

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELL**
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposal.
Carlsbad Field Office
OCD Artesia

SUBMIT IN TRIPLICATE - Other instructions on page 2		7. If Unit or CA/Agreement, Name and/or No.
1. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other	8. Well Name and No. FOXX 31 FEDERAL 4H	
2. Name of Operator CIMAREX ENERGY COMPANY	Contact: TERRI STATHEM E-Mail: tstatthem@cimarex.com	9. API Well No. 30-015-43150-00-X1
3a. Address 202 S CHEYENNE AVE SUITE 1000 TULSA, OK 74103.4346	3b. Phone No. (include area code) Ph: 432-620-1936	10. Field and Pool or Exploratory Area WC-015 G-04 S262625B;BONE SPRI
4. Location of Well (Footage, Sec., T., R., M., or Survey Description) Sec 31 T26S R27E NENE 0453FNL 0417FEL 32.001651 N Lat, 104.131715 W Lon		11. County or Parish, State EDDY COUNTY, NM

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 A
	☐ Convert to Injection	☐ Plug Back	☐ Water Disposal	PD

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 drill and complete the well in the Bone Spring pool.
Please see attached C102, drilling plan and directional plan.

Please also change the the casing design as indicated below:

Surface:
Hole size: 17-1/2"
Csg size: 13-3/8"
Weight: 48#
Grade: H-40/J55 Hybrid
Conn: STC
Set Depth: 400'

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

NM OIL CONSERVATION
ARTESIA DISTRICT

DEC 02 2016

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14. I hereby certify that the foregoing is true and correct. Electronic Submission #358631 verified by the BLM Well Information System For CIMAREX ENERGY COMPANY, sent to the Carlsbad Committed to AFMSS for processing by MUSTAFA HAQUE on 11/22/2016 (17MH0016SE)	
Name (Printed/Typed) TERRI STATHEM	Title MANAGER REGULATORY COMPLIANCE
Signature (Electronic Submission)	Date 11/21/2016
THIS SPACE FOR FEDERAL OR STATE OFFICE USE	
Approved By MUSTAFA HAQUE	Title PETROLEUM ENGINEER
Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.	
Office Carlsbad	
Date 11/22/2016	

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 #358631 that would not fit on the form

32. Additional remarks, continued

Intermediate:

Hole size: 12-1/4"

Csg size: 9-5/8"

Weight: 36#

Grade: J55

Conn: LTC

Set Depth: 1900'

Production:

Hole size: 8-3/4"

Csg size: 5-1/2"

Weight: 17#

Grade: L80

Conn: LTC/BTC

Set Depth: 12018'

Please see the attached drilling plan for changes to cement design and other wellbore changes due to new completion formation.

No additional surface disturbance.

DEC 02 2016

**PECOS DISTRICT
CONDITIONS OF APPROVAL**

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OPERATOR'S NAME:	Cimarex Energy Co.
LEASE NO.:	NMNM-117116
WELL NAME & NO.:	Foxx 31 Federal 4H
SURFACE HOLE FOOTAGE:	0453' FNL & 0417' FEL
BOTTOM HOLE FOOTAGE	400' FSL & 0330' FWL
LOCATION:	Section 31, T. 26 S., R 27 E., NMPM
COUNTY:	Eddy County, New Mexico

All previous COAs still apply except for the following:

A. CASING

1. 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. **Excess calculates to 20%. Additional cement might be required.**

2. 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.

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 53.
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** inch intermediate casing shoe shall be **3000 (3M)** psi.
4. 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. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- c. 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.
- d. The results of the test shall be reported to the appropriate BLM office.
- 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 if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

MHH 11222016

NM OIL CONSERVATION

ARTESIA DISTRICT

District I
1625 N French Dr., Hb's, 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) 718-9729
District III
1050 Rio Brazos Road, Artesia, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505
Phone: (505) 476-3160 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

DEC 02 2016 Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

RECEIVED ☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-43150	² Pool Code 98018	³ Pool Name Wildcat Bone Spring
⁴ Property Code 40412	⁵ Property Name FOXX 31 FEDERAL COM	⁶ Well Number 4H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3210.9'

"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	26S	27E		453	NORTH	417	EAST	EDDY

"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
2	31	26S	27E		400	SOUTH	330	WEST	EDDY
¹⁰ Dedicated Acres 96:47	¹¹ Joint or Infill	¹² Consolidation Code	¹³ Order No.	NAD 83					

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

"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 a 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: <i>Terri Stathem</i> Date: 11-21-16 Printed Name: Terri Stathem Email Address: tstathem@cimarex.com		"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. Date of Survey: July 18, 2016 Signature and Seal of Professional Surveyor: <i>[Seal]</i> Certificate Number: <i>[Blank]</i>	
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NAD 83 (BOTTOM HOLE LOCATION) LATITUDE = 32°00'04.13" (32.001147) LONGITUDE = 104°14'10.79" (104.236331) NAD 27 (BOTTOM HOLE LOCATION) LATITUDE = 32°00'03.69" (32.001025) LONGITUDE = 104°14'09.01" (104.235836) STATE PLANE NAD 83 (N.M. EAST) N: 364169.50 E: 571406.68 STATE PLANE NAD 27 (N.M. EAST) N: 371113.41 E: 510223.92	NAD 83 (SURFACE HOLE LOCATION) LATITUDE = 32°00'16.43" (32.004564) LONGITUDE = 104°13'18.14" (104.221766) NAD 27 (SURFACE HOLE LOCATION) LATITUDE = 32°00'15.99" (32.004412) LONGITUDE = 104°13'16.36" (104.221211) STATE PLANE NAD 83 (N.M. EAST) N: 365417.55 E: 575939.21 STATE PLANE NAD 27 (N.M. EAST) N: 365361.02 E: 534755.31
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LINE	DIRECTION	LENGTH
L1	S25°44'05"W	1383.62'

NOTE: Distances referenced on plat to section lines are perpendicular.

1. Geological Formations

TVD of target 7,255

Pilot Hole TD N/A

MD at TD 12,018

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	0	N/A	
Salado (Top Salt)	1244	N/A	
Castille (Base Salt)	1703	N/A	
Bell Canyon (Top Delaware)	1924	Hydrocarbons	
Cherry Canyon	2921	N/A	
Brushy Canyon	4050	N/A	
Brushy Canyon Lower	5274	N/A	
Bone Spring	5495	Hydrocarbons	
Bone Spring "A" Shale	5615	Hydrocarbons	
Bone Spring "C" Shale	6125	Hydrocarbons	
1st Bone Spring Ss	6444	Hydrocarbons	
2nd Bone Spring Ss	6906	Hydrocarbons	
2nd BS Ss Horz target	7216	Hydrocarbons	
3rd BS Limestone	7428	Hydrocarbons	

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	1900	9-5/8"	36.00	J-55	LT&C	2.04	3.56	6.62
8 3/4	0	6854	5-1/2"	17.00	L-80	LT&C	1.92	2.36	2.74
8 3/4	6854	12018	5-1/2"	17.00	L-80	BT&C	1.81	2.23	58.24
BLM Minimum Safety Factor							1.125	1	1.6 Dry 1.8 Wet

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	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	60	13.50	1.75	8.83	15.5	Lead: Class C + Bentonite + Calcium Chloride + LCM
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	361	12.90	1.88	9.65	30	Lead: 35:65 (Poz:C) + Salt + Bentonite + LCM + Retarder
	111	14.80	1.34	6.32	9.5	Tail: Class C + Retarder + LCM
Production	689	10.80	2.35	9.60	17:43	Lead: Tuned Light I Class H
	1104	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

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Casing String	TOC	% Excess
Surface	0	31
Intermediate	0	44
Production	1700	17

4. Pressure Control Equipment *-DSEE COA*

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
8 3/4	13 5/8	3M	Annular	X	50% of working pressure
			Blind Ram	X	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 SM 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.	
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	28	N/C
400' to 1900'	Brine Water	9.50 - 10.00	30-32	N/C
1900' to 12018'	FW/Cut Brine	8.70 - 9.20	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	3470 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

Cimarex Foxx 31 Federal Com #4H Rev2 OPB 20Jul16 Proposal Report



(Non-Def Plan)

NM OIL CONSERVATION
ARTESIA DISTRICT
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Report Date: July 20, 2016 - 09:27 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Cimarex Foxx 31 Federal Com #4H / Cimarex Foxx 31 Federal Com #4H
Structure / Slot: Cimarex Foxx 31 Federal Com #4H
Well: Cimarex Foxx 31 Federal Com #4H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Foxx 31 Federal Com #4H Rev2 OPB 20Jul16
Survey Date: January 16, 2014
Tort / AHD / DDI / ERD Ratio: 112.394 ° / 6050.881 ft / 6.052 / 0.634
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 0' 16.42908", W 104° 13' 18.13843"
Location Grid N/E Y/X: N 365417.500 ftUS, E 575939.210 ftUS
CRS Grid Convergence Angle: 0.0592 °
Grid Scale Factor: 0.99991046
Version / Patch: 2.9.370.0
Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 254.610 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3235.900 ft above MSL
Seabed / Ground Elevation: 3210.900 ft above MSL
Magnetic Declination: 7.495 °
Total Gravity Field Strength: 998.6858mgm (9.80665 Based)
Gravity Model: DOX
Total Magnetic Field Strength: 48056.883 nT
Magnetic Dip Angle: 59.704 °
Declination Date: July 14, 2016
Magnetic Declination Model: HDGM 2016
North Reference: Grid North
Grid Convergence Used: 0.0592 °
Total Corr Mag North->Grid North: 7.4358 °
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 (453' FNL, 417' FEL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	100.00	0.00	163.90	100.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	200.00	0.00	163.90	200.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	300.00	0.00	163.90	300.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	400.00	0.00	163.90	400.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	500.00	0.00	163.90	500.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	600.00	0.00	163.90	600.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	700.00	0.00	163.90	700.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	800.00	0.00	163.90	800.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	900.00	0.00	163.90	900.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1000.00	0.00	163.90	1000.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1100.00	0.00	163.90	1100.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1200.00	0.00	163.90	1200.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1300.00	0.00	163.90	1300.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14

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 ° ' ")
Build 2° DLS Nudge	1400.00	0.00	163.90	1400.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1500.00	0.00	163.90	1500.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1600.00	0.00	163.90	1600.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1700.00	0.00	163.90	1700.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1800.00	0.00	163.90	1800.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	1900.00	0.00	163.90	1900.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	2000.00	0.00	163.90	2000.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	2100.00	0.00	163.90	2100.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	2200.00	0.00	163.90	2200.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	2300.00	0.00	163.90	2300.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	2400.00	0.00	163.90	2400.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	2500.00	0.00	163.90	2500.00	0.00	0.00	0.00	0.00	365417.50	575939.21	N 32 0 16.43	W 104 13 18.14
	2600.00	2.00	163.90	2599.98	-0.02	-1.68	0.48	2.00	365415.82	575939.69	N 32 0 16.41	W 104 13 18.13
	2700.00	4.00	163.90	2698.84	-0.09	-6.70	1.94	2.00	365410.80	575941.15	N 32 0 16.36	W 104 13 18.12
	2800.00	6.00	163.90	2799.45	-0.19	-15.08	4.35	2.00	365402.42	575943.56	N 32 0 16.28	W 104 13 18.09
	2900.00	8.00	163.90	2898.70	-0.35	-26.79	7.73	2.00	365390.72	575946.94	N 32 0 16.16	W 104 13 18.05
	3000.00	10.00	163.90	2997.47	-0.54	-41.82	12.07	2.00	365375.69	575951.28	N 32 0 16.02	W 104 13 18.00
	3100.00	12.00	163.90	3095.62	-0.78	-60.15	17.36	2.00	365357.36	575956.57	N 32 0 15.83	W 104 13 17.94
	3200.00	14.00	163.90	3193.06	-1.05	-81.76	23.60	2.00	365335.75	575962.81	N 32 0 15.62	W 104 13 17.87
	3300.00	16.00	163.90	3289.64	-1.38	-106.62	30.78	2.00	365310.89	575969.98	N 32 0 15.37	W 104 13 17.78
Hold Nudge to KOP	3347.00	16.94	163.90	3334.71	-1.54	-119.43	34.47	2.00	365298.08	575973.68	N 32 0 15.25	W 104 13 17.74
	3400.00	16.94	163.90	3385.41	-1.73	-134.26	38.75	0.00	365283.25	575977.96	N 32 0 15.10	W 104 13 17.69
	3500.00	16.94	163.90	3481.08	-2.09	-162.26	46.83	0.00	365255.26	575986.04	N 32 0 14.82	W 104 13 17.60
	3600.00	16.94	163.90	3576.74	-2.45	-190.25	54.91	0.00	365227.27	575994.12	N 32 0 14.55	W 104 13 17.50
	3700.00	16.94	163.90	3672.40	-2.82	-218.25	62.99	0.00	365199.27	576002.20	N 32 0 14.27	W 104 13 17.41
	3800.00	16.94	163.90	3768.06	-3.18	-246.24	71.07	0.00	365171.28	576010.28	N 32 0 13.99	W 104 13 17.32
	3900.00	16.94	163.90	3863.72	-3.54	-274.23	79.15	0.00	365143.29	576018.36	N 32 0 13.71	W 104 13 17.22
	4000.00	16.94	163.90	3959.38	-3.90	-302.23	87.23	0.00	365115.30	576026.44	N 32 0 13.44	W 104 13 17.13
	4100.00	16.94	163.90	4055.04	-4.26	-330.22	95.31	0.00	365087.31	576034.52	N 32 0 13.16	W 104 13 17.04
	4200.00	16.94	163.90	4150.70	-4.62	-358.22	103.39	0.00	365059.32	576042.59	N 32 0 12.88	W 104 13 16.94
	4300.00	16.94	163.90	4246.36	-4.98	-386.21	111.47	0.00	365031.32	576050.67	N 32 0 12.61	W 104 13 16.85
	4400.00	16.94	163.90	4342.02	-5.34	-414.21	119.55	0.00	365003.33	576058.75	N 32 0 12.33	W 104 13 16.76
	4500.00	16.94	163.90	4437.69	-5.70	-442.20	127.63	0.00	364975.34	576066.83	N 32 0 12.05	W 104 13 16.66
	4600.00	16.94	163.90	4533.35	-6.07	-470.19	135.71	0.00	364947.35	576074.91	N 32 0 11.77	W 104 13 16.57
	4700.00	16.94	163.90	4629.01	-6.43	-498.19	143.79	0.00	364919.36	576082.99	N 32 0 11.50	W 104 13 16.47
	4800.00	16.94	163.90	4724.67	-6.79	-526.18	151.87	0.00	364891.37	576091.07	N 32 0 11.22	W 104 13 16.38
	4900.00	16.94	163.90	4820.33	-7.15	-554.18	159.96	0.00	364863.37	576099.15	N 32 0 10.94	W 104 13 16.29
	5000.00	16.94	163.90	4915.99	-7.51	-582.17	168.04	0.00	364835.38	576107.23	N 32 0 10.67	W 104 13 16.19
	5100.00	16.94	163.90	5011.65	-7.87	-610.17	176.12	0.00	364807.39	576115.31	N 32 0 10.39	W 104 13 16.10
Build 12° DLS	5200.00	16.94	163.90	5107.31	-8.23	-638.16	184.20	0.00	364779.40	576123.39	N 32 0 10.11	W 104 13 16.01
	5300.00	16.94	163.90	5202.97	-8.59	-666.15	192.28	0.00	364751.41	576131.47	N 32 0 9.84	W 104 13 15.91
	5400.00	16.94	163.90	5298.64	-8.96	-694.15	200.36	0.00	364723.42	576139.55	N 32 0 9.56	W 104 13 15.82
	5500.00	16.94	163.90	5394.30	-9.32	-722.14	208.44	0.00	364695.42	576147.63	N 32 0 9.28	W 104 13 15.73
	5600.00	16.94	163.90	5489.96	-9.68	-750.14	216.52	0.00	364667.43	576155.71	N 32 0 9.00	W 104 13 15.63
	5700.00	16.94	163.90	5585.62	-10.04	-778.13	224.60	0.00	364639.44	576163.79	N 32 0 8.73	W 104 13 15.54
	5800.00	16.94	163.90	5681.28	-10.40	-806.13	232.68	0.00	364611.45	576171.86	N 32 0 8.45	W 104 13 15.45
	5900.00	16.94	163.90	5776.94	-10.76	-834.12	240.76	0.00	364583.46	576179.94	N 32 0 8.17	W 104 13 15.35
	6000.00	16.94	163.90	5872.60	-11.12	-862.11	248.84	0.00	364555.47	576188.02	N 32 0 7.90	W 104 13 15.26
	6100.00	16.94	163.90	5968.26	-11.48	-890.11	256.92	0.00	364527.47	576196.10	N 32 0 7.62	W 104 13 15.17
	6200.00	16.94	163.90	6063.92	-11.84	-918.10	265.00	0.00	364499.48	576204.18	N 32 0 7.34	W 104 13 15.07
	6300.00	16.94	163.90	6159.58	-12.21	-946.10	273.08	0.00	364471.49	576212.26	N 32 0 7.06	W 104 13 14.98
	6400.00	16.94	163.90	6255.25	-12.57	-974.09	281.16	0.00	364443.50	576220.34	N 32 0 6.79	W 104 13 14.89
	6500.00	16.94	163.90	6350.91	-12.93	-1002.08	289.24	0.00	364415.51	576228.42	N 32 0 6.51	W 104 13 14.79
	6600.00	16.94	163.90	6446.57	-13.29	-1030.08	297.32	0.00	364387.52	576236.50	N 32 0 6.23	W 104 13 14.70
	6700.00	16.94	163.90	6542.23	-13.65	-1058.07	305.40	0.00	364359.52	576244.58	N 32 0 5.96	W 104 13 14.60
	6800.00	16.94	163.90	6637.89	-14.01	-1086.07	313.48	0.00	364331.53	576252.66	N 32 0 5.68	W 104 13 14.51
	6854.03	16.94	163.90	6689.58	-14.21	-1101.19	317.84	0.00	364316.41	576257.02	N 32 0 5.53	W 104 13 14.46

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 ° ' ")
	6900.00	16.33	183.14	6733.65	-12.23	-1114.09	319.35	12.00	364303.51	576258.53	N 32 0 5.40	W 104 13 14.44
	7000.00	20.66	219.18	6828.77	6.68	-1141.90	307.39	12.00	364275.70	576246.57	N 32 0 5.13	W 104 13 14.58
	7100.00	29.45	238.85	6919.43	44.85	-1168.39	275.09	12.00	364249.22	576214.27	N 32 0 4.86	W 104 13 14.96
	7200.00	39.84	249.53	7001.66	100.61	-1192.39	223.86	12.00	364225.22	576163.04	N 32 0 4.63	W 104 13 15.35
	7300.00	50.85	256.28	7071.88	171.53	-1212.86	155.93	12.00	364204.75	576095.13	N 32 0 4.43	W 104 13 16.34
	7400.00	62.14	261.17	7127.02	254.51	-1228.90	74.28	12.00	364188.71	576013.49	N 32 0 4.27	W 104 13 17.29
	7500.00	73.57	265.11	7164.66	345.92	-1239.82	-17.52	12.00	364177.80	575921.70	N 32 0 4.16	W 104 13 18.36
	7600.00	85.07	268.62	7183.16	441.76	-1245.12	-115.46	12.00	364172.49	575823.76	N 32 0 4.11	W 104 13 19.49
Landing Point, Hold 89.70° Inc 1930'	7640.20	89.70	269.97	7185.00	480.59	-1245.62	-155.60	12.00	364172.00	575783.62	N 32 0 4.10	W 104 13 19.96
	7700.00	89.70	269.97	7185.31	538.25	-1245.64	-215.40	0.00	364171.97	575723.83	N 32 0 4.11	W 104 13 20.65
	7800.00	89.70	269.97	7185.83	634.68	-1245.69	-315.40	0.00	364171.92	575623.84	N 32 0 4.11	W 104 13 21.82
	7900.00	89.70	269.97	7186.36	731.10	-1245.74	-415.40	0.00	364171.88	575523.85	N 32 0 4.11	W 104 13 22.98
	8000.00	89.70	269.97	7186.88	827.53	-1245.78	-515.40	0.00	364171.83	575423.86	N 32 0 4.11	W 104 13 24.14
	8100.00	89.70	269.97	7187.40	923.95	-1245.83	-615.40	0.00	364171.79	575323.87	N 32 0 4.11	W 104 13 25.30
	8200.00	89.70	269.97	7187.93	1020.38	-1245.87	-715.40	0.00	364171.74	575223.88	N 32 0 4.11	W 104 13 26.46
	8300.00	89.70	269.97	7188.45	1116.80	-1245.92	-815.39	0.00	364171.70	575123.89	N 32 0 4.11	W 104 13 27.62
	8400.00	89.70	269.97	7188.97	1213.23	-1245.96	-915.39	0.00	364171.65	575023.90	N 32 0 4.11	W 104 13 28.78
	8500.00	89.70	269.97	7189.50	1309.65	-1246.01	-1015.39	0.00	364171.61	574923.91	N 32 0 4.11	W 104 13 29.94
	8600.00	89.70	269.97	7190.02	1406.08	-1246.05	-1115.39	0.00	364171.56	574823.92	N 32 0 4.11	W 104 13 31.11
	8700.00	89.70	269.97	7190.55	1502.50	-1246.10	-1215.39	0.00	364171.52	574723.93	N 32 0 4.11	W 104 13 32.27
	8800.00	89.70	269.97	7191.07	1598.93	-1246.14	-1315.39	0.00	364171.47	574623.94	N 32 0 4.11	W 104 13 33.43
	8900.00	89.70	269.97	7191.59	1695.35	-1246.19	-1415.39	0.00	364171.42	574523.95	N 32 0 4.11	W 104 13 34.59
	9000.00	89.70	269.97	7192.12	1791.78	-1246.23	-1515.38	0.00	364171.38	574423.96	N 32 0 4.11	W 104 13 35.75
	9100.00	89.70	269.97	7192.64	1888.20	-1246.28	-1615.38	0.00	364171.33	574323.97	N 32 0 4.11	W 104 13 36.91
	9200.00	89.70	269.97	7193.16	1984.63	-1246.33	-1715.38	0.00	364171.29	574223.99	N 32 0 4.11	W 104 13 38.07
	9300.00	89.70	269.97	7193.69	2081.05	-1246.37	-1815.38	0.00	364171.24	574124.00	N 32 0 4.11	W 104 13 39.23
	9400.00	89.70	269.97	7194.21	2177.48	-1246.42	-1915.38	0.00	364171.20	574024.01	N 32 0 4.11	W 104 13 40.40
	9500.00	89.70	269.97	7194.73	2273.90	-1246.46	-2015.38	0.00	364171.15	573924.02	N 32 0 4.11	W 104 13 41.56
Align for 1930'	9570.20	89.70	269.97	7195.10	2341.59	-1246.49	-2085.57	0.00	364171.12	573853.83	N 32 0 4.12	W 104 13 42.37
	9600.00	89.10	269.97	7195.41	2370.33	-1246.51	-2115.37	2.00	364171.11	573824.03	N 32 0 4.12	W 104 13 42.72
	9625.93	88.59	269.97	7195.94	2395.33	-1246.52	-2141.30	2.00	364171.09	573798.11	N 32 0 4.12	W 104 13 43.02
Hold to TD	9700.00	88.59	269.97	7197.76	2466.73	-1246.56	-2215.35	0.00	364171.06	573724.07	N 32 0 4.12	W 104 13 43.88
	9800.00	88.59	269.97	7200.23	2563.13	-1246.61	-2315.32	0.00	364171.01	573624.11	N 32 0 4.12	W 104 13 45.04
	10000.00	88.59	269.97	7205.17	2755.92	-1246.71	-2515.26	0.00	364170.96	573524.15	N 32 0 4.12	W 104 13 46.20
	10100.00	88.59	269.97	7207.64	2852.32	-1246.76	-2615.22	0.00	364170.86	573424.18	N 32 0 4.12	W 104 13 47.36
	10200.00	88.59	269.97	7210.11	2948.72	-1246.81	-2715.19	0.00	364170.81	573324.22	N 32 0 4.12	W 104 13 48.52
	10300.00	88.59	269.97	7212.58	3045.12	-1246.86	-2815.16	0.00	364170.76	573224.26	N 32 0 4.12	W 104 13 49.68
	10400.00	88.59	269.97	7215.05	3141.51	-1246.91	-2915.13	0.00	364170.71	573124.30	N 32 0 4.12	W 104 13 50.84
	10500.00	88.59	269.97	7217.52	3237.91	-1246.96	-3015.10	0.00	364170.66	572924.38	N 32 0 4.12	W 104 13 52.01
	10600.00	88.59	269.97	7219.98	3334.31	-1247.01	-3115.07	0.00	364170.61	572824.42	N 32 0 4.12	W 104 13 53.17
	10700.00	88.59	269.97	7222.45	3430.71	-1247.06	-3215.04	0.00	364170.56	572724.46	N 32 0 4.12	W 104 13 55.49
	10800.00	88.59	269.97	7224.92	3527.11	-1247.11	-3315.01	0.00	364170.51	572624.50	N 32 0 4.12	W 104 13 56.65
	10900.00	88.59	269.97	7227.39	3623.50	-1247.16	-3414.98	0.00	364170.46	572524.54	N 32 0 4.12	W 104 13 57.81
	11000.00	88.59	269.97	7229.86	3719.90	-1247.21	-3514.95	0.00	364170.41	572424.58	N 32 0 4.12	W 104 13 58.97
	11100.00	88.59	269.97	7232.33	3816.30	-1247.26	-3614.92	0.00	364170.36	572324.62	N 32 0 4.12	W 104 14 0.13
	11200.00	88.59	269.97	7234.80	3912.70	-1247.31	-3714.89	0.00	364170.31	572224.66	N 32 0 4.12	W 104 14 1.29
	11300.00	88.59	269.97	7237.27	4009.10	-1247.36	-3814.86	0.00	364170.26	572124.70	N 32 0 4.12	W 104 14 2.45
	11400.00	88.59	269.97	7239.74	4105.50	-1247.41	-3914.83	0.00	364170.21	572024.74	N 32 0 4.12	W 104 14 3.61
	11500.00	88.59	269.97	7242.20	4201.89	-1247.46	-4014.80	0.00	364170.16	571924.78	N 32 0 4.12	W 104 14 4.77
	11600.00	88.59	269.97	7244.67	4298.29	-1247.51	-4114.77	0.00	364170.11	571824.82	N 32 0 4.12	W 104 14 5.94
	11700.00	88.59	269.97	7247.14	4394.69	-1247.56	-4214.74	0.00	364170.06	571724.86	N 32 0 4.12	W 104 14 7.10
	11800.00	88.59	269.97	7249.61	4491.09	-1247.61	-4314.71	0.00	364170.01	571624.90	N 32 0 4.12	W 104 14 8.26
	11900.00	88.59	269.97	7252.08	4587.49	-1247.66	-4414.68	0.00	364169.96	571524.94	N 32 0 4.13	W 104 14 9.42
	12000.00	88.59	269.97	7254.55	4683.88	-1247.71	-4514.65	0.00	364169.91	571424.98	N 32 0 4.13	W 104 14 10.58

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (RUS)	Easting (RUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Cimarex Foxx 31 Federal Com #4H - PBHL	12018.31	88.59	269.97	7255.00	4701.53	-1247.71	-4532.94	0.00	364169.90	571406.68	N 32 0 4.13 W	104 14 10.79

Survey Type: Non-Def Plan

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

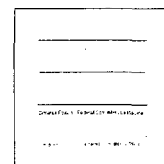
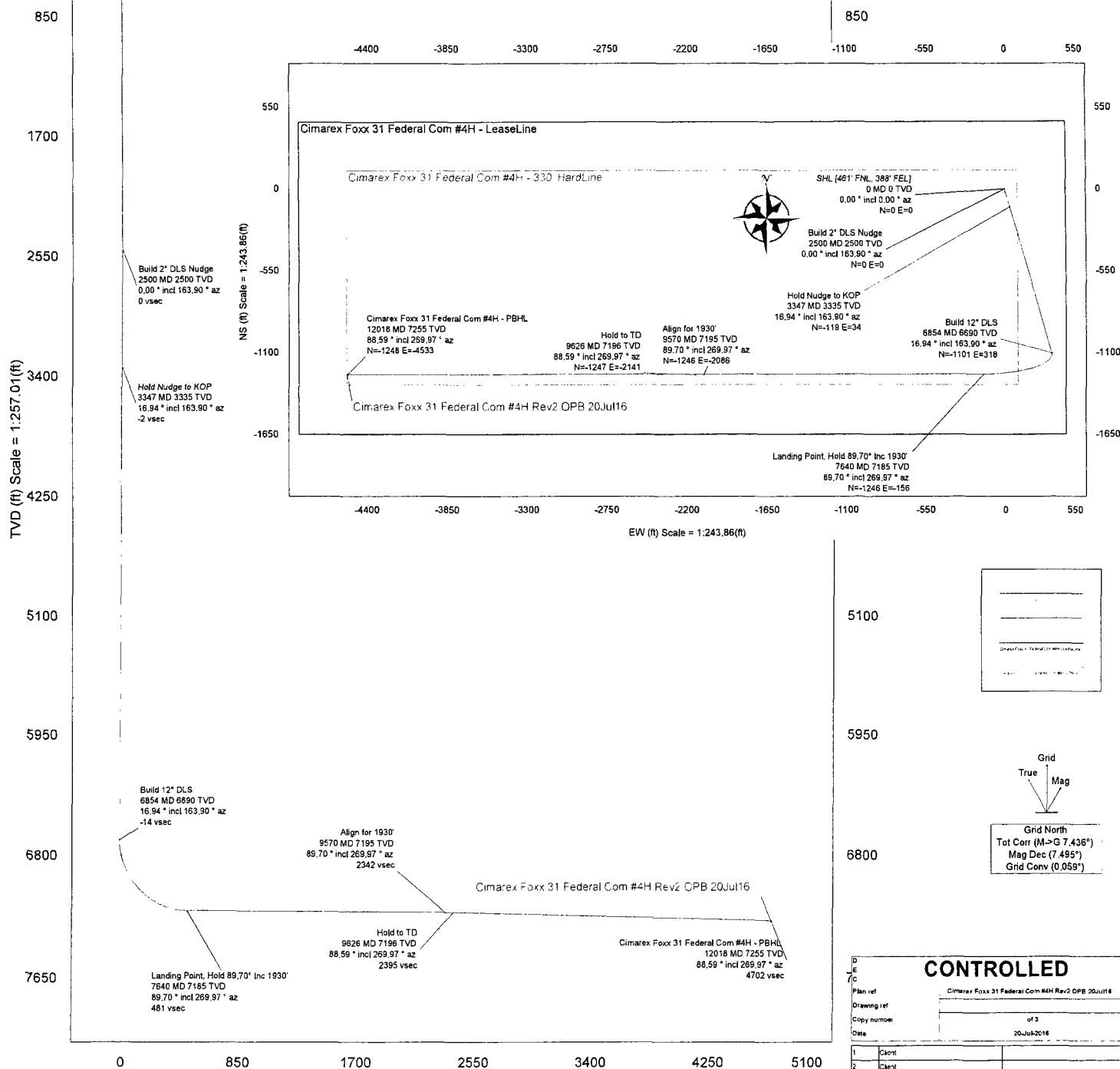
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	25.000	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Foxx 31 Federal Com #4H Rev2 OPB 20Jul16
	1	25.000	12018.305	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Foxx 31 Federal Com #4H Rev2 OPB 20Jul16

Borehole:	Well:	Field:	Structure:
Original Borehole	Foxx 31 Federal Com #4H	NM Eddy County (NAD 83)	TBD

Gravity & Magnetic Parameters Model: HOGM Dip: 59.704° Mag Dec: 7.495° FS: 48056.883n Date: 14-Jul-2016 Gravity FS: 998.686mgn (9.80665 Based)	Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet Lat: N 32 0 16.43 Northing: 365417.5110 Lon: W 104 13 18.14 Easting: 575939.2110 Grid Conv: 0.0592° Scale Fact: 0.99991046	Miscellaneous Foxx 31 Fed Slot: Com #4H TVD Ref: RKB(3235.9ft above MSL) Plan: Cimarex Foxx 31 Federal Com #4H Rev2 OPB 20Jul16
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Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(°)/S(-)	E(°)/W(-)	DLS
SHL [453' FNL, 417' FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Build 2" DLS Nudge	2500.00	0.00	163.90	2500.00	0.00	0.00	0.00	0.00
Hold Nudge to KOP	3347.00	16.94	163.90	3334.71	-1.54	-119.43	34.47	2.00
Build 12" DLS	6854.03	16.94	163.90	6689.58	-14.21	-1101.19	317.84	0.00
Landing Point, Hold 89.70° Inc 1930'	7640.20	89.70	269.97	7185.00	480.59	-1245.62	-155.60	12.00
Align for 1930'	9570.20	89.70	269.97	7195.10	2341.59	-1246.49	-2085.57	0.00
Hold to TD	9625.93	88.59	269.97	7195.94	2395.33	-1246.52	-2141.30	2.00
Cimarex Foxx 31 Federal Com #4H - PBHL	12018.31	88.59	269.97	7255.00	4701.53	-1247.71	-4532.94	0.00



Grid
True
Mag

Grid North
Tot Corr (M→G 7.436°)
Mag Dec (7.495°)
Grid Conv (0.059°)

CONTROLLED

Cimarex Foxx 31 Federal Com #4H Rev2 OPB 20Jul16	
Plan ref	
Drawing ref	
Copy number	of 3
Date	20-Jul-2016
1	Client
2	Client
3	Office
4	Office
Copy number	for