

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMLC069705

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 27. If Unit or CA/Agreement, Name and/or No.
891000326X8. Well Name and No.
BIG EDDY UNIT D12 323H9. API Well No.
30-015-43648-00-X110. Field and Pool or Exploratory Area
WILLIAMS SINK

11. County or Parish, State

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other2. Name of Operator
BOPCO LPContact: KELLY KARDOS
E-Mail: kelly_kardos@xtoenergy.com3a. Address
6401 HOLIDAY HILL RD BLDG 5 SUITE 200
MIDLAND, TX 797073b. Phone No. (include area code)
Ph: 432-620-4374

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 34 T19S R31E NWNE 660FNL 1420FEL

Carlsbad Field Office
OCD Artesia
DOUGLAS COUNTY, NM

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION			
☒ Notice of Intent	☐ Acidize	☐ Deepen	☐ Production (Start/Resume)	☐ Water Shut-Off
☐ Subsequent Report	☐ Alter Casing	☐ Hydraulic Fracturing	☐ Reclamation	☐ Well Integrity
☐ Final Abandonment Notice	☐ Casing Repair	☐ New Construction	☐ Recomplete	☒ Other
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	Change to Original APD
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recomple horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recomple in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

BOPCO, L.P. requests permission to make the following changes to the approved APD:

1. Change BHL from 350?FNL & 2290?FEL to 350?FNL & 2440?FEL
2. Drilling Program
3. Directional Program

Attachments:

1. C-102 & Supplement
2. Drilling Program
3. Directional Survey
4. BOP/CM/FH

RECEIVED

OCT 16 2018

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

DISTRICT II-ARTESIA O.C.D.

14. I hereby certify that the foregoing is true and correct.	
Electronic Submission #436417 verified by the BLM Well Information System For BOPCO LP, sent to the Carlsbad Committed to AFMSS for processing by PRISCILLA PEREZ on 09/27/2018 (18PP2749SE)	
Name (Printed/Typed) KELLY KARDOS	Title REGULATORY COORDINATOR
Signature (Electronic Submission)	Date 09/21/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS	Title PETROLEUM ENGINEER	Date 10/12/2018
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.		Office Carlsbad

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED ** BLM REVISED **

RWP 10-24-18

District I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone: (575) 748-1283 Fax: (575) 748-9720
District III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☒ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-43648	² Pool Code 97650	³ Pool Name WC WILLIAMS SINK (BONE SPRING)
⁴ Property Code 40250	⁵ Property Name BIG EDDY UNIT DI 2	⁶ Well Number 323H
⁷ OGRID No. 260737	⁸ Operator Name BOPCO, L.P.	⁹ Elevation 3,469'

¹⁰ Surface Location

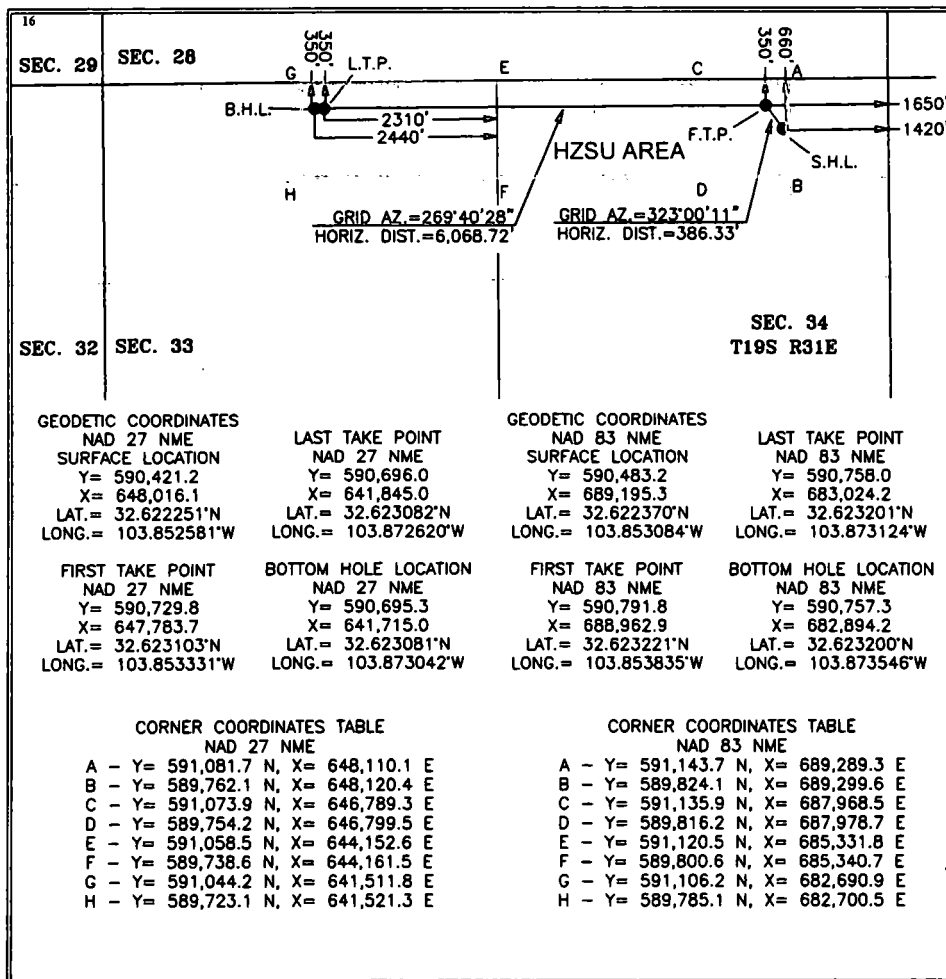
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	34	19 S	31 E		660	NORTH	1,420	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	33	19 S	31 E		350	NORTH	2,440	EAST	EDDY

¹² Dedicated Acres 200	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.
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No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



17 OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Kelly Kardos 9/19/18

Signature Date

Kelly Kardos

Printed Name

kelly_kardos@xtoenergy.com

E-mail Address

18 SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

06-22-2018

Date of Survey

Signature and Seal of
Professional Surveyor:

MARK DILLON HARP 23786

Certificate Number



AI

2018040910

RP 10-24-18

Intent ☒ As Drilled ☐

API #
30-015-43648

Operator Name:
BOPCO, L.P.

Property Name:
Big Eddy Unit DI 2

Well Number
323H

Kick Off Point (KOP)

UL B	Section 34	Township 19S	Range 31E	Lot	Feet 660	From N/S North	Feet 1420	From E/W East	County Eddy
Latitude 32.622370					Longitude -103.853084			NAD NAD83	

First Take Point (FTP)

UL B	Section 34	Township 19S	Range 31E	Lot	Feet 550	From N/S North	Feet 1650	From E/W East	County Eddy
Latitude 32.623221					Longitude -103.853835			NAD NAD83	

Last Take Point (LTP)

UL B	Section 33	Township 19S	Range 31E	Lot	Feet 350	From N/S North	Feet 2310	From E/W East	County Eddy
Latitude 32.623201					Longitude -103.873124			NAD NAD83	

Is this well the defining well for the Horizontal Spacing Unit?

☒

Is this well an infill well?

☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #

Operator Name:

Property Name:

Well Number

KZ 06/29/2018

DRILLING PLAN: BLM COMPLIANCE
(Supplement to BLM 3160-3)

XTO Energy Inc.
Big Eddy Unit DI 2B 323H
Projected TD: 14553' MD / 8457' TVD
SHL: 660' FNL & 1420' FEL , Section 34, T19S, R31E
BHL: 350' FNL & 2440' FEL , Section 33, T19S, R31E
Eddy County, NM

1. Geologic Name of Surface Formation

A. Quaternary

2. Estimated Tops of Geological Markers & Depths of Anticipated Fresh Water, Oil or Gas:

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	937'	Water
Top of Salt	1210'	Water
Base of Salt	2144'	Water
Capitan	2733'	Water
Delaware	4271'	Water
Bone Spring	7002'	Water/Oil/Gas
1st Bone Spring Ss	8303'	Water/Oil/Gas
Target/Land Curve	8457'	Water/Oil/Gas

*** Hydrocarbons @ Brushy Canyon

*** Groundwater depth 40' (per NM State Engineers Office).

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 16 inch casing @ 1180' (30' above the salt) and circulating cement back to surface. The salt will be isolated by setting 11-3/4 inch casing at 2160' and circulating cement to surface. 8-5/8 inch intermediate casing will be set at 4371'. A 7-7/8 inch curve and lateral hole will be drilled to TD, where 5-1/2 inch casing will be set and cemented back up to the 8-5/8 inch casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
20"	0' - 1180' <i>7000</i>	16"	75	STC	J-55	New	3.92	2.59	8.02
14-3/4"	0' - 2160'	11-3/4"	42	STC	H40	New	1.62	1.57	3.38
10-5/8"	0' - 4371'	8-5/8"	32	STC	J-55	New	1.96	2.04	2.66
7-7/8"	0' - 14553'	5-1/2"	20	LTC	P-110	New	1.33	2.86	2.52

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 16" Collapse analyzed using 75% evacuation. Casing to be filled while running.
- 11-3/4" & 8-5/8" Collapse analyzed using 50% evacuation based on regional experience.
- 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Temporary Wellhead

- 16" SOW bottom x 16-3/4" 3M top flange.

Permanent Wellhead – GE RSH Multibowl System

A. Starting Head: 13-5/8" 5M top flange x 11-3/4" SOW bottom

B. Tubing Head: 13-5/8" 5M bottom flange x 7" 10M top flange

- Wellhead will be installed by manufacturer's representatives.
- Manufacturer will monitor welding process to ensure appropriate temperature of seal.
- Operator will test the 8-5/8" casing per BLM Onshore Order 2
- Wellhead manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 16", 75 New J-55, STC casing to be set at +/- 1180'

Lead: 850 sxs Class C + Salt (mixed at 12.8 ppg, 1.88 ft³/sx, 11.45 gal/sx water)

Tail: 190 sxs Class C (mixed at 14.8 ppg, 1.33 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 1000 psi 24 hr = 2000 psi

1st Intermediate Casing: 11-3/4", 42 New H40, STC casing to be set at +/- 2160'

Lead: 850 sxs Class C + Poz + Fluid Loss FL-25 + Retarder R-3 + Salt + Bentonite (mixed at 12.8 ppg, 1.88 ft³/sx, 9.93 gal/sx water)

Tail: 190 sxs Class C + Retarder R-3 (mixed at 14.8 ppg, 1.33 ft³/sx, 6.30 gal/sx water)

Compressives: 12-hr = 1000 psi 24 hr = 2000 psi

2nd Intermediate Casing: 8-5/8", 32 New J-55, STC casing to be set at +/- 4371'

ECP/DV Tool to be set at 2260'

1st Stage

Lead 1: 470 sxs Class C + Glass Beads + IntegraSeal + Bonding Agent BA-90 + Foam Preventer FP-6L + Sodium Metasilicate A-2 + Anti Settling ASA-301 + Retarder R-21 + Extender LW-5E (mixed at 9.5 ppg, 3.8 ft³/sx, 18.7 gal/sx water)

Lead 2: 250 sxs Class C + Poz + IntegraSeal Cello + IntegraSeal Kol + Salt + Sodium Metasilicate A-2 + Retarder R-21 + Fluid Loss FL-52 + Bentonite (mixed at 11.5 ppg, 2.68 ft³/sx, 15.46 gal/sx water)

Tail: 150 sxs Class C + Foam Preventer FP-6L + Retarder R-21 + Fluid Loss FL-52 (mixed at 14.8 ppg, 1.33 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 1000 psi 24 hr = 2000 psi

2nd Stage

Lead: 390 sxs Class C + Poz + IntegraSeal Cello + IntegraSeal Kol + Salt + Retarder R-3 + Sodium Metasilicate A-2 + Fluid Loss FL-52 + Bentonite (mixed at 12.8 ppg, 1.88 ft³/sx, 9.61 gal/sx water)

Tail: 150 sxs Class C + Fluid Loss FL-52 (mixed at 14.8 ppg, 1.33 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 1000 psi 24 hr = 2000 psi

Production Casing: 5-1/2", 20 New P-110, LTC casing to be set at +/- 14553'

Lead 1: 10 sxs Class C + Glass Beads + IntegraSeal Kol + Bonding Agent BA-90 + Foam Preventer FP-6L + Sodium Metasilicate A-2 + Anti Settling ASA-301 + Retarder R-21 + Bentonite (mixed at 9.5 ppg, 3.8 ft³/sx, 18.7 gal/sx water)

Lead 2: 280 sxs Class C + Poz + IntegraSeal Cello + IntegraSeal Kol + Foam Preventer FP-6L + Salt + Sodium Metasilicate A-2 + Bentonite (mixed at 11.5 ppg, 2.72 ft³/sx, 15.9 gal/sx water)

Tail: 1010 sxs Class C + IntegraSeal Kol + Foam Preventer FP-6L + Salt + Fluid Loss FL-52 + Dispersant CS-32 + Retarder R-21 + Bonding Agent BA-90 (mixed at 13.2 ppg, 1.61 ft³/sx, 9.36 gal/sx water)

Compressives: 12-hr = 9 psi 24 hr = 1800 psi

5. Pressure Control Equipment

The blow out preventer equipment (BOP) on surface casing/temp. wellhead will consist of a 20" minimum 2M Hydril. MASP should not exceed 670 psi.

Once the permanent WH is installed on the 11-3/4" casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 3M 2-Ram BOP. MASP should not exceed 2009 psi.

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 50% of the working pressure. When nipping up on the 13-5/8" 3M bradenhead and flange, the BOP test will be limited to 3000 psi. Since a multibowl system will be used, subsequent BOP pressure tests will be performed as necessary based on required testing schedule (i.e., at least every 30 days). All BOP tests will include a low pressure test as per BLM regulations. The 3M BOP diagrams are attached. Blind rams will be functioned tested each trip, pipe rams will be functioned tested each day.

A variance is requested to allow use of a flex hose as the choke line from the BOP to the Choke Manifold. If this hose is used, a copy of the manufacturer's certification and pressure test chart will be kept on the rig. Attached is an example of a certification and pressure test chart. The manufacturer does not require anchors.

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 1180'	20"	FW/Native	8.3-9.5	35-50	NC
1180' - 2160'	14-3/4"	Brine	9.5-10.2	30-35	NC
2160' to 4371'	10-5/8"	FW/Cut Brine	8.3-9.5	30-32	NC
4371' to 14553'	7-7/8"	FW / Cut Brine / Polymer	8.2-9.2	29-32	NC - 20

The necessary mud products for weight addition and fluid loss control will be on location at all times.

Spud with fresh water/native mud. Drill out from under 16" surface casing with brine solution. A 9.5ppg-10.2ppg brine mud will be used while drilling through the salt formation. Use fibrous materials as needed to control seepage and lost circulation. Pump viscous sweeps as needed for hole cleaning. Pump speed will be recorded on a daily drilling report after mudding up. A Pason or Totco will be used to detect changes in loss or gain of mud volume. A mud test will be performed every 24 hours to determine: density, viscosity, strength, filtration and pH as necessary. Use available solids controls equipment to help keep mud weight down after mud up. Rig up solids control equipment to operate as a closed loop system.

Fill Line

Flowline

3000# (3M)
BOP

SRR & A

Annular Preventer

Pipe Rams

Blind Rams

2" Minimum Kill Line

Kill Line

1 Kill Line Valve
(Minimum)

Drilling Spool

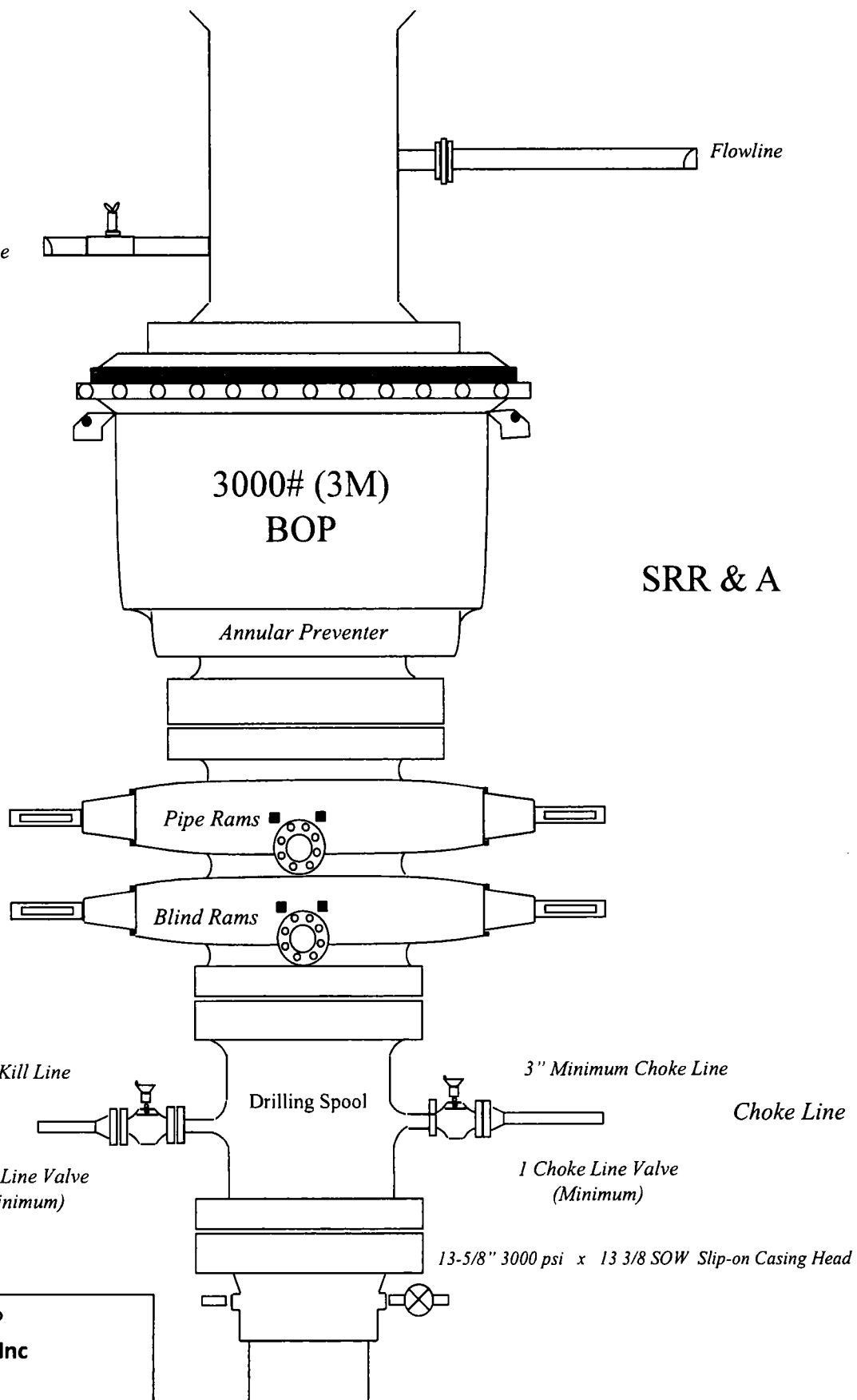
3" Minimum Choke Line

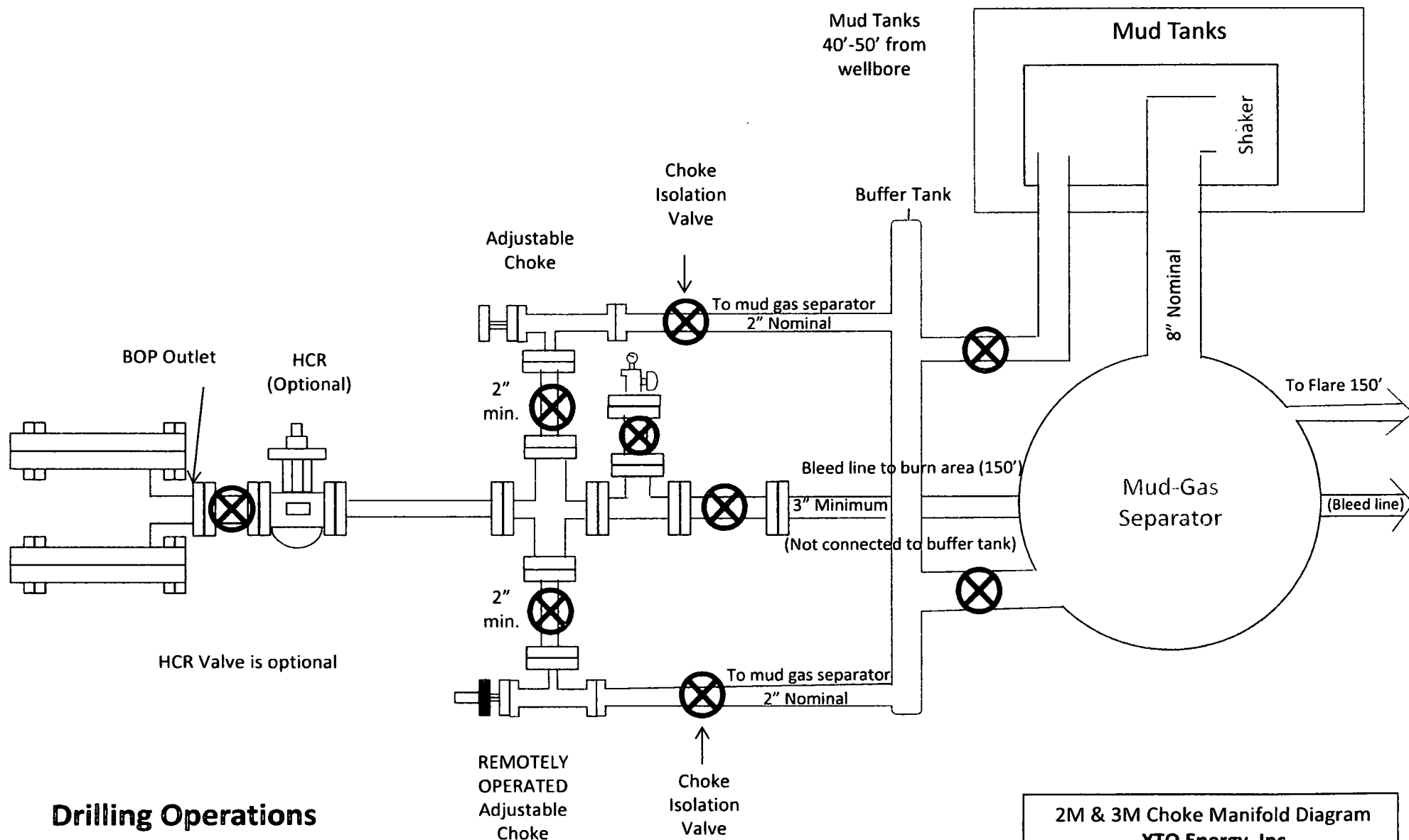
Choke Line

1 Choke Line Valve
(Minimum)

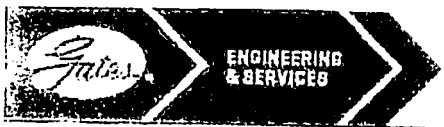
13-5/8" 3000 psi x 13 3/8 SOW Slip-on Casing Head

3000# BOP
XTO Energy, Inc





2M & 3M Choke Manifold Diagram
XTO Energy, Inc



GATES E & S NORTH AMERICA, INC
DU-TEX
134 44TH STREET
CORPUS CHRISTI, TEXAS 78405

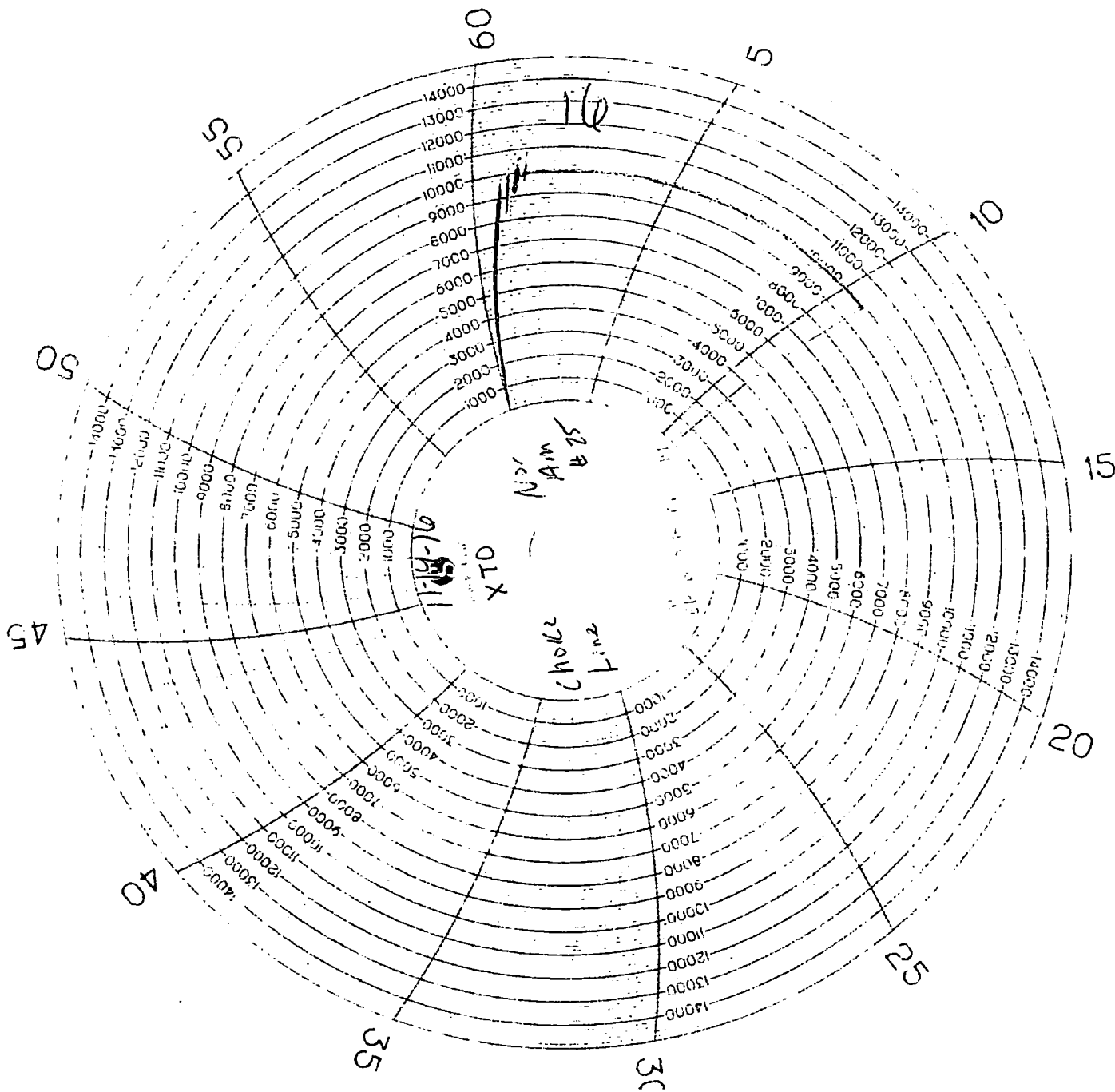
PHONE: 361-887-9807
FAX: 361-887-0812
EMAIL: crpe@s@gates.com
WEB: www.gates.com

GRADE D PRESSURE TEST CERTIFICATE

Customer :	AUSTIN DISTRIBUTING	Test Date:	6/8/2014
Customer Ref. :	PENDING	Hose Serial No.:	D-060814-1
Invoice No. :	201709	Created By:	NORMA
Product Description:	FDJ-042-0R41/16.5KFLGE/E LE		
End Fitting 1 :	1 1/16 in.5K FLG	End Fitting 2 :	1 1/16 in.5K FLG
Gates Part No. :	4774-6001	Assembly Code :	L33090011513D-060814-1
Working Pressure :	5,000 PSI	Test Pressure :	7,500 PSI

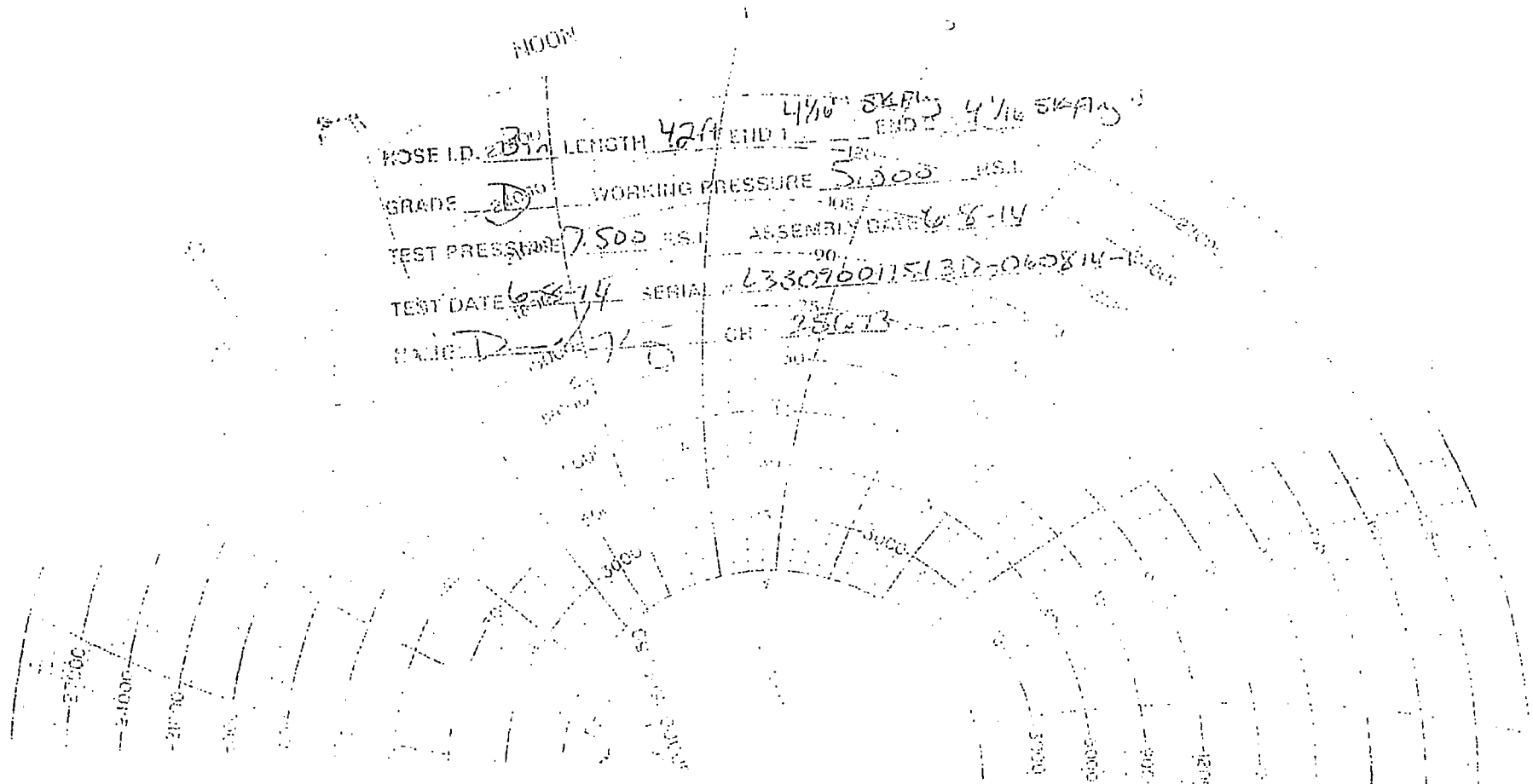
Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 7,500 psi in accordance with this product number. Hose burst pressure 9.6.7.2 exceeds the minimum of 2.5 times the working pressure per Table 9.

Quality :	QUALITY	Technical Supervisor :	PRODUCTION
Date :	6/8/2014	Date :	6/8/2014
Signature :		Signature :	



NOON

HOSE I.D. 3.00 LENGTH 42 ft END 1 4 1/8" 82FL END 2 4 1/8" 82FL
GRADE D WORKING PRESSURE 5,000 P.S.I.
TEST PRESSURE 7,500 P.S.I. ASSEMBLY DATE 6-8-14
TEST DATE 6-8-14 SERIAL # 633096011513D-060814-1000
NAME D-745 CH 25613



**5D Plan Report****XTO Energy**

Field Name: *Eddy Co., NM (NAD 27 NME)*
Site Name: *Big Eddy Unit DI 2 #323H_324H Pad*
Well Name: *Big Eddy Unit DI 2 #323H*
Plan: *P1:V1*

10 September 2018





Big Eddy Unit DI 2 #323H

Field Name: Eddy Co., NM (NAD 27 NME)	Map Units: US ft		Company Name: XTO Energy	
	Vertical Reference Datum (VRD): Mean Sea Level			
	Projected Coordinate System: NAD27 / New Mexico East			
	Comment:			
Site: Big Eddy Unit DI 2 #323H_324H Pad	Units: US ft	North Reference: True	Convergence Angle: 0.26	
	Position:	Northing: 590421.20 US ft	Latitude: 32° 37' 20.10"	
		Easting: 648016.10 US ft	Longitude: -103° 51' 9.29"	
	Elevation above MSL: 3469.00 US ft		Comment:	
Slot: Big Eddy Unit DI 2 #323H	Position (Relative to Site Centre)			
	+N/-S: 0.00 US ft	Northing: 590421.20 US ft	Latitude: 32° 37' 20.10"	
	+E/-W: 0.00 US ft	Easting: 648016.10 US ft	Longitude: -103° 51' 9.29"	
	Slot TVD Reference: Ground Elevation			
	Elevation above MSL: 3469.00 US ft			
	Comment:			
Well: Big Eddy Unit DI 2 #323H	Type: Main well	UWI:	Plan: P1:V1	
	File Number:	Comment:		
	Closure Distance: 6307.06 US ft		Closure Azimuth: 272.75°	
	Vertical Section: Position of Origin (Relative to Slot centre)			
	+N/-S: 0.00 US ft	+E/-W: 0.00 US ft	Az: 269.93°	
	Magnetic Parameters:			
	Model: bggm2018	Field Strength: 48067.1 nT	Declination: 7.02°	Dip: 60.34° Date: 15/Oct/2018

Drill floor: Plan: P1:V1

Rig Height (Drill Floor): 18.00 US ft **Elevation above MSL:** 3487.00 US ft **Inclination:** 0.00° **Azimuth:** 0.00°

Target set: Big Eddy Unit DI 2 #323H Comment:

Target Name:	TVD (US ft)	TVD (MSL) (US ft)	N. Offset (US ft)	E. Offset (US ft)	Northing (US ft)	Easting (US ft)	C. Pt. Distance (US ft)	Comment
FTP	8453.00	4966.00	309.65	-231.00	590729.80	647783.70	122.83	
LTP	8344.38	4857.38	302.71	-6169.79	590696.00	641845.00	0.05	
PBHL 323H	8342.00	4855.00	302.60	-6299.80	590695.30	641715.00	0.00	

Wellpath created using minimum curvature.

ED Plan Report

Tie Point:

MD: 0.00USFt **Inclination:** **Azimuth:** 0.00° **TVD:** **North Offset:** **East Offset:**
 0.00° 0.00USFt 0.00USFt 0.00USFt

Salient Points: (Relative to Slot centre)(TVD relative to Drill Floor)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	B.Rate (%/100US ft)	T.Rate (%/100US ft)	T.Face (°)	DLS (%/100US ft)	Comment
0.00	0.00	0.00	0.00	-3487.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	
7799.60	0.00	0.00	7799.60	4312.60	-0.00	0.00	0.00	0.00	0.00	0.00	0.00	KOP
8249.60	45.00	318.30	8204.74	4717.74	111.48	125.30	-111.64	10.00	0.00	318.30	10.00	Build/Turn
8877.84	91.05	269.93	8445.76	4958.76	625.68	309.60	-626.06	7.33	-7.70	302.85	10.00	LP
14552.52	91.05	269.93	8342.00	4855.00	6299.42	302.60	-6299.80	0.00	0.00	0.00	0.00	PBHL 323H

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)

MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (%/100US ft)	Comment
0.00	0.00	0.00	0.00	-3487.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
100.00	0.00	0.00	100.00	-3387.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
200.00	0.00	0.00	200.00	-3287.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
300.00	0.00	0.00	300.00	-3187.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
400.00	0.00	0.00	400.00	-3087.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
500.00	0.00	0.00	500.00	-2987.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
600.00	0.00	0.00	600.00	-2887.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
700.00	0.00	0.00	700.00	-2787.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
800.00	0.00	0.00	800.00	-2687.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
900.00	0.00	0.00	900.00	-2587.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1000.00	0.00	0.00	1000.00	-2487.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1100.00	0.00	0.00	1100.00	-2387.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1200.00	0.00	0.00	1200.00	-2287.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1300.00	0.00	0.00	1300.00	-2187.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1400.00	0.00	0.00	1400.00	-2087.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1500.00	0.00	0.00	1500.00	-1987.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1600.00	0.00	0.00	1600.00	-1887.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1700.00	0.00	0.00	1700.00	-1787.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1800.00	0.00	0.00	1800.00	-1687.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
1900.00	0.00	0.00	1900.00	-1587.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2000.00	0.00	0.00	2000.00	-1487.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2100.00	0.00	0.00	2100.00	-1387.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2200.00	0.00	0.00	2200.00	-1287.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2300.00	0.00	0.00	2300.00	-1187.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2400.00	0.00	0.00	2400.00	-1087.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2500.00	0.00	0.00	2500.00	-987.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2600.00	0.00	0.00	2600.00	-887.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2700.00	0.00	0.00	2700.00	-787.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2800.00	0.00	0.00	2800.00	-687.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
2900.00	0.00	0.00	2900.00	-587.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3000.00	0.00	0.00	3000.00	-487.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3100.00	0.00	0.00	3100.00	-387.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3200.00	0.00	0.00	3200.00	-287.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3300.00	0.00	0.00	3300.00	-187.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3400.00	0.00	0.00	3400.00	-87.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3500.00	0.00	0.00	3500.00	13.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3600.00	0.00	0.00	3600.00	113.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3700.00	0.00	0.00	3700.00	213.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3800.00	0.00	0.00	3800.00	313.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
3900.00	0.00	0.00	3900.00	413.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4000.00	0.00	0.00	4000.00	513.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4100.00	0.00	0.00	4100.00	613.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4200.00	0.00	0.00	4200.00	713.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4300.00	0.00	0.00	4300.00	813.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4400.00	0.00	0.00	4400.00	913.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4500.00	0.00	0.00	4500.00	1013.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	

SD Plan Report

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
4600.00	0.00	0.00	4600.00	1113.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4700.00	0.00	0.00	4700.00	1213.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4800.00	0.00	0.00	4800.00	1313.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
4900.00	0.00	0.00	4900.00	1413.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5000.00	0.00	0.00	5000.00	1513.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5100.00	0.00	0.00	5100.00	1613.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5200.00	0.00	0.00	5200.00	1713.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5300.00	0.00	0.00	5300.00	1813.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5400.00	0.00	0.00	5400.00	1913.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5500.00	0.00	0.00	5500.00	2013.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5600.00	0.00	0.00	5600.00	2113.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5700.00	0.00	0.00	5700.00	2213.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5800.00	0.00	0.00	5800.00	2313.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
5900.00	0.00	0.00	5900.00	2413.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6000.00	0.00	0.00	6000.00	2513.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6100.00	0.00	0.00	6100.00	2613.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6200.00	0.00	0.00	6200.00	2713.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6300.00	0.00	0.00	6300.00	2813.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6400.00	0.00	0.00	6400.00	2913.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6500.00	0.00	0.00	6500.00	3013.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6600.00	0.00	0.00	6600.00	3113.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6700.00	0.00	0.00	6700.00	3213.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6800.00	0.00	0.00	6800.00	3313.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
6900.00	0.00	0.00	6900.00	3413.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7000.00	0.00	0.00	7000.00	3513.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7100.00	0.00	0.00	7100.00	3613.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7200.00	0.00	0.00	7200.00	3713.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7300.00	0.00	0.00	7300.00	3813.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7400.00	0.00	0.00	7400.00	3913.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7500.00	0.00	0.00	7500.00	4013.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7600.00	0.00	0.00	7600.00	4113.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7700.00	0.00	0.00	7700.00	4213.00	-0.00	0.00	0.00	590421.20	648016.10	0.00	
7799.60	0.00	0.00	7799.60	4312.60	-0.00	0.00	0.00	590421.20	648016.10	0.00	KOP
7800.00	0.04	318.30	7800.00	4313.00	0.00	0.00	-0.00	590421.20	648016.10	10.00	
7900.00	10.04	318.30	7899.49	4412.49	5.83	6.55	-5.84	590427.72	648010.23	10.00	
8000.00	20.04	318.30	7995.94	4508.94	23.05	25.90	-23.08	590447.00	647992.91	10.00	
8100.00	30.04	318.30	8086.43	4599.43	51.13	57.46	-51.20	590478.43	647964.64	10.00	
8200.00	40.04	318.30	8168.20	4681.20	89.22	100.28	-89.34	590521.07	647926.30	10.00	
8249.60	45.00	318.30	8204.74	4717.74	111.48	125.30	-111.64	590545.99	647903.90	10.00	Build/Turn
8300.00	47.88	312.59	8239.48	4752.48	137.08	151.27	-137.27	590571.85	647878.15	10.00	
8400.00	54.31	302.73	8302.35	4815.35	198.65	198.45	-198.89	590618.74	647816.31	10.00	
8500.00	61.43	294.42	8355.56	4868.56	272.93	238.66	-273.23	590658.62	647741.80	10.00	
8600.00	68.98	287.19	8397.52	4910.52	357.68	270.68	-358.01	590690.26	647656.87	10.00	
8700.00	76.81	280.67	8426.94	4939.94	450.32	293.55	-450.67	590712.70	647564.10	10.00	
8800.00	84.79	274.56	8442.93	4955.93	548.02	306.56	-548.40	590725.27	647466.32	10.00	
8877.84	91.05	269.93	8445.76	4958.76	625.68	309.60	-626.06	590727.96	647388.64	10.00	LP
8900.00	91.05	269.93	8445.35	4958.35	647.84	309.57	-648.22	590727.83	647366.48	0.00	
9000.00	91.05	269.93	8443.53	4956.53	747.83	309.45	-748.21	590727.26	647266.50	0.00	
9100.00	91.05	269.93	8441.70	4954.70	847.81	309.32	-848.19	590726.68	647166.52	0.00	
9200.00	91.05	269.93	8439.87	4952.87	947.79	309.20	-948.17	590726.11	647066.54	0.00	
9300.00	91.05	269.93	8438.04	4951.04	1047.78	309.08	-1048.15	590725.53	646966.56	0.00	
9400.00	91.05	269.93	8436.21	4949.21	1147.76	308.95	-1148.14	590724.96	646866.58	0.00	
9500.00	91.05	269.93	8434.38	4947.38	1247.74	308.83	-1248.12	590724.38	646766.59	0.00	
9600.00	91.05	269.93	8432.56	4945.56	1347.73	308.71	-1348.10	590723.80	646666.61	0.00	
9700.00	91.05	269.93	8430.73	4943.73	1447.71	308.58	-1448.09	590723.23	646566.63	0.00	
9800.00	91.05	269.93	8428.90	4941.90	1547.69	308.46	-1548.07	590722.65	646466.65	0.00	
9900.00	91.05	269.93	8427.07	4940.07	1647.68	308.34	-1648.05	590722.08	646366.67	0.00	
10000.00	91.05	269.93	8425.24	4938.24	1747.66	308.21	-1748.04	590721.50	646266.69	0.00	

LD Plan View

Interpolated Points: (Relative to Slot centre)(TVD relative to Drill Floor)											
MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	VS (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	DLS (°/100US ft)	Comment
10100.00	91.05	269.93	8423.41	4936.41	1847.64	308.09	-1848.02	590720.93	646166.70	0.00	
10200.00	91.05	269.93	8421.58	4934.58	1947.63	307.97	-1948.00	590720.35	646066.72	0.00	
10300.00	91.05	269.93	8419.76	4932.76	2047.61	307.84	-2047.99	590719.78	645966.74	0.00	
10400.00	91.05	269.93	8417.93	4930.93	2147.59	307.72	-2147.97	590719.20	645866.76	0.00	
10500.00	91.05	269.93	8416.10	4929.10	2247.58	307.60	-2247.95	590718.62	645766.78	0.00	
10600.00	91.05	269.93	8414.27	4927.27	2347.56	307.47	-2347.94	590718.05	645666.80	0.00	
10700.00	91.05	269.93	8412.44	4925.44	2447.54	307.35	-2447.92	590717.47	645566.81	0.00	
10800.00	91.05	269.93	8410.61	4923.61	2547.53	307.23	-2547.90	590716.90	645466.83	0.00	
10900.00	91.05	269.93	8408.79	4921.79	2647.51	307.10	-2647.89	590716.32	645366.85	0.00	
11000.00	91.05	269.93	8406.96	4919.96	2747.49	306.98	-2747.87	590715.75	645266.87	0.00	
11100.00	91.05	269.93	8405.13	4918.13	2847.48	306.86	-2847.85	590715.17	645166.89	0.00	
11200.00	91.05	269.93	8403.30	4916.30	2947.46	306.73	-2947.84	590714.60	645066.91	0.00	
11300.00	91.05	269.93	8401.47	4914.47	3047.44	306.61	-3047.82	590714.02	644966.93	0.00	
11400.00	91.05	269.93	8399.64	4912.64	3147.43	306.49	-3147.80	590713.44	644866.94	0.00	
11500.00	91.05	269.93	8397.81	4910.81	3247.41	306.36	-3247.79	590712.87	644766.96	0.00	
11600.00	91.05	269.93	8395.99	4908.99	3347.39	306.24	-3347.77	590712.29	644666.98	0.00	
11700.00	91.05	269.93	8394.16	4907.16	3447.38	306.12	-3447.75	590711.72	644567.00	0.00	
11800.00	91.05	269.93	8392.33	4905.33	3547.36	305.99	-3547.73	590711.14	644467.02	0.00	
11900.00	91.05	269.93	8390.50	4903.50	3647.34	305.87	-3647.72	590710.57	644367.04	0.00	
12000.00	91.05	269.93	8388.67	4901.67	3747.33	305.75	-3747.70	590709.99	644267.05	0.00	
12100.00	91.05	269.93	8386.84	4899.84	3847.31	305.62	-3847.68	590709.42	644167.07	0.00	
12200.00	91.05	269.93	8385.02	4898.02	3947.29	305.50	-3947.67	590708.84	644067.09	0.00	
12300.00	91.05	269.93	8383.19	4896.19	4047.27	305.38	-4047.65	590708.26	643967.11	0.00	
12400.00	91.05	269.93	8381.36	4894.36	4147.26	305.26	-4147.63	590707.69	643867.13	0.00	
12500.00	91.05	269.93	8379.53	4892.53	4247.24	305.13	-4247.62	590707.11	643767.15	0.00	
12600.00	91.05	269.93	8377.70	4890.70	4347.22	305.01	-4347.60	590706.54	643667.16	0.00	
12700.00	91.05	269.93	8375.87	4888.87	4447.21	304.89	-4447.58	590705.96	643567.18	0.00	
12800.00	91.05	269.93	8374.04	4887.04	4547.19	304.76	-4547.57	590705.39	643467.20	0.00	
12900.00	91.05	269.93	8372.22	4885.22	4647.17	304.64	-4647.55	590704.81	643367.22	0.00	
13000.00	91.05	269.93	8370.39	4883.39	4747.16	304.52	-4747.53	590704.24	643267.24	0.00	
13100.00	91.05	269.93	8368.56	4881.56	4847.14	304.39	-4847.52	590703.66	643167.26	0.00	
13200.00	91.05	269.93	8366.73	4879.73	4947.12	304.27	-4947.50	590703.08	643067.27	0.00	
13300.00	91.05	269.93	8364.90	4877.90	5047.11	304.15	-5047.48	590702.51	642967.29	0.00	
13400.00	91.05	269.93	8363.07	4876.07	5147.09	304.02	-5147.47	590701.93	642867.31	0.00	
13500.00	91.05	269.93	8361.24	4874.24	5247.07	303.90	-5247.45	590701.36	642767.33	0.00	
13600.00	91.05	269.93	8359.42	4872.42	5347.06	303.78	-5347.43	590700.78	642667.35	0.00	
13700.00	91.05	269.93	8357.59	4870.59	5447.04	303.65	-5447.42	590700.21	642567.37	0.00	
13800.00	91.05	269.93	8355.76	4868.76	5547.02	303.53	-5547.40	590699.63	642467.38	0.00	
13900.00	91.05	269.93	8353.93	4866.93	5647.01	303.41	-5647.38	590699.06	642367.40	0.00	
14000.00	91.05	269.93	8352.10	4865.10	5746.99	303.28	-5747.37	590698.48	642267.42	0.00	
14100.00	91.05	269.93	8350.27	4863.27	5846.97	303.16	-5847.35	590697.90	642167.44	0.00	
14200.00	91.05	269.93	8348.45	4861.45	5946.96	303.04	-5947.33	590697.33	642067.46	0.00	
14300.00	91.05	269.93	8346.62	4859.62	6046.94	302.91	-6047.32	590696.75	641967.48	0.00	
14400.00	91.05	269.93	8344.79	4857.79	6146.92	302.79	-6147.30	590696.18	641867.49	0.00	
14500.00	91.05	269.93	8342.96	4855.96	6246.91	302.67	-6247.28	590695.60	641767.51	0.00	
14552.52	91.05	269.93	8342.00	4855.00	6299.42	302.60	-6299.80	590695.30	641715.00	0.00	PBHL 323H

Formation Points: (Relative to Slot centre)(TVD relative to Drill Floor)										Comment
Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	
Rustler	933.00	0.00	0.00	933.00	-2554.00	0.00	0.00	590421.20	648016.10	
Salado	1206.00	0.00	0.00	1206.00	-2281.00	0.00	0.00	590421.20	648016.10	
Base Salt	2140.00	0.00	0.00	2140.00	-1347.00	0.00	0.00	590421.20	648016.10	
Capitan	2729.00	0.00	0.00	2729.00	-758.00	0.00	0.00	590421.20	648016.10	
Delaware Sand	4267.00	0.00	0.00	4267.00	780.00	0.00	0.00	590421.20	648016.10	
Base Manzanita	4469.00	0.00	0.00	4469.00	982.00	0.00	0.00	590421.20	648016.10	

SD Plan Report

Formation Points: (Relative to Slot centre)(TVD relative to Drill Floor)										
Name	MD (US ft)	Inc (°)	Az (°)	TVD (US ft)	TVD (MSL) (US ft)	N.Offset (US ft)	E.Offset (US ft)	Northing (US ft)	Easting (US ft)	Comment
Brushy Canyon	5417.00	0.00	0.00	5417.00	1930.00	0.00	0.00	590421.20	648016.10	
Basal Brushy Canyon	6682.00	0.00	0.00	6682.00	3195.00	0.00	0.00	590421.20	648016.10	
Base Brushy Canyon Sands	6984.00	0.00	0.00	6984.00	3497.00	0.00	0.00	590421.20	648016.10	
Bone Spring	6998.00	0.00	0.00	6998.00	3511.00	0.00	0.00	590421.20	648016.10	
Avalon Sand/Upper Avalon Shale	7214.00	0.00	0.00	7214.00	3727.00	0.00	0.00	590421.20	648016.10	
Lower Avalon Shale	7818.00	1.84	318.30	7818.00	4331.00	0.22	-0.20	590421.42	648015.90	
First Bone Spring Sand	8394.29	53.93	303.25	8299.00	4812.00	195.93	-195.01	590616.24	647820.20	
Lower First Bone Spring Sand	8604.16	69.30	286.91	8399.00	4912.00	271.82	-361.73	590691.38	647653.15	

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	BOPCO LP
LEASE NO.:	NMNM02447
WELL NAME & NO.:	BIG EDDY UNIT DI 2 323H
SURFACE HOLE FOOTAGE:	660'/N & 1420'/E
BOTTOM HOLE FOOTAGE:	350'/N & 2440'/E
LOCATION:	SECTION 34, T19S, R31E, NMPM
COUNTY:	EDDY, NEW MEXICO

COA

All previous COAs still apply expect the following:

H2S	☐ Yes	☒ No	
Potash	☐ None	☒ Secretary	☒ R-111-P
Cave/Karst Potential	☐ Low	☐ Medium	☒ High
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP

A. Hydrogen Sulfide

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **16 inch** surface casing shall be set at approximately **1000 feet** (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **24 hours in the Potash Area** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

- c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Operator shall filled 50% of casing with fluid while running intermediate casing to maintain collapse safety factor.

- 2. The minimum required fill of cement behind the 11 ¾ inch intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

- ❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

Operator shall filled 50% of casing with fluid while running intermediate casing to maintain collapse safety factor.

- 3. The minimum required fill of cement behind the 8 5/8 inch intermediate casing is: Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.
 - a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
 - b. Second stage above DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.
- 4. The minimum required fill of cement behind the 5-1/2 inch production casing is:
 - Cement to surface. If cement does not circulate, contact the appropriate BLM office.

C. PRESSURE CONTROL

- 1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).
- 2. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **3000 (3M) psi**.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- a. Spudding well (minimum of 24 hours)
- b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
- c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties

Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.

During office hours call (575) 627-0272.

After office hours call (575)

☒ Eddy County

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(575) 361-2822

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)
393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log (one log per well pad is acceptable) run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

- a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
- b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
- c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.
- g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

ZS 101218

193134B SUNDRY 436417 Big Eddy Unit DI2 - 323H 30015 NMLC069705 BOPCO v12.4 ZS
10.12.2018

R-111-P Section: 3 strings circ. a casing seal test of 600psi(hydr) for the surface and 1000 for intermediate, <100psi drop in 30min. Capitan Reef Section: 4 casing strings. production cement to cover casing 50 feet above Capitan Reef top. In a Lesser Prairie-Chicken section.

16 Segment	surface csg in a #/ft	20 Grade	inch hole. Coupling	Joint	Design Factors		SURFACE	
"A"	75.00	J 55	BUTT	16.00	Collapse	Burst	Length	Weight
"B"					2.86	2.3	1,000	75,000
							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,405				Tail Cmt	does not	circ to sfc.	Totals:	1,000 75,000

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
20	0.7854	1040	1851	980	89	9.50	669	2M	1.50

11 3/4 Segment	casing inside the #/ft	16 Grade	— Coupling	Joint	Design Factors		INTERMEDIATE		
"A"	42.00	H 40	ST&C	3.38	Collapse	Burst	Length	Weight	
"B"					2.54	0.92	2,160	90,720	
w/8.4#/g mud, 30min Sfc Csg Test psig:							0	0	
The cement volume(s) are intended to achieve a top of					0	Totals:	2,160	90,720	
					ft from surface or a		1000	overlap.	
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
14 3/4	0.4336	1040	1851	1027	80	10.20	1195	2M	1.00

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.92, b, c, d .

8 5/8 Segment	casing inside the #/ft	11 3/4 Grade	Coupling	Joint	Design Factors		INTERMEDIATE		
"A"	32.00	J 55	ST&C	2.66	Collapse	Burst	Length	Weight	
"B"					1.19	0.97	4,371	139,872	
							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 844							Totals:	4,371	139,872
The cement volume(s) are intended to achieve a top of					0	ft from surface or a		2160	overlap.
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
10 5/8	0.2100	look ↘	0	1050		9.50	2178	3M	0.50
Setting Depths for D V Tool(s):			2260				sum of sx	Σ CuFt	Σ % excess
% excess cmt by stage:		452	58				1410	3465	230

Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.9, b, c, d All > 0.70, OK.

5 1/2 Segment	casing inside the #/ft	8 5/8 Grade	Coupling	Joint	Design Factors		PRODUCTION		
"A"	20.00	P 110	LT&C	3.28	Collapse	Burst	Length	Weight	
"B"	20.00	P 110	LT&C	7.89	1.74	3.13	6,753	135,060	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,716							Totals:	14,553	291,060
Begment Design Factors would be:				50.55	1.96	if it were a vertical wellbore.			
0646		MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC	
		14553	8446	8342	7800	91	8	8878	
The cement volume(s) are intended to achieve a top of				4171	ft from surface or a		200	overlap.	
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
7 7/8	0.1733	1300	2572	1805	42	9.20			0.91

Class 'H' tail cmt yld > 1.20

Capitan Reef est top 2736'

25