the provisions of Regulation 7, Sections XII and XVII.C may apply</b> )	X	Yes		No	

Section 5 – Emission Estimate Information							
<b>AIRS Point</b>	<b>Emission Factor Source</b>						
<b>007,008</b>	<b>Source provided site-specific emission factors using gas sample and WinSim. Previously approved with Issuance 1 (TRIM dated 5/4/12).</b>						
Did the applicant provide actual process data for the emission inventory?					Yes	<b>X</b>	<b>No</b>
Basis for Potential to Emit (PTE)							
<b>AIRS Point</b>	<b>Process Consumption/Throughput/Production</b>						
<b>007</b>	<b>1825000 BBL per year</b>						
<b>008</b>	<b>85000 BBL per year</b>						
Basis for Permitted Emissions (Permit Limits)							
<b>AIRS Point</b>	<b>Process Consumption/Throughput/Production</b>						
<b>007</b>	<b>1825000 BBL per year</b>						
<b>008</b>	<b>85000 BBL per year</b>						
Does this source use a control device?			<b>X</b>	<b>Yes</b>		<b>No</b>	
<b>AIRS Point</b>	<b>Process</b>	<b>Control Device Description</b>				<b>% Reduction Granted</b>	
<b>007,008</b>	<b>01</b>	<b>Flare</b>				<b>95.0</b>	

Section 6 – Emission Summary (tons per year)						
	<b>Point</b>	<b>NO<sub>x</sub></b>	<b>VOC</b>	<b>CO</b>	<b>Single HAP</b>	<b>Total HAP</b>
PTE:	<b>007</b>	3.3	292	2.7	8.2 (hexane)	9.2
	<b>008</b>	0.2	13.6	0.1	0.4 (hexane)	0.4
Uncontrolled point emission rate:	<b>007</b>	3.3	292	2.7	8.2 (hexane)	9.2
	<b>008</b>	0.2	13.6	0.1	0.4 (hexane)	0.4
Controlled point emission rate:	<b>007</b>	3.3	14.6	2.7	0.4 (hexane)	0.5
	<b>008</b>	0.2	0.7	0.1	0.02 (hexane)	0.02
<b>Total APEN Reported emissions:</b>		<b>3.3</b>	<b>15.3</b>	<b>2.7</b>	<b>0.42 (hexane)</b>	<b>0.52</b>

Section 7 – Non-Criteria / Hazardous Air Pollutants						
<b>Pollutant</b>	<b>CAS #</b>	<b>BIN</b>	<b>Point</b>	<b>Uncontrolled Emission Rate (lb/yr)</b>	<b>Are the emissions reportable?</b>	<b>Controlled Emission Rate (lb/yr)</b>
Benzene	71432	A	007	2008	<b>YES</b>	100
			008	94	<b>No</b>	5
n-Hexane	110543	C	007	16425	<b>YES</b>	821
			008	765	<b>YES</b>	38
Note: Regulation 3, Part A, Section II.B.3.b APEN emission reporting requirements for non-criteria air pollutants are based on potential emissions without credit for reductions achieved by control devices used by the operator.						

Section 8 – Testing Requirements						
Will testing be required to show compliance with any emission rate or regulatory standard?				Yes	<b>X</b>	<b>No</b>

Section 9 – Source Classification									
Is this a new previously un-permitted source?		Yes	X	No					
What is this facility classification?		True Minor	X	Synthetic Minor				Major	
Classification relates to what programs?	X	Title V		PSD	X	NA NSR		MACT	
Is this a modification to an existing permit?	X	Yes		No					
If “yes” what kind of modification?	X	Minor		Synthetic Minor				Major	

Section 10 – Public Comment									
Does this permit require public comment per CAQCC Regulation 3?	X	Yes		No					
If “yes”, for which pollutants? Why?									
For Reg. 3, Part B, III.C.1.a (emissions increase > 25/50 tpy)?	X	Yes		No					
For Reg. 3, Part B, III.C.1.c.ii (subject to MACT)?		Yes	X	No					
For Reg. 3, Part B, III.C.1.d (synthetic minor emission limits)?	X	Yes		No					

Section 11 – Modeling									
Is modeling required to demonstrate compliance with National Ambient Air Quality Standards (NAAQS)?		Yes	X	No					

AIRS Point	Section 12 – Regulatory Review
	<u>Regulation 1 - Particulate, Smoke, Carbon Monoxide and Sulfur Dioxide</u>
007,008	<p><b>Section II.A.1</b> - Except as provided in paragraphs 2 through 6 below, no owner or operator of a source shall allow or cause the emission into the atmosphere of any air pollutant which is in excess of 20% opacity. This standard is based on 24 consecutive opacity readings taken at 15-second intervals for six minutes. The approved reference test method for visible emissions measurement is EPA Method 9 (40 CFR, Part 60, Appendix A (July, 1992)) in all subsections of Section II. A and B of this regulation.</p> <p><b>Section II.A.5</b> - Smokeless Flare or Flares for the Combustion of Waste Gases No owner or operator of a smokeless flare or other flare for the combustion of waste gases shall allow or cause emissions into the atmosphere of any air pollutant which is in excess of 30% opacity for a period or periods aggregating more than six minutes in any sixty consecutive minutes.</p>
	<u>Regulation 2 – Odor</u>
007,008	<p><b>Section I.A</b> - No person, wherever located, shall cause or allow the emission of odorous air contaminants from any single source such as to result in detectable odors which are measured in excess of the following limits: For areas used predominantly for residential or commercial purposes it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air.</p>
	<u>Regulation 3 - APENs, Construction Permits, Operating Permits, PSD</u>
007,008	<p><b>Part A-APEN Requirements</b></p> <p><b>Criteria Pollutants:</b> For criteria pollutants, Air Pollutant Emission Notices are required for: each individual emission point in a non-attainment area with uncontrolled actual emissions of one ton per year or more of any individual criteria pollutant (pollutants are not summed) for which the area is in non-attainment.</p> <p><b>(Applicant is required to file an APEN since emissions exceed 1 ton per year VOC)</b></p>
007,008	<p><b>Part B – Construction Permit Exemptions</b></p> <p><b>Applicant is required to obtain a permit since uncontrolled VOC emissions from this facility are greater than the 2.0 TPY threshold (Reg. 3, Part B, Section II.D.3.a)</b></p>
	<u>Regulation 6 - New Source Performance Standards</u>
007,008	<p><b>NSPS Kb: for storage vessels greater than 19,800 gallons after 7/23/84.</b></p> <p>Is this source greater than 19,800 gallons (471 bbl)? Yes</p> <p>Is this source subject to NSPS Kb? No</p> <p>This is at an E&amp;P site and is below 10,000 barrels.</p>

	<u>Regulation 7 – Volatile Organic Compounds</u>
007,008	<b>XII. VOLATILE ORGANIC COMPOUND EMISSIONS FROM OIL AND GAS OPERATIONS</b> <i>(Applicant is subject to the emission control requirements for condensate tanks since it is located in a non-attainment area.)</i> <b>XVII.C STATEWIDE CONTROLS FOR OIL AND GAS OPERATIONS...</b> <i>(Applicant is currently subject to this since actual uncontrolled emissions are greater than 20 tpy of VOC.)</i>
	<u>Regulation 8 – Hazardous Air Pollutants</u>
007,008	<b>MACT EEEE: Organic Liquids Distribution</b> This source is not subject to MACT EEEE because it is located at a “production field facility” as defined in 40 CFR 63.761 (located upstream of the natural gas processing plant).
007,008	<b>MACT HH</b> This source is not subject to MACT HH because it is not located at a major source of HAP.

<b>Section 13 – Aerometric Information Retrieval System Coding Information</b>							
Point	Process	Process Description	Emission Factor	Pollutant / CAS #	Fugitive (Y/N)	Emission Factor Source	Control (%)
007,008	01	E&P Condensate Storage Tanks	7.619 lb/1000 gal throughput	VOC	No	Chemical Analysis and Winsim	95
			0.086 lb/1000 gal throughput	NO	No	Chemical Analysis and Winsim	N/A
			0.02619 lb/1000 gal throughput	Benzene / 71432	No	Chemical Analysis and Winsim	95
			0.2143 lb/1000 gal throughput	n-Hexane / 110543	No	Chemical Analysis and Winsim	95
SCC	<b>40400311 – Fixed Roof Tank, Condensate, working+breathing+flashing losses</b>						

<b>Section 14 – Miscellaneous Application Notes</b>		
AIRS Point	007,008	Condensate Storage Tanks
<p>Site-specific emissions were approved in Issuance 2 and were re-used with this modification. Emissions for Point 007 increased while they decreased for Point 008. Final issuance of the permit was issued 1/14/14, and this modification does not warrant re self-certification. I will issue this permit as an FA.</p> <p>VOC = 0.32 lb/bbl * 1000/42 = 7.6190 lb/1000 gal  Benzene = 0.0011 lb/bbl * 1000/42 = 0.02619 lb/1000 gal  n-hexane = 0.009 lb/bbl * 1000/42 = 0.2143 lb/1000 gal</p>		

**Division Information**

Engineer:	Stephanie Chaousy, PE
Control Engineer:	Chris Laplante
Review Date:	11/10/2014
Application Date:	04/23/2014

**Attainment Status**

PM10	Attainment
PM2.5	Attainment
SOx	Attainment
NOx	Nonattainment
VOC	Nonattainment
CO	Attainment

**Facility Information**

Permit No.		14WE0968			
AIRs	County #	123 Weld			
	Facility #	9586			
	Point #	012			
Facility Equipment ID		Flare			
Company Name:		Noble Energy, Inc.			
Source Name:		Wells Ranch EcoNode 25			
Source Location:		NWNW Section 25, T6N, R63W			
SIC:		1311			
Elevation (feet)		4600			
X	New Permit (CP1)		Modification (Issuance #)		APEN Required/Permit Exempt
			Transfer of Ownership		APEN Exempt/Permit Exempt
Notes					

Potentially Located within EAC - determine attainment status of NO:

**Equipment Description**

This source vents natural gas from:	a well head separator
Emissions from this source are:	routed to an open-flame flare

Natural gas venting from a well head separator. Emissions from this source are routed to an open-flame flare.

**Emission Calculation Method**

EPA Emission Inventory Improvement Program Publication: Volume II, Chapter 10 - Displacement Equation (10.4-3)

$$Ex = Q * MW * Xx / C$$

- Ex = emissions of pollutant x
- Q = Volumetric flow rate/volume of gas processed
- MW = Molecular weight of gas = SG of gas \* MW of air
- Xx = mass fraction of x in gas
- C = molar volume of ideal gas (379 scf/lb-mol) at 60F and 1 atm

Throughput (Q)	91 MMscf/yr	10388.1 scf/hr	7.73 MMscf/mo
MW	22.450 lb/lb-mol	0.002 MMscf/d	

	mole %	MW	lbx/lbmol	mass fraction	E	lb/hr	lb/yr	tpy
Helium	0	4.0026	0.000	0.000	Helium	0.0	0	0.00
CO2	2.707	44.01	1.191	0.053	CO2	32.7	286050	143.02
N2	0.525	28.013	0.147	0.007	N2	4.0	35312	17.66
methane	72.093	16.041	11.564	0.515	methane	317.0	2776686	1388.34
ethane	13.969	30.063	4.200	0.187	ethane	115.1	1008323	504.16
propane	7.596	44.092	3.3492	0.149	propane	91.8	804168	402.08
isobutane	0.72	58.118	0.4184	0.019	isobutane	11.5	100472	50.24
n-butane	1.887	58.118	1.0967	0.049	n-butane	30.1	263321	131.66
isopentane	0.222	72.114	0.1601	0.007	isopentane	4.4	38439	19.22
n-pentane	0.222	72.114	0.1601	0.007	n-pentane	4.4	38439	19.22
cyclopentane	0	70.13	0.0000	0.000	cyclopentane	0.0	0	0.00
n-Hexane	0.0000	86.18	0.0000	0.000	n-Hexane	0.0	0	0.00
cyclohexane	0.0000	84.16	0.0000	0.000	cyclohexane	0.0	0	0.00
Other hexanes	0	86.18	0.0000	0.000	Other hexanes	0.0	0	0.00
heptanes	0	100.21	0.0000	0.000	heptanes	0.0	0	0.00
methylcyclohexane	0	98.19	0.0000	0.000	methylcyclohexane	0.0	0	0.00
224-TMP	0	114.23	0.0000	0.000	224-TMP	0.0	0	0.00
Benzene	0	78.12	0.0000	0.000	Benzene	0.0	0	0.00
Toluene	0	92.15	0.0000	0.000	Toluene	0.0	0	0.00
Ethylbenzene	0	106.17	0.0000	0.000	Ethylbenzene	0.0	0	0.00
Xylenes	0	106.17	0.0000	0.000	Xylenes	0.0	0	0.00

C8+ Heavies	0.059	276.427	0.1631	0.007	C8+ Heavies	4.5	39159	19.58
VOC mass fraction: 22.450				0.2382	Total VOC Emissions (Uncontrolled)			
					annual limit assuming 95% control			
					monthly limit assuming 95% control (lb/mo.)			
					642.0			
					32.1			
					5452.6			

**Notes**

Mole %, MW, and mass fractions from WR 25 Check #2 gas analysis.  
Emissions are based on 8760 hours of operation per year.  
I calculated the average MW of C8+ based on the average MW on the analysis for the gas.

Operator calculated 684.0 TPY uncontrolled. This is higher and probably due to rounding issues. I will permit using operator numbers and a controlled VOC emissions of 34.2 Tpy

**Flaring Information**

Equipment Description

Flare to combust produced gas until pipeline is available at this wellhead facility.

Manufacturer	TBD	
Model	TBD	
Serial Number	TBD	
Gas Heating Value	1281	Btu/scf
Throughput	116571	MMBtu/yr

Combustion emission factor source: [AP-42: Chapter 13.5](#)

0.068	lb NOX/MMBtu	0.37	lb CO/MMBtu
3.96	tpy NOX	21.57	tpy CO

**Emissions Summary**

Uncontrolled/PTE	3.96	tpy NOX
	21.57	tpy CO
Controlled	641.999	tpy VOC
	32.100	tpy VOC

Because the gas analysis did not speciate the HAPS, Noble conservatively calculated HAPS by using wt% taken from the facility

	Wt%	Uncontrolled Total	Scenario A Reportable?	Controlled Total (lb/yr)
Benzene	0.20%	10762	Yes	538
Toluene	0.20%	10762	Yes	538
Ethylbenzene	0.10%	5381	Yes	269
Xylenes	0.10%	5381	Yes	269
n-hexane	0.60%	32378	Yes	1619
224-TMP	0.10%	5381	Yes	269

**Regulatory Applicability**

**AQCC Regulation 1**

This source is subject to the opacity requirements for flares in Section II.A.5: 'No owner or operator of a smokeless flare or other flare for the combustion of waste gases shall allow or cause emissions into the atmosphere of any air pollutant which is in excess of 30% opacity.'

**AQCC Regulation 2**

Section I.A applies to all emission sources. "No person, wherever located, shall cause or allow the emission of odorous air contaminants from any single source such as to result in detectable odors which are measured in excess of the following limits: For areas used predominantly for residential or commercial purposes it is a violation if odors are detected after the odorous air has been diluted with seven (7) or more volumes of odor free air."

**AQCC Regulation 3**

Part A:	An APEN is required for this source because uncontrolled VOC emissions exceed one ton per year in a nonattainment area for ozone.
Part B:	A permit is required for this source because uncontrolled VOC emissions from this facility exceed two tons per year in a nonattainment area for ozone.
	This source is subject to Section III.D.2 (Minor Source RACT) because it is located in a nonattainment area. RACT for this source has been determined to be the use of a flare to control emissions.
Is public comment required?	Public Comment Required