From: Allison, Craig
To: Braganza, Bonnie
Cc: Payne, William
Subject: RE: XTO draft permit and technical support document for your review.
Date: Thursday, May 04, 2017 3:07:22 PM
Attachments: image001.png
image002.png
image003.png
image004.png
image005.png
image007.png
ZZZZ Remote maps_ XTO Jicarilla Apache-2017.pdf
XTO Jicarilla Draft Permit edit information-5-4-2017.pdf
XTO draft permit April 20, 2017-XTO comments.docx

Bonnie:

1. Regarding the engine "major overhaul language", your response is still not clear and I cannot find anything in the regulations that is published that clearly establishes why and when these notifications need to occur other than for "reconstruction":

"I will respond to your other question, the reporting to EPA is only required for major overhauls that is considered more than the required maintenance, almost replacement of part of the equipment and is usually in the equipment specifications as to when a major overhaul of an engine is required to extend its life."

This answer is not clear and will make the permit requirement too vague to implement in terms of compliance. In addition, *more than required maintenance* may be very small repair items which would not impact engine emissions or performance, so the interpretation of this is too subjective. Both 40 CFR 60.15 (JJJJ applicability triggered by reconstruction) and 40 CFR 63.2 have applicability for "major overhaul", but the current language in the draft permit is not correct and too vague. The requirements for "reconstruction" apply more in this case than notifications of "major overhaul" which is not defined anywhere. Refer to the following applicable regs for "reconstruction":

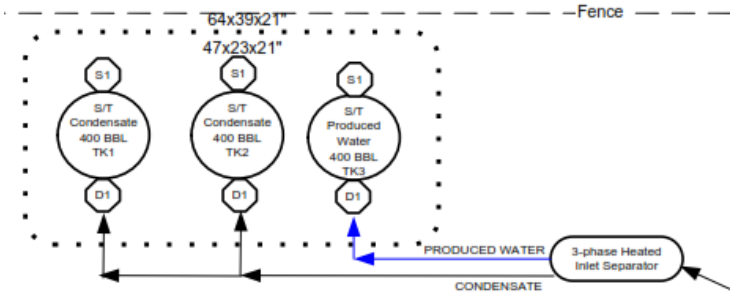
§60.15 Reconstruction.
(a) An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate.
(b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:
(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and
(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.
(c) "Fixed capital cost" means the capital needed to provide all the depreciable components.
(d) If an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, he shall notify the Administrator of the proposed replacements.

§63.2 Definitions.
The terms used in this part are defined in the Act or in this section as follows:
Reconstruction, unless otherwise defined in a relevant standard, means the replacement of components of an affected or a previously nonaffected source to such an extent that:
(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable new source; and
(2) It is technologically and economically feasible for the reconstructed source to meet the relevant standard(s) established by the Administrator (or a State) pursuant to section 112 of the Act. Upon reconstruction, an affected source, or a stationary source that becomes an affected source, is subject to relevant standards for new sources, including compliance dates, irrespective of any change in emissions of hazardous air pollutants from that source.

2. Regarding the "remote" engine classification, refer to the attached maps showing that there are no structures, buildings, playgrounds, etc. within several miles of the facility, so the engine is classified as a "remote" engine as per 40 CFR 63.6675:
(2) Stationary RICE located on a pipeline segment that meets both of the criteria in paragraphs (2)(i) and (ii) of this definition.
(i) A pipeline segment with 10 or fewer buildings intended for human occupancy and no buildings with four or more stories within 220 yards (200 meters) on either side of the centerline of any continuous 1-mile (1.6 kilometers) length of pipeline. Each separate dwelling unit in a multiple dwelling unit building is counted as a separate building intended for human occupancy. *The attached map shows that no human occupied buildings exist in the applicable area around the engine.*

(ii) The pipeline segment does not lie within 100 yards (91 meters) of either a building or a small, well-defined outside area (such as a playground, recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. *The attached map shows that no "outside areas" exist in the applicable area around the engine.*

3. Regarding the tanks, several tanks (TK4, TK5, and TK6) were removed, as noted in the previous e-mail, so obviously no install dates apply to them. Other than the tank removals from the permit, the only tank that was different than the original application is that the original condensate tank TK1 is taking the physical place of the original 100-barrel Produced Water Tank TK3, and the Produced Water tank TK3 is now located in the original location as Tank TK1. Tanks TK1, TK2, and TK3 were all originally constructed in 2002. Tank TK1 is a replacement of the former 100-barrel produced water tank with a 400-barrel condensate tank. The 100-barrel tank was removed and will no longer be used. The installation of Tank TK1 will be done in the same spot with the same operational function and location as the original tank TK 3. All three (3) tanks have a heater with a maximum heat rating of 0.5 mmBTU/hr. Emissions were updated for the additional tank heater in the attached calculations.
The current tank configuration (as of the completion of the installation of re-location of TK1 on or before June 30, 2017) is as follows:



4. Additional Emissions updates: Tank emissions were re-calculated using E&P Tanks 3.0 which is a more updated method than the spreadsheet calculation that was done in the past. In addition, emissions calculations were updated for pigging emissions and for the engine Startup / shutdown emissions under the facility maintenance emissions. Both of the emissions from these sources were less than 2 tpy of VOC each. Attached is the backup information for the tanks and associated emissions changes (including adding heater H5).
5. For your reference, attached is an updated process description, process flow diagram, and site drawing reflecting the equipment modifications for the site.
6. Attached is a draft permit with XTO suggested edits and revisions, along with additional supporting information.

Hopefully, this provides everything that you need.

Regards,

Craig Allison
EH&S Advisor
Environmental Health & Safety
Office: 817-885-2672 | Cell: 817-201-2379 | Fax: 817-885-1847
XTO ENERGY INC., an ExxonMobil subsidiary
810 Houston Street, Fort Worth, Texas 76102

From: Braganza, Bonnie [mailto:Braganza.Bonnie@epa.gov]
Sent: Wednesday, May 03, 2017 6:06 PM
To: Allison, Craig
Subject: RE: XTO draft permit and technical support document for your review.

Thanks for your quick response. It appears that these are major changes from the application in 2012. So yes please provide the dates of installation of the tanks etc as in the draft permit and TSD. Also remote is defined and I will need site specifics for considering it remote. Unless the lat/long for the facility is indicative of it being remote – google maps etc. probably see the NMGC permit that indicated the compressors was remote

https://www.epa.gov/sites/production/files/2015-08/documents/redonda-laguna-app.pdf

I will respond to your other question, the reporting to EPA is only required for major overhauls that is considered more than the required maintenance, almost replacement of part of the equipment and is usually in the equipment specifications as to when a major overhaul of an engine is required to extend its life.

Bonnie Braganza P.E.
Air Permits
US Environmental Protection Agency
Region 6
1445 Ross Ave, Dallas TX 75202
214-665-7340

In the end it all comes to Choices to turn stumbling blocks into stepping stones….Scott Peterson

---

From: Allison, Craig [mailto:Craig_Allison@xtoenergy.com]
Sent: Wednesday, May 03, 2017 4:28 PM
To: Braganza, Bonnie <Braganza.Bonnie@epa.gov>
Subject: RE: XTO draft permit and technical support document for your review.

Bonnie - yes, I will need a few extra days (probably tomorrow) to wrap it up, if that's OK. The information below details the main comments / suggested edits to the draft permit. Additional supporting information (calculations) and updates to the draft permit Table 2 (updated PTE emissions) will be sent to you tomorrow.

Updates to Equipment List (In RED):

I. EQUIPMENT LIST

Table 1 lists the equipment subject to 40 CFR § 49.158.

Table 1

Equipment Type	EPN	Construction date	Capacity	Content/Fuel	Serial No. or Manufacturer
1004 HP RICE (Screw Compressor) Engine, 4-stroke-lean burn	E1	5/16/2002	1004hp 7.1MMBtu/hr	Fuel gas	SN 7NJ00895 Caterpillar 3512
4.5 MMSCFD TEG Dehydrator Controlled by Flare	FL1	Pre 7/2002	0.5 MMSCFH fuel gas	Fuel Gas	PESCO
Three Tank Heaters	H1, H2, H5	Pre 2011	0.5 MMBtu/hr each	Fuel gas	
Separator Heater	H3	Pre 7/2004	0.5 MMBtu/hr	Fuel gas	
Dehydrator Heater/Reboiler	H4	Pre 7/2005	1.06 MMBtu/hr	Fuel gas	
Condensate Tanks	TK1 TK2	Pre 2011	400 BBL each	Condensate	
Produced Water Tanks	TK3 ~~TK4~~	Pre 7/2002	~~100~~ 400 BBL each	Water from Separator and Engine scrubber	
~~Produced Water Tanks~~	~~TK5 TK6~~	~~Pre 7/2002~~	~~30 BBL each~~	~~Water from dehydrator~~	-
[1]Three Production Well Sites and Equipment	WS-1	12/1/2006	Oil throughput 1.5 BBL/day	Oil and gas operations	

Storage tank updates:

1. I am right in the middle of updating the emissions to match the facility tank configuration. I re-calculated the tank emissions using E&P Tanks 3.0 which is a more updated method than the spreadsheet calculation that was done in the past.
2. The final configuration of storage tanks will be two (2) – 400 bbl condensate tanks (Tanks TK1 and TK2) and one (1) – 400 bbl produced water tank (Tank TK3 which was listed as a 100 bbl but NOW is a 400 bbl tank). The smaller tanks (100-barrel and 30-barrel tanks TK4, Tk5, and TK6) have all been eliminated and need to be removed from the permit. I will send updated calculations, site drawing, and process description that reflect these updates. I updated the construction date for the condensate tanks, since the updated tank was not constructed in 2002, but later, definitely

before 2011 (which is the OOOO trigger year). The added 400-bbl condensate tank is NOT a OOOO tank. In addition, the updated condensate tank will have an additional tank heater.

Engine requirement comments:

1. In addition to updating the tanks and emissions, the engine on the location is a "remote" engine that is not subject to the non-remote requirements. The permit currently states that the engine is "non-remote" which is not the case since no receptors are around this engine, and a formal ZZZZ notice was done for the engine in 2013. Please change the "non-remote" reference to "remote". See excerpt from the permit, below.
2. In addition, the engine requirements under permit section "VIII. Reporting Requirements", paragraph 2. State that "Any major overhaul of the compressor engine shall promptly be reported to EPA". I am not sure how this applies to the site (it is not a regulatory requirement) and an additional question is also, what is the definition of a "major overhaul"? This requirement is very confusing and I don't believe it will add any compliance benefit, so I am requesting that this be removed. The permit already requires maintenance tracking for the engine (See VI.5 "Recordkeeping and Monitoring Requirements", so I do not know what this additional reporting would accomplish, since "major overhaul" is not defined and the purpose of the report is not clear.

From draft permit:

III. REGULATORY APPLICABILITY

5. *Compressor Engine [E1] is subject to emission standards, monitoring, testing, recordkeeping and reporting rules as a non-emergency, ~~non~~-remote, four stroke lean burn engine (4SLB) in 40 CFR Part 63, Subpart ZZZZ.*

V. SPECIAL CONDITIONS

6. *The Compressor Engine [EPN E1] shall comply with 40 CFR §§ 63.6603(a) and 63.6605(a) as a non-emergency ~~non~~-remote four stroke lean burn stationary RICE > 500 HP.*

Flare comments:

1. XTO requests that the initial performance test to be conducted within 180-days after the permit issuance and not 90-days to allow for proper planning and scheduling of contractors and personnel. In addition, XTO requests that EPA Region 6 revise the testing language for this permit to be in alignment with EPA Region 8 testing language for a similar facility, as follows:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
1595 Wynkoop Street
Denver, CO 80202-1129
Phone 800-227-8917
www.epa.gov/region08

Ref: 8P-AR

Craig Allison
Environmental Engineer
XTO Energy, Inc.
810 W. Houston Street, Petro-4
Fort Worth, Texas 76102

FEB 0 8 2016

Re: XTO Energy, Inc. Wild Horse Bench Site, Permit # SMNSR-UO-000124-2012.001,
Proposed Synthetic Minor NSR Permit

The Permittee shall demonstrate that all thermal oxidizers in operation on the effective date of this permit achieve the 95.0% VOC and total BTEX emissions destruction efficiency requirement by performing an initial performance test of the thermal oxidizer(s) within 180 days after the effective date of this permit.

- Please make the following change to the initial test time stipulation:

V. COMPLIANCE TESTS

1. The Permittee shall prepare a test plan to verify that the dehydrator meets the requirement of 40 CFR § 63.772(b)(2) with the use of the flare. The flare tests shall also meet the requirements of 40 CFR § 63.11(b). Tests should be conducted within ~~90~~ 180 days of the effective date of this permit, and all records maintained as in Section VI.

Additional Emissions updates:
I also added calculations for pigging emissions and updated the engine Startup / shutdown emissions under the facility maintenance emissions. Both of the emissions from these sources were less than 2 tpy of VOC each. In addition, I am currently working on backup information to the tank and associated emissions changes (including adding heater H5) that I will send you (hopefully tomorrow). I will also send you the draft permit with XTO suggested edits and revisions, along with additional supporting information.

Thanks for your patience and assistance.

Regards,
Craig Allison
EH&S Advisor
Environmental Health & Safety
Office: 817-885-2672 | Cell: 817-201-2379 | Fax: 817-885-1847
XTO ENERGY INC., an ExxonMobil subsidiary
810 Houston Street, Fort Worth, Texas 76102

-----Original Message-----
From: Braganza, Bonnie [mailto:Braganza.Bonnie@epa.gov]
Sent: Wednesday, May 03, 2017 2:27 PM
To: Allison, Craig
Subject: RE: XTO draft permit and technical support document for your review.

Please let me know if you need additional time so that I can schedule our management review.

Bonnie Braganza P.E.
Air Permits
US Environmental Protection Agency
Region 6
1445 Ross Ave, Dallas TX 75202
214-665-7340

In the end it all comes to Choices to turn stumbling blocks into stepping stones....Scott Peterson

-----Original Message-----
From: Allison, Craig [mailto:Craig_Allison@xtoenergy.com]
Sent: Thursday, April 27, 2017 1:33 PM
To: Braganza, Bonnie <Braganza.Bonnie@epa.gov>
Subject: RE: XTO draft permit and technical support document for your review.

Bonnie - I am requesting a few extra days (COB on Tuesday, May 2) to review the changes due to coordinating the review with additional XTO personnel, in addition to my being out of the office all of next week. I did send you preliminary comments today in a separate e-mail. Please let me know if you have any questions. Thanks.

Regards,
Craig Allison
EH&S Advisor
Environmental Health & Safety
Office: 817-885-2672 | Cell: 817-201-2379 | Fax: 817-885-1847 XTO ENERGY INC., an ExxonMobil subsidiary

810 Houston Street, Fort Worth, Texas 76102

-----Original Message-----
From: Braganza, Bonnie [mailto:Braganza.Bonnie@epa.gov]
Sent: Friday, April 21, 2017 6:31 AM
To: Allison, Craig
Subject: RE: XTO draft permit and technical support document for your review.

Thank you Craig. Let me know what changes may be needed. We would like the permit to reflect the actual equipment so if any changes- no worries.

Bonnie Braganza P.E.
Air Permits
US Environmental Protection Agency
Region 6
1445 Ross Ave, Dallas TX 75202
214-665-7340

In the end it all comes to Choices to turn stumbling blocks into stepping stones....Scott Peterson

-----Original Message-----
From: Allison, Craig [mailto:Craig_Allison@xtoenergy.com]
Sent: Thursday, April 20, 2017 9:23 PM
To: Braganza, Bonnie <Braganza.Bonnie@epa.gov>
Subject: Re: XTO draft permit and technical support document for your review.

Bonnie:
I will work on the response next week. I am currently working out of the office in the field.

Regards,
Craig Allison
XTO Energy - EHS Department
Sent from my iPhone

> On Apr 20, 2017, at 4:59 PM, Braganza, Bonnie <Braganza.Bonnie@epa.gov> wrote:
>
> Craig:
>
> Please review the documents for accuracy. I appreciate a response by COB on April 27th.
>
> If there is a difference in the configuration of the facility- tanks,
> heaters, etc., please send the new information including the equipment
> specifications and if possible a drawing as well. Thank you
>
> Bonnie Braganza P.E.
> Air Permits
> US Environmental Protection Agency
> Region 6
> 1445 Ross Ave, Dallas TX 75202
> 214-665-7340
>
> In the end it all comes to Choices to turn stumbling blocks into
> stepping stones....Scott Peterson
>
> <Technical Support Document 4-20-17.docx> <XTO draft permit April 20,
> 2017.docx>

ATTACHMENT 2
PROCESS/PROJECT DESCRIPTION – UPDATED May 2017

Jicarilla Compressor Station - Process Description
XTO Energy, Inc. is submitting this Synthetic Minor Limit application for the Jicarilla Compressor Station (the Station) located southeast of Aztec in Rio Arriba County, New Mexico.

The Station is comprised of one (1) compressor engine and associated blowdowns, one (1) glycol dehydration unit, two (2) condensate tanks, one (1) produced water tank, five (5) heaters, truck loading rack, and piping components.

Sweet natural gas enters the Station via a pressurized inlet separator. Due to pressure drop, the liquefiable portion of the stream drops out in the separator and is routed to the three (3) atmospheric storage tanks [referred to as "condensate" tanks, (FINs) TK1 & TK2 and the "produced water" tank, (FIN) TK3. The produced water tank also receives scrubber dumps off the engines. Liquids from these tanks are periodically collected by tank truck and sent offsite. The inlet gas and condensate compositions are found in the Site Data table in Attachment 7.

The gaseous stream from the inlet separator is routed to one (1) reciprocating internal combustion engine-driven compressor [(FINs) E1] and is compressed prior to the dehydration process.

After dehydrating [(FIN) DEHY-1] the gas stream, rich glycol (water saturated) is routed to the flash tank, where flashed vapors are sent to the reboiler as fuel. The remaining rich glycol is routed into the glycol regenerator column where the entrained water and other constituents are removed, and lean glycol is circulated back into the dehydration column. The regenerator overhead vent is routed to the flare with a 98% control efficiency. The condensable liquids are routed to the produced water tank, [(FINs) TK3]. The dehydrated pipeline quality natural gas exits the Station via a pipeline.

Heaters are used for the separator, tanks, and dehydration reboiler, [(FINs) H1-H5]. The Station operates 8760 hrs per year.

In addition to the equipment and operations located on-site at the Jicarilla Compressor Station, current U.S. EPA Source Aggregation regulations require that XTO operated equipment located within ¼-mile of the permitted source is to be included in this application. A list of the wellsites aggregated with the Jicarilla Compressor Station and their associated equipment is included in the tables below.

Wellsites that are located within ¼ mile of the Jicarilla Compressor Station include the Jicarilla Apache 14, the Jicarilla Apache 14G, and the Jicarilla Apache 16F. The wellsites each consist of an oil and gas wellhead that flows to an onsite three-phase (gas, water, and oil) separator. The three-phase separator utilizes the wellhead pressure that is either assisted by a wellhead plunger-lift system or a wellhead natural gas-driven pumping unit to push the gas into the separator vessel and separate the produced hydrocarbons into a natural gas-stream and into produced water and natural gas condensate. The natural gas component of the production flows through gathering pipelines to the Jicarilla Compressor Station. The liquid components of the well production, which includes the produced water and the associated gas condensate then flows into the onsite condensate and produced water tanks for temporary storage prior to being trucked off-site. The Jicarilla Apache 14G well was hydraulically re-fractured in March of 2016 and the other two wells, the Jicarilla Apache 14, and 16F, were hydraulically fractured in 2006. Attachment 4.c provides individual site plot plans for each of the wellsites.

Please see the following tables describing the existing emission units:

Compressor Station Reciprocating Internal Combustion Engine-Driven Compressors*

Engine No.	Description	Mfg./ Construction Date	Fuel Fired	Rated Capacity (hp)	Max Firing Rate			Manufacturer	Serial#
					MMBTU/yr	MMBTU/day	MMBTU/ hr		
E1	Caterpillar 3512	5/16/2002	Fuel Gas	1004	62,371	171	7.12	Caterpillar	SN 7NJ00895

*NOTE: Removed Engine E2 from the application.

Compressor Station Dehydration Unit

Unit No.	Description	Construction Date	Max Throughput (MMSCF/D)	Manufacturer	Control Equipment
DEHY-1	TEG Dehydrator	Pre 7/2002	4.5	Pesco	Flare

Compressor Station Tanks

Unit ID	Description	Content	Construction Date	Design Capacity (BBL)	Max Throughput		
					BBL/yr	BBL/day	BBL/hr
TK1	Condensate Tank	Condensate from inlet Separator	2002	400	1460	4	0.17
TK2	Condensate Tank	Condensate from inlet Separator	2002	400	1460	4	0.17
TK3	Produced Water	Produced Water from Inlet Separator & Engine Scrubber	2002	~~100~~400	1460	8	0.34
~~TK4~~	~~Produced Water~~	~~Produced Water from Inlet Separator & Engine Scrubber~~	~~Pre 7/2002~~	~~100~~	~~1460~~	~~4~~	~~0.17~~
~~TK5~~	~~Produced Water~~	~~Produced Water from Dehy~~	~~Pre 7/2002~~	~~30~~	~~365~~	~~1~~	~~0.04~~
~~TK6~~	~~Produced Water~~	~~Produced Water from Dehy~~	~~Pre 7/2002~~	~~30~~	~~365~~	~~1~~	~~0.04~~

Compressor Station Heaters

Heater No.	Description	Construction Date	Fuel Fired	Design Heat Capacity based on LHV		
				MMBTU/yr	MMBTU/day	MMBTU/hr
H1	Tank Heater	Pre 7/2002	Fuel Gas	4,380.00	12	0.5
H2	Tank Heater	Pre 7/2003	Fuel Gas	4,380.00	12	0.5
H5	Tank Heater	2002	Fuel Gas	4,380.00	12	0.5
H3	Separator Heater	Pre 7/2004	Fuel Gas	4,380.00	12	0.5
H4	Dehy Heater	Pre 7/2005	Fuel Gas	8760.00	24	1.0

Aggregated Nearby Wellsites – within ¼ mile of the Jicarilla Compressor Station

Unit No.	Description	Completion Date	Max Oil Throughput (bbl/yr)	Max Oil Throughput (bbl/day)
JA-14*	Jicarilla Apache 14 Wellsite	12/1/2006	547.5	1.5
JA-14G*	Jicarilla Apache 14G Wellsite	12/1/2006	547.5	1.5
JA-16F*	Jicarilla Apache 16F Wellsite	12/1/2006	547.5	1.5

*NOTE: Emissions from these sources are collectively reported as EPN: WS-1 and FIN: WS-1.

Aggregated Nearby Wellsite Equipment – within ¼ mile of the Jicarilla Compressor Station

Unit No.	Description	Wellsite Production Tanks (300-bbl capacity)	Wellsite Combustion Engines	Tank or Process Heaters	Wellsite Emissions Controls
JA-14	Jicarilla Apache 14 Wellsite	2	One (1) Arrow C-96	NONE	NONE
JA-14G	Jicarilla Apache 14G Wellsite	1	NONE	NONE	NONE
JA-16F	Jicarilla Apache 16F Wellsite	1	NONE	NONE	NONE

Attachment 4.A is a process flow diagram of the Station showing emission points for the Compressor Station. In addition, Attachment 4.C are individual plot plan drawings for each of the wellsites aggregated with the Jicarilla Compressor Station.

Project Description

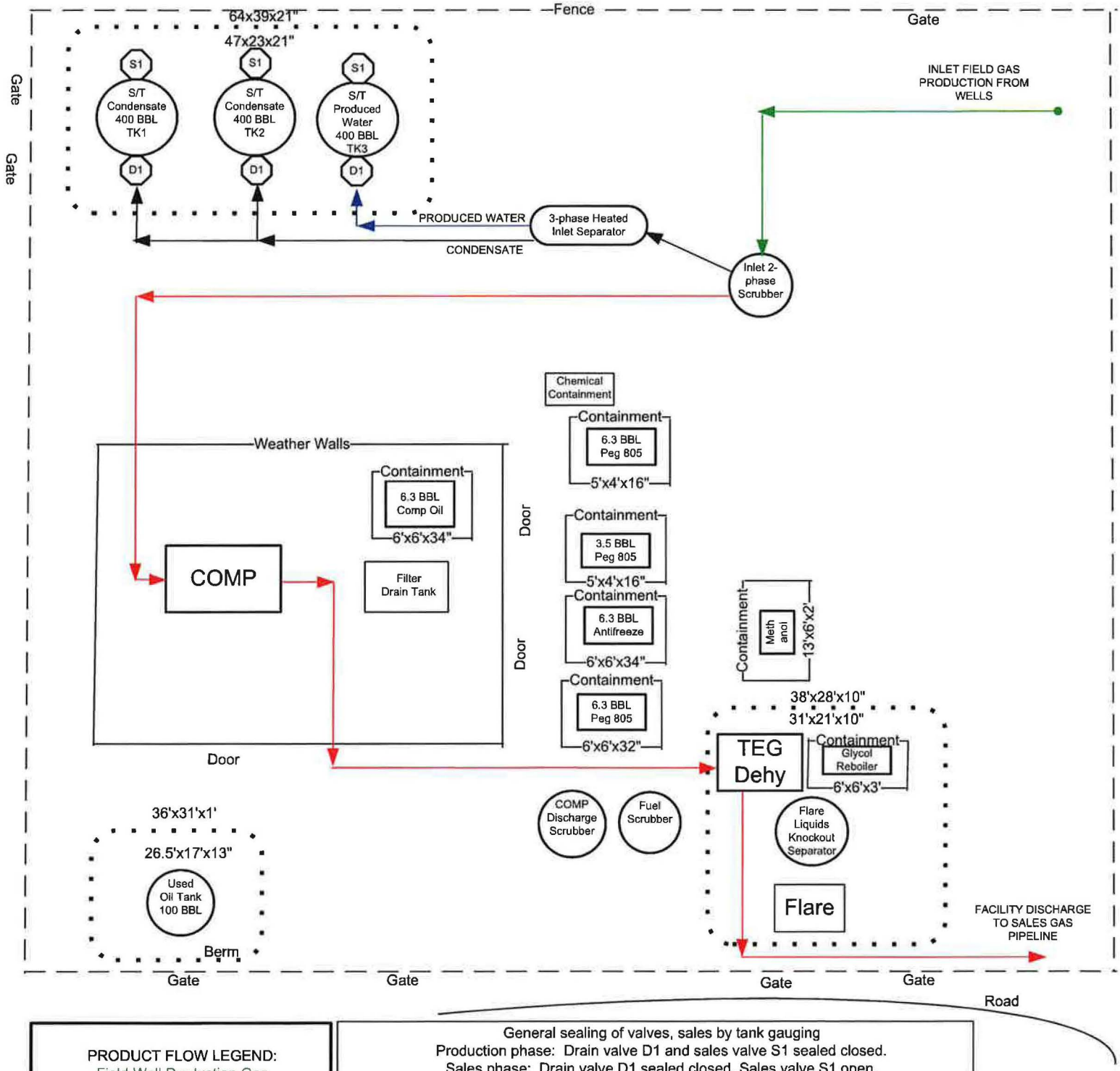
XTO Energy, Inc. is submitting this Synthetic Minor Limit application to authorize the operations of the Jicarilla Compressor Station. The Station's dehydration unit [Facility Identification Number (FIN) DEHY-1] is subject to 40 CFR §63, Subpart HH. The Station's dehydration regeneration still vent gas emission rates are controlled by a flare. The site emissions are below major source thresholds after dehydration unit controls.

The Station's Compressor Engine, [Facility Identification Number (FIN) E1], is subject to 40 CFR §63, Subpart ZZZZ, area source provisions.

Attachment 5 contains emission rate calculations and summarizes the Station's potential emission rates.

Plot Plan/ Facility Diagram

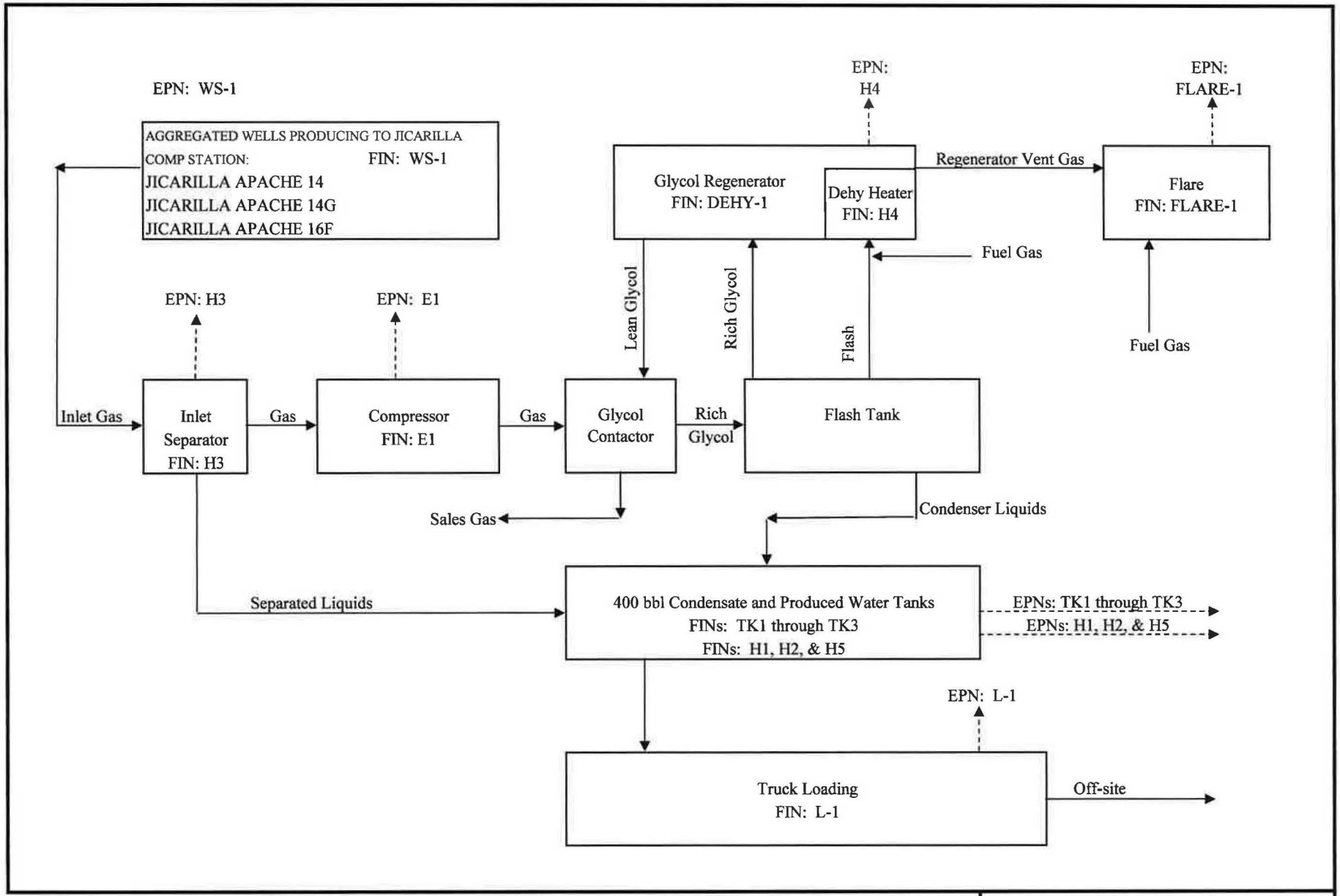
Well Name: Jicarilla Apache CDP
Field: Rio Arriba County, NM.
Section: Sec. 34, T-26N, R-5W
CA # If Applicable :
Updated: Date: 5-4-2017
Drawing updated by : WCA



PRODUCT FLOW LEGEND:
Field Well Production Gas
Gas
Condensate
Water

General sealing of valves, sales by tank gauging
Production phase: Drain valve D1 and sales valve S1 sealed closed.
Sales phase: Drain valve D1 sealed closed. Sales valve S1 open.
Draining phase: Drain valve D1 open. Sales valve S1 closed.

This lease is subject to the site security plan for San Juan Basin Area. The plan is located at:
XTO ENERGY INC.
382 Road 3100
Aztec, NM 87410



Attachment 4.A
Process Flow Diagram - Updated May-2017
Jicarilla Compressor Station

Table 3-1
XTO Energy, Inc.
Jicarilla Compressor Station
Application for Synthetic Minor Limit
Summary of Site-Wide Potential to Emit

FIN	DEHY-1 UNCONTROLLED	DEHY-1 CONTROLLED	E1	H1 - H5	TK1 & TK2	TK3	WS-1	FUG	L1	COMP1-BD	6", 10", and 12" PIPELINE PIGGING	PTE UNCONTROLLED Emissions Total by Pollutant	PTE CONTROLLED Emissions Total by Pollutant
EPN	DEHY-1	FLARE-1	E1	H1 - H5	TK1 & TK2	TK3	WS-1	FUG	L1	COMP1-BD	PLPIG		
Description	TEG Dehydrator	TEG Dehydrator	Caterpillar 3512	Auxiliary Heaters	Condensate Tanks	Produced Water Tank	Aggregated Wellsites	Site Fugitives	Tank Loading	Engine Blowdown	Pipeline Pigging		
Rated Capacity (horsepower)/(bbl)	-	-	1,004	-	(2) - 400 BBL	(1) - 400 BBL	JA 14,14G, and 16F	-	-	-	-		
Rated Capacity (MMBtu/hr)	-	-	7.12	3.00	See Tanks Report	See Tanks Report	-	-	-	-	-		
Normal Operation													
Hourly Emission Rate (lb/hr)													
NO_x	—	0.1	4.1	0.3	—	—	1.2	—	—	—	—	**5.6**	**5.6**
CO	—	0.3	5.4	0.2	—	—	0.7	—	—	—	—	**6.4**	**6.6**
VOC	24.8	0.5	1.5	0.0	5.5	<0.1	2.9	3.3	89.8	—	—	**127.9**	**103.6**
SO_2	—	<0.1	<0.1	0.0	—	—	0.0	—	—	—	—	**<0.1**	**<0.1**
PM/PM_{10}	—	—	0.1	0.0	—	—	0.0	—	—	—	—	**0.1**	**0.1**
Formaldehyde	—	—	0.5	0.0	—	—	—	—	—	—	—	**0.5**	**0.5**
Hexane	0.3	<0.1	—	0.0	—	—	0.0	—	—	—	—	**0.3**	**<0.1**
Benzene	1.5	<0.1	<0.1	0.0	<0.1	—	0.0	<0.1	<0.1	—	—	**1.6**	**0.1**
Toluene	4.6	0.1	—	—	—	—	0.0	—	—	—	—	**4.6**	**0.1**
Ethylbenzene	0.4	<0.1	—	—	—	—	0.0	—	—	—	—	**0.4**	**<0.1**
Xylene	3.8	0.1	—	—	—	—	0.0	—	—	—	—	**3.8**	**0.1**
Annual PTE (TPY)													
NO_x	—	0.3	17.9	1.3	—	—	5.15	—	—	—	—	**24.3**	**24.6**
CO	—	1.3	23.5	1.1	—	—	3.28	—	—	—	—	**27.8**	**29.1**
VOC	108.5	2.2	6.4	0.1	24.2	<0.1	12.63	14.7	0.7	—	—	**167.4**	**61.0**
SO_2	—	<0.1	<0.1	0.0	—	—	0.02	—	—	—	—	**<0.1**	**<0.1**
PM/PM_{10}	—	—	0.3	0.1	—	—	0.21	—	—	—	—	**0.6**	**0.6**
Formaldehyde	—	—	2.1	0.0	—	—	—	—	—	—	—	**2.1**	**2.1**
Hexane	1.3	<0.1	—	0.0	—	—	0.195	—	—	—	—	**1.5**	**<0.1**
Benzene	6.5	0.1	<0.1	0.0	0.1	—	0.030	0.1	<0.1	—	—	**6.8**	**0.4**
Toluene	20.0	0.4	—	—	—	—	0.069	—	—	—	—	**20.1**	**0.5**
Ethylbenzene	1.6	<0.1	—	—	—	—	0.000	—	—	—	—	**1.6**	**<0.1**
Xylene	16.8	0.3	—	—	—	—	0.009	—	—	—	—	**16.8**	**0.3**
CO_2e	533.0	442.4	3647.3	1537.4	15.3	—	—	384.1	<0.1	—	—	**6117.2**	**6026.6**
Maintenance Operations													
Hourly Emission Rate (lb/hr)													
VOC	—	—	—	—	—	—	0.0	—	—	316.7	34.0	**350.7**	**350.7**
Benzene	—	—	—	—	—	—	0.0	—	—	1.02	0.15	**<1.1**	**<1.1**
Annual PTE (TPY)													
VOC	—	—	—	—	—	—	0.0	—	—	1.9	1.8	**3.7**	**3.7**
Benzene	—	—	—	—	—	—	0.0	—	—	0.01	0.01	**<0.1**	**<0.1**
CO_2e	—	—	—	—	—	—	0.0	—	—	138.8	37.2	**176.0**	**176.0**

Notes:
1) Emissions from the condensate tanks includes flashing from both tanks
2) Engines Blowdowns are included in SSM under Maintenance Operations

XTO Energy, Inc.

Jicarilla Compressor Station

Application for Synthetic Minor Limit

Calculation of Tanks Potential to Emit[1,2]

FIN	Tank Name	Number of Tanks	Annual Throughput (bopy)	Daily Throughput (bopd)	PTE VOC Emissions Hourly (lb/hr)	PTE VOC Emissions Annual (T/yr)	PTE Benzene Emissions Hourly (lb/hr)	PTE Benzene Emissions Annual (T/yr)	Carbon Dioxide Emissions Hourly (lb/hr)	Carbon Dioxide Emissions Annual (T/yr)	Methane Emissions Hourly (lb/hr)	Methane Emissions Annual (T/yr)
TK1	Condensate Tank 1 - 400 bbl	1	1460	4	2.77	12.12	0.01	0.0380	0.004	0.02	0.069	0.303
TK2	Condensate Tank 2 - 400 bbl	1	1460	4	2.77	12.12	0.01	0.0380	0.004	0.02	0.069	0.303
TK3	Produced Water Tank 3 - 400 bbl	1	2920	8	0.06	0.242	0.0002	0.001	0.00	0.000	0.00	0.006

[1]NOTE: Tank Emissions include both Working and Standing Loss and Tank Flash Emissions that are calculated from E&P Tanks v3.0.

[2]NOTE: Produced Water Tank emissions are calculated using a ratio of 1% condensate and 99% water throughput for the tank.

```
*****************************************************************************
*     Project Setup Information                                             *
*****************************************************************************
Project File              : W:\EHS\Environmental\Air\Areas of Operation\New Mexico\Western Division\MSO\Jicarilla
Flowsheet Selection       : Oil Tank with Separator
Calculation Method        : RVP Distillation
Control Efficiency        :  0.00%
Known Separator Stream    : Low Pressure Oil
Entering Air Composition  : No
Component Group           : C10+

Filed Name                : XTO Jicarilla Compressor Station
Well Name                 : XTO Jicarilla Compressor Station - Actual PTE 400 BBL Condensate Tank
Well ID                   : Condensate Throughput = 8 bopd; Altitude at 6,500 ft elevation and 81.4 deg avg temp
Date                      : 2017.05.03


*****************************************************************************
*     Data Input                                                            *
*****************************************************************************

Separator Pressure (psia)         : 30.80
Separator Temperature (F)         : 50.0
C10+ SG                           : 0.84
C10+ MW(lb/lbmol)                 : 171.18

-- Low Pressure Oil ---------------------------------------------------------
No.    Component           Mole%    Wt%
1      H2S                  0.0000   0.0000
2      O2                   0.0000   0.0000
3      CO2                  0.0189   0.0090
4      N2                   0.0628   0.0190
5      C1                   0.8773   0.1520
6      C2                   0.9945   0.3230
7      C3                   2.4352   1.1600
8      i-C4                13.3056   8.3530
9      n-C4                 3.9393   2.4730
10     i-C5                 3.6159   2.8180
11     n-C5                 4.1754   3.2540
12     C6                   5.4177   5.0420
13     C7                  26.8695  29.0810
14     C8                  12.7317  15.7090
15     C9                   5.9338   8.2219
16     C10+                 4.4758   8.2760
17     Benzene              0.9873   0.8330
18     Toluene              6.4363   6.4050
19     E-Benzene            0.3593   0.4120
20     Xylenes              2.6491   3.0380
21     n-C6                 4.6075   4.2890
22     224Trimethylp        0.1070   0.1320

-- Sales Oil ----------------------------------------------------------------
Production Rate (bbl/day)     : 8.00
Days of Annual Operation      : 365
API Gravity                   : 64.02
Reid Vapor Pressure (psia)    : 11.60
Ambient Pressure (psia)       : 11.60
Ambient Temperature (F)       : 81.4


*****************************************************************************
*     Calculation Results                                                   *
*****************************************************************************

-- Emission Summary ---------------------------------------------------------
                  Uncontrolled
```

	ton
Total HAPs	0.7530
Total HC	26.1170
VOCs, C2+	25.5110
VOCs, C3+	24.2300
CO2	0.0360
CH4	0.6060

Uncontrolled Recovery Information:

Vapor(mscfd):	1.0300
HC Vapor(mscfd):	1.0200
CO2(mscfd):	0.0000
CH4(mscfd):	0.0800
GOR(SCF/STB):	128.7500

-- Emission Composition ----------

NoComponent	Uncontrolled ton
1 H2S	0.0000
2 O2	0.0000
3 CO2	0.0360
4 N2	0.0760
5 C1	0.6060
6 C2	1.2810
7 C3	3.3720
8 i-C4	13.2020
9 n-C4	2.8510
10 i-C5	1.3600
11 n-C5	1.1890
12 C6	0.5800
13 Benzene	0.0760
14 Toluene	0.1650
15 E-Benzene	0.0030
16 Xylenes	0.0210
17 n-C6	0.4830
18 224Trimethylp	0.0050
19 Pseudo Comp1	0.7290
20 Pseudo Comp2	0.1620
21 Pseudo Comp3	0.0300
22 Pseudo Comp4	0.0030
23 Pseudo Comp5	0.0000
24 Total	26.2300

-- Stream Data ----------

NoComponent	MW lb/lbmol	LP Oil mole %	Flash Oil mole %	Sales Oil mole %	Flash Gas mole %	W&S Gas mole %	Total Emission mole %
1 H2S	34.80	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2 O2	32.00	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
3 CO2	44.01	0.0189	0.0022	0.0000	0.2072	0.0591	0.1638
4 N2	28.01	0.0628	0.0008	0.0000	0.7616	0.0208	0.5444
5 C1	16.04	0.8773	0.0417	0.0000	10.2902	1.1318	7.6049
6 C2	30.07	0.9945	0.2468	0.0064	9.4172	6.5342	8.5719
7 C3	44.10	2.4352	1.3913	0.7456	14.1948	18.2774	15.3918
8 i-C4	58.12	13.3056	10.6016	9.0784	43.7646	50.4407	45.7221
9 n-C4	58.12	3.9393	3.4418	3.1653	9.5433	10.6751	9.8751
10 i-C5	72.15	3.6159	3.6081	3.5926	3.7039	4.0127	3.7945
11 n-C5	72.15	4.1754	4.2585	4.2873	3.2390	3.5054	3.3171
12 C6	84.00	5.4177	5.7784	5.9431	1.3543	1.4727	1.3890
13 Benzene	78.11	0.9873	1.0581	1.0907	0.1897	0.2065	0.1946
14 Toluene	92.14	6.4363	6.9766	7.2286	0.3497	0.3861	0.3604
15 E-Benzene	106.17	0.3593	0.3906	0.4053	0.0064	0.0072	0.0066
16 Xylenes	106.17	2.6491	2.8808	2.9893	0.0391	0.0436	0.0404
17 n-C6	86.18	4.6075	4.9189	5.0613	1.1001	1.1928	1.1272
18 224Trimethylp	114.23	0.1070	0.1157	0.1197	0.0092	0.0101	0.0095
19 Pseudo Comp1	96.00	26.8695	29.1234	30.1741	1.4810	1.6415	1.5280
20 Pseudo Comp2	107.00	12.7317	13.8357	14.3523	0.2959	0.3246	0.3043
21 Pseudo Comp3	121.00	5.9338	6.4563	6.7011	0.0487	0.0533	0.0501

22	Pseudo Comp4	134.00	1.2333	1.3424	1.3936	0.0039	0.0042	0.0040
23	Pseudo Comp5	185.07	3.2426	3.5304	3.6654	0.0002	0.0002	0.0002

	LP Oil	Flash Oil	Sales Oil	Flash Gas	W&S Gas	Total Emission
MW (lb/lbmol):	89.97	93.39	94.82	51.46	56.02	52.80
Stream Mole Ratio:	1.0000	0.9185	0.8846	0.0815	0.0338	0.1154
Stream Weight Ratio:	89.97	85.78	83.88	4.20	1.89	6.09
Total Emission (ton):				18.068	8.161	26.228
Heating Value (BTU/scf):				2880.46	3139.98	2956.55
Gas Gravity (Gas/Air):				1.78	1.93	1.82
Bubble Pt. @100F (psia):	60.31	17.66	12.43			
RVP @100F (psia):	26.72	14.79	11.53			
Spec. Gravity @100F:	0.71	0.71	0.72			

SPL, Inc.
2440 Chambers Street
Suite A
Venus, TX 76084
817-539-2168 (O)
817-539-2170 (F)

2011120051-001A

Division	Barnett Gathering	**For:**	Clare Hoang
Well:	Jicarilla Compressor Inlet		Barnett Gathering
County	XTO Energy - Jicarilla		810 Houston Street
Sample of:	Liquid		Fort Worth, Texas 76102
Conditions:	19 psi @ 50 °F		
Sampled by:	J.Petree	**Report Date:**	12/17/2011
Sample date:	12/01/2011	**API #:**	
Remarks:	Cylinder No.: 01220	**Tag #:**	Sample time 11:28AM, D

Analysis: (*GPA 2103M*)	**Mol. %**	**MW**	**Wt. %**	**Sp. Gravity**	**L.V. %**
Nitrogen	0.063	28.013	0.019	0.8094	0.017
Methane	0.871	16.043	0.152	0.3000	0.361
Carbon Dioxide	0.019	44.010	0.009	0.8180	0.008
Ethane	0.984	30.070	0.323	0.3562	0.643
Propane	2.410	44.097	1.160	0.5070	1.623
Iso-butane	13.169	58.123	8.353	0.5629	10.535
N-butane	3.899	58.123	2.473	0.5840	3.006
Iso-pentane	3.579	72.150	2.818	0.6244	3.203
N-pentane	4.133	72.150	3.254	0.6311	3.661
i-Hexanes	2.176	86.177	1.992	0.6795	2.088
n-Hexane	4.561	85.438	4.289	0.6640	4.584
2,2,4 trimethylpentane	0.106	114.231	0.132	0.6967	0.135
Methylcyclopentane	2.638	84.161	3.050	0.7535	2.638
Benzene	0.862	78.114	0.833	0.8846	0.589
Heptanes	19.419	94.300	19.680	0.7231	19.903
Methylcyclohexane	9.401	98.188	9.401	0.7740	8.623
Toluene	4.469	92.141	6.405	0.8719	3.659
Octanes	13.667	104.865	15.709	0.7603	17.144
E-benzene	0.356	106.167	0.412	0.8718	0.336
M-,O-,P-xylene	2.622	106.167	3.038	0.8731	2.484
Nonanes	6.166	116.971	8.222	0.7859	7.725
Decanes Plus	4.430	171.185	8.276	0.8353	7.035
	100.000		100.000		100.000

Calculated Values	**Total Sample**	**Decanes Plus**
Specific Gravity at 60 °F	0.7100	0.8353
Api Gravity at 60 °F	67.810	37.910
Molecular Weight	91.634	171.185
Pounds per Gallon (in Vacuum)	5.919	6.964
Pounds per Gallon (in Air)	5.913	6.956
Cu. Ft. Vapor per Gallon @ 14.65 psia	24.436	15.486

Donald D Dunn

SPL, Inc.
2440 Chambers Street, Suite A
Venus, TX 76084

CERTIFICATE OF ANALYSIS

Certificate of Analysis: 2011120051-001A

Customer:	XTO Energy	**Report Date:**	12/17/11
Attn:	Craig Allison		
	810 Houston Street	**PO / Ref. No.:**	
	Fort Worth, TX 76102		

Company:	XTO Energy	**Sample Of:**	Liquid
Field:	New Mexico	**Sample Date/Time:**	12/1/2011
Well :	Jicarilla Compresspr Station	**Sample Psig & Temp:**	19 psig @ 50°F
API #:		**Sampled By:**	JP-XTO
Sample Point:	Inlet Separator	**Cylinder # :**	01220

Comments: Staged Flash from 33.7 psi @ 50°F to 0 psi @ 60°F

Analytical Data

Parameters	Results	Units	Method	Lab Tech.	Date Analyzed
Shrinkage Factor	0.9814		Shrink-EOS	DDO	12/17/11
Flash Factor	29.523	Cu.Ft./STBbl.	Shrink-EOS	DDO	12/17/11

Hydrocarbon Laboratory Manager

CERTIFICATE OF ANALYSIS

Number : 2011120051-002A

SPL, Inc,
DFW Hydrocarbon Unit
2440 Chambers St. Suite A
Venus, TX 76084
817-539-2168 (O)
817-539-2179 (F)

Barnett Gathering
Clare Hoang
810 Houston Street

Fort Worth, Texas 76102

Station:	Jicarilla Compressor Inlet	**Report Date:**	12/17/11
Field:	XTO Energy - Jicarilla	**Sample Of:**	Spot Liquid
Sample Point:		**Sample Date:**	12/01/2011
Cylinder # :	Tin Can	**Sample Pressure:**	19
		Sample Temperature:	87.2

Comments:

Analytical Data

Test	Method	Results	Units	Lab Tech.	Date Analyzed
Reid Vapor Pressure @ 100 °F	**ASTM-D-323**	**11.60**	**psi**	**AO**	**12/9/2011**
API Gravity @ 60 °F	**ASTM-D-5002**	**64.02**		**AO**	**12/9/2011**

CONDENSATE AND PRODUCED WATER TRUCK LOADING EMISSIONS - Jicarilla Compressor Station

Company: XTO Energy, Inc.
Facility Name: Jicarilla Compressor Station
Facility Location: Rio Arriba County, New Mexico
Source: Produced Liquids Truck Loading

Tank Description	Sales [1] (bbls/day)	Sales (1,000 bbls/yr)	Saturation Factor (S)	True Vapor Pressure [2] (P) (psia)	Vapor Mole Wt. [2] (M)	Oil Temperature (T) (Degrees R)	Loading Losses[1,2,3,4] (lbs/1,000 gal)	VOC Loading Emissions[1,2,3,4] (lbs/hr)	VOC Loading Emissions[1,2,3,4] (TPY)
Condensate TK1 and TK2	8.00	2.92	0.6	11.6	68	542	10.8802	88.9565	0.6672
Produced Water TK3	8.00	2.92	0.6	11.6	68	542	0.1088	0.8896	0.0067
TOTAL	16	5.84					10.9890	**89.8461**	**0.6738**

NOTE 1: Based on a maximum of 8.0 bpd of condensate and 8.0 bpd of water production.

NOTE 2: Vapor molecular weight and true vapor pressure are based on a stock tank liquids analysis and avg. product temperature of 82 deg F.

NOTE 3: Produced water emissions are based on a ratio of 1% condensate and 99% water.

NOTE 4: Loading emissions are based on an average of 200 barrels per load and a one hour maximum load time, so the number of loads is: 15

$$\text{Loading Losses (lbs/1,000 gal)} = \frac{12.46*S*P*M}{T} \qquad \text{(AP-42 Section 5.2, Equation 1)}$$

$$\text{Loading Emissions (tons/year)} = \frac{\text{Loading Losses (lbs/1,000 gal)} * \text{Oil Sales (1,000 bbls/yr)} * (42 \text{ gal/bbl})}{2{,}000 \text{ lbs/ton}}$$

$$\text{Degrees R} = \text{Degrees F} + 460$$

Tank Truck S Factors

Mode of Operation	S Factor
Submerged loading of a clean tank	0.5
Submerged loading-dedicated service	0.6
Submerged loading-vapor balance	1.0
Splash Loading-clean tank	1.45
Splash loading-normal service	1.45
Splash loading-vapor balance	1.00

XTO Energy, Inc.
Jicarilla Compressor Station
Application for Synthetic Minor Limit
Calculation of Heaters Potential to Emit

Unit FIN	H1	H2	H3	H4	H5	Units, Data Source
Description	Tank Heater	Tank Heater	Separator Heater	Dehy Heater	Tank Heater	
Fuel Type	NG	NG	NG	NG	NG	manufacturer
Operating hr/yr	8,760	8,760	8,760	8,760	8,760	Maximum actual hours
Stack Information						
Stack Height	15	15	15	15	15	ft
Exhaust Gas Velocity	1.5	1.5	1.5	3.0	1.5	ft/sec, estimated
Exhaust Temp	400	400	400	400	400	°F, estimated
Stack Inside Diameter	1.5	1.5	1.5	1.5	1.5	ft, site inspection
Exhaust Gas Flow	158	158	158	316	158	cfm
Fuel Flowrates						
Rated Input Capacity	0.50	0.50	0.50	1.00	0.50	MMBtu/hr, per manufacturer
Fuel HHV	1,020	1,020	1,020	1,020	1,020	Btu/scf, estimated
Fuel Use Rate	490.2	490.2	490.2	980.4	490.2	scfh @ 1020 Btu/scf (HHV)
Fuel Use Rate	4.3	4.3	4.3	8.6	4.3	MMscf/yr @ 1020 Btu/scf (HHV)
Emission Factor (EF)						
NO_x	100	100	100	100	100	lb/MMscf, AP-42 Tbl 1.4-1 (07/98)
CO	84	84	84	84	84	lb/MMscf, AP-42 Tbl 1.4-1 (07/98)
VOC	5.5	5.5	5.5	5.5	5.5	lb/MMscf, AP-42 Tbl 1.4-2 (07/98)
SO_2	0.6	0.6	0.6	0.6	0.6	lb/MMscf, AP-42 Tbl 1.4-2 (07/98)
PM/PM_{10}	7.6	7.6	7.6	7.6	7.6	lb/MMscf, AP-42 Tbl 1.4-2 (07/98)
Formaldehyde	0.075	0.075	0.075	0.075	0.075	lb/MMscf, AP-42 Tbl 1.4-3 (07/98)
Hexane	1.8	1.8	1.8	1.8	1.8	lb/MMscf, AP-42 Tbl 1.4-3 (07/98)
Benzene	0.0021	0.0021	0.0021	0.0021	0.0021	lb/MMscf, AP-42 Tbl 1.4-3 (07/98)
Hourly Emission Rate in pounds per hour						
NO_x	0.05	0.05	0.05	0.10	0.05	lb/hr, calc'd from EF data
CO	0.04	0.04	0.04	0.08	0.04	lb/hr, calc'd from EF data
VOC	0.003	0.003	0.003	0.01	0.003	lb/hr, calc'd from EF data
SO_2	0.0003	0.0003	0.0003	0.001	0.0003	lb/hr, calc'd from EF data
PM/PM_{10}	0.004	0.004	0.004	0.01	0.004	lb/hr, calc'd from EF data
Formaldehyde	0.00004	0.00004	0.00004	0.0001	0.00004	lb/hr, calc'd from EF data
Hexane	0.001	0.001	0.001	0.002	0.001	lb/hr, calc'd from EF data
Benzene	0.000001	0.000001	0.000001	0.000002	0.000001	lb/hr, calc'd from EF data
Annual Potential To Emit (PTE) in tons per year						
NO_x	0.21	0.21	0.21	0.43	0.21	tpy, calc'd from lb/hr data
CO	0.18	0.18	0.18	0.36	0.18	tpy, calc'd from lb/hr data
VOC	0.01	0.01	0.01	0.02	0.01	tpy, calc'd from lb/hr data
SO_2	0.001	0.001	0.001	0.003	0.001	tpy, calc'd from lb/hr data
PM/PM_{10}	0.016	0.02	0.016	0.03	0.016	tpy, calc'd from lb/hr data
Formaldehyde	0.0002	0.0002	0.0002	0.0003	0.0002	tpy, calc'd from lb/hr data
Hexane	0.004	0.004	0.004	0.01	0.004	tpy, calc'd from lb/hr data
Benzene	0.000005	0.000005	0.000005	0.00001	0.000005	tpy, calc'd from lb/hr data

XTO Energy, Inc.
Jicarilla Compressor Station
Application for Synthetic Minor Limit
Calculation of Greenhouse Gas Potential to Emit for Combustion Sources

Combustion-Related Green House Gas Emissions

Combustion Source EPN	HP	Btu/hp-hr	MMBtu/hr	Annual Operating Hours	Fuel Usage MMBtu/Term	CO_2e[a] metric T/yr	CO_2e[a] short T/yr	GHG Mass[a] short T/yr
H1-H5	---	---	3.00	8,760	26,280.00	1,394.73	1,537.41	1,535.94
FLARE-1	---	---	0.84	8,760	7,378.05	391.57	431.63	431.21
E1	927	7,676	7.12	8,760	62,346.16	3,308.84	3,647.33	3,643.83
SITE TOTAL			**10.96**	**---**	**96,004.21**	**5,095.14**	**5,616.37**	**5,610.98**

[a]Sample calculations:

Greenhouse Gas (GHG) Emission Factors from Tables C-1 and C-2 of 40 CFR 98, Subpart C, are as follows:

Carbon Dioxide Emission Factor (CO_2EF) =	53.02 kg/MMBtu
Methane Emission Factor (CH_4EF) =	0.001 kg/MMBtu
Nitrous Oxide Emission Factor	0.0001 kg/MMBtu

An example calculation for carbon dioxide equivalent CO_2e in metric T/yr for EPN E1 follows:
CO_2e (metric T/yr) = (0.001 metric T/kg)*(Fuel usage, MMBtu/yr))*[(CO_2EF + 21*CH_4EF + 310*N_2OEF), kg/MMBtu]
CO2e (metric T/yr) = (0.001 metric T/kg) * (62,346 MMBtu/yr) * [(53.02 kg/MMBtu) + (21*0.001 kg/MMBtu) + (310*0.0001 kg/MMBtu)] = 3308.84 metric T/yr

An example calculation for CO_2e in short T/yr for EPN E1 follows:
CO_2e (short T/yr) = (0.001 metric T/kg) * (Fuel usage, MMBtu/yr)) * [(CO_2EF + 21*CH_4EF + 310*N_2OEF), kg/MMBtu] * (2,204.6 lb/metric T) / (2,000 lb/short T)
CO2e (short T/yr) = (0.001 metric T/kg) * (62,346 MMBtu/yr) * [(53.02 kg/MMBtu) + (21*0.001 kg/MMBtu) + (310*0.0001 kg/MMBtu)] * (2,204.6 lb/metric T) / (2,000 lb/short T) = 3647.33 short T/yr

An example calculation for GHG Mass in short T/yr for EPN E1 follows:
GHG Mass (short T/yr) = (0.001 metric T/kg) * (Fuel usage, MMBtu/yr) * (CO_2EF+CH_4EF+N_2OEF) * (2,204.6 lb/metric T) / (2,000 lb/short T)
GHG Mass (short T/yr) = (0.001 metric T/kg) * (62,346 MMBtu/yr) * [(53.02 kg/MMBtu) + (0.001 kg/MMBtu) + (0.0001 kg/MMBtu)] * (2,204.6 lb/metric T) / (2,000 lb/short T) = 3643.83 short T/yr

XTO Energy, Inc.
Jicarilla Compressor Station
Application for Synthetic Minor Limit
Calculation of Startup, Shutdown and Maintenance (SSM) Potential to Emit

2017 Update

Representative gas sample obtained 7/6/2011

Density of Air at 60 F & 14.7 psia =	0.0764	lb/scf
Specific Gravity of Gas	0.7191	
Density of Gas	0.0549	lb/scf

Annual No. of Blowdowns = 365 (est. one per day)

Annual vent rate per Operations

Unit No	Annual Venting (scf)	Annual Gas Vented (lbs/yr)	Annual Gas Vented (tons/yr)
E1	325000	17848.886	8.92

Speciation by Pollutant

Emission Source	Speciated Pollutant	COMP1 Wt %	SSM Emissions COMP1-BD (tpy)
Startup, Shutdown, Maintenance	Nitrogen	0.6453%	0.058
	Carbon Dioxide	1.4729%	0.131
	Methane	62.1467%	5.546
	Ethane	14.4430%	1.289
	Propane	9.8410%	0.878
	I-Butane	2.2597%	0.202
	N-Butane	3.3839%	0.302
	I-Pentane	1.4053%	0.125
	N-Pentane	1.0582%	0.094
	Hexanes Plus	3.3441%	0.298
	Total	1.0	-
Annual VOC Emissions (tons)			**1.900**
Hourly VOC Emissions (lbs)			**316.702**
Annual Benzene Emissions (lbs)			**0.0061**
Hourly Benzene Emissions (tons)			**1.025**
Annual Carbon Dioxide Emissions (tons)			**0.131**
Hourly Carbon Dioxide Emissions (lbs)			**21.908**
Annual Methane Emissions (tons)			**5.546**
Hourly Methane Emissions (lbs)			**924.374**

1.Blowdown frequency is 130 blowdowns per year and 1 hour per blowdown and est. 2,500 scf/blowdown.

POTENTIAL PIGGING EMISSIONS - JICARILLA COMPRESSOR STATION

Company: XTO Energy, Inc.
Facility Name: Jicarilla Compressor Station
Facility Location: Rio Blanco County, New Mexico
Source: Pipeline Pigging - 6", 10", 12" Pipelines

Operating Hours: 8760

GAS COMPONENT (Wet Gas)	MOLECULAR WEIGHT (lb/lb-mole)	Weight Fraction	COMPONENT FLOW RATE (Mscf)	COMPONENT FLOW RATE (lb/yr)	COMPONENT FLOW RATE (tons/yr)
Methane	16.043	0.6215	70.289	2971.468	1.486
Ethane	30.07	0.1444	16.335	1294.368	0.647
Propane	44.097	0.0984	11.130	1293.356	0.647
i-Butane	58.123	0.0226	2.556	391.462	0.196
n-Butane	58.123	0.0338	3.827	586.179	0.293
i-Pentane	72.15	0.0141	1.590	302.217	0.151
n-Pentane	72.15	0.0113	1.277	242.741	0.121
Hexanes	86.177	0.0125	1.408	319.752	0.160
Heptanes	100.204	0.0065	0.736	194.260	0.097
Octanes	114.231	0.0048	0.548	165.078	0.083
Nonanes	128.258	0.0000	0.000	0.000	0.000
Decanes +	142.285	0.0000	0.000	0.000	0.000
Benzene	78.12	0.0007	0.078	16.111	0.008
Toluene	92.13	0.0013	0.152	36.847	0.018
Ethylbenzene	106.16	0.0001	0.008	2.310	0.001
Xylenes	106.16	0.0006	0.067	18.762	0.009
n-Hexane	86.177	0.0042	0.472	107.226	0.054
Helium	4.003	0.0000	0.000	0.000	0.000
Nitrogen	28.013	0.0065	0.730	53.882	0.027
Carbon Dioxide	44.01	0.0147	1.666	193.200	0.097
Oxygen	32	0.0000	0.000	0.000	0.000
Hydrogen Sulfide	34.08	0.0000	0.000	0.000	0.000
VOC SUBTOTAL		**0.211**	**23.850**	**3676.300**	**1.838**
HAP SUBTOTAL		**0.007**	**0.778**	**181.255**	**0.091**
TOTAL		**0.998**	**112.869**	**8189.218**	**4.095**

PIG SPECIFICATIONS	Receiver #1 - 12"	Receiver #2 - 10"	Receiver #3 - 6"	units
Pig Section Circumference :	3.142	2.618	1.571	feet
Pig Section Diameter :	1.000	0.833	0.500	feet
Pig Section Length :	6.0	6.000	6.000	feet
Pig Section Receiver Volume :	4.712	3.272	1.178	actual ft^3
Average Pipeline Pressure :	5040	5040	5040	lb/ft^2
me corrected for Std Conditions(14.7 psia) :	1615.676	1121.997	403.919	scf/event
Number of activities :	36	36	36	per year
Number of receivers :	1	1	1	
Total events :	36	36	36	per year
Total Annual Release Volume (per section) :	58164.344	40391.906	14541.086	scf/yr
Total Volume :	113.097	Mscf/year		

Note 1: Emissions (tpy) = Volume released (Mscf/yr) x Weight Fraction x 1000 (scf/Mscf) x 1/379.45 (lb-mol/scf) x MW (lb/mol) / 2000 (lb/ton)

Note 2: Wet Gas composition used for calculations

From:	Allison, Craig
To:	Braganza, Bonnie
Subject:	RE: XTO draft permit 5-5-17.docx
Date:	Tuesday, May 09, 2017 10:48:50 AM
Attachments:	XTO Jicarilla CS-Flare Combustion calc May-2017.pdf XTO Jicarilla Draft Permit edit information-5-9-2017.pdf

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Bonnie:

My comments are as follows:

First, none of the combustion emissions (engine, heaters, or flare) are controlled, so the controlled versus uncontrolled emissions are irrelevant for these sources.
Secondly, the reason that the CO and NOx from the combustion sources are greater for the controlled grouping versus the uncontrolled grouping is that the flare combustion emissions are counted in the "controlled" emissions and NOT in the uncontrolled emissions because the flare is not used in the "uncontrolled" scenario. This is the reason that it is only represented in the controlled emissions scenario and the flare is a combustion device that produces NOx and CO and is not present in the uncontrolled scenario for the site. This appears as higher emissions for controlled, but in reality, it is because the flare is present in the controlled and not in the uncontrolled emissions set.

Attached is the spreadsheet that was sent to you showing combustion (NOx and CO) emissions from the flare.
Also, your statement of basis for the reason for the increase in VOC emissions due to a change in emissions calculation methodology sounded correct.

Attached are a few corrected pages from the 5/5/2017 draft permit.

1. Corrected the Reg Applicabilty #7 =- should be 40 CFR 60 not 63, since this is OOOOa NSPS not NESHAP.
2. Corrected a few minor numbers in the Special Conditions Table 2. These corrections should have been done with the last draft update, and they are only typo corrections to make the permit emissions table match the actual calculations. As you can see, they are minor. Also, the Five auxiliary heaters should be 3.0 heat rating instead of 2.5 – this is an admin correction and should have been done last time.

Hopefully, this clarifies the controlled versus uncontrolled emissions number. Let me know if you need any additional information or if we need to discuss anything further. Thanks.

Regards,

Craig Allison
EH&S Advisor
Environmental Health & Safety
Office: 817-885-2672 **|** Cell: 817-201-2379 **|** Fax: 817-885-1847
XTO ENERGY INC., an ExxonMobil subsidiary
810 Houston Street, Fort Worth, Texas 76102

From: Braganza, Bonnie [mailto:Braganza.Bonnie@epa.gov]
Sent: Monday, May 08, 2017 8:14 AM
To: Allison, Craig
Subject: XTO draft permit 5-5-17.docx

Craig: Just another quick check on the comments you sent and the revision. If you have any other comments by COB Tuesday, I will review them. Also please check the emission calculation spreadsheet fot the combustion emissions. Controlled emissions should be less than uncontrolled emissions. I left a voice mail message.

Thank you Craig

Bonnie Braganza P.E.
Air Permits
US Environmental Protection Agency
Region 6
1445 Ross Ave, Dallas TX 75202
214-665-7340

In the end it all comes to Choices to turn stumbling blocks into stepping stones….Scott Peterson