U.S. Department of the Interior
BUREAU OF LAND MANAGEMENT

Sundry Print Report

10/20/2023

Well Name: JAMES RANCH UNIT DI 7 SAWTOOTH

Well Location: T23S / R31E / SEC 6 / LOT 4 / 32.340106 / -103.821891

County or Parish/State: EDDY / NM

Well Number: 110H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMNM02887D

Unit or CA Name: JAMES RANCH, JAMES RANCH UNIT

Unit or CA Number: NMNM070965Z, NMNM70965X

US Well Number: 3001550084

Well Status: Approved Application for Permit to Drill

Operator: XTO PERMIAN OPERATING LLC

Notice of Intent

Sundry ID: 2753476

Type of Submission: Notice of Intent

Type of Action: APD Change

Date Sundry Submitted: 09/26/2023

Time Sundry Submitted: 02:58

Date proposed operation will begin: 11/01/2023

Procedure Description: ** Surface hole Change, First and Last Take Point Changes, Bottomhole Location Change, Drilling Plan Change, Casing/Cement Change XTO Permian Operating, LCC. requests permission to make the following changes to the original APD: No Additional Surface Disturbance SHL: fr/240'FNL & 1149'FWL to 155'FNL & 979'FWL, NMNM02887D FTP: fr/1000'FNL & 990'FWL to 700'FSL & 331'FWL, NMNM02952C PPP #1: 2638' FNL & 330' FWL, NMNM04473 PPP#2: 0' FNL & 330' FWL, NMNM02887D LTP: fr/2490'FNL & 990'FWL to 2528'FNL & 330'FWL, NMNM02887A BHL: fr/2490'FNL & 990'FWL to 2578'FNL & 330'FWL, Section 18-T23S-R31E NMNM02887A Additionally, XTO Permian Operating, LLC. respectfully requests permission to change from a three-string design to a four-string design. The surface, intermediate and production hole, casing, and cement based on the attached drilling program. Due to the design change in these strings, the wellhead configuration has also changed based on the attached drilling program. Casing/Cement design per the attached drilling program. Attachments: C102 Drilling Program MBS Directional Plan OLCV Spud BOP BTV Cement Variance

NOI Attachments

Procedure Description

JRU_DI_7_Sawtooth_110H_Sundry_Attachments_20230926145816.pdf

Well Name: JAMES RANCH UNIT DI 7 SAWTOOTH

Well Location: T23S / R31E / SEC 6 / LOT 4 / 32.340106 / -103.821891

County or Parish/State: EDDY / NM

Well Number: 110H

Type of Well: CONVENTIONAL GAS WELL

Allottee or Tribe Name:

Lease Number: NMNM02887D

Unit or CA Name: JAMES RANCH, JAMES RANCH UNIT

Unit or CA Number: NMNM070965Z, NMNM70965X

US Well Number: 3001550084

Well Status: Approved Application for Permit to Drill

Operator: XTO PERMIAN OPERATING LLC

Conditions of Approval

Additional

Sec_06_23S_31E_NMP_Sundry_2753476_James_Ranch_Unit_DI_7_Sawtooth_110H_COAs_20231017155556.pdf

Operator

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: CASSIE EVANS

Signed on: SEP 26, 2023 02:58 PM

Name: XTO PERMIAN OPERATING LLC

Title: Regulatory Analyst

Street Address: 6401 Holiday Hill Road, Bldg 5

City: Midland **State:** TX

Phone: (432) 218-3671

Email address: CASSIE.EVANS@EXXONMOBIL.COM

Field

Representative Name:

Street Address:

City: **State:** **Zip:**

Phone:

Email address:

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5752342234

BLM POC Email Address: cwalls@blm.gov

Disposition: Approved

Disposition Date: 10/18/2023

Signature: Chris Walls

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-	96336	LOS MEDANOS (WOLFCAMP) SOUTH

[4] Property Code	[5] Property Name	[6] Well Number
333473	JRU DI 7 SAWTOOTH	110H

[7] OGRID No.	[8] Operator Name	[9] Elevation
373075	XTO PERMIAN OPERATING, LLC	3,315'

[10] Surface Location

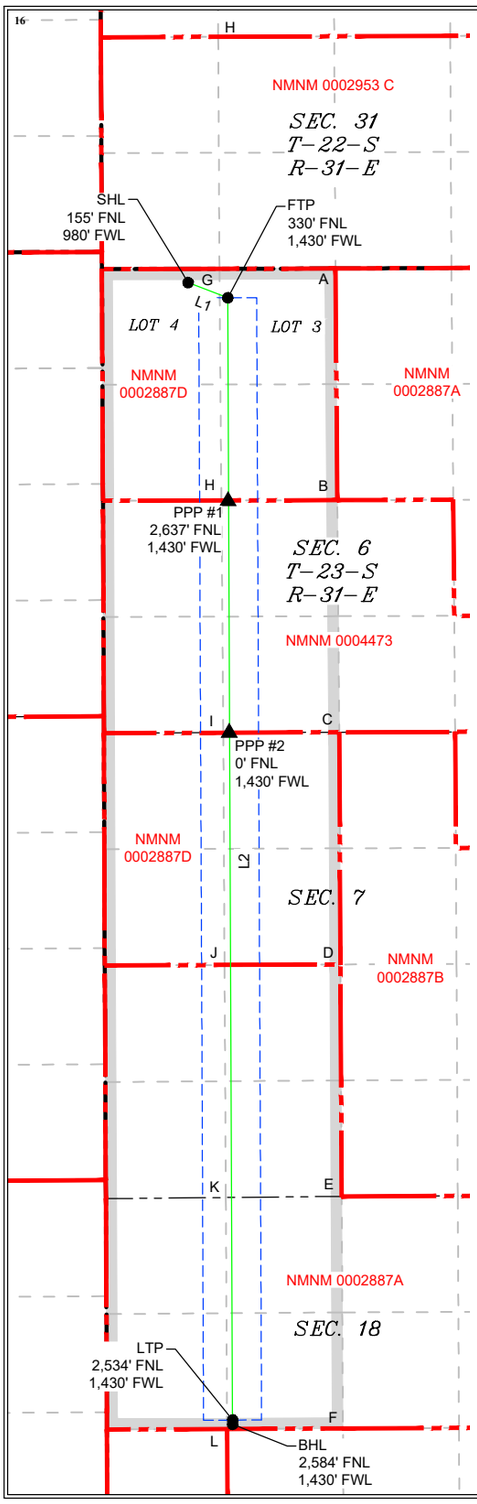
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
4	6	23 S	31 E		155	NORTH	980	WEST	EDDY

[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
F	18	23 S	31 E		2,584	NORTH	1,430	WEST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
811.36			

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.



LINE TABLE		
LINE	AZIMUTH	LENGTH
L1	111°03'56"	483.64'
L2	179°45'05"	12,822.02'

LOT ACREAGE TABLE

SECTION 6, T-23-S, R-31-E
LOT 3 = 39.90 ACRES
LOT 4 = 40.45 ACRES

LEGEND

- SECTION LINE
- WELL BORE
- NEW MEXICO MINERAL LEASE
- 330' BUFFER
- ALLOCATION AREA

COORDINATE TABLE

SHL (NAD 83 NME)	FTP (NAD 83 NME)	PPP #1 (NAD 83 NME)
Y = 487,924.3 N	Y = 487,750.5 N	Y = 485,443.9 N
X = 699,121.1 E	X = 699,572.4 E	X = 699,582.4 E
LAT. = 32.340341 °N	LAT. = 32.339857 °N	LAT. = 32.333517 °N
LONG. = 103.822441 °W	LONG. = 103.820983 °W	LONG. = 103.820986 °W
PPP #2 (NAD 83 NME)	**LTP (NAD 83 NME)**	**BHL (NAD 83 NME)**
Y = 482,801.4 N	Y = 474,978.6 N	Y = 474,928.6 N
X = 699,593.9 E	X = 699,627.8 E	X = 699,628.0 E
LAT. = 32.326253 °N	LAT. = 32.304750 °N	LAT. = 32.304612 °N
LONG. = 103.820990 °W	LONG. = 103.821001 °W	LONG. = 103.821001 °W
SHL (NAD 27 NME)	**FTP (NAD 27 NME)**	**PPP #1 (NAD 27 NME)**
Y = 487,864.1 N	Y = 487,690.3 N	Y = 485,383.8 N
X = 657,939.0 E	X = 658,390.3 E	X = 658,400.2 E
LAT. = 32.340218 °N	LAT. = 32.339734 °N	LAT. = 32.333394 °N
LONG. = 103.821950 °W	LONG. = 103.820491 °W	LONG. = 103.820495 °W
PPP #2 (NAD 27 NME)	**LTP (NAD 27 NME)**	**BHL (NAD 27 NME)**
Y = 482,741.3 N	Y = 474,918.7 N	Y = 474,868.7 N
X = 658,411.6 E	X = 658,445.3 E	X = 658,445.5 E
LAT. = 32.326130 °N	LAT. = 32.304626 °N	LAT. = 32.304489 °N
LONG. = 103.820499 °W	LONG. = 103.820511 °W	LONG. = 103.820511 °W

CORNER COORDINATES (NAD 83 NME)		CORNER COORDINATES (NAD 27 NME)	
A - Y = 488,082.7 N	A - X = 700,798.9 E	A - Y = 488,022.6 N	A - X = 659,616.8 E
B - Y = 485,447.3 N	B - X = 700,820.4 E	B - Y = 485,387.2 N	B - X = 659,638.2 E
C - Y = 482,806.0 N	C - X = 700,841.9 E	C - Y = 482,746.0 N	C - X = 659,659.6 E
D - Y = 480,163.7 N	D - X = 700,856.2 E	D - Y = 480,103.7 N	D - X = 659,673.8 E
E - Y = 477,524.9 N	E - X = 700,870.5 E	E - Y = 477,465.0 N	E - X = 659,688.0 E
F - Y = 474,884.2 N	F - X = 700,884.2 E	F - Y = 474,824.3 N	F - X = 659,701.6 E
G - Y = 488,080.3 N	G - X = 699,478.5 E	G - Y = 488,020.1 N	G - X = 658,296.4 E
H - Y = 485,443.7 N	H - X = 699,500.8 E	H - Y = 485,383.5 N	H - X = 658,318.6 E
I - Y = 482,801.1 N	I - X = 699,522.9 E	I - Y = 482,741.1 N	I - X = 658,340.6 E
J - Y = 480,158.2 N	J - X = 699,536.4 E	J - Y = 480,098.2 N	J - X = 658,354.0 E
K - Y = 477,512.1 N	K - X = 699,551.6 E	K - Y = 477,452.2 N	K - X = 658,369.2 E
L - Y = 474,878.3 N	L - X = 699,565.5 E	L - Y = 474,818.4 N	L - X = 658,382.9 E

[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.

Cassie Evans 9/25/23
Signature Date

Cassie Evans
Printed Name

cassie.evans@exxonmobil.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

08-02-2023
Date of Survey

Signature and Seal of Professional Surveyor:

MARK DILLON HARP
NEW MEXICO
23786
PROFESSIONAL SURVEYOR

MARK DILLON HARP 23786
Certificate Number

RP 618.013002.06-01

P:\618.013 XTO Energy - NM\002 James Ranch Unit\.06 - DI 7 - EDDY\Wells\-01 - 110H\DWG\SAWTOOTH 110H C-102.dwg

Instructions:

1) Enter all data into table below using the plat, geoprog, and directional plan
2) Enter GeoProg data directly into permit -- surface and intermediate casing/cement calculations a
3) If there is not a 3rd bone or Wolfcamp X/Y then hide the row from columns A - M
4) Enter Casing Specs on "Casing Design Page" for Burst, Collapse, and Tension

	Field Needs an Input
	Calculated Field
	Pull Down Menu

Input Data		
Well Name	JRU DI 7 Sawtoot	
Well Formation and Lateral	Wolfcamp Y	
Date Created	9/25/2023	
	SHL Data	
Section	6	
T	23	S
R	31	E
Northing	155	N
Easting	980	W
County	Eddy	

Formations		
Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	230'	Water
Top of Salt	577'	Water
Base of Salt	3684'	Water
Delaware	3917'	Water
Brushy Canyon	6452'	Water/Oil/Gas
Bone Spring	7745'	Water
1st Bone Spring Ss	8787'	Water/Oil/Gas
2nd Bone Spring Ss	9625'	Water/Oil/Gas
3rd Bone Spring Sh	10187'	Water/Oil/Gas
3rd Bone Spring Ss	10620'	Water/Oil/Gas
Wolfcamp	11047'	Water/Oil/Gas
Wolfcamp X	11062'	Water/Oil/Gas
Wolfcamp Y	11128'	Water/Oil/Gas
Target/Land Curve	**11182'**	**Water/Oil/Gas**
BHL	**11272'**	**Water/Oil/Gas**

Hole Sizes	
Hole Section	Hole Size
Surface	17.5
Intermediate 1	12.25
Intermediate 2	8.75
Production Curve	6.75
Production Lateral	6.75

Mud Weights	
Surface	8.5
Intermediate 1	10
Intermediate 2	8.6
Production	10

Casing Points		
Surface	552'	25' above Top Salt
Intermediate 1	3784'	100' below Base of
Intermediate 2	9860'	~200' above KOP, I
DV Tool &/or Int 2 XO	3884'	100' below previous
Production	23719'	Equals BHL

Casing		
Hole Section	Name	Size
Surface	13.375 | 54.5 | J-55 | BTC	13.375
Intermediate 1	9.625 | 40 | J-55 | BTC	9.625
Intermediate 2	7.625 | 29.7 | RY P-110 | Flush Joint	7.625
Intermediate 2	7.625 | 29.7 | HC L-80 | Flush Joint	7.625
Production	5.5 | 23 | RY P-110 | Semi-Premium	5.5
Production	5.5 | 23 | RY P-110 | Semi-Flush	5.5
Production	5.5 | 23 | RY P-110 | Semi-Flush	5.5

Directional		
	MD	TVD
KOP	10,489	10,466
Landing Point	11,614	11,182
TD	23,719	11,182

OH Logs		
If Yes, Paste if no, "NO" >	No	Check 8. to see tha

Max Frac Pressure	
12000	psi

Temps		
Surf Temp	BHT	
85	185	** Calculated off LP

		Ca
Name	OD	Weight
20 | 169 | K-55 | BTC	20	169
18.625 | 87.5 | J-55 | BTC	18 5/8	87.5
13.375 | 68 | HC L-80 | BTC	13 3/8	68
13.375 | 54.5 | J-55 | BTC	13 3/8	54.5
9.625 | 40 | J-55 | BTC	9 5/8	40
9.625 | 40 | HC L-80 | BTC	9 5/8	40
9.625 | 53.5 | HC P-110 | BTC	9 5/8	53.5
9.625 | 40 | HC P-110 | BTC	9 5/8	40
7.625 | 29.7 | RY P-110 | Flush Joint	7 5/8	29.7
7.625 | 29.7 | CY P-110 | Flush Joint	7 5/8	29.7
7.625 | 29.7 | HC L-80 | Flush Joint	7 5/8	29.7
6 | 26 | P-110 | Semi-Flush	6	26
5.5 | 23 | RY P-110 | Semi-Flush	5 1/2	23
5.5 | 23 | RY P-110 | Semi-Premium	5 1/2	23
5.5 | 20 | RY P-110 | Semi-Flush	5 1/2	20
5.5 | 20 | RY P-110 | Semi-Premium	5 1/2	20

Open hole logging

re based on salt top & bottom.

th 110H	
2.5 Mile Lateral	
BHL Data	
18	
23	S
31	E
2584	N
1430	W

Match Directional Plan when appropriate

Salt
but ensure casing is set in competent rock per geo
s casing shoe (if needed)

Check Hole sizes on Cement Calcs

Weight	Grade	Collar
54.5	J-55	BTC
40	J-55	BTC
29.7	RY P-110	Flush Joint
29.7	HC L-80	Flush Joint
23	RY P-110	Semi-Premium
23	RY P-110	Semi-Flush
23	RY P-110	Semi-Flush

ıt it reads correctly

TVD

sing Table

Grade	Connection	Tube ID	Collapse	Burst	Tension
K-55	BTC	18.376	2,500	3,380	2,689,000
J-55	BTC	17.755	630	2,250	1,329,000
HC L-80	BTC	12.415	2,690	5,020	1,545,000
J-55	BTC	12.615	1,130	2,740	909,000
J-55	BTC	8.835	2,750	3,950	630,000
HC L-80	BTC	8.835	4,230	5,750	916,000
HC P-110	BTC	8.835	9,190	10,900	1,718,000
HC P-110	BTC	8.535	4,230	7,910	1,266,000
RY P-110	Flush Joint	6.875	5,350	9,460	558,000
CY P-110	Flush Joint	6.875	5,350	9,460	960,000
HC L-80	Flush Joint	6.875	5,780	6,880	406,000
P-110	Semi-Flush	5.128	13,570	14,010	838,000
RY P-110	Semi-Flush	4.67	14,540	14,530	707,000
RY P-110	Semi-Premium	4.67	14,540	14,520	729,000
RY P-110	Semi-Flush	4.778	11,100	12,640	641,000
RY P-110	Semi-Premium	4.778	11,100	12,640	641,000

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

XTO Energy Inc.
JRU DI 7 Sawtooth 110H
Projected TD: 23719.3' MD / 11182' TVD
SHL: 155' FNL & 980' FWL , Section 6, T23S, R31E
BHL: 2584' FNL & 1430' FWL , Section 18, T23S, R31E
Eddy County, NM

1. Geologic Name of Surface Formation

A. Quaternary

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

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	230'	Water
Top of Salt	577'	Water
Base of Salt	3684'	Water
Delaware	3917'	Water
Brushy Canyon	6452'	Water/Oil/Gas
Bone Spring	7745'	Water
1st Bone Spring Ss	8787'	Water/Oil/Gas
2nd Bone Spring Ss	9625'	Water/Oil/Gas
3rd Bone Spring Sh	10187'	Water/Oil/Gas
Target/Land Curve	11182'	Water/Oil/Gas

Rows hidd

*** 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 13.375 inch casing @ 552' (25' above the salt) and circulating cement back to surface. The salt will be isolated by setting 9.625 inch casing at 3784' and circulating cement to surface. The second intermediate will isolate from the salt down to the next casing seat by setting 7.625 inch casing at 9860' and cementing to surface. A 6.75 inch curve and 6.75 inch lateral hole will be drilled to 23719.3 MD/TD and 5.5 inch production casing will be set at TD and cemented back up to 2nd intermediate (estimated TOC 9360 feet) per Potash regulations.

3. Casing Design

Hole Size	MD	TVD	OD Csg	Weight	Grade	Collar	New/Used	SF Burst	SF Collapse	SF Tension
17.5	0' – 552'	571'	13.375	54.5	J-55	BTC	New	2.41	4.63	30.22
12.25	0' – 3784'	3688'	9.625	40	J-55	BTC	New	1.76	2.39	4.16
8.75	0' – 3884'	3788'	7.625	29.7	RY P-110	Flush Joint	New	2.82	3.08	1.91
8.75	3884' – 9860'	9502'	7.625	29.7	HC L-80	Flush Joint	New	2.05	3.68	2.29
6.75	0' – 9760'	9409'	5.5	23	RY P-110	Semi-Premium	New	1.21	2.86	2.00
6.75	9760' - 23719.3'	10451'	5.5	23	RY P-110	Semi-Flush	New	1.21	2.50	5.05

· Production casing meets the clearance requiremenets as tapered string crosses over before encountering the intermediate shoe, per Onshore Order 2.3.B.1
· XTO requests the option to utilize a spudder rig (Atlas Copco RD20 or Equivalent) to set and cement surface and intermediate 1 casing per this Sundry
· XTO requests to not utilize centralizers in the curve and lateral
· 9.625 Collapse analyzed using 50% evacuation based on regional experience.
· 7.625 Collapse analyzed using 50% evacuation based on regional experience.
· 5.5 Tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35
· Test on 2M annular & Casing will be limited to 70% burst of the casing or 1500 psi, whichever is less
· XTO requests the option to use 5" BTC Float equipment for the the production casing

Wellhead:

Permanent Wellhead – Multibowl System
A. Starting Head: 13-5/8" 10M top flange x 13-3/8" bottom
B. Tubing Head: 13-5/8" 10M 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 7-5/8" casing per BLM Onshore Order 2
· Wellhead Manufacturer representative will not be present for BOP test plug installation

Check casing size her

4. Cement Program

Surface Casing: 13.375, 54.5 New BTC, J-55 casing to be set at +/- 552

Lead: 180 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft3/sx, 10.13 gal/sx water)
Tail: 300 sxs Class C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Top of Cement: Surface
Compressives: 12-hr = 250 psi 24 hr = 500 psi

Due to the high probability of not getting cement to surface during conventional top-out jobs in the area, ~10-20 ppb gravel will be added on the backside of the 1" to get cement to surface, if required.

1st Intermediate Casing: 9.625, 40 New BTC, J-55 casing to be set at +/- 3784

Lead: 1570 sxs Class C (mixed at 12.9 ppg, 1.39 ft3/sx, 10.13 gal/sx water)
Tail: 130 sxs Class C + 2% CaCl (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
Top of Cement: Surface
Compressives: 12-hr = 900 psi 24 hr = 1500 psi

2nd Intermediate Casing: 7.625, 29.7 New casing to be set at +/- 9860 DV Tool can be hidder
1st Stage
Optional Lead: 150 sxs Class C (mixed at 10.5 ppg, 2.77 ft3/sx, 15.59 gal/sx water)
TOC: 3584
Tail: 310 sxs Class C (mixed at 14.8 ppg, 1.35 ft3/sx, 6.39 gal/sx water)
TOC: Brushy Canyon @ 6452
Compressives: 12-hr = 900 psi 24 hr = 1150 psi

2nd Stage
Lead: 0 sxs Class C (mixed at 12.9 ppg, 2.16 ft3/sx, 9.61 gal/sx water)
Tail: 400 sxs Class C (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)
Top of Cement: 0
Compressives: 12-hr = 900 psi 24 hr = 1150 psi

Bradenhead squeeze

XTO requests to pump a two stage cement job on the 7-5/8" intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Brush Canyon (6452') and the second stage performed as a bradenhead squeeze with planned cement from the Brushy Canyon to surface. If cement is not visually confirmed to circulate to surface, the final cement top after the second stage job will be verified by Echo-meter. If necessary, a top out consisting of 1,500 sack of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (2.30 yld, 12.91 ppg) will be executed as a contingency. If cement is still unable to circulate to surface, another Echo-meter run will be performed for cement top verification.

XTO will include the Echo-meter verified fluid top and the volume of displacement fluid above the cement slurry in the annulus in all post-drill sundries on wells utilizing this cement program.

XTO will report to the BLM the volume of fluid (limited to 5 bbls) used to flush intermediate casing valves following backside cementing procedures.

XTO requests to pump an Optional Lead if well conditions dictate in an attempt to bring cement to surface. If cement reaches the desired height, the BLM will be notified and the second stage bradenhead squeeze and subsequent TOC verification will be negated.

XTO requests the option to conduct the bradenhead squeeze and TOC verification offline as per standard approval from BLM when unplanned remediation is needed and batch drilling is approved. In the event the bradenhead is conducted, we will ensure the first stage cement job is cemented properly and the well is static with floats holding and no pressure on the csg annulus as with all other casing strings where batch drilling operations occur before moving off the rig. The TA cap will also be installed per Cactus procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.

Production Casing: 5.5, 23 New Semi-Flush, RY P-110 casing to be set at +/- 23719.3

Lead: 40 sxs NeoCem (mixed at 11.5 ppg, 2.69 ft3/sx, 15.00 gal/sx water) Top of Cement: 9360 feet
Tail: 950 sxs VersaCem (mixed at 13.2 ppg, 1.51 ft3/sx, 8.38 gal/sx water) Top of Cement: 10488.8 feet
Compressives: 12-hr = 1375 psi 24 hr = 2285 psi

XTO requests the option to offline cement and remediate (if needed) surface and intermediate casing strings where batch drilling is approved and if unplanned remediation is needed. XTO will ensure well is static with no pressure on the csg annulus, as with all other casing strings where batch drilling operations occur before moving off the rig. The TA cap will also be installed when applicable per Cactus procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops. Offline cement operations will then be conducted after the rig is moved off the current well to the next well in the batch sequence.

5. Pressure Control Equipment

Temporary wellhead/d

Check casing sizes he

Once the permanent WH is installed on the 13.375 casing, the blow out preventer equipment (BOP) will consist of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 5M Double Ram BOP. MASP should not exceed 3355 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 nippling up on the 13.375, 5M bradenhead and flange, the BOP test will be limited to 5000 psi. When nippling up on the 7.625, the BOP 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.

XTO requests a variance to be able to batch drill this well if necessary. In doing so, XTO will set casing and ensure that the well is cemented properly (unless approval is given for offline cementing) and the well is static. With floats holding, no pressure on the csg annulus, and the installation of a 10K TA cap as per Cactus recommendations, XTO will contact the BLM to skid the rig to drill the remaining wells on the pad. Once surface and both intermediate strings are all completed, XTO will begin drilling the production hole on each of the wells.

A variance is requested to **ONLY** test broken pressure seals on the BOP equipment when moving from wellhead to wellhead which is in compliance with API Standard 53. API standard 53 states, that for pad drilling operation, moving from one wellhead to another within 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken. Based on discussions with the BLM on February 27th 2020, we will request permission to **ONLY** retest broken pressure seals if the following conditions are met: 1. After a full BOP test is conducted on the first well on the pad 2. When skidding to drill an intermediate section that does not penetrate into the Wolfcamp.

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' - 552'	17.5	FW/Native	8.5-9	35-40	NC
552' - 3784'	12.25	Brine	10-10.5	30-32	NC
3784' to 9860'	8.75	BDE/OBM or FW/Brine	8.6-9.1	30-32	NC
9860' to 23719.3'	6.75	OBM	10-10.5	50-60	NC - 20

Check properties

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 10.0 ppg -10.5 ppg 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.

Double che

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 13.375 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 175 to 195 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 5815 psi.

10. Anticipated Starting Date and Duration of Operations

Anticipated spud date will be after BLM approval. Move in operations and drilling is expected to take 40 days.

JRU DI 7 Sawtooth 110H **23,719 ft TD** 9/25/2023

Field Needs an Input	BLM Min. Burst: 1
Calculated Field	BLM Min. Collapse: 1.125
Collapse Assumptions	BLM Min. Tension (Dry): 1.6
Burst Assumptions	BLM Min. Tension (Buoyed): 1.8

13.375 | 54.5 | J-55 | BTC — 552 MD/TVD — 8.5 ppg mud

collapse = 1130 | Burst = 2740 | Tension = 909000

Collapse
(8.5)(0.052)(552) = 244 psi | 1130/244 = 4.63 SF for collapse

Burst
Max exp. surf pressure 1135 psi | 2740/1135.2 = 2.41 SF for burst | Burst Assumes MASP Equation (10)(0.052)(3784) - (.22)(3784)

Tension
(552)(54.5)= 30084 lb | 909/30.1 = 30.22 SF for tension

9.625 | 40 | J-55 | BTC — 3784 MD/TVD — 10 # mud

Collapse = 2750 | Burst = 3950 | Tension = 630000

Collapse
(10)(0.052)(3784) * = 1151 psi | 2750/1151 = 2.39 SF for collapse | Collapse Assumes 1/2 evacuation & FW internal
*Less internal fluid height | Fluid Top: 1892 MD/TVD

Burst
Max expected surf pressure = 2240 psi | 3950/2240.192 = 1.76 SF for burst | Burst Assumes MASP Equation (8.6)(0.052)(9860) - (.22)(9860)

Tension
(3784)(40)= 151360 lb | 630/151.36 = 4.16 SF for tension

7.625 | 29.7 | RY P-110 | Flush Joint — 0 Top MD/TVD — 8.6 # mud
3884 Bottom MD/TVD

Collapse = 5350 | Burst = 9460 | Tension = 558000

Collapse
(8.6)(0.052)(3884)= 1737 psi | 5350/1737= 3.08 SF for collapse | Collapse Assumes full evacuation

Burst
Max expected surf pressure = 3355 psi | 9460/3354.6= 2.82 SF for burst | Burst Assumes MASP Equation (10)(0.052)(11182) - (.22)(11182)

Tension
(3884*29.7)+(5976*29.7)= 292842 lb | 558/292.842= 1.91 SF for tension

7.625 | 29.7 | HC L-80 | Flush Joint — 3884 Top MD/TVD — 8.6 # mud
9860 TD MD/TVD

Collapse = 5780 | Burst = 6880 | Tension = 406000

Collapse
(8.6)(0.052)(9860) * = 1572 psi | 5780/1572= 3.68 SF for collapse | Collapse Assumes 1/3 evacuation & FW internal
*Less internal fluid height | Fluid Top: 6573 MD/TVD

Burst
Max expected surf pressure = 3355 psi | 6880/3354.6= 2.05 SF for burst | Burst Assumes MASP Equation (10)(0.052)(11182) - (.22)(11182)

Tension
(5976)(29.7)= 177487.2 lb | 406/177.4872= 2.29 SF for tension

5.5 | 23 | RY P-110 | Semi-Premium — 0 Top — 9,760 TD (MD) — 10 # mud
0.35 FF

Collapse = 14540 | Burst= 14520 | Tension= 729000

Collapse
(10)(0.052)(9760) = 5075 psi | 14540/5075= 2.86 SF for collapse

Burst
Max expected surf pressure = 12000 psi *for frac | 14520/12000= 1.21 SF for burst

Tension
#REF! 364567 lb | 729/364.566675= 2.00 SF for tension

5.5 | 23 | RY P-110 | Semi-Flush — 9,760 Top — 23,719 TD (MD) — 11,182 TVD (max) — 10 # mud
0.35 FF — 11,614 LP (MD) — 12105.5 Lat Length

Collapse= 14540 | Burst= 14530 | Tension= 707000

Collapse
(10)(0.052)(11182) = 5815 psi | 14540/5815= 2.50 SF for collapse

Burst
Max expected surf pressure = 12000 psi *for frac | 14530/12000= 1.21 SF for burst

Tension
#REF! 140087 lb | 707/140.086675= 5.05 SF for tension

Surface Cement			1st Intermediate	
Top of Cement:	0 ft, MD		Top of Cement:	0
Casing Shoe:	552 ft, MD		Casing Shoe:	3784
Hole Size:	17.5 in		Hole Size:	12.25
Casing Size:	13.375 in		Casing Size:	9.625
Lead			Lead	
% Excess, OH	100 %		% Excess, OH	100
yield	1.87 ft^3 / sack		yield	1.39
TOC for Lead	0 ft, MD		TOC for Lead	0
Tail			Tail	
% Excess, OH	100 %		% Excess, OH	100
yield	1.35 ft^3 / sack		yield	1.35
TOC for Tail	252 ft, MD		TOC for Tail	3,484
Lead Calcs			*Lead Calcs*	
Annular Volume:	350.12 ft^3 (w/ excess)		Annular Volume:	2182.42
Cement Volume:	187.2 sacks		Cement Volume:	1570.1
Tail Calcs			*Tail Calcs*	
Annular Volume:	416.81 ft^3 (w/ excess)		Annular Volume:	187.92
Cement Volume:	308.7 sacks		Cement Volume:	139.2

Field Needs an Input
Calculated Field

	2nd Intermediate, 2nd Stage			2nd Intermediate,
ft, MD	Top of Cement:	0	ft, MD	Top of Cem
ft, MD	Bottom of Cement:	3,584	ft, MD	Casing Sho
in	Hole Size:	8.75	in	Hole Size:
in	Casing Size:	7.625	in	Casing Size
	Lead			Lead
%	% Excess, OH	100	%	% Excess,
ft^3 / sack	yield	2.16	ft^3 / sack	yield
ft, MD	TOC for Lead	0	ft, MD	TOC for Le
	Tail			Tail
%	% Excess, OH	50	%	% Excess,
ft^3 / sack	yield	1.33	ft^3 / sack	yield
ft, MD	TOC for Tail	0	ft, MD	TOC for Ta
	Lead Calcs			*Lead Calcs*
ft^3 (w/ excess)	Annular Volume:	0.00	ft^3 (w/ excess)	Annular Vo
sacks	Cement Volume:	0.0	sacks	Cement Vo
	Tail Calcs			*Tail Calcs*
ft^3 (w/ excess)	Annular Volume:	540.19	ft^3 (w/ excess)	Annular Vo
sacks	Cement Volume:	406.2	sacks	Cement Vo

1st Stage			Production Cement		
ıent:	3584	ft, MD	Top of Cement:	9360	ft, MD
ɔe:	9860	ft, MD	Casing Shoe:	23,719	ft, MD
			Kick Off Point:	10,489	ft, MD
	8.75	in	Landing Point:	11,614	ft, MD
e:	7.625	in	Hole Size 1:	6.75	in
			Hole Size 2:	6.75	in
			Casing Size 1:	5.5	in
			Casing Size 2:	5.5	in
			XO Depth:	0	ft, MD
			Lead		
OH	50	%	% Excess, OH	30	%
	2.77	ft^3 / sack	yield	2.69	ft^3 / sack
ad	3,584	ft, MD	TOC for Lead	9,360	ft, MD
			Tail		
OH	25	%	% Excess, OH	30	%
	1.35	ft^3 / sack	yield	1.51	ft^3 / sack
il	6,452	ft, MD	TOC for Tail	10,489	ft, MD
			Lead Calcs		
lume:	432.27	ft^3 (w/ excess)	Annular Volume:	122.56	ft^3 (w/ excess)
lume:	156.1	sacks	Cement Volume:	45.6	sacks
			Tail Calcs		
lume:	428.05	ft^3 (w/ excess)	Annular Volume:	1436.54	ft^3 (w/ excess)
lume:	317.1	sacks	Cement Volume:	951.4	sacks

= Calculate

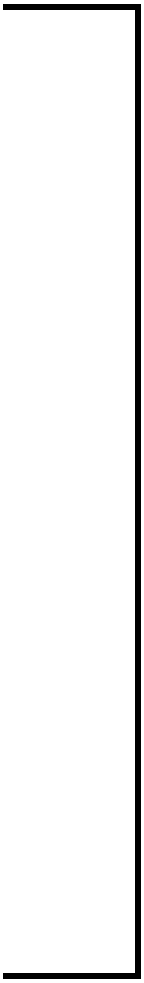
		Field Needs an Input
		Calculated Field

Permanent System

Prod MW =	10	ppg	
Max TVD =	11,182	ft	
			3M system if MASP < 3000
BHP =	5815	psi	5M system if 3000 < MASP < 5000
			10M system if MASP > 5000
MASP =	**3355**	**psi**	
Permit for =	5M		
	5000	psi	

Temporary System (if required)

1st Int MW =	10	ppg	
Max TVD =	3784	ft	
			2M system if MASP < 3000
BHP =	1968	psi	5M system if 2000 < MASP < 5000
MASP =	**1135**	**psi**	
Permit for =	2M		
	2000		



JRU DI 7 Sawtooth 110H

Wolfcamp Y | 2.5 Mile Lateral

County: Eddy County, NM
SHL: SHL: 155' FNL & 980' FWL , Section 6, T23S, R31E
BHL: BHL: 2584' FNL & 1430' FWL , Section 18, T23S, R31E
Area: Potash mines (~4,500')

TVD	Geology	Casing & Cement	Wellhead	Hole Size	General Notes
120'	***Conductor***		**(Tech Data Sheet)**	17.5"	
230'	Rustler	**13.375 | 54.5 | J-55 | BTC**	**552' MD**	12-1/4"	
577'	Top of Salt				
3,684'	Base of Salt	**9.625 | 40 | J-55 | BTC**	**3784' MD**	8-3/4"	
3,917'	Delaware/Lamar		Composite DV Tool (If Required)		
6,452'	Brushy Canyon Ss.				
7,745'	Bone Spring Lm				
8,787'	1st Bone Spring Ss.				
		7.625 | 29.7 | RY P-110 | Flush Joint **7.625 | 29.7 | HC L-80 | Flush Joint**	**9860' MD**	6-3/4" Curve	
			KOP 10489' MD 10466' TVD		
9,625'	2nd Bone Spring Ss.			6-3/4" Lateral	
			LP 11614' MD 11182' TVD		
		5.5 | 23 | RY P-110 | Semi-Premium **5.5 | 23 | RY P-110 | Semi-Flush**		**23,719' MD**	
11,182'	Landing TVD	**5.5 | 23 | RY P-110 | Semi-Flush**		**11,182' TVD @ BHL**	
11,182'	TVD @ BHL				

Formations
1st Bone Spring
1st Bone Spring Sand
2nd Bone Spring
2nd Bone Spring Shale
2nd Bone Spring Sand
3rd Bone Spring
3rd Bone Spring Shale
3rd Bone Spring Sand
Wolfcamp X
Wolfcamp Y
Wolfcamp X/Y
Wolfcamp A
Wolfcamp B
Wolfcamp B/C
Wolfcamp C
Wolfcamp D/E
Wolfcamp D
Wolfcamp E

Lateral Length
1 Mile Lateral
1.5 Mile Lateral
2 Mile Lateral
2.25 Mile Lateral
2.5 Mile Lateral
3 Mile Lateral
3.5 Mile Lateral
4 Mile Lateral

1st Bone Spring
1st Bone Spring
1st Bone Spring
1st Bone Spring
1st Bone Spring
1st Bone Spring
1st Bone Spring
2nd Bone Spring
2nd Bone Spring
2nd Bone Spring
2nd Bone Spring
2nd Bone Spring
2nd Bone Spring
2nd Bone Spring
3rd Bone Spring
3rd Bone Spring
3rd Bone Spring
3rd Bone Spring
3rd Bone Spring
3rd Bone Spring
3rd Bone Spring
3rd Bone Spring Shale
3rd Bone Spring Shale
3rd Bone Spring Shale
3rd Bone Spring Shale
3rd Bone Spring Shale
3rd Bone Spring Shale
3rd Bone Spring Shale
Wolfcamp X
Wolfcamp X
Wolfcamp X
Wolfcamp X
Wolfcamp X
Wolfcamp X
Wolfcamp X
Wolfcamp Y
Wolfcamp Y
Wolfcamp Y
Wolfcamp Y
Wolfcamp Y
Wolfcamp Y
Wolfcamp Y
Wolfcamp A
Wolfcamp A
Wolfcamp A
Wolfcamp A
Wolfcamp A
Wolfcamp A

Wolfcamp A
Wolfcamp B
Wolfcamp B
Wolfcamp B
Wolfcamp B
Wolfcamp B
Wolfcamp B
Wolfcamp B
Wolfcamp D/E
Wolfcamp D/E
Wolfcamp D/E
Wolfcamp D/E
Wolfcamp D/E
Wolfcamp D/E
Wolfcamp D/E
1st Bone Spring Sand
1st Bone Spring Sand
1st Bone Spring Sand
1st Bone Spring Sand
1st Bone Spring Sand
1st Bone Spring Sand
1st Bone Spring Sand
2nd Bone Spring Shale
2nd Bone Spring Shale
2nd Bone Spring Shale
2nd Bone Spring Shale
2nd Bone Spring Shale
2nd Bone Spring Shale
2nd Bone Spring Shale
2nd Bone Spring Sand
2nd Bone Spring Sand
2nd Bone Spring Sand
2nd Bone Spring Sand
2nd Bone Spring Sand
2nd Bone Spring Sand
2nd Bone Spring Sand
3rd Bone Spring Sand
3rd Bone Spring Sand
3rd Bone Spring Sand
3rd Bone Spring Sand
3rd Bone Spring Sand
3rd Bone Spring Sand
3rd Bone Spring Sand
Wolfcamp C
Wolfcamp C
Wolfcamp C
Wolfcamp C
Wolfcamp C
Wolfcamp C
Wolfcamp C
Wolfcamp B/C
Wolfcamp B/C
Wolfcamp B/C
Wolfcamp B/C
Wolfcamp B/C

Wolfcamp B/C
Wolfcamp B/C
Wolfcamp D
Wolfcamp D
Wolfcamp D
Wolfcamp D
Wolfcamp D
Wolfcamp D
Wolfcamp D
Wolfcamp E
Wolfcamp E
Wolfcamp E
Wolfcamp E
Wolfcamp E
Wolfcamp E
Wolfcamp E
Wolfcamp X/Y
Wolfcamp X/Y
Wolfcamp X/Y
Wolfcamp X/Y
Wolfcamp X/Y
Wolfcamp X/Y
Wolfcamp X/Y
1st Bone Spring
2nd Bone Spring
3rd Bone Spring
3rd Bone Spring Shale
Wolfcamp X
Wolfcamp Y
Wolfcamp A
Wolfcamp B
Wolfcamp D/E
1st Bone Spring Sand
2nd Bone Spring Shale
2nd Bone Spring Sand
3rd Bone Spring Sand
Wolfcamp C
Wolfcamp B/C
Wolfcamp D
Wolfcamp E
Wolfcamp X/Y

Target formation and Lateral Length: Wolfcamp Y 2.5 Mile Lateral

		Production 1
1 Mile Lateral	1st Bone Spring 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	1st Bone Spring 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	1st Bone Spring 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	1st Bone Spring 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	1st Bone Spring 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	1st Bone Spring 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	1st Bone Spring 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	2nd Bone Spring 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	2nd Bone Spring 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	2nd Bone Spring 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	2nd Bone Spring 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	2nd Bone Spring 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	2nd Bone Spring 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	2nd Bone Spring 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	3rd Bone Spring 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	3rd Bone Spring 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	3rd Bone Spring 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	3rd Bone Spring 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	3rd Bone Spring 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	3rd Bone Spring 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	3rd Bone Spring 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	3rd Bone Spring Shale 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	3rd Bone Spring Shale 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	3rd Bone Spring Shale 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	3rd Bone Spring Shale 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	3rd Bone Spring Shale 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	3rd Bone Spring Shale 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	3rd Bone Spring Shale 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp X 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp X 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp X 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp X 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp X 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp X 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp X 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp Y 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp Y 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp Y 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp Y 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp Y 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp Y 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp Y 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp A 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp A 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp A 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp A 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp A 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp A 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush

4 Mile Lateral	Wolfcamp A 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp B 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp B 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp B 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp B 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp B 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp B 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp B 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp D/E 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp D/E 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp D/E 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp D/E 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp D/E 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp D/E 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp D/E 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	1st Bone Spring Sand 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	1st Bone Spring Sand 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	1st Bone Spring Sand 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	1st Bone Spring Sand 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	1st Bone Spring Sand 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	1st Bone Spring Sand 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	1st Bone Spring Sand 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	2nd Bone Spring Shale 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	2nd Bone Spring Shale 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	2nd Bone Spring Shale 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	2nd Bone Spring Shale 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	2nd Bone Spring Shale 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	2nd Bone Spring Shale 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	2nd Bone Spring Shale 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	2nd Bone Spring Sand 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	2nd Bone Spring Sand 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	2nd Bone Spring Sand 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	2nd Bone Spring Sand 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	2nd Bone Spring Sand 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	2nd Bone Spring Sand 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	2nd Bone Spring Sand 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	3rd Bone Spring Sand 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	3rd Bone Spring Sand 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	3rd Bone Spring Sand 2 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.5 Mile Lateral	3rd Bone Spring Sand 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	3rd Bone Spring Sand 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	3rd Bone Spring Sand 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	3rd Bone Spring Sand 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp C 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp C 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp C 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp C 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp C 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp C 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp C 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp B/C 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp B/C 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp B/C 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp B/C 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp B/C 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium

3.5 Mile Lateral	Wolfcamp B/C 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp B/C 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp D 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp D 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp D 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp D 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp D 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp D 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp D 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp E 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp E 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp E 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp E 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp E 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp E 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp E 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
1 Mile Lateral	Wolfcamp X/Y 1 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
1.5 Mile Lateral	Wolfcamp X/Y 1.5 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2 Mile Lateral	Wolfcamp X/Y 2 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.5 Mile Lateral	Wolfcamp X/Y 2.5 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3 Mile Lateral	Wolfcamp X/Y 3 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
3.5 Mile Lateral	Wolfcamp X/Y 3.5 Mile Lateral	6 | 26 | P-110 | Semi-Flush
4 Mile Lateral	Wolfcamp X/Y 4 Mile Lateral	6 | 26 | P-110 | Semi-Flush
2.25 Mile Lateral	1st Bone Spring 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	2nd Bone Spring 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	3rd Bone Spring 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	3rd Bone Spring Shale 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp X 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp Y 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp A 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp B 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp D/E 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	1st Bone Spring Sand 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	2nd Bone Spring Shale 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	2nd Bone Spring Sand 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	3rd Bone Spring Sand 2.25 Mile Lateral	5.5 | 20 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp C 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp B/C 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp D 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp E 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium
2.25 Mile Lateral	Wolfcamp X/Y 2.25 Mile Lateral	5.5 | 23 | RY P-110 | Semi-Premium

Production 1	Production 2
5.5 | 23 | RY P-110 | Semi-Premium	5.5 | 23 | RY P-110 | Semi-Flush

Production 2	Production 3
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush	5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush	5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush	6 | 26 | P-110 | Semi-Flush

6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush

6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush

6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush

6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
6 | 26 | P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 20 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush
5.5 | 23 | RY P-110 | Semi-Flush

Production 3	Max Frac Pressure
5.5 | 23 | RY P-110 | Semi-Flush	12000

Max Frac Pressure

10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000

Name
20 | 169 | K-55 | BTC
18.625 | 87.5 | J-55 | BTC
13.375 | 68 | HC L-80 | BT
13.375 | 54.5 | J-55 | BTC
9.625 | 40 | J-55 | BTC
9.625 | 40 | HC L-80 | BTC
9.625 | 53.5 | HC P110 | B
9.625 | 40 | HC P110 | BTC
7.625 | 29.7 | P110 RY -IF
7.625 | 29.7 | P110 CY - IF
7.625 | 29.7 | HCL-80 - IFJ
6 | 26 | P-110 - Talon HTQ
5.5 | 23 | P110 RY - Talon
5.5 | 23 | P110 RY - VAM S
5.5 | 23 | P110 RY - Freed
5.5 | 20 | P110 RY - Talon
5.5 | 20 | P110 RY - Freed

12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
12000
10000
10000
10000
12000
12000

12000
12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
10000
10000
10000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000
12000

Casing Table			
	OD	Weight	Grade
	20	169	K-55
	18 5/8	87.5	J-55
C	13 3/8	68	HC L-80
	13 3/8	54.5	J-55
	9 5/8	40	J-55
	9 5/8	40	HC L-80
TC	9 5/8	53.5	HC P110
C	9 5/8	40	HC P110
J | Flush Joint	7 5/8	29.7	P110 RY -IFJ
J | Flush Joint	7 5/8	29.7	P110 CY - IFJ
| Flush Joint	7 5/8	29.7	HCL-80 - IFJ
| Semi-Flush	6	26	P-110 - Talon HTC
HTQ | Semi-Flu	5 1/2	23	P110 RY - Talon HT
SPRINT | Semi-F	5 1/2	23	P110 RY - VAM SPR
om HTQ | Semi-	5 1/2	23	P110 RY - Freedom H
HTQ | Semi-Flu	5 1/2	20	P110 RY - Talon HT
om HTQ | Semi-	5 1/2	20	P110 RY - Freedom H

	Connection	Tube ID	Collapse	Burst	Tension
	BTC	18.376	2,500	3,380	2,689,000
	BTC	17.755	630	2,250	1,329,000
	BTC	12.415	2,690	5,020	1,545,000
	BTC	12.615	1,130	2,740	909,000
	BTC	8.835	2,750	3,950	630,000
	BTC	8.835	4,230	5,750	916,000
	BTC	8.835	9,190	10,900	1,718,000
	BTC	8.535	4,230	7,910	1,266,000
	Flush Joint	6.875	5,350	9,460	558,000
	Flush Joint	6.875	5,350	9,460	960,000
	Flush Joint	6.875	5,780	6,880	406,000
Q	Semi-Flush	5.128	13,570	14,010	838,000
TQ	Semi-Flush	4.67	14,540	14,530	707,000
INT	Semi-Flush	4.67	14,550	14,530	671,000
HTQ	Semi-Premium	4.67	14,540	14,520	729,000
TQ	Semi-Flush	4.778	11,100	12,640	641,000
HTQ	Semi-Premium	4.778	11,100	12,640	641,000

Well Plan Report - 110H

Measured Depth:	23719.34 ft
TVD RKB:	11182.00 ft
Location	
Cartographic Reference System:	New Mexico East - NAD 27
Northing:	487864.10 ft
Easting:	657939.00 ft
RKB:	3347.00 ft
Ground Level:	3315.00 ft
North Reference:	Grid
Convergence Angle:	0.27 Deg
Site:	JRU DI7

Plan Sections 110H

Measured Depth (ft)	Inclination (Deg)	Azimuth (Deg)	TVD RKB (ft)	Y Offset (ft)	X Offset (ft)	Build Rate (Deg/100ft)	Turn Rate (Deg/100ft)	Dogleg Rate (Deg/100ft)
0	0	360	0	0	0	0	0	0
1200	0	360	1200	0	0	0	0	0
1477.66	5.55	111.06	1477.22	-4.83	12.55	2	0	2
6197.36	5.55	111.06	6174.78	-168.97	438.75	0	0	0
6475.02	0	360	6452	-173.8	451.3	-2	0	2
10488.82	0	360	10465.8	-173.8	451.3	0	0	0
11613.82	90	179.75	11182	-889.99	454.38	8	15.98	8
23669.34	90	179.75	11182	-12945.4	506.3	0	0	0
23719.34	90	179.75	11182	-12995.4	506.52	0	0	0

Position Uncertainty	110H

Measured Depth (ft)	Inclination (°)	Azimuth (°)	TVD RKB (ft)	Highside Error (ft)	Bias (ft)	Lateral Error (ft)	Bias (ft)	Vertical Error (ft)
0	0	360	0	0	0	0	0	0
100	0	0	100	0.358	0	0.179	0	2.3
200	0	0	200	0.717	0	0.538	0	2.309
300	0	0	300	1.075	0	0.896	0	2.325
400	0	0	400	1.434	0	1.255	0	2.347
500	0	0	500	1.792	0	1.613	0	2.374
600	0	0	600	2.151	0	1.972	0	2.406
700	0	0	700	2.509	0	2.33	0	2.443
800	0	0	800	2.868	0	2.689	0	2.485
900	0	0	900	3.226	0	3.047	0	2.53
1000	0	0	1000	3.585	0	3.405	0	2.58
1100	0	0	1100	3.943	0	3.764	0	2.633
1200	0	360	1200	4.302	0	4.122	0	2.69
1300	2	111.062	1299.98	4.49	0	4.626	0	2.749
1400	4	111.062	1399.838	4.82	0	4.965	0	2.809
1477.656	5.553	111.062	1477.222	5.074	0	5.231	0	2.855
1500	5.553	111.062	1499.461	5.15	0	5.307	0	2.868
1600	5.553	111.062	1598.991	5.493	0	5.654	0	2.936

1700	5.553	111.062	1698.522	5.838	0	6.003	0	3.007
1800	5.553	111.062	1798.053	6.185	0	6.354	0	3.08
1900	5.553	111.062	1897.583	6.534	0	6.707	0	3.155
2000	5.553	111.062	1997.114	6.885	0	7.061	0	3.233
2100	5.553	111.062	2096.645	7.238	0	7.417	0	3.312
2200	5.553	111.062	2196.175	7.591	0	7.774	0	3.394
2300	5.553	111.062	2295.706	7.946	0	8.132	0	3.477
2400	5.553	111.062	2395.237	8.301	0	8.491	0	3.561
2500	5.553	111.062	2494.768	8.657	0	8.851	0	3.648
2600	5.553	111.062	2594.298	9.014	0	9.211	0	3.736
2700	5.553	111.062	2693.829	9.372	0	9.572	0	3.825
2800	5.553	111.062	2793.36	9.73	0	9.933	0	3.916
2900	5.553	111.062	2892.89	10.089	0	10.295	0	4.008
3000	5.553	111.062	2992.421	10.448	0	10.658	0	4.102
3100	5.553	111.062	3091.952	10.807	0	11.02	0	4.197
3200	5.553	111.062	3191.482	11.167	0	11.383	0	4.294
3300	5.553	111.062	3291.013	11.527	0	11.747	0	4.392
3400	5.553	111.062	3390.544	11.887	0	12.11	0	4.492
3500	5.553	111.062	3490.074	12.248	0	12.474	0	4.593
3600	5.553	111.062	3589.605	12.609	0	12.838	0	4.695
3700	5.553	111.062	3689.136	12.97	0	13.203	0	4.799

3800	5.553	111.062	3788.667	13.332	0	13.567	0	4.904
3900	5.553	111.062	3888.197	13.693	0	13.932	0	5.011
4000	5.553	111.062	3987.728	14.055	0	14.297	0	5.119
4100	5.553	111.062	4087.259	14.417	0	14.662	0	5.229
4200	5.553	111.062	4186.789	14.779	0	15.027	0	5.34
4300	5.553	111.062	4286.32	15.141	0	15.393	0	5.453
4400	5.553	111.062	4385.851	15.504	0	15.758	0	5.568
4500	5.553	111.062	4485.381	15.866	0	16.124	0	5.684
4600	5.553	111.062	4584.912	16.229	0	16.49	0	5.802
4700	5.553	111.062	4684.443	16.591	0	16.856	0	5.922
4800	5.553	111.062	4783.973	16.954	0	17.222	0	6.043
4900	5.553	111.062	4883.504	17.317	0	17.588	0	6.166
5000	5.553	111.062	4983.035	17.68	0	17.954	0	6.291
5100	5.553	111.062	5082.565	18.043	0	18.32	0	6.418
5200	5.553	111.062	5182.096	18.406	0	18.686	0	6.547
5300	5.553	111.062	5281.627	18.769	0	19.053	0	6.677
5400	5.553	111.062	5381.158	19.133	0	19.419	0	6.81
5500	5.553	111.062	5480.688	19.496	0	19.786	0	6.944
5600	5.553	111.062	5580.219	19.859	0	20.152	0	7.081
5700	5.553	111.062	5679.75	20.223	0	20.519	0	7.22
5800	5.553	111.062	5779.28	20.586	0	20.885	0	7.36

5900	5.553	111.062	5878.811	20.95	0	21.252	0	7.503
6000	5.553	111.062	5978.342	21.313	0	21.619	0	7.648
6100	5.553	111.062	6077.872	21.677	0	21.986	0	7.795
6197.363	5.553	111.062	6174.778	22.031	0	22.343	0	7.94
6200	5.5	111.062	6177.403	22.041	0	22.352	0	7.944
6300	3.5	111.062	6277.09	22.404	0	22.717	0	8.096
6400	1.5	111.062	6376.989	22.738	0	23.075	0	8.247
6475.019	0	360	6452	23.273	0	23.028	0	8.361
6500	0	0	6476.981	23.358	0	23.112	0	8.398
6600	0	0	6576.981	23.697	0	23.447	0	8.55
6700	0	0	6676.981	24.038	0	23.784	0	8.704
6800	0	0	6776.981	24.378	0	24.121	0	8.861
6900	0	0	6876.981	24.72	0	24.459	0	9.021
7000	0	0	6976.981	25.062	0	24.797	0	9.183
7100	0	0	7076.981	25.404	0	25.136	0	9.348
7200	0	0	7176.981	25.746	0	25.476	0	9.515
7300	0	0	7276.981	26.089	0	25.816	0	9.685
7400	0	0	7376.981	26.433	0	26.156	0	9.857
7500	0	0	7476.981	26.777	0	26.497	0	10.033
7600	0	0	7576.981	27.121	0	26.838	0	10.211
7700	0	0	7676.981	27.466	0	27.18	0	10.391

7800	0	0	7776.981	27.811	0	27.522	0	10.575
7900	0	0	7876.981	28.156	0	27.865	0	10.761
8000	0	0	7976.981	28.502	0	28.208	0	10.95
8100	0	0	8076.981	28.848	0	28.552	0	11.142
8200	0	0	8176.981	29.194	0	28.895	0	11.336
8300	0	0	8276.981	29.54	0	29.24	0	11.534
8400	0	0	8376.981	29.887	0	29.584	0	11.734
8500	0	0	8476.981	30.234	0	29.929	0	11.937
8600	0	0	8576.981	30.582	0	30.274	0	12.143
8700	0	0	8676.981	30.929	0	30.619	0	12.351
8800	0	0	8776.981	31.277	0	30.965	0	12.563
8900	0	0	8876.981	31.625	0	31.311	0	12.778
9000	0	0	8976.981	31.974	0	31.658	0	12.995
9100	0	0	9076.981	32.322	0	32.004	0	13.215
9200	0	0	9176.981	32.671	0	32.351	0	13.439
9300	0	0	9276.981	33.02	0	32.698	0	13.665
9400	0	0	9376.981	33.369	0	33.045	0	13.894
9500	0	0	9476.981	33.719	0	33.393	0	14.126
9600	0	0	9576.981	34.068	0	33.741	0	14.361
9700	0	0	9676.981	34.418	0	34.089	0	14.599
9800	0	0	9776.981	34.768	0	34.437	0	14.84

9900	0	0	9876.981	35.118	0	34.785	0	15.084
10000	0	0	9976.981	35.468	0	35.134	0	15.331
10100	0	0	10076.981	35.819	0	35.483	0	15.581
10200	0	0	10176.981	36.169	0	35.832	0	15.834
10300	0	0	10276.981	36.52	0	36.181	0	16.09
10400	0	0	10376.981	36.871	0	36.53	0	16.349
10488.819	0	360	10465.8	37.182	0	36.841	0	16.581
10500	0.894	179.753	10476.98	37.224	0	36.88	0	16.61
10600	8.894	179.753	10576.535	37.269	0	37.217	0	16.873
10700	16.894	179.753	10673.934	36.736	0	37.55	0	17.128
10800	24.894	179.753	10767.282	35.645	0	37.874	0	17.371
10900	32.894	179.753	10854.762	34.037	0	38.186	0	17.597
11000	40.894	179.753	10934.672	31.977	0	38.483	0	17.805
11100	48.894	179.753	11005.455	29.56	0	38.764	0	17.998
11200	56.894	179.753	11065.735	26.923	0	39.026	0	18.179
11300	64.894	179.753	11114.337	24.252	0	39.269	0	18.354
11400	72.894	179.753	11150.317	21.807	0	39.492	0	18.53
11500	80.894	179.753	11172.973	19.925	0	39.691	0	18.712
11600	88.894	179.753	11181.865	18.972	0	39.865	0	18.903
11613.819	90	179.753	11181.997	18.931	0	39.886	0	18.931
11700	90	179.753	11181.997	19.112	0	40.028	0	19.112

11800	90	179.753	11181.997	19.351	0	40.211	0	19.351
11900	90	179.753	11181.997	19.618	0	40.411	0	19.618
12000	90	179.753	11181.997	19.912	0	40.63	0	19.912
12100	90	179.753	11181.997	20.233	0	40.867	0	20.233
12200	90	179.753	11181.997	20.578	0	41.121	0	20.578
12300	90	179.753	11181.997	20.948	0	41.393	0	20.948
12400	90	179.753	11181.997	21.339	0	41.681	0	21.339
12500	90	179.753	11181.997	21.752	0	41.986	0	21.752
12600	90	179.753	11181.997	22.185	0	42.307	0	22.185
12700	90	179.753	11181.997	22.637	0	42.643	0	22.637
12800	90	179.753	11181.998	23.107	0	42.996	0	23.107
12900	90	179.753	11181.998	23.594	0	43.363	0	23.594
13000	90	179.753	11181.998	24.096	0	43.745	0	24.096
13100	90	179.753	11181.998	24.613	0	44.141	0	24.613
13200	90	179.753	11181.998	25.144	0	44.551	0	25.144
13300	90	179.753	11181.998	25.688	0	44.974	0	25.688
13400	90	179.753	11181.998	26.244	0	45.411	0	26.244
13500	90	179.753	11181.998	26.812	0	45.86	0	26.812
13600	90	179.753	11181.998	27.39	0	46.322	0	27.39
13700	90	179.753	11181.998	27.978	0	46.796	0	27.978
13800	90	179.753	11181.998	28.576	0	47.281	0	28.576

13900	90	179.753	11181.998	29.183	0	47.778	0	29.183
14000	90	179.753	11181.998	29.798	0	48.285	0	29.798
14100	90	179.753	11181.998	30.421	0	48.804	0	30.421
14200	90	179.753	11181.998	31.051	0	49.332	0	31.051
14300	90	179.753	11181.998	31.688	0	49.871	0	31.688
14400	90	179.753	11181.998	32.331	0	50.419	0	32.331
14500	90	179.753	11181.998	32.981	0	50.977	0	32.981
14600	90	179.753	11181.998	33.636	0	51.543	0	33.636
14700	90	179.753	11181.998	34.297	0	52.118	0	34.297
14800	90	179.753	11181.998	34.963	0	52.702	0	34.963
14900	90	179.753	11181.998	35.634	0	53.294	0	35.634
15000	90	179.753	11181.998	36.31	0	53.894	0	36.31
15100	90	179.753	11181.998	36.989	0	54.501	0	36.989
15200	90	179.753	11181.998	37.673	0	55.116	0	37.673
15300	90	179.753	11181.998	38.361	0	55.738	0	38.361
15400	90	179.753	11181.998	39.052	0	56.366	0	39.052
15500	90	179.753	11181.998	39.747	0	57.002	0	39.747
15600	90	179.753	11181.998	40.445	0	57.644	0	40.445
15700	90	179.753	11181.998	41.146	0	58.292	0	41.146
15800	90	179.753	11181.998	41.85	0	58.946	0	41.85
15900	90	179.753	11181.998	42.557	0	59.606	0	42.557

16000	90	179.753	11181.998	43.267	0	60.272	0	43.267
16100	90	179.753	11181.998	43.979	0	60.943	0	43.979
16200	90	179.753	11181.998	44.694	0	61.619	0	44.694
16300	90	179.753	11181.998	45.411	0	62.301	0	45.411
16400	90	179.753	11181.998	46.13	0	62.987	0	46.13
16500	90	179.753	11181.998	46.851	0	63.678	0	46.851
16600	90	179.753	11181.998	47.575	0	64.374	0	47.575
16700	90	179.753	11181.998	48.3	0	65.075	0	48.3
16800	90	179.753	11181.998	49.027	0	65.779	0	49.027
16900	90	179.753	11181.998	49.756	0	66.488	0	49.756
17000	90	179.753	11181.998	50.486	0	67.201	0	50.486
17100	90	179.753	11181.998	51.218	0	67.918	0	51.218
17200	90	179.753	11181.999	51.952	0	68.639	0	51.952
17300	90	179.753	11181.999	52.687	0	69.363	0	52.687
17400	90	179.753	11181.999	53.424	0	70.091	0	53.424
17500	90	179.753	11181.999	54.161	0	70.822	0	54.161
17600	90	179.753	11181.999	54.901	0	71.557	0	54.901
17700	90	179.753	11181.999	55.641	0	72.295	0	55.641
17800	90	179.753	11181.999	56.383	0	73.037	0	56.383
17900	90	179.753	11181.999	57.126	0	73.781	0	57.126
18000	90	179.753	11181.999	57.869	0	74.528	0	57.869

18100	90	179.753	11181.999	58.614	0	75.278	0	58.614
18200	90	179.753	11181.999	59.36	0	76.031	0	59.36
18300	90	179.753	11181.999	60.107	0	76.787	0	60.107
18400	90	179.753	11181.999	60.855	0	77.545	0	60.855
18500	90	179.753	11181.999	61.604	0	78.306	0	61.604
18600	90	179.753	11181.999	62.354	0	79.069	0	62.354
18700	90	179.753	11181.999	63.104	0	79.835	0	63.104
18800	90	179.753	11181.999	63.856	0	80.603	0	63.856
18900	90	179.753	11181.999	64.608	0	81.374	0	64.608
19000	90	179.753	11181.999	65.361	0	82.146	0	65.361
19100	90	179.753	11181.999	66.115	0	82.921	0	66.115
19200	90	179.753	11181.999	66.869	0	83.698	0	66.869
19300	90	179.753	11181.999	67.624	0	84.477	0	67.624
19400	90	179.753	11181.999	68.38	0	85.258	0	68.38
19500	90	179.753	11181.999	69.136	0	86.041	0	69.136
19600	90	179.753	11181.999	69.893	0	86.825	0	69.893
19700	90	179.753	11181.999	70.651	0	87.612	0	70.651
19800	90	179.753	11181.999	71.409	0	88.4	0	71.409
19900	90	179.753	11181.999	72.168	0	89.19	0	72.168
20000	90	179.753	11181.999	72.927	0	89.982	0	72.927
20100	90	179.753	11181.999	73.687	0	90.775	0	73.687

20200	90	179.753	11181.999	74.448	0	91.57	0	74.448
20300	90	179.753	11181.999	75.209	0	92.367	0	75.209
20400	90	179.753	11181.999	75.97	0	93.165	0	75.97
20500	90	179.753	11181.999	76.732	0	93.964	0	76.732
20600	90	179.753	11181.999	77.494	0	94.765	0	77.494
20700	90	179.753	11181.999	78.257	0	95.567	0	78.257
20800	90	179.753	11181.999	79.02	0	96.371	0	79.02
20900	90	179.753	11181.999	79.784	0	97.176	0	79.784
21000	90	179.753	11181.999	80.548	0	97.982	0	80.548
21100	90	179.753	11181.999	81.312	0	98.79	0	81.312
21200	90	179.753	11181.999	82.077	0	99.599	0	82.077
21300	90	179.753	11181.999	82.842	0	100.409	0	82.842
21400	90	179.753	11181.999	83.608	0	101.22	0	83.608
21500	90	179.753	11182	84.374	0	102.033	0	84.374
21600	90	179.753	11182	85.14	0	102.846	0	85.14
21700	90	179.753	11182	85.906	0	103.661	0	85.906
21800	90	179.753	11182	86.673	0	104.477	0	86.673
21900	90	179.753	11182	87.441	0	105.293	0	87.441
22000	90	179.753	11182	88.208	0	106.111	0	88.208
22100	90	179.753	11182	88.976	0	106.93	0	88.976
22200	90	179.753	11182	89.744	0	107.75	0	89.744

22300	90	179.753	11182	90.512	0	108.57	0	90.512
22400	90	179.753	11182	91.281	0	109.392	0	91.281
22500	90	179.753	11182	92.05	0	110.214	0	92.05
22600	90	179.753	11182	92.819	0	111.038	0	92.819
22700	90	179.753	11182	93.589	0	111.862	0	93.589
22800	90	179.753	11182	94.359	0	112.687	0	94.359
22900	90	179.753	11182	95.129	0	113.513	0	95.129
23000	90	179.753	11182	95.899	0	114.34	0	95.899
23100	90	179.753	11182	96.669	0	115.168	0	96.669
23200	90	179.753	11182	97.44	0	115.996	0	97.44
23300	90	179.753	11182	98.211	0	116.825	0	98.211
23400	90	179.753	11182	98.982	0	117.655	0	98.982
23500	90	179.753	11182	99.753	0	118.486	0	99.753
23600	90	179.753	11182	100.525	0	119.317	0	100.525
23669.34	90	179.753	11182	101.06	0	119.894	0	101.06
23700	90	179.753	11182	101.297	0	120.148	0	101.297
23719.341	90	179.753	11182	101.446	0	120.309	0	101.446

Plan Targets	110H

Target Name	Measured Depth (ft)	Grid Northing (ft)	Grid Easting (ft)	TVD MSL (ft)	Target Shape
110H_LTP	23669.34	474918.7	658445.3	7835	LOCATION

110H_BHL	23719.36	474868.7	658445.5	7835	LOCATION
110H_PP2	15846.67	482741.3	658411.6	7835	LOCATION
110H_PP1	13204.14	485383.8	658400.2	7835	LOCATION
110H_FTP	11402.25	487690.3	658390.3	7835	LOCATION
Plan @ 10465.8 (110H OH Plan 2)	11205.02	488406.49	658387.23	7118.8	LOCATION
110H_SHL	0	487864.1	657939	-3347	RECTANGLE

Target

110H_LTP

110H_BHL

Bias (ft)	Magnitude of Bias (ft)	Semi-major Error (ft)	Semi-minor Error (ft)	Semi-minor Azimuth (°)	Tool Used
0	0	0	0	0	XOM_R2OWSG MWD+IFR1+MS
0	0	0.358	0.179	90	XOM_R2OWSG MWD+IFR1+MS
0	0	0.717	0.538	90	XOM_R2OWSG MWD+IFR1+MS
0	0	1.075	0.896	90	XOM_R2OWSG MWD+IFR1+MS
0	0	1.434	1.255	90	XOM_R2OWSG MWD+IFR1+MS
0	0	1.792	1.613	90	XOM_R2OWSG MWD+IFR1+MS
0	0	2.151	1.972	90	XOM_R2OWSG MWD+IFR1+MS
0	0	2.509	2.33	90	XOM_R2OWSG MWD+IFR1+MS
0	0	2.868	2.689	90	XOM_R2OWSG MWD+IFR1+MS
0	0	3.226	3.047	90	XOM_R2OWSG MWD+IFR1+MS
0	0	3.585	3.405	90	XOM_R2OWSG MWD+IFR1+MS
0	0	3.943	3.764	90	XOM_R2OWSG MWD+IFR1+MS
0	0	4.302	4.122	90	XOM_R2OWSG MWD+IFR1+MS
0	0	4.649	4.469	90.032	XOM_R2OWSG MWD+IFR1+MS
0	0	4.988	4.807	90.039	XOM_R2OWSG MWD+IFR1+MS
0	0	5.254	5.071	90.061	XOM_R2OWSG MWD+IFR1+MS
0	0	5.331	5.148	90.03	XOM_R2OWSG MWD+IFR1+MS
0	0	5.676	5.489	90.583	XOM_R2OWSG MWD+IFR1+MS

0	0	6.025	5.833	91.169	XOM_R2OWSG MWD+IFR1+MS
0	0	6.375	6.18	91.78	XOM_R2OWSG MWD+IFR1+MS
0	0	6.727	6.528	92.41	XOM_R2OWSG MWD+IFR1+MS
0	0	7.08	6.879	93.053	XOM_R2OWSG MWD+IFR1+MS
0	0	7.435	7.23	93.706	XOM_R2OWSG MWD+IFR1+MS
0	0	7.791	7.583	94.364	XOM_R2OWSG MWD+IFR1+MS
0	0	8.148	7.937	95.025	XOM_R2OWSG MWD+IFR1+MS
0	0	8.506	8.292	95.688	XOM_R2OWSG MWD+IFR1+MS
0	0	8.865	8.647	96.349	XOM_R2OWSG MWD+IFR1+MS
0	0	9.224	9.004	97.007	XOM_R2OWSG MWD+IFR1+MS
0	0	9.584	9.361	97.661	XOM_R2OWSG MWD+IFR1+MS
0	0	9.944	9.718	98.309	XOM_R2OWSG MWD+IFR1+MS
0	0	10.305	10.076	98.95	XOM_R2OWSG MWD+IFR1+MS
0	0	10.667	10.434	99.582	XOM_R2OWSG MWD+IFR1+MS
0	0	11.029	10.793	100.207	XOM_R2OWSG MWD+IFR1+MS
0	0	11.391	11.152	100.821	XOM_R2OWSG MWD+IFR1+MS
0	0	11.753	11.511	101.426	XOM_R2OWSG MWD+IFR1+MS
0	0	12.116	11.871	102.02	XOM_R2OWSG MWD+IFR1+MS
0	0	12.48	12.23	102.603	XOM_R2OWSG MWD+IFR1+MS
0	0	12.843	12.59	103.174	XOM_R2OWSG MWD+IFR1+MS
0	0	13.207	12.951	103.734	XOM_R2OWSG MWD+IFR1+MS

0	0	13.571	13.311	104.283	XOM_R2OWSG MWD+IFR1+MS
0	0	13.935	13.671	104.819	XOM_R2OWSG MWD+IFR1+MS
0	0	14.3	14.032	105.344	XOM_R2OWSG MWD+IFR1+MS
0	0	14.664	14.393	105.856	XOM_R2OWSG MWD+IFR1+MS
0	0	15.029	14.754	106.357	XOM_R2OWSG MWD+IFR1+MS
0	0	15.394	15.115	106.846	XOM_R2OWSG MWD+IFR1+MS
0	0	15.76	15.476	107.323	XOM_R2OWSG MWD+IFR1+MS
0	0	16.125	15.837	107.788	XOM_R2OWSG MWD+IFR1+MS
0	0	16.49	16.198	108.242	XOM_R2OWSG MWD+IFR1+MS
0	0	16.856	16.56	108.684	XOM_R2OWSG MWD+IFR1+MS
0	0	17.222	16.921	109.116	XOM_R2OWSG MWD+IFR1+MS
0	0	17.588	17.283	109.537	XOM_R2OWSG MWD+IFR1+MS
0	0	17.954	17.644	109.947	XOM_R2OWSG MWD+IFR1+MS
0	0	18.32	18.006	110.346	XOM_R2OWSG MWD+IFR1+MS
0	0	18.686	18.367	110.736	XOM_R2OWSG MWD+IFR1+MS
0	0	19.053	18.729	111.115	XOM_R2OWSG MWD+IFR1+MS
0	0	19.419	19.091	111.485	XOM_R2OWSG MWD+IFR1+MS
0	0	19.786	19.453	111.845	XOM_R2OWSG MWD+IFR1+MS
0	0	20.152	19.814	112.196	XOM_R2OWSG MWD+IFR1+MS
0	0	20.519	20.176	112.539	XOM_R2OWSG MWD+IFR1+MS
0	0	20.886	20.538	112.872	XOM_R2OWSG MWD+IFR1+MS

0	0	21.253	20.9	113.197	XOM_R2OWSG MWD+IFR1+MS
0	0	21.619	21.262	113.514	XOM_R2OWSG MWD+IFR1+MS
0	0	21.986	21.624	113.823	XOM_R2OWSG MWD+IFR1+MS
0	0	22.344	21.977	114.117	XOM_R2OWSG MWD+IFR1+MS
0	0	22.354	21.986	114.124	XOM_R2OWSG MWD+IFR1+MS
0	0	22.718	22.346	114.381	XOM_R2OWSG MWD+IFR1+MS
0	0	23.077	22.703	114.566	XOM_R2OWSG MWD+IFR1+MS
0	0	23.337	22.963	114.471	XOM_R2OWSG MWD+IFR1+MS
0	0	23.421	23.048	114.371	XOM_R2OWSG MWD+IFR1+MS
0	0	23.759	23.385	113.977	XOM_R2OWSG MWD+IFR1+MS
0	0	24.097	23.724	113.594	XOM_R2OWSG MWD+IFR1+MS
0	0	24.436	24.063	113.223	XOM_R2OWSG MWD+IFR1+MS
0	0	24.776	24.402	112.861	XOM_R2OWSG MWD+IFR1+MS
0	0	25.116	24.742	112.51	XOM_R2OWSG MWD+IFR1+MS
0	0	25.457	25.083	112.169	XOM_R2OWSG MWD+IFR1+MS
0	0	25.798	25.424	111.838	XOM_R2OWSG MWD+IFR1+MS
0	0	26.14	25.765	111.515	XOM_R2OWSG MWD+IFR1+MS
0	0	26.482	26.107	111.202	XOM_R2OWSG MWD+IFR1+MS
0	0	26.824	26.449	110.897	XOM_R2OWSG MWD+IFR1+MS
0	0	27.167	26.792	110.601	XOM_R2OWSG MWD+IFR1+MS
0	0	27.511	27.135	110.313	XOM_R2OWSG MWD+IFR1+MS

0	0	27.855	27.478	110.032	XOM_R2OWSG MWD+IFR1+MS
0	0	28.199	27.822	109.759	XOM_R2OWSG MWD+IFR1+MS
0	0	28.544	28.166	109.493	XOM_R2OWSG MWD+IFR1+MS
0	0	28.888	28.51	109.235	XOM_R2OWSG MWD+IFR1+MS
0	0	29.234	28.855	108.983	XOM_R2OWSG MWD+IFR1+MS
0	0	29.579	29.2	108.738	XOM_R2OWSG MWD+IFR1+MS
0	0	29.925	29.546	108.499	XOM_R2OWSG MWD+IFR1+MS
0	0	30.272	29.891	108.266	XOM_R2OWSG MWD+IFR1+MS
0	0	30.618	30.237	108.04	XOM_R2OWSG MWD+IFR1+MS
0	0	30.965	30.584	107.819	XOM_R2OWSG MWD+IFR1+MS
0	0	31.312	30.93	107.603	XOM_R2OWSG MWD+IFR1+MS
0	0	31.659	31.277	107.393	XOM_R2OWSG MWD+IFR1+MS
0	0	32.007	31.624	107.188	XOM_R2OWSG MWD+IFR1+MS
0	0	32.355	31.971	106.988	XOM_R2OWSG MWD+IFR1+MS
0	0	32.703	32.319	106.793	XOM_R2OWSG MWD+IFR1+MS
0	0	33.051	32.666	106.603	XOM_R2OWSG MWD+IFR1+MS
0	0	33.4	33.014	106.417	XOM_R2OWSG MWD+IFR1+MS
0	0	33.749	33.363	106.236	XOM_R2OWSG MWD+IFR1+MS
0	0	34.098	33.711	106.059	XOM_R2OWSG MWD+IFR1+MS
0	0	34.447	34.06	105.886	XOM_R2OWSG MWD+IFR1+MS
0	0	34.796	34.408	105.717	XOM_R2OWSG MWD+IFR1+MS

0	0	35.146	34.757	105.552	XOM_R2OWSG MWD+IFR1+MS
0	0	35.495	35.106	105.391	XOM_R2OWSG MWD+IFR1+MS
0	0	35.845	35.456	105.233	XOM_R2OWSG MWD+IFR1+MS
0	0	36.195	35.805	105.079	XOM_R2OWSG MWD+IFR1+MS
0	0	36.546	36.155	104.929	XOM_R2OWSG MWD+IFR1+MS
0	0	36.896	36.505	104.781	XOM_R2OWSG MWD+IFR1+MS
0	0	37.207	36.816	104.653	XOM_R2OWSG MWD+IFR1+MS
0	0	37.246	36.854	104.648	XOM_R2OWSG MWD+IFR1+MS
0	0	37.58	37.191	104.748	XOM_R2OWSG MWD+IFR1+MS
0	0	37.91	37.523	105.046	XOM_R2OWSG MWD+IFR1+MS
0	0	38.223	37.845	105.909	XOM_R2OWSG MWD+IFR1+MS
0	0	38.512	38.151	107.779	XOM_R2OWSG MWD+IFR1+MS
0	0	38.773	38.438	111.327	XOM_R2OWSG MWD+IFR1+MS
0	0	39.004	38.697	117.541	XOM_R2OWSG MWD+IFR1+MS
0	0	39.215	38.916	127.09	XOM_R2OWSG MWD+IFR1+MS
0	0	39.417	39.082	-41.849	XOM_R2OWSG MWD+IFR1+MS
0	0	39.616	39.189	-32.95	XOM_R2OWSG MWD+IFR1+MS
0	0	39.807	39.246	-27.353	XOM_R2OWSG MWD+IFR1+MS
0	0	39.983	39.266	-24.221	XOM_R2OWSG MWD+IFR1+MS
0	0	40.005	39.267	-23.964	XOM_R2OWSG MWD+IFR1+MS
0	0	40.152	39.268	-22.318	XOM_R2OWSG MWD+IFR1+MS

0	0	40.339	39.271	-20.659	XOM_R2OWSG MWD+IFR1+MS
0	0	40.544	39.275	-19.232	XOM_R2OWSG MWD+IFR1+MS
0	0	40.766	39.281	-17.99	XOM_R2OWSG MWD+IFR1+MS
0	0	41.005	39.288	-16.896	XOM_R2OWSG MWD+IFR1+MS
0	0	41.262	39.296	-15.927	XOM_R2OWSG MWD+IFR1+MS
0	0	41.535	39.305	-15.062	XOM_R2OWSG MWD+IFR1+MS
0	0	41.824	39.315	-14.284	XOM_R2OWSG MWD+IFR1+MS
0	0	42.13	39.326	-13.583	XOM_R2OWSG MWD+IFR1+MS
0	0	42.452	39.338	-12.946	XOM_R2OWSG MWD+IFR1+MS
0	0	42.789	39.351	-12.366	XOM_R2OWSG MWD+IFR1+MS
0	0	43.142	39.365	-11.835	XOM_R2OWSG MWD+IFR1+MS
0	0	43.509	39.379	-11.348	XOM_R2OWSG MWD+IFR1+MS
0	0	43.891	39.395	-10.899	XOM_R2OWSG MWD+IFR1+MS
0	0	44.286	39.411	-10.485	XOM_R2OWSG MWD+IFR1+MS
0	0	44.696	39.428	-10.101	XOM_R2OWSG MWD+IFR1+MS
0	0	45.119	39.445	-9.744	XOM_R2OWSG MWD+IFR1+MS
0	0	45.555	39.464	-9.411	XOM_R2OWSG MWD+IFR1+MS
0	0	46.004	39.483	-9.101	XOM_R2OWSG MWD+IFR1+MS
0	0	46.465	39.503	-8.811	XOM_R2OWSG MWD+IFR1+MS
0	0	46.938	39.523	-8.539	XOM_R2OWSG MWD+IFR1+MS
0	0	47.422	39.545	-8.283	XOM_R2OWSG MWD+IFR1+MS

0	0	47.918	39.567	-8.043	XOM_R2OWSG MWD+IFR1+MS
0	0	48.425	39.589	-7.816	XOM_R2OWSG MWD+IFR1+MS
0	0	48.942	39.613	-7.602	XOM_R2OWSG MWD+IFR1+MS
0	0	49.47	39.637	-7.4	XOM_R2OWSG MWD+IFR1+MS
0	0	50.007	39.662	-7.208	XOM_R2OWSG MWD+IFR1+MS
0	0	50.554	39.687	-7.026	XOM_R2OWSG MWD+IFR1+MS
0	0	51.111	39.713	-6.853	XOM_R2OWSG MWD+IFR1+MS
0	0	51.676	39.74	-6.689	XOM_R2OWSG MWD+IFR1+MS
0	0	52.25	39.768	-6.533	XOM_R2OWSG MWD+IFR1+MS
0	0	52.833	39.796	-6.384	XOM_R2OWSG MWD+IFR1+MS
0	0	53.423	39.825	-6.242	XOM_R2OWSG MWD+IFR1+MS
0	0	54.022	39.854	-6.106	XOM_R2OWSG MWD+IFR1+MS
0	0	54.628	39.884	-5.976	XOM_R2OWSG MWD+IFR1+MS
0	0	55.242	39.915	-5.852	XOM_R2OWSG MWD+IFR1+MS
0	0	55.862	39.947	-5.733	XOM_R2OWSG MWD+IFR1+MS
0	0	56.49	39.979	-5.619	XOM_R2OWSG MWD+IFR1+MS
0	0	57.124	40.012	-5.51	XOM_R2OWSG MWD+IFR1+MS
0	0	57.765	40.045	-5.405	XOM_R2OWSG MWD+IFR1+MS
0	0	58.412	40.08	-5.304	XOM_R2OWSG MWD+IFR1+MS
0	0	59.065	40.114	-5.207	XOM_R2OWSG MWD+IFR1+MS
0	0	59.724	40.15	-5.113	XOM_R2OWSG MWD+IFR1+MS

0	0	60.389	40.186	-5.023	XOM_R2OWSG MWD+IFR1+MS
0	0	61.058	40.223	-4.936	XOM_R2OWSG MWD+IFR1+MS
0	0	61.734	40.26	-4.852	XOM_R2OWSG MWD+IFR1+MS
0	0	62.414	40.298	-4.772	XOM_R2OWSG MWD+IFR1+MS
0	0	63.099	40.337	-4.694	XOM_R2OWSG MWD+IFR1+MS
0	0	63.79	40.376	-4.618	XOM_R2OWSG MWD+IFR1+MS
0	0	64.484	40.416	-4.545	XOM_R2OWSG MWD+IFR1+MS
0	0	65.184	40.457	-4.475	XOM_R2OWSG MWD+IFR1+MS
0	0	65.887	40.498	-4.407	XOM_R2OWSG MWD+IFR1+MS
0	0	66.595	40.54	-4.34	XOM_R2OWSG MWD+IFR1+MS
0	0	67.307	40.582	-4.276	XOM_R2OWSG MWD+IFR1+MS
0	0	68.023	40.625	-4.214	XOM_R2OWSG MWD+IFR1+MS
0	0	68.742	40.669	-4.154	XOM_R2OWSG MWD+IFR1+MS
0	0	69.466	40.713	-4.096	XOM_R2OWSG MWD+IFR1+MS
0	0	70.193	40.758	-4.039	XOM_R2OWSG MWD+IFR1+MS
0	0	70.923	40.803	-3.984	XOM_R2OWSG MWD+IFR1+MS
0	0	71.657	40.85	-3.931	XOM_R2OWSG MWD+IFR1+MS
0	0	72.394	40.896	-3.879	XOM_R2OWSG MWD+IFR1+MS
0	0	73.135	40.944	-3.828	XOM_R2OWSG MWD+IFR1+MS
0	0	73.878	40.992	-3.779	XOM_R2OWSG MWD+IFR1+MS
0	0	74.624	41.04	-3.731	XOM_R2OWSG MWD+IFR1+MS

0	0	75.373	41.089	-3.684	XOM_R2OWSG MWD+IFR1+MS
0	0	76.126	41.139	-3.639	XOM_R2OWSG MWD+IFR1+MS
0	0	76.88	41.189	-3.595	XOM_R2OWSG MWD+IFR1+MS
0	0	77.638	41.24	-3.552	XOM_R2OWSG MWD+IFR1+MS
0	0	78.398	41.292	-3.51	XOM_R2OWSG MWD+IFR1+MS
0	0	79.16	41.344	-3.469	XOM_R2OWSG MWD+IFR1+MS
0	0	79.925	41.397	-3.429	XOM_R2OWSG MWD+IFR1+MS
0	0	80.693	41.45	-3.39	XOM_R2OWSG MWD+IFR1+MS
0	0	81.462	41.504	-3.352	XOM_R2OWSG MWD+IFR1+MS
0	0	82.234	41.558	-3.315	XOM_R2OWSG MWD+IFR1+MS
0	0	83.008	41.613	-3.279	XOM_R2OWSG MWD+IFR1+MS
0	0	83.784	41.669	-3.244	XOM_R2OWSG MWD+IFR1+MS
0	0	84.562	41.725	-3.209	XOM_R2OWSG MWD+IFR1+MS
0	0	85.342	41.781	-3.176	XOM_R2OWSG MWD+IFR1+MS
0	0	86.125	41.839	-3.143	XOM_R2OWSG MWD+IFR1+MS
0	0	86.908	41.897	-3.11	XOM_R2OWSG MWD+IFR1+MS
0	0	87.694	41.955	-3.079	XOM_R2OWSG MWD+IFR1+MS
0	0	88.482	42.014	-3.048	XOM_R2OWSG MWD+IFR1+MS
0	0	89.271	42.073	-3.018	XOM_R2OWSG MWD+IFR1+MS
0	0	90.062	42.133	-2.988	XOM_R2OWSG MWD+IFR1+MS
0	0	90.855	42.194	-2.959	XOM_R2OWSG MWD+IFR1+MS

0	0	91.649	42.255	-2.931	XOM_R2OWSG MWD+IFR1+MS
0	0	92.445	42.317	-2.903	XOM_R2OWSG MWD+IFR1+MS
0	0	93.242	42.379	-2.876	XOM_R2OWSG MWD+IFR1+MS
0	0	94.041	42.442	-2.849	XOM_R2OWSG MWD+IFR1+MS
0	0	94.842	42.505	-2.823	XOM_R2OWSG MWD+IFR1+MS
0	0	95.643	42.569	-2.798	XOM_R2OWSG MWD+IFR1+MS
0	0	96.446	42.634	-2.773	XOM_R2OWSG MWD+IFR1+MS
0	0	97.251	42.699	-2.748	XOM_R2OWSG MWD+IFR1+MS
0	0	98.057	42.764	-2.724	XOM_R2OWSG MWD+IFR1+MS
0	0	98.864	42.83	-2.7	XOM_R2OWSG MWD+IFR1+MS
0	0	99.672	42.896	-2.677	XOM_R2OWSG MWD+IFR1+MS
0	0	100.481	42.964	-2.654	XOM_R2OWSG MWD+IFR1+MS
0	0	101.292	43.031	-2.632	XOM_R2OWSG MWD+IFR1+MS
0	0	102.104	43.099	-2.61	XOM_R2OWSG MWD+IFR1+MS
0	0	102.917	43.168	-2.588	XOM_R2OWSG MWD+IFR1+MS
0	0	103.731	43.237	-2.567	XOM_R2OWSG MWD+IFR1+MS
0	0	104.546	43.306	-2.546	XOM_R2OWSG MWD+IFR1+MS
0	0	105.362	43.377	-2.526	XOM_R2OWSG MWD+IFR1+MS
0	0	106.18	43.447	-2.506	XOM_R2OWSG MWD+IFR1+MS
0	0	106.998	43.518	-2.486	XOM_R2OWSG MWD+IFR1+MS
0	0	107.817	43.59	-2.467	XOM_R2OWSG MWD+IFR1+MS

0	0	108.637	43.662	-2.448	XOM_R2OWSG MWD+IFR1+MS
0	0	109.459	43.735	-2.429	XOM_R2OWSG MWD+IFR1+MS
0	0	110.281	43.808	-2.411	XOM_R2OWSG MWD+IFR1+MS
0	0	111.104	43.881	-2.393	XOM_R2OWSG MWD+IFR1+MS
0	0	111.927	43.955	-2.375	XOM_R2OWSG MWD+IFR1+MS
0	0	112.752	44.03	-2.357	XOM_R2OWSG MWD+IFR1+MS
0	0	113.578	44.105	-2.34	XOM_R2OWSG MWD+IFR1+MS
0	0	114.404	44.181	-2.323	XOM_R2OWSG MWD+IFR1+MS
0	0	115.231	44.257	-2.307	XOM_R2OWSG MWD+IFR1+MS
0	0	116.059	44.333	-2.29	XOM_R2OWSG MWD+IFR1+MS
0	0	116.888	44.41	-2.274	XOM_R2OWSG MWD+IFR1+MS
0	0	117.717	44.487	-2.258	XOM_R2OWSG MWD+IFR1+MS
0	0	118.548	44.565	-2.243	XOM_R2OWSG MWD+IFR1+MS
0	0	119.379	44.644	-2.227	XOM_R2OWSG MWD+IFR1+MS
0	0	119.955	44.698	-2.217	XOM_R2OWSG MWD+IFR1+MS
0	0	120.209	44.723	-2.212	XOM_R2OWSG MWD+IFR1+MS
0	0	120.37	44.738	-2.209	XOM_R2OWSG MWD+IFR1+MS

Cement Variance Request

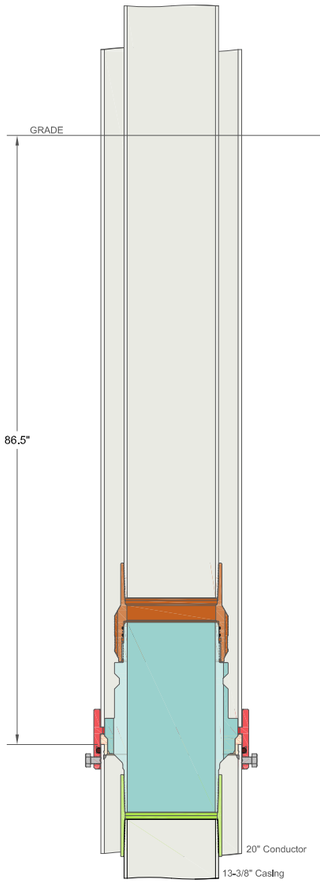
XTO requests to pump a two stage cement job on the 7-5/8” intermediate casing string with the first stage being pumped conventionally with the calculated top of cement at the Brushy Canyon (6452') and the second stage performed as a bradenhead squeeze with planned cement from the Brushy Canyon to surface. If cement is not visually confirmed to circulate to surface, the final cement top after the second stage job will be verified by Echo-meter. If necessary, a top out consisting of 1,500 sack of Class C cement + 3% Salt + 1% PreMag-M + 6% Bentonite Gel (2.30 yld, 12.91 ppg) will be executed as a contingency. If cement is still unable to circulate to surface, another Echo-meter run will be performed for cement top verification.

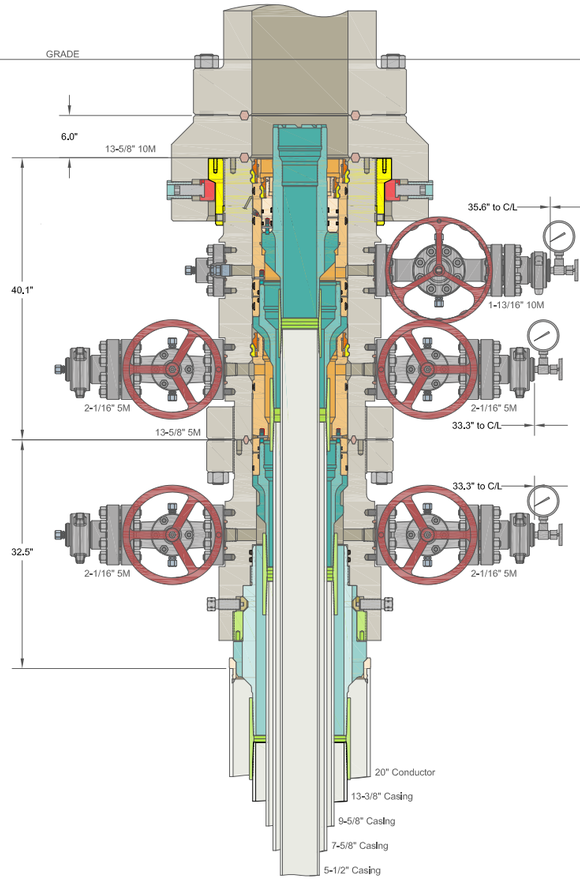
XTO will include the Echo-meter verified fluid top and the volume of displacement fluid above the cement slurry in the annulus in all post-drill sundries on wells utilizing this cement program.

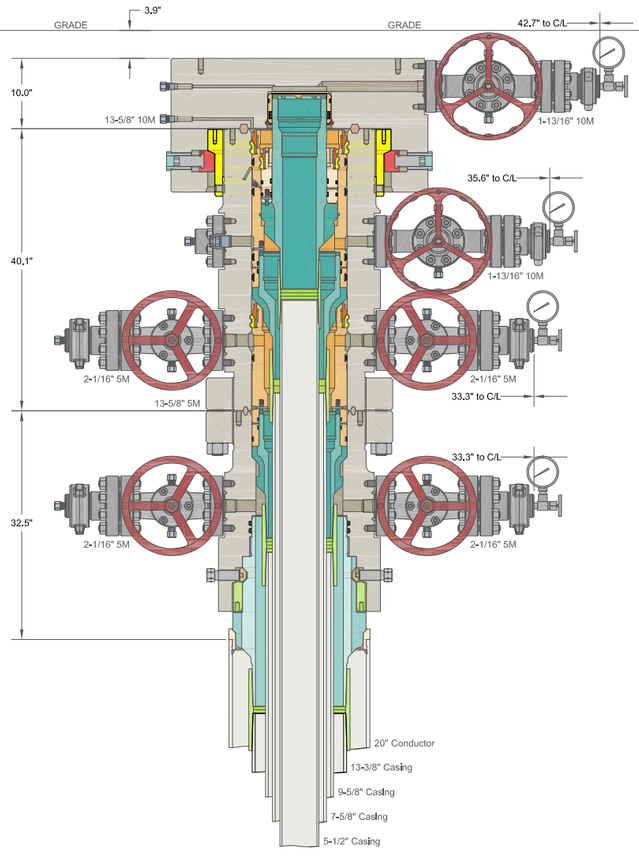
XTO will report to the BLM the volume of fluid (limited to 5 bbls) used to flush intermediate casing valves following backside cementing procedures.

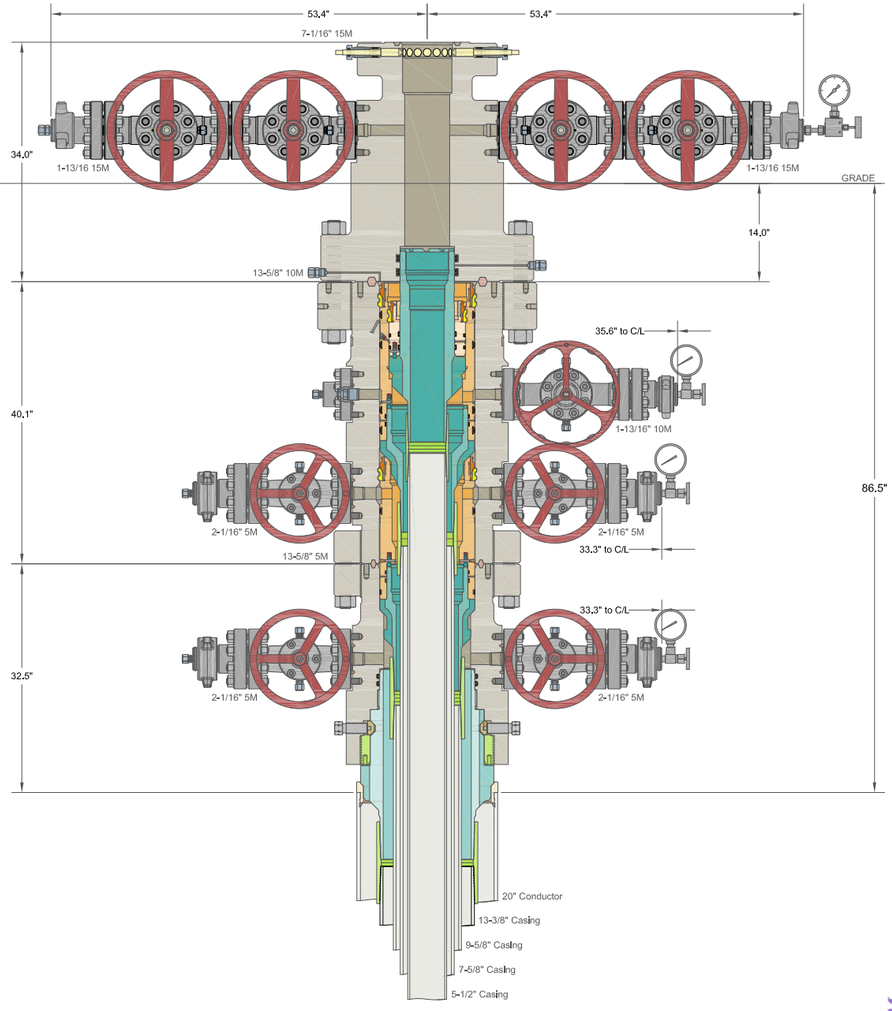
XTO requests to pump an Optional Lead if well conditions dictate in an attempt to bring cement to surface on the first stage. If cement is brought to surface, the BLM will be notified and the second stage bradenhead squeeze and subsequent TOC verification will be negated.

In the event cement is not circulated to surface on the first stage, whether intentionally or unintentionally, XTO requests the option to conduct the bradenhead squeeze and TOC verification offline as per standard approval from BLM when unplanned remediation is needed and batch drilling is approved. In the event the bradenhead is conducted, we will ensure first stage cement job is cemented properly and the well is static with floats holding and no pressure on the csg annulus as with all other casing strings where batch drilling operations occur before moving off the rig. The TA cap will also be installed per GE procedure and pressure inside the casing will be monitored via the valve on the TA cap as per standard batch drilling ops.









ALL DIMENSIONS APPROXIMATE

CACTUS WELLHEAD LLC

(20") x 13-3/8" x 9-5/8" x 7-5/8" x 5-1/2" MBU-4T-CFL-R-DBLO
With 13-5/8" 10M x 7-1/16" 15M CTH-DBLHPS-SB Tubing Head
And Drilling & Skid Configurations

XTO ENERGY INC
DELAWARE BASIN

DRAWN	VJK	31MAR22
APPRV		

DRAWING NO. SDT-3301

Subject: Request for a Variance Allowing break Testing of the Blowout Preventer Equipment (BOPE)

XTO Energy requests a variance to ONLY test broken pressure seals on the BOPE and function test BOP when skidding a drilling rig between multiple wells on a pad.

Background

Onshore Oil and Gas Order (OOGO) No. 2, Drilling Operations, Sections III.A.2.i.iv.B states that the BOP test must be performed whenever any seal subject to test pressure is broken. The current interpretation of the Bureau of Land Management (BLM) requires a complete BOP test and not just a test of the affected component. OOGO No. 2, Section I.D.2 states, "Some situation may exist either on a well-by-well basis or field-wide basis whereby it is commonly accepted practice to vary a particular minimum standard(s) established in this order. This situation can be resolved by requesting a variance…". XTO Energy feels the break testing the BOPE is such a situation. Therefore, as per OOGO No. 2, Section IV., XTO Energy submits this request for the variance.

Supporting Documentation

OOGO No. 2 became effective on December 19, 1988 and has remained the standard for regulating BLM onshore drilling operations for over 30 years. During this time there have been significant changes in drilling technology. BLM continues to use the variance request process to allow for the use of modern technology and acceptable engineering practices that have arisen since OOGO No. 2 was originally released. The XTO Energy drilling rig fleet has many modern upgrades that allow the intact BOP stack to be moved between well slots on a multi-well pad, as well as, wellhead designs that incorporate quick connects facilitating release of the BOP from the wellhead without breaking any BOP stack components apart. These technologies have been used extensively offshore, and other regulators, API, and many operators around the world have endorsed break testing as safe and reliable.

Figure 1: Winch System attached to BOP Stack

Figure 2: BOP Winch System

American Petroleum Institute (API) standards, specification and recommended practices are considered the industry standard and are consistently utilized and referenced by the industry. OOGO No. 2 recognizes API recommended Practices (RP) 53 in its original development. API Standard 53, *Well Control Equipment Systems for Drilling Wells* (Fifth Edition, December 2018, Annex C, Table C.4) recognizes break testing as an acceptable practice. Specifically, API Standard 53, Section 5.3.7.1 states "A pressure test of the pressure containing component shall be performed following the disconnection or repair, limited to the affected component." See Table C.4 below for reference.

62 API STANDARD 53

Table C.4—Initial Pressure Testing, Surface BOP Stacks

Component to be Pressure Tested	Pressure Test—Low Pressure[ac] psig (MPa)	Pressure Test—High Pressure[ac]	
		Change Out of Component, Elastomer, or Ring Gasket	No Change Out of Component, Elastomer, or Ring Gasket
Annular preventer[b]	250 to 350 (1.72 to 2.41)	RWP of annular preventer	MASP or 70% annular RWP, whichever is lower.
Fixed pipe, variable bore, blind, and BSR preventers[bd]	250 to 350 (1.72 to 2.41)	RWP of ram preventer or wellhead system, whichever is lower	ITP
Choke and kill line and BOP side outlet valves below ram preventers (both sides)	250 to 350 (1.72 to 2.41)	RWP of side outlet valve or wellhead system, whichever is lower	ITP
Choke manifold—upstream of chokes[e]	250 to 350 (1.72 to 2.41)	RWP of ram preventers or wellhead system, whichever is lower	ITP
Choke manifold—downstream of chokes[e]	250 to 350 (1.72 to 2.41)	RWP of valve(s), line(s), or MASP for the well program, whichever is lower	
Kelly, kelly valves, drill pipe safety valves, IBOPs	250 to 350 (1.72 to 2.41)	MASP for the well program	

[a] Pressure test evaluation periods shall be a minimum of five minutes.
No visible leaks.
The pressure shall remain stable during the evaluation period. The pressure shall not decrease below the intended test pressure.

[b] Annular(s) and VBR(s) shall be pressure tested on the largest and smallest OD drill pipe to be used in well program.

[c] For pad drilling operations, moving from one wellhead to another within the 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken.

[d] For surface offshore operations, the ram BOPs shall be pressure tested with the ram locks engaged and the closing and locking pressure vented during the initial test. For land operations, the ram BOPs shall be pressure tested with the ram locks engaged and the closing and locking pressure vented at commissioning and annually.

[e] Adjustable chokes are not required to be full sealing devices. Pressure testing against a closed choke is not required.

The Bureau of Safety and Environmental Enforcement (BSEE), Department of Interior, has also utilized the API standards, specification and best practices in the development of its offshore oil and gas regulations and incorporates them by reference within its regulations.

Break testing has been approved by the BLM in the past with other operators based on the detailed information provided in this document.

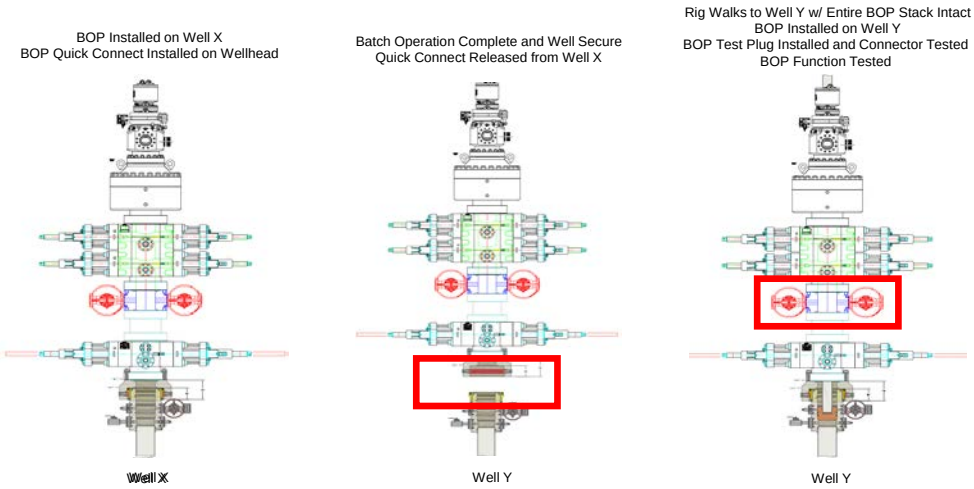
XTO Energy feels break testing and our current procedures meet the intent of OOGO No. 2 and often exceed it. There has been no evidence that break testing results in more components failing than seen on full BOP tests. XTO Energy's internal standards requires complete BOPE tests more often than that of OOGO No. 2 (Every 21 days). In addition to function testing the annular, pipe rams and blind rams after each BOP nipple up, XTO Energy performs a choke drill with the rig crew prior to drilling out every casing shoe. This is additional training for the rig crew that exceeds the requirements of the OOGO No.2.

Procedures

1. XTO Energy will use this document for our break testing plan for New Mexico Delaware basin. The summary below will be referenced in the APD or Sundry Notice and receive approval prior to implementing this variance.
2. XTO Energy will perform BOP break testing on multi-wells pads where multiple intermediate sections can be drilled and cased within the 21-day BOP test window.
    a. A full BOP test will be conducted on the first well on the pad.
    b. The first intermediate hole section drilled on the pad will be the deepest. All of the remaining hole sections will be the same depth or shallower.
        i. Our Lower WC targets set the intermediate casing shoe no deeper than the Wolfcamp B.
        ii. Our Upper WC targets set the intermediate casing shoe shallower than the Wolfcamp B.
    c. A Full BOP test will be required if the intermediate hole section being drilled has a MASP over 5M.
    d. A full BOP test will be required prior to drilling any production hole.
3. After performing a complete BOP test on the first well, the intermediate hole section will be drilled and cased, two breaks would be made on the BOP equipment.
    a. Between the HCV valve and choke line connection
    b. Between the BOP quick connect and the wellhead
4. The BOP is then lifted and removed from the wellhead by a hydraulic system.
5. After skidding to the next well, the BOP is moved to the wellhead by the same hydraulic system and installed.
6. The connections mentioned in 3a and 3b will then be reconnected.
7. Install test plug into the wellhead using test joint or drill pipe.
8. A shell test is performed against the upper pipe rams testing the two breaks.
9. The shell test will consist of a 250 psi low test and a high test to the value submitted in the APD or Sundry (e.g. 5,000 psi or 10,000psi).
10. Function test will be performed on the following components: lower pipe rams, blind rams, and annular.

11. For a multi-well pad the same two breaks on the BOP would be made and on the next wells and steps 4 through 10 would be repeated.
12. A second break test would only be done if the intermediate hole section being drilled could not be completed within the 21 day BOP test window.

Note: Picture below highlights BOP components that will be tested during batch operations



Summary

A variance is requested to **ONLY** test broken pressure seals on the BOP equipment when moving from wellhead to wellhead which is in compliance with API Standard 53. API Standard 53 states, that for pad drilling operation, moving from one wellhead to another within 21 days, pressure testing is required for pressure-containing and pressure-controlling connections when the integrity of a pressure seal is broken.

The BOP will be secured by a hydraulic carrier or cradle. The BLM will be contacted if a Well Control event occurs prior to the commencement of a BOPE Break Testing operation.

Based on discussions with the BLM on February 27th 2020 and the supporting documentation submitted to the BLM, we will request permission to ONLY retest broken pressure seals if the following conditions are met:

1. After a full BOP test is conducted on the first well on the pad.

2. The first intermediate hole section drilled on the pad will be the deepest. All of the remaining hole sections will be the same depth or shallower.

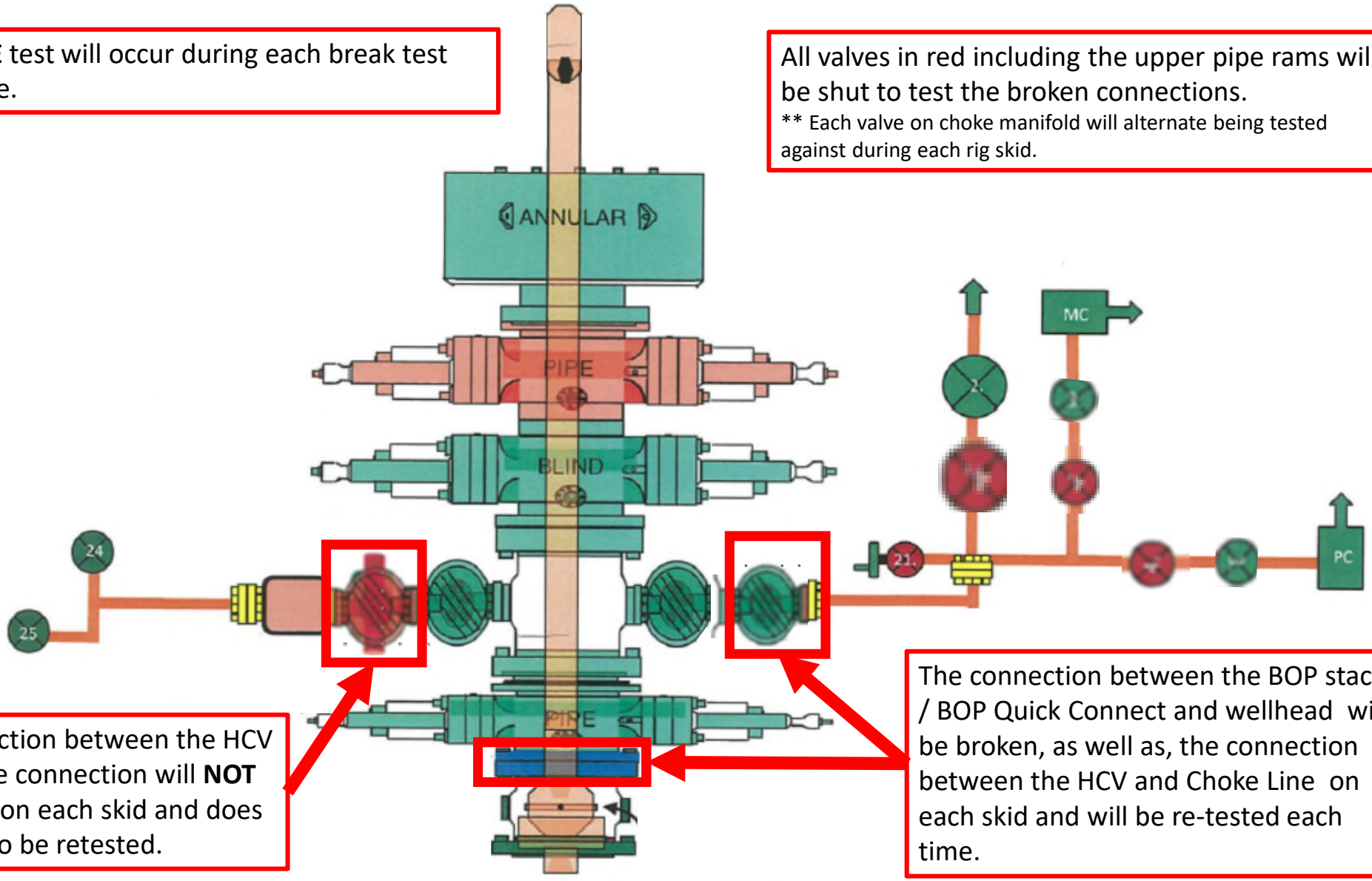
3. Full BOP test will be required if the intermediate hole section being drilled has a MASP over 5M.

4. Full BOP test will be required prior to drilling the production hole.

Only **ONE** test will occur during each break test procedure.

All valves in red including the upper pipe rams will be shut to test the broken connections.

** Each valve on choke manifold will alternate being tested against during each rig skid.



The connection between the HCV and kill line connection will **NOT** be broken on each skid and does not need to be retested.

The connection between the BOP stack / BOP Quick Connect and wellhead will be broken, as well as, the connection between the HCV and Choke Line on each skid and will be re-tested each time.

XTO Permian Operating, LLC Offline Cementing Variance Request

XTO requests the option to cement the surface and intermediate casing strings offline as a prudent batch drilling efficiency of acreage development.

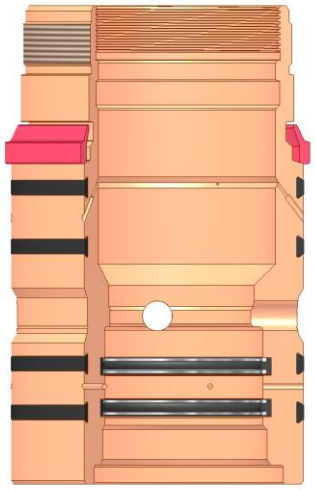
1. Cement Program

No changes to the cement program will take place for offline cementing.

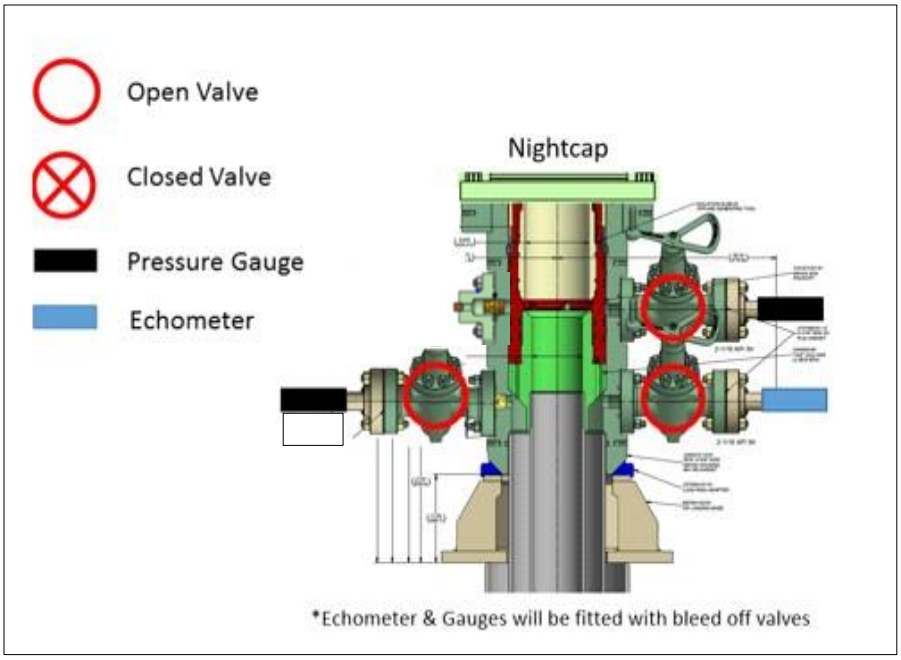
2. Offline Cementing Procedure

The operational sequence will be as follows. If a well control event occurs, the BLM will be contacted for approval prior to conducting offline cementing operations.

1. Run casing as per normal operations. While running casing, conduct negative pressure test and confirm integrity of the float equipment (float collar and shoe)
2. Land casing with mandrel
3. Fill pipe with kill weight fluid, do not circulate through floats and confirm well is static
4. Set annular packoff shown below and pressure test to confirm integrity of the seal. Pressure ratings of wellhead components and valves is 5,000 psi.
5. After confirmation of both annular barriers and internal barriers, nipple down BOP and install cap flange.
    a. If any barrier fails to test, the BOP stack will not be nippled down until after the cement job is completed with cement 500ft above the highest formation capable of flow with kill weight mud above or after it has achieved 50-psi compressive strength if kill weight fluid cannot be verified.



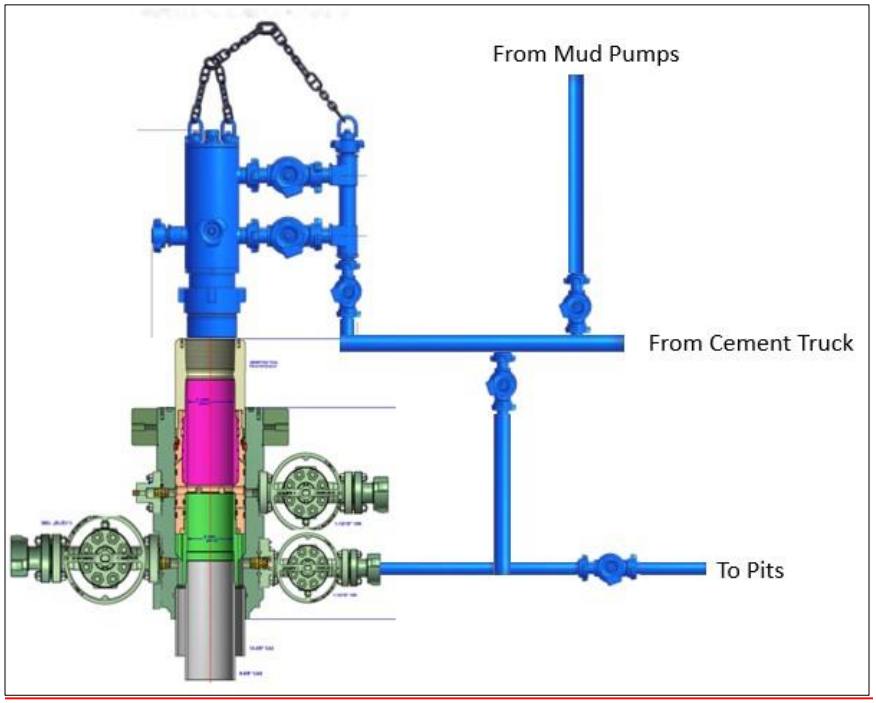
Annular packoff with both external and internal seals



Wellhead diagram during skidding operations

6. Skid rig to next well on pad.
7. Confirm well is static before removing cap flange, flange will not be removed and offline cementing operations will not commence until well is under control. If well is not static, casing outlet valves will provide access to both the casing ID and annulus. Rig or third party pump truck will kill well prior to cementing or nippling up for further remediation.
    a. Well Control Plan
        i. The Drillers Method will be the primary well control method to regain control of the wellbore prior to cementing, if wellbore conditions do not permit the drillers method other methods of well control may be used
        ii. Rig pumps or a 3rd party pump will be tied into the upper casing valve to pump down the casing ID
        iii. A high pressure return line will be rigged up to lower casing valve and run to choke manifold to control annular pressure
        iv. Once influx is circulated out of the hole, kill weight mud will be circulated
        v. Well will be confirmed static
        vi. Once confirmed static, cap flange will be removed to allow for offline cementing operations to commence
8. Install offline cement tool
9. Rig up cement equipment

XTO Permian Operating, LLC Offline Cementing Variance Request



Wellhead diagram during offline cementing operations

10. Circulate bottoms up with cement truck
    a. If gas is present on bottoms up, well will be shut in and returns rerouted through gas buster to handle entrained gas
    b. Max anticipated time before circulating with cement truck is 6 hrs
11. Perform cement job taking returns from the annulus wellhead valve
12. Confirm well is static and floats are holding after cement job
13. Remove cement equipment, offline cement tools and install night cap with pressure gauge for monitoring.

XTO respectfully requests approval to utilize a spudder rig to pre-set surface casing.

Description of Operations:

1. Spudder rig will move in to drill the surface hole and pre-set surface casing on the well.
    a. After drilling the surface hole section, the spudder rig will run casing and cement following all of the applicable rules and regulations (OnShore Order 2, all COAs and NMOCD regulations).
    b. The spudder rig will utilize fresh water-based mud to drill the surface hole to TD. Solids control will be handled entirely on a closed loop basis. No earth pits will be used.
2. The wellhead will be installed and tested as soon as the surface casing is cut off and WOC time has been reached.
3. A blind flange at the same pressure rating as the wellhead will be installed to seal the wellbore. Pressure will be monitored with needle valves installed on two wing valves.
    a. A means for intervention will be maintained while the drilling rig is not over the well.
4. Spudder rig operations are expected to take 2-3 days per well on the pad.
5. The BLM will be contacted and notified 24 hours prior to commencing spudder rig operations.
6. Drilling Operations will begin with a larger rig and a BOP stack equal to or greater than the pressure rating that was permitted will be nippled up and tested on the wellhead before drilling operations resume on each well.
    a. The larger rig will move back onto the location within 180 days from the point at which the wells are secured and the spudder rig is moved off location.
    b. The BLM will be notified 24 hours before the larger rig moves back on the pre-set locations
7. XTO will have supervision on the rig to ensure compliance with all BLM and NMOCD regulations and to oversee operations.
8. Once the rig is removed, XTO will secure the wellhead area by placing a guard rail around the cellar area.

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 Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 281452

CONDITIONS

Operator: XTO PERMIAN OPERATING LLC. 6401 HOLIDAY HILL ROAD MIDLAND, TX 79707	OGRID: 373075
	Action Number: 281452
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
dmcclure	A CBL must be run for any string of casing for which cement did not circulate. This includes casing strings for which a “bradenhead squeeze” was performed.	11/22/2023
dmcclure	The entirety of the surface casing must have competent cement.	11/22/2023