

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTCarlsbad Field Office
WCD ArtesiaFORM APPROVED
OMB NO. 1004-0137
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.
NMNM100332

6. If Indian, Allottee or Tribe Name

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

8. Well Name and No.
SCOTER 6-31 FEDERAL COM 43H9. API Well No.
30-015-45265-00-X110. Field and Pool or Exploratory Area
WILDCAT - BONE SPRING11. 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: AMITHY E CRAWFORD

Mail: acrawford@cimarex.com

3a. Address

600 N MARIENFELD STE 600
MIDLAND, TX 79703

3b. Phone No. (include area code)

Ph: 432-620-1909

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

Sec 6 T25S R27E SESE 365FSL 320FEL
32.152885 N Lat, 104.222015 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 requests to change the SHL of the Scoter 6-31 Federal Com 43H. There will be no new surface disturbance.

Original:

SHL- 365' FSL & 320' FEL Sec 6, 25S, 27E Eddy Co NM

Proposed:

SHL- 365' FSL & 280' FEL Sec 6, 25S, 27E Eddy Co NM

See below changes to casing and cement program:

RECEIVED

NOV 06 2018

DISTRICT II-ARTESIA O.C.D.

GC 11-7-18
Accepted for record - NMOC

10-23-2018 Same casing apply. No new Disturbance.
Surface good. But Ballard Covered DOI-Blm-NM-PO2-2018-0908-EA No New Disturbance

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

Electronic Submission #437883 verified by the BLM Well Information System

For CIMAREX ENERGY COMPANY OF CO, sent to the Carlsbad

Committed to AFMSS for processing by PRISCILLA PEREZ on 10/04/2018 (19PP0058SE)

Name (Printed/Typed) AMITHY E CRAWFORD

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 10/02/2018

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)

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

Additional data for EC transaction #437883 that would not fit on the form

32. Additional remarks, continued

13.375" Surface csg 48# H40/J55 Hybrid, ST&C Set at 400'. Cement with Lead: 61 Sks, 13.5 ppg, 1.72 yield, Class C + Bentonite. TAIL: 195 sks, 14.8 ppg, 1.34 yield, Class C + LCM.

9.625" Intermediate Csg 36#, J55, LTC set at 2096'. Cement with Lead: 400 sks, 12.9 ppg, 1.88 yield, 35:65 (POZ C) + Salt + Bentonite. Tail: 123 sks, 14.8 ppg, 1.34 yield, Class C + LCM.

5.5" Production casing 17# L80 LTC/BTC Set at 12101'. Cement with Lead: 430 sks, 10.3# ppg, 3.64 yield, Tuned Light + LCM. Tail: 1117 sks, 14.2 ppg, 1.3 yield, 50"50 (POZ H) + salt + Bentonite + Fluid Loss + Dispersant + SMS.

Please see attached New C-102, Well Pad diagram, Directional Survey and Drilling Plan.

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

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

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

¹ API Number 30-015-45265	² Pool Code 97494	³ Pool Name Cottonwood Draw; Bone Spring
⁴ Property Code 321000	⁵ Property Name SCOTER 6-31 FEDERAL COM	⁶ Well Number 43H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 3333.1'

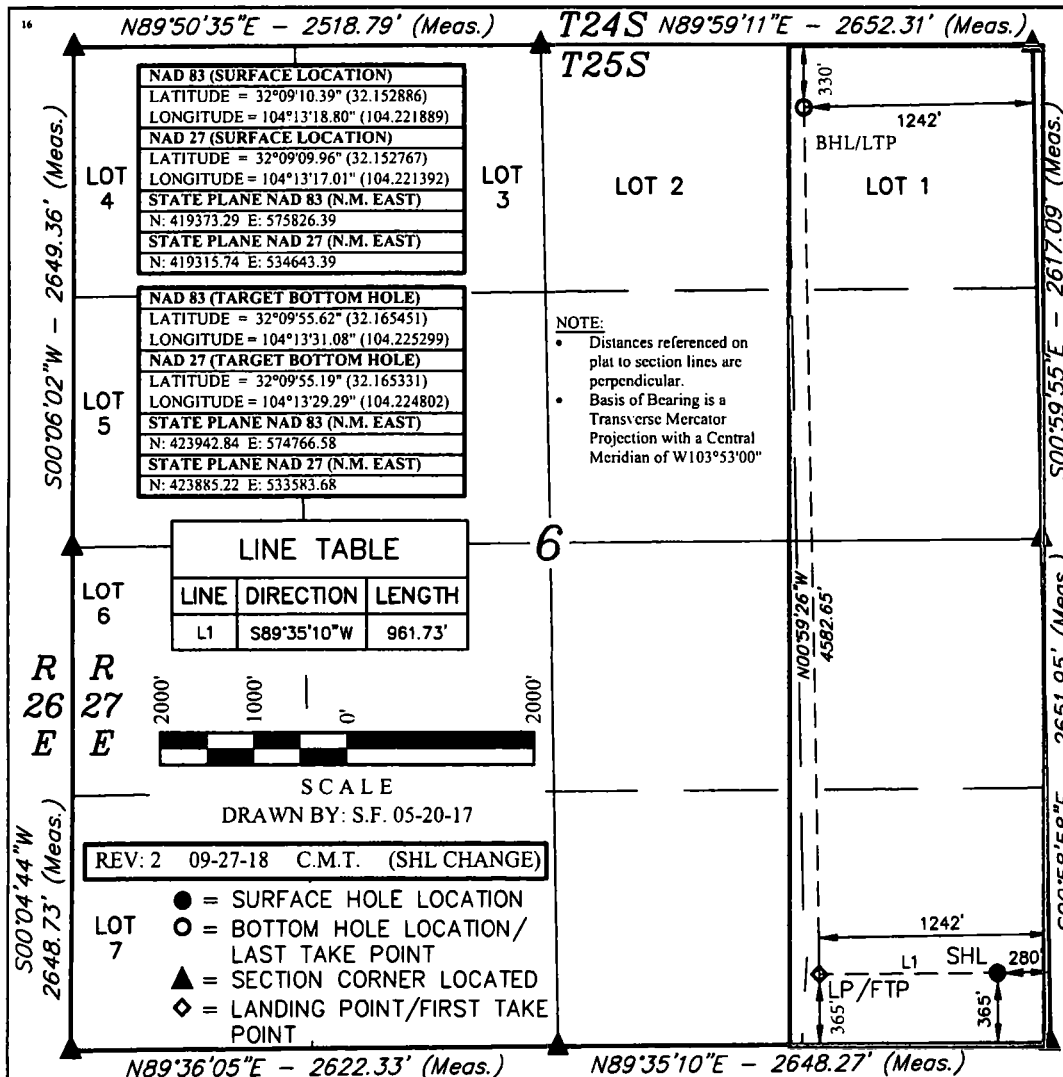
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	6	25S	27E		365	SOUTH	280	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
1	6	25S	27E		330	NORTH	1242	EAST	EDDY
¹² Dedicated Acres 159.09	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ Order No.						

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.



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.

Amithy Crawford 10/1/2018
Signature Date

Amithy Crawford
Printed Name

acrawford@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.

May 10, 2017

Date of Survey
Signature and Seal of Professional Surveyor:



Certificate Number:

1..Geological Formations

TVD of target 7,208
MD at TD 12,101

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Salado	1305	N/A	
Castille	1923	N/A	
Bell Canyon	2120	N/A	
Cherry Canyon	3052	N/A	
Brushy Canyon	4109	Hydrocarbons	
Brushy Canyon Lower	5345	Hydrocarbons	
Bone Spring	5659	Hydrocarbons	
Bone Spring "A" Shale	5787	Hydrocarbons	
Bone Spring "C" Shale	6103	Hydrocarbons	
1st Bone Spring Ss	6627	Hydrocarbons	
2nd Bone Spring Ss	7132	Hydrocarbons	
2nd BS Ss Lower	7882	Hydrocarbons	
3rd Bone Spring Ss	8450	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	2096	9-5/8"	36.00	J-55	LT&C	1.82	3.17	6.00
8 3/4	0	6881	5-1/2"	17.00	L-80	LT&C	1.95	2.40	2.76
8 3/4	6881	12101	5-1/2"	17.00	L-80	BT&C	1.86	2.29	71.42
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.	N
Is premium or uncommon casing planned? If yes attach casing specification sheet.	Y
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
Is AC Report included?	N

3..Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	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	400	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	123	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	430	10.30	3.64	22.18		Lead: Tuned Light + LCM
	1117	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	49
Production	1896	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 2096'	Brine Water	9.70 - 10.20	30-32	N/C
2096' to 12101'	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
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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	3373 psi
Abnormal Temperature	No

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

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

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

A multi-bowl wellhead system will be utilized.

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

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

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

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

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

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

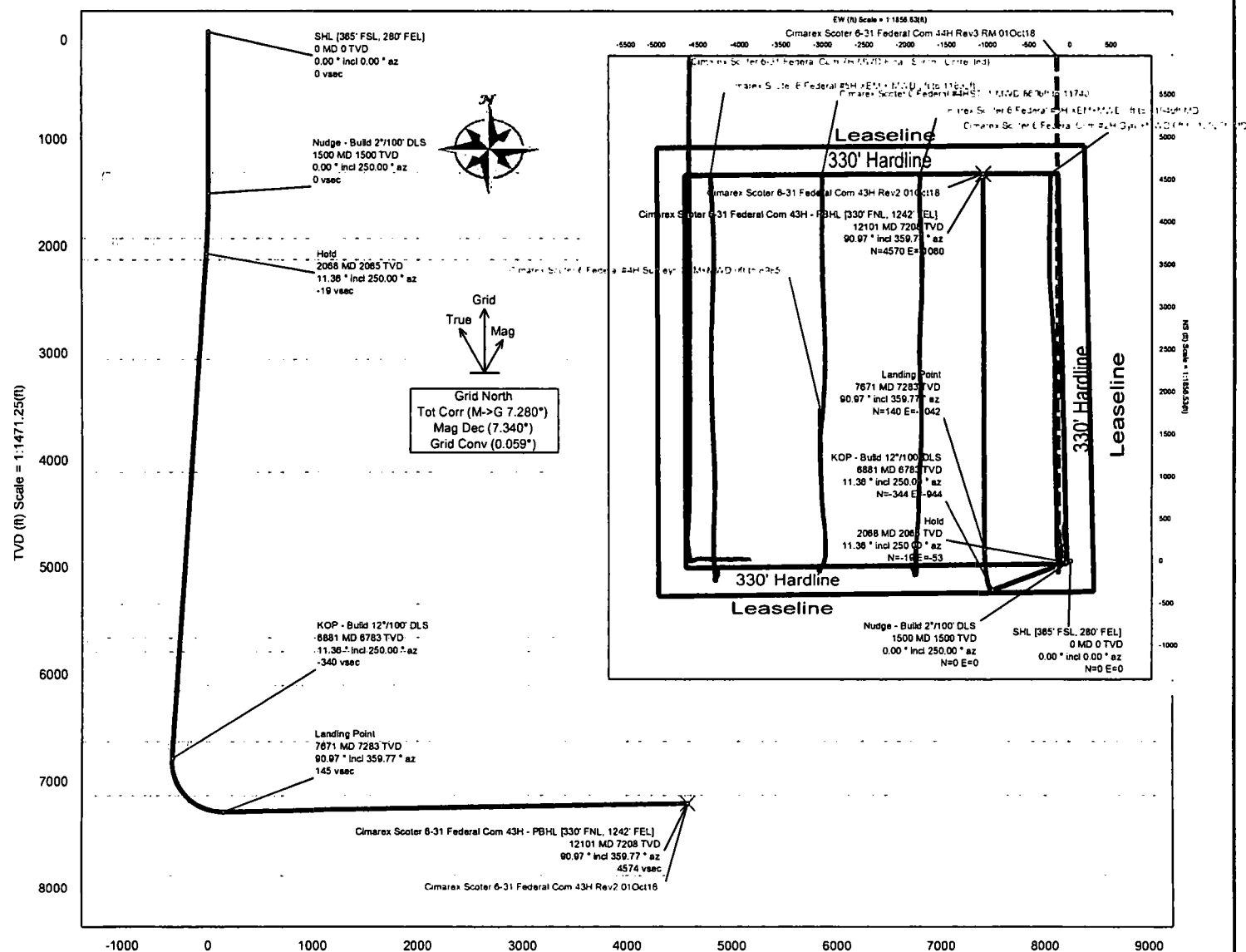
The casing string utilizing steel body pack-off will be tested to 70% of casing burst.

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

EXHIBIT D

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Scoter 6-31 Federal Com 43H	NM Eddy County (NAD 83)	Cimarex Scoter 6-31 Federal Com 43H

Gravity & Magnetic Parameters	Surface Location	Miscellaneous
Model: HDGM 2018 Dip: 59.841° Date: 01-Oct-2018	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Cimarex Scoter
MagDec: 7.34° FS: 47662.953nT Gravity FS: 998.432mg (9.80665 Based)	Lat: N 32 8 10.38 Northing: 418373.28ftUS Grid Conv: 0.8593°	Plot: 6-31 Federal TVD Ref: RKB(3558.1h above MSL)
	Lon: W 104 13 18.80 Easting: 575829.38ftUS Scale Fact: 0.89991045	Plan: Cimarex Scoter 6-31 Federal Com 43H Rev2 01Oct18



Vertical Section (ft) Azim = 359.77° Scale = 1:1471.25(ft) Origin = 0N/-S, 0E/-W

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [365° FSL, 280° FEL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Salado	1305.00	0.00	250.00	1305.00	0.00	0.00	0.00	0.00
Nudge - Build 2°/100' DLS	1500.00	0.00	250.00	1500.00	0.00	0.00	0.00	0.00
Castile	1924.55	8.49	250.00	1923.00	-10.74	-10.74	-29.51	2.00
Hold	2068.22	11.36	250.00	2064.50	-19.21	-19.21	-52.78	2.00
Bell Canyon	2124.83	11.36	250.00	2120.00	-23.03	-23.03	-63.26	0.00
Cherry Canyon	3075.47	11.36	250.00	3052.00	-87.09	-87.09	-239.29	0.00
Brushy Canyon	4153.60	11.36	250.00	4109.00	-159.75	-159.75	-438.92	0.00
Brushy Canyon Lower	5414.32	11.36	250.00	5345.00	-244.72	-244.72	-672.38	0.00
Bone Spring	5734.60	11.36	250.00	5659.00	-268.30	-268.30	-731.67	0.00
Bone Spring "A" Shale	5865.16	11.36	250.00	5787.00	-275.10	-275.10	-755.84	0.00
Bone Spring "C" Shale	6187.48	11.36	250.00	6103.00	-298.83	-298.83	-815.52	0.00
1st Bone Spring Sa	6721.96	11.36	250.00	6627.00	-332.85	-332.85	-914.49	0.00
KOP - Build 12°/100' DLS	6881.03	11.36	250.00	6782.95	-343.57	-343.57	-943.94	0.00
2nd Bone Spring Sa	7268.31	43.78	348.18	7132.00	-218.60	-218.60	-1010.94	12.00
Landing Point	7870.82	90.97	359.77	7283.00	140.39	140.39	-1042.13	12.00
Cimarex Scoter 6-31 Federal Com 43H - PBHL [330° FNL, 1242° FEL]	12101.08	90.97	359.77	7208.00	4569.97	4569.97	-1059.91	0.00
2nd BS Lower	NaN			7882.00				
3rd Bone Spring Sa	NaN			8450.00				

Cimarex Scoter 6-31 Federal Com 43H Rev2 01Oct18 Anti-Collision Summary Report

Analysis Date-24hr Time: October 01, 2018 - 14:28
 Client: Cimarex
 Field: NM Eddy County (NAD 83)
 Structure: Cimarex Scoter 6-31 Federal Com 43H
 Slot: Cimarex Scoter 6-31 Federal Com 43H
 Well: Cimarex Scoter 6-31 Federal Com 43H
 Borehole: Original Borehole
 Scan MD Range: 0.00ft - 12101.08ft

Analysis Method: 3D Least Distance
 Reference Trajectory: Cimarex Scoter 6-31 Federal Com 43H Rev2 01Oct18 (Def Plan)
 Depth Interval: Every 10.00 Measured Depth (ft)
 Rule Set: NAL Procedure: D&M Anti-Collision Standard S002
 Min Pts: All local minima indicated.
 Version / Patch: 2.10.740.0
 Database \ Project: US1153APP452.dir.slb.com/drilling-NM Eddy County 2.10

Trajectory Error Model: ISCSWA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan:

Selection filters:

Not performed!

Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans

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

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

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Scoter 6-31 Federal Com 44H Rev3 RM 01Oct18 (Def Plan)

40.01	32.51	37.51	7.50	N/A	MAS = 9.91 (m)	0.00	0.00	CtCt<=15m<15.00				Enter Alert	Fail Major
40.01	32.51	37.51	7.50	168806.75	MAS = 9.91 (m)	28.00	28.00					WRP	
32.16	32.51	19.90	-0.35	3.04	MAS = 9.91 (m)	1720.00	1719.78					Enter Major	
17.36	32.51	4.59	-15.14	1.45	MAS = 9.91 (m)	1890.00	1888.80		OSF<1.50		StcRui=9.91	Enter Minor	
13.24	32.51	0.20	-19.26	1.02	MAS = 9.91 (m)	1970.00	1967.89					MinPts	
18.53	32.51	5.22	-13.97	1.48	MAS = 9.91 (m)	2040.00	2036.81		OSF>1.50		StcRui=9.91	Exit Minor	
31.52	32.51	17.89	-0.99	2.61	MAS = 9.91 (m)	2120.00	2115.27					Exit Major	
59.65	32.51	45.41	27.15	4.87	MAS = 9.91 (m)	2270.00	2262.33		OSF>5.00			Exit Alert	
994.05	64.32	950.34	929.74	24.06	OSF1.50	7390.00	7208.87					MinPt-CtCt	
994.06	64.35	950.33	929.71	24.05	OSF1.50	7400.00	7213.89					MINPT-O-EQU	
994.09	64.38	950.34	929.71	24.04	OSF1.50	7407.56	7217.72					MinPt-O-ADP	
995.78	64.85	951.84	931.13	23.97	OSF1.50	7490.00	7252.75					MinPt-O-SF	
996.65	64.71	952.88	931.94	23.97	OSF1.50	7510.00	7259.31					MinPt-O-SF	
1802.74	166.77	1690.73	1635.97	16.44	OSF1.50	12101.08	7208.00					MinPts	

Cimarex Scoter 6 Federal Com 43H Cyo-MWD DR to 12027ft MD (Def Survey)

448.87	32.81	448.37	418.06	N/A	MAS = 10.00 (m)	0.00	0.00					Warning Alert	
448.88	32.81	448.35	418.07	17090.83	MAS = 10.00 (m)	26.00	26.00					MinPts	
449.46	32.81	448.01	418.66	488.57	MAS = 10.00 (m)	220.00	220.00					WRP	
451.42	32.81	448.45	418.81	181.57	MAS = 10.00 (m)	500.00	500.00					MINPT-O-EQU	
447.97	32.81	441.01	415.10	99.71	MAS = 10.00 (m)	1050.00	1050.00					MinPts	
448.08	32.81	439.14	415.28	89.20	MAS = 10.00 (m)	1500.00	1500.00					MinPts	
448.10	32.81	439.12	415.29	88.84	MAS = 10.00 (m)	1520.00	1520.00					MINPT-O-EQU	
448.43	32.81	439.33	415.63	67.48	MAS = 10.00 (m)	1600.00	1599.68					MinPt-O-SF	
480.34	32.81	466.83	447.53	43.43	MAS = 10.00 (m)	3440.00	3409.39					MinPts	
480.38	32.81	466.78	447.57	43.08	MAS = 10.00 (m)	3460.00	3428.99					MINPT-O-EQU	
809.27	50.70	774.64	758.58	25.11	OSF1.50	8810.00	8713.31					MinPt-O-SF	
888.25	82.73	812.26	785.52	16.19	OSF1.50	9020.00	7260.16					MinPt-CtCt	
889.66	87.06	810.79	782.61	15.38	OSF1.50	9140.00	7258.13					MINPT-O-EQU	
877.67	113.82	801.08	764.04	11.81	OSF1.50	9660.00	7249.33					MinPt-CtCt	
811.03	189.87	883.82	821.15	6.47	OSF1.50	11110.00	7224.78					MinPt-CtCt	
814.44	199.39	890.70	815.08	6.19	OSF1.50	11320.00	7221.22					MINPT-O-EQU	
834.13	234.01	877.29	800.12	5.39	OSF1.50	11670.00	7210.22					MINPT-O-EQU	
837.65	254.02	867.47	583.83	4.98	OSF1.50	12070.00	7208.53		OSF<5.00			Enter Alert	
838.83	279.02	851.98	559.81	4.54	OSF1.50	12101.08	7208.00					MinPts	

Cimarex Scoter 6 Federal 43H XEM-MWD DR to 11940ft MD (Def Survey)

1909.38	32.81	1906.88	1876.57	N/A	MAS = 10.00 (m)	0.00	0.00					Warning Alert	
1909.14	32.81	1906.82	1876.33	79569.57	MAS = 10.00 (m)	20.00	20.00					Surface	
1909.11	32.81	1906.59	1876.30	112928.14	MAS = 10.00 (m)	26.00	26.00					MinPt-O-SF	
1909.10	32.81	1906.57	1876.29	61022.71	MAS = 10.00 (m)	40.00	40.00					WRP	
1909.13	32.81	1906.55	1876.32	24538.35	MAS = 10.00 (m)	60.00	60.00					MinPts	
1916.04	32.81	1910.82	1883.23	703.28	MAS = 10.00 (m)	670.00	670.00					MINPT-O-EQU	
1916.09	32.81	1910.78	1883.28	681.31	MAS = 10.00 (m)	690.00	690.00					MinPts	
1928.01	32.81	1918.84	1895.20	288.96	MAS = 10.00 (m)	1600.00	1599.68					MINPT-O-EQU	
974.11	43.20	944.14	930.91	30.60	OSF1.50	6810.00	6713.31					MinPt-O-SF	
907.33	44.51	876.44	862.82	33.18	OSF1.50	7100.00	6993.38					MinPt-O-SF	
841.04	44.08	810.39	795.96	31.17	OSF1.50	7480.00	7249.18					MinPts	
768.13	105.89	696.26	662.24	11.23	OSF1.50	9170.00	7257.82					MinPt-CtCt	
773.84	120.61	692.16	653.23	9.89	OSF1.50	9480.00	7252.37					MINPT-O-EQU	
776.57	123.80	692.76	652.77	9.86	OSF1.50	9550.00	7251.19					MinPt-O-ADP	
761.17	207.60	621.50	553.56	5.57	OSF1.50	11130.00	7224.44					MinPt-CtCt	
762.95	215.98	617.69	548.87	5.37	OSF1.50	11300.00	7221.56					MINPT-O-EQU	
764.36	217.68	617.69	548.70	5.33	OSF1.50	11340.00	7220.88					MinPt-O-ADP	
786.20	238.86	625.69	547.34	4.99	OSF1.50	11720.00	7214.45		OSF<5.00			Enter Alert	
777.94	305.29	573.15	472.65	3.85	OSF1.50	12080.00	7208.38					MinPt-CtCt	
777.94	305.35	573.11	472.59	3.85	OSF1.50	12090.00	7208.19					MinPts	
778.09	305.36	573.25	472.73	3.85	OSF1.50	12101.08	7208.00					TD	

Cimarex Scoter 6 Federal 43H ST01 MWD 8606ft to 11740 (Def Survey)

3083.84	32.81	3081.34	3051.03	N/A	MAS = 10.00 (m)	0.00	0.00					Pass	
3083.63	32.81	3081.11	3050.82	123109.87	MAS = 10.00 (m)	20.00	20.00					Surface	
3083.59	32.81	3081.07	3050.78	129888.38	MAS = 10.00 (m)	26.00	26.00					MinPt-O-SF	
3050.76	32.81	3041.60	3017.06	458.03	MAS = 10.00 (m)	1800.00	1599.98					WRP	
3045.88	32.81	3038.70	3013.05	457.98	MAS = 10.00 (m)	1650.00	1649.93					MinPt-O-SF	
2135.54	42.62	2105.98	2062.92	81.70	OSF1.50	6770.00	6674.10					MinPt-O-SF	
2129.21	42.48	2099.73	2066.75	81.87	OSF1.50	6800.00	6703.51					MinPt-O-SF	
1933.97	48.20	1900.55	1885.77	65.31	OSF1.50	7780.00	7281.15					MinPt-CtCt	
1904.13	48.78	1900.37	1885.35	64.48	OSF1.50	7820.00	7280.47					MINPT-O-EQU	
1904.52	48.26	1900.39	1885.26	63.80	OSF1.50	7850.00	7279.97					MinPt-O-ADP	

Offset Trajectory	Separation				Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	FOU (ft)	Dev. (ft)			MD (ft)	TVD (ft)	Alert	Minor	Major		
1978.95	65.58	1931.97	1911.43	47.95		OSF1.50	8340.00	7271.87				MinPts	
1982.59	74.31	1931.77	1908.28	42.11		OSF1.50	8510.00	7268.79				MinPT-O-EQU	
1983.57	75.51	1931.95	1908.06	41.42		OSF1.50	8550.00	7268.12				MinPI-O-ADP	
1990.51	82.89	1933.98	1907.62	37.68		OSF1.50	8730.00	7265.07				MinPI-O-ADP	
1929.55	147.01	1830.28	1782.55	20.18		OSF1.50	9920.00	7244.62				MinPI-CICI	
1938.55	161.83	1827.37	1774.72	18.35		OSF1.50	10240.00	7239.51				MinPT-O-EQU	
1947.71	181.42	1825.49	1766.30	16.42		OSF1.50	10600.00	7233.41				MinPT-O-EQU	
1950.89	186.73	1825.12	1764.16	15.97		OSF1.50	10700.00	7231.72				MinPT-O-EQU	
1954.89	193.36	1824.70	1761.53	15.44		OSF1.50	10820.00	7229.69				MinPT-O-EQU	
1957.43	253.42	1787.20	1704.01	11.74		OSF1.50	11880.00	7211.74				MinPI-CICI	
1957.35	257.81	1784.20	1699.55	11.54		OSF1.50	11960.00	7210.39				MinPI-CICI	
1958.77	301.11	1756.75	1657.86	9.89		OSF1.50	12101.08	7208.00				MinPts	

Cimarex Scoter 6 Federal #4H
Surveys XEM-MWD 01 to
6985 (Def Survey)

3083.84	32.81	3081.34	3051.03	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
3083.83	32.81	3081.11	3050.82	123109.82	MAS = 10.00 (m)	26.00	26.00	MinPI-O-SF
3083.59	32.81	3081.07	3050.78	120988.38	MAS = 10.00 (m)	26.00	26.00	WRP
3050.78	32.81	3041.60	3017.06	458.03	MAS = 10.00 (m)	1600.00	1599.98	MinPI-O-SF
3045.86	32.81	3036.70	3013.05	457.05	MAS = 10.00 (m)	1650.00	1649.83	MinPI-O-SF
2135.54	42.62	2105.98	2092.62	81.76	OSF1.50	6770.00	6874.10	MinPI-O-SF
2129.21	42.44	2099.75	2086.78	81.82	OSF1.50	6800.00	6703.51	MinPI-O-SF
1933.07	47.69	1900.89	1886.28	66.07	OSF1.50	7780.00	7281.15	MinPI-CICI
1934.13	48.25	1900.68	1885.88	65.24	OSF1.50	7820.00	7280.47	MinPT-O-EQU
1934.52	48.72	1900.70	1885.81	64.58	OSF1.50	7850.00	7279.97	MinPT-O-ADP
1976.85	64.78	1932.49	1912.17	48.56	OSF1.50	8340.00	7271.87	MinPts
1982.59	73.49	1932.32	1909.09	42.80	OSF1.50	8510.00	7268.79	MinPT-O-EQU
1983.57	74.69	1932.50	1908.87	41.00	OSF1.50	8550.00	7268.12	MinPT-O-ADP
1990.51	82.07	1934.52	1908.44	38.08	OSF1.50	8730.00	7265.07	MinPT-O-ADP
1992.87	93.32	1929.38	1899.54	33.33	OSF1.50	8900.00	7262.19	MinPI-CICI
1992.75	102.37	1923.27	1890.41	30.27	OSF1.50	9080.00	7259.14	MinPI-CICI
1992.48	114.11	1915.14	1878.37	27.04	OSF1.50	9310.00	7255.25	MinPI-CICI
1992.70	118.01	1914.05	1876.69	26.50	OSF1.50	9380.00	7254.40	MinPts
2009.31	118.28	1929.19	1891.03	26.27	OSF1.50	9600.00	7250.34	MinPI-O-SF
3403.77	106.45	3331.97	3297.32	49.08	OSF1.50	12101.08	7208.00	TD

Cimarex Scoter 6 Federal #5H
XEM = MWD 01 to 11832H
(Def Survey)

4324.04	32.81	4321.54	4291.24	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
4323.74	32.81	4321.20	4290.84	110933.89	MAS = 10.00 (m)	26.00	26.00	MinPI-O-SF
4322.74	32.81	4318.27	4289.83	2182.47	MAS = 10.00 (m)	490.00	490.00	MinPts
4301.02	32.81	4291.56	4268.21	818.51	MAS = 10.00 (m)	1600.00	1599.98	MinPI-O-SF
4276.82	32.81	4287.55	4244.11	823.21	MAS = 10.00 (m)	1840.00	1839.20	MinPI-O-SF
4265.09	32.81	4255.72	4232.28	823.39	MAS = 10.00 (m)	1920.00	1918.50	MinPI-O-SF
3332.73	45.12	3301.45	3287.61	120.22	OSF1.50	7040.00	6937.84	MinPI-O-SF
3327.03	44.83	3296.08	3282.40	121.53	OSF1.50	7070.00	6905.81	MinPI-O-SF
3275.37	44.94	3244.18	3230.43	118.95	OSF1.50	7510.00	7259.31	MinPI-O-SF
3273.88	45.14	3242.66	3228.84	118.35	OSF1.50	7560.00	7277.68	MinPts
3277.12	46.50	3244.85	3230.81	114.70	OSF1.50	7700.00	7282.51	MinPts
3257.85	73.87	3207.30	3183.88	69.47	OSF1.50	8440.00	7269.98	MinPI-CICI
3290.85	81.82	3204.80	3178.73	62.46	OSF1.50	8670.00	7266.08	MinPT-O-EQU
3267.87	90.82	3208.12	3177.05	56.14	OSF1.50	8850.00	7262.36	MinPT-O-ADP
3285.46	112.00	3209.57	3173.46	45.45	OSF1.50	9290.00	7255.59	MinPT-O-EQU
3291.24	118.07	3210.70	3172.27	42.78	OSF1.50	9450.00	7252.88	MinPI-O-ADP
3292.53	137.64	3199.81	3154.89	36.85	OSF1.50	9700.00	7248.65	MinPI-CICI
3290.05	214.90	3115.81	3045.12	23.13	OSF1.50	11140.00	7224.27	MinPI-CICI
3284.47	228.01	3111.22	3036.45	21.81	OSF1.50	11450.00	7219.02	MinPT-O-EQU
3269.72	236.06	3111.11	3033.86	21.08	OSF1.50	11610.00	7216.31	MinPT-O-EQU
3274.19	241.58	3111.01	3032.82	20.82	OSF1.50	11730.00	7214.28	MinPT-O-ADP
3287.93	257.30	3115.17	3030.83	19.42	OSF1.50	12000.00	7209.71	MinPT-O-EQU
3291.84	261.85	3116.05	3029.90	19.10	OSF1.50	12101.08	7208.00	MinPts

Cimarex Scoter 6-31 Federal
Com 7H MWD Final (Surcon
Corrected) (Def Survey)

3893.08	32.81	3891.28	3880.27	N/A	MAS = 10.00 (m)	0.00	0.00	Surface
3892.81	32.81	3890.97	3880.00	121770.87	MAS = 10.00 (m)	26.00	26.00	MinPI-O-SF
3892.72	32.81	3890.83	3859.91	51504.58	MAS = 10.00 (m)	60.00	60.00	MinPts
3893.41	32.81	3890.32	3880.80	3043.09	MAS = 10.00 (m)	310.00	310.00	MinPT-O-EQU
3894.20	32.81	3890.52	3861.39	2070.58	MAS = 10.00 (m)	470.00	470.00	MinPT-O-EQU
3890.85	32.81	3884.58	3858.04	840.91	MAS = 10.00 (m)	1050.00	1050.00	MinPts
3890.92	32.81	3884.80	3858.11	816.85	MAS = 10.00 (m)	1090.00	1090.00	MinPT-O-EQU
3883.28	32.81	3874.85	3850.47	573.00	MAS = 10.00 (m)	1600.00	1599.98	MinPI-O-SF
3875.32	32.81	3866.93	3842.51	575.59	MAS = 10.00 (m)	1720.00	1719.78	MinPI-O-SF
3844.35	32.81	3836.06	3811.54	581.06	MAS = 10.00 (m)	1970.00	1967.89	MinPI-O-SF
3408.44	44.64	3378.01	3363.80	119.85	OSF1.50	7480.00	7249.18	MinPI-O-SF
3404.45	44.70	3373.86	3359.75	119.68	OSF1.50	7610.00	7280.23	MinPI-CICI
3404.47	44.74	3373.86	3359.73	119.58	OSF1.50	7820.00	7281.20	MinPts
4199.54	77.33	4147.47	4122.21	83.08	OSF1.50	10030.00	7243.06	MinPI-O-SF
4204.01	77.92	4151.50	4128.09	82.43	OSF1.50	10120.00	7241.54	MinPT-O-EQU
4215.80	101.26	4147.82	4114.54	83.33	OSF1.50	10940.00	7227.65	MinPT-O-EQU
4217.22	106.59	4145.88	4110.83	80.14	OSF1.50	11100.00	7224.95	MinPI-CICI
4217.91	108.65	4145.00	4106.28	58.09	OSF1.50	11190.00	7223.42	MinPT-O-EQU
4218.87	109.50	4145.10	4109.12	58.51	OSF1.50	11230.00	7222.75	MinPI-O-ADP
4229.87	135.14	4139.30	4094.73	47.44	OSF1.50	12090.00	7208.19	MinPT-O-EQU
4230.07	135.43	4139.31	4094.64	47.34	OSF1.50	12101.08	7208.00	MinPts

Cimarex Scoter 6-31 Federal Com 43H Rev2 01Oct18 Proposal Geodetic Report (Def Plan)



Report Date: October 01, 2018 - 02:25 PM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Scoter 6-31 Federal Com 43H / Cimarex Scoter 6-31 Federal Com 43H
Well: Cimarex Scoter 6-31 Federal Com 43H
Borehole: Original Borehole
UWI / AP#: Unknown / Unknown
Survey Name: Cimarex Scoter 6-31 Federal Com 43H Rev2 01Oct18
Survey Date: October 01, 2018
Tort / AHD / DDI / ERD Ratio: 108.139° / 5947.283 ft / 6.021 / 0.817
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 0' 10.39150", W 104° 13' 18.80140"
Location Grid N/E Y/X: N 419373.280 RUS, E 575826.390 RUS
CRS Grid Convergence Angle: 0.0593°
Grid Scale Factor: 0.99991045
Version / Patch: 2.10.740.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 0.000° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3359.100 ft above MSL
Seabed / Ground Elevation: 3333.100 ft above MSL
Magnetic Declination: 7.340°
Total Gravity Field Strength: 998.4320mgN (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47882.053 nT
Magnetic Dip Angle: 56.841°
Declination Date: October 01, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.0593°
Total Corr Mag North->Grid North: 7.2804°
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 1365' FSL, 280' FEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	100.00	0.00	250.00	100.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	200.00	0.00	250.00	200.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	300.00	0.00	250.00	300.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	400.00	0.00	250.00	400.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	500.00	0.00	250.00	500.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	600.00	0.00	250.00	600.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	700.00	0.00	250.00	700.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	800.00	0.00	250.00	800.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	900.00	0.00	250.00	900.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	1000.00	0.00	250.00	1000.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	1100.00	0.00	250.00	1100.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	1200.00	0.00	250.00	1200.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	1300.00	0.00	250.00	1300.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
Salado	1305.00	0.00	250.00	1305.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	1400.00	0.00	250.00	1400.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
Nudge - Build 2°/100' DLS	1500.00	0.00	250.00	1500.00	0.00	0.00	0.00	0.00	419373.29	575826.39	N 32° 9' 10.39" W 104° 13' 18.80"	
	1600.00	2.00	250.00	1599.98	-0.80	-0.80	-1.64	2.00	419372.89	575824.75	N 32° 9' 10.39" W 104° 13' 18.82"	
	1700.00	4.00	250.00	1699.94	-2.39	-2.39	-6.56	2.00	419370.90	575819.83	N 32° 9' 10.37" W 104° 13' 18.88"	
	1800.00	8.00	250.00	1799.45	-5.37	-5.37	-14.75	2.00	419367.82	575811.84	N 32° 9' 10.34" W 104° 13' 18.97"	
	1900.00	8.00	250.00	1898.70	-9.54	-9.54	-26.20	2.00	419363.78	575800.19	N 32° 9' 10.30" W 104° 13' 19.11"	
Castilla	1924.55	8.49	250.00	1923.00	-10.74	-10.74	-29.51	2.00	419362.55	575796.89	N 32° 9' 10.29" W 104° 13' 19.14"	
	2000.00	10.00	250.00	1997.47	-14.89	-14.89	-40.90	2.00	419358.41	575785.50	N 32° 9' 10.24" W 104° 13' 19.28"	
Hold	2068.22	11.36	250.00	2064.50	-19.21	-19.21	-52.78	2.00	419354.08	575773.81	N 32° 9' 10.20" W 104° 13' 19.42"	
	2100.00	11.36	250.00	2095.68	-21.35	-21.35	-58.66	0.00	419351.84	575767.73	N 32° 9' 10.18" W 104° 13' 19.48"	
Bell Canyon	2124.83	11.36	250.00	2120.00	-23.03	-23.03	-63.26	0.00	419350.27	575763.13	N 32° 9' 10.16" W 104° 13' 19.54"	
	2200.00	11.36	250.00	2193.70	-28.09	-28.09	-77.18	0.00	419345.20	575749.22	N 32° 9' 10.11" W 104° 13' 19.70"	
	2300.00	11.36	250.00	2291.74	-34.83	-34.83	-95.70	0.00	419338.46	575730.70	N 32° 9' 10.05" W 104° 13' 19.91"	
	2400.00	11.36	250.00	2389.78	-41.57	-41.57	-114.21	0.00	419331.72	575712.19	N 32° 9' 10.00" W 104° 13' 20.13"	
	2500.00	11.36	250.00	2487.82	-48.31	-48.31	-132.73	0.00	419324.98	575693.67	N 32° 9' 9' 59" W 104° 13' 20.35"	
	2600.00	11.36	250.00	2585.86	-55.05	-55.05	-151.25	0.00	419318.25	575675.16	N 32° 9' 8' 55" W 104° 13' 20.56"	
	2700.00	11.36	250.00	2683.89	-61.79	-61.79	-169.78	0.00	419311.51	575656.64	N 32° 9' 8' 50" W 104° 13' 20.78"	
	2800.00	11.36	250.00	2781.93	-68.53	-68.53	-188.28	0.00	419304.77	575638.13	N 32° 9' 8' 45" W 104° 13' 20.99"	
	2900.00	11.36	250.00	2879.97	-75.27	-75.27	-206.80	0.00	419298.03	575619.61	N 32° 9' 8' 40" W 104° 13' 21.21"	
Cherry Canyon	3000.00	11.36	250.00	2978.01	-82.01	-82.01	-225.31	0.00	419291.29	575601.10	N 32° 9' 8' 35" W 104° 13' 21.42"	
	3075.47	11.36	250.00	3052.00	-87.09	-87.09	-239.29	0.00	419286.20	575587.12	N 32° 9' 8' 30" W 104° 13' 21.59"	
	3100.00	11.36	250.00	3076.05	-88.75	-88.75	-243.83	0.00	419284.55	575582.58	N 32° 9' 8' 29" W 104° 13' 21.64"	
	3200.00	11.36	250.00	3174.09	-95.49	-95.49	-262.35	0.00	419277.81	575564.07	N 32° 9' 8' 24" W 104° 13' 21.85"	
	3300.00	11.36	250.00	3272.13	-102.23	-102.23	-280.86	0.00	419271.07	575545.55	N 32° 9' 8' 19" W 104° 13' 22.07"	
	3400.00	11.36	250.00	3370.17	-108.97	-108.97	-299.38	0.00	419264.33	575527.04	N 32° 9' 8' 14" W 104° 13' 22.28"	
	3500.00	11.36	250.00	3468.21	-115.70	-115.70	-317.90	0.00	419257.60	575508.52	N 32° 9' 8' 9" W 104° 13' 22.50"	
	3600.00	11.36	250.00	3566.25	-122.44	-122.44	-336.41	0.00	419250.86	575490.01	N 32° 9' 8' 4" W 104° 13' 22.72"	
	3700.00	11.36	250.00	3664.29	-129.18	-129.18	-354.93	0.00	419244.12	575471.49	N 32° 9' 8' 12" W 104° 13' 22.93"	
	3800.00	11.36	250.00	3762.33	-135.92	-135.92	-373.44	0.00	419237.38	575452.98	N 32° 9' 8' 05" W 104° 13' 23.15"	
	3900.00	11.36	250.00	3860.37	-142.66	-142.66	-391.96	0.00	419230.64	575434.46	N 32° 9' 7' 59" W 104° 13' 23.36"	
	4000.00	11.36	250.00	3958.41	-149.40	-149.40	-410.48	0.00	419223.90	575415.95	N 32° 9' 7' 54" W 104° 13' 23.58"	
Brushy Canyon	4100.00	11.36	250.00	4056.45	-156.14	-156.14	-428.99	0.00	419217.16	575397.43	N 32° 9' 7' 49" W 104° 13' 23.79"	
	4153.60	11.36	250.00	4109.00	-159.75	-159.75	-438.92	0.00	419213.55	575387.51	N 32° 9' 7' 44" W 104° 13' 23.91"	
	4200.00	11.36	250.00	4154.49	-162.88	-162.88	-447.51	0.00	419210.42	575378.92	N 32° 9' 7' 39" W 104° 13' 24.01"	
	4300.00	11.36	250.00	4252.52	-169.82	-169.82	-466.03	0.00	419203.69	575360.41	N 32° 9' 7' 34" W 104° 13' 24.22"	
	4400.00	11.36	250.00	4350.56	-176.36	-176.36	-484.54	0.00	419196.95	575341.89	N 32° 9' 7' 29" W 104° 13' 24.44"	
	4500.00	11.36	250.00	4448.60	-183.10	-183.10	-503.06	0.00	419190.21	575323.38	N 32° 9' 7' 24" W 104° 13' 24.65"	
	4600.00	11.36	250.00	4546.64	-189.84	-189.84	-521.58	0.00	419183.47	575304.88	N 32° 9' 7' 19" W 104° 13' 24.87"	
	4700.00	11.36	250.00	4644.68	-196.58	-196.58	-540.09	0.00	419176.73	575286.35	N 32° 9' 7' 14" W 104° 13' 25.09"	
	4800.00	11.36	250.00	4742.72	-203.32	-203.32	-558.61	0.00	419169.99	575267.83	N 32° 9' 7' 9" W 104° 13' 25.30"	
	4900.00	11.36	250.00	4840.76	-210.06	-210.06	-577.13	0.00	419163.25	575249.32	N 32° 9' 7' 4" W 104° 13' 25.52"	
	5000.00	11.36	250.00	4938.80	-216.80	-216.80	-595.64	0.00	419156.51	575230.80	N 32° 9' 6' 59" W 104° 13' 25.73"	
	5100.00	11.36	250.00	5036.84	-223.54	-223.54	-614.16	0.00	419149.77	575212.29	N 32° 9' 6' 54" W 104° 13' 25.95"	
	5200.00	11.36	250.00	5134.88	-230.28	-230.28	-632.68	0.00	419143.04	575193.77	N 32° 9' 6' 49" W 104° 13' 26.16"	
	5300.00	11.36	250.00	5232.92	-237.01	-237.01	-651.19	0.00	419136.30	575175.26	N 32° 9' 6' 44" W 104° 13' 26.38"	
	5400.00	11.36	250.00	5330.96	-243.75	-243.75	-669.71	0.00	419129.56	575156.74	N 32° 9' 6' 39" W 104° 13' 26.59"	
Brushy Canyon Lower	5414.32	11.36	250.00	5345.00	-244.72	-244.72	-672.36	0.00	419128.59	575154.09	N 32° 9' 6' 38" W 104° 13' 26.62"	
	5500.00	11.36	250.00	5429.00	-250.49	-250.49	-688.23	0.00	419122.82	575138.23	N 32° 9' 6' 33" W 104° 13' 26.81"	
	5600.00	11.36	250.00	5527.04	-257.23	-257.23	-706.74	0.00	419116.08	575119.71	N 32° 9' 6' 28" W 104° 13' 27.02"	
	5700.00	11.36	250.00	5625.08	-263.97	-263.97	-725.26	0.00	419109.34	575101.20	N 32° 9' 6' 23" W 104° 13' 27.24"	
Bone Spring	5734.60	11.36	250.00	5659.00	-266.30	-266.30	-731.67	0.00	419107.01	575094.79	N 32° 9' 6' 18" W 104° 13' 27.31"	
	5800.00	11.36	250.00	5723.12	-270.71	-270.71	-743.77	0.00	419102.80	575082.68	N 32° 9' 6' 13" W 104° 13' 27.46"	
Bone Spring "A" Shale	5865.16	11.36	250.00	5787.00	-275.10	-275.10	-755.84	0.00	419098.21	575070.62	N 32° 9' 6' 8" W 104° 13' 27.60"	
	5900.00	11.36	250.00	5821.15	-277.45	-277.45	-762.29	0.00	419095.86	575064.17	N 32° 9' 6' 3" W 104° 13' 27.67"	
	6000.00	11.36	250.00	5919.19	-284.19	-284.19	-780.81	0.00	419089.13	575045.65	N 32° 9' 5' 58" W 104° 13' 27.89"	
	6100											

Comments	MD (ft)	Incl (°)	Azlm Grd (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6200.00	11.36	250.00	6115.27	-297.67	-297.67	-817.84	0.00	419075.85	575008.82	N 32 ° 9 7.45	W 104 13 28.32
	6300.00	11.36	250.00	6213.31	-304.41	-304.41	-836.36	0.00	419068.91	574990.11	N 32 ° 9 7.39	W 104 13 28.53
	6400.00	11.36	250.00	6311.35	-311.15	-311.15	-854.87	0.00	419062.17	574971.59	N 32 ° 9 7.32	W 104 13 28.75
	6500.00	11.36	250.00	6409.39	-317.89	-317.89	-873.39	0.00	419055.43	574953.08	N 32 ° 9 7.25	W 104 13 28.96
	6600.00	11.36	250.00	6507.43	-324.63	-324.63	-891.91	0.00	419048.69	574934.57	N 32 ° 9 7.18	W 104 13 29.18
	6700.00	11.36	250.00	6605.47	-331.37	-331.37	-910.42	0.00	419041.95	574916.05	N 32 ° 9 7.12	W 104 13 29.39
1st Bone Spring Ss	6721.96	11.36	250.00	6627.00	-332.85	-332.85	-914.49	0.00	419040.47	574911.88	N 32 ° 9 7.11	W 104 13 29.44
	6800.00	11.36	250.00	6703.51	-338.11	-338.11	-928.94	0.00	419035.21	574897.54	N 32 ° 9 7.06	W 104 13 29.61
KOP - Build 12"/100' DLS	6881.03	11.36	250.00	6782.95	-343.57	-343.57	-943.94	0.00	419029.75	574882.53	N 32 ° 9 7.00	W 104 13 29.78
	6900.00	10.83	281.52	6801.57	-344.47	-344.47	-947.46	12.00	419028.85	574878.01	N 32 ° 9 6.99	W 104 13 29.83
	7000.00	14.96	314.44	6899.34	-336.79	-336.79	-968.03	12.00	419036.53	574860.45	N 32 ° 9 7.07	W 104 13 30.04
	7100.00	24.79	335.39	6993.38	-308.59	-308.59	-984.04	12.00	419084.73	574842.44	N 32 ° 9 7.35	W 104 13 30.25
	7200.00	35.92	344.43	7079.58	-261.10	-261.10	-1000.71	12.00	419112.22	574825.77	N 32 ° 9 7.82	W 104 13 30.44
2nd Bone Spring Ss	7268.31	43.76	348.18	7132.00	-218.60	-218.60	-1010.94	12.00	419154.71	574815.54	N 32 ° 9 8.24	W 104 13 30.56
	7300.00	47.43	349.57	7154.17	-198.39	-198.39	-1015.30	12.00	419176.92	574811.18	N 32 ° 9 8.48	W 104 13 30.61
	7400.00	59.10	353.08	7213.89	-117.30	-117.30	-1027.18	12.00	419256.01	574799.30	N 32 ° 9 9.24	W 104 13 30.75
	7500.00	70.84	355.81	7256.13	-27.27	-27.27	-1035.83	12.00	419346.02	574790.65	N 32 ° 9 10.13	W 104 13 30.85
	7600.00	82.62	358.18	7279.04	69.75	69.75	-1040.87	12.00	419443.03	574785.82	N 32 ° 9 11.06	W 104 13 30.91
Landing Point	7670.82	90.97	359.77	7283.00	140.39	140.39	-1042.13	12.00	419513.66	574784.38	N 32 ° 9 11.79	W 104 13 30.92
	7700.00	90.97	359.77	7282.51	169.58	169.58	-1042.25	0.00	419542.83	574784.24	N 32 ° 9 12.08	W 104 13 30.92
	7800.00	90.97	359.77	7280.81	269.54	269.54	-1042.65	0.00	419642.81	574783.84	N 32 ° 9 13.07	W 104 13 30.93
	7900.00	90.97	359.77	7279.12	369.53	369.53	-1043.05	0.00	419742.78	574783.44	N 32 ° 9 14.06	W 104 13 30.93
	8000.00	90.97	359.77	7277.43	469.51	469.51	-1043.45	0.00	419842.78	574783.04	N 32 ° 9 15.05	W 104 13 30.93
	8100.00	90.97	359.77	7275.73	569.50	569.50	-1043.85	0.00	419942.74	574782.63	N 32 ° 9 16.04	W 104 13 30.94
	8200.00	90.97	359.77	7274.04	669.48	669.48	-1044.25	0.00	420042.71	574782.23	N 32 ° 9 17.03	W 104 13 30.94
	8300.00	90.97	359.77	7272.35	769.47	769.47	-1044.65	0.00	420142.69	574781.83	N 32 ° 9 18.02	W 104 13 30.94
	8400.00	90.97	359.77	7270.66	869.45	869.45	-1045.05	0.00	420242.66	574781.43	N 32 ° 9 19.01	W 104 13 30.95
	8500.00	90.97	359.77	7268.96	969.44	969.44	-1045.46	0.00	420342.64	574781.03	N 32 ° 9 19.99	W 104 13 30.95
	8600.00	90.97	359.77	7267.27	1069.42	1069.42	-1045.86	0.00	420442.61	574780.63	N 32 ° 9 20.98	W 104 13 30.95
	8700.00	90.97	359.77	7265.58	1169.41	1169.41	-1046.26	0.00	420542.59	574780.23	N 32 ° 9 21.97	W 104 13 30.96
	8800.00	90.97	359.77	7263.88	1269.39	1269.39	-1046.66	0.00	420642.57	574779.83	N 32 ° 9 22.96	W 104 13 30.96
	8900.00	90.97	359.77	7262.19	1369.38	1369.38	-1047.06	0.00	420742.54	574779.42	N 32 ° 9 23.95	W 104 13 30.96
	9000.00	90.97	359.77	7260.50	1469.36	1469.36	-1047.46	0.00	420842.52	574779.02	N 32 ° 9 24.94	W 104 13 30.97
	9100.00	90.97	359.77	7258.81	1569.35	1569.35	-1047.86	0.00	420942.49	574778.62	N 32 ° 9 25.93	W 104 13 30.97
	9200.00	90.97	359.77	7257.11	1669.33	1669.33	-1048.27	0.00	421042.47	574778.22	N 32 ° 9 26.92	W 104 13 30.97
	9300.00	90.97	359.77	7255.42	1769.32	1769.32	-1048.67	0.00	421142.44	574777.82	N 32 ° 9 27.91	W 104 13 30.98
	9400.00	90.97	359.77	7253.73	1869.30	1869.30	-1049.07	0.00	421242.42	574777.42	N 32 ° 9 28.90	W 104 13 30.98
	9500.00	90.97	359.77	7252.03	1969.29	1969.29	-1049.47	0.00	421342.40	574777.02	N 32 ° 9 29.89	W 104 13 30.99
	9600.00	90.97	359.77	7250.34	2069.27	2069.27	-1049.87	0.00	421442.37	574776.62	N 32 ° 9 30.88	W 104 13 30.99
	9700.00	90.97	359.77	7248.65	2169.26	2169.26	-1050.27	0.00	421542.35	574776.21	N 32 ° 9 31.87	W 104 13 30.99
	9800.00	90.97	359.77	7246.96	2269.24	2269.24	-1050.67	0.00	421642.32	574775.81	N 32 ° 9 32.86	W 104 13 31.00
	9900.00	90.97	359.77	7245.26	2369.23	2369.23	-1051.07	0.00	421742.30	574775.41	N 32 ° 9 33.85	W 104 13 31.00
	10000.00	90.97	359.77	7243.57	2469.21	2469.21	-1051.48	0.00	421842.27	574775.01	N 32 ° 9 34.84	W 104 13 31.00
	10100.00	90.97	359.77	7241.88	2569.20	2569.20	-1051.88	0.00	421942.25	574774.61	N 32 ° 9 35.82	W 104 13 31.01
	10200.00	90.97	359.77	7240.18	2669.18	2669.18	-1052.28	0.00	422042.23	574774.21	N 32 ° 9 36.81	W 104 13 31.01
	10300.00	90.97	359.77	7238.49	2769.17	2769.17	-1052.68	0.00	422142.20	574773.81	N 32 ° 9 37.80	W 104 13 31.01
	10400.00	90.97	359.77	7236.80	2869.15	2869.15	-1053.08	0.00	422242.18	574773.41	N 32 ° 9 38.79	W 104 13 31.02
	10500.00	90.97	359.77	7235.10	2969.14	2969.14	-1053.48	0.00	422342.15	574773.00	N 32 ° 9 39.78	W 104 13 31.02
	10600.00	90.97	359.77	7233.41	3069.12	3069.12	-1053.88	0.00	422442.13	574772.60	N 32 ° 9 40.77	W 104 13 31.02
	10700.00	90.97	359.77	7231.72	3169.10	3169.10	-1054.28	0.00	422542.10	574772.20	N 32 ° 9 41.76	W 104 13 31.03
	10800.00	90.97	359.77	7230.03	3269.09	3269.09	-1054.69	0.00	422642.08	574771.80	N 32 ° 9 42.75	W 104 13 31.03
	10900.00	90.97	359.77	7228.33	3369.07	3369.07	-1055.09	0.00	422742.06	574771.40	N 32 ° 9 43.74	W 104 13 31.03
	11000.00	90.97	359.77	7226.64	3469.06	3469.06	-1055.49	0.00	422842.03	574771.00	N 32 ° 9 44.73	W 104 13 31.04
	11100.00	90.97	359.77	7224.95	3569.04	3569.04	-1055.89	0.00	422942.01	574770.60	N 32 ° 9 45.72	W 104 13 31.04
	11200.00	90.97	359.77	7223.25	3669.03	3669.03	-1056.29	0.00	423041.98	574770.20	N 32 ° 9 46.71	W 104 13 31.04
	11300.00	90.97	359.77	7221.56	3769.01	3769.01	-1056.69	0.00	423141.96	574769.79	N 32 ° 9 47.70	W 104 13 31.05
	11400.00	90.97	359.77	7219.87	3869.00	3869.00	-1057.09	0.00	423241.93	574769.39	N 32 ° 9 48.69	W 104 13 31.05
	11500.00	90.97	359.77	7218.18	3968.98	3968.98	-1057.49	0.00	423341.91	574768.99	N 32 ° 9 49.68	W 104 13 31.06
	11600.00	90.97	359.77	7216.48	4068.97	4068.97	-1057.90	0.00	423441.89	574768.59	N 32 ° 9 50.67	W 104 13 31.06
	11700.00	90.97	359.77	7214.79	4168.95	4168.95	-1058.30	0.00	423541.86	574768.19	N 32 ° 9 51.65	W 104 13 31.06
	11800.00	90.97	359.77	7213.10	4268.94	4268.94	-1058.70	0.00	423641.84	574767.79	N 32 ° 9 52.64	W 104 13 31.07
	11900.00	90.97	359.77	7211.40	4368.92	4368.92	-1059.10	0.00	423741.81	574767.39	N 32 ° 9 53.63	W 104 13 31.07
	12000.00	90.97	359.77	7209.71	4468.91	4468.91	-1059.50	0.00	423841.79	574766.99	N 32 ° 9 54.62	W 104 13 31.07
	12100.00	90.97	359.77	7208.02	4568.89	4568.89	-1059.90	0.00	423941.76	574766.58	N 32 ° 9 55.61	W 104 13 31.08
Cimarex Scoter 6-31 Federal Com 43H - PBHL [330' FNL, 1242' FEL]	12101.08	90.97	359.77	7208.00	4569.97	4569.97	-1059.91	0.00	423942.84	574766.58	N 32 ° 9 55.62	W 104 13 31.08

Survey Type: 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	28.000	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Scoter 6-31 Federal Com 43H Rev2 01Oct18
	1	28.000	12101.075	1/100.000	30.000	30.000		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Scoter 6-31 Federal Com 43H

Report
(Def Plan)

(ua)

Report Date:	October 01, 2018 - 02:26 PM
Client:	Cimarex
Field:	NM Eddy County (NAD 83)
Structure / Slot:	Cimarex Scanner 6-31 Federal Com 43H / Cimarex Scanner 6-31 Federal Com 43H
Well:	Cimarex Scanner 6-31 Federal Com 43H
Borehole:	Original Borehole
UWI / APW:	Unknown / Unknown
Survey Name:	Cimarex Scanner 6-31 Federal Com 43H Rev2 01Oct18
Survey Date:	October 01, 2018
Tom / AHD / DDI / ERD Ratio:	106.138 ° / 5947.263 ft / 8.021 / 0.817
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long:	N 419373.280 NUS, E 575826.380 NUS
CRS Grid Convergence Angle:	0.0593 °
Grid Scale Factor:	0.99991045
Version / Patch:	2.10.740.0
Local Coord Referenced To: North: Total Corr Mag North->Grid 7.2804 °	
North Reference: Grid Convergence Used: 0.0593 °	
Magnetic Declination Model: HDM 2018	
Declination Date: October 01, 2018	
Magnetic Dip Angle: 59.841 °	
Total Magnetic Field Strength: 47882.053 nT	
Gravity Model: GARM	
Total Gravity Field Strength: 988.4320mgm (g 0.8065 Based)	
Magnetic Declination: 7.340 °	
Seabed / Ground Elevation: 3333.100 ft above MSL	
TVD Reference Elevation: 3359.100 ft above MSL	
TVD Reference Datum: RIGB	
Vertical Section Origin: 0.000 ft, 0.000 ft	
Vertical Section Azimuth: 0.000 ° (Grid North)	
Survey / DLS Computation: Minimum Curvature / Lubinski	
Comments	MD (ft) Incl (°) Azim Grid (°) TVD (ft) VSEC (ft) NS (ft) EW (ft) DLS (ft/100ft) Nothing (NUS) Eastng (NUS) Latitude (N/° ..) Longitude (E/W ..)
MD	0.00
Incl	0.00
Azim Grid	0.00
TVD	0.00
VSEC	0.00
NS	0.00
EW	0.00
DLS	N/A
Nothing (NUS)	419373.29
Eastng (NUS)	575826.39
Latitude (N/° ..)	32 ° 9 10.39
Longitude (E/W ..)	W 104 13 18.80
MD	1500.00
Incl	0.00
Azim Grid	250.00
TVD	1500.00
VSEC	0.00
NS	0.00
EW	0.00
DLS	419373.29
Nothing (NUS)	575826.39
Eastng (NUS)	575826.39
Latitude (N/° ..)	32 ° 9 10.39
Longitude (E/W ..)	W 104 13 18.80
MD	2064.22
Incl	11.36
Azim Grid	250.00
TVD	2064.50
VSEC	-19.21
NS	-343.57
EW	-343.57
DLS	-1042.13
Nothing (NUS)	419029.75
Eastng (NUS)	574882.53
Latitude (N/° ..)	32 ° 9 11.79
Longitude (E/W ..)	W 104 13 29.78
MD	7670.82
Incl	90.97
Azim Grid	358.77
TVD	7283.00
VSEC	140.39
NS	4569.97
EW	-1059.91
DLS	0.00
Nothing (NUS)	423942.84
Eastng (NUS)	574766.58
Latitude (N/° ..)	32 ° 9 55.82
Longitude (E/W ..)	W 104 13 31.08
MD	12101.08
Incl	90.97
Azim Grid	358.77
TVD	7208.00
VSEC	4569.97
NS	4569.97
EW	-1059.91
DLS	0.00
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