

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTCarlsbad Field Office
OCD ArtesiaFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018Lease Serial No.
NMNM120350

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
HORNSBY 35 FEDERAL COM 7H9. API Well No.
30-015-42168-00-X110. Field and Pool or Exploratory Area
WILDCAT11. County or Parish, State
EDDY 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

Contact: ARICKA EASTERLING

E-Mail: aeasterling@cimarex.com

3a. Address

202 S CHEYENNE AVE SUITE 1000
TULSA, OK 74103.4346

3b. Phone No. (include area code)

Ph: 918-560-7060

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

Sec 35 T26S R27E Lot 2 0210FSL 2020FEL
32.000207 N Lat, 104.093151 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☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☐ Alter Casing☐ Casing Repair☐ Change Plans☐ Convert to Injection☐ Deepen☐ Hydraulic Fracturing☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Production (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other
Change to Original A
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 recompleat 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 recompleat 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 request approval to change the original drilling plan for the above referenced well. Cimarex proposes to change the BHL there by changing the directional plan. No additional disturbance is required. Please see attached directional plan and plat.

Approved: *660*

BHL: 330 FNL & 2020 FEL Sec 26-26S-27E

Proposed:

BHL: 330 FNL & 2590 FWL Sec 26-26S-27E

Please notice the drilling plan has been modified.

*All previous COAs still apply
Additional cement maybe required
for the surface + production casing*

NSL

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

Electronic Submission #360678 verified by the BLM Well Information System

For CIMAREX ENERGY COMPANY OF CO, sent to the Carlsbad

Committed to AFMSS for processing by CHARLES NIMMER on 12/13/2016 (17CN0057SE)

Name (Printed/Typed) ARICKA EASTERLING

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 12/12/2016

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By CHARLES NIMMERTitle PETROLEUM ENGINEERDate 12/13/2016

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

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 **

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

NM OIL CONSERVATION
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

DEC 22 2016
RECEIVED ☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-42168	² Pool Code 30215	³ Pool Name Hay Hollow; Bone Spring
⁴ Property Code	⁵ Property Name HORNSBY 35 FEDERAL COM	⁶ Well Number 7H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3240.6'

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
2	35	26S	27E		290	SOUTH	2050	EAST	EDDY

¹¹ Bottom Hole Location If Different From Surface

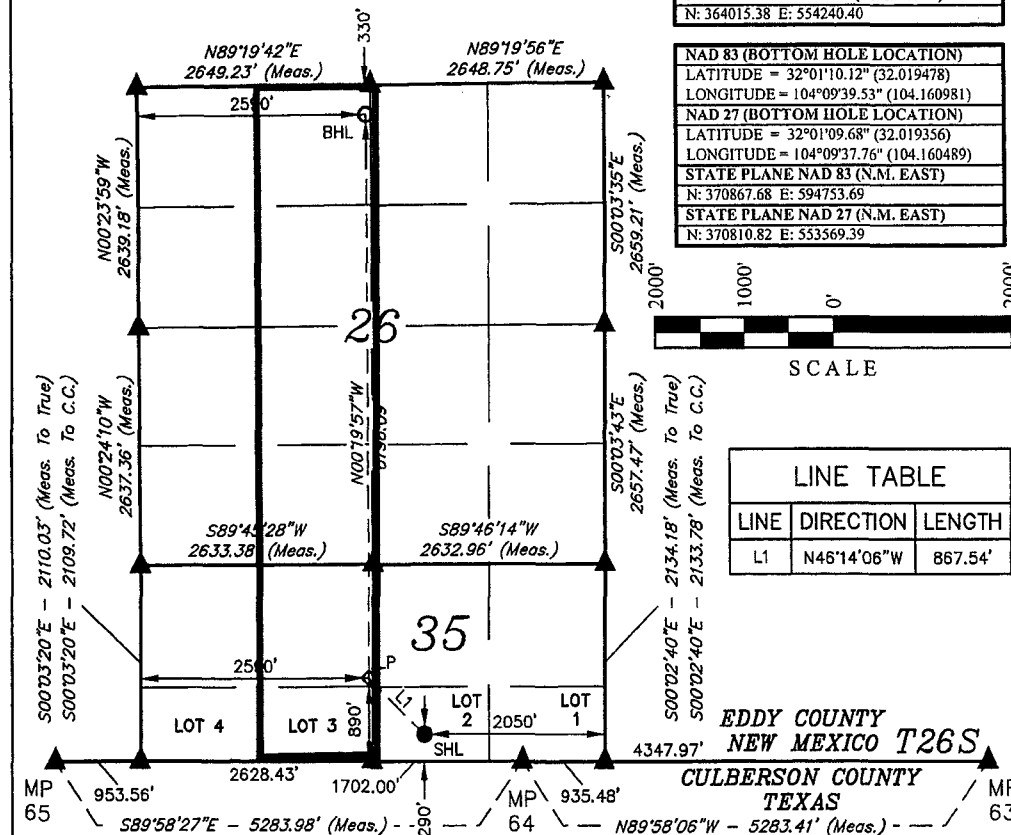
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	26	26S	27E		330	NORTH	2590	WEST	EDDY
¹² Dedicated Acres 224.13	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No. USL-						

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 ● = SURFACE HOLE LOCATION
◆ = LANDING POINT
○ = BOTTOM HOLE LOCATION
▲ = SECTION CORNER LOCATED

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

REV: 1 10-28-16 D.P. (BHL MOVE)



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:

Aricka Easterling 11/21/16
Signature Date

Aricka Easterling

Printed Name

aeasterling@cimarex.com

E-mail Address

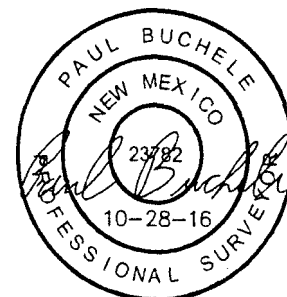
¹⁸ SURVEYOR
CERTIFICATION

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.

October 5, 2015

Date of Survey

Signature and Seal of Professional Surveyor:



Certificate Number:

1. Geological Formations

TVD of target 7,710
MD at TD 14,560

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	1550	N/A	
Castille	2102	N/A	
Bell Canyon	2260	N/A	
Cherry Canyon	3290	N/A	
Brushy Canyon	4470	N/A	
Brushy Canyon Lower	5735	N/A	
Bone Spring	5935	Hydrocarbons	
Bone Spring A Shale	6150	Hydrocarbons	
Bone Spring C Shale	6550	Hydrocarbons	
1st Bone Spring Ss	6850	Hydrocarbons	
2nd Bone Spring Ss	7325	Hydrocarbons	
2nd BS Ss Horz target	7770	Hydrocarbons	
3rd BS Limestone	7855	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	4.29	10.02	16.77
12 1/4	0	2200	9-5/8"	36.00	J-55	LT&C	1.77	3.08	5.72
8 3/4	0	7051	5-1/2"	17.00	L-80	LT&C	1.86	2.29	2.58
8 3/4	7051	14560	5-1/2"	17.00	L-80	BT&C	1.71	2.10	35.44
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	# Sks	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	421	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	129	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	1220	14.20	1.30	5.86	14:30	Lead: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
	889	10.80	2.35	9.60	17:43	Tail: Tuned Light I Class H

Casing String	TOC	% Excess
Surface	0	31
Intermediate	0	45
Production	2000	16

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	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 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	7.80 - 8.30	28	N/C
400' to 2200'	Brine Water	9.50 - 10.00	30-32	N/C
2200' to 14560'	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	3688 psi
Abnormal Temperature	No

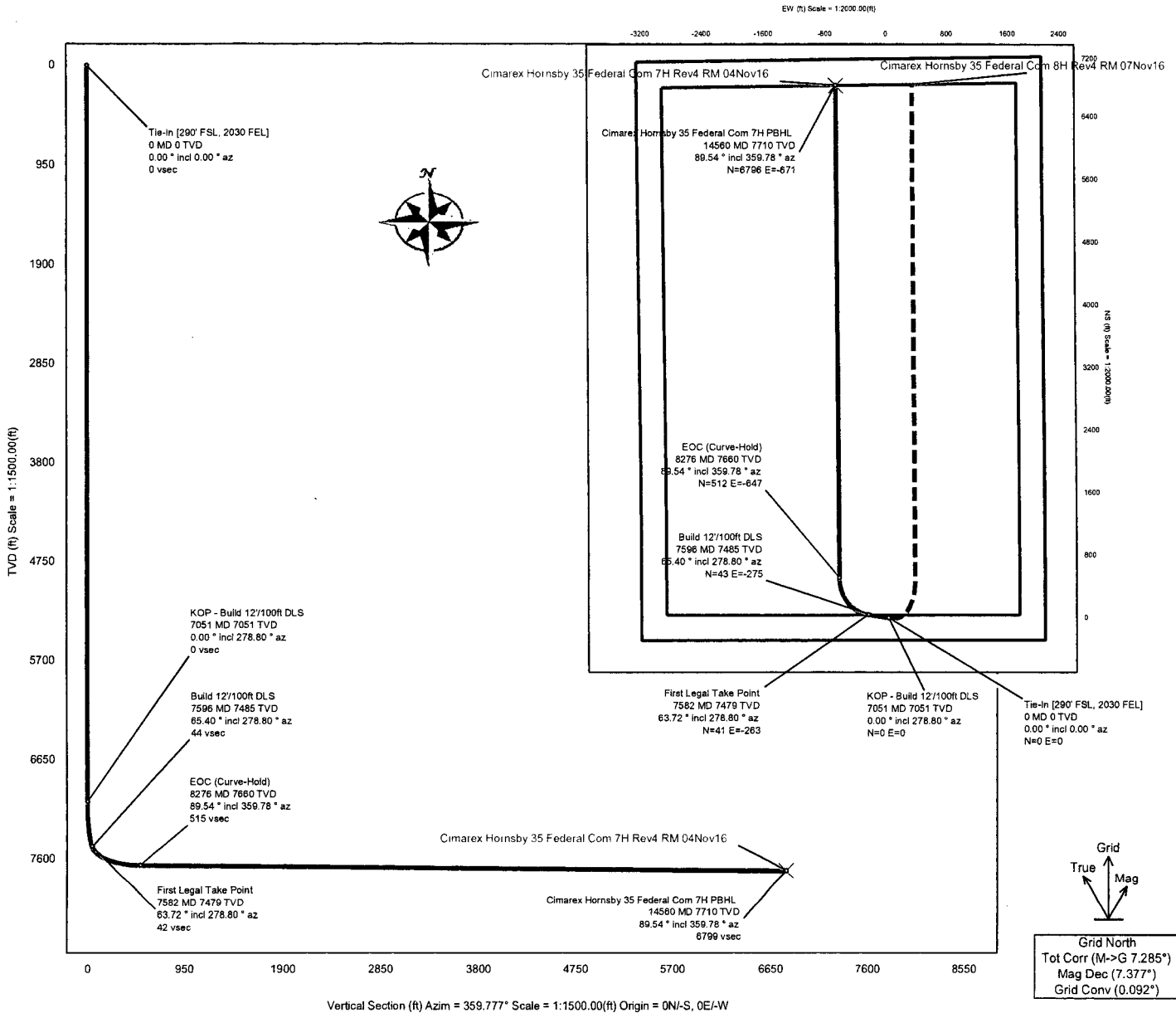
Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be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

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

8. Other Facets of Operation

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Hornsby 35 Federal Com 7H	NM Eddy County (NAD 83)	Cimarex Hornsby 35 Federal Com 7H

Gravity & Magnetic Parameters	Surface Location	Miscellaneous
Model: HDGM 2016 Dip: 59.715° Date: 04-Nov-2016	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Cimarex
MagDec: 7.377° FS: 48047.873nT Gravity FS: 988.428mgn (9.80665 Based)	Lat: N 32 0 2.88 Northing: 364072.12RU5 Grid Conv: 0.0025°	Slot: Hornsby 35 TVD Ref: RKB(3260.6ft above MSL)
	Lon: W 104 9 31.86 Easting: 595424.85RU5 Scale Fact: 0.99891244	Federal Com 7H Cimarex Hornsby 35 Federal Com 7H Rev4 RM 04Nov16



Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
Tie-In [290' FSL, 2030 FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
KOP - Build 12'/100ft DLS	7050.98	0.00	278.80	7050.98	0.00	0.00	0.00	0.00
First Legal Take Point	7582.00	63.72	278.80	7479.10	66.03	40.71	-262.95	12.00
Build 12'/100ft DLS	7595.98	65.40	278.80	7485.11	69.16	42.64	-275.42	12.00
EOC (Curve-Hold)	8276.11	89.54	359.78	7660.00	572.61	512.22	-647.41	12.00
Cimarex Hornsby 35 Federal Com 7H PBHL	14560.31	89.54	359.78	7710.00	6829.23	6796.17	-671.22	0.00

D E C		CONTROLLED	
Plan ref	Cimarex Hornsby 35 Federal Com 7H Rev4 RM 04Nov16		
Drawing ref			
Copy number	of 3		
Date	07-Nov-2016		
1	Client		
2	Client		
3	Office		
4	Office		
Copy number		for	

Cimarex Hornsby 35 Federal Com 7H Rev4 RM 04Nov16 Proposal

Geodetic Report

(Non-Def Plan)



Report Date: November 07, 2016 - 11:48 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Hornsby 35 Federal Com 7H / Cimarex Hornsby 35 Federal Com 7H
Well: Cimarex Hornsby 35 Federal Com 7H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Hornsby 35 Federal Com 7H Rev4 RM 04Nov16
Survey Date: November 04, 2016
Tort / AHD / DDI / ERD Ratio: 147.016' / 7214.212 ft / 6.302' / 0.936
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 0' 2.85952", W 104° 9' 31.85967"
Location Grid N/E Y/X: N 364072.120 RUS, E 595424.850 RUS
CRS Grid Convergence Angle: 0.0925°
Grid Scale Factor: 0.99991244
Version / Patch: 2.10.254.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 354.432° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3260.600 ft above MSL
Seabed / Ground Elevation: 3240.600 ft above MSL
Magnetic Declination: 7.377°
Total Gravity Field Strength: 998.427mgal (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 48047.873 nT
Magnetic Dip Angle: 59.715°
Declination Date: November 04, 2016
Magnetic Declination Model: HDGM 2016
North Reference: Grid North
Grid Convergence Used: 0.0925°
Total Corr Mag North->Grid North: 7.2845°
Local Coord Referenced To: Structure Reference Point

NM OIL CONSERVATION
 ARTESIA DISTRICT

DEC 22 2016

RECEIVED

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (RUS)	Easting (RUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Tie-In [290° FSL, 2030 FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	100.00	0.00	278.80	100.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	200.00	0.00	278.80	200.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	300.00	0.00	278.80	300.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	400.00	0.00	278.80	400.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	500.00	0.00	278.80	500.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	600.00	0.00	278.80	600.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	700.00	0.00	278.80	700.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	800.00	0.00	278.80	800.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	900.00	0.00	278.80	900.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1000.00	0.00	278.80	1000.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1100.00	0.00	278.80	1100.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1200.00	0.00	278.80	1200.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1300.00	0.00	278.80	1300.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1400.00	0.00	278.80	1400.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1500.00	0.00	278.80	1500.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1600.00	0.00	278.80	1600.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1700.00	0.00	278.80	1700.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1800.00	0.00	278.80	1800.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	1900.00	0.00	278.80	1900.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	2000.00	0.00	278.80	2000.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	2100.00	0.00	278.80	2100.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	2200.00	0.00	278.80	2200.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	2300.00	0.00	278.80	2300.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	2400.00	0.00	278.80	2400.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86
	2500.00	0.00	278.80	2500.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86	W 104 9 31.86

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 ° ' ")
	2600.00	0.00	278.80	2600.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	2700.00	0.00	278.80	2700.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	2800.00	0.00	278.80	2800.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	2900.00	0.00	278.80	2900.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3000.00	0.00	278.80	3000.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3100.00	0.00	278.80	3100.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3200.00	0.00	278.80	3200.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3300.00	0.00	278.80	3300.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3400.00	0.00	278.80	3400.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3500.00	0.00	278.80	3500.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3600.00	0.00	278.80	3600.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3700.00	0.00	278.80	3700.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3800.00	0.00	278.80	3800.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	3900.00	0.00	278.80	3900.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4000.00	0.00	278.80	4000.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4100.00	0.00	278.80	4100.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4200.00	0.00	278.80	4200.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4300.00	0.00	278.80	4300.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4400.00	0.00	278.80	4400.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4500.00	0.00	278.80	4500.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4600.00	0.00	278.80	4600.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4700.00	0.00	278.80	4700.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4800.00	0.00	278.80	4800.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	4900.00	0.00	278.80	4900.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5000.00	0.00	278.80	5000.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5100.00	0.00	278.80	5100.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5200.00	0.00	278.80	5200.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5300.00	0.00	278.80	5300.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5400.00	0.00	278.80	5400.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5500.00	0.00	278.80	5500.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5600.00	0.00	278.80	5600.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5700.00	0.00	278.80	5700.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5800.00	0.00	278.80	5800.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	5900.00	0.00	278.80	5900.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6000.00	0.00	278.80	6000.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6100.00	0.00	278.80	6100.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6200.00	0.00	278.80	6200.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6300.00	0.00	278.80	6300.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6400.00	0.00	278.80	6400.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6500.00	0.00	278.80	6500.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6600.00	0.00	278.80	6600.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6700.00	0.00	278.80	6700.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6800.00	0.00	278.80	6800.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	6900.00	0.00	278.80	6900.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	7000.00	0.00	278.80	7000.00	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
	7050.98	0.00	278.80	7050.98	0.00	0.00	0.00	0.00	364072.12	595424.85	N 32 0 2.86 W 104	9 31.86
KOP - Build 12"/100ft DLS	7100.00	5.88	278.80	7099.91	0.62	0.38	-2.48	12.00	364072.50	595422.37	N 32 0 2.86 W 104	9 31.89
	7200.00	17.88	278.80	7197.59	5.72	3.53	-22.80	12.00	364075.65	595402.06	N 32 0 2.89 W 104	9 32.12
	7300.00	29.88	278.80	7288.86	15.75	9.71	-62.73	12.00	364081.83	595362.12	N 32 0 2.96 W 104	9 32.59
	7400.00	41.88	278.80	7369.74	30.27	18.66	-120.55	12.00	364090.78	595304.31	N 32 0 3.05 W 104	9 33.26
	7500.00	53.88	278.80	7436.68	48.64	29.99	-193.72	12.00	364102.11	595231.15	N 32 0 3.16 W 104	9 34.11
First Legal Take Point	7582.00	63.72	278.80	7479.10	66.03	40.71	-262.95	12.00	364112.82	595161.92	N 32 0 3.27 W 104	9 34.91
Build 12"/100ft DLS	7595.98	65.40	278.80	7485.11	69.16	42.64	-275.42	12.00	364114.75	595149.45	N 32 0 3.29 W 104	9 35.06
	7600.00	65.43	279.33	7486.78	70.08	43.21	-279.03	12.00	364115.33	595145.84	N 32 0 3.29 W 104	9 35.10
	7700.00	66.74	292.38	7527.47	103.43	68.17	-366.70	12.00	364140.28	595058.18	N 32 0 3.54 W 104	9 36.12
	7800.00	69.10	305.09	7565.19	155.58	112.67	-447.69	12.00	364184.78	594977.20	N 32 0 3.98 W 104	9 37.06

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 ° ' '')
EOC (Curve- Hold)	7900.00	72.36	317.32	7598.30	224.26	174.78	-518.48	12.00	364246.86	594906.42	N 32 0 4.60 W 104 9 37.88	9 37.88
	8000.00	76.35	329.08	7625.35	306.47	251.78	-575.95	12.00	364323.87	594848.95	N 32 0 5.36 W 104 9 38.54	9 38.54
	8100.00	80.87	340.43	7645.16	398.61	340.30	-617.61	12.00	364412.39	594807.30	N 32 0 6.24 W 104 9 39.03	9 39.03
	8200.00	85.73	351.48	7656.86	496.66	436.47	-641.63	12.00	364508.55	594783.28	N 32 0 7.19 W 104 9 39.30	9 39.30
	8276.11	89.54	359.78	7660.00	572.61	512.22	-647.41	12.00	364584.29	594777.50	N 32 0 7.94 W 104 9 39.37	9 39.37
	8300.00	89.54	359.78	7660.19	596.40	536.11	-647.50	0.00	364608.18	594777.41	N 32 0 8.17 W 104 9 39.37	9 39.37
	8400.00	89.54	359.78	7660.99	695.96	636.10	-647.88	0.00	364706.16	594777.03	N 32 0 9.16 W 104 9 39.37	9 39.37
	8500.00	89.54	359.78	7661.78	795.52	736.10	-648.26	0.00	364808.15	594776.65	N 32 0 10.15 W 104 9 39.37	9 39.37
	8600.00	89.54	359.78	7662.58	895.08	836.09	-648.63	0.00	364908.14	594776.27	N 32 0 11.14 W 104 9 39.38	9 39.38
	8700.00	89.54	359.78	7663.37	994.64	936.09	-649.01	0.00	365008.13	594775.89	N 32 0 12.13 W 104 9 39.38	9 39.38
	8800.00	89.54	359.78	7664.17	1094.20	1036.09	-649.39	0.00	365108.11	594775.52	N 32 0 13.12 W 104 9 39.38	9 39.38
	8900.00	89.54	359.78	7664.96	1193.76	1136.08	-649.77	0.00	365208.10	594775.14	N 32 0 14.11 W 104 9 39.38	9 39.38
	9000.00	89.54	359.78	7665.76	1293.33	1236.08	-650.15	0.00	365308.09	594774.76	N 32 0 15.10 W 104 9 39.39	9 39.39
	9100.00	89.54	359.78	7666.56	1392.89	1336.07	-650.53	0.00	365408.07	594774.38	N 32 0 16.09 W 104 9 39.39	9 39.39
	9200.00	89.54	359.78	7667.35	1492.45	1436.07	-650.91	0.00	365508.05	594774.00	N 32 0 17.08 W 104 9 39.39	9 39.39
	9300.00	89.54	359.78	7668.15	1592.01	1536.07	-651.29	0.00	365608.05	594773.62	N 32 0 18.07 W 104 9 39.39	9 39.39
	9400.00	89.54	359.78	7668.94	1691.57	1636.06	-651.67	0.00	365708.04	594773.24	N 32 0 19.06 W 104 9 39.40	9 39.40
	9500.00	89.54	359.78	7669.74	1791.13	1736.06	-652.05	0.00	365808.02	594772.86	N 32 0 20.05 W 104 9 39.40	9 39.40
	9600.00	89.54	359.78	7670.53	1890.69	1836.05	-652.42	0.00	365908.01	594772.48	N 32 0 21.04 W 104 9 39.40	9 39.40
	9700.00	89.54	359.78	7671.33	1990.25	1936.05	-652.80	0.00	366008.00	594772.11	N 32 0 22.03 W 104 9 39.41	9 39.41
	9800.00	89.54	359.78	7672.13	2089.81	2036.05	-653.18	0.00	366107.98	594771.73	N 32 0 23.02 W 104 9 39.41	9 39.41
	9900.00	89.54	359.78	7672.92	2189.38	2136.04	-653.56	0.00	366207.97	594771.35	N 32 0 24.01 W 104 9 39.41	9 39.41
	10000.00	89.54	359.78	7673.72	2288.94	2236.04	-653.94	0.00	366307.96	594770.97	N 32 0 25.00 W 104 9 39.41	9 39.41
	10100.00	89.54	359.78	7674.51	2388.50	2336.04	-654.32	0.00	366407.95	594770.59	N 32 0 25.99 W 104 9 39.41	9 39.41
	10200.00	89.54	359.78	7675.31	2488.06	2436.03	-654.70	0.00	366507.93	594770.21	N 32 0 26.98 W 104 9 39.42	9 39.42
	10300.00	89.54	359.78	7676.10	2587.62	2536.03	-655.08	0.00	366607.92	594769.83	N 32 0 27.97 W 104 9 39.42	9 39.42
	10400.00	89.54	359.78	7676.90	2687.18	2636.02	-655.46	0.00	366707.91	594769.45	N 32 0 28.95 W 104 9 39.42	9 39.42
	10500.00	89.54	359.78	7677.69	2786.74	2736.02	-655.83	0.00	366807.89	594769.07	N 32 0 29.94 W 104 9 39.42	9 39.42
	10600.00	89.54	359.78	7678.49	2886.30	2836.02	-656.21	0.00	366907.88	594768.70	N 32 0 30.93 W 104 9 39.43	9 39.43
	10700.00	89.54	359.78	7679.29	2985.86	2936.01	-656.59	0.00	367007.87	594768.32	N 32 0 31.92 W 104 9 39.43	9 39.43
	10800.00	89.54	359.78	7680.08	3085.43	3036.01	-656.97	0.00	367107.86	594767.94	N 32 0 32.91 W 104 9 39.43	9 39.43
	10900.00	89.54	359.78	7680.88	3184.99	3136.00	-657.35	0.00	367207.84	594767.56	N 32 0 33.90 W 104 9 39.43	9 39.43
	11000.00	89.54	359.78	7681.67	3284.55	3236.00	-657.73	0.00	367307.83	594767.18	N 32 0 34.89 W 104 9 39.44	9 39.44
	11100.00	89.54	359.78	7682.47	3384.11	3336.00	-658.11	0.00	367407.82	594766.80	N 32 0 35.88 W 104 9 39.44	9 39.44
	11200.00	89.54	359.78	7683.26	3483.67	3435.99	-658.49	0.00	367507.80	594766.42	N 32 0 36.87 W 104 9 39.44	9 39.44
	11300.00	89.54	359.78	7684.06	3583.23	3535.98	-658.87	0.00	367607.79	594766.04	N 32 0 37.86 W 104 9 39.45	9 39.45
	11400.00	89.54	359.78	7684.86	3682.79	3635.98	-659.24	0.00	367707.78	594765.66	N 32 0 38.85 W 104 9 39.45	9 39.45
	11500.00	89.54	359.78	7685.65	3782.35	3735.98	-659.62	0.00	367807.77	594765.29	N 32 0 39.84 W 104 9 39.45	9 39.45
	11600.00	89.54	359.78	7686.45	3881.91	3835.97	-660.00	0.00	367907.75	594764.91	N 32 0 40.83 W 104 9 39.45	9 39.45
	11700.00	89.54	359.78	7687.24	3981.48	3935.97	-660.38	0.00	368007.74	594764.53	N 32 0 41.82 W 104 9 39.46	9 39.46
	11800.00	89.54	359.78	7688.04	4081.04	4035.97	-660.76	0.00	368107.73	594764.15	N 32 0 42.81 W 104 9 39.46	9 39.46
	11900.00	89.54	359.78	7688.83	4180.60	4135.97	-661.14	0.00	368207.71	594763.77	N 32 0 43.80 W 104 9 39.46	9 39.46
	12000.00	89.54	359.78	7689.63	4280.16	4235.96	-661.52	0.00	368307.70	594763.39	N 32 0 44.79 W 104 9 39.46	9 39.46
	12100.00	89.54	359.78	7690.42	4379.72	4335.96	-661.90	0.00	368407.69	594763.01	N 32 0 45.78 W 104 9 39.47	9 39.47
	12200.00	89.54	359.78	7691.22	4479.28	4435.95	-662.28	0.00	368507.68	594762.63	N 32 0 46.77 W 104 9 39.47	9 39.47
	12300.00	89.54	359.78	7692.01	4578.84	4535.95	-662.66	0.00	368607.66	594762.25	N 32 0 47.76 W 104 9 39.47	9 39.47
	12400.00	89.54	359.78	7692.81	4678.40	4635.95	-663.03	0.00	368707.65	594761.88	N 32 0 48.74 W 104 9 39.47	9 39.47
	12500.00	89.54	359.78	7693.61	4777.96	4735.94	-663.41	0.00	368807.64	594761.50	N 32 0 49.73 W 104 9 39.48	9 39.48
	12600.00	89.54	359.78	7694.40	4877.53	4835.94	-663.79	0.00	368907.63	594761.12	N 32 0 50.72 W 104 9 39.48	9 39.48
	12700.00	89.54	359.78	7695.20	4977.09	4935.93	-664.17	0.00	369007.61	594760.74	N 32 0 51.71 W 104 9 39.48	9 39.48
	12800.00	89.54	359.78	7695.99	5076.65	5035.93	-664.55	0.00	369107.60	594760.36	N 32 0 52.70 W 104 9 39.49	9 39.49
	12900.00	89.54	359.78	7696.79	5176.21	5135.93	-664.93	0.00	369207.59	594759.98	N 32 0 53.69 W 104 9 39.49	9 39.49
	13000.00	89.54	359.78	7697.59	5275.77	5235.92	-665.31	0.00	369307.57	594759.60	N 32 0 54.68 W 104 9 39.49	9 39.49
	13100.00	89.54	359.78	7698.38	5375.33	5335.92	-665.69	0.00	369407.56	594759.22	N 32 0 55.67 W 104 9 39.49	9 39.49
	13200.00	89.54	359.78	7699.18	5474.89	5435.91	-666.07	0.00	369507.55	594758.84	N 32 0 56.66 W 104 9 39.49	9 39.49
	13300.00	89.54	359.78	7699.97	5574.45	5535.91	-666.44	0.00	369607.54	594758.47	N 32 0 57.65 W 104 9 39.50	9 39.50
	13400.00	89.54	359.78	7700.77	5674.01	5635.91	-666.82	0.00	369707.52	594758.09	N 32 0 58.64 W 104 9 39.50	9 39.50
	13500.00	89.54	359.78	7701.56	5773.58	5735.90	-667.20	0.00	369807.51	594757.71	N 32 0 59.63 W 104 9 39.50	9 39.50

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 ° ' ")
	13600.00	89.54	359.78	7702.36	5873.14	5835.90	-667.58	0.00	369907.50	594757.33	N 32 1 0.62 W 104	9 39.50
	13700.00	89.54	359.78	7703.16	5972.70	5935.90	-667.96	0.00	370007.48	594756.95	N 32 1 1.61 W 104	9 39.51
	13800.00	89.54	359.78	7703.95	6072.26	6035.89	-668.34	0.00	370107.47	594756.57	N 32 1 2.60 W 104	9 39.51
	13900.00	89.54	359.78	7704.75	6171.82	6135.89	-668.72	0.00	370207.46	594756.19	N 32 1 3.59 W 104	9 39.51
	14000.00	89.54	359.78	7705.54	6271.38	6235.88	-669.10	0.00	370307.45	594755.81	N 32 1 4.58 W 104	9 39.51
	14100.00	89.54	359.78	7706.34	6370.94	6335.88	-669.48	0.00	370407.43	594755.43	N 32 1 5.57 W 104	9 39.52
	14200.00	89.54	359.78	7707.13	6470.50	6435.88	-669.85	0.00	370507.42	594755.06	N 32 1 6.56 W 104	9 39.52
	14300.00	89.54	359.78	7707.93	6570.06	6535.87	-670.23	0.00	370607.41	594754.68	N 32 1 7.55 W 104	9 39.52
	14400.00	89.54	359.78	7708.72	6669.63	6635.87	-670.61	0.00	370707.39	594754.30	N 32 1 8.54 W 104	9 39.52
	14500.00	89.54	359.78	7709.52	6769.19	6735.86	-670.99	0.00	370807.38	594753.92	N 32 1 9.52 W 104	9 39.53
Cimarex Hornsby 35 Federal Com 7H PBHL	14560.31	89.54	359.78	7710.00	6829.23	6796.17	-671.22	0.00	370867.68	594753.69	N 32 1 10.12 W 104	9 39.53

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	20.000	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG- Depth Only	Original Borehole / Cimarex Hornsby 35 Federal Com 7H Rev4 RM 04Nov16
	1	20.000	14560.307	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Hornsby 35 Federal Com 7H