Form 3160-5
(June 2015)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on page 2

5. Lease Serial No.
NMNM117116

6. If Indian, Allottee or Tribe Name

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

1. Type of Well
☒ Oil Well ☐ Gas Well ☐ Other 215099

8. Well Name and No.
FOXX 31 FEDERAL COM 1H 40412

2. Name of Operator
CIMAREX ENERGY COMPANY
Contact: ARICKA EASTERLING
E-Mail: aeasterling@cimarex.com

9. API Well No.
30-015-45039

3a. Address
202 S. CHEYENNE AVE, SUITE 1000
TULSA, OK 74103

3b. Phone No. (include area code)
Ph: 918-560-7060

10. Field and Pool or Exploratory Area
BONE SPRING

4. Location of Well *(Footage, Sec., T., R., M., or Survey Description)*
Sec 31 T26S R27E NENE 525FNL 270FEL

11. County or Parish, State
EDDY COUNTY, NM

Carlsbad Field Office
OCD Artesia

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 to Original APD
	☐ Change Plans	☐ Plug and Abandon	☐ Temporarily Abandon	
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or 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 of the Foxx 31 Fed 1H well
Approved:
BHL: 400 FSL & 330 FWL
Proposed
BHL: 400 FNL & 330 FWL

Please see attached plat, directional plan, and drilling plan for changes due to new BHL.

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 27 2018

RECEIVED

14. I hereby certify that the foregoing is true and correct.
Electronic Submission #423864 verified by the BLM Well Information System
For CIMAREX ENERGY COMPANY, sent to the Carlsbad

Name *(Printed/Typed)* ARICKA EASTERLING — Title REGULATORY ANALYST

Signature (Electronic Submission) — Date 06/13/2018

APPROVED
JUN 21 2018
BUREAU OF LAND MANAGEMENT
CARLSBAD FIELD OFFICE

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By _____ Title _____ Date _____

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

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

(Instructions on page 2)

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

Duplicate / This old location
Ref 6-18.
Change Rec to 100' FEL

NM OIL CONSERVATION
ARTESIA DISTRICT

JUN 27 2018

RECEIVED

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
30-015-45039	98018	WC-015 G-04 S262625B; Bone Spring
[4] Property Code	[5] Property Name	[6] Well Number
40412	FOXX 31 FEDERAL COM	1H
[7] OGRID No.	[8] Operator Name	[9] Elevation
215099	CIMAREX ENERGY CO.	3209'

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
A	31	26 S	27 E		525	NORTH	270	EAST	EDDY

[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	31	26 S	27 E		400	NORTH	330	WEST	EDDY

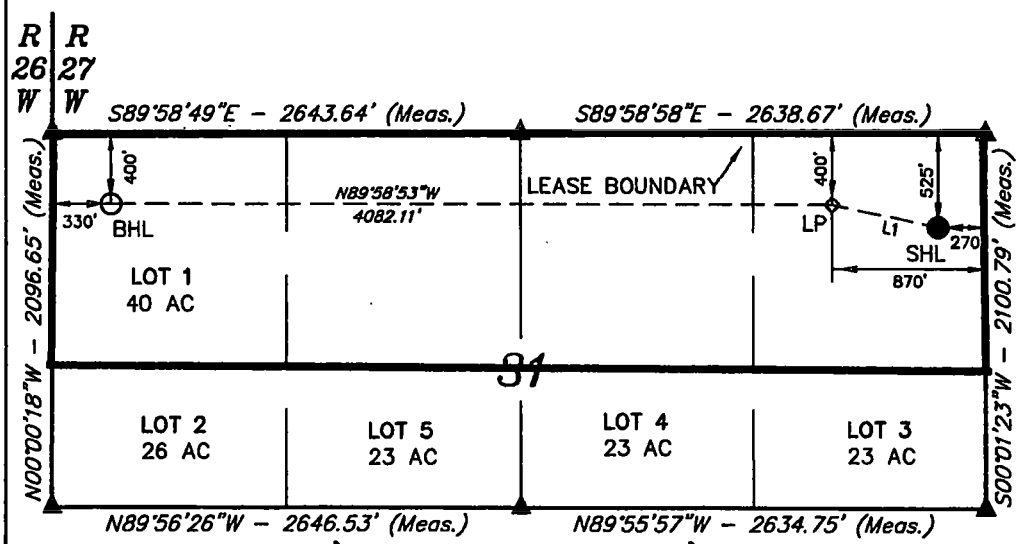
[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
160			

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.

[16]

NAD 83 (SURFACE HOLE LOCATION)	NAD 83 (BOTTOM HOLE LOCATION)
LATITUDE = 32°00'15.72" (32.004367)	LATITUDE = 32°00'16.96" (32.004711)
LONGITUDE = 104°13'16.44" (104.221233)	LONGITUDE = 104°14'10.80" (104.236333)
NAD 27 (SURFACE HOLE LOCATION)	NAD 27 (BOTTOM HOLE LOCATION)
LATITUDE = 32°00'15.28" (32.004244)	LATITUDE = 32°00'16.52" (32.004589)
LONGITUDE = 104°13'14.68" (104.220739)	LONGITUDE = 104°14'09.02" (104.235839)
STATE PLANE NAD 83 (NM EAST)	STATE PLANE NAD 83 (NM EAST)
N: 385346.27 E: 578085.62	N: 385486.46 E: 571404.89
STATE PLANE NAD 27 (NM EAST)	STATE PLANE NAD 27 (NM EAST)
N: 385289.74 E: 534901.74	N: 385409.98 E: 530221.15

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	N78°13'40"W	612.48'



1000' 500' 0' 1000'

SCALE

▲ = SECTION CORNERS LOCATED.
● = SURFACE HOLE LOCATION
◇ = LANDING POINT
○ = BOTTOM HOLE LOCATION

REVISED: 2 S.S. 03–15–17 (BHL MOVE)

The boundary lines shown on this exhibit are from a previous survey conducted by Nelson J. Marshall, R.P.L.S. 12446 while under employment of Uintah Engineering & Land Surveying. The surveyor signing this exhibit attests only to the revision noted and not to the validity or accuracy of said previous survey

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W104°11'35.28"

[17] OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Signature — Date: 6/12/18

Aricka Easterling
Printed Name

aeasterling@cimarex.com
E-mail Address

[18] SURVEYOR CERTIFICATION

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

September 28, 2017
Date of Survey

Signature and Seal of Professional Surveyor:

PAUL BUCHELE
NEW MEXICO
23782
03-15-18
PROFESSIONAL SURVEYOR

Certificate Number:

1. Geological Formations

TVD of target 7,250
MD at TD 11,730

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	0	N/A	
Salado (top Salt)	1245	N/A	
Castille (Base Salt)	1704	N/A	
Bell Canyon (Delaware)	1925	N/A	
Cherry Canyon	2922	N/A	
Brushy Canyon	4051	N/A	
Brushy Canyon Lower	5275	N/A	
Bone Spring	5495	N/A	
Bone Spring A Shale	5617	N/A	
Bone Spring C Shale	6126	N/A	
1st Bone Spring	6445	N/A	
2nd Bone Spring	6907	Hydrocarbons	
2nd BS Ss Horz Target	7217	Hydrocarbons	
3rd BS Limestone	7429	N/A	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	400	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	4.04	9.45	16.77
12 1/4	0	1905	9-5/8"	36.00	J-55	LT&C	2.00	3.48	6.61
8 3/4	0	6750	5-1/2"	17.00	L-80	LT&C	1.99	2.45	2.74
8 3/4	6750	11730	5-1/2"	17.00	L-80	BT&C	1.85	2.28	46.71
				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?	N
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

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	61	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	362	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	112	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	436	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1065	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	31
Intermediate	0	50
Production	1705	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 400'	FW Spud Mud	8.30 - 8.80	30-32	N/C
400' to 1905'	Brine Water	9.70 - 10.20	30-32	N/C
1905' to 11730'	FW/Cut Brine	8.50 - 9.00	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

6. Logging and Testing Procedures

Logging, Coring and Testing	
X	Will run GR/CNL fromTD 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

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	3393 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	H2S is present
X	H2S 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.

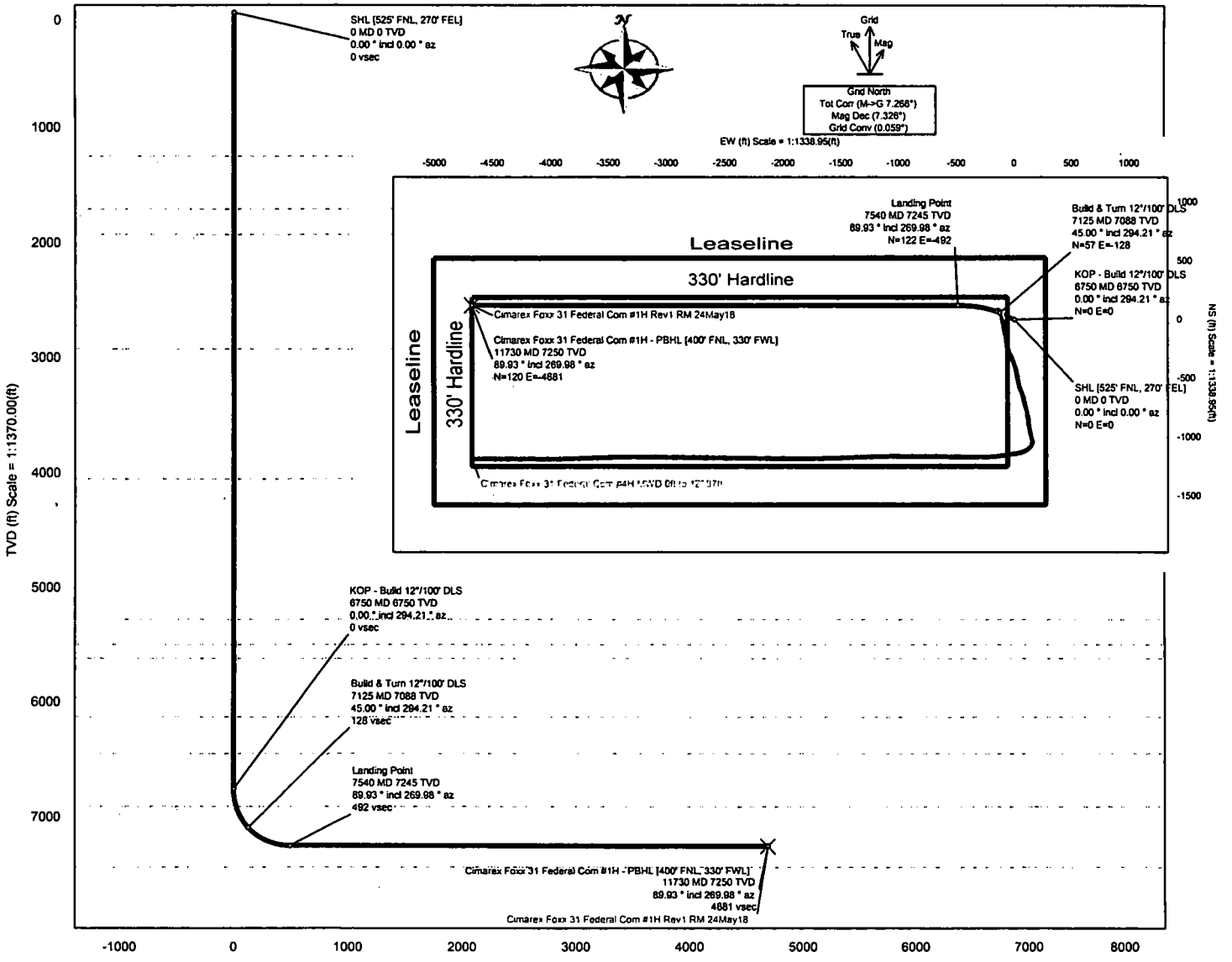
Schlumberger

Cimarex Rev 1

CIMAREX

Borehole:	Well:	Field:	Structure:
Original Borehole	Foxx 31 Federal Com #1H	NM Eddy County (NAD 83)	Cimarex Foxx 31 Federal Com #1H

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet					Miscellaneous			
Model:	HDGM 2018	Dip:	59.83°	Date:	24-May-2018	Lat:	N 32 0 16.72	Northing:	385348.27ftUS	Grid Conv:	0.0594°	Slot:	Foxx 31 Federal Com #1H	TVD Ref:	RKB(3233ft above MSL)
MagDec:	7.325°	FS:	47844.106nT	Gravity FS:	998.432mgn (9.80665 Based)	Lon:	W 104 13 16.44	Easting:	576085.62ftUS	Scale Fact:	0.99991047	Plan:	Cimarex Foxx 31 Federal Com #1H Rev1 RM 24May18		



Vertical Section (ft) Azim = 269.98° Scale = 1:1370.00(ft) Origin = 0N/-S, 0E/-W

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [525' FNL, 270' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Salado (Top Salt)	1245.00	0.00	294.21	1245.00	0.00	0.00	0.00	0.00
Castile (Base Salt)	1704.00	0.00	294.21	1704.00	0.00	0.00	0.00	0.00
Bell Canyon (Delaware)	1925.00	0.00	294.21	1925.00	0.00	0.00	0.00	0.00
Cherry Canyon	2922.00	0.00	294.21	2922.00	0.00	0.00	0.00	0.00
Brushy Canyon	4051.00	0.00	294.21	4051.00	0.00	0.00	0.00	0.00
Brushy Canyon Lower	5275.00	0.00	294.21	5275.00	0.00	0.00	0.00	0.00
Bone Spring	5495.00	0.00	294.21	5495.00	0.00	0.00	0.00	0.00
Bone Spring "A" Shale	5617.00	0.00	294.21	5617.00	0.00	0.00	0.00	0.00
Bone Spring "C" Shale	6126.00	0.00	294.21	6126.00	0.00	0.00	0.00	0.00
1st Bone Spring Ss	6445.00	0.00	294.21	6445.00	0.00	0.00	0.00	0.00
KOP - Build 12°/100' DLS	6750.45	0.00	294.21	6750.45	0.00	0.00	0.00	0.00
2nd Bone Spring Ss	6909.95	19.14	294.21	6907.00	24.07	10.82	-24.07	12.00
Build & Turn 12°/100' DLS	7125.45	45.00	294.21	7088.07	127.53	57.35	-127.54	12.00
Landing Point	7540.33	89.93	269.98	7245.00	491.95	121.53	-491.98	12.00
Cimarex Foxx 31 Federal Com #1H - PBHL [400' FNL, 330' FWL]	11729.51	89.93	269.98	7250.00	4681.12	120.20	-4681.16	0.00
3rd Bone Spring Limestone	NaN			7429.00				

Schlumberger

Cimarex Foxx 31 Federal Com #1H Rev1 RM 24May18 Proposal Geodetic Report

(Non-Def Plan)

CIMAREX

NM OIL CONSERVATION
ARTESIA DISTRICT
JUN 27 2018
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Report Date:	June 13, 2018 - 01:59 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex	**Vertical Section Azimuth:**	269.982 ° (Grid North)
Field:	NM Eddy County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Foxx 31 Federal Com #1H / Foxx 31 Federal Com #1H	**TVD Reference Datum:**	RKB
Well:	Foxx 31 Federal Com #1H	**TVD Reference Elevation:**	3233.000 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3209.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	7.326 °
Survey Name:	Cimarex Foxx 31 Federal Com #1H Rev1 RM 24May18	**Total Gravity Field Strength:**	998.4317mgn (9.80665 Based)
Survey Date:	October 13, 2017	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	94.785 ° / 4701.563 ft / 5.858 / 0.648	**Total Magnetic Field Strength:**	47844.106 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.630 °
Location Lat / Long:	N 32° 0' 15.72266", W 104° 13' 16.43889"	**Declination Date:**	May 24, 2018
Location Grid N/E Y/X:	N 365346.270 ftUS, E 576085.620 ftUS	**Magnetic Declination Model:**	HDGM 2018
CRS Grid Convergence Angle:	0.0594 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99991047	**Grid Convergence Used:**	0.0594 °
Version / Patch:	2.10.715.0	**Total Corr Mag North->Grid North:**	7.2663 °
		Local Coord Referenced To:	Structure Reference Point

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 [525' FNL, 270' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	100.00	0.00	294.21	100.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	200.00	0.00	294.21	200.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	300.00	0.00	294.21	300.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	400.00	0.00	294.21	400.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	500.00	0.00	294.21	500.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	600.00	0.00	294.21	600.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	700.00	0.00	294.21	700.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	800.00	0.00	294.21	800.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	900.00	0.00	294.21	900.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1000.00	0.00	294.21	1000.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1100.00	0.00	294.21	1100.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1200.00	0.00	294.21	1200.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Salado (Top Salt)	*1245.00*	*0.00*	*294.21*	*1245.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	1300.00	0.00	294.21	1300.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1400.00	0.00	294.21	1400.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1500.00	0.00	294.21	1500.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1600.00	0.00	294.21	1600.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1700.00	0.00	294.21	1700.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Castille (Base Salt)	*1704.00*	*0.00*	*294.21*	*1704.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	1800.00	0.00	294.21	1800.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	1900.00	0.00	294.21	1900.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Bell Canyon (Delaware)	*1925.00*	*0.00*	*294.21*	*1925.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	2000.00	0.00	294.21	2000.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2100.00	0.00	294.21	2100.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44

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 ° ' ")
	2200.00	0.00	294.21	2200.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2300.00	0.00	294.21	2300.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2400.00	0.00	294.21	2400.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2500.00	0.00	294.21	2500.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2600.00	0.00	294.21	2600.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2700.00	0.00	294.21	2700.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2800.00	0.00	294.21	2800.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	2900.00	0.00	294.21	2900.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Cherry Canyon	*2922.00*	*0.00*	*294.21*	*2922.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	3000.00	0.00	294.21	3000.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3100.00	0.00	294.21	3100.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3200.00	0.00	294.21	3200.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3300.00	0.00	294.21	3300.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3400.00	0.00	294.21	3400.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3500.00	0.00	294.21	3500.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3600.00	0.00	294.21	3600.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3700.00	0.00	294.21	3700.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3800.00	0.00	294.21	3800.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	3900.00	0.00	294.21	3900.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4000.00	0.00	294.21	4000.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Brushy Canyon	*4051.00*	*0.00*	*294.21*	*4051.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	4100.00	0.00	294.21	4100.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4200.00	0.00	294.21	4200.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4300.00	0.00	294.21	4300.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4400.00	0.00	294.21	4400.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4500.00	0.00	294.21	4500.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4600.00	0.00	294.21	4600.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4700.00	0.00	294.21	4700.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4800.00	0.00	294.21	4800.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	4900.00	0.00	294.21	4900.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	5000.00	0.00	294.21	5000.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	5100.00	0.00	294.21	5100.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	5200.00	0.00	294.21	5200.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Brushy Canyon Lower	*5275.00*	*0.00*	*294.21*	*5275.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	5300.00	0.00	294.21	5300.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	5400.00	0.00	294.21	5400.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Bone Spring	*5495.00*	*0.00*	*294.21*	*5495.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	5500.00	0.00	294.21	5500.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	5600.00	0.00	294.21	5600.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Bone Spring "A" Shale	*5617.00*	*0.00*	*294.21*	*5617.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	5700.00	0.00	294.21	5700.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	5800.00	0.00	294.21	5800.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	5900.00	0.00	294.21	5900.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	6000.00	0.00	294.21	6000.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	6100.00	0.00	294.21	6100.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
Bone Spring "C" Shale	*6126.00*	*0.00*	*294.21*	*6126.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	6200.00	0.00	294.21	6200.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	6300.00	0.00	294.21	6300.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	6400.00	0.00	294.21	6400.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
1st Bone Spring Ss	*6445.00*	*0.00*	*294.21*	*6445.00*	*0.00*	*0.00*	*0.00*	*0.00*	*365346.27*	*576085.62*	*N 32 0 15.72*	*W 104 13 16.44*
	6500.00	0.00	294.21	6500.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	6600.00	0.00	294.21	6600.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
	6700.00	0.00	294.21	6700.00	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44
KOP - Build 12°/100' DLS	6750.45	0.00	294.21	6750.45	0.00	0.00	0.00	0.00	365346.27	576085.62	N 32 0 15.72	W 104 13 16.44

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 ° ' ")
	6800.00	5.95	294.21	6799.91	2.34	1.05	-2.34	12.00	365347.32	576083.28	N 32 0 15.73	W 104 13 16.47
	6900.00	17.95	294.21	6897.57	21.18	9.53	-21.19	12.00	365355.80	576064.44	N 32 0 15.82	W 104 13 16.68
2nd Bone Spring Ss	*6909.95*	*19.14*	*294.21*	*6907.00*	*24.07*	*10.82*	*-24.07*	*12.00*	*365357.09*	*576061.55*	*N 32 0 15.83*	*W 104 13 16.72*
	7000.00	29.95	294.21	6988.79	58.13	26.14	-58.13	12.00	365372.41	576027.49	N 32 0 15.98	W 104 13 17.11
	7100.00	41.95	294.21	7069.60	111.56	50.17	-111.57	12.00	365396.44	575974.06	N 32 0 16.22	W 104 13 17.73
Build & Turn 12°/100' DLS	7125.45	45.00	294.21	7088.07	127.53	57.35	-127.54	12.00	365403.62	575958.09	N 32 0 16.29	W 104 13 17.92
	7200.00	52.71	288.18	7137.11	179.84	77.46	-179.86	12.00	365423.72	575905.77	N 32 0 16.49	W 104 13 18.53
	7300.00	63.43	281.81	7189.95	261.70	99.10	-261.73	12.00	365445.36	575823.91	N 32 0 16.71	W 104 13 19.48
	7400.00	74.39	276.55	7225.90	353.65	113.80	-353.69	12.00	365460.06	575731.97	N 32 0 16.85	W 104 13 20.54
	7500.00	85.46	271.82	7243.38	451.67	120.90	-451.70	12.00	365467.16	575633.96	N 32 0 16.92	W 104 13 21.68
Landing Point	7540.33	89.93	269.98	7245.00	491.95	121.53	-491.98	12.00	365467.79	575593.68	N 32 0 16.93	W 104 13 22.15
	7600.00	89.93	269.98	7245.07	551.62	121.51	-551.65	0.00	365467.77	575534.02	N 32 0 16.93	W 104 13 22.84
	7700.00	89.93	269.98	7245.19	651.62	121.48	-651.65	0.00	365467.74	575434.03	N 32 0 16.93	W 104 13 24.01
	7800.00	89.93	269.98	7245.31	751.62	121.45	-751.65	0.00	365467.71	575334.03	N 32 0 16.93	W 104 13 25.17
	7900.00	89.93	269.98	7245.43	851.62	121.42	-851.65	0.00	365467.68	575234.04	N 32 0 16.93	W 104 13 26.33
	8000.00	89.93	269.98	7245.55	951.62	121.39	-951.65	0.00	365467.65	575134.05	N 32 0 16.93	W 104 13 27.49
	8100.00	89.93	269.98	7245.67	1051.62	121.35	-1051.65	0.00	365467.61	575034.06	N 32 0 16.93	W 104 13 28.65
	8200.00	89.93	269.98	7245.79	1151.62	121.32	-1151.65	0.00	365467.58	574934.07	N 32 0 16.93	W 104 13 29.81
	8300.00	89.93	269.98	7245.91	1251.62	121.29	-1251.65	0.00	365467.55	574834.08	N 32 0 16.94	W 104 13 30.97
	8400.00	89.93	269.98	7246.03	1351.62	121.26	-1351.65	0.00	365467.52	574734.09	N 32 0 16.94	W 104 13 32.13
	8500.00	89.93	269.98	7246.15	1451.62	121.23	-1451.65	0.00	365467.49	574634.10	N 32 0 16.94	W 104 13 33.30
	8600.00	89.93	269.98	7246.26	1551.62	121.20	-1551.65	0.00	365467.45	574534.11	N 32 0 16.94	W 104 13 34.46
	8700.00	89.93	269.98	7246.38	1651.62	121.16	-1651.65	0.00	365467.42	574434.12	N 32 0 16.94	W 104 13 35.62
	8800.00	89.93	269.98	7246.50	1751.62	121.13	-1751.65	0.00	365467.39	574334.13	N 32 0 16.94	W 104 13 36.78
	8900.00	89.93	269.98	7246.62	1851.62	121.10	-1851.65	0.00	365467.36	574234.14	N 32 0 16.94	W 104 13 37.94
	9000.00	89.93	269.98	7246.74	1951.62	121.07	-1951.65	0.00	365467.33	574134.15	N 32 0 16.94	W 104 13 39.10
	9100.00	89.93	269.98	7246.86	2051.62	121.04	-2051.65	0.00	365467.30	574034.15	N 32 0 16.94	W 104 13 40.26
	9200.00	89.93	269.98	7246.98	2151.62	121.00	-2151.65	0.00	365467.26	573934.16	N 32 0 16.94	W 104 13 41.42
	9300.00	89.93	269.98	7247.10	2251.62	120.97	-2251.65	0.00	365467.23	573834.17	N 32 0 16.94	W 104 13 42.59
	9400.00	89.93	269.98	7247.22	2351.62	120.94	-2351.65	0.00	365467.20	573734.18	N 32 0 16.94	W 104 13 43.75
	9500.00	89.93	269.98	7247.34	2451.62	120.91	-2451.65	0.00	365467.17	573634.19	N 32 0 16.94	W 104 13 44.91
	9600.00	89.93	269.98	7247.46	2551.62	120.88	-2551.65	0.00	365467.14	573534.20	N 32 0 16.94	W 104 13 46.07
	9700.00	89.93	269.98	7247.58	2651.61	120.85	-2651.65	0.00	365467.11	573434.21	N 32 0 16.94	W 104 13 47.23
	9800.00	89.93	269.98	7247.70	2751.61	120.81	-2751.65	0.00	365467.07	573334.22	N 32 0 16.95	W 104 13 48.39
	9900.00	89.93	269.98	7247.82	2851.61	120.78	-2851.65	0.00	365467.04	573234.23	N 32 0 16.95	W 104 13 49.55
	10000.00	89.93	269.98	7247.94	2951.61	120.75	-2951.65	0.00	365467.01	573134.24	N 32 0 16.95	W 104 13 50.71
	10100.00	89.93	269.98	7248.06	3051.61	120.72	-3051.65	0.00	365466.98	573034.25	N 32 0 16.95	W 104 13 51.88
	10200.00	89.93	269.98	7248.17	3151.61	120.69	-3151.65	0.00	365466.95	572934.26	N 32 0 16.95	W 104 13 53.04
	10300.00	89.93	269.98	7248.29	3251.61	120.66	-3251.65	0.00	365466.91	572834.27	N 32 0 16.95	W 104 13 54.20
	10400.00	89.93	269.98	7248.41	3351.61	120.62	-3351.65	0.00	365466.88	572734.27	N 32 0 16.95	W 104 13 55.36
	10500.00	89.93	269.98	7248.53	3451.61	120.59	-3451.65	0.00	365466.85	572634.28	N 32 0 16.95	W 104 13 56.52
	10600.00	89.93	269.98	7248.65	3551.61	120.56	-3551.65	0.00	365466.82	572534.29	N 32 0 16.95	W 104 13 57.68
	10700.00	89.93	269.98	7248.77	3651.61	120.53	-3651.65	0.00	365466.79	572434.30	N 32 0 16.95	W 104 13 58.84
	10800.00	89.93	269.98	7248.89	3751.61	120.50	-3751.65	0.00	365466.76	572334.31	N 32 0 16.95	W 104 14 0.00
	10900.00	89.93	269.98	7249.01	3851.61	120.46	-3851.65	0.00	365466.72	572234.32	N 32 0 16.95	W 104 14 1.17
	11000.00	89.93	269.98	7249.13	3951.61	120.43	-3951.65	0.00	365466.69	572134.33	N 32 0 16.95	W 104 14 2.33
	11100.00	89.93	269.98	7249.25	4051.61	120.40	-4051.65	0.00	365466.66	572034.34	N 32 0 16.95	W 104 14 3.49
	11200.00	89.93	269.98	7249.37	4151.61	120.37	-4151.65	0.00	365466.63	571934.35	N 32 0 16.95	W 104 14 4.65
	11300.00	89.93	269.98	7249.49	4251.61	120.34	-4251.65	0.00	365466.60	571834.36	N 32 0 16.95	W 104 14 5.81
	11400.00	89.93	269.98	7249.61	4351.61	120.31	-4351.65	0.00	365466.56	571734.37	N 32 0 16.95	W 104 14 6.97
	11500.00	89.93	269.98	7249.73	4451.61	120.27	-4451.65	0.00	365466.53	571634.38	N 32 0 16.96	W 104 14 8.13
	11600.00	89.93	269.98	7249.85	4551.61	120.24	-4551.65	0.00	365466.50	571534.38	N 32 0 16.96	W 104 14 9.30
	11700.00	89.93	269.98	7249.96	4651.61	120.21	-4651.65	0.00	365466.47	571434.39	N 32 0 16.96	W 104 14 10.46

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 ° ' ")
Cimarex Foxx 31 Federal Com #1H - PBHL [400' FNL, 330' FWL]	11729.51	89.93	269.98	7250.00	4681.12	120.20	-4681.16	0.00	365466.46	571404.89	N 32 0 16.96	W 104 14 10.80

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	24.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Foxx 31 Federal Com #1H Rev1 RM 24May18
	1	24.000	11729.507	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Foxx 31 Federal Com #1H Rev1 RM

PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Cimarex Energy Co**
LEASE NO.:	**NM117116**
WELL NAME & NO.:	**1H – Foxx 31 Federal Com**
SURFACE HOLE FOOTAGE:	**525'/N & 270'/E**
BOTTOM HOLE FOOTAGE	**400'/N & 330'/W**
LOCATION:	**Sec. 31, T. 26 S, R. 27 E**
COUNTY:	**Eddy County, New Mexico**

COA

All previous COAs still apply expect the following:

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

A. Hydrogen Sulfide

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8** inch surface casing shall be set at approximately **400** feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt) and cemented to the surface.**Additional cement maybe required. Excess calculates to 10%.**

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:
   - Cement to surface. If cement does not circulate see B.1.a, c-d above.

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

❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings , the cement on the 3rd casing string must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:
   - Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Additional cement maybe required. Excess calculates to 16%.**

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 **2000 (2M)** psi.

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.

GENERAL REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

a. Spudding well (minimum of 24 hours)
b. Setting and/or Cementing of all casing strings (minimum of 4 hours)
c. BOPE tests (minimum of 4 hours)

☒ Chaves and Roosevelt Counties
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
During office hours call (575) 627-0272.
After office hours call (575)

☒ Eddy County
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 393-3612

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
   a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
   b. When the operator proposes to set surface casing with Spudder Rig
      - Notify the BLM when moving in and removing the Spudder Rig.
      - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
      - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log (one log per well pad is acceptable) run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or

if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

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

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

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

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

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

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
    a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
    b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
    c. Manufacturer representative shall install the test plug for the initial BOP test.
    d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
    e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

    b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be

initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug. The results of the test shall be reported to the appropriate BLM office.

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes. This test shall be performed prior to the test at full stack pressure.

g. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

Waste Minimization Plan (WMP)

In the interest of resource development, submission of additional well gas capture development plan information is deferred but may be required by the BLM Authorized Officer at a later date.

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Medium

13 3/8	surface csg in a	17 1/2	inch hole.		Design Factors		SURFACE	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	48.00	H 40	ST&C	16.77	4.21	1.71	400	19,200
"B"							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,036			Tail Cmt	does	circ to sfc.	Totals:	400	19,200

Comparison of Proposed to Minimum Required Cement Volumes

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
17 1/2	0.6946	256	366	333	10	8.80	590	2M	1.56

9 5/8	casing inside the	13 3/8			Design Factors		INTERMEDIATE	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	36.00	J 55	LT&C	6.61	2	1.01	1,905	68,580
"B"							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig:						Totals:	1,905	68,580
The cement volume(s) are intended to achieve a top of				0	ft from surface or a		400	overlap.

Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
12 1/4	0.3132	474	831	641	30	10.20	1839	2M	0.81

5 1/2	casing inside the	9 5/8			Design Factors		PRODUCTION	
Segment	#/ft	Grade	Coupling	Joint	Collapse	Burst	Length	Weight
"A"	17.00	L 80	LT&C	2.68	1.99	2.23	6,750	114,750
"B"	17.00	L 80	LT&C	2.23	1.67	2.23	125	2,125
"C"	17.00	L 80	BUTT	42.15	1.81	2.23	4,855	82,535
"D"							0	0
w/8.4#/g mud, 30min Sfc Csg Test psig: 1,500						Totals:	11,730	199,410
B would be:				29.28	1.96	if it were a vertical wellbore.		

No Pilot Hole Planned	MTD	Max VTD	Csg VD	Curve KOP	Dogleg°	Severity°	MEOC
	11730	7429	7429	6750	89	11	7540

The cement volume(s) are intended to achieve a top of				1705	ft from surface or a		200	overlap.
Hole Size	Annular Volume	1 Stage Cmt Sx	1 Stage CuFt Cmt	Min Cu Ft	1 Stage % Excess	Drilling Mud Wt	Calc MASP	Req'd BOPE	Min Dist Hole-Cplg
8 3/4	0.2526	1501	2972	2541	17	9.00			1.35