

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RECEIVED

OCT 25 2018

FORM 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.
NMNM120898

6. If Indian, Allottee or Tribe Name

SUBMIT IN TRIPLICATE - Other instructions on page 2

7. If Unit or CA/Agreement, Name and/or No.
891000303X

8. Well Name and No. **321273**
POKER LAKE UNIT 18 BRUSHY DRAW 701

9. API Well No.
30-015-44897-00-X1

10. Field and Pool or Exploratory Area
WILDCAT

11. County or Parish, State
EDDY COUNTY, NM

1. Type of Well
 Oil Well Gas Well Other

2. Name of Operator
BOPCO LP

3a. Address
6401 HOLIDAY HILL RD BLDG 5 SUITE 200
MIDLAND, TX 79707

3b. Phone No. (include area code)
PH: 432-620-4374

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
Sec 18 T25S R30E 2310FNL 510FWL
32.130974 N Lat, 103.927277 W Lon

Carlsbad Field Office
KELLY KARDOS
E-Mail: Kelly_Kardos@kloa.blm.gov

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

TYPE OF SUBMISSION	TYPE OF ACTION			
<input checked="" type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input checked="" type="checkbox"/> Other
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon	Change to Original APD
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> 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 well name fr/Poker Lake Unit 18 Brushy Draw 701H to **Poker Lake Unit 18 BD 161H.**
2. Change target from Pierce Crossing Bone Spring East to Purple Sage, Wolfcamp.
3. Drilling Program
4. Directional Program

- 322451
effective 10-18-2018

In addition, BOPCO requests a variance to be able to batch drill the 121H (30-015-44893), 124H (30-015-44899) & 161H (30-015-44897) wells if necessary. See attached drilling program for details.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Attachments:
1. C-102 & Supplement

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

Electronic Submission #435966 verified by the BLM Well Information System
For BOPCO LP, sent to the Carlsbad
Committed to AFMSS for processing by PRISCILLA PEREZ on 09/19/2018 (18PP2702SE)

Name (Printed/Typed) KELLY KARDOS Title REGULATORY COORDINATOR

Signature (Electronic Submission) Date 09/19/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS Title PETROLEUM ENGINEER Date 10/18/2018

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.

RUP 10-25-18

Additional data for EC transaction #435966 that would not fit on the form

32. Additional remarks, continued

2. Drilling Program
3. Directional Survey
4. BOP/CM/FH

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

RECEIVED

DEC 25 2018

DISTRICT II-ARTESIA O.C.D.

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 30-015-44897		² Pool Code 98220		³ Pool Name PURPLE SAGE; WOLFCAMP	
⁴ Property Code 321273 322451		⁵ Property Name POKER LAKE UNIT 18 BD			⁶ Well Number 161H
⁷ OGRID No. 260737		⁸ Operator Name BOPCO, L.P.			⁹ Elevation 3163'

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
2	18	25 S	30 E		2,310	NORTH	510	WEST	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
4	19	25 S	30 E		200	SOUTH	330	WEST	EDDY

¹² Dedicated Acres 482.62	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. (337)
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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.

	<p>16</p> <p>GEODETIC COORDINATES NAD 27 NME SURFACE LOCATION Y= 411,606.7 X= 625,696.9 LAT.= 32.130972°N LONG.= 103.927276°W</p> <p>FIRST TAKE POINT NAD 27 NME Y= 410,905.8 X= 625,521.0 LAT.= 32.129047°N LONG.= 103.927853°W</p> <p>CORNER COORDINATES TABLE NAD 27 NME A - Y= 411,254.3 N, X= 625,189.0 E B - Y= 411,260.5 N, X= 626,533.3 E C - Y= 408,594.2 N, X= 625,204.2 E D - Y= 408,601.2 N, X= 626,548.3 E E - Y= 405,935.1 N, X= 625,221.5 E F - Y= 405,943.0 N, X= 626,563.0 E G - Y= 403,277.4 N, X= 625,238.2 E H - Y= 403,285.0 N, X= 626,577.4 E</p> <p>CORNER COORDINATES TABLE NAD 83 NME A - Y= 411,312.6 N, X= 666,373.6 E B - Y= 411,318.8 N, X= 667,717.9 E C - Y= 408,652.4 N, X= 666,388.9 E D - Y= 408,659.4 N, X= 667,733.0 E E - Y= 405,993.3 N, X= 666,406.3 E F - Y= 406,001.2 N, X= 667,747.8 E G - Y= 403,335.5 N, X= 666,423.1 E H - Y= 403,343.1 N, X= 667,762.3 E</p> <p>LAST TAKE POINT NAD 27 NME Y= 403,609.3 X= 625,566.1 LAT.= 32.108989°N LONG.= 103.927795°W</p> <p>BOTTOM HOLE LOCATION NAD 27 NME Y= 403,479.3 X= 625,566.9 LAT.= 32.108631°N LONG.= 103.927794°W</p>	<p>GEODETIC COORDINATES NAD 83 NME SURFACE LOCATION Y= 411,665.0 X= 666,881.5 LAT.= 32.131096°N LONG.= 103.927761°W</p> <p>FIRST TAKE POINT NAD 83 NME Y= 410,964.1 X= 666,705.6 LAT.= 32.129171°N LONG.= 103.928337°W</p> <p>CORNER COORDINATES TABLE NAD 83 NME A - Y= 411,312.6 N, X= 666,373.6 E B - Y= 411,318.8 N, X= 667,717.9 E C - Y= 408,652.4 N, X= 666,388.9 E D - Y= 408,659.4 N, X= 667,733.0 E E - Y= 405,993.3 N, X= 666,406.3 E F - Y= 406,001.2 N, X= 667,747.8 E G - Y= 403,335.5 N, X= 666,423.1 E H - Y= 403,343.1 N, X= 667,762.3 E</p> <p>LAST TAKE POINT NAD 83 NME Y= 403,667.4 X= 666,751.0 LAT.= 32.109113°N LONG.= 103.928279°W</p> <p>BOTTOM HOLE LOCATION NAD 83 NME Y= 403,537.4 X= 666,751.8 LAT.= 32.108756°N LONG.= 103.928278°W</p>	<p>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.</p> <p>Kelly Kardos 09/19/18 Signature Date</p> <p>Kelly Kardos Printed Name</p> <p>kelly_kardos@xtoenergy.com E-mail Address</p>
	<p>GRID AZ.=194°05'10" HORIZ. DIST.=722.7'</p> <p>GRID AZ.=179°38'37" HORIZ. DIST.=7426.9'</p>	<p>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.</p> <p>7-26-2018 Date of Survey</p> <p>MARK DILLON HARP 23786 Signature and Seal of Professional Surveyor:</p> <p>MARK DILLON HARP 23786 Certificate Number</p> <p>DH/JC 2017050629</p>	

RW 10-25-18

Intent As Drilled

OCT 25 2018

API # 30-015-44897	DISTRICT II-ARTESIA O.C.D.	
Operator Name: BOPCO, L.P.	Property Name: Poker Lake Unit 18 BD	Well Number 161H

Kick Off Point (KOP)

UL	Section 18	Township 25S	Range 30E	Lot 2	Feet 2310	From N/S North	Feet 510	From E/W West	County Eddy
Latitude 32.131096					Longitude -103.927761			NAD NAD83	

First Take Point (FTP)

UL	Section 18	Township 25S	Range 30E	Lot 3	Feet 2310	From N/S South	Feet 330	From E/W West	County Eddy
Latitude 32.129171					Longitude -103.928337			NAD NAD83	

Last Take Point (LTP)

UL	Section 19	Township 25S	Range 30E	Lot 4	Feet 330	From N/S South	Feet 330	From E/W West	County Eddy
Latitude 32.109113					Longitude -103.928279			NAD NAD83	

Is this well the defining well for the Horizontal Spacing Unit? NIs this well an infill well? Y

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

API # 30-015-44891	DISTRICT II-ARTESIA O.C.D.	
Operator Name: BOPCO, L.P.	Property Name: Poker Lake Unit 18 BD	Well Number 103H

KZ 06/29/2018

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

XTO Energy Inc.
PLU 18 Brushy Draw 161H
Projected TD: 19424' MD / 11528' TVD
SHL: 2310' FNL & 510' FWL , Section 18, T25S, R30E
BHL: 200' FSL & 330' FWL , Section 19, T25S, R30E
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	706'	Water
Top of Salt	1019'	Water
Base of Salt	3267'	Water
Delaware	3460'	Water
Bone Spring	7216'	Water/Oil/Gas
1st Bone Spring Ss	8216'	Water/Oil/Gas
2nd Bone Spring Ss	9023'	Water/Oil/Gas
3rd Bone Spring Ss	10103'	Water/Oil/Gas
Wolfcamp	10504'	Water/Oil/Gas
Wolfcamp A	10632'	Water/Oil/Gas
Wolfcamp E	11503'	Water/Oil/Gas
Target/Land Curve	11528'	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 18-5/8 inch casing @ 990' (29' above the salt) and circulating cement back to surface. The salt will be isolated by setting 13-3/8 inch casing at 3290' and circulating cement to surface. 9-5/8 inch intermediate casing will be set at 10780'. An 8-3/4 inch curve and 8-1/2 inch lateral hole will be drilled to TD, where 5-1/2 inch casing will be set and cemented back up to the 9-5/8 inch casing shoe.

3. Casing Design

Hole Size	Depth	OD Csg	Weight	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
24"	0' - 990' <i>820</i>	18-5/8"	87.5	STC	J-55	New	2.20	1.82	8.70
17-1/2"	0' - 3290'	13-3/8"	68	STC	J-55	New	1.15	1.88	3.02
12-1/4"	0' - 10780'	9-5/8"	40	LTC	HCL-80	New	1.28	1.38	1.94
8-3/4" x 8-1/2"	0' - 19424'	5-1/2"	20	BTC	P-110	New	1.33	1.58	2.21

- XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.
- 18-5/8" Collapse analyzed using 75% evacuation. Casing to be filled while running.
- 13-3/8" & 9-5/8" 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

- 18-5/8" SOW bottom x 21-1/4" 2M top flange.

Permanent Wellhead – GE RSH Multibowl System

- Starting Head: 13-5/8" 10M top flange x 13-3/8" SOW bottom
- Tubing Head: 13-5/8" 10M bottom flange x 7" 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 per BLM Onshore Order 2
- Wellhead manufacturer representative will not be present for BOP test plug installation

4. Cement Program

Surface Casing: 18-5/8", 87.5 New J-55, STC casing to be set at +/- 990' ⁸²⁰

Lead: 2220 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

1st Intermediate Casing: 13-3/8", 68 New J-55, STC casing to be set at +/- 3290'

Lead: 2220 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

2nd Intermediate Casing: 9-5/8", 40 New HCL-80, LTC casing to be set at +/- 10780'

ECP/DV Tool to be set at 3390'

1st Stage

Lead: 2290 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 Stage

Lead: 960 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

Production Casing: 5-1/2", 20 New P-110, BTC casing to be set at +/- 19424'

Tail: 1690 sxs VersaCem (mixed at 13.2 ppg, 1.61 ft³/sx, 8.38 gal/sx water)

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

XTO requests a variance to be able to batch drill these wells if necessary. In doing so, XTO will set 13-3/8" intermediate casing and ensure that the well is cemented properly and the well is dead. With floats holding, no pressure on the intermediate csg annulus, and the installation of a TA cap as per GE recommendations, XTO will contact the BLM to skid the rig to drill the surface and intermediate for the remaining wells on the pad. Once surface and intermediate are all completed, XTO will begin drilling the production hole on each of the wells.

5. Pressure Control Equipment

The blow out preventer equipment (BOP) on surface casing/temp. wellhead will consist of a 21-1/4" minimum 2M Hydril. MASP should not exceed 1021 psi.

Once the permanent WH is installed on the 13-3/8 casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 5M 3-Ram BOP. MASP should not exceed 4477 psi. In any instance where 10M BOP is required by BLM, XTO requests a variance to utilize 5M annular with 10M ram preventers (a common BOP configuration, which allows use of 10M rams in unlikely event that pressures exceed 5M).

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. 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 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.

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 990' ^{620'}	24"	FW/Native	8.4-9.0	45-60	NC
990' - 3290' ^{620'}	17-1/2"	Brine / OBM	9.0-10.2	30-32	NC
3290' to 10780'	12-1/4"	FW/Cut Brine	8.7-10.0	30-32	NC
10780' to 19424'	8-3/4" x 8-1/2"	FW / Cut Brine / Polymer / OBM	11.3 - 12.1	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 18-5/8" surface casing with brine solution. A 9.0ppg-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.



RECEIVED
OCT 25 2018
DISTRICT II-ARTESIA O.C.D.

XTO ENERGY, INC.

Eddy County, NM

Sec 18, T25S, R30E

Poker Lake Unit 18 Brushy Draw #161H

Wellbore #1

Plan: Design #1

QES Well Planning Report

14 September, 2018





Well Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Poker Lake Unit 18 Brushy Draw #161H
Company:	XTO ENERGY, INC.	TVD Reference:	WELL @ 3184.5usft (Akita #22)
Project:	Eddy County, NM	MD Reference:	WELL @ 3184.5usft (Akita #22)
Site:	Sec 18, T25S, R30E	North Reference:	True
Well:	Poker Lake Unit 18 Brushy Draw #161H	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Eddy County, NM		
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	Sec 18, T25S, R30E				
Site Position:		Northing:	411,610.00 usft	Latitude:	32° 7' 51.500 N
From:	Map	Easting:	626,551.90 usft	Longitude:	103° 55' 28.249 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.22 °

Well	Poker Lake Unit 18 Brushy Draw #161H					
Well Position	+N-S	-0.1 usft	Northing:	411,606.70 usft	Latitude:	32° 7' 51.500 N
	+E-W	-855.0 usft	Easting:	625,696.90 usft	Longitude:	103° 55' 38.193 W
Position Uncertainty		0.0 usft	Wellhead Elevation:		Ground Level:	3,163.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2015	9/14/2018	(°)	(°)	(nT)
			6.98	59.90	47,719.41731582

Design	Design #1				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD)	+N-S	+E-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.0	0.0	0.0	181.13	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N-S (usft)	+E-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
10,924.6	0.00	0.00	10,924.6	0.0	0.0	0.00	0.00	0.00	0.00	
11,374.6	45.00	209.40	11,329.8	-146.2	-82.4	10.00	10.00	0.00	209.40	
11,894.9	90.00	179.86	11,527.5	-598.1	-178.8	10.00	8.65	-5.68	-38.71	
19,423.7	90.00	179.86	11,527.5	-8,126.9	-160.6	0.00	0.00	0.00	0.00	0.00 PLU 18 BD 161H - PE



Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 18, T25S, R30E
Well: Poker Lake Unit 18 Brushy Draw #161H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Poker Lake Unit 18 Brushy Draw #161H
TVD Reference: WELL @ 3184.5usft (Akita #22)
MD Reference: WELL @ 3184.5usft (Akita #22)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
Rustler									
705.5	0.00	0.00	705.5	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
Salado (Top of Salt)									
1,018.5	0.00	0.00	1,018.5	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
Base of Salt									
3,266.5	0.00	0.00	3,266.5	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
Delaware (Bell Canyon)									
3,459.5	0.00	0.00	3,459.5	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
Cherry Canyon									
4,351.5	0.00	0.00	4,351.5	0.0	0.0	0.0	0.00	0.00	0.00



Database: EDM 5000.1 Single User Db
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Project: Eddy County, NM
Site: Sec 18, T25S, R30E
Well: Poker Lake Unit 18 Brushy Draw #161H
Wellbore: Wellbore #1
Design: Design #1

Local Co-ordinate Reference: Well Poker Lake Unit 18 Brushy Draw #161H
TVD Reference: WELL @ 3184.5usft (Akita #22)
MD Reference: WELL @ 3184.5usft (Akita #22)
North Reference: True
Survey Calculation Method: Minimum Curvature

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
Brushy Canyon										
5,985.5	0.00	0.00	5,985.5	0.0	0.0	0.0	0.00	0.00	0.00	
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
Bone Spring Lime										
7,215.5	0.00	0.00	7,215.5	0.0	0.0	0.0	0.00	0.00	0.00	
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
1st Bone Spring Sand										
8,215.5	0.00	0.00	8,215.5	0.0	0.0	0.0	0.00	0.00	0.00	
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
2nd Bone Spring Lime										
8,598.5	0.00	0.00	8,598.5	0.0	0.0	0.0	0.00	0.00	0.00	
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00	



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 North Reference:
 Survey Calculation Method:

Well Poker Lake Unit 18 Brushy Draw #161H
 WELL @ 3184.5usft (Akita #22)
 WELL @ 3184.5usft (Akita #22)
 True
 Minimum Curvature

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
2nd Bone Spring Sand										
9,022.5	0.00	0.00	9,022.5	0.0	0.0	0.0	0.00	0.00	0.00	
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
3rd Bone Spring Lime										
9,281.5	0.00	0.00	9,281.5	0.0	0.0	0.0	0.00	0.00	0.00	
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
Harkey sand										
9,645.5	0.00	0.00	9,645.5	0.0	0.0	0.0	0.00	0.00	0.00	
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
Lower 3rd Bone Spring Lime										
9,901.5	0.00	0.00	9,901.5	0.0	0.0	0.0	0.00	0.00	0.00	
Lower 3rd Bone Spring Shale										
9,954.5	0.00	0.00	9,954.5	0.0	0.0	0.0	0.00	0.00	0.00	
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
3rd Bone Spring Sand										
10,102.5	0.00	0.00	10,102.5	0.0	0.0	0.0	0.00	0.00	0.00	
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,500.0	0.00	0.00	10,500.0	0.0	0.0	0.0	0.00	0.00	0.00	
Wolfcamp										
10,503.5	0.00	0.00	10,503.5	0.0	0.0	0.0	0.00	0.00	0.00	
10,600.0	0.00	0.00	10,600.0	0.0	0.0	0.0	0.00	0.00	0.00	
Wolfcamp A										
10,631.5	0.00	0.00	10,631.5	0.0	0.0	0.0	0.00	0.00	0.00	
10,700.0	0.00	0.00	10,700.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,800.0	0.00	0.00	10,800.0	0.0	0.0	0.0	0.00	0.00	0.00	
10,900.0	0.00	0.00	10,900.0	0.0	0.0	0.0	0.00	0.00	0.00	
Build 10°/100										
10,924.6	0.00	0.00	10,924.6	0.0	0.0	0.0	0.00	0.00	0.00	
10,950.0	2.54	209.40	10,950.0	-0.5	-0.3	0.5	10.00	10.00	0.00	
Wolfcamp B										
10,982.6	5.80	209.40	10,982.5	-2.6	-1.4	2.6	10.00	10.00	0.00	
11,000.0	7.54	209.40	10,999.8	-4.3	-2.4	4.4	10.00	10.00	0.00	
11,050.0	12.54	209.40	11,049.0	-11.9	-6.7	12.0	10.00	10.00	0.00	
11,100.0	17.54	209.40	11,097.3	-23.2	-13.1	23.5	10.00	10.00	0.00	
11,150.0	22.54	209.40	11,144.2	-38.1	-21.5	38.5	10.00	10.00	0.00	
Wolfcamp C										
11,176.5	25.19	209.40	11,168.5	-47.5	-26.8	48.0	10.00	10.00	0.00	
11,200.0	27.54	209.40	11,189.5	-56.6	-31.9	57.2	10.00	10.00	0.00	
11,250.0	32.54	209.40	11,232.8	-78.4	-44.2	79.2	10.00	10.00	0.00	
11,300.0	37.54	209.40	11,273.7	-103.4	-58.2	104.5	10.00	10.00	0.00	
11,350.0	42.54	209.40	11,312.0	-131.4	-74.0	132.8	10.00	10.00	0.00	



Well Planning Report



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Local Co-ordinate Reference:
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Well Poker Lake Unit 18 Brushy Draw #161H
 WELL @ 3184.5usft (Akita #22)
 WELL @ 3184.5usft (Akita #22)
 True
 Minimum Curvature

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Build 10°/100									
11,374.6	45.00	209.40	11,329.8	-146.2	-82.4	147.8	10.00	10.00	0.00
11,400.0	47.00	207.23	11,347.4	-162.3	-91.0	164.0	10.00	7.89	-8.55
11,450.0	51.05	203.35	11,380.2	-196.4	-107.1	198.5	10.00	8.10	-7.77
Wolfcamp D									
11,453.7	51.36	203.07	11,382.5	-199.1	-108.3	201.2	10.00	8.23	-7.28
11,500.0	55.22	199.89	11,410.2	-233.6	-121.8	236.0	10.00	8.34	-6.89
11,550.0	59.47	196.76	11,437.1	-273.6	-135.0	276.2	10.00	8.51	-6.25
11,600.0	63.79	193.91	11,460.9	-316.0	-146.6	318.8	10.00	8.64	-5.72
11,650.0	68.17	191.25	11,481.2	-360.5	-156.6	363.6	10.00	8.75	-5.30
11,700.0	72.58	188.76	11,498.0	-406.9	-164.7	410.1	10.00	8.83	-4.99
Wolfcamp E									
11,715.5	73.96	188.01	11,502.5	-421.6	-166.9	424.8	10.00	8.87	-4.82
11,750.0	77.03	186.38	11,511.1	-454.7	-171.1	458.0	10.00	8.90	-4.72
11,800.0	81.49	184.09	11,520.5	-503.6	-175.5	507.0	10.00	8.93	-4.58
11,850.0	85.97	181.85	11,525.9	-553.2	-178.1	556.6	10.00	8.96	-4.48
EOC @ 90.00° Inc. / 179.86° AZM. 11527.5' TVD									
11,894.9	90.00	179.86	11,527.5	-598.1	-178.8	601.6	10.00	8.97	-4.43
11,900.0	90.00	179.86	11,527.5	-603.2	-178.8	606.6	0.00	0.00	0.00
12,000.0	90.00	179.86	11,527.5	-703.2	-178.5	706.6	0.00	0.00	0.00
12,100.0	90.00	179.86	11,527.5	-803.2	-178.3	806.6	0.00	0.00	0.00
12,200.0	90.00	179.86	11,527.5	-903.2	-178.1	906.5	0.00	0.00	0.00
12,300.0	90.00	179.86	11,527.5	-1,003.2	-177.8	1,006.5	0.00	0.00	0.00
12,400.0	90.00	179.86	11,527.5	-1,103.2	-177.6	1,106.5	0.00	0.00	0.00
12,500.0	90.00	179.86	11,527.5	-1,203.2	-177.3	1,206.5	0.00	0.00	0.00
12,600.0	90.00	179.86	11,527.5	-1,303.2	-177.1	1,306.4	0.00	0.00	0.00
12,700.0	90.00	179.86	11,527.5	-1,403.2	-176.8	1,406.4	0.00	0.00	0.00
12,800.0	90.00	179.86	11,527.5	-1,503.2	-176.6	1,506.4	0.00	0.00	0.00
12,900.0	90.00	179.86	11,527.5	-1,603.2	-176.4	1,606.4	0.00	0.00	0.00
13,000.0	90.00	179.86	11,527.5	-1,703.2	-176.1	1,706.3	0.00	0.00	0.00
13,100.0	90.00	179.86	11,527.5	-1,803.2	-175.9	1,806.3	0.00	0.00	0.00
13,200.0	90.00	179.86	11,527.5	-1,903.2	-175.6	1,906.3	0.00	0.00	0.00
13,300.0	90.00	179.86	11,527.5	-2,003.2	-175.4	2,006.3	0.00	0.00	0.00
13,400.0	90.00	179.86	11,527.5	-2,103.2	-175.2	2,106.2	0.00	0.00	0.00
13,500.0	90.00	179.86	11,527.5	-2,203.2	-174.9	2,206.2	0.00	0.00	0.00
13,600.0	90.00	179.86	11,527.5	-2,303.2	-174.7	2,306.2	0.00	0.00	0.00
13,700.0	90.00	179.86	11,527.5	-2,403.2	-174.4	2,406.2	0.00	0.00	0.00
13,800.0	90.00	179.86	11,527.5	-2,503.2	-174.2	2,506.1	0.00	0.00	0.00
13,900.0	90.00	179.86	11,527.5	-2,603.2	-174.0	2,606.1	0.00	0.00	0.00
14,000.0	90.00	179.86	11,527.5	-2,703.2	-173.7	2,706.1	0.00	0.00	0.00
14,100.0	90.00	179.86	11,527.5	-2,803.2	-173.5	2,806.1	0.00	0.00	0.00
14,200.0	90.00	179.86	11,527.5	-2,903.2	-173.2	2,906.0	0.00	0.00	0.00
14,300.0	90.00	179.86	11,527.5	-3,003.2	-173.0	3,006.0	0.00	0.00	0.00
14,400.0	90.00	179.86	11,527.5	-3,103.2	-172.7	3,106.0	0.00	0.00	0.00
14,500.0	90.00	179.86	11,527.5	-3,203.2	-172.5	3,206.0	0.00	0.00	0.00
14,600.0	90.00	179.86	11,527.5	-3,303.2	-172.3	3,305.9	0.00	0.00	0.00
14,700.0	90.00	179.86	11,527.5	-3,403.2	-172.0	3,405.9	0.00	0.00	0.00
14,800.0	90.00	179.86	11,527.5	-3,503.2	-171.8	3,505.9	0.00	0.00	0.00
14,900.0	90.00	179.86	11,527.5	-3,603.2	-171.5	3,605.9	0.00	0.00	0.00
15,000.0	90.00	179.86	11,527.5	-3,703.2	-171.3	3,705.8	0.00	0.00	0.00
15,100.0	90.00	179.86	11,527.5	-3,803.2	-171.1	3,805.8	0.00	0.00	0.00
15,200.0	90.00	179.86	11,527.5	-3,903.2	-170.8	3,905.8	0.00	0.00	0.00
15,300.0	90.00	179.86	11,527.5	-4,003.2	-170.6	4,005.8	0.00	0.00	0.00



Database: EDM 5000.1 Single User Db
 Company: XTO ENERGY, INC.
 Project: Eddy County, NM
 Site: Sec 18, T25S, R30E
 Well: Poker Lake Unit 18 Brushy Draw #161H
 Wellbore: Wellbore #1
 Design: Design #1

Local Co-ordinate Reference: Well Poker Lake Unit 18 Brushy Draw #161H
 TVD Reference: WELL @ 3184.5usft (Akita #22)
 MD Reference: WELL @ 3184.5usft (Akita #22)
 North Reference: True
 Survey Calculation Method: Minimum Curvature

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
15,400.0	90.00	179.86	11,527.5	-4,103.2	-170.3	4,105.7	0.00	0.00	0.00
15,500.0	90.00	179.86	11,527.5	-4,203.2	-170.1	4,205.7	0.00	0.00	0.00
15,600.0	90.00	179.86	11,527.5	-4,303.2	-169.9	4,305.7	0.00	0.00	0.00
15,700.0	90.00	179.86	11,527.5	-4,403.2	-169.6	4,405.7	0.00	0.00	0.00
15,800.0	90.00	179.86	11,527.5	-4,503.2	-169.4	4,505.6	0.00	0.00	0.00
15,900.0	90.00	179.86	11,527.5	-4,603.2	-169.1	4,605.6	0.00	0.00	0.00
16,000.0	90.00	179.86	11,527.5	-4,703.2	-168.9	4,705.6	0.00	0.00	0.00
16,100.0	90.00	179.86	11,527.5	-4,803.2	-168.7	4,805.6	0.00	0.00	0.00
16,200.0	90.00	179.86	11,527.5	-4,903.2	-168.4	4,905.6	0.00	0.00	0.00
16,300.0	90.00	179.86	11,527.5	-5,003.2	-168.2	5,005.5	0.00	0.00	0.00
16,400.0	90.00	179.86	11,527.5	-5,103.2	-167.9	5,105.5	0.00	0.00	0.00
16,500.0	90.00	179.86	11,527.5	-5,203.2	-167.7	5,205.5	0.00	0.00	0.00
16,600.0	90.00	179.86	11,527.5	-5,303.2	-167.4	5,305.5	0.00	0.00	0.00
16,700.0	90.00	179.86	11,527.5	-5,403.2	-167.2	5,405.4	0.00	0.00	0.00
16,800.0	90.00	179.86	11,527.5	-5,503.2	-167.0	5,505.4	0.00	0.00	0.00
16,900.0	90.00	179.86	11,527.5	-5,603.2	-166.7	5,605.4	0.00	0.00	0.00
17,000.0	90.00	179.86	11,527.5	-5,703.2	-166.5	5,705.4	0.00	0.00	0.00
17,100.0	90.00	179.86	11,527.5	-5,803.2	-166.2	5,805.3	0.00	0.00	0.00
17,200.0	90.00	179.86	11,527.5	-5,903.2	-166.0	5,905.3	0.00	0.00	0.00
17,300.0	90.00	179.86	11,527.5	-6,003.2	-165.8	6,005.3	0.00	0.00	0.00
17,400.0	90.00	179.86	11,527.5	-6,103.2	-165.5	6,105.3	0.00	0.00	0.00
17,500.0	90.00	179.86	11,527.5	-6,203.2	-165.3	6,205.2	0.00	0.00	0.00
17,600.0	90.00	179.86	11,527.5	-6,303.2	-165.0	6,305.2	0.00	0.00	0.00
17,700.0	90.00	179.86	11,527.5	-6,403.2	-164.8	6,405.2	0.00	0.00	0.00
17,800.0	90.00	179.86	11,527.5	-6,503.2	-164.6	6,505.2	0.00	0.00	0.00
17,900.0	90.00	179.86	11,527.5	-6,603.2	-164.3	6,605.1	0.00	0.00	0.00
18,000.0	90.00	179.86	11,527.5	-6,703.2	-164.1	6,705.1	0.00	0.00	0.00
18,100.0	90.00	179.86	11,527.5	-6,803.2	-163.8	6,805.1	0.00	0.00	0.00
18,200.0	90.00	179.86	11,527.5	-6,903.2	-163.6	6,905.1	0.00	0.00	0.00
18,300.0	90.00	179.86	11,527.5	-7,003.2	-163.3	7,005.0	0.00	0.00	0.00
18,400.0	90.00	179.86	11,527.5	-7,103.2	-163.1	7,105.0	0.00	0.00	0.00
18,500.0	90.00	179.86	11,527.5	-7,203.2	-162.9	7,205.0	0.00	0.00	0.00
18,600.0	90.00	179.86	11,527.5	-7,303.2	-162.6	7,305.0	0.00	0.00	0.00
18,700.0	90.00	179.86	11,527.5	-7,403.2	-162.4	7,404.9	0.00	0.00	0.00
18,800.0	90.00	179.86	11,527.5	-7,503.2	-162.1	7,504.9	0.00	0.00	0.00
18,900.0	90.00	179.86	11,527.5	-7,603.2	-161.9	7,604.9	0.00	0.00	0.00
19,000.0	90.00	179.86	11,527.5	-7,703.2	-161.7	7,704.9	0.00	0.00	0.00
19,100.0	90.00	179.86	11,527.5	-7,803.2	-161.4	7,804.8	0.00	0.00	0.00
19,200.0	90.00	179.86	11,527.5	-7,903.2	-161.2	7,904.8	0.00	0.00	0.00
19,300.0	90.00	179.86	11,527.5	-8,003.2	-160.9	8,004.8	0.00	0.00	0.00
19,400.0	90.00	179.86	11,527.5	-8,103.2	-160.7	8,104.8	0.00	0.00	0.00
TD @ 19423.7 'MD / 11527.5' TVD									
19,423.7	90.00	179.86	11,527.5	-8,126.9	-160.6	8,128.4	0.00	0.00	0.00



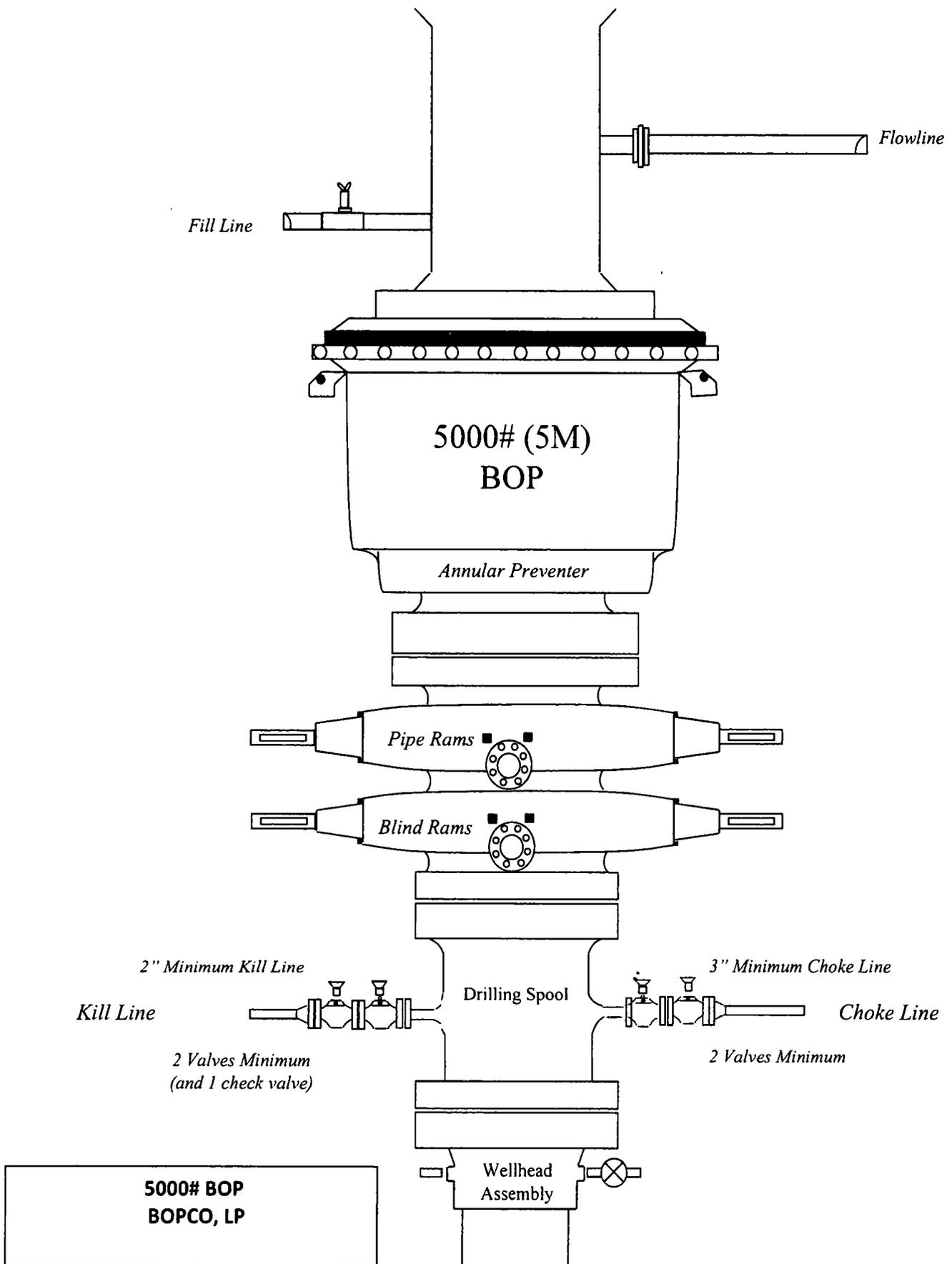
Database: EDM 5000.1 Single User Db
Company: XTO ENERGY, INC.
Project: Eddy County, NM
Site: Sec 18, T25S, R30E
Well: Poker Lake Unit 18 Brushy Draw #161H
Wellbore: Wellbore #1
Design: Design #1

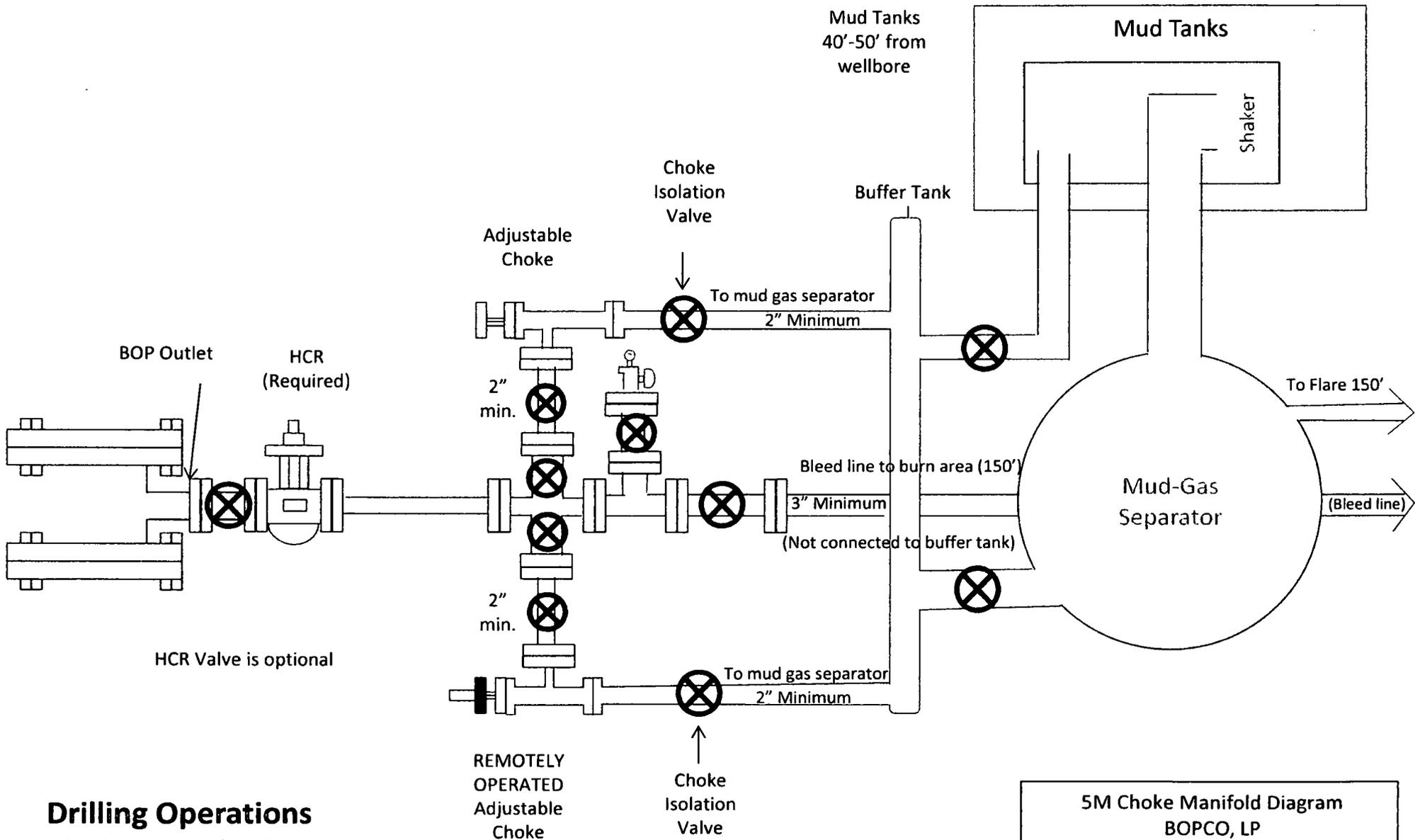
Local Co-ordinate Reference: Well Poker Lake Unit 18 Brushy Draw #161H
TVD Reference: WELL @ 3184.5usft (Akita #22)
MD Reference: WELL @ 3184.5usft (Akita #22)
North Reference: True
Survey Calculation Method: Minimum Curvature

Design Targets									
Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PLU 18 BD 161H - PBHI - plan hits target center - Point	0.00	0.00	11,527.5	-8,126.9	-160.6	403,479.30	625,566.90	32° 6' 31.073 N	103° 55' 40.060 W
PLU 18 BD 161H - FTP - plan hits target center - Point	0.00	0.00	11,527.5	-700.2	-178.5	410,905.80	625,521.00	32° 7' 44.570 N	103° 55' 40.269 W
PLU 18 BD 161H - LTP - plan hits target center - Point	0.00	0.00	11,527.5	-7,996.8	-160.9	403,609.30	625,566.10	32° 6' 32.360 N	103° 55' 40.064 W
PLU 18 BD 161H - EOC - plan hits target center - Point	0.00	0.00	11,527.5	-598.1	-178.8	411,007.89	625,520.37	32° 7' 45.580 N	103° 55' 40.272 W

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
705.5	705.5	Rustler		0.00	
1,018.5	1,018.5	Salado (Top of Salt)		0.00	
3,266.5	3,266.5	Base of Salt		0.00	
3,459.5	3,459.5	Delaware (Bell Canyon)		0.00	
4,351.5	4,351.5	Cherry Canyon		0.00	
5,985.5	5,985.5	Brushy Canyon		0.00	
7,215.5	7,215.5	Bone Spring Lime		0.00	
8,215.5	8,215.5	1st Bone Spring Sand		0.00	
8,598.5	8,598.5	2nd Bone Spring Lime		0.00	
9,022.5	9,022.5	2nd Bone Spring Sand		0.00	
9,281.5	9,281.5	3rd Bone Spring Lime		0.00	
9,645.5	9,645.5	Harkey sand		0.00	
9,901.5	9,901.5	Lower 3rd Bone Spring Lime		0.00	
9,954.5	9,954.5	Lower 3rd Bone Spring Shale		0.00	
10,102.5	10,102.5	3rd Bone Spring Sand		0.00	
10,503.5	10,503.5	Wolfcamp		0.00	
10,631.5	10,631.5	Wolfcamp A		0.00	
10,982.6	10,982.5	Wolfcamp B		0.00	
11,176.5	11,168.5	Wolfcamp C		0.00	
11,453.7	11,382.5	Wolfcamp D		0.00	
11,715.5	11,502.5	Wolfcamp E		0.00	

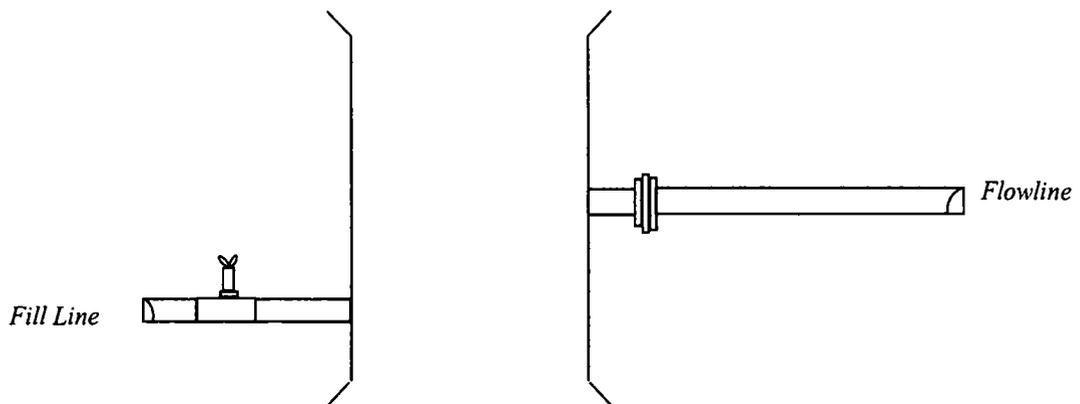
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
10,924.6	10,924.6	0.0	0.0	Build 10°/100
11,374.6	11,329.8	-146.2	-82.4	Build 10°/100
11,894.9	11,527.5	-598.1	-178.8	EOC @ 90.00° Inc. / 179.86° AZM. 11527.5' TVD
19,423.7	11,527.5	-8,126.9	-160.6	TD @ 19423.7 'MD / 11527.5' TVD





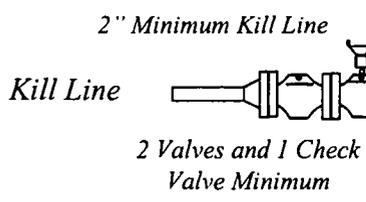
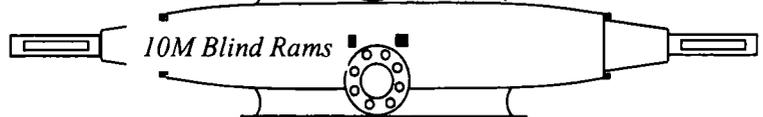
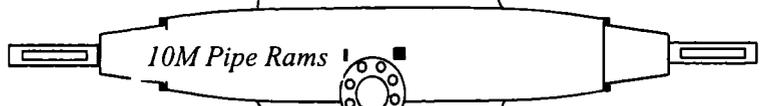
**Drilling Operations
Choke Manifold
5M Service**

**5M Choke Manifold Diagram
BOPCO, LP
BEU 29 Federal SWD #1**

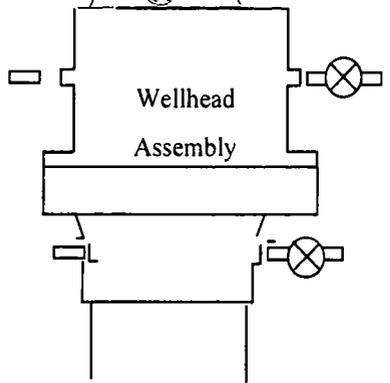
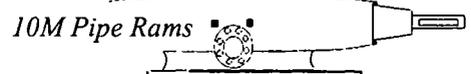
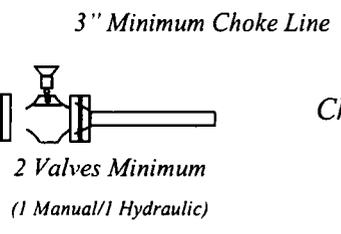


5000# (5M) Annular /
10000# Ram Preventer

5M Annular Preventer

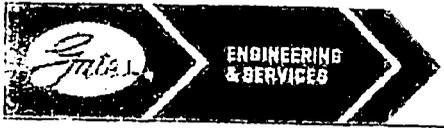


Drilling Spool



10000# BOP
BOPCO, LP

Attached is an example of a certification and pressure test chart. The manufacturer does not require anchors.



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

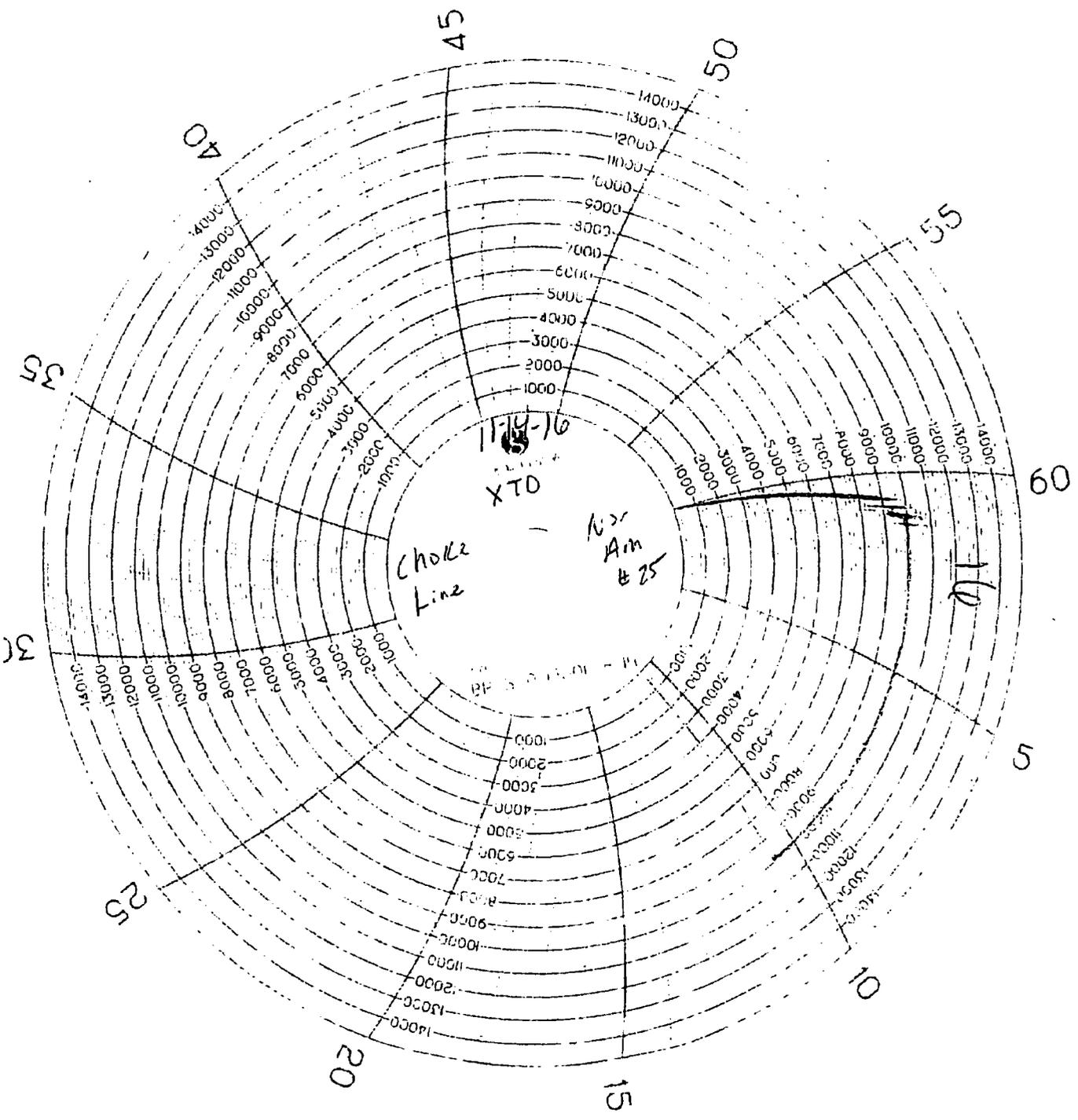
PHONE: 361-887-9807
 FAX: 361-887-0812
 EMAIL: crpe&s@gates.com
 WEB: www.gates.com

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.0-2.0R-11/16.5KFLGE;E IE		
End Fitting 1 :	4 1/16 in. SK FLG	End Fitting 2 :	4 1/16 in. SK F.G
Gates Part No. :	4771-6001	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 :	<i>[Signature]</i>	Signature :	<i>[Signature]</i>



PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	BOPCO, LP
LEASE NO.:	POKER LAKE UNIT 18 BD 161H
WELL NAME & NO.:	NMNM120898
SURFACE HOLE FOOTAGE:	2310' FNL & 510' FWL
BOTTOM HOLE FOOTAGE	200' FSL & 330' FWL
LOCATION:	Section 18, T. 25 S., R 30 E., NMPM
COUNTY:	Eddy County, New Mexico

COA

All previous COAs still apply expect the following:

H2S	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> 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 **18 5/8** 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.

Operator shall filled 50% of casing with fluid while running 1st intermediate casing to maintain collapse safety factor.

2. The minimum required fill of cement behind the 13-3/8 inch 1st 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 Medium 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 2nd intermediate casing to maintain collapse safety factor.

3. The minimum required fill of cement behind the 9-5/8 inch 2nd 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. **Additional cement maybe required. Excess calculates to 13%.**

4. The minimum required fill of cement behind the 5-1/2 inch production casing is:

- Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Additional cement maybe required. Excess calculates to 21%.**

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. **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 101818

Medium

18 5/8 Segment	surface csg in a #/ft	24 Grade	inch hole. Coupling	Joint	Design Factors		SURFACE		
"A"	87.50	J 55	ST&C	10.51	Collapse	Burst	Length	Weight	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,217				Tail Cmt	does not	circ to sfc.	Totals:	820	71,750
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
24	1.2496	2520	4556	1180	286	9.00	1019	2M	12.00

13 3/8 Segment	casing inside the #/ft	18 5/8 Grade	Coupling	Joint	Design Factors		INTERMEDIATE		
"A"	68.00	J 55	ST&C	3.02	Collapse	Burst	Length	Weight	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig:							Totals:	3,290	223,720
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
17 1/2	0.6946	2520	4556	2363	93	10.20	3228	5M	1.56
Burst Frac Gradient(s) for Segment(s): A, B, C, D = 1.05, b, c, d						ALT. COLLAPSE SF: 1.12*1.5= 1.68			
All > 0.70, OK.									

9 5/8 Segment	casing inside the #/ft	13 3/8 Grade	Coupling	Joint	Design Factors		INTERMEDIATE		
"A"	40.00	HCL 80	LT&C	1.94	Collapse	Burst	Length	Weight	
"B"							0	0	
w/8.4#/g mud, 30min Sfc Csg Test psig: -679							Totals:	10,780	431,200
The cement volume(s) are intended to achieve a top of				3090	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
12 1/4	0.3132	look	0	2432		10.00	4709	5M	0.81
Setting Depths for D V Tool(s):				3390	sum of sx		Σ CuFt	Σ%excess	
% excess cmt by stage:				98	2045		3710	6722	176
Class 'H' tail cmt yld > 1.20				MASP is within 10% of 5000psig, need exrta equip?					
Burst Frac Gradient(s) for Segment(s): A, B, C, D = 0.53, b, c, d < 0.70 a Problem!!						ALT. COLLAPSE SF: 0.76*2=1.52			

5 1/2 Segment	casing inside the #/ft	9 5/8 Grade	Coupling	Body	Design Factors		PRODUCTION			
"A"	20.00	P 110	BUTT	2.78	Collapse	Burst	Length	Weight		
"B"	20.00	P 110	BUTT	8.40	1.42	1.74	8,500	170,000		
w/8.4#/g mud, 30min Sfc Csg Test psig: 2,403							Totals:	19,424	388,480	
B-egment Design Factors would be:				53.25	1.53	if it were a vertical wellbore.				
No Pilot Hole Planned				MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
				19424	11526	11526	10924	90	9	11895
The cement volume(s) are intended to achieve a top of				10580	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	
8 3/4	0.2526	1690	2721	2241	21	12.10			1.35	
Class 'H' tail cmt yld > 1.20				Capitan Reef est top XXXX.		MASP is within 10% of 5000psig, need exrta equip?				