

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMNM128835

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
LEA 7 FEDERAL COM 30H9. API Well No.
30-025-45200-00-X110. Field and Pool or Exploratory Area
WILDCAT BONE SPRING11. County or Parish, State
LEA COUNTY, NM**SUBMIT IN TRIPLICATE - Other instructions on page 2**

1. Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

2. Name of Operator

CIMAREX ENERGY COMPANY OF CO-Mail: aeasterling@cimarex.com

Contact: ARICKA EASTERLING

3a. Address

600 N MARIENFELD STE 600
MIDLAND, TX 79703

3b. Phone No. (include area code)

Ph: 918.560.7060

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

Sec 7 T20S R35E SESE 191FSL 1139FEL
32.580940 N Lat, 103.491737 W Lon

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

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

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

Cimarex respectfully requests approval to change the BHL and add a DV tool and Packer at 3,500'

Approved BHL:
330 FNL & 660 FELProposed BHL:
100 FNL & 1980-FEL,

Please see attached C-102, Drilling Plan, Directional Plan, & Anti-Collision Report.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

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

Electronic Submission #443837 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY OF CO, sent to the Hobbs
Committed to AFMSS for processing by ZOTA STEVENS on 11/14/2018 (19ZS0012SE)

Name (Printed/Typed) ARICKA EASTERLING

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 11/13/2018

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS

Title PETROLEUM ENGINEER

Date 11/14/2018

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

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

(Instructions on page 2)

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

Additional data for EC transaction #443837 that would not fit on the form

32. Additional remarks, continued

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-025-45200	² Pool Code 97983	³ Pool Name WC-025 G-08 S203506D; Bone Spring
⁴ Property Code 313878	⁵ Property Name LEA 7 FEDERAL COM	⁶ Well Number 30H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3676.6'

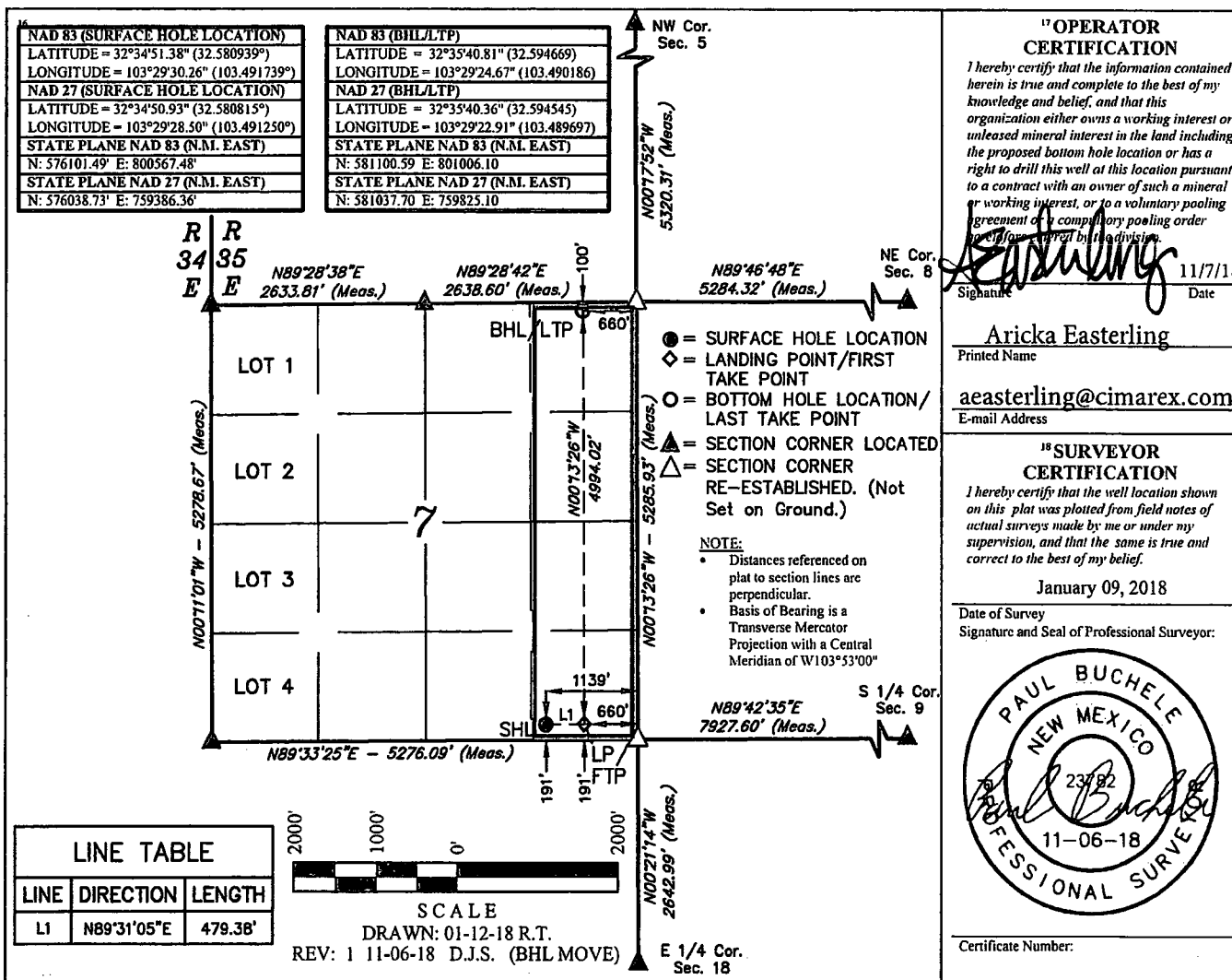
"Surface Location

UL or lot no. P	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
	7	20S	35E		191	SOUTH	1139	EAST	LEA

"Bottom Hole Location If Different From Surface

UL or lot no. A	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
	7	20S	35E		100	NORTH	660	EAST	LEA
¹² Dedicated Acres 160	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.						

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.



1. Geological Formations

TVD of target 11,080

Pilot Hole TD N/A

MD at TD 15,991

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	1730	N/A	
Salado	1830	N/A	
Tansil	3380	N/A	
Capitan	4000	N/A	
Delaware Sands	5740	N/A	
Brushy Canyon	8200	Hydrocarbons	
Bone Spring	8419	Hydrocarbons	
1st Bone Spring Ss	9726	Hydrocarbons	
2nd Bone Spring Ss	10353	Hydrocarbons	
3rd Bone Spring Target	11105	Hydrocarbons	
Wolfcamp	11220	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	1780	1780	13-3/8"	54.50	J-55	ST&C	1.39	3.36	5.30
12 1/4	0	5720	5720	9-5/8"	40.00	J-55	LT&C	1.31	1.30	2.27
8 3/4	0	10746	10746	5-1/2"	20.00	L-80	LT&C	1.74	1.81	1.88
8 3/4	10746	15991	11080	5-1/2"	20.00	L-80	BT&C	1.68	1.71	69.76
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

	Y or N
Is casing new? If used, attach certification as required in Onshore Order #1	Y
Does casing meet API specifications? If no, attach casing specification sheet.	Y
Is premium or uncommon casing planned? If yes attach casing specification sheet.	N
Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria).	Y
Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?	Y
Is well located within Capitan Reef?	N
If yes, does production casing cement tie back a minimum of 50' above the Reef?	N
Is well within the designated 4 string boundary.	N
Is well located in SOPA but not in R-111-P?	N
If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?	N
Is well located in R-111-P and SOPA?	N
If yes, are the first three strings cemented to surface?	N
Is 2nd string set 100' to 600' below the base of salt?	N
Is well located in high Cave/Karst?	N
If yes, are there two strings cemented to surface?	N
(For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?	N
Is well located in critical Cave/Karst?	N
If yes, are there three strings cemented to surface?	N
Is AC Report included?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	863	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	231	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 1	306	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	292	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 2	774	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
Production	451	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1122	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool with possible annular casing packer as needed is proposed at a depth of +/- 3,500'.

Casing String	TOC	% Excess
Surface	0	45
Intermediate Stage 1	3500	39
Intermediate Stage 2	0	23
Production	5520	17

4. Pressure Control Equipment

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	X	
			Other		

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i.	
X	A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.	
N	Are anchors required by manufacturer?	

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1780'	FW Spud Mud	8.30 - 8.80	30-32	N/C
1780' to 5720'	Brine Water	9.70 - 10.20	30-32	N/C
5720' to 15991'	FW/Cut Brine	8.60 - 9.10	30-32	N/C

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM.
	No logs are planned based on well control or offset log information.
	Drill stem test?
	Coring?

Additional Logs Planned	Interval
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7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	5243 psi
Abnormal Temperature	No

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

X	H ₂ S is present
X	H ₂ S plan is attached

8. Other Facets of Operation**9. Wellhead**

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi.

The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

The casing string utilizing steel body pack-off will be tested to 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Cimarex Lea 7 Federal Com 30H Rev2 RM 07Nov18 Proposal Geodetic Report (Non-Def Plan)



Report Date: November 07, 2018 - 03:12 PM Client: Cimarex Field: NM Lea County (NAD 83) Structure / Slot: Cimarex Lea 7 Federal Com 30H / Cimarex Lea 7 Federal Com 30H Well: Cimarex Lea 7 Federal Com 30H Borehole: Original Borehole UWI / API#: Unknown / Unknown Survey Name: Cimarex Lea 7 Federal Com 30H Rev2 RM 07Nov18 Survey Date: October 30, 2018 Tort / AHD / DDI / ERD Ratio: 113.408 ° / 5451.263 ft / 5.947 / 0.488 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet Location Lat / Long: N 32° 34' 51.37965", W 103° 29' 30.25868" Location Grid N/E Y/X: N 576101.490 ftUS, E 800567.480 ftUS CRS Grid Convergence Angle: 0.4532 ° Grid Scale Factor: 0.99998605 Version / Patch: 2.10.740.0	Survey / DLS Computation: Minimum Curvature / Lubinski Vertical Section Azimuth: 359.534 ° (Grid North) Vertical Section Origin: 0.000 ft, 0.000 ft TVD Reference Datum: RKB TVD Reference Elevation: 3702.600 ft above MSL Seabed / Ground Elevation: 3676.600 ft above MSL Magnetic Declination: 6.600 ° Total Gravity Field Strength: 998.5062mgn (9.80665 Based) Gravity Model: GARM Total Magnetic Field Strength: 48128.156 nT Magnetic Dip Angle: 60.507 ° Declination Date: November 07, 2018 Magnetic Declination Model: HDGM 2018 North Reference: Grid North Grid Convergence Used: 0.4532 ° Total Corr Mag North->Grid North: 6.1465 ° Local Coord Referenced To: Structure Reference Point	
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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 [191' FSL, 1139' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	100.00	0.00	86.66	100.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	200.00	0.00	86.66	200.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	300.00	0.00	86.66	300.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	400.00	0.00	86.66	400.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	500.00	0.00	86.66	500.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	600.00	0.00	86.66	600.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	700.00	0.00	86.66	700.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	800.00	0.00	86.66	800.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	900.00	0.00	86.66	900.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1000.00	0.00	86.66	1000.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1100.00	0.00	86.66	1100.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1200.00	0.00	86.66	1200.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1300.00	0.00	86.66	1300.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1400.00	0.00	86.66	1400.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1500.00	0.00	86.66	1500.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1600.00	0.00	86.66	1600.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1700.00	0.00	86.66	1700.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
Rustler	1730.00	0.00	86.66	1730.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1800.00	0.00	86.66	1800.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
Top of Salt	1830.00	0.00	86.66	1830.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	1900.00	0.00	86.66	1900.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2000.00	0.00	86.66	2000.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2100.00	0.00	86.66	2100.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2200.00	0.00	86.66	2200.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2300.00	0.00	86.66	2300.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	

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 ° ' ")
	2400.00	0.00	86.66	2400.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2500.00	0.00	86.66	2500.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2600.00	0.00	86.66	2600.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2700.00	0.00	86.66	2700.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2800.00	0.00	86.66	2800.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	2900.00	0.00	86.66	2900.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3000.00	0.00	86.66	3000.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3100.00	0.00	86.66	3100.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3200.00	0.00	86.66	3200.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3300.00	0.00	86.66	3300.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
Base Salt (Tansi)	3380.00	0.00	86.66	3380.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3400.00	0.00	86.66	3400.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3500.00	0.00	86.66	3500.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3600.00	0.00	86.66	3600.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3700.00	0.00	86.66	3700.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3800.00	0.00	86.66	3800.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	3900.00	0.00	86.66	3900.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
Capitan	4000.00	0.00	86.66	4000.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4100.00	0.00	86.66	4100.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4200.00	0.00	86.66	4200.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4300.00	0.00	86.66	4300.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4400.00	0.00	86.66	4400.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4500.00	0.00	86.66	4500.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4600.00	0.00	86.66	4600.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4700.00	0.00	86.66	4700.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
Base Capitan	4740.00	0.00	86.66	4740.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4800.00	0.00	86.66	4800.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	4900.00	0.00	86.66	4900.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5000.00	0.00	86.66	5000.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5100.00	0.00	86.66	5100.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5200.00	0.00	86.66	5200.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5300.00	0.00	86.66	5300.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5400.00	0.00	86.66	5400.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5500.00	0.00	86.66	5500.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5600.00	0.00	86.66	5600.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5700.00	0.00	86.66	5700.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
Delaware Sands	5740.00	0.00	86.66	5740.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	5800.00	0.00	86.66	5800.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
Nudge 2°/100' DLS	5900.00	0.00	86.66	5900.00	0.00	0.00	0.00	0.00	576101.49	800567.48	N 32 34 51.38 W 103 29 30.26	
	6000.00	2.00	86.66	5999.98	0.09	0.10	1.74	2.00	576101.59	800569.22	N 32 34 51.38 W 103 29 30.24	
	6100.00	4.00	86.66	6099.84	0.35	0.41	6.97	2.00	576101.90	800574.45	N 32 34 51.38 W 103 29 30.18	
	6200.00	6.00	86.66	6199.45	0.79	0.91	15.67	2.00	576102.40	800583.15	N 32 34 51.39 W 103 29 30.08	
	6300.00	8.00	86.66	6298.70	1.40	1.62	27.83	2.00	576103.11	800595.31	N 32 34 51.39 W 103 29 29.93	
	6400.00	10.00	86.66	6397.47	2.18	2.54	43.45	2.00	576104.03	800610.93	N 32 34 51.40 W 103 29 29.75	
Hold Nudge	6453.26	11.07	86.66	6449.83	2.67	3.10	53.17	2.00	576104.59	800620.65	N 32 34 51.41 W 103 29 29.64	
	6500.00	11.07	86.66	6495.70	3.12	3.63	62.12	0.00	576105.12	800629.60	N 32 34 51.41 W 103 29 29.53	
	6600.00	11.07	86.66	6593.84	4.08	4.74	81.28	0.00	576106.23	800648.76	N 32 34 51.42 W 103 29 29.31	
	6700.00	11.07	86.66	6691.98	5.04	5.86	100.44	0.00	576107.35	800667.92	N 32 34 51.43 W 103 29 29.08	
	6800.00	11.07	86.66	6790.12	6.01	6.98	119.60	0.00	576108.47	800687.08	N 32 34 51.44 W 103 29 28.86	
	6900.00	11.07	86.66	6888.26	6.97	8.10	138.76	0.00	576109.59	800706.24	N 32 34 51.45 W 103 29 28.64	
	7000.00	11.07	86.66	6986.40	7.93	9.22	157.92	0.00	576110.71	800725.40	N 32 34 51.46 W 103 29 28.41	
	7100.00	11.07	86.66	7084.54	8.89	10.33	177.08	0.00	576111.82	800744.56	N 32 34 51.47 W 103 29 28.19	
	7200.00	11.07	86.66	7182.68	9.86	11.45	196.24	0.00	576112.94	800763.72	N 32 34 51.48 W 103 29 27.96	
	7300.00	11.07	86.66	7280.83	10.82	12.57	215.40	0.00	576114.06	800782.88	N 32 34 51.49 W 103 29 27.74	
	7400.00	11.07	86.66	7378.97	11.78	13.69	234.56	0.00	576115.18	800802.04	N 32 34 51.50 W 103 29 27.52	
	7500.00	11.07	86.66	7477.11	12.74	14.81	253.72	0.00	576116.30	800821.20	N 32 34 51.51 W 103 29 27.29	

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 ° ' '')
	7600.00	11.07	86.66	7575.25	13.71	15.93	272.88	0.00	576117.42	800840.36	N 32 34 51.52 W 103 29 27.07	
	7700.00	11.07	86.66	7673.39	14.67	17.04	292.04	0.00	576118.53	800859.52	N 32 34 51.53 W 103 29 26.84	
	7800.00	11.07	86.66	7771.53	15.63	18.16	311.20	0.00	576119.65	800878.68	N 32 34 51.53 W 103 29 26.62	
	7900.00	11.07	86.66	7869.67	16.59	19.28	330.36	0.00	576120.77	800897.84	N 32 34 51.54 W 103 29 26.40	
	8000.00	11.07	86.66	7967.81	17.55	20.40	349.52	0.00	576121.89	800917.00	N 32 34 51.55 W 103 29 26.17	
	8100.00	11.07	86.66	8065.95	18.52	21.52	368.68	0.00	576123.01	800936.16	N 32 34 51.56 W 103 29 25.95	
	8200.00	11.07	86.66	8164.09	19.48	22.63	387.84	0.00	576124.12	800955.32	N 32 34 51.57 W 103 29 25.72	
Brushy Canyon	8236.59	11.07	86.66	8200.00	19.83	23.04	394.85	0.00	576124.53	800962.33	N 32 34 51.58 W 103 29 25.64	
	8300.00	11.07	86.66	8262.24	20.44	23.75	407.00	0.00	576125.24	800974.48	N 32 34 51.58 W 103 29 25.50	
Drop to Vertical 2°/100' DLS	8398.60	11.07	86.66	8359.00	21.39	24.86	425.89	0.00	576126.34	800993.37	N 32 34 51.59 W 103 29 25.28	
	8400.00	11.04	86.66	8360.38	21.40	24.87	426.16	2.00	576126.36	800993.64	N 32 34 51.59 W 103 29 25.28	
Bone Spring	8459.61	9.84	86.66	8419.00	21.95	25.50	436.95	2.00	576126.99	801004.42	N 32 34 51.60 W 103 29 25.15	
	8500.00	9.04	86.66	8458.84	22.28	25.89	443.56	2.00	576127.38	801011.03	N 32 34 51.60 W 103 29 25.07	
	8600.00	7.04	86.66	8557.85	22.98	26.70	457.52	2.00	576128.19	801024.99	N 32 34 51.61 W 103 29 24.91	
	8700.00	5.04	86.66	8657.29	23.51	27.31	468.02	2.00	576128.80	801035.49	N 32 34 51.61 W 103 29 24.79	
1st Bone Spring Sand	8768.91	3.66	86.66	8726.00	23.77	27.62	473.23	2.00	576129.11	801040.70	N 32 34 51.62 W 103 29 24.73	
	8800.00	3.04	86.66	8757.04	23.86	27.72	475.04	2.00	576129.21	801042.52	N 32 34 51.62 W 103 29 24.70	
	8900.00	1.04	86.66	8856.97	24.04	27.93	478.59	2.00	576129.42	801046.07	N 32 34 51.62 W 103 29 24.66	
Hold Vertical	8951.86	0.00	86.66	8908.83	24.06	27.96	479.06	2.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9000.00	0.00	86.66	8956.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9100.00	0.00	86.66	9056.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9200.00	0.00	86.66	9156.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9300.00	0.00	86.66	9256.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9400.00	0.00	86.66	9356.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9500.00	0.00	86.66	9456.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9600.00	0.00	86.66	9556.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9700.00	0.00	86.66	9656.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9800.00	0.00	86.66	9756.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	9900.00	0.00	86.66	9856.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10000.00	0.00	86.66	9956.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10100.00	0.00	86.66	10056.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10200.00	0.00	86.66	10156.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10300.00	0.00	86.66	10256.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
2nd Bone Spring Sand	10396.03	0.00	86.66	10353.00	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10400.00	0.00	86.66	10356.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10500.00	0.00	86.66	10456.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10600.00	0.00	86.66	10556.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10700.00	0.00	86.66	10656.97	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
KOP - Build 12°/100' DLS	10745.68	0.00	86.66	10702.65	24.06	27.96	479.06	0.00	576129.45	801046.53	N 32 34 51.62 W 103 29 24.66	
	10800.00	6.52	359.53	10756.85	27.15	31.04	479.04	12.00	576132.53	801046.51	N 32 34 51.65 W 103 29 24.66	
	10900.00	18.52	359.53	10854.30	48.78	52.68	478.86	12.00	576154.17	801046.33	N 32 34 51.86 W 103 29 24.66	
	11000.00	30.52	359.53	10945.11	90.20	94.10	478.52	12.00	576195.59	801046.00	N 32 34 52.27 W 103 29 24.66	
	11100.00	42.52	359.53	11025.33	149.60	153.50	478.04	12.00	576254.98	801045.51	N 32 34 52.86 W 103 29 24.66	
	11200.00	54.52	359.53	11091.45	224.38	228.27	477.43	12.00	576329.76	801044.90	N 32 34 53.60 W 103 29 24.66	
3rd Bone Spring Sand	11224.21	57.42	359.53	11105.00	244.45	248.34	477.27	12.00	576349.82	801044.74	N 32 34 53.80 W 103 29 24.66	
	11300.00	66.52	359.53	11140.58	311.27	315.16	476.73	12.00	576416.65	801044.20	N 32 34 54.46 W 103 29 24.66	
	11400.00	78.52	359.53	11170.56	406.48	410.37	475.95	12.00	576511.85	801043.42	N 32 34 55.40 W 103 29 24.66	
	11500.00	90.52	359.53	11180.10	505.84	509.72	475.14	12.00	576611.20	801042.62	N 32 34 56.39 W 103 29 24.66	
Landing Point	11506.33	91.28	359.53	11180.00	512.17	516.05	475.09	12.00	576617.54	801042.56	N 32 34 56.45 W 103 29 24.66	
	11600.00	91.28	359.53	11177.91	605.82	609.70	474.33	0.00	576711.18	801041.80	N 32 34 57.37 W 103 29 24.66	
	11700.00	91.28	359.53	11175.68	705.79	709.67	473.52	0.00	576811.15	801040.99	N 32 34 58.36 W 103 29 24.66	
	11800.00	91.28	359.53	11173.45	805.77	809.64	472.70	0.00	576911.12	801040.18	N 32 34 59.35 W 103 29 24.66	
	11900.00	91.28	359.53	11171.22	905.74	909.61	471.89	0.00	577011.09	801039.36	N 32 35 0.34 W 103 29 24.66	
	12000.00	91.28	359.53	11168.99	1005.72	1009.58	471.08	0.00	577111.06	801038.55	N 32 35 1.33 W 103 29 24.66	

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 ° ' ")
	12100.00	91.28	359.53	11166.76	1105.69	1109.55	470.26	0.00	577211.03	801037.74	N 32 35 2.32	W 103 29 24.66
	12200.00	91.28	359.53	11164.53	1205.67	1209.53	469.45	0.00	577311.00	801036.92	N 32 35 3.31	W 103 29 24.66
	12300.00	91.28	359.53	11162.30	1305.64	1309.50	468.64	0.00	577410.97	801036.11	N 32 35 4.30	W 103 29 24.66
	12400.00	91.28	359.53	11160.07	1405.62	1409.47	467.82	0.00	577510.94	801035.30	N 32 35 5.29	W 103 29 24.66
	12500.00	91.28	359.53	11157.84	1505.59	1509.44	467.01	0.00	577610.91	801034.48	N 32 35 6.28	W 103 29 24.66
	12600.00	91.28	359.53	11155.61	1605.57	1609.41	466.20	0.00	577710.88	801033.67	N 32 35 7.27	W 103 29 24.66
	12700.00	91.28	359.53	11153.38	1705.54	1709.39	465.39	0.00	577810.85	801032.86	N 32 35 8.26	W 103 29 24.66
	12800.00	91.28	359.53	11151.15	1805.52	1809.36	464.57	0.00	577910.82	801032.04	N 32 35 9.25	W 103 29 24.66
	12900.00	91.28	359.53	11148.92	1905.49	1909.33	463.76	0.00	578010.79	801031.23	N 32 35 10.23	W 103 29 24.66
	13000.00	91.28	359.53	11146.69	2005.47	2009.30	462.95	0.00	578110.76	801030.42	N 32 35 11.22	W 103 29 24.66
	13100.00	91.28	359.53	11144.46	2105.44	2109.27	462.13	0.00	578210.73	801029.61	N 32 35 12.21	W 103 29 24.66
	13200.00	91.28	359.53	11142.23	2205.42	2209.24	461.32	0.00	578310.70	801028.79	N 32 35 13.20	W 103 29 24.66
	13300.00	91.28	359.53	11140.00	2305.39	2309.22	460.51	0.00	578410.67	801027.98	N 32 35 14.19	W 103 29 24.66
	13400.00	91.28	359.53	11137.77	2405.37	2409.19	459.69	0.00	578510.64	801027.17	N 32 35 15.18	W 103 29 24.66
	13500.00	91.28	359.53	11135.54	2505.34	2509.16	458.88	0.00	578610.61	801026.35	N 32 35 16.17	W 103 29 24.66
	13600.00	91.28	359.53	11133.31	2605.32	2609.13	458.07	0.00	578710.58	801025.54	N 32 35 17.16	W 103 29 24.66
	13700.00	91.28	359.53	11131.08	2705.30	2709.10	457.25	0.00	578810.55	801024.73	N 32 35 18.15	W 103 29 24.66
	13800.00	91.28	359.53	11128.85	2805.27	2809.08	456.44	0.00	578910.52	801023.91	N 32 35 19.14	W 103 29 24.66
	13900.00	91.28	359.53	11126.62	2905.25	2909.05	455.63	0.00	579010.49	801023.10	N 32 35 20.13	W 103 29 24.66
	14000.00	91.28	359.53	11124.39	3005.22	3009.02	454.81	0.00	579110.46	801022.29	N 32 35 21.12	W 103 29 24.66
	14100.00	91.28	359.53	11122.16	3105.20	3108.99	454.00	0.00	579210.43	801021.47	N 32 35 22.11	W 103 29 24.67
	14200.00	91.28	359.53	11119.93	3205.17	3208.96	453.19	0.00	579310.40	801020.66	N 32 35 23.09	W 103 29 24.67
	14300.00	91.28	359.53	11117.70	3305.15	3308.93	452.38	0.00	579410.37	801019.85	N 32 35 24.08	W 103 29 24.67
	14400.00	91.28	359.53	11115.47	3405.12	3408.91	451.56	0.00	579510.34	801019.03	N 32 35 25.07	W 103 29 24.67
	14500.00	91.28	359.53	11113.24	3505.10	3508.88	450.75	0.00	579610.31	801018.22	N 32 35 26.06	W 103 29 24.67
	14600.00	91.28	359.53	11111.01	3605.07	3608.85	449.94	0.00	579710.28	801017.41	N 32 35 27.05	W 103 29 24.67
	14700.00	91.28	359.53	11108.78	3705.05	3708.82	449.12	0.00	579810.25	801016.60	N 32 35 28.04	W 103 29 24.67
	14800.00	91.28	359.53	11106.55	3805.02	3808.79	448.31	0.00	579910.22	801015.78	N 32 35 29.03	W 103 29 24.67
3rd Bone Spring Sand	14869.62	91.28	359.53	11105.00	3874.63	3878.40	447.74	0.00	579979.83	801015.22	N 32 35 29.72	W 103 29 24.67
	14900.00	91.28	359.53	11104.32	3905.00	3908.77	447.50	0.00	580010.19	801014.97	N 32 35 30.02	W 103 29 24.67
	15000.00	91.28	359.53	11102.09	4004.97	4008.74	446.68	0.00	580110.16	801014.16	N 32 35 31.01	W 103 29 24.67
	15100.00	91.28	359.53	11099.86	4104.95	4108.71	445.87	0.00	580210.13	801013.34	N 32 35 32.00	W 103 29 24.67
	15200.00	91.28	359.53	11097.63	4204.92	4208.68	445.06	0.00	580310.10	801012.53	N 32 35 32.99	W 103 29 24.67
	15300.00	91.28	359.53	11095.40	4304.90	4308.65	444.24	0.00	580410.07	801011.72	N 32 35 33.98	W 103 29 24.67
	15400.00	91.28	359.53	11093.17	4404.87	4408.62	443.43	0.00	580510.04	801010.90	N 32 35 34.97	W 103 29 24.67
	15500.00	91.28	359.53	11090.94	4504.85	4508.60	442.62	0.00	580610.01	801010.09	N 32 35 35.95	W 103 29 24.67
	15600.00	91.28	359.53	11088.71	4604.82	4608.57	441.80	0.00	580709.98	801009.28	N 32 35 36.94	W 103 29 24.67
	15700.00	91.28	359.53	11086.48	4704.80	4708.54	440.99	0.00	580809.95	801008.46	N 32 35 37.93	W 103 29 24.67
	15800.00	91.28	359.53	11084.25	4804.77	4808.51	440.18	0.00	580909.93	801007.65	N 32 35 38.92	W 103 29 24.67
	15900.00	91.28	359.53	11082.02	4904.75	4908.48	439.36	0.00	581009.90	801006.84	N 32 35 39.91	W 103 29 24.67
Cimarex Lea 7 Federal Com 30H - PBHL [100' FNL, 660' FEL]	15990.72	91.28	359.53	11080.00	4995.45	4999.18	438.63	0.00	581100.59	801006.10	N 32 35 40.81	W 103 29 24.67

Survey Type: Non-Def Plan

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

Survey Program:

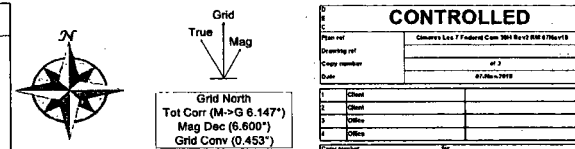
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
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Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
		1	0.000	26.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only		Original Borehole / Cimarex Lea 7 Federal Com 30H Rev2 RM 07Nov18	
		1	26.000	15990.722	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS		Original Borehole / Cimarex Lea 7 Federal Com 30H Rev2 RM	

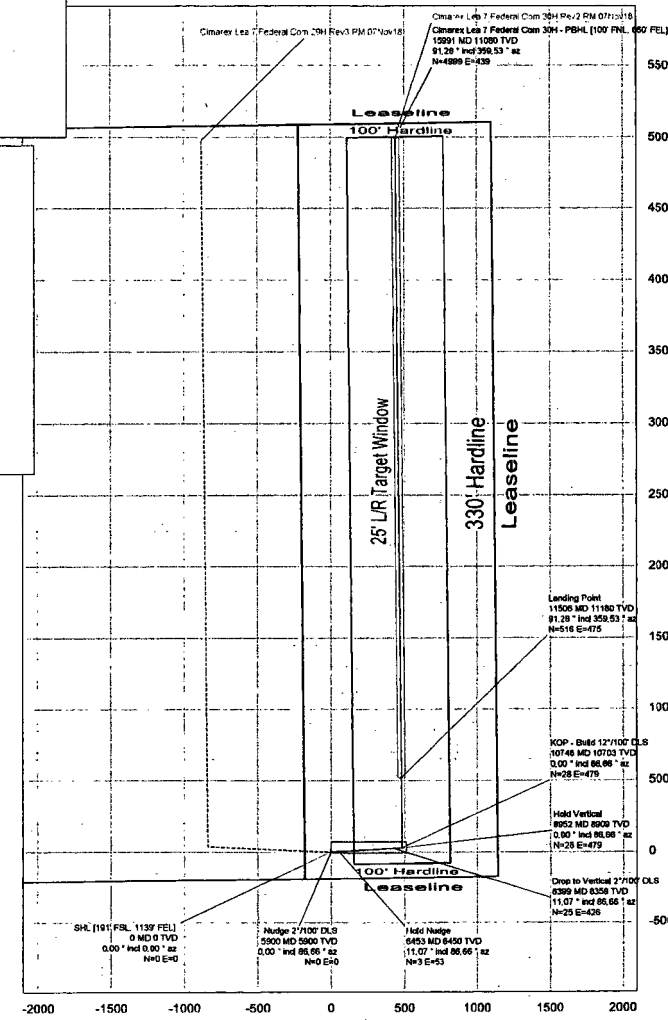
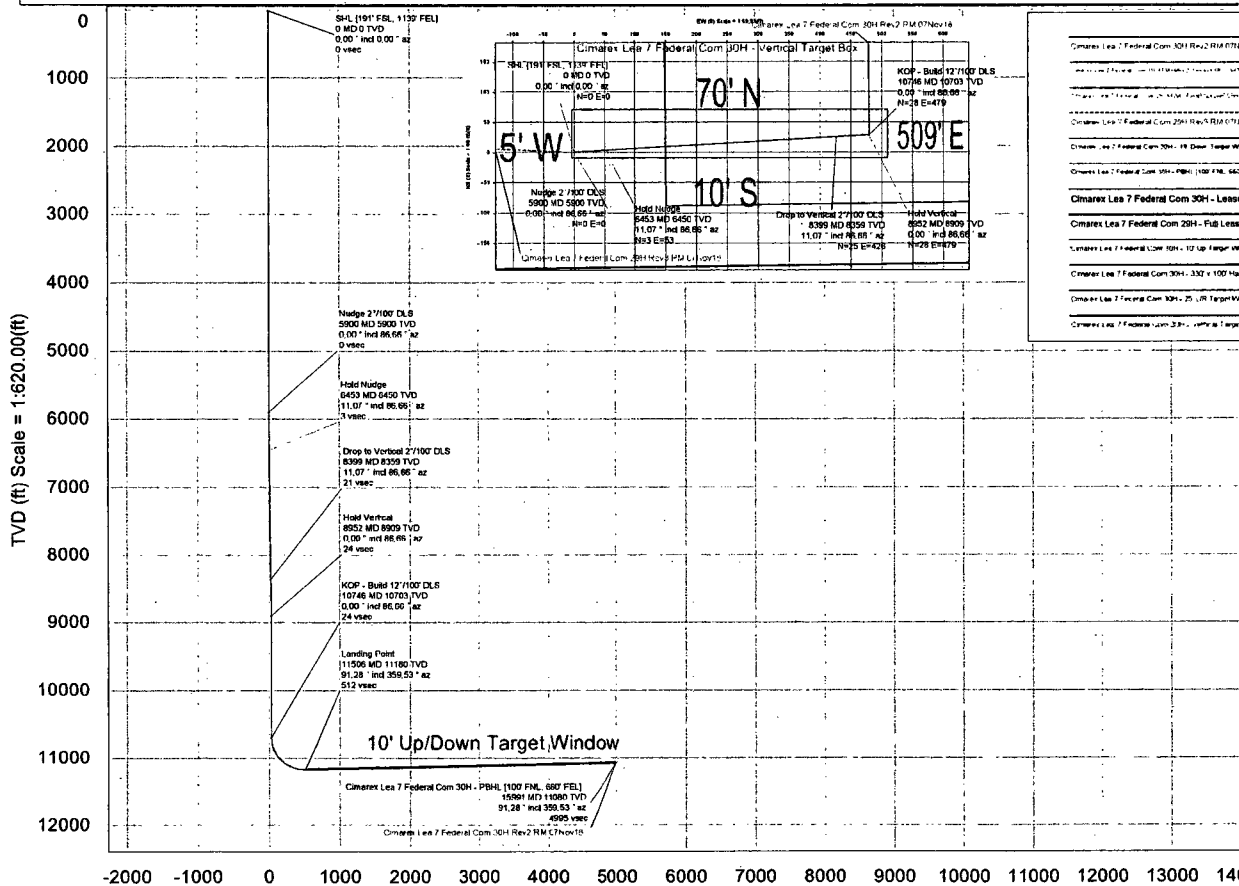
Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Lea 7 Federal Com 30H	NM Lea County (NAD 83)	Cimarex Lea 7 Federal Com 30H

Gravity & Magnetic Parameters Model: HDGM 2018 MagDec: 6.6°	Dip: 60.697° FS: 48128.156mT	Date: 07-Nov-2018 Gravity FS: 986.606mg (9.80666 Based)	Surface Location Lat: N 32 34 61.38 Lon: W 103 29 50.28	NAD83 New Mexico State Plane, Eastern Zone, US Feet Northing: 678101.4381US Easting: 800587.481US	Grid Conv: 0.4532° Scale Fact: 0.99999005	MicroBase: Slot: Cimarex Lea 7 Federal Com 30H Plan: Cimarex Lea 7 Federal Com 30H Rev2 RM 07Nov18	TVD Ref: RKB(1762.6R above MSL)
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Critical Points							
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)B(-)	E(+)W(-)
SHL [191° FSL, 1139° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	5900.00	0.00	86.66	5900.00	0.00	0.00	0.00
Hold Nudge	6453.26	11.07	86.66	6449.83	2.67	3.10	53.17
Drop to Vertical 2°/100' DLS	6399.60	11.07	86.66	6399.00	21.39	24.88	425.89
Hold Vertical	8951.66	0.00	86.66	8908.63	24.06	27.96	479.06
KOP - Build 12°/100' DLS	10745.66	0.00	86.66	10702.65	24.06	27.96	479.06
Landing Point	11506.33	91.28	359.53	11180.00	512.17	516.05	475.08
Cimarex Lea 7 Federal Com 30H - PBHL [100° FNL, 680° FEL]	15990.72	91.28	359.53	11080.00	4995.45	4999.16	438.63



CONTROLLED	
Drawn by	Cimarex Lea 7 Federal Com 30H Rev2 RM 07Nov18
Copy number	# 3
Date	07-Nov-2018
Check	
Check	
Check	
Check	
Check	
Copy number	30



Vertical Section (ft) Azim = 359.53° Scale = 1:620.00(ft) Origin = 0N/-S, 0E/-W

EW (ft) Scale = 1:294.93(ft)

Cimarex Lea 7 Federal Com 30H Rev2 RM 07Nov18 Anti-Collision Summary Report

Analysis Date-24hr Time: November 07, 2018 - 15:13
 Client: Cimarex
 Field: NM Lea County (NAD 83)
 Structure: Cimarex Lea 7 Federal Com 30H
 Slot: Cimarex Lea 7 Federal Com 30H
 Well: Cimarex Lea 7 Federal Com 30H
 Borehole: Original Borehole
 Scan MD Range: 0.00ft ~ 15990.72ft

Analysis Method: 3D Least Distance
 Reference Trajectory: Cimarex Lea 7 Federal Com 30H Rev2 RM 07Nov18 (Non-Def Plan)
 Depth Interval: Every 10.00 Measured Depth (ft)
 Rule Set: NAL Procedure: D&M AntiCollision Standard S002
 Min Pts: All local minima indicated.
 Version / Patch: 2.10.740.0
 Database \ Project: US1153APP452.dir.slb.com\drilling-NM Lea County 2.10

Trajectory Error Model: ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan:

Selection filters:

Not performed!

Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans

- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Lea 7 Federal Com
 29H Rev3 RM 07Nov18 (Def Plan)

Fail Major

20.18	16.64	17.68	3.54	N/A	MAS = 5.07 (m)	0.00	0.00	CtCt<=15m<15.00				Enter Alert	
20.18	16.64	17.68	3.54	N/A	MAS = 5.07 (m)	26.00	26.00					WRP	
20.18	20.19	5.89	-0.01	1.50	OSF1.50	1940.00	1940.00		OSF<1.50			Enter Minor	
20.18	29.05	-0.02	-8.87	1.00	OSF1.50	2880.00	2880.00				OSF<1.00	Enter Major	
20.18	57.52	-19.00	-37.34	0.48	OSF1.50	5900.00	5900.00					MinPts	
20.21	57.57	-19.00	-37.36	0.48	OSF1.50	5910.00	5910.00					MinPt-O-ADP	
38.47	57.95	-0.99	-19.48	0.97	OSF1.50	6130.00	6129.75				OSF>1.00	Exit Major	
57.70	57.88	18.28	-0.18	1.50	OSF1.50	6230.00	6229.27			OSF>1.50		Exit Minor	
181.42	57.34	142.36	124.08	4.89	OSF1.50	6600.00	6593.84		OSF>5.00			Exit Alert	
1319.19	65.44	1274.73	1253.75	31.38	OSF1.50	9270.00	9226.97					MinPt-O-SF	
1319.95	193.91	1189.84	1126.04	10.32	OSF1.50	15980.00	11080.24					MinPt-CtCt	
1319.97	194.15	1189.70	1125.82	10.31	OSF1.50	15990.72	11080.00					MinPts	

Cimarex Lea 7 Federal Com
 2H MWD Final(Surcon Corrected), (Def Survey)

Pass

2557.31	32.81	2555.51	2524.51	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
2557.30	32.81	2555.49	2524.49	578238.04	MAS = 10.00 (m)	26.00	26.00					WRP	
2555.86	32.81	2551.62	2523.05	1048.20	MAS = 10.00 (m)	610.00	610.00					MinPts	
2556.00	32.81	2550.55	2523.19	701.23	MAS = 10.00 (m)	880.00	880.00					MinPts	
2556.02	32.81	2549.26	2523.21	515.68	MAS = 10.00 (m)	1170.00	1170.00					MinPts	
2556.93	32.81	2548.36	2524.12	378.15	MAS = 10.00 (m)	1580.00	1580.00					MINPT-O-EOU	
2549.72	36.52	2524.76	2513.20	110.12	OSF1.50	5250.00	5250.00					MinPt-CtCt	
2541.26	41.10	2513.25	2500.16	97.00	OSF1.50	6040.00	6039.94					MinPts	
2543.56	41.16	2515.51	2502.40	96.92	OSF1.50	6150.00	6149.68					MinPt-O-SF	
2890.27	46.25	2858.83	2844.02	97.49	OSF1.50	8398.60	8359.00					MinPt-O-SF	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2908.23	51.18	2873.50	2857.04	88.29		OSF1.50	9950.00	9906.97				MinPt-O-SF	
2647.05	72.51	2598.11	2574.54	56.12		OSF1.50	12250.00	11183.42				MinPt-CtCt	
2647.30	73.26	2597.86	2574.04	55.54		OSF1.50	12300.00	11162.30				MINPT-O-EOU	
2648.32	74.46	2598.08	2573.86	54.64		OSF1.50	12370.00	11160.74				MinPt-O-ADP	
2654.42	82.33	2598.93	2572.08	49.41		OSF1.50	12750.00	11152.27				MINPT-O-EOU	
2647.20	107.62	2574.85	2539.58	37.50		OSF1.50	13800.00	11128.85				MinPt-CtCt	
2634.61	126.48	2549.69	2508.13	31.68		OSF1.50	14510.00	11113.02				MinPt-CtCt	
2635.04	136.83	2543.22	2498.21	29.25		OSF1.50	14890.00	11104.55				MinPt-CtCt	
2636.94	140.61	2542.59	2496.32	28.48		OSF1.50	15050.00	11100.98				MINPT-O-EOU	
2621.64	161.02	2513.69	2460.62	24.68		OSF1.50	15740.00	11085.59				MinPt-CtCt	
2621.76	161.41	2513.55	2460.35	24.62		OSF1.50	15770.00	11084.92				MINPT-O-EOU	
2621.88	161.53	2513.59	2460.34	24.61		OSF1.50	15780.00	11084.70				MinPt-O-ADP	
2633.20	163.76	2523.42	2469.44	24.37		OSF1.50	15990.72	11080.00				MinPt-O-SF	

Cimarex Lea 7 Federal Com
1H XEM+MWD Surveys Off -
15433ft MD (Def Survey)

Pass

3481.55	32.81	3479.05	3448.74	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
3481.55	32.81	3479.05	3448.74	N/A	MAS = 10.00 (m)	10.00	10.00	MinPts
3481.56	32.81	3479.05	3448.75	N/A	MAS = 10.00 (m)	26.00	26.00	WRP
3481.88	32.81	3477.19	3449.08	1586.05	MAS = 10.00 (m)	510.00	510.00	MinPts
3482.38	32.81	3473.53	3449.57	548.01	MAS = 10.00 (m)	1450.00	1450.00	MinPts
3485.03	32.81	3471.79	3452.22	324.06	MAS = 10.00 (m)	2350.00	2350.00	MINPT-O-EOU
3447.08	42.06	3418.19	3405.02	130.80	OSF1.50	5930.00	5930.00	MinPt-CtCt
3447.09	42.10	3418.17	3404.99	130.68	OSF1.50	5940.00	5940.00	MINPT-O-EOU
3447.12	42.13	3418.17	3404.98	130.57	OSF1.50	5950.00	5950.00	MinPt-O-ADP
3450.79	42.35	3421.70	3408.44	129.99	OSF1.50	6090.00	6089.86	MinPt-O-SF
3452.44	42.36	3423.35	3410.08	129.99	OSF1.50	6120.00	6119.78	MinPt-O-SF
3882.27	47.93	3849.48	3834.34	128.10	OSF1.50	8398.60	8359.00	MinPt-O-SF
3967.64	49.34	3933.91	3918.30	126.97	OSF1.50	9380.00	9336.97	MinPt-O-SF
3960.32	51.30	3925.28	3909.02	121.65	OSF1.50	9740.00	9696.97	MinPt-CtCt
3960.37	51.42	3925.25	3908.94	121.35	OSF1.50	9760.00	9716.97	MINPT-O-EOU
3960.41	51.49	3925.26	3908.93	121.20	OSF1.50	9770.00	9726.97	MinPt-O-ADP
3713.08	310.99	3504.92	3402.09	18.04	OSF1.50	15740.00	11085.59	MinPt-CtCt
3713.08	311.03	3504.90	3402.05	18.04	OSF1.50	15750.00	11085.37	MINPT-O-EOU
3713.11	311.07	3504.90	3402.04	18.04	OSF1.50	15760.00	11085.14	MinPt-O-ADP
3714.59	311.37	3506.17	3403.21	18.03	OSF1.50	15850.00	11083.14	MinPt-O-SF
3721.25	311.51	3512.74	3409.74	18.05	OSF1.50	15990.72	11080.00	TD

PECOS DISTRICT

DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Company
LEASE NO.:	NMNM128835
WELL NAME & NO.:	Lea 7 Federal Com 30H
SURFACE HOLE FOOTAGE:	191'/S & 1139'/E
BOTTOM HOLE FOOTAGE:	100'/N & 660'/E
LOCATION:	Section 7, T20S, R35E, NMPM
COUNTY:	Lea County, New Mexico

COA

All previous COAs still apply expect the following:

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

A. Hydrogen Sulfide

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

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **1780** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength,

whichever is greater.

- d. If cement falls back, remedial cementing will be done prior to drilling out that string.

Operator shall filled 1/3rd casing with fluid while running intermediate casing to maintain collapse safety factor.

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is: Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

- a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.
- b. Second stage above DV tool: Cement to surface. If cement does not circulate, contact the appropriate BLM office.

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

❖ **Special Capitan Reef requirements.** If lost circulation (50% or greater) occurs below the Base of the Salt, the operator shall do the following:
(Use this for 3 string wells in the Capitan Reef, if 4 string well ensure FW based mud used across the capitan interval)

- Switch to fresh water mud to protect the Capitan Reef and use fresh water mud until setting the intermediate casing. The appropriate BLM office is to be notified for a PET to witness the switch to fresh water.
- Daily drilling reports from the Base of the Salt to the setting of the intermediate casing are to be submitted to the BLM CFO engineering staff via e-mail by 0800 hours each morning. Any lost circulation encountered is to be recorded on these drilling reports. The daily drilling report should show mud volume per shift/tour. Failure to submit these reports will result in an Incidence of Non-Compliance being issued for failure to comply with the Conditions of Approval. If not already planned, the operator shall run a caliper survey for the intermediate well bore and submit to the appropriate BLM office.

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

- Cement should tie-back at least 50 feet above the Capitan Reef (3950ft) (Top of Capitan 4000') into previous casing string. Operator shall provide method of verification. **Additional cement maybe required. Excess calculates to -8%.**

C. PRESSURE CONTROL

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

ZS 090518