

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Field Office

SUNDRY NOTICES AND REPORTS ON WELLS.
*Do not use this form for proposals to drill on to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 20185. Lease Serial No.
NMNM120898

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.
NMNM071016X8. Well Name and No.
POKER LAKE UNIT 18 BRUSHY DRAW 1249. API Well No.
30-015-4489610. Field and Pool or Exploratory Area
PURPLE SAGE WOLFCAMP11. County or Parish, State
EDDY COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator
BOPCO, L.P. Contact: KELLY KARDOS
E-Mail: kelly_kardos@xtoenergy.com3a. Address
6401 HOLIDAY HILL RD BLDG 5
MIDLAND, TX 79707
3b. Phone No. (include area code)
Ph: 432-620-43744. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 18 T25S R30E Mer NMP SENW 2310FNL 2120FWL

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	
	☐ 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 recompleate 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 recompleation 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 name fr/Poker Lake Unit 18 Brushy Draw 124H to Poker Lake Unit 18 BD 124H.
2. Change SHL fr/2310'FNL & 2120'FWL to 2310'FNL & 1335'FWL. SHL permitted on eastern most pad (Pad C) in slot 2 (west to east). Revised SHL will put the well in slot 3 on Pad B. No surface disturbance will occur with this change. (See attached permitted vs proposed sheet).
3. Change BHL fr/200'FSL & 2310'FWL to 200'FSL & 2090'FWL
4. Drilling Program
5. Directional Plan

Attachments:
C102 & Supplements

DOI- BLM- NM-PZ 2018-0280-6
Cover under.
Same Cons Apply
NO new surface disturbance
OK Pa Bel Bellad 11-14-2018

Engineering is Good See attached COA. 7S 11-13-18

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #442760 verified by the BLM Well Information System
For BOPCO, L.P., sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 11/06/2018 ()

RECEIVED

Name (Printed/Typed) KELLY KARDOS

Title REGULATORY COORDINATOR

NOV 28 2018

Signature (Electronic Submission)

Date 11/06/2018

DISTRICT II-ARTESIA O.C.D.

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By Cody H. [Signature]
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.

Title AFM - L & M

Date 11/14/2018

Office CFO

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)

**** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ** OPERATOR-SUBMITTED ****

Additional data for EC transaction #442760 that would not fit on the form

32. ~~Additional~~ remarks, continued

Revised Pad Layout
Permitted vs Proposed Sheet
Drilling Program (BOP/CM/FH)
Directional Plan



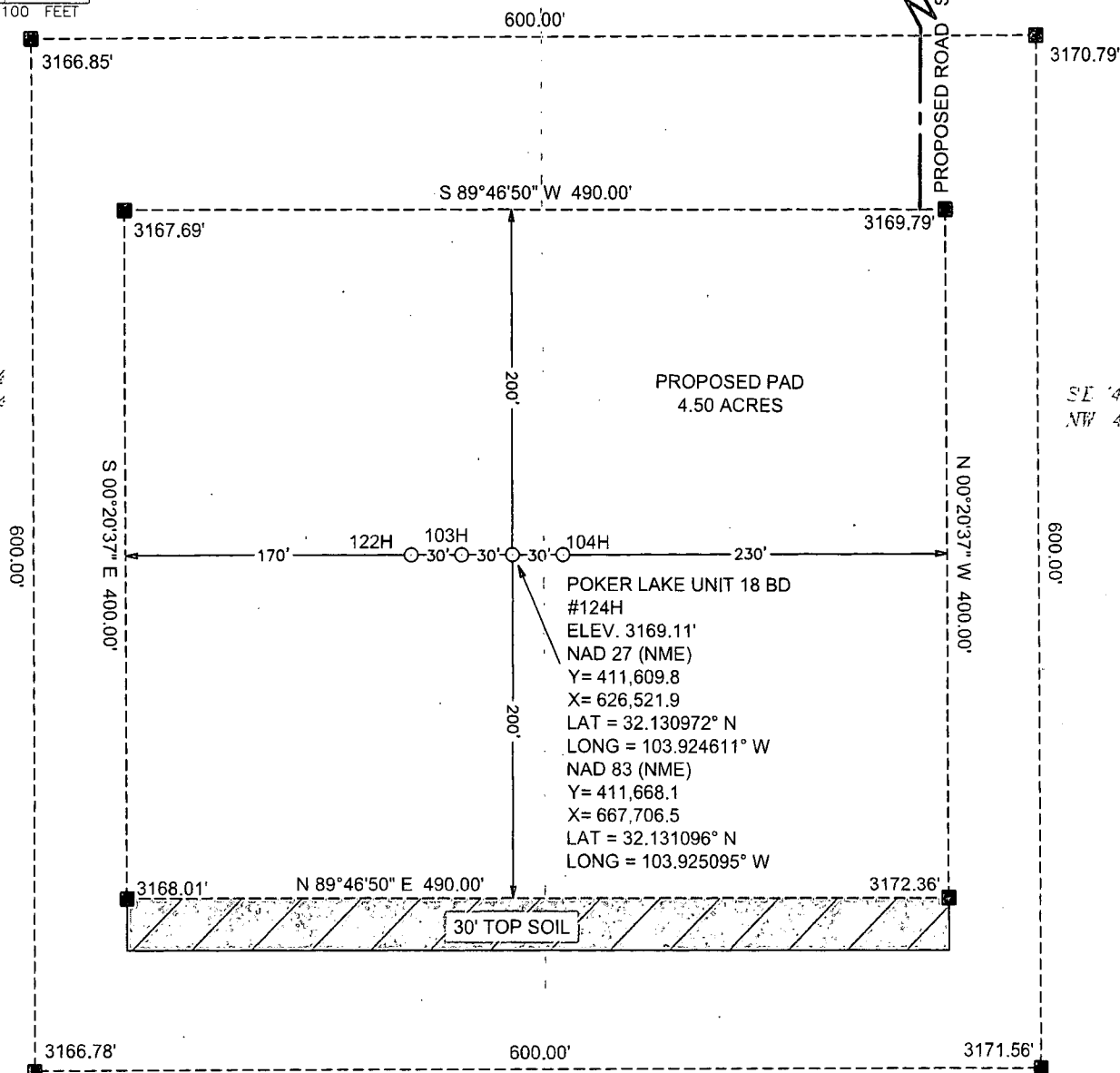
SECTION 18

TOWNSHIP 25 SOUTH, RANGE 30 EAST
NEW MEXICO PRIME MERIDIAN

0 50' 100'
1" = 100 FEET

SW 1/4
NW 1/4

SE 1/4
NW 1/4



NOTE:

- 1). SEE "TOPOGRAPHICAL AND ACCESS ROAD MAP" FOR PROPOSED ROAD LOCATION

DIRECTIONS TO THIS LOCATION:

FROM THE INTERSECTION OF HWY 285 AND LONGHORN RD. GO NORTHEAST ON LONGHORN ROAD (PAVED). ROAD BEND SOUTHEAST AND BACK TO NORTHEAST APPROX. 4.3 MILES. TURN LEFT AND GO NORTHEAST ON PIPELINE ROAD #1 (GRAVEL) APPROX. 7.0 MILES. THEN TURN LEFT ON LEASE ROAD (GRAVEL) FOR APPROX. 1 MILE. TURN LEFT ON LEASE ROAD (GRAVEL) FOR APPROX. 0.5 MILES AND ARRIVE AT PROPOSED ROAD AND LOCATION IS TO THE SOUTHWEST.

LEGEND

----- PROPOSED PAD
----- PROPOSED ACCESS ROAD

BOPCO, L.P.

WELL SITE PLAN

POKER LAKE UNIT 18 BD #124H LOCATED
2,310 FEET FROM THE NORTH LINE AND 1,335
FEET FROM THE WEST LINE OF SECTION 18,
TOWNSHIP 25 SOUTH, RANGE 30 EAST,
N.M.P.M. EDDY COUNTY, NEW MEXICO

DATE:	7-13-2018	PROJECT NO:	2017050632
DRAWN BY:	JAR/AI/RS	SCALE:	1"=100'
CHECKED BY:	DH	SHEET:	1 OF 1
FIELD CREW:	NGM/JLD	REVISION:	2



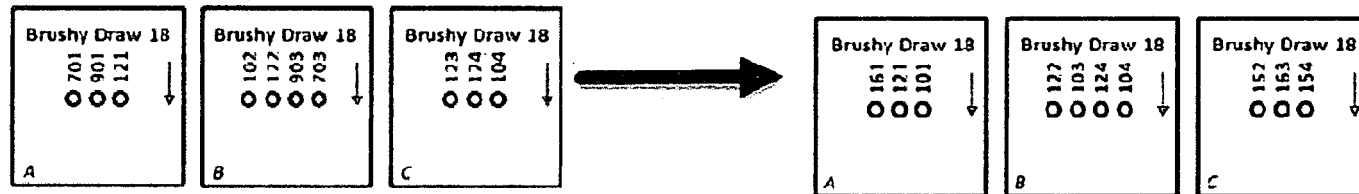
550 Bailey Ave., 205 - Fort Worth, TX 76107
Ph: 817.349.9800 - Fax: 979.732.5271
TBPE Firm 17957 | TBPLS Firm 10193887
www.fscinc.net

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PERMITTED PLAN

SUNDRY CHANGES

API Number	Current Pad & Slot	Current Well Name	Permitted SHL	Proposed Pad & Slot	Well Name Change	Updated SHL	ULSTR
3001544897	A-1	POKER LAKE UNIT 18 BRUSHY DRAW No. 701H	E-18-25S-30E (2310 FNL & 510 FWL)	A-1	Poker Lake Unit 18 BD 161H	2310'FNL & 510'FWL	2-18-25S-30E
3001544899	A-2	POKER LAKE UNIT 18 BRUSHY DRAW No. 901H	E-18-25S-30E (2310 FNL & 540 FWL)	A-3	Poker Lake Unit 18 BD 101H	2310'FNL & 570'FWL	2-18-25S-30E
3001544893	A-3	POKER LAKE UNIT 18 BRUSHY DRAW No. 121H	E-18-25S-30E (2310 FNL & 570 FWL)	A-2	Poker Lake Unit 18 BD 121H	2310'FNL & 540'FWL	2-18-25S-30E
3001544891	B-1	POKER LAKE UNIT 18 BRUSHY DRAW No. 102H	E-18-25S-30E (2310 FNL & 1275 FWL)	B-2	Poker Lake Unit 18 BD 103H	2310'FNL & 1305'FWL	2-18-25S-30E
3001544894	B-2	POKER LAKE UNIT 18 BRUSHY DRAW No. 122H	E-18-25S-30E (2310 FNL & 1305 FWL)	B-1	Poker Lake Unit 18 BD 122H	2310'FNL & 1275'FWL	2-18-25S-30E
3001544900	B-3	POKER LAKE UNIT 18 BRUSHY DRAW No. 903H	E-18-25S-30E (2310 FNL & 1335 FWL)	C-2	Poker Lake Unit 18 BD 163H	2310'FNL & 2120'FWL	F-18-25S-30E
3001544898	B-4	POKER LAKE UNIT 18 BRUSHY DRAW No. 703H	F-18-25S-30E (2310 FNL & 1365 FWL)	C-1	Poker Lake Unit 18 BD 152H	2310'FNL & 2090'FWL	F-18-25S-30E
3001544895	C-1	POKER LAKE UNIT 18 BRUSHY DRAW No. 123H	F-18-25S-30E (2310 FNL & 2090 FWL)	C-3	Poker Lake Unit 18 BD 154H	2310'FNL & 2150'FWL	F-18-25S-30E
3001544896	C-2	POKER LAKE UNIT 18 BRUSHY DRAW No. 124H	F-18-25S-30E (2310 FNL & 2120 FWL)	B-3	Poker Lake Unit 18 BD 124H	2310'FNL & 1335'FWL	2-18-25S-30E
3001544892	C-3	POKER LAKE UNIT 18 BRUSHY DRAW No. 104H	F-18-25S-30E (2310 FNL & 2150 FWL)	B-4	Poker Lake Unit 18 BD 104H	2310'FNL & 1365'FWL	F-18-25S-30E



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

XTO Energy Inc.
PLU 18 Brushy Draw 124H
Projected TD: 18657' MD / 10850' TVD
SHL: 2310' FNL & 1335' FWL , Section 18, T25S, R30E
BHL: 200' FSL & 2090' FWL , Section 19, T25S, R30E
Eddy County, NM

1. Geologic Name of Surface Formation

A. Permian

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

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	721'	Water
Top of Salt	1036'	Water
Base of Salt	3308'	Water
Delaware	3491'	Water
Bone Spring	7219'	Water/Oil/Gas
1st Bone Spring Ss	8243'	Water/Oil/Gas
2nd Bone Spring Ss	9048'	Water/Oil/Gas
3rd Bone Spring Ss	10141'	Water/Oil/Gas
Wolfcamp	10542'	Water/Oil/Gas
Target/Land Curve	10850'	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 13-3/8 inch casing @ 840' (196' above the salt) and circulating cement back to surface. The salt will be isolated by setting 9-5/8 inch casing at 3340' and circulating cement to surface. An 8-3/4 inch vertical and curve hole will be drilled and 7 inch casing run and cemented 500' into the 9-5/8 inch casing. A 6 inch curve and lateral hole will be drilled to MD/TD and 4-1/2 inch liner will be set at TD and cemented back 250' into the 7 inch casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
17-1/2"	0' - 840' 820	13-3/8"	54.5	BTC	J-55	New	2.63	2.94	21.16
12-1/4"	0' - 3340'	9-5/8"	40	BTC	J-55	New	1.39	2.45	5.24
8-3/4"	0' - 10950'	7"	32	BTC	P-110	New	1.31	2.06	2.82
6"	10232' - 18657'	4-1/2"	13.5	BTC	P-110	New	1.31	2.58	2.26

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 9-5/8" & 4-1/2" Collapse analyzed using 50% evacuation based on regional experience.
- 4-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

- Starting Head (RSH System): 13-3/8" SOW bottom x 13-5/8" 3M top flange
- Tubing Head: 13-5/8" 5M bottom flange x 7-1/16" 15M 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 9-5/8" casing to per Onshore Order 2.
 - Wellhead manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 13-3/8", 54.5 New J-55, BTC casing to be set at +/- 840'

Lead: 400 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft³/sx, 10.13 gal/sx water)

Tail: 300 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Intermediate Casing: 9-5/8", 40 New J-55, BTC casing to be set at +/- 3340'

Lead: 940 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft³/sx, 9.61 gal/sx water)

Tail: 230 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 900 psi 24 hr = 1500 psi

2nd Intermediate Casing: 7", 32 New P-110, BTC casing to be set at +/- 10950'

Lead: 1000 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft³/sx, 9.61 gal/sx water)

Tail: 60 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft³/sx, 6.39 gal/sx water)

Compressives: 12-hr = 900 psi 24 hr = 1500 psi

Production Casing: 4-1/2", 13.5 New P-110, BTC casing to be set at +/- 18657'

Tail: 710 sxs VersaCem (mixed at 13.2 ppg, 1.33 ft³/sx, 8.38 gal/sx water)

Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

5. Pressure Control Equipment

The blow out preventer equipment (BOP) for this well consists of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 5M Double Ram BOP. MASP should not exceed 4101 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" 5M bradenhead and flange, the BOP test will be limited to 5000 psi. When the 9-5/8" and 7" casing is set, the packoff seals will be tested to a minimum of 5000 psi. All BOP tests will include a low pressure test as per BLM regulations. The 5M 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' to 840'	17-1/2"	FW/Native	8.4-8.8	35-40	NC
840' to 3340'	12-1/4"	Brine/Gel Sweeps	9.8-10.2	30-32	NC
3340' to 10950'	8-3/4"	FW / Cut Brine	8.6-9.5	29-32	NC - 20
10950' to 18657'	6-1/8"	FW / Cut Brine / Polymer	11.2-11.5	32-50	20-Aug

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 13-3/8" surface casing with brine solution. A 9.8ppg-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.

7. Auxiliary Well Control and Monitoring Equipment

- A. A Kelly cock will be in the drill string at all times.
- B. A full opening drill pipe stabbing valve having appropriate connections will be on the rig floor at all times.
- C. H2S monitors will be on location when drilling below the 13-3/8" casing.

8. Logging, Coring and Testing Program

Mud Logger: Mud Logging Unit (2 man) below intermediate casing.

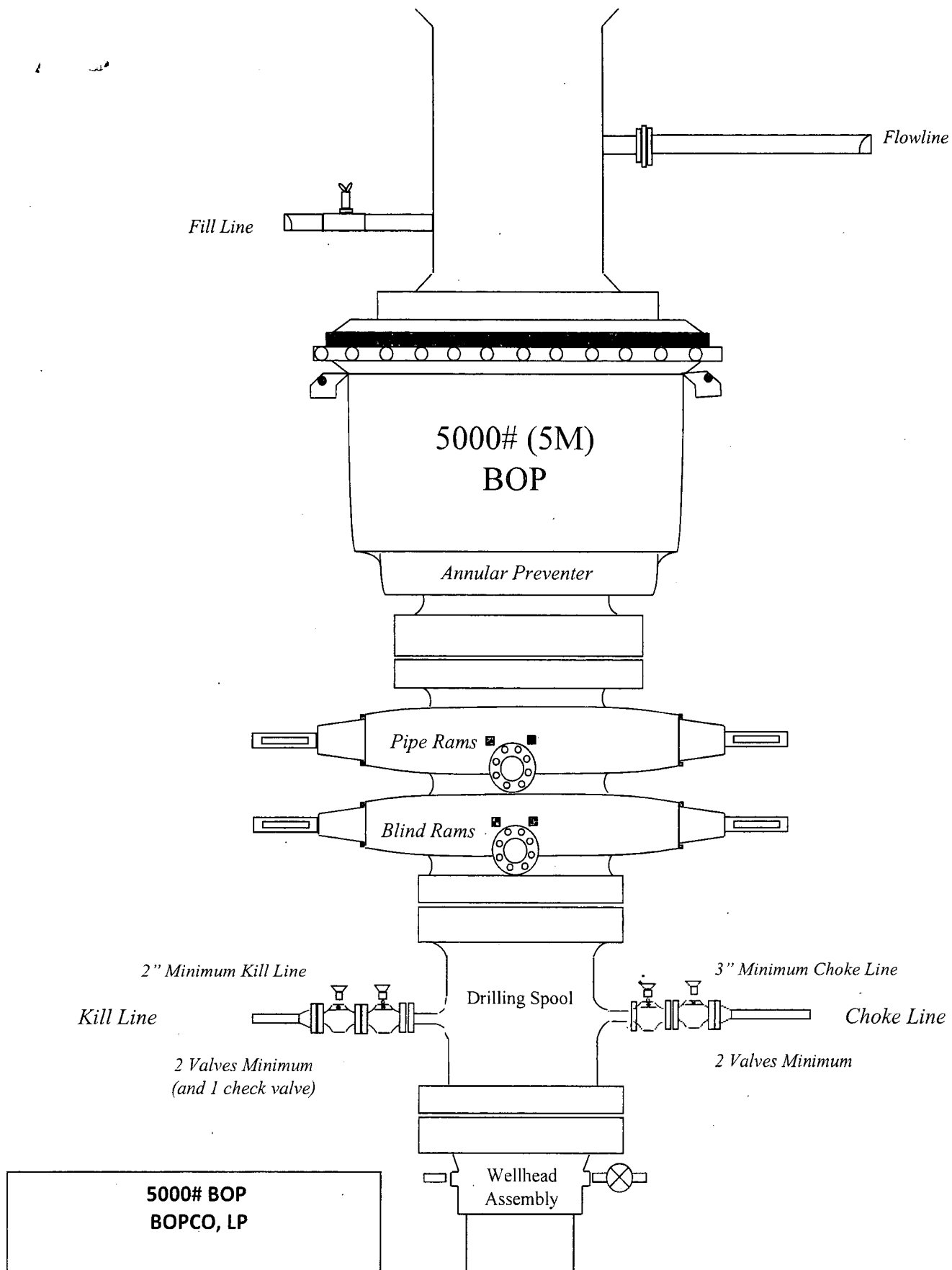
Open hole logging will not be done on this well.

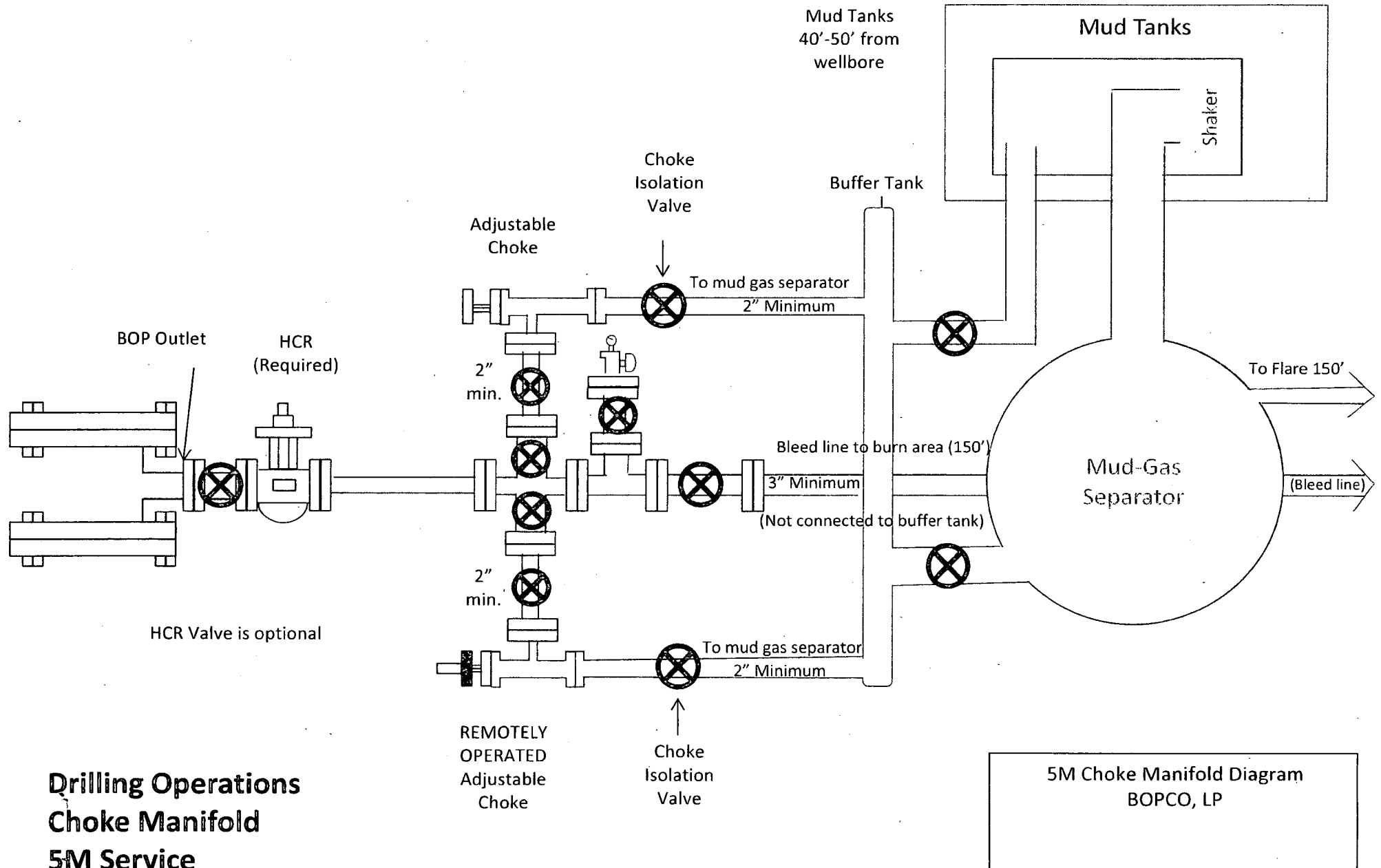
9. Abnormal Pressures and Temperatures / Potential Hazards

None Anticipated. BHT of 145 to 165 F is anticipated. No H2S is expected but monitors will be in place to detect any H2S occurrences. Should these circumstances be encountered the operator and drilling contractor are prepared to take all necessary steps to ensure safety of all personnel and environment. Lost circulation could occur but is not expected to be a serious problem in this area and hole seepage will be compensated for by additions of small amounts of LCM in the drilling fluid. The maximum anticipated bottom hole pressure for this well is 6488 psi.

10. Anticipated Starting Date and Duration of Operations

Road and location construction will begin after Santa Fe and BLM have approved the APD. Anticipated spud date will be as soon after Santa Fe and BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 40 days. If production casing is run, an additional 30 days will be needed to complete well and construct surface facilities and/or lay flow lines in order to place well on production.





**Drilling Operations
Choke Manifold
5M Service**



RECEIVED

NOV 28 2018

DISTRICT II-ARTESIA O.C.D.

XTO Energy

Eddy County, NM (Nad-27 / East Zone)

Poker Lake Unit 18 BD

#124H

OH

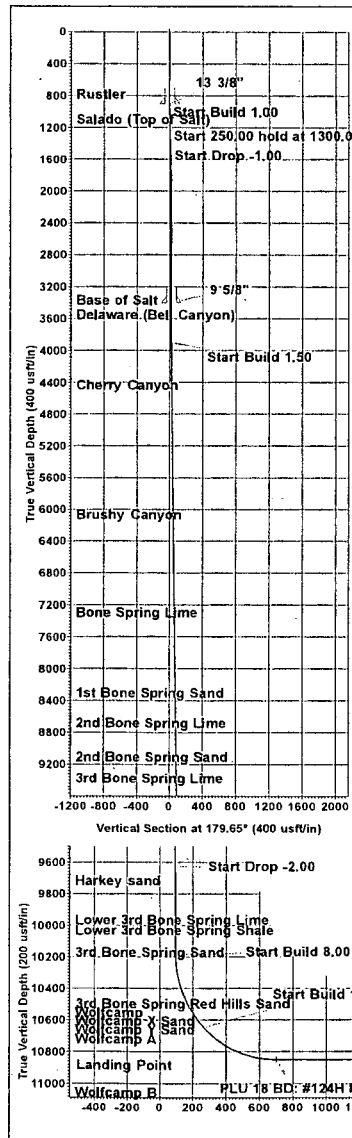
Plan: Plan #1

Standard Planning Report

31 October, 2018

WELLBENDERS
DIRECTIONAL SERVICES





Company: XTO Energy
 Project: Eddy County, NM (Nad-27 / East Zone)
 Site: Poker Lake Unit 18 BD
 Well: #124H
 Wellbore: OH
 Rig:
 Design: Plan #1 / 12:51, October 31 2018

TOTAL CORRECTION
 To convert a Magnetic Direction to a Grid Direction, Add 6.75°

WELL DETAILS: #124H

RKB = 23' @ 3182.00ft
 3182.00

	+N/S	+E/W	Northing	Easting	Latitude	Longitude
	0.00	0.00	411609.60	628521.90	32.130972	-103.924811

SECTION DETAILS

Sec	MD	Inc	Ad	TVD	+N/S	+E/W	Dip	Vsect
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00
3	1300.00	3.00	140.00	1259.68	-6.02	5.05	1.00	8.05
4	1550.00	3.00	140.00	1549.52	-18.04	13.48	0.00	18.12
5	1850.00	0.00	0.00	1840.30	-22.05	18.50	1.00	22.17
6	3900.02	0.00	0.00	3900.00	-22.05	18.50	0.00	22.17
7	4307.00	7.45	95.20	4305.07	-24.97	50.50	1.50	25.28
8	9675.23	7.45	95.20	9678.70	-26.99	731.87	0.00	91.48
9	10047.58	0.00	179.85	10000.00	-29.18	755.94	2.00	93.80
10	10232.55	0.00	179.85	10184.97	-29.18	755.94	0.00	93.80
11	10732.55	40.00	179.85	10845.33	-29.74	759.86	8.00	291.36
12	11232.55	90.00	179.85	10850.00	-29.94	759.84	10.00	700.27
13	18557.55	90.00	179.85	10850.00	-31.20.50	805.00	0.00	8125.27

DESIGN TARGET DETAILS

Name	TVD	+N/S	+E/W	Northing	Easting	Latitude	Longitude
PLU 18 BD: #124H SHL	0.00	0.00	0.00	411809.60	628521.90	32.130972	-103.924811
PLU 18 BD: #124H FTP	10850.00	-694.80	759.00	410915.00	627280.90	32.120054	-103.922187
PLU 18 BD: #124H LTP	10850.00	-7890.50	804.10	403618.30	627328.00	32.108998	-103.922112
PLU 18 BD: #124H PBHL	10850.00	-8120.50	805.00	403489.30	627329.90	32.109641	-103.922110



T G M

Azimuths to Grid North
 True North: -0.22°
 Magnetic North: 6.75°

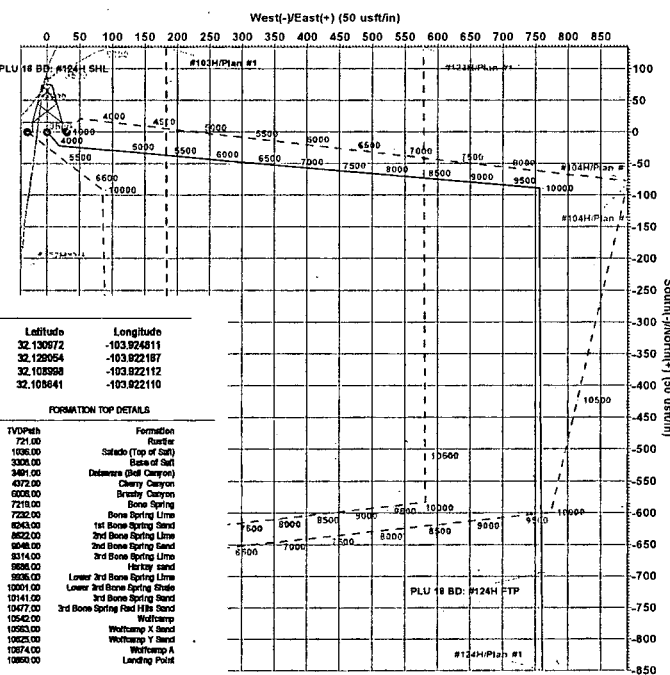
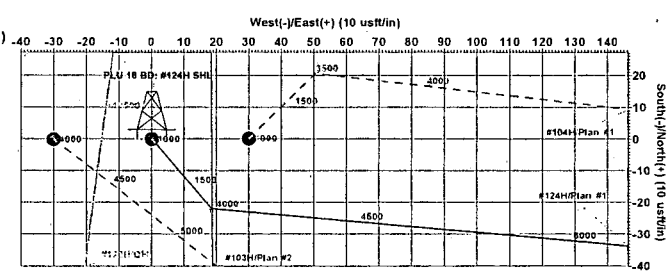
Magnetic Field
 Strength: 41706.8nT
 Dip Angle: 59.50°
 Date: 10/30/2018
 Model: IGRF2015

CASING DETAILS

TVD	MD	Name
900.00	900.00	13 3/8"
3400.00	3400.02	9 5/8"
10850.00	11232.55	7"

PROJECT DETAILS: Eddy County, NM (Nad-27 / East Zone)

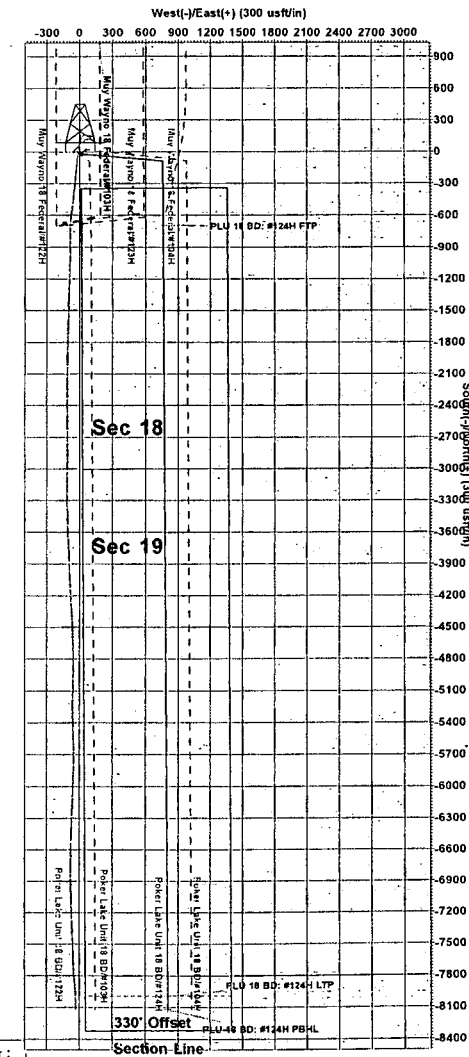
Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CORRECTIONS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level



FORMATION TOP DETAILS

TVD Path	Formation
721.00	Basin
1036.00	Salado (Top of Salt)
3301.00	Base of Salt
3401.00	Delaware (Chal. Canyon)
4072.00	Cherry Canyon
6038.00	Brushy Canyon
7218.00	Bone Spring
7230.00	Bone Spring Lime
8043.00	1st Bone Spring Sand
8622.00	2nd Bone Spring Lime
9048.00	2nd Bone Spring Sand
9114.00	3rd Bone Spring Lime
9826.00	Harkey sand
9838.00	Lower 3rd Bone Spring Lime
10051.00	Lower 2nd Bone Spring Shale
10141.00	3rd Bone Spring Sand
10477.00	3rd Bone Spring Red Hills Sand
10540.00	Wolfcamp
10593.00	Wolfcamp X Sand
10623.00	Wolfcamp Y Sand
10674.00	Wolfcamp A
10850.00	Landing Point

TD at 18657.55
 PLU 18 BD: #124H PBHL
 PLU 18 BD: #124H LTP



Disclaimer:
 All of the data, including
 lines and other well
 located on this plan,
 are the property of
 the owner and are
 not to be used for
 any other purpose
 without the owner's
 written consent.



Planning Report



Database:	WBDS_SQL_2	Local Co-ordinate Reference:	Well #124H
Company:	XTO Energy	TVD Reference:	RKB = 23' @ 3192.00usft
Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project:	Eddy County, NM (Nad-27 / East Zone)		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	Poker Lake Unit 18 BD		
Site Position:	Map	From:	Map
Position Uncertainty:	0.00 usft	Slot Radius:	13.200 in
North:	411,609.60 usft	Latitude:	32.130972
Easting:	626,461.90 usft	Longitude:	-103.924805
Grid Convergence:			0.22 °

Well	#124H					
Well Position	+N/-S	0.20 usft	Northing:	411,609.80 usft	Latitude:	32.130972
	+E/-W	60.00 usft	Easting:	626,521.90 usft	Longitude:	-103.924611
Position Uncertainty		0.00 usft	Wellhead Elevation:		Ground Level:	3,169.00 usft

Wellbore:	OH		
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	10/30/18	6.96	59.90	47,706.75098905

Design:	Plan #1		
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Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.00	
Vertical Section	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.00	0.00	0.00	179.65	

Plan Survey Tool Program	Date	10/31/18			
Depth From (usft)	Depth To (usft)	Survey (Wellbore)	Tool Name	Remarks	
1	0.00	18,657.38 Plan #1 (OH)	WBDS_IGRF		
			OWSG MWD + IGRF or WM		



Planning Report



Database:	WBDS_SQL_2	Local Co-ordinate Reference:	Well #124H
Company:	XTO Energy	TVD Reference:	RKB = 23' @ 3192.00usft
Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	3.00	140.00	1,299.86	-6.02	5.05	1.00	1.00	0.00	140.00	
1,550.00	3.00	140.00	1,549.52	-16.04	13.46	0.00	0.00	0.00	0.00	
1,850.00	0.00	0.00	1,849.38	-22.05	18.50	1.00	-1.00	0.00	180.00	
3,900.62	0.00	0.00	3,900.00	-22.05	18.50	0.00	0.00	0.00	0.00	
4,397.09	7.45	95.20	4,395.07	-24.97	50.59	1.50	1.50	0.00	95.20	
9,675.23	7.45	95.20	9,628.70	-86.99	731.87	0.00	0.00	0.00	0.00	
10,047.58	0.00	179.65	10,000.00	-89.18	755.94	2.00	-2.00	0.00	180.00	
10,232.55	0.00	179.65	10,184.97	-89.18	755.94	0.00	0.00	0.00	0.00	
10,732.55	40.00	179.65	10,645.33	-256.74	756.96	8.00	8.00	0.00	0.00	
11,232.55	90.00	179.65	10,850.00	-695.64	759.64	10.00	10.00	0.00	0.00	
18,657.55	90.00	179.65	10,850.00	-8,120.50	805.00	0.00	0.00	0.00	0.00	PLU 18 BD: #124H



Planning Report



Database:	WBDS_SQL_2	Local Co-ordinate Reference:	Well #124H
Company:	XTO Energy	TVD Reference:	RKB = 23' @ 3192.00usft
Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	1.00	140.00	1,099.99	-0.67	0.56	0.67	1.00	1.00	0.00
1,200.00	2.00	140.00	1,199.96	-2.67	2.24	2.69	1.00	1.00	0.00
1,300.00	3.00	140.00	1,299.86	-6.02	5.05	6.05	1.00	1.00	0.00
1,400.00	3.00	140.00	1,399.73	-10.02	8.41	10.08	0.00	0.00	0.00
1,500.00	3.00	140.00	1,499.59	-14.03	11.78	14.11	0.00	0.00	0.00
1,550.00	3.00	140.00	1,549.52	-16.04	13.46	16.12	0.00	0.00	0.00
1,600.00	2.50	140.00	1,599.46	-17.88	15.00	17.97	1.00	-1.00	0.00
1,700.00	1.50	140.00	1,699.40	-20.55	17.24	20.65	1.00	-1.00	0.00
1,800.00	0.50	140.00	1,799.38	-21.89	18.36	22.00	1.00	-1.00	0.00
1,850.00	0.00	0.00	1,849.38	-22.05	18.50	22.17	1.00	-1.00	0.00
1,900.00	0.00	0.00	1,899.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,000.00	0.00	0.00	1,999.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,100.00	0.00	0.00	2,099.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,200.00	0.00	0.00	2,199.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,300.00	0.00	0.00	2,299.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,400.00	0.00	0.00	2,399.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,500.00	0.00	0.00	2,499.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,600.00	0.00	0.00	2,599.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,700.00	0.00	0.00	2,699.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,800.00	0.00	0.00	2,799.38	-22.05	18.50	22.17	0.00	0.00	0.00
2,900.00	0.00	0.00	2,899.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,000.00	0.00	0.00	2,999.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,100.00	0.00	0.00	3,099.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,200.00	0.00	0.00	3,199.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,300.00	0.00	0.00	3,299.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,400.00	0.00	0.00	3,399.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,500.00	0.00	0.00	3,499.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,600.00	0.00	0.00	3,599.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,700.00	0.00	0.00	3,699.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,800.00	0.00	0.00	3,799.38	-22.05	18.50	22.17	0.00	0.00	0.00
3,900.62	0.00	0.00	3,900.00	-22.05	18.50	22.17	0.00	0.00	0.00
4,000.00	1.49	95.20	3,999.37	-22.17	19.79	22.29	1.50	1.50	0.00
4,100.00	2.99	95.20	4,099.29	-22.52	23.69	22.67	1.50	1.50	0.00
4,200.00	4.49	95.20	4,199.08	-23.12	30.18	23.30	1.50	1.50	0.00
4,300.00	5.99	95.20	4,298.66	-23.94	39.28	24.18	1.50	1.50	0.00
4,397.09	7.45	95.20	4,395.07	-24.97	50.59	25.28	1.50	1.50	0.00
4,400.00	7.45	95.20	4,397.96	-25.01	50.97	25.32	0.00	0.00	0.00
4,500.00	7.45	95.20	4,497.12	-26.18	63.87	26.57	0.00	0.00	0.00
4,600.00	7.45	95.20	4,596.28	-27.36	76.78	27.83	0.00	0.00	0.00
4,700.00	7.45	95.20	4,695.43	-28.53	89.69	29.08	0.00	0.00	0.00
4,800.00	7.45	95.20	4,794.59	-29.71	102.60	30.33	0.00	0.00	0.00
4,900.00	7.45	95.20	4,893.74	-30.88	115.51	31.59	0.00	0.00	0.00
5,000.00	7.45	95.20	4,992.90	-32.06	128.41	32.84	0.00	0.00	0.00



Planning Report



Database:	WBDS_SQL_2	Local Co-ordinate Reference:	Well #124H
Company:	XTO Energy	TVD Reference:	RKB = 23' @ 3192.00usft
Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	N-S (usft)	E-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
5,100.00	7.45	95.20	5,092.06	-33.23	141.32	34.10	0.00	0.00	0.00	
5,200.00	7.45	95.20	5,191.21	-34.41	154.23	35.35	0.00	0.00	0.00	
5,300.00	7.45	95.20	5,290.37	-35.58	167.14	36.60	0.00	0.00	0.00	
5,400.00	7.45	95.20	5,389.53	-36.76	180.04	37.86	0.00	0.00	0.00	
5,500.00	7.45	95.20	5,488.68	-37.93	192.95	39.11	0.00	0.00	0.00	
5,600.00	7.45	95.20	5,587.84	-39.11	205.86	40.36	0.00	0.00	0.00	
5,700.00	7.45	95.20	5,687.00	-40.28	218.77	41.62	0.00	0.00	0.00	
5,800.00	7.45	95.20	5,786.15	-41.46	231.67	42.87	0.00	0.00	0.00	
5,900.00	7.45	95.20	5,885.31	-42.63	244.58	44.13	0.00	0.00	0.00	
6,000.00	7.45	95.20	5,984.47	-43.81	257.49	45.38	0.00	0.00	0.00	
6,100.00	7.45	95.20	6,083.62	-44.98	270.40	46.63	0.00	0.00	0.00	
6,200.00	7.45	95.20	6,182.78	-46.16	283.30	47.89	0.00	0.00	0.00	
6,300.00	7.45	95.20	6,281.94	-47.33	296.21	49.14	0.00	0.00	0.00	
6,400.00	7.45	95.20	6,381.09	-48.51	309.12	50.40	0.00	0.00	0.00	
6,500.00	7.45	95.20	6,480.25	-49.68	322.03	51.65	0.00	0.00	0.00	
6,600.00	7.45	95.20	6,579.41	-50.86	334.94	52.90	0.00	0.00	0.00	
6,700.00	7.45	95.20	6,678.56	-52.03	347.84	54.16	0.00	0.00	0.00	
6,800.00	7.45	95.20	6,777.72	-53.21	360.75	55.41	0.00	0.00	0.00	
6,900.00	7.45	95.20	6,876.87	-54.38	373.66	56.66	0.00	0.00	0.00	
7,000.00	7.45	95.20	6,976.03	-55.56	386.57	57.92	0.00	0.00	0.00	
7,100.00	7.45	95.20	7,075.19	-56.73	399.47	59.17	0.00	0.00	0.00	
7,200.00	7.45	95.20	7,174.34	-57.91	412.38	60.43	0.00	0.00	0.00	
7,300.00	7.45	95.20	7,273.50	-59.08	425.29	61.68	0.00	0.00	0.00	
7,400.00	7.45	95.20	7,372.66	-60.26	438.20	62.93	0.00	0.00	0.00	
7,500.00	7.45	95.20	7,471.81	-61.43	451.10	64.19	0.00	0.00	0.00	
7,600.00	7.45	95.20	7,570.97	-62.61	464.01	65.44	0.00	0.00	0.00	
7,700.00	7.45	95.20	7,670.13	-63.78	476.92	66.69	0.00	0.00	0.00	
7,800.00	7.45	95.20	7,769.28	-64.96	489.83	67.95	0.00	0.00	0.00	
7,900.00	7.45	95.20	7,868.44	-66.13	502.73	69.20	0.00	0.00	0.00	
8,000.00	7.45	95.20	7,967.60	-67.31	515.64	70.46	0.00	0.00	0.00	
8,100.00	7.45	95.20	8,066.75	-68.48	528.55	71.71	0.00	0.00	0.00	
8,200.00	7.45	95.20	8,165.91	-69.66	541.46	72.96	0.00	0.00	0.00	
8,300.00	7.45	95.20	8,265.07	-70.83	554.36	74.22	0.00	0.00	0.00	
8,400.00	7.45	95.20	8,364.22	-72.01	567.27	75.47	0.00	0.00	0.00	
8,500.00	7.45	95.20	8,463.38	-73.18	580.18	76.73	0.00	0.00	0.00	
8,600.00	7.45	95.20	8,562.54	-74.36	593.09	77.98	0.00	0.00	0.00	
8,700.00	7.45	95.20	8,661.69	-75.53	606.00	79.23	0.00	0.00	0.00	
8,800.00	7.45	95.20	8,760.85	-76.71	618.90	80.49	0.00	0.00	0.00	
8,900.00	7.45	95.20	8,860.00	-77.88	631.81	81.74	0.00	0.00	0.00	
9,000.00	7.45	95.20	8,959.16	-79.06	644.72	82.99	0.00	0.00	0.00	
9,100.00	7.45	95.20	9,058.32	-80.23	657.63	84.25	0.00	0.00	0.00	
9,200.00	7.45	95.20	9,157.47	-81.41	670.53	85.50	0.00	0.00	0.00	
9,300.00	7.45	95.20	9,256.63	-82.58	683.44	86.76	0.00	0.00	0.00	
9,400.00	7.45	95.20	9,355.79	-83.76	696.35	88.01	0.00	0.00	0.00	
9,500.00	7.45	95.20	9,454.94	-84.93	709.26	89.26	0.00	0.00	0.00	
9,600.00	7.45	95.20	9,554.10	-86.11	722.16	90.52	0.00	0.00	0.00	
9,675.23	7.45	95.20	9,628.70	-86.99	731.87	91.46	0.00	0.00	0.00	
9,700.00	6.95	95.20	9,653.27	-87.27	734.97	91.76	2.00	-2.00	0.00	
9,800.00	4.95	95.20	9,752.73	-88.21	745.29	92.76	2.00	-2.00	0.00	
9,900.00	2.95	95.20	9,852.48	-88.84	752.15	93.43	2.00	-2.00	0.00	
10,000.00	0.95	95.20	9,952.42	-89.15	755.55	93.76	2.00	-2.00	0.00	
10,047.58	0.00	179.65	10,000.00	-89.18	755.94	93.80	2.00	-2.00	0.00	
10,100.00	0.00	0.00	10,052.42	-89.18	755.94	93.80	0.00	0.00	0.00	
10,200.00	0.00	0.00	10,152.42	-89.18	755.94	93.80	0.00	0.00	0.00	

Database:	WBDS_SQL_2	Local Co-ordinate Reference:	Well #124H
Company:	XTO Energy	TVD Reference:	RKB = 23' @ 3192.00usft
Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
10,232.55	0.00	179.65	10,184.97	-89.18	755.94	93.80	0.00	0.00	0.00
10,250.00	1.40	179.65	10,202.42	-89.39	755.94	94.01	8.00	8.00	0.00
10,300.00	5.40	179.65	10,252.32	-92.36	755.96	96.97	8.00	8.00	0.00
10,350.00	9.40	179.65	10,301.89	-98.79	756.00	103.41	8.00	8.00	0.00
10,400.00	13.40	179.65	10,350.90	-108.67	756.06	113.28	8.00	8.00	0.00
10,450.00	17.40	179.65	10,399.09	-121.94	756.14	126.55	8.00	8.00	0.00
10,500.00	21.40	179.65	10,446.25	-138.54	756.24	143.16	8.00	8.00	0.00
10,550.00	25.40	179.65	10,492.13	-158.39	756.36	163.01	8.00	8.00	0.00
10,600.00	29.40	179.65	10,536.51	-181.39	756.50	186.01	8.00	8.00	0.00
10,650.00	33.40	179.65	10,579.18	-207.43	756.66	212.05	8.00	8.00	0.00
10,700.00	37.40	179.65	10,619.93	-236.39	756.84	241.01	8.00	8.00	0.00
10,732.55	40.00	179.65	10,645.33	-256.74	756.96	261.36	8.00	8.00	0.00
10,750.00	41.74	179.65	10,658.53	-268.15	757.03	272.77	10.00	10.00	0.00
10,800.00	46.74	179.65	10,694.33	-303.03	757.25	307.65	10.00	10.00	0.00
10,850.00	51.74	179.65	10,726.96	-340.89	757.48	345.51	10.00	10.00	0.00
10,900.00	56.74	179.65	10,756.17	-381.45	757.72	386.07	10.00	10.00	0.00
10,950.00	61.74	179.65	10,781.73	-424.41	757.99	429.03	10.00	10.00	0.00
11,000.00	66.74	179.65	10,803.45	-469.42	758.26	474.05	10.00	10.00	0.00
11,050.00	71.74	179.65	10,821.16	-516.16	758.55	520.79	10.00	10.00	0.00
11,100.00	76.74	179.65	10,834.74	-564.27	758.84	568.89	10.00	10.00	0.00
11,150.00	81.74	179.65	10,844.06	-613.37	759.14	618.00	10.00	10.00	0.00
11,200.00	86.74	179.65	10,849.08	-663.11	759.44	667.73	10.00	10.00	0.00
11,232.55	90.00	179.65	10,850.00	-695.64	759.64	700.27	10.00	10.00	0.00
11,300.00	90.00	179.65	10,850.00	-763.09	760.06	767.72	0.00	0.00	0.00
11,400.00	90.00	179.65	10,850.00	-863.08	760.67	867.72	0.00	0.00	0.00
11,500.00	90.00	179.65	10,850.00	-963.08	761.28	967.72	0.00	0.00	0.00
11,600.00	90.00	179.65	10,850.00	-1,063.08	761.89	1,067.72	0.00	0.00	0.00
11,700.00	90.00	179.65	10,850.00	-1,163.08	762.50	1,167.72	0.00	0.00	0.00
11,800.00	90.00	179.65	10,850.00	-1,263.08	763.11	1,267.72	0.00	0.00	0.00
11,900.00	90.00	179.65	10,850.00	-1,363.08	763.72	1,367.72	0.00	0.00	0.00
12,000.00	90.00	179.65	10,850.00	-1,463.07	764.33	1,467.72	0.00	0.00	0.00
12,100.00	90.00	179.65	10,850.00	-1,563.07	764.94	1,567.72	0.00	0.00	0.00
12,200.00	90.00	179.65	10,850.00	-1,663.07	765.55	1,667.72	0.00	0.00	0.00
12,300.00	90.00	179.65	10,850.00	-1,763.07	766.16	1,767.72	0.00	0.00	0.00
12,400.00	90.00	179.65	10,850.00	-1,863.07	766.78	1,867.72	0.00	0.00	0.00
12,500.00	90.00	179.65	10,850.00	-1,963.06	767.39	1,967.72	0.00	0.00	0.00
12,600.00	90.00	179.65	10,850.00	-2,063.06	768.00	2,067.72	0.00	0.00	0.00
12,700.00	90.00	179.65	10,850.00	-2,163.06	768.61	2,167.72	0.00	0.00	0.00
12,800.00	90.00	179.65	10,850.00	-2,263.06	769.22	2,267.72	0.00	0.00	0.00
12,900.00	90.00	179.65	10,850.00	-2,363.06	769.83	2,367.72	0.00	0.00	0.00
13,000.00	90.00	179.65	10,850.00	-2,463.05	770.44	2,467.72	0.00	0.00	0.00
13,100.00	90.00	179.65	10,850.00	-2,563.05	771.05	2,567.72	0.00	0.00	0.00
13,200.00	90.00	179.65	10,850.00	-2,663.05	771.66	2,667.72	0.00	0.00	0.00
13,300.00	90.00	179.65	10,850.00	-2,763.05	772.27	2,767.72	0.00	0.00	0.00
13,400.00	90.00	179.65	10,850.00	-2,863.05	772.88	2,867.72	0.00	0.00	0.00
13,500.00	90.00	179.65	10,850.00	-2,963.05	773.49	2,967.72	0.00	0.00	0.00
13,600.00	90.00	179.65	10,850.00	-3,063.04	774.11	3,067.72	0.00	0.00	0.00
13,700.00	90.00	179.65	10,850.00	-3,163.04	774.72	3,167.72	0.00	0.00	0.00
13,800.00	90.00	179.65	10,850.00	-3,263.04	775.33	3,267.72	0.00	0.00	0.00
13,900.00	90.00	179.65	10,850.00	-3,363.04	775.94	3,367.72	0.00	0.00	0.00
14,000.00	90.00	179.65	10,850.00	-3,463.04	776.55	3,467.72	0.00	0.00	0.00
14,100.00	90.00	179.65	10,850.00	-3,563.03	777.16	3,567.72	0.00	0.00	0.00
14,200.00	90.00	179.65	10,850.00	-3,663.03	777.77	3,667.72	0.00	0.00	0.00
14,300.00	90.00	179.65	10,850.00	-3,763.03	778.38	3,767.72	0.00	0.00	0.00



Planning Report



Database:	WBDS_SQL_2	Local Co-ordinate Reference:	Well #124H
Company:	XTO Energy	TVD Reference:	RKB = 23' @ 3192.00usft
Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/S (usft)	+E/W (usft)	Vertical Section (usft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
14,400.00	90.00	179.65	10,850.00	-3,863.03	778.99	3,867.72	0.00	0.00	0.00
14,500.00	90.00	179.65	10,850.00	-3,963.03	779.60	3,967.72	0.00	0.00	0.00
14,600.00	90.00	179.65	10,850.00	-4,063.02	780.21	4,067.72	0.00	0.00	0.00
14,700.00	90.00	179.65	10,850.00	-4,163.02	780.82	4,167.72	0.00	0.00	0.00
14,800.00	90.00	179.65	10,850.00	-4,263.02	781.44	4,267.72	0.00	0.00	0.00
14,900.00	90.00	179.65	10,850.00	-4,363.02	782.05	4,367.72	0.00	0.00	0.00
15,000.00	90.00	179.65	10,850.00	-4,463.02	782.66	4,467.72	0.00	0.00	0.00
15,100.00	90.00	179.65	10,850.00	-4,563.02	783.27	4,567.72	0.00	0.00	0.00
15,200.00	90.00	179.65	10,850.00	-4,663.01	783.88	4,667.72	0.00	0.00	0.00
15,300.00	90.00	179.65	10,850.00	-4,763.01	784.49	4,767.72	0.00	0.00	0.00
15,400.00	90.00	179.65	10,850.00	-4,863.01	785.10	4,867.72	0.00	0.00	0.00
15,500.00	90.00	179.65	10,850.00	-4,963.01	785.71	4,967.72	0.00	0.00	0.00
15,600.00	90.00	179.65	10,850.00	-5,063.01	786.32	5,067.72	0.00	0.00	0.00
15,700.00	90.00	179.65	10,850.00	-5,163.00	786.93	5,167.72	0.00	0.00	0.00
15,800.00	90.00	179.65	10,850.00	-5,263.00	787.54	5,267.72	0.00	0.00	0.00
15,900.00	90.00	179.65	10,850.00	-5,363.00	788.16	5,367.72	0.00	0.00	0.00
16,000.00	90.00	179.65	10,850.00	-5,463.00	788.77	5,467.72	0.00	0.00	0.00
16,100.00	90.00	179.65	10,850.00	-5,563.00	789.38	5,567.72	0.00	0.00	0.00
16,200.00	90.00	179.65	10,850.00	-5,663.00	789.99	5,667.72	0.00	0.00	0.00
16,300.00	90.00	179.65	10,850.00	-5,762.99	790.60	5,767.72	0.00	0.00	0.00
16,400.00	90.00	179.65	10,850.00	-5,862.99	791.21	5,867.72	0.00	0.00	0.00
16,500.00	90.00	179.65	10,850.00	-5,962.99	791.82	5,967.72	0.00	0.00	0.00
16,600.00	90.00	179.65	10,850.00	-6,062.99	792.43	6,067.72	0.00	0.00	0.00
16,700.00	90.00	179.65	10,850.00	-6,162.99	793.04	6,167.72	0.00	0.00	0.00
16,800.00	90.00	179.65	10,850.00	-6,262.98	793.65	6,267.72	0.00	0.00	0.00
16,900.00	90.00	179.65	10,850.00	-6,362.98	794.26	6,367.72	0.00	0.00	0.00
17,000.00	90.00	179.65	10,850.00	-6,462.98	794.87	6,467.72	0.00	0.00	0.00
17,100.00	90.00	179.65	10,850.00	-6,562.98	795.49	6,567.72	0.00	0.00	0.00
17,200.00	90.00	179.65	10,850.00	-6,662.98	796.10	6,667.72	0.00	0.00	0.00
17,300.00	90.00	179.65	10,850.00	-6,762.97	796.71	6,767.72	0.00	0.00	0.00
17,400.00	90.00	179.65	10,850.00	-6,862.97	797.32	6,867.72	0.00	0.00	0.00
17,500.00	90.00	179.65	10,850.00	-6,962.97	797.93	6,967.72	0.00	0.00	0.00
17,600.00	90.00	179.65	10,850.00	-7,062.97	798.54	7,067.72	0.00	0.00	0.00
17,700.00	90.00	179.65	10,850.00	-7,162.97	799.15	7,167.72	0.00	0.00	0.00
17,800.00	90.00	179.65	10,850.00	-7,262.97	799.76	7,267.72	0.00	0.00	0.00
17,900.00	90.00	179.65	10,850.00	-7,362.96	800.37	7,367.72	0.00	0.00	0.00
18,000.00	90.00	179.65	10,850.00	-7,462.96	800.98	7,467.72	0.00	0.00	0.00
18,100.00	90.00	179.65	10,850.00	-7,562.96	801.59	7,567.72	0.00	0.00	0.00
18,200.00	90.00	179.65	10,850.00	-7,662.96	802.21	7,667.72	0.00	0.00	0.00
18,300.00	90.00	179.65	10,850.00	-7,762.96	802.82	7,767.72	0.00	0.00	0.00
18,400.00	90.00	179.65	10,850.00	-7,862.95	803.43	7,867.72	0.00	0.00	0.00
18,500.00	90.00	179.65	10,850.00	-7,962.95	804.04	7,967.72	0.00	0.00	0.00
18,600.00	90.00	179.65	10,850.00	-8,062.95	804.65	8,067.72	0.00	0.00	0.00
18,657.55	90.00	179.65	10,850.00	-8,120.50	805.00	8,125.27	0.00	0.00	0.00



Planning Report



Database:	WBDS_SQL_2	Local Co-ordinate Reference:	Well #124H
Company:	XTO Energy	TVD Reference:	RKB = 23' @ 3192.00usft
Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Design Targets									
Target Name	hit/miss target	Dip Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	
Shape		(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)	
									Latitude Longitude
PLU 18 BD: #124H SI	- plan hits target center	0.00	0.00	0.00	0.00	0.00	411,609.80	626,521.90	32.130972 -103.924611
	- Point								
PLU 18 BD: #124H FI	- plan misses target center by 0.64usft at 11231.71usft MD (10850.00 TVD, -694.80 N, 759.64 E)	0.00	0.00	10,850.00	-694.80	759.00	410,915.00	627,280.90	32.129054 -103.922168
	- Point								
PLU 18 BD: #124H LT	- plan misses target center by 0.11usft at 18527.55usft MD (10850.00 TVD, -7990.50 N, 804.21 E)	0.00	0.00	10,850.00	-7,990.50	804.10	403,619.30	627,326.00	32.108998 -103.922112
	- Point								
PLU 18 BD: #124H PI	- plan hits target center	0.00	0.00	10,850.00	-8,120.50	805.00	403,489.30	627,326.90	32.108641 -103.922111
	- Point								

Casing Points					
Measured Depth	Vertical Depth			Casing Diameter	Hole Diameter
(usft)	(usft)	Name		(in)	(in)
900.00	900.00	13 3/8"		13.375	17.500
3,400.62	3,400.00	9 5/8"		9.625	12.250
11,232.55	10,850.00	7"		7.000	7.500

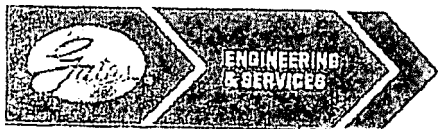
Formations						
Measured Depth	Vertical Depth				Dip	Dip Direction
(usft)	(usft)	Name	Lithology		(°)	(°)
721.00	721.00	Rustler				
1,036.00	1,036.00	Salado (Top of Salt)				
3,308.62	3,308.00	Base of Salt				
3,491.62	3,491.00	Delaware (Bell Canyon)				
4,373.83	4,372.00	Cherry Canyon				
6,021.72	6,006.00	Brushy Canyon				
7,245.04	7,219.00	Bone Spring				
7,258.15	7,232.00	Bone Spring Lime				
8,277.75	8,243.00	1st Bone Spring Sand				
8,659.97	8,622.00	2nd Bone Spring Lime				
9,089.59	9,048.00	2nd Bone Spring Sand				
9,357.86	9,314.00	3rd Bone Spring Lime				
9,734.96	9,688.00	Harkey sand				
9,982.58	9,935.00	Lower 3rd Bone Spring Lime				
10,048.58	10,001.00	Lower 3rd Bone Spring Shale				
10,188.58	10,141.00	3rd Bone Spring Sand				
10,533.35	10,477.00	3rd Bone Spring Red Hills Sand				
10,606.32	10,542.00	Wolfcamp				
10,630.79	10,563.00	Wolfcamp X Sand				
10,706.40	10,625.00	Wolfcamp Y Sand				
10,771.09	10,674.00	Wolfcamp A				
11,232.55	10,850.00	Landing Point				



Planning Report



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Project:	Eddy County, NM (Nad-27 / East Zone)	MD Reference:	RKB = 23' @ 3192.00usft
Site:	Poker Lake Unit 18 BD	North Reference:	Grid
Well:	#124H	Survey Calculation Method	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		



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 :
Customer Ref. :
Invoice No. :

AUSTIN DISTRIBUTING
PENDING
201709

Test Date:
Hose Serial No.:
Created By:

6/8/2014
D-060814-1
MORHA

Product Description:

FD3.0-12.0R41/16.5KFLGE/E LE

End Fitting 1 :
Gates Part No. :
Working Pressure :

4 1/16 in. SK FLG
4774-6001
5,000 PSI

End Fitting 2 :
Assembly Code :
Test Pressure :

4 1/16 in. SK FLG
L33090011513D-060814-1
7,500 PSI

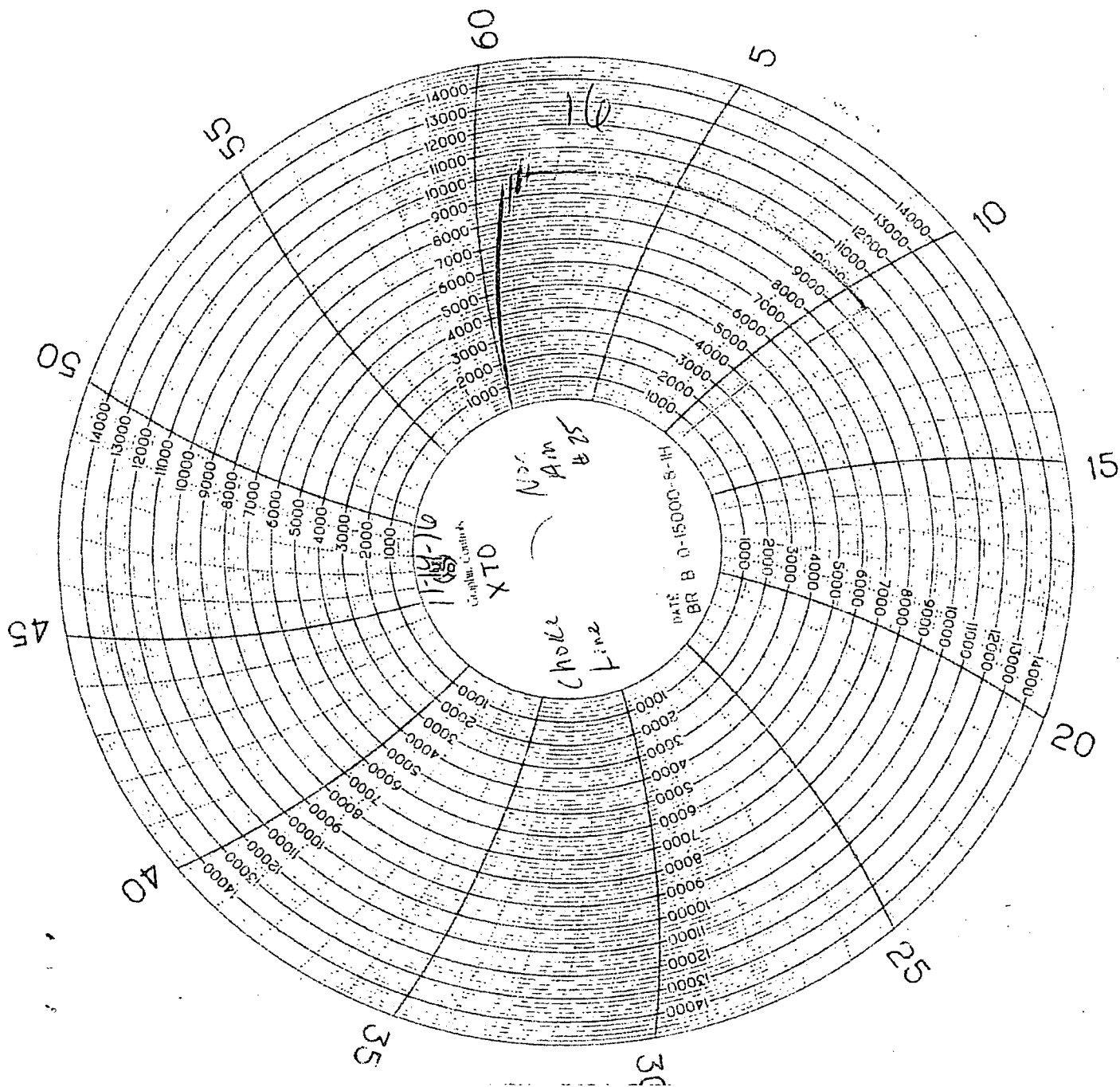
Gates E & S North America, Inc. certifies that the following hose assembly has been tested to the Gates Oilfield Roughneck Agreement/Specification requirements and passed the 15 minute hydrostatic test per API Spec 7K/Q1, Fifth Edition, June 2010, Test pressure 9.6.7 and per Table 9 to 7,500 psi in accordance 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:
Date :
Signature :

QUALITY
6/8/2014
<i>[Signature]</i>

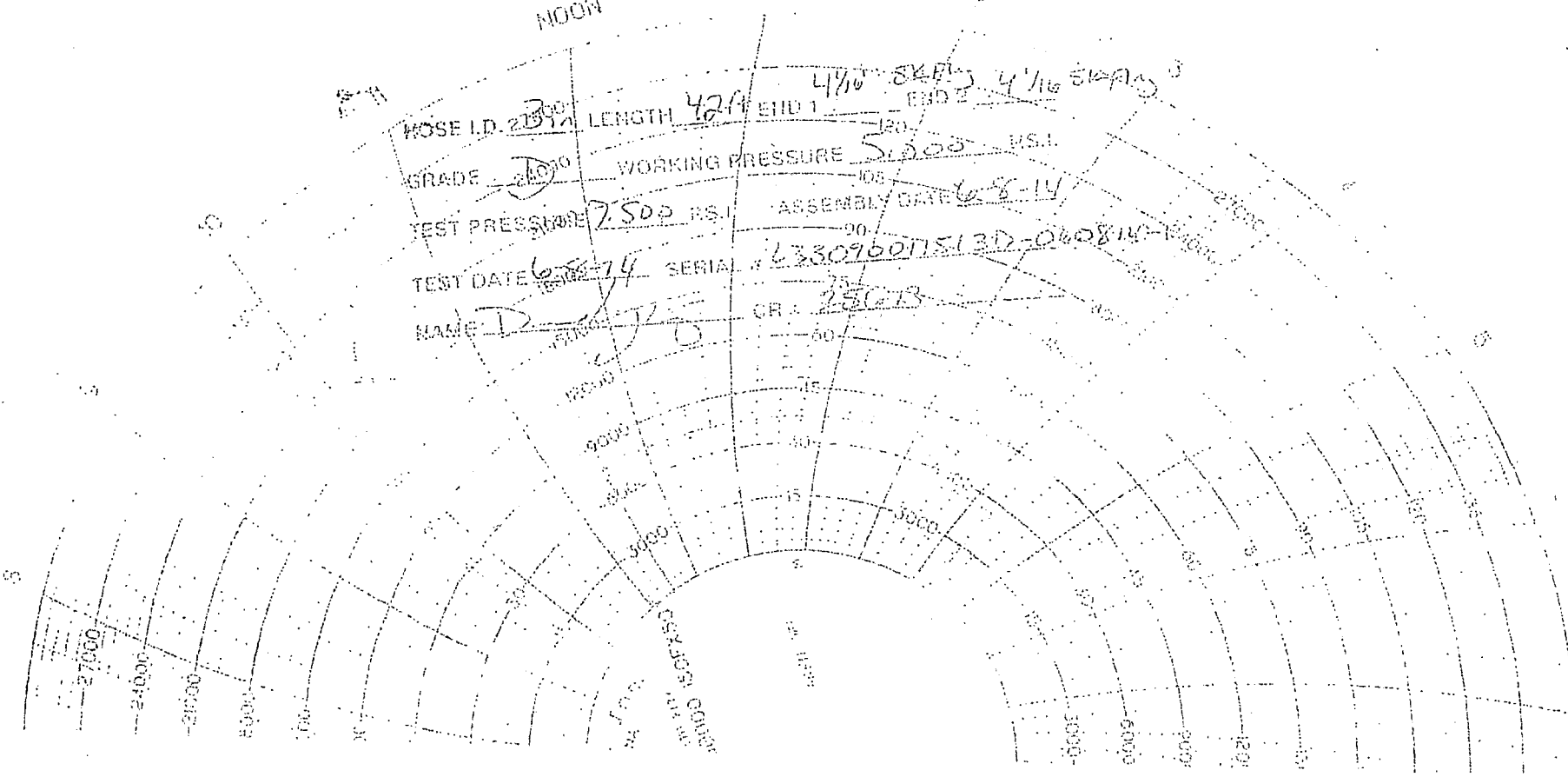
Technical Supervisor :
Date :
Signature :

PRODUCTION
6/8/2014
<i>[Signature]</i>



MOON

HOSE I.D. 3.00 LENGTH 42 ft END 1 L 1/16" S&P END 2 4 1/16" S&P
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-060814-1400
NAME D. J. F. CR # 25013



NOV 28 2018

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

DISTRICT II-ARTESIA O.C.D.

OPERATOR'S NAME:	XTO PERMIAN OPERATING LLC
LEASE NO.:	NMNM120898
WELL NAME & NO.:	POKER LAKE UNIT 18 BD 124H
SURFACE HOLE FOOTAGE:	2310'/N & 1335'/W
BOTTOM HOLE FOOTAGE:	200'/S & 2090'/W
LOCATION:	Sec. 18., T25S., R.30E., NMP
COUNTY:	Eddy County, 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

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Delaware** formation. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **820** 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 **8 hours** 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.
2. The minimum required fill of cement behind the **9-5/8** 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.
3. The minimum required fill of cement behind the **7** inch production casing is:
 - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.
4. The minimum required fill of cement behind the **4-1/2** inch production liner is:
 - Cement should tie-back 100' into the previous casing. Operator shall provide method of verification.

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 **5000 (5M)** 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 111318

Medium

13 3/8		surface csg in a		17 1/2		inch hole.		Design Factors			SURFACE	
Segment	#/ft	Grade		Coupling	Body	Collapse	Burst	Length	Weight			
"A"	54.50	J 55		BUTT	19.09	3.01	1.54	820	44,690			
"B"								0	0			
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500				Tail Cmt	does not	circ to sfc.	Totals:	820	44,690			
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			
17-1/2	0.6946	700	1153	624	85	8:80	1035	2M	1.56			

9 5/8 casing inside the		13 3/8		Design Factors				INTERMEDIATE	
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	40.00	J 55	BUTT	4.72	1.45	0.74	3,340	133,600	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig:						Totals:	3,340	133,600	
The cement volume(s) are intended to achieve a top of				0	ft from surface or a		820	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
12 1/4	0.3132	1170	2073	1105	88	10:20	2949	3M	0.81
Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.18, b, c, d All > 0.70, OK.									

7 casing inside the 9 5/8				Design Factors			PRODUCTION		
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	32.00	P 110	BUTT	2.97	2.13	2.17	10,233	327,456	
"B"	32.00	P 110	BUTT	113.13	2.04	2.17	717	22,944	
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,251						Totals:	10,950	350,400	
B would be:				58.34	2.03	if it were a vertical wellbore.			
No Pilot Hole Planned		MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC	
		10950	10782	10782	10233	62	-1	0	
The cement volume(s) are intended to achieve a top of				3140	ft from surface or a		200	overlap.	
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min CuFt	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 3/4	0.1503	1060	1960	1185	65	9.50	2968	3M	0.55
Class 'H' tail cmt yld > 1.20									

Tail cmt		4 1/2 Liner w/top @ 10232		Design Factors			LINER		
Segment	#/ft	Grade	Coupling	Body	Collapse	Burst	Length	Weight	
"A"	13.50	P 110	BUTT	2.95	1.82	2.32	1,001	13,514	
"B"	13.50	P 110	BUTT	3.17	1.99	2.32	7,424	100,224	
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,387							Totals:	8,425 113,738	
A Segment Design Factors would be:				3.89	1.99	if it were a vertical wellbore.			
No Pilot Hole Planned		MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC	
		18657	10850	10850	10233	90	9	11233	
The cement volume(s) are intended to achieve a top of				10232	ft from surface or a		718	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
6	0.0859	710	944	675	40	9.50			0.50
Class 'H' tail cmt yld > 1.20									