

NM OIL CONSERVATION

ARTESIA DISTRICT

FEB 20 2018

Form 3160-3
(August 2007)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

5. Lease Serial No. NMNM089052	
6. If Indian, Allottee or Tribe Name	
7. If Unit or CA Agreement, Name and No. NMNM70965X	
8. Lease Name and Well No. James Ranch Unit D12 194Y 40141	
9. API Well No. 30-015-44678	
1a. Type of work: ☒ DRILL ☐ REENTER	10. Field and Pool, or Exploratory Los Medanos; Bone Spring
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone	11. Sec., T. R. M. or Blk. and Survey or Area K-25-22S-30E
2. Name of Operator BOPCO, L.P.	
3a. Address 6401 Holiday Hill Rd Midland, Texas 79707	3b. Phone No. (include area code) 432-620-6714
4. Location of Well (Report location clearly and in accordance with any State requirements.) At surface 2420'FSL & 1940'FWL, Sec 25-22S-30E At proposed prod. zone 990'FSL & 2340'FWL, Sec 28-22S-30E	
14. Distance in miles and direction from nearest town or post office*	
15. Distance from proposed* 1940' location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No. of acres in lease 3281.84
18. Distance from proposed location* 30' to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth 10,926'TVD 25,871'MD
17. Spacing Unit dedicated to this well 400	
20. BLM/BIA Bond No. on file UTB000138	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3343'	22. Approximate date work will start*
23. Estimated duration 90 Days	

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

- | | |
|---|---|
| 1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM. |
|---|---|

25. Signature <i>Stephanie Rabadue</i>	Name (Printed/Typed) Stephanie Rabadue	Date 02/12/2018
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Title

Regulatory Analyst

Approved by (Signature) <i>Cody R Layton</i>	Name (Printed/Typed) Cody R Layton	Date 02/13/2018
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Title APN - Land & Minerals	Office CFO	
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Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

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.

(Continued on page 2)

*(Instructions on page 2)

RWP 2-23-18

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

XTO Energy Inc.
JRU DI2 194Y

SHL: 2420' FSL & 1940' FWL , Section 25, T22S, R30E
BHL: 990' FSL & 2440' FEL , Section 28, T22S, R30E
Eddy County, NM

1. Geologic Name of Surface Formation

A. Quaternary

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

Formation	Well Depth (TVD)	Water/Oil/Gas
Rustler	370'	Water
Top of Salt	670'	Water
Base of Salt	3618'	Water
Delaware / Lamar	3825'	Water
Bone Spring	7700'	Water/Oil/Gas
1st Bone Spring Ss	8760'	Water/Oil/Gas
2nd Bone Spring Ss	9210'	Water/Oil/Gas
3rd Bone Spring Ss	9850'	Water/Oil/Gas
Target/Land Curve	10915'	Water/Oil/Gas

*** Hydrocarbons @ Brushy Canyon

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

No other formations are expected to yield oil, gas or fresh water in measurable volumes. The surface fresh water sands will be protected by setting 13-3/8 inch casing @ 650' and circulating cement back to surface. The salt will be isolated by setting 9-5/8 inch casing at 7800' with a DV tool to be set @ 3820'. Cement will be circulated to surface. An 8-3/4 inch curve and 8-1/2 inch lateral hole will be drilled to MD/TD and 5-1/2 inch casing will be set at TD and cemented back to surface.

3. Casing Design

Hole Size	Depth	OD Csg	Weight (#)	Collar	Grade	New/Used	SF Burst	SF Collapse	SF Tension
17-1/2"	0' – 650'	13-3/8"	54.5	STC	J-55	New	1.15	3.80	14.51
12-1/4"	0' – 7800'	9-5/8"	40	LTC	J-55	New	1.27	1.14	1.67
8-3/4" x 8-1/2"	0' – 24727'	5-1/2"	17	BTC	P-110	New	1.12	1.36	1.95

· XTO requests to utilize centralizers only in the curve after the KOP and only a minimum of one every other joint.

· 9-5/8" Collapse analyzed using 50% evacuation based on regional experience.

· 5-1/2" tension calculated using vertical hanging weight plus the lateral weight multiplied by a friction factor of 0.35

WELLHEAD:

Permanent Wellhead – GE RSH Multibowl System

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

B. Tubing Head: 13-5/8" 5M bottom flange x 7-1/16" 10M top flange

- Wellhead will be installed by manufacturer's representatives.
- Manufacturer will monitor welding process to ensure appropriate temperature of seal.
- Manufacturer will witness installation of test plug for initial test.
- Operator will test the 9-5/8" casing to 70% of casing burst before drilling out.

4. Cement Program

Surface Casing: 13-3/8", 54.5 New J-55, STC casing to be set at +/- 650'

Lead: 260 sxs EconoCem-HLTRRC (mixed at 12.9 ppg, 1.87 ft3/sx, 10.13 gal/sx water)

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

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

Intermediate Casing: 9-5/8", 40 New J-55, LTC casing to be set at +/- 7800'

First Stage

Lead: 1150 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

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

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

A DV tool will be set @ 3820' (5' above the Lamar).

Second Stage

Lead: 410 sxs Halcem-C + 2% CaCl (mixed at 12.9 ppg, 1.88 ft3/sx, 9.61 gal/sx water)

Tail: 180 sxs Halcem-C + 2% CaCl (mixed at 14.8 ppg, 1.33 ft3/sx, 6.39 gal/sx water)

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

Production Casing: 5-1/2", 17 New P-110, BTC casing to be set at +/- 24727'

Lead: 1090 sxs NeoCem (mixed at 10.5 ppg, 2.69 ft3/sx, 12.26 gal/sx water)

Tail: 2970 sxs VersaCem (mixed at 13.2 ppg, 1.61 ft3/sx, 8.38 gal/sx water)

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

5. Pressure Control Equipment

The blow out preventer equipment (BOP) for this well consists of a 13-5/8" minimum 5M Hydril and a 13-5/8" minimum 5M Double Ram BOP. MASP should not exceed 3161 psi.

All BOP testing will be done by an independent service company. Annular pressure tests will be limited to 50% of the working pressure. When nipping up on the 13-5/8" 5M bradenhead and flange, the BOP test will be limited to 5000 psi. When nipping up on the 9-5/8", 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.

6. Proposed Mud Circulation System

INTERVAL	Hole Size	Mud Type	MW (ppg)	Viscosity (sec/qt)	Fluid Loss (cc)
0' to 650'	17-1/2"	FW / Native	8.4-8.8	35-40	NC
650' to 7800'	12-1/4"	Brine / Gel Sweeps	9.7-10.1	30-32	NC
7800' to 24727'	8-3/4" x 8-1/2"	FW / Cut Brine / Polymer	9 - 9.3	29-32	NC - 20

The necessary mud products for weight addition and fluid loss control will be on location at all times. Spud with fresh water/native mud. Drill out from under 13-3/8" surface casing with brine solution. A 9.8ppg-10.2ppg brine mud will be used while drilling through the salt formation. Use fibrous materials as needed to control seepage and lost circulation. Pump viscous sweeps as needed for hole cleaning. Pump speed will be recorded on a daily drilling report after mudding up. A Pason or Totco will be used to detect changes in loss or gain of mud volume. A mud test will be performed every 24 hours to determine: density, viscosity, strength, filtration and pH as necessary. Use available solids controls equipment to help keep mud weight down after mud up. Rig up solids control equipment to operate as a closed loop system.

7. Auxiliary Well Control and Monitoring Equipment

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

8. Logging, Coring and Testing Program

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

Open hole logging will not be done on this well.

9. Abnormal Pressures and Temperatures / Potential Hazards

None Anticipated. BHT of 150 to 170 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 5562 psi.

10. Anticipated Starting Date and Duration of Operations

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

XTO James Ranch Unit DI 2 #194Y Rev0 RM 8Feb18 Proposal Geodetic Report (Non-Def Plan)



Report Date: February 08, 2018 - 02:50 PM
Client: XTO
Field: NM Eddy County (NAD 27)
Structure / Slot: XTO James Ranch Unit DI 2 #194Y / New Slot
Well: James Ranch Unit DI 2 #194Y
Borehole: James Ranch Unit DI 2 #194Y
UWI / API#: Unknown / Unknown
Survey Name: XTO James Ranch Unit DI 2 #194Y Rev0 RM 8Feb18
Survey Date: February 08, 2018
Tort / AHD / DDI / ERD Ratio: 127.008 ° / 15654.060 ft / 6.673 / 1.433
Coordinate Reference System: NAD27 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 21' 44.53751", W 103° 50' 10.20182"
Location Grid N/E Y/X: N 495902.600 ftUS, E 653510.500 ftUS
CRS Grid Convergence Angle: 0.2661 °
Grid Scale Factor: 0.99993608
Version / Patch: 2.10.696.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 264.463 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3368.000 ft above MSL
Seabed / Ground Elevation: 3343.000 ft above MSL
Magnetic Declination: 7.084 °
Total Gravity Field Strength: 998.4607mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48138.417 nT
Magnetic Dip Angle: 60.158 °
Declination Date: February 08, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.2661 °
Total Corr Mag North->Grid North: 6.8176 °
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
Nudge 1.5"/100'	7000.00	0.00	190.00	7000.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
DLS	7433.33	6.50	190.00	7432.40	6.58	-24.18	-4.26	1.50	495878.42	653506.24	N 32 21 44.30	W 103 50 10.25
Hold Nudge	7527.38	6.50	190.00	7525.85	9.43	-34.67	-6.11	0.00	495867.94	653504.39	N 32 21 44.19	W 103 50 10.27
1.5"/100' DLS	7655.22	6.50	207.00	7652.87	15.26	-48.24	-10.65	1.50	495854.36	653499.85	N 32 21 44.06	W 103 50 10.33
Hold Nudge	10198.69	6.50	207.00	10180.00	170.12	-304.79	-141.37	0.00	495597.83	653369.14	N 32 21 41.53	W 103 50 11.87
KOP - Build												
8"/100' DLS	10803.16	55.00	213.00	10684.17	353.89	-558.25	-301.43	8.03	495344.39	653209.09	N 32 21 39.03	W 103 50 13.75
Build & Turn	11605.78	90.39	248.00	10926.02	980.90	-1011.27	-887.47	6.00	494891.40	652623.09	N 32 21 34.57	W 103 50 20.60
6"/100' DLS	12190.78	90.39	248.00	10922.04	1541.90	-1230.41	-1429.86	0.00	494672.27	652080.74	N 32 21 32.43	W 103 50 26.94
Landing Point	13285.50	90.39	269.89	10914.51	2624.90	-1438.99	-2497.72	2.00	494463.70	651012.95	N 32 21 30.41	W 103 50 39.40
Turn 2"/100'												
DLS												
Hold to TD												
XTO James												
Ranch Unit DI 2	25871.09	90.39	269.89	10829.00	15153.69	-1462.10	-15082.99	0.00	494440.60	638428.50	N 32 21 30.73	W 103 53 6.11
#194Y -PBHL												

Survey Type: Non-Def Plan

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	25.000	1/100.000	30.000	30.000		NAL_MWD_1.0_DEG-Depth Only	James Ranch Unit DI 2 #194Y / XTO James Ranch Unit DI 2 #194Y Rev0 RM 8Feb18
	1	25.000	25871.086	1/100.000	30.000	30.000		NAL_MWD_1.0_DEG	James Ranch Unit DI 2 #194Y / XTO James Ranch Unit DI 2

XTO James Ranch Unit DI 2 #194Y Rev0 RM 8Feb18 Proposal Geodetic Report (Non-Def Plan)



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Vertical Section Origin: 0.000 ft, 0.000 ft
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North Reference: Grid North
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Total Corr Mag North->Grid North: 6.8176 °
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	100.00	0.00	190.00	100.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	200.00	0.00	190.00	200.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	300.00	0.00	190.00	300.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	400.00	0.00	190.00	400.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	500.00	0.00	190.00	500.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	600.00	0.00	190.00	600.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	700.00	0.00	190.00	700.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	800.00	0.00	190.00	800.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	900.00	0.00	190.00	900.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
	1000.00	0.00	190.00	1000.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1100.00	0.00	190.00	1100.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1200.00	0.00	190.00	1200.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1300.00	0.00	190.00	1300.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1400.00	0.00	190.00	1400.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1500.00	0.00	190.00	1500.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1600.00	0.00	190.00	1600.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1700.00	0.00	190.00	1700.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1800.00	0.00	190.00	1800.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	1900.00	0.00	190.00	1900.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2000.00	0.00	190.00	2000.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2100.00	0.00	190.00	2100.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2200.00	0.00	190.00	2200.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2300.00	0.00	190.00	2300.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2400.00	0.00	190.00	2400.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2500.00	0.00	190.00	2500.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2600.00	0.00	190.00	2600.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2700.00	0.00	190.00	2700.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2800.00	0.00	190.00	2800.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	2900.00	0.00	190.00	2900.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3000.00	0.00	190.00	3000.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3100.00	0.00	190.00	3100.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3200.00	0.00	190.00	3200.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3300.00	0.00	190.00	3300.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3400.00	0.00	190.00	3400.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3500.00	0.00	190.00	3500.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3600.00	0.00	190.00	3600.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3700.00	0.00	190.00	3700.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3800.00	0.00	190.00	3800.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	3900.00	0.00	190.00	3900.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4000.00	0.00	190.00	4000.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4100.00	0.00	190.00	4100.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4200.00	0.00	190.00	4200.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4300.00	0.00	190.00	4300.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4400.00	0.00	190.00	4400.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4500.00	0.00	190.00	4500.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4600.00	0.00	190.00	4600.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4700.00	0.00	190.00	4700.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4800.00	0.00	190.00	4800.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	4900.00	0.00	190.00	4900.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5000.00	0.00	190.00	5000.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5100.00	0.00	190.00	5100.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5200.00	0.00	190.00	5200.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5300.00	0.00	190.00	5300.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5400.00	0.00	190.00	5400.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5500.00	0.00	190.00	5500.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5600.00	0.00	190.00	5600.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5700.00	0.00	190.00	5700.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5800.00	0.00	190.00	5800.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	5900.00	0.00	190.00	5900.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6000.00	0.00	190.00	6000.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6100.00	0.00	190.00	6100.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6200.00	0.00	190.00	6200.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6300.00	0.00	190.00	6300.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6400.00	0.00	190.00	6400.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6500.00	0.00	190.00	6500.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6600.00	0.00	190.00	6600.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6700.00	0.00	190.00	6700.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
	6800.00	0.00	190.00	6800.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20
6900.00	0.00	190.00	6900.00	0.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
Nudge 1.5"/100'	7000.00	0.00	190.00	7000.00	0.00	0.00	0.00	0.00	495902.60	653510.50	N 32 21 44.54	W 103 50 10.20	
DLS	7100.00	1.50	190.00	7099.99	0.35	-1.29	-0.23	1.50	495901.31	653510.27	N 32 21 44.52	W 103 50 10.20	
	7200.00	3.00	190.00	7199.91	1.40	-5.16	-0.91	1.50	495897.45	653509.59	N 32		

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100')	Northing (NAD83)	Easting (NAD83)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Turn Nudge 1.5°/100' DLS	7527.38	6.50	190.00	7525.85	9.43	-34.67	-6.11	0.00	495867.94	653504.39	N 32 21 44.19	W 103 50 10.27
Hold Nudge	7600.00	6.43	199.67	7598.01	12.26	-42.54	-8.19	1.50	495860.06	653502.31	N 32 21 44.12	W 103 50 10.30
	7655.22	6.50	207.00	7652.87	15.28	-48.24	-10.65	1.50	495849.85	653499.85	N 32 21 44.06	W 103 50 10.33
	7700.00	6.50	207.00	7697.37	17.89	-52.76	-12.96	0.00	495849.85	653497.55	N 32 21 44.02	W 103 50 10.36
	7800.00	6.50	207.00	7797.73	24.07	-62.84	-16.10	0.00	495839.76	653492.41	N 32 21 43.92	W 103 50 10.42
	7900.00	6.50	207.00	7896.08	30.16	-72.93	-23.23	0.00	495829.68	653487.27	N 32 21 43.82	W 103 50 10.48
	8000.00	6.50	207.00	7995.44	36.25	-83.02	-28.37	0.00	495819.59	653482.13	N 32 21 43.72	W 103 50 10.54
	8100.00	6.50	207.00	8094.80	42.34	-93.10	-33.51	0.00	495809.50	653476.99	N 32 21 43.62	W 103 50 10.60
	8200.00	6.50	207.00	8194.15	48.43	-103.19	-38.65	0.00	495799.42	653471.85	N 32 21 43.52	W 103 50 10.66
	8300.00	6.50	207.00	8293.51	54.52	-113.28	-43.79	0.00	495789.33	653466.71	N 32 21 43.42	W 103 50 10.72
	8400.00	6.50	207.00	8392.87	60.61	-123.36	-48.93	0.00	495779.25	653461.57	N 32 21 43.32	W 103 50 10.78
	8500.00	6.50	207.00	8492.23	66.69	-133.45	-54.07	0.00	495769.16	653456.43	N 32 21 43.22	W 103 50 10.84
	8600.00	6.50	207.00	8591.58	72.78	-143.53	-59.21	0.00	495759.07	653451.29	N 32 21 43.12	W 103 50 10.90
	8700.00	6.50	207.00	8690.94	78.87	-153.62	-64.35	0.00	495748.99	653446.16	N 32 21 43.02	W 103 50 10.96
	8800.00	6.50	207.00	8790.30	84.96	-163.71	-69.49	0.00	495738.90	653441.02	N 32 21 42.92	W 103 50 11.02
	8900.00	6.50	207.00	8889.66	91.05	-173.79	-74.63	0.00	495728.82	653435.88	N 32 21 42.82	W 103 50 11.08
	9000.00	6.50	207.00	8989.01	97.14	-183.88	-79.77	0.00	495718.73	653430.74	N 32 21 42.72	W 103 50 11.14
	9100.00	6.50	207.00	9088.37	103.22	-193.97	-84.91	0.00	495708.65	653425.60	N 32 21 42.62	W 103 50 11.20
	9200.00	6.50	207.00	9187.73	109.31	-204.05	-90.05	0.00	495698.56	653420.46	N 32 21 42.52	W 103 50 11.26
	9300.00	6.50	207.00	9287.08	115.40	-214.14	-95.18	0.00	495688.47	653415.32	N 32 21 42.42	W 103 50 11.32
	9400.00	6.50	207.00	9386.44	121.49	-224.23	-100.32	0.00	495678.39	653410.18	N 32 21 42.32	W 103 50 11.38
	9500.00	6.50	207.00	9485.80	127.58	-234.31	-105.46	0.00	495668.30	653405.04	N 32 21 42.22	W 103 50 11.44
9600.00	6.50	207.00	9585.16	133.67	-244.40	-110.60	0.00	495658.22	653399.90	N 32 21 42.12	W 103 50 11.50	
9700.00	6.50	207.00	9684.51	139.76	-254.49	-115.74	0.00	495648.13	653394.77	N 32 21 42.02	W 103 50 11.56	
9800.00	6.50	207.00	9783.87	145.84	-264.57	-120.88	0.00	495638.04	653389.63	N 32 21 41.93	W 103 50 11.63	
9900.00	6.50	207.00	9883.23	151.93	-274.66	-126.02	0.00	495627.96	653384.49	N 32 21 41.83	W 103 50 11.69	
10000.00	6.50	207.00	9982.58	158.02	-284.75	-131.16	0.00	495617.87	653379.35	N 32 21 41.73	W 103 50 11.75	
10100.00	6.50	207.00	10081.94	164.11	-294.83	-136.30	0.00	495607.79	653374.21	N 32 21 41.63	W 103 50 11.81	
KOP - Build 8°/100' DLS	10198.69	6.50	207.00	10180.00	170.12	-304.79	-141.37	0.00	495597.83	653369.14	N 32 21 41.53	W 103 50 11.87
	10200.00	6.60	207.10	10181.30	170.20	-304.92	-141.44	8.03	495597.70	653369.07	N 32 21 41.53	W 103 50 11.87
	10300.00	14.61	210.67	10279.51	180.77	-320.91	-150.51	8.03	495581.71	653360.00	N 32 21 41.37	W 103 50 11.97
	10400.00	22.63	211.74	10374.20	199.91	-348.17	-167.09	8.03	495554.45	653343.42	N 32 21 41.10	W 103 50 12.17
	10500.00	30.66	212.27	10463.50	227.24	-386.16	-190.87	8.03	495516.47	653319.64	N 32 21 40.73	W 103 50 12.45
	10600.00	38.69	212.59	10545.67	262.22	-434.13	-221.37	8.03	495468.50	653289.15	N 32 21 40.25	W 103 50 12.81
	10700.00	46.72	212.82	10619.10	304.18	-491.14	-257.99	8.03	495411.49	653252.52	N 32 21 39.69	W 103 50 13.24
	10800.00	54.75	213.00	10682.35	352.28	-556.08	-300.02	8.03	495346.56	653210.49	N 32 21 39.05	W 103 50 13.73
Build & Turn 6°/100' DLS	10803.16	55.00	213.00	10684.17	353.89	-558.25	-301.43	8.03	495344.39	653209.09	N 32 21 39.03	W 103 50 13.75
	10900.00	58.82	218.23	10737.05	407.30	-624.11	-348.71	6.00	495278.53	653161.81	N 32 21 38.38	W 103 50 14.30
	11000.00	62.97	223.19	10785.70	470.42	-690.25	-405.71	6.00	495212.40	653104.81	N 32 21 37.73	W 103 50 14.97
	11100.00	67.28	227.79	10827.77	540.95	-753.77	-470.42	6.00	495148.88	653040.11	N 32 21 37.10	W 103 50 15.73
	11200.00	71.72	232.11	10862.80	618.12	-813.97	-542.11	6.00	495088.69	652968.43	N 32 21 36.51	W 103 50 16.57
	11300.00	76.24	236.21	10890.40	701.08	-870.19	-620.01	6.00	495032.47	652890.53	N 32 21 35.96	W 103 50 17.48
	11400.00	80.83	240.15	10910.27	788.92	-921.82	-703.26	6.00	494980.84	652807.29	N 32 21 35.45	W 103 50 18.45
	11500.00	85.47	243.99	10922.20	880.68	-968.29	-790.94	6.00	494934.38	652719.61	N 32 21 34.99	W 103 50 19.47
	11600.00	90.12	247.78	10926.05	975.36	-1009.09	-882.11	6.00	494893.58	652628.45	N 32 21 34.59	W 103 50 20.54
Landing Point	11605.78	90.39	248.00	10926.02	980.90	-1011.27	-887.47	6.00	494891.40	652623.09	N 32 21 34.57	W 103 50 20.60
	11700.00	90.39	248.00	10925.38	1071.25	-1046.56	-974.82	0.00	494856.11	652535.74	N 32 21 34.23	W 103 50 21.62
	11800.00	90.39	248.00	10924.70	1167.15	-1084.02	-1067.54	0.00	494818.65	652443.03	N 32 21 33.86	W 103 50 22.71
	11900.00	90.39	248.00	10924.02	1263.05	-1121.48	-1160.26	0.00	494781.19	652350.32	N 32 21 33.49	W 103 50 23.79
	12000.00	90.39	248.00	10923.34	1358.95	-1158.94	-1252.97	0.00	494743.74	652257.61	N 32 21 33.13	W 103 50 24.87
	12100.00	90.39	248.00	10922.66	1454.84	-1196.40	-1345.69	0.00	494706.28	652164.90	N 32 21 32.76	W 103 50 25.95
Turn 2°/100' DLS	12190.78	90.39	248.00	10922.04	1541.90	-1230.41	-1429.86	0.00	494672.27	652080.74	N 32 21 32.43	W 103 50 26.94
	12200.00	90.39	248.18	10921.98	1550.75	-1233.85	-1438.81	2.00	494668.84	652072.19	N 32 21 32.39	W 103 50 27.04
	12300.00	90.39	250.18	10921.30	1647.20	-1269.38	-1531.88	2.00	494633.30	651978.73	N 32 21 32.05	W 103 50 28.13
	12400.00	90.39	252.18	10920.61	1744.52	-1301.63	-1626.52	2.00	494601.06	651884.08	N 32 21 31.73	W 103 50 29.23
	12500.00	90.40	254.18	10919.92	1842.58	-1330.56	-1722.24	2.00	494572.13	651788.37	N 32 21 31.45	W 103 50 30.35
	12600.00	90.40	256.18	10919.23	1941.27	-1356.13	-1818.91	2.00	494546.56	651691.71	N 32 21 31.20	W 103 50 31.48
	12700.00	90.40	258.18	10918.54	2040.46	-1378.30	-1916.41	2.00	494524.39	651594.21	N 32 21 30.99	W 103 50 32.62
	12800.00	90.40	260.18	10917.84	2140.02	-1397.07	-2014.63	2.00	494505.62	651496.00	N 32 21 30.81	W 103 50 33.76
	12900.00	90.40	262.18	10917.15	2239.85	-1412.39	-2113.44	2.00	494490.30	651397.20	N 32 21 30.66	W 103 50 34.92
	13000.00	90.40	264.18	10916.46	2339.82	-1424.26	-2212.73	2.00	494478.44	651297.92	N 32 21 30.55	W 103 50 36.07
	13100.00	90.39	266.18	10915.77	2439.81	-1432.65	-2312.36	2.00	494470.04	651198.29	N 32 21 30.47	W 103 50 37.24
Hold to TD	13200.00	90.39	268.18	10915.09	2539.68	-1437.56	-2412.24	2.00	494465.13	651098.42	N 32 21 30.42	W 103 50 38.40
	13285.50	90.39	269.89	10914.51	2624.90	-1438.99	-2497.72	2.00	494463.70	651012.95	N 32 21 30.41	W 103

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	17400.00	90.39	269.89	10886.55	6720.84	-1446.55	-8612.12	0.00	494456.15	646898.82	N 32 21 30.52	W 103 51 27.36
	17500.00	90.39	269.89	10885.87	6820.39	-1446.73	-8712.12	0.00	494455.96	646798.83	N 32 21 30.52	W 103 51 28.53
	17600.00	90.39	269.89	10885.19	6919.94	-1446.91	-8812.11	0.00	494455.78	646698.84	N 32 21 30.53	W 103 51 29.69
	17700.00	90.39	269.89	10884.51	7019.48	-1447.10	-8912.11	0.00	494455.60	646598.85	N 32 21 30.53	W 103 51 30.86
	17800.00	90.39	269.89	10883.83	7119.03	-1447.28	-9012.11	0.00	494455.41	646498.85	N 32 21 30.53	W 103 51 32.02
	17900.00	90.39	269.89	10883.16	7218.58	-1447.46	-9112.11	0.00	494455.23	646398.86	N 32 21 30.53	W 103 51 33.19
	18000.00	90.39	269.89	10882.48	7318.13	-1447.65	-9212.10	0.00	494455.05	646298.87	N 32 21 30.54	W 103 51 34.36
	18100.00	90.39	269.89	10881.80	7417.68	-1447.83	-9312.10	0.00	494454.86	646198.88	N 32 21 30.54	W 103 51 35.52
	18200.00	90.39	269.89	10881.12	7517.23	-1448.02	-9412.10	0.00	494454.68	646098.89	N 32 21 30.54	W 103 51 36.69
	18300.00	90.39	269.89	10880.44	7616.78	-1448.20	-9512.10	0.00	494454.50	645998.90	N 32 21 30.54	W 103 51 37.85
	18400.00	90.39	269.89	10879.76	7716.33	-1448.38	-9612.09	0.00	494454.31	645898.91	N 32 21 30.55	W 103 51 39.02
	18500.00	90.39	269.89	10879.08	7815.87	-1448.57	-9712.09	0.00	494454.13	645798.92	N 32 21 30.55	W 103 51 40.18
	18600.00	90.39	269.89	10878.40	7915.42	-1448.75	-9812.09	0.00	494453.95	645698.93	N 32 21 30.55	W 103 51 41.35
	18700.00	90.39	269.89	10877.72	8014.97	-1448.93	-9912.09	0.00	494453.76	645598.94	N 32 21 30.55	W 103 51 42.52
	18800.00	90.39	269.89	10877.04	8114.52	-1449.12	-10012.08	0.00	494453.58	645498.95	N 32 21 30.56	W 103 51 43.68
	18900.00	90.39	269.89	10876.36	8214.07	-1449.30	-10112.08	0.00	494453.40	645398.95	N 32 21 30.56	W 103 51 44.85
	19000.00	90.39	269.89	10875.68	8313.62	-1449.48	-10212.08	0.00	494453.21	645298.96	N 32 21 30.56	W 103 51 46.01
	19100.00	90.39	269.89	10875.00	8413.17	-1449.67	-10312.08	0.00	494453.03	645198.97	N 32 21 30.56	W 103 51 47.18
	19200.00	90.39	269.89	10874.32	8512.71	-1449.85	-10412.07	0.00	494452.84	645098.98	N 32 21 30.57	W 103 51 48.34
	19300.00	90.39	269.89	10873.64	8612.26	-1450.03	-10512.07	0.00	494452.66	644998.99	N 32 21 30.57	W 103 51 49.51
	19400.00	90.39	269.89	10872.96	8711.81	-1450.22	-10612.07	0.00	494452.48	644899.00	N 32 21 30.57	W 103 51 50.68
	19500.00	90.39	269.89	10872.28	8811.36	-1450.40	-10712.07	0.00	494452.29	644799.01	N 32 21 30.57	W 103 51 51.84
	19600.00	90.39	269.89	10871.61	8910.91	-1450.59	-10812.06	0.00	494452.11	644699.02	N 32 21 30.58	W 103 51 53.01
	19700.00	90.39	269.89	10870.93	9010.46	-1450.77	-10912.06	0.00	494451.93	644599.03	N 32 21 30.58	W 103 51 54.17
	19800.00	90.39	269.89	10870.25	9110.01	-1450.95	-11012.06	0.00	494451.74	644499.04	N 32 21 30.58	W 103 51 55.34
	19900.00	90.39	269.89	10869.57	9209.56	-1451.14	-11112.06	0.00	494451.56	644399.04	N 32 21 30.58	W 103 51 56.50
	20000.00	90.39	269.89	10868.89	9309.10	-1451.32	-11212.05	0.00	494451.38	644299.05	N 32 21 30.59	W 103 51 57.67
	20100.00	90.39	269.89	10868.21	9408.65	-1451.50	-11312.05	0.00	494451.19	644199.06	N 32 21 30.59	W 103 51 58.84
	20200.00	90.39	269.89	10867.53	9508.20	-1451.69	-11412.05	0.00	494451.01	644099.07	N 32 21 30.59	W 103 52 0.00
	20300.00	90.39	269.89	10866.85	9607.75	-1451.87	-11512.05	0.00	494450.83	643999.08	N 32 21 30.59	W 103 52 1.17
	20400.00	90.39	269.89	10866.17	9707.30	-1452.05	-11612.04	0.00	494450.64	643899.09	N 32 21 30.59	W 103 52 2.33
	20500.00	90.39	269.89	10865.49	9806.85	-1452.24	-11712.04	0.00	494450.46	643799.10	N 32 21 30.60	W 103 52 3.50
	20600.00	90.39	269.89	10864.81	9906.40	-1452.42	-11812.04	0.00	494450.27	643699.11	N 32 21 30.60	W 103 52 4.66
	20700.00	90.39	269.89	10864.13	10005.95	-1452.60	-11912.04	0.00	494450.09	643599.12	N 32 21 30.60	W 103 52 5.83
	20800.00	90.39	269.89	10863.45	10105.49	-1452.79	-12012.03	0.00	494449.91	643499.13	N 32 21 30.61	W 103 52 7.00
	20900.00	90.39	269.89	10862.77	10205.04	-1452.97	-12112.03	0.00	494449.72	643399.14	N 32 21 30.61	W 103 52 8.16
	21000.00	90.39	269.89	10862.09	10304.59	-1453.16	-12212.03	0.00	494449.54	643299.14	N 32 21 30.61	W 103 52 9.33
	21100.00	90.39	269.89	10861.41	10404.14	-1453.34	-12312.03	0.00	494449.36	643199.15	N 32 21 30.61	W 103 52 10.49
	21200.00	90.39	269.89	10860.74	10503.69	-1453.52	-12412.02	0.00	494449.17	643099.16	N 32 21 30.62	W 103 52 11.66
	21300.00	90.39	269.89	10860.06	10603.24	-1453.71	-12512.02	0.00	494448.99	642999.17	N 32 21 30.62	W 103 52 12.82
	21400.00	90.39	269.89	10859.38	10702.79	-1453.89	-12612.02	0.00	494448.81	642899.18	N 32 21 30.62	W 103 52 13.99
	21500.00	90.39	269.89	10858.70	10802.33	-1454.07	-12712.02	0.00	494448.62	642799.19	N 32 21 30.62	W 103 52 15.16
	21600.00	90.39	269.89	10858.02	10901.88	-1454.26	-12812.01	0.00	494448.44	642699.20	N 32 21 30.63	W 103 52 16.32
	21700.00	90.39	269.89	10857.34	11001.43	-1454.44	-12912.01	0.00	494448.26	642599.21	N 32 21 30.63	W 103 52 17.49
	21800.00	90.39	269.89	10856.66	11100.98	-1454.62	-13012.01	0.00	494448.07	642499.22	N 32 21 30.63	W 103 52 18.65
	21900.00	90.39	269.89	10855.98	11200.53	-1454.81	-13112.01	0.00	494447.89	642399.23	N 32 21 30.63	W 103 52 19.82
	22000.00	90.39	269.89	10855.30	11300.08	-1454.99	-13212.00	0.00	494447.71	642299.24	N 32 21 30.64	W 103 52 20.98
	22100.00	90.39	269.89	10854.62	11399.63	-1455.17	-13312.00	0.00	494447.52	642199.24	N 32 21 30.64	W 103 52 22.15
	22200.00	90.39	269.89	10853.94	11499.18	-1455.36	-13412.00	0.00	494447.34	642099.25	N 32 21 30.64	W 103 52 23.32
	22300.00	90.39	269.89	10853.26	11598.72	-1455.54	-13512.00	0.00	494447.15	641999.26	N 32 21 30.64	W 103 52 24.48
	22400.00	90.39	269.89	10852.58	11698.27	-1455.72	-13611.99	0.00	494446.97	641899.27	N 32 21 30.65	W 103 52 25.65
	22500.00	90.39	269.89	10851.90	11797.82	-1455.91	-13711.99	0.00	494446.79	641799.28	N 32 21 30.65	W 103 52 26.81
	22600.00	90.39	269.89	10851.22	11897.37	-1456.09	-13811.99	0.00	494446.60	641699.29	N 32 21 30.65	W 103 52 27.98
	22700.00	90.39	269.89	10850.54	11996.92	-1456.28	-13911.99	0.00	494446.42	641599.30	N 32 21 30.65	W 103 52 29.14
	22800.00	90.39	269.89	10849.86	12096.47	-1456.46	-14011.98	0.00	494446.24	641499.31	N 32 21 30.66	W 103 52 30.31
	22900.00	90.39	269.89	10849.19	12196.02	-1456.64	-14111.98	0.00	494446.05	641399.32	N 32 21 30.66	W 103 52 31.48
	23000.00	90.39	269.89	10848.51	12295.57	-1456.83	-14211.98	0.00	494445.87	641299.33	N 32 21 30.66	W 103 52 32.64
	23100.00	90.39	269.89	10847.83	12395.11	-1457.01	-14311.98	0.00	494445.69	641199.34	N 32 21 30.66	W 103 52 33.81
	23200.00	90.39	269.89	10847.15	12494.66	-1457.19	-14411.97	0.00	494445.50	641099.34	N 32 21 30.67	W 103 52 34.97
	23300.00	90.39	269.89	10846.47	12594.21	-1457.38	-14511.97	0.00	494445.32	640999.35	N 32 21 30.67	W 103 52 36.14
	23400.00	90.39	269.89	10845.79	12693.76	-1457.56	-14611.97	0.00	494445.14	640899.36	N 32 21 30.67	W 103 52 37.30
	23500.00	90.39	269.89	10845.11	12793.31	-1457.74	-14711.97	0.00	494444.95	640799.37	N 32 21 30.67	W 103 52 38.47
	23600.00	90.39	269.89	10844.43	12892.86	-1457.93	-14811.96	0.00	494444.77	640699.38	N 32 21 30.68	W 103 52 39.64
	23700.00	90.39	269.89	10843.75	12992.41	-1458.11	-14911.96	0.00	494444.58	640599.39	N 32 21 30.68	W 103 52 40.80
	23800.00	90.39	269.89	10843.07	13091.95	-1458.29	-15011.96	0.00	494444.40	640499.40	N 32 21 30.68	W 103 52 41.97
	23900.00	90.39	269.89	10842.39	13191.50	-1458.48	-15111.96	0.00	494444.22	640399.41	N 32 21 30.68	W 103 52 43.13
	24000.00	90.39	269.89	10841.71	13291.05	-1458.66	-15211.95	0.00	494444.03	640299.42	N 32 21 30.68	W 103 52 44.30
	24100.00	90.39	269.89	10841.03	13390.60	-1458.85	-15311.95	0.00	494443.85	640199.43	N 32 21 30.69	W 103 52 45.47
	24200.00	90.39	269.89	10840.35	13490.15	-1459.03	-15411.95	0.00	494443.67	640099.43	N 32 21 30.69	W 103 52 46.63
	24300.00	90.39	269.89	10839.67	13589.70	-1459.21	-15511.95	0.00	494443.48	639999.44	N 32 21 30.69	W 103 52 47.80
	24400.00	90.39	269.89	10838.99	13689.25	-1459.40	-15611.94	0.00	494443.30	639899.45	N 32 21 30.69	W 103 52 48.96
	24500.00	90.39	269.89	10838.32	13788.80	-1459.58	-15711.94	0.00	494443.12	639799.46	N 32 21 30.70	W 103 52 50.13
	24600.00	90.39	269.89	10837.64	13888.34	-1459.76	-15811.94	0.00	494442.93	639699.47	N 32 21 30.70	W 103 52 51.29
	24700.00	90.39	269.89	10836.96	13987.89	-145						

C21

$$=0.17 \times 0.052 \times 517 - (0.22) \times 8.3 \times 0.052$$

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
16																
17	9-5/8"	7800	MD/TVD	10.1	# mud											
18																
19	40. J-55. LTC		collapse =	2750	burst =	3950	tension =	520000								
20																
21	$(10.1 \times 0.052 \times 7800) \div$		2413	psi	2750/2413=	1.14	SF for collapse									
22	*Less internal fluid height															
23	Max expected surf pressure =		3104	psi	3950/3104	1.27	SF for burst									
24																
25	(7800/40)=		312000	lb	520/312=	1.67	SF for tension Dry									

Collapse Assumes 1/2 evacuation & FW internal
 Fluid Top 3900 MD/TVD
 Burst Assumes MASP Equation $(8.7)(0.052)(10915) - (0.22)(10915)$

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

NM OIL CONSERVATION
ARTESIA DISTRICT
FEB 20 2008

OPERATOR'S NAME:	BOPCO, L.P.	RECEIVED
LEASE NO.:	NMNM-0307337	
WELL NAME & NO.:	James Ranch Unit DI2 194Y	
SURFACE HOLE FOOTAGE:	2420' FSL & 1940' FWL	
BOTTOM HOLE FOOTAGE	0900' FSL & 2440' FEL Sec. 28, T. 22 S., R 30 E.	
LOCATION:	Section 25, T. 22 S., R 30 E., NMPM	
COUNTY:	Eddy County, New Mexico	

All previous COAs still apply except for the following:

A. CASING

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) for Potash Areas:

After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

R-111-P-Potash

WIPP

Possibility of water flows in the Salado and Castile.

Possibility of lost circulation in the Red Beds, Rustler, and Delaware.

Abnormal pressure may be encountered within the 3rd Bone Spring Sand.

1. The **13-3/8** inch surface casing shall be set at approximately **640** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt.**
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Intermediate casing must be kept 1/2 fluid filled to meet BLM minimum collapse requirement.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

Operator has proposed DV tool at depth of 3820', but will adjust cement proportionately if moved. DV tool shall be set a minimum of 50' below previous shoe and a minimum of 200' above current shoe. Operator shall submit sundry if DV tool depth cannot be set in this range. If an ECP is used, it is to be set a minimum of 50' below the shoe to provide cement across the shoe. If it cannot be set below the shoe, a CBL shall be run to verify cement coverage.

- a. First stage to DV tool:
 - ☒ Cement to circulate. If cement does not circulate, contact the appropriate BLM office before proceeding with second stage cement job. Operator should have plans as to how they will achieve approved top of cement on the next stage.
- b. Second stage above DV tool:
 - ☒ Cement to surface. If cement does not circulate, contact the appropriate BLM office. **Excess calculates to -18% - additional cement will be required.**

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

☒ Cement to surface. Operator shall provide method of verification. **Excess calculates to 23% - additional cement may be required.**

4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

5. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. WIPP Requirements

The proposed well is located within 330' of the WIPP Land Withdrawal Area boundary. As a result, BOPCO, L.P. is required to submit daily drilling reports, logs and deviation survey information to the Bureau of Land Management and the Department of Energy per requirements of the Joint Powers Agreement until a total vertical depth of 7,000 feet is reached. These reports will have at a minimum the rate of penetration and a clearly marked section showing the deviation for each 500 foot interval. Operator may be required to do more frequent deviation surveys based on the daily information submitted and may be required to take other corrective measures. Information from this well will be included in the Quarterly Drilling Report. Information will also be provided to the New Mexico Oil Conservation Division after drilling activities have been completed. Upon completion of the well, the operator shall submit a complete directional survey. Any future entry into the well for purposes of completing additional drilling will require supplemental information.

BOPCO, L.P. can email the required information to Mr. Melvin Balderrama at Melvin.Balderama@wipp.ws or Mr. J. Neatherlin at Jimmy.Neatherlin@wipp.ws fax to his attention at 575-234-6062.

MHH 02132018