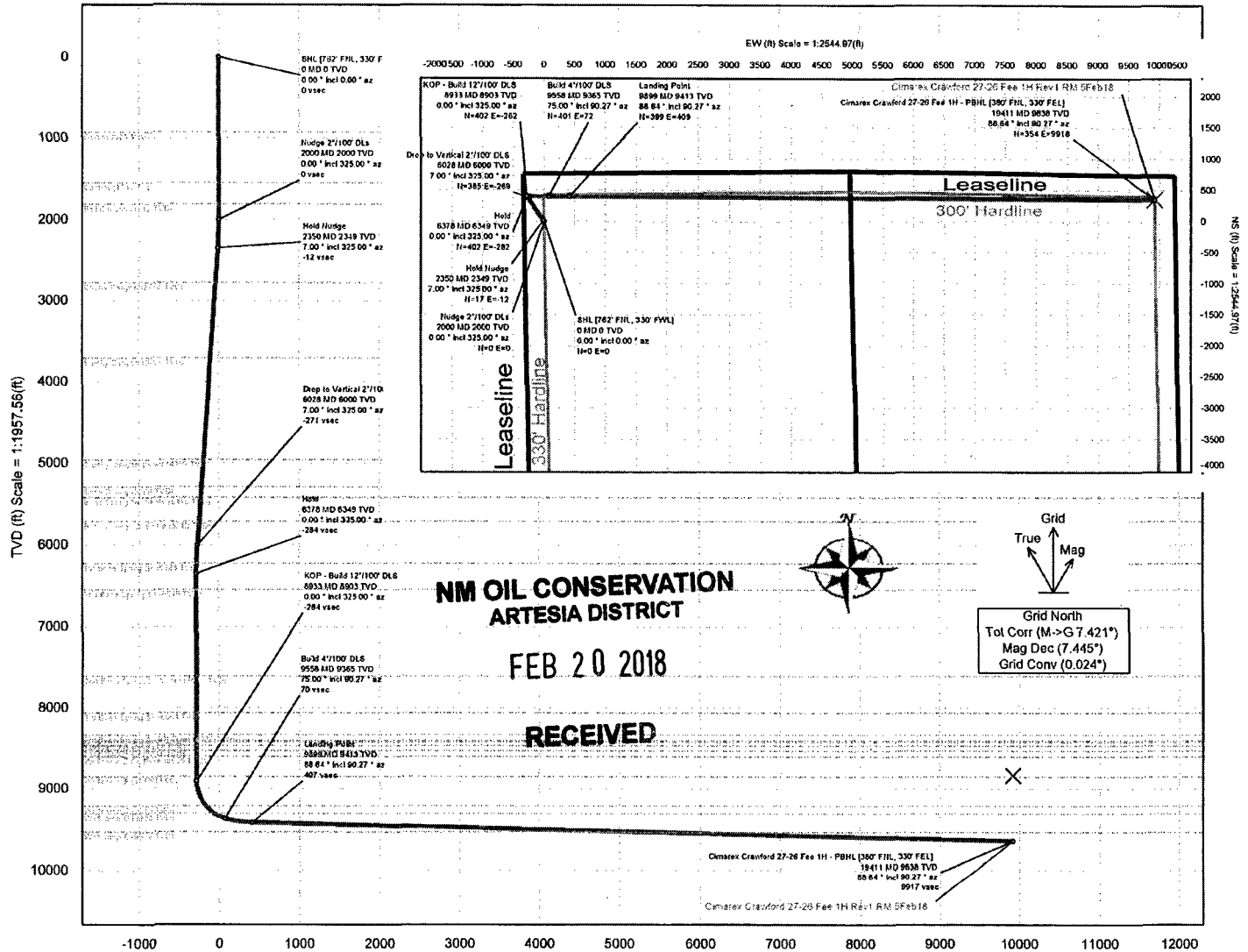


30-015-44693

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Crawford 27-26 Fee 1H	NM Eddy County (NAD 83)	Cimarex Crawford 27-26 Fee 1H

Gravity & Magnetic Parameters	Surface Location	Miscellaneous
Model: HDGM 2017 Dip: 88.884° Date: 05-Feb-2018	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Cimarex
MagDec: 7.445° FS: 47944.07nT Gravity FS: 938.445mgn (0.86655 Based)	Lat: N 32 11 38.77 Northing: 434150.2185 Grid Conv: 0.0239°	Slot: Crawford 27-26 TVD Ref: RKB(3373H above MSL)
	Lon: W 104 17 19.45 Easting: 655219.1185 Scale Fact: 0.99999591	Plan: Cimarex Crawford 27-26 Fee 1H Rev1 RM 5Feb18



Vertical Section (ft) Azim = 90.27° Scale = 1:1957.56(ft) Origin = ON-S, OE-W

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL (762 FHL, 330 FHL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Salado	928.00	0.00	325.00	928.00	0.00	0.00	0.00	0.00
Castile	1546.00	0.00	325.00	1546.00	0.00	0.00	0.00	0.00
Red Canyon	1812.00	0.00	325.00	1812.00	0.00	0.00	0.00	0.00
Hodge 2 1/100 DLS	2000.00	0.00	325.00	2000.00	0.00	0.00	0.00	0.00
Hold Hodge	2350.00	7.00	325.00	2349.13	-12.33	17.49	-12.25	0.00
Cherry Canyon	2780.08	7.00	325.00	2776.00	-42.60	60.43	-42.31	0.00
Brushy Canyon	3718.07	7.00	325.00	3707.00	-106.60	154.07	-107.88	0.00
Brushy Canyon Lower	4879.47	7.00	325.00	4850.00	-197.37	279.99	-196.05	0.00
Bone Spring	5310.94	7.00	325.00	5298.00	-220.69	313.08	-219.22	0.00
Bone Spring "A" Shale	5439.90	7.00	325.00	5416.00	-220.77	325.96	-220.24	0.00
Bone Spring "C" Shale	5736.11	7.00	325.00	5710.00	-250.61	355.53	-248.94	0.00
Drop to Vertical 2 1/100 DLS	6028.29	7.00	325.00	6000.00	-271.16	384.69	-269.37	0.00
1st Bone Spring Ss	6255.12	2.46	325.00	6226.00	-281.98	400.02	-280.09	2.00
Hold	6378.29	0.00	325.00	6349.13	-283.51	402.19	-281.61	2.00
2nd Bone Spring Ss	6578.16	0.00	325.00	6549.00	-283.51	402.19	-281.61	0.00
2nd Bone Spring Ss Lower	7640.16	0.00	325.00	7611.00	-283.51	402.19	-281.61	0.00
3rd Bone Spring Ss	8093.16	0.00	325.00	8064.00	-283.51	402.19	-281.61	0.00
3rd Bone Spring Ss "C" Zone	8368.16	0.00	325.00	8337.00	-283.51	402.19	-281.61	0.00
Wolfcamp A	8436.16	0.00	325.00	8407.00	-283.51	402.19	-281.61	0.00
Wolfcamp X Ss	8452.16	0.00	325.00	8423.00	-283.51	402.19	-281.61	0.00
Wolfcamp Y Ss	8498.16	0.00	325.00	8469.00	-283.51	402.19	-281.61	0.00
Wolfcamp Z Ss	8560.16	0.00	325.00	8531.00	-283.51	402.19	-281.61	0.00
Wolfcamp Z Ss Base	8634.16	0.00	325.00	8605.00	-283.51	402.19	-281.61	0.00
Wolfcamp A2	8879.16	0.00	325.00	8850.00	-283.51	402.19	-281.61	0.00
Wolfcamp B	8879.16	0.00	325.00	8850.00	-283.51	402.19	-281.61	0.00
KOP - Build 12 1/100 DLS	8933.56	0.00	325.00	8903.40	-283.51	402.19	-281.61	0.00
Wolfcamp C	9205.49	39.95	90.27	9210.00	-172.06	401.68	-170.17	12.00
Wolfcamp D	9407.86	57.04	90.27	9304.00	-65.83	401.16	-63.94	12.00
Build 4 1/100 DLS	9557.56	75.00	90.27	9364.50	70.36	400.52	72.27	12.00
Landing Point	9698.67	88.64	90.27	9413.00	407.23	396.93	409.12	4.00
Wolfcamp E	14802.62	88.64	90.27	9529.00	5309.81	375.84	5311.64	0.00
Cimarex Crawford 27-26 Fee 1H - PBHL (380° FHL, 330° FHL)	19410.74	88.64	90.27	9638.00	9916.64	354.13	9918.42	0.00

Cimarex Crawford 27-26 Fee 1H Rev1 RM 5Feb18 Anti-Collision Summary Report

Analysis Date-24hr Time:

February 05, 2018 - 11:16

Client:

Cimarex

Field:

NM Eddy County (NAD 83)

Structure:

Cimarex Crawford 27-26 Fee 1H

Slot:

Cimarex Crawford 27-26 Fee 1H

Well:

Cimarex Crawford 27-26 Fee 1H

Borehole:

Original Borehole

Scan MD Range:

0.00ft ~ 19410.74ft

Analysis Method:

3D Least Distance

Reference Trajectory:

Cimarex Crawford 27-26 Fee 1H Rev1 RM 5Feb18 (Non-Def Plan)

Depth Interval:

Every 10.00 Measured Depth (ft)

Rule Set:

NAL Procedure: D&M AntiCollision Standard S002

Min Pts:

All local minima indicated.

Version / Patch:

2.10.696.0

Database / Project:

US1153APP452.dbr.sib.com/drilling-NM Eddy County 2.10

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

Trajectory Error Model:

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan:

Not performed! Definitive Plans - Definitive surveys exclude definitive plans

Selection filters:

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

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

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Crawford 27-26 Fee 2H Rev0 RM 19Jan18 (Non-Def Plan)

20.01	16.50	17.51	3.50	N/A	N/A	MAS = 5.03 (m)	0.00	0.00	CIC<=15m<15.00		Enter Alert	Fail Minor
20.01	16.50	17.51	3.50	N/A	N/A	MAS = 5.03 (m)	24.00	24.00	OSF<1.50		WRP	
20.01	20.01	5.33	-0.01	1.50	1.50	OSF1.50	1920.00	1920.00	OSF<1.50		Enter Minor	
20.01	20.77	5.23	-0.70	1.44	1.44	OSF1.50	2000.00	2000.00	OSF<1.50		MinPl-CIC	
20.06	30.95	5.25	-0.33	1.43	1.43	OSF1.50	2020.00	2020.00	OSF<1.50		MINPT-O-EOU	
20.14	31.04	5.25	-0.30	1.43	1.43	OSF1.50	2030.00	2030.00	OSF<1.50		MinPls	
21.48	21.67	5.25	-0.18	1.48	1.48	OSF1.50	2100.00	2098.98	OSF<1.50		Exit Minor	
83.80	27.16	64.87	56.65	4.95	4.95	OSF1.50	2720.00	2716.37	OSF<5.00		Exit Alert	
507.82	73.83	457.77	433.97	10.61	10.61	OSF1.50	8070.00	8040.84	OSF<5.00		MINPT-O-EOU	
507.93	73.96	457.79	433.97	10.61	10.61	OSF1.50	8090.00	8060.84	OSF<5.00		MinPl-O-ADP	
509.90	74.59	459.34	435.31	10.56	10.56	OSF1.50	8200.00	8170.84	OSF<5.00		MinPl-O-SF	
845.23	255.33	674.17	589.86	5.00	5.00	OSF1.50	17560.00	9594.22	OSF<5.00		Enter Alert	
841.75	311.45	633.30	530.32	4.07	4.07	OSF1.50	19390.00	9637.51	OSF<5.00		MinPl-CIC	
841.81	311.56	633.26	530.23	4.07	4.07	OSF1.50	19400.00	9637.75	OSF<5.00		MinPls	
841.98	311.67	633.37	530.31	4.07	4.07	OSF1.50	19410.00	9637.98	OSF<5.00		MinPl-O-SF	
842.00	311.68	633.38	530.32	4.07	4.07	OSF1.50	19410.74	9638.00	OSF<5.00		TD	

Cimarex Crawford 27-26 Fee 1H Rev1 RM 5Feb18 Proposal Geodetic Report

(Non-Def Plan)

Report Date: February 05, 2018 - 11:16 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Crawford 27-26 Fee 1H / Cimarex Crawford 27-26 Fee 1H
Well: Cimarex Crawford 27-26 Fee 1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Crawford 27-26 Fee 1H Rev1 RM 5Feb18
Survey Date: January 19, 2018
Tort / AHD / DDI / ERD Ratio: 102.645° / 10691.124 ft / 6.344 / 1.109
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 11' 36.77392", W 104° 17' 18.44784"
Location Grid N/E Y/X: N 434150.200 ftUS, E 555219.100 ftUS
CRS Grid Convergence Angle: 0.0239°
Grid Scale Factor: 0.99990931
Version / Patch: 2.10.696.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 90.270° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3373.000 ft above MSL
Seabed / Ground Elevation: 3349.000 ft above MSL
Magnetic Declination: 7.445°
Total Gravity Field Strength: 998.4453mgm (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47944.070 nT
Magnetic Dip Angle: 59.886°
Declination Date: February 05, 2018
Magnetic Declination Model: HDGM 2017
North Reference: Grid North
Grid Convergence Used: 0.0239°
Total Corr Mag North->Grid North: 7.4209°
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 [762' FNL, 330' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	100.00	0.00	325.00	100.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	200.00	0.00	325.00	200.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	300.00	0.00	325.00	300.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	400.00	0.00	325.00	400.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	500.00	0.00	325.00	500.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	600.00	0.00	325.00	600.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	700.00	0.00	325.00	700.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	800.00	0.00	325.00	800.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	900.00	0.00	325.00	900.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
Salado	928.00	0.00	325.00	928.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1000.00	0.00	325.00	1000.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1100.00	0.00	325.00	1100.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1200.00	0.00	325.00	1200.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1300.00	0.00	325.00	1300.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1400.00	0.00	325.00	1400.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1500.00	0.00	325.00	1500.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
Castille	1546.00	0.00	325.00	1546.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1600.00	0.00	325.00	1600.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1700.00	0.00	325.00	1700.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1800.00	0.00	325.00	1800.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
Bell Canyon	1812.00	0.00	325.00	1812.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
	1900.00	0.00	325.00	1900.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
Nudge 2°/100'	2000.00	0.00	325.00	2000.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
DLS	2100.00	2.00	325.00	2099.98	-1.01	1.43	-1.00	2.00	434151.63	555218.10	N 32 11 36.79	W 104 17 18.46

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/°'")
Hold Nudge	2200.00	4.00	325.00	2199.84	-4.03	5.72	-4.00	2.00	434155.92	555215.10	N 32 11 36.83	W 104 17 18.49
	2300.00	6.00	325.00	2299.45	-9.06	12.86	-9.00	2.00	434163.05	555210.10	N 32 11 36.90	W 104 17 18.55
	2350.00	7.00	325.00	2349.13	-12.33	17.48	-12.25	2.00	434167.69	555206.85	N 32 11 36.95	W 104 17 18.59
	2400.00	7.00	325.00	2398.76	-15.85	22.48	-15.74	0.00	434172.66	555203.36	N 32 11 37.00	W 104 17 18.63
	2500.00	7.00	325.00	2498.01	-22.89	32.47	-22.73	0.00	434182.66	555196.37	N 32 11 37.10	W 104 17 18.71
Cherry Canyon	2600.00	7.00	325.00	2597.27	-29.92	42.45	-29.72	0.00	434192.65	555189.38	N 32 11 37.19	W 104 17 18.79
	2700.00	7.00	325.00	2696.52	-36.96	52.43	-36.71	0.00	434202.63	555182.39	N 32 11 37.29	W 104 17 18.87
	2780.08	7.00	325.00	2776.00	-42.60	60.43	-42.31	0.00	434210.62	555176.79	N 32 11 37.37	W 104 17 18.94
	2800.00	7.00	325.00	2795.78	-44.00	62.42	-43.70	0.00	434212.61	555175.40	N 32 11 37.39	W 104 17 18.96
	2900.00	7.00	325.00	2895.03	-51.03	72.40	-50.69	0.00	434222.59	555168.41	N 32 11 37.49	W 104 17 19.04
Brushy Canyon	3000.00	7.00	325.00	2994.28	-58.07	82.38	-57.68	0.00	434232.57	555161.42	N 32 11 37.59	W 104 17 19.12
	3100.00	7.00	325.00	3093.54	-65.11	92.36	-64.67	0.00	434242.56	555154.43	N 32 11 37.69	W 104 17 19.20
	3200.00	7.00	325.00	3192.79	-72.15	102.35	-71.66	0.00	434252.54	555147.44	N 32 11 37.79	W 104 17 19.28
	3300.00	7.00	325.00	3292.05	-79.18	112.33	-78.65	0.00	434262.52	555140.45	N 32 11 37.89	W 104 17 19.36
	3400.00	7.00	325.00	3391.30	-86.22	122.31	-85.64	0.00	434272.50	555133.46	N 32 11 37.98	W 104 17 19.44
Brushy Canyon	3500.00	7.00	325.00	3490.56	-93.26	132.30	-92.63	0.00	434282.48	555126.47	N 32 11 38.08	W 104 17 19.53
	3600.00	7.00	325.00	3589.81	-100.28	142.28	-99.62	0.00	434292.47	555119.48	N 32 11 38.18	W 104 17 19.61
	3700.00	7.00	325.00	3689.07	-107.33	152.26	-106.61	0.00	434302.45	555112.50	N 32 11 38.28	W 104 17 19.69
	3718.07	7.00	325.00	3707.00	-108.60	154.07	-107.88	0.00	434304.25	555110.23	N 32 11 38.30	W 104 17 19.70
	3800.00	7.00	325.00	3788.32	-114.37	162.24	-113.60	0.00	434312.43	555105.51	N 32 11 38.38	W 104 17 19.77
Brushy Canyon	3900.00	7.00	325.00	3887.56	-121.41	172.23	-120.60	0.00	434322.41	555098.52	N 32 11 38.48	W 104 17 19.85
	4000.00	7.00	325.00	3986.83	-128.44	182.21	-127.59	0.00	434332.39	555091.53	N 32 11 38.58	W 104 17 19.93
	4100.00	7.00	325.00	4086.09	-135.48	192.19	-134.58	0.00	434342.38	555084.54	N 32 11 38.68	W 104 17 20.01
	4200.00	7.00	325.00	4185.34	-142.52	202.16	-141.57	0.00	434352.36	555077.55	N 32 11 38.78	W 104 17 20.09
	4300.00	7.00	325.00	4284.59	-149.55	212.16	-148.56	0.00	434362.34	555070.56	N 32 11 38.87	W 104 17 20.18
Bone Spring	4400.00	7.00	325.00	4383.85	-156.59	222.14	-155.55	0.00	434372.32	555063.57	N 32 11 38.97	W 104 17 20.26
	4500.00	7.00	325.00	4483.10	-163.63	232.13	-162.54	0.00	434382.30	555056.58	N 32 11 39.07	W 104 17 20.34
	4600.00	7.00	325.00	4582.36	-170.67	242.11	-169.53	0.00	434392.29	555049.59	N 32 11 39.17	W 104 17 20.42
	4700.00	7.00	325.00	4681.61	-177.70	252.09	-176.52	0.00	434402.27	555042.60	N 32 11 39.27	W 104 17 20.50
	4800.00	7.00	325.00	4780.87	-184.74	262.07	-183.51	0.00	434412.25	555035.61	N 32 11 39.37	W 104 17 20.58
Brushy Canyon	4900.00	7.00	325.00	4880.12	-191.78	272.06	-190.50	0.00	434422.23	555028.62	N 32 11 39.47	W 104 17 20.66
	4979.47	7.00	325.00	4959.00	-197.37	279.99	-196.05	0.00	434430.16	555023.07	N 32 11 39.55	W 104 17 20.73
	5000.00	7.00	325.00	4979.38	-198.81	282.04	-197.49	0.00	434432.21	555021.63	N 32 11 39.57	W 104 17 20.74
	5100.00	7.00	325.00	5078.63	-205.85	292.02	-204.48	0.00	434442.20	555014.64	N 32 11 39.66	W 104 17 20.83
	5200.00	7.00	325.00	5177.89	-212.89	302.01	-211.47	0.00	434452.18	555007.65	N 32 11 39.76	W 104 17 20.91
Bone Spring "A"	5300.00	7.00	325.00	5277.14	-219.92	311.99	-218.46	0.00	434462.16	555000.66	N 32 11 39.86	W 104 17 20.99
	5310.94	7.00	325.00	5286.00	-220.69	313.08	-219.22	0.00	434463.25	554999.90	N 32 11 39.87	W 104 17 21.00
	5400.00	7.00	325.00	5376.40	-226.96	321.97	-225.45	0.00	434472.14	554993.67	N 32 11 39.96	W 104 17 21.07
	5439.90	7.00	325.00	5416.00	-229.77	325.96	-228.24	0.00	434476.13	554990.88	N 32 11 40.00	W 104 17 21.10
	5500.00	7.00	325.00	5475.65	-234.00	331.95	-232.44	0.00	434482.12	554986.68	N 32 11 40.06	W 104 17 21.15
Bone Spring "C"	5600.00	7.00	325.00	5574.90	-241.04	341.94	-239.43	0.00	434492.11	554979.69	N 32 11 40.16	W 104 17 21.23
	5700.00	7.00	325.00	5674.16	-248.07	351.92	-246.42	0.00	434502.09	554972.71	N 32 11 40.26	W 104 17 21.31
	5736.11	7.00	325.00	5710.00	-250.61	355.53	-248.94	0.00	434505.69	554970.18	N 32 11 40.29	W 104 17 21.34
	5800.00	7.00	325.00	5773.41	-255.11	361.90	-253.41	0.00	434512.07	554965.72	N 32 11 40.36	W 104 17 21.39
	5900.00	7.00	325.00	5872.67	-262.15	371.89	-260.40	0.00	434522.05	554958.73	N 32 11 40.45	W 104 17 21.48
Drop to Vertical 27100' DLS	6000.00	7.00	325.00	5971.92	-269.18	381.87	-267.39	0.00	434532.03	554951.74	N 32 11 40.55	W 104 17 21.56
	6028.29	7.00	325.00	6000.00	-271.18	384.69	-269.37	0.00	434534.86	554949.76	N 32 11 40.58	W 104 17 21.58
	6100.00	5.57	325.00	6071.28	-275.71	391.12	-273.87	2.00	434541.29	554945.26	N 32 11 40.65	W 104 17 21.63
	6200.00	3.57	325.00	6170.96	-280.30	397.64	-278.43	2.00	434547.81	554940.69	N 32 11 40.71	W 104 17 21.69
	6255.12	2.46	325.00	6226.00	-281.98	400.02	-280.09	2.00	434550.18	554939.03	N 32 11 40.73	W 104 17 21.71
1st Bone Spring Ss	6300.00	1.57	325.00	6270.85	-282.89	401.31	-281.00	2.00	434551.47	554938.13	N 32 11 40.75	W 104 17 21.72
	6378.29	0.00	325.00	6349.13	-283.51	402.19	-281.61	2.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	6400.00	0.00	325.00	6370.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°100ft)	Northing (ftUS)	Eastings (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
2nd Bone Spring Ss	6500.00	0.00	325.00	6470.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	6578.16	0.00	325.00	6549.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	6600.00	0.00	325.00	6570.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	6700.00	0.00	325.00	6670.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	6800.00	0.00	325.00	6770.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	6900.00	0.00	325.00	6870.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7000.00	0.00	325.00	6970.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7100.00	0.00	325.00	7070.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7200.00	0.00	325.00	7170.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7300.00	0.00	325.00	7270.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7400.00	0.00	325.00	7370.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7500.00	0.00	325.00	7470.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7600.00	0.00	325.00	7570.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
2nd Bone Spring Ss Lower	7640.16	0.00	325.00	7611.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7700.00	0.00	325.00	7670.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7800.00	0.00	325.00	7770.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	7900.00	0.00	325.00	7870.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8000.00	0.00	325.00	7970.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
3rd Bone Spring Ss	8093.16	0.00	325.00	8064.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8100.00	0.00	325.00	8070.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8200.00	0.00	325.00	8170.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8300.00	0.00	325.00	8270.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
3rd Bone Spring Ss "C" Zone	8366.16	0.00	325.00	8337.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8400.00	0.00	325.00	8370.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Wolfcamp A	8436.16	0.00	325.00	8407.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Wolfcamp X Ss	8452.16	0.00	325.00	8423.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Wolfcamp Y Ss	8498.16	0.00	325.00	8469.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8500.00	0.00	325.00	8470.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Wolfcamp Z Ss	8560.16	0.00	325.00	8531.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Wolfcamp Z Ss	8600.00	0.00	325.00	8570.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Wolfcamp Z Ss Base	8634.16	0.00	325.00	8605.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8700.00	0.00	325.00	8670.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8800.00	0.00	325.00	8770.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Wolfcamp B Wolfcamp A2	8879.16	0.00	325.00	8850.00	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	8900.00	0.00	325.00	8870.84	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
KOP - Build 12"/100' DLS	8932.56	0.00	325.00	8903.40	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
	9000.00	8.09	90.27	8970.62	-278.75	402.16	-278.86	12.00	434552.33	554942.27	N 32 11 40.75	W 104 17 21.87
	9100.00	20.09	90.27	9067.43	-254.44	402.05	-252.55	12.00	434552.21	554966.57	N 32 11 40.75	W 104 17 21.38
	9200.00	32.09	90.27	9157.08	-210.54	401.84	-208.65	12.00	434552.00	555010.47	N 32 11 40.75	W 104 17 20.87
Wolfcamp C	9265.49	39.95	90.27	9210.00	-172.06	401.66	-170.17	12.00	434551.82	555048.95	N 32 11 40.75	W 104 17 20.43
	9300.00	44.09	90.27	9235.63	-148.96	401.55	-147.07	12.00	434551.71	555072.04	N 32 11 40.75	W 104 17 20.16
	9400.00	56.09	90.27	9299.67	-72.39	401.19	-70.50	12.00	434551.35	555148.60	N 32 11 40.74	W 104 17 19.27
Wolfcamp D	9407.86	57.04	90.27	9304.00	-65.83	401.16	-63.94	12.00	434551.32	555155.16	N 32 11 40.74	W 104 17 19.19
	9500.00	68.09	90.27	9346.39	15.82	400.78	17.71	12.00	434550.94	555236.80	N 32 11 40.74	W 104 17 18.24
Build 4"/100' DLS	9557.56	75.00	90.27	9384.60	70.38	400.52	72.27	12.00	434550.68	555291.36	N 32 11 40.74	W 104 17 17.60

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 ° ' ")
Landing Point	9600.00	76.70	90.27	9374.97	111.54	400.32	113.42	4.00	434550.49	555332.51	N 32 11 40.73	W 104 17 17.13
	9700.00	80.70	90.27	9394.57	209.58	399.86	211.48	4.00	434550.02	555430.54	N 32 11 40.73	W 104 17 15.99
	9800.00	84.70	90.27	9407.27	308.74	399.39	310.83	4.00	434549.56	555529.70	N 32 11 40.72	W 104 17 14.83
	9898.87	88.64	90.27	9413.00	407.23	398.93	409.12	4.00	434549.09	555628.18	N 32 11 40.72	W 104 17 13.69
	9900.00	88.64	90.27	9413.03	408.56	398.92	410.44	0.00	434549.09	555623.51	N 32 11 40.72	W 104 17 13.67
	10000.00	88.64	90.27	9415.40	508.53	398.45	510.41	0.00	434548.62	555729.47	N 32 11 40.71	W 104 17 12.51
	10100.00	88.64	90.27	9417.76	608.50	397.98	610.38	0.00	434548.15	555829.43	N 32 11 40.71	W 104 17 11.34
	10200.00	88.64	90.27	9420.13	708.47	397.51	710.36	0.00	434547.67	555929.39	N 32 11 40.70	W 104 17 10.18
	10300.00	88.64	90.27	9422.50	808.45	397.04	810.33	0.00	434547.20	556029.35	N 32 11 40.70	W 104 17 9.02
	10400.00	88.64	90.27	9424.86	908.42	396.57	910.30	0.00	434546.73	556129.31	N 32 11 40.69	W 104 17 7.85
	10500.00	88.64	90.27	9427.23	1008.39	396.10	1010.27	0.00	434546.26	556229.27	N 32 11 40.69	W 104 17 6.69
	10600.00	88.64	90.27	9429.59	1108.36	395.63	1110.24	0.00	434545.79	556329.24	N 32 11 40.68	W 104 17 5.53
	10700.00	88.64	90.27	9431.96	1208.33	395.16	1210.21	0.00	434545.32	556429.20	N 32 11 40.68	W 104 17 4.36
	10800.00	88.64	90.27	9434.32	1308.31	394.69	1310.18	0.00	434544.85	556529.16	N 32 11 40.67	W 104 17 3.20
	10900.00	88.64	90.27	9436.69	1408.28	394.21	1410.15	0.00	434544.38	556629.12	N 32 11 40.67	W 104 17 2.04
	11000.00	88.64	90.27	9439.05	1508.25	393.74	1510.12	0.00	434543.91	556729.08	N 32 11 40.66	W 104 17 0.87
	11100.00	88.64	90.27	9441.42	1608.22	393.27	1610.09	0.00	434543.44	556829.04	N 32 11 40.66	W 104 16 59.71
	11200.00	88.64	90.27	9443.78	1708.19	392.80	1710.06	0.00	434542.97	556929.01	N 32 11 40.65	W 104 16 58.55
	11300.00	88.64	90.27	9446.15	1808.17	392.33	1810.04	0.00	434542.49	557029.97	N 32 11 40.65	W 104 16 57.38
	11400.00	88.64	90.27	9448.51	1908.14	391.86	1910.01	0.00	434542.02	557129.93	N 32 11 40.64	W 104 16 56.22
	11500.00	88.64	90.27	9450.88	2008.11	391.39	2009.98	0.00	434541.55	557229.89	N 32 11 40.64	W 104 16 55.06
Wolfcamp E	11600.00	88.64	90.27	9453.25	2108.08	390.92	2109.95	0.00	434541.08	557329.85	N 32 11 40.63	W 104 16 53.89
	11700.00	88.64	90.27	9455.61	2208.06	390.45	2209.92	0.00	434540.61	557429.81	N 32 11 40.63	W 104 16 52.73
	11800.00	88.64	90.27	9457.98	2308.03	389.98	2309.89	0.00	434540.14	557529.78	N 32 11 40.62	W 104 16 51.57
	11900.00	88.64	90.27	9460.34	2408.00	389.51	2409.86	0.00	434539.67	557629.74	N 32 11 40.62	W 104 16 50.40
	12000.00	88.64	90.27	9462.71	2507.97	389.03	2509.83	0.00	434539.20	557729.70	N 32 11 40.61	W 104 16 49.24
	12100.00	88.64	90.27	9465.07	2607.94	388.56	2609.80	0.00	434538.73	557829.66	N 32 11 40.61	W 104 16 48.08
	12200.00	88.64	90.27	9467.44	2707.92	388.09	2709.77	0.00	434538.26	557929.62	N 32 11 40.60	W 104 16 46.91
	12300.00	88.64	90.27	9469.80	2807.89	387.62	2809.74	0.00	434537.79	558029.58	N 32 11 40.59	W 104 16 45.75
	12400.00	88.64	90.27	9472.17	2907.86	387.15	2909.72	0.00	434537.31	558129.55	N 32 11 40.59	W 104 16 44.59
	12500.00	88.64	90.27	9474.53	3007.83	386.68	3009.69	0.00	434536.84	558229.51	N 32 11 40.58	W 104 16 43.42
	12600.00	88.64	90.27	9476.90	3107.80	386.21	3109.66	0.00	434536.37	558329.47	N 32 11 40.58	W 104 16 42.26
	12700.00	88.64	90.27	9479.26	3207.78	385.74	3209.63	0.00	434535.90	558429.43	N 32 11 40.58	W 104 16 41.10
	12800.00	88.64	90.27	9481.63	3307.75	385.27	3309.60	0.00	434535.43	558529.39	N 32 11 40.57	W 104 16 39.93
	12900.00	88.64	90.27	9484.00	3407.72	384.80	3409.57	0.00	434534.96	558629.35	N 32 11 40.57	W 104 16 38.77
	13000.00	88.64	90.27	9486.36	3507.69	384.32	3509.54	0.00	434534.49	558729.32	N 32 11 40.56	W 104 16 37.61
	13100.00	88.64	90.27	9488.73	3607.66	383.85	3609.51	0.00	434534.02	558829.28	N 32 11 40.56	W 104 16 36.44
	13200.00	88.64	90.27	9491.09	3707.64	383.38	3709.48	0.00	434533.55	558929.24	N 32 11 40.55	W 104 16 35.28
	13300.00	88.64	90.27	9493.46	3807.61	382.91	3809.45	0.00	434533.08	559029.20	N 32 11 40.55	W 104 16 34.12
	13400.00	88.64	90.27	9495.82	3907.58	382.44	3809.42	0.00	434532.61	559129.16	N 32 11 40.54	W 104 16 32.95
	13500.00	88.64	90.27	9498.19	4007.55	381.97	4009.40	0.00	434532.13	559229.12	N 32 11 40.53	W 104 16 31.79
Wolfcamp E	13600.00	88.64	90.27	9500.55	4107.52	381.50	4109.37	0.00	434531.66	559329.09	N 32 11 40.53	W 104 16 30.63
	13700.00	88.64	90.27	9502.92	4207.50	381.03	4209.34	0.00	434531.19	559429.05	N 32 11 40.52	W 104 16 29.46
	13800.00	88.64	90.27	9505.28	4307.47	380.56	4309.31	0.00	434530.72	559529.01	N 32 11 40.52	W 104 16 28.30
	13900.00	88.64	90.27	9507.65	4407.44	380.09	4409.28	0.00	434530.25	559629.97	N 32 11 40.51	W 104 16 27.14
	14000.00	88.64	90.27	9510.01	4507.41	379.62	4509.25	0.00	434529.78	559727.93	N 32 11 40.51	W 104 16 25.97
	14100.00	88.64	90.27	9512.38	4607.38	379.14	4609.22	0.00	434529.31	559827.89	N 32 11 40.50	W 104 16 24.81
	14200.00	88.64	90.27	9514.75	4707.36	378.67	4709.19	0.00	434528.84	559927.86	N 32 11 40.50	W 104 16 23.65
	14300.00	88.64	90.27	9517.11	4807.33	378.20	4809.16	0.00	434528.37	560027.82	N 32 11 40.49	W 104 16 22.48
	14400.00	88.64	90.27	9519.48	4907.30	377.73	4909.13	0.00	434527.90	560127.78	N 32 11 40.49	W 104 16 21.32
	14500.00	88.64	90.27	9521.84	5007.27	377.26	5009.11	0.00	434527.43	560227.74	N 32 11 40.48	W 104 16 20.16

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 ° ' ")
	15200.00	88.64	90.27	9538.40	5707.08	373.96	5708.90	0.00	434524.13	560927.47	N 32 11 40.45	W 104 16 12.01
	15300.00	88.64	90.27	9540.76	5807.05	373.49	5808.87	0.00	434523.66	561027.43	N 32 11 40.44	W 104 16 10.85
	15400.00	88.64	90.27	9543.13	5907.02	373.02	5908.84	0.00	434523.19	561127.40	N 32 11 40.44	W 104 16 9.69
	15500.00	88.64	90.27	9545.50	6006.99	372.55	6008.81	0.00	434522.72	561227.36	N 32 11 40.43	W 104 16 8.52
	15600.00	88.64	90.27	9547.86	6106.96	372.08	6108.79	0.00	434522.25	561327.32	N 32 11 40.42	W 104 16 7.36
	15700.00	88.64	90.27	9550.23	6206.94	371.61	6208.76	0.00	434521.77	561427.28	N 32 11 40.42	W 104 16 6.20
	15800.00	88.64	90.27	9552.59	6306.91	371.14	6308.73	0.00	434521.30	561527.24	N 32 11 40.41	W 104 16 5.03
	15900.00	88.64	90.27	9554.96	6406.88	370.67	6408.70	0.00	434520.83	561627.20	N 32 11 40.41	W 104 16 3.87
	16000.00	88.64	90.27	9557.32	6506.85	370.20	6508.67	0.00	434520.36	561727.17	N 32 11 40.40	W 104 16 2.71
	16100.00	88.64	90.27	9559.69	6606.82	369.73	6608.64	0.00	434519.89	561827.13	N 32 11 40.40	W 104 16 1.54
	16200.00	88.64	90.27	9562.05	6706.80	369.25	6708.61	0.00	434519.42	561927.09	N 32 11 40.39	W 104 16 0.38
	16300.00	88.64	90.27	9564.42	6806.77	368.78	6808.58	0.00	434518.95	562027.05	N 32 11 40.39	W 104 15 59.22
	16400.00	88.64	90.27	9566.78	6906.74	368.31	6908.55	0.00	434518.48	562127.01	N 32 11 40.38	W 104 15 58.05
	16500.00	88.64	90.27	9569.15	7006.71	367.84	7008.52	0.00	434518.01	562226.97	N 32 11 40.38	W 104 15 56.89
	16600.00	88.64	90.27	9571.51	7106.68	367.37	7108.49	0.00	434517.54	562326.94	N 32 11 40.37	W 104 15 55.73
	16700.00	88.64	90.27	9573.88	7206.66	366.90	7208.47	0.00	434517.07	562426.90	N 32 11 40.37	W 104 15 54.56
	16800.00	88.64	90.27	9576.25	7306.63	366.43	7308.44	0.00	434516.59	562526.86	N 32 11 40.36	W 104 15 53.40
	16900.00	88.64	90.27	9578.61	7406.60	365.96	7408.41	0.00	434516.12	562626.82	N 32 11 40.36	W 104 15 52.24
	17000.00	88.64	90.27	9580.98	7506.57	365.49	7508.38	0.00	434515.65	562726.78	N 32 11 40.35	W 104 15 51.07
	17100.00	88.64	90.27	9583.34	7606.54	365.02	7608.35	0.00	434515.18	562826.74	N 32 11 40.35	W 104 15 49.91
	17200.00	88.64	90.27	9585.71	7706.52	364.54	7708.32	0.00	434514.71	562926.71	N 32 11 40.34	W 104 15 48.75
	17300.00	88.64	90.27	9588.07	7806.49	364.07	7808.29	0.00	434514.24	563026.67	N 32 11 40.34	W 104 15 47.58
	17400.00	88.64	90.27	9590.44	7906.46	363.60	7908.26	0.00	434513.77	563126.63	N 32 11 40.33	W 104 15 46.42
	17500.00	88.64	90.27	9592.80	8006.43	363.13	8008.23	0.00	434513.30	563226.59	N 32 11 40.32	W 104 15 45.26
	17600.00	88.64	90.27	9595.17	8106.40	362.66	8108.20	0.00	434512.83	563326.55	N 32 11 40.32	W 104 15 44.09
	17700.00	88.64	90.27	9597.53	8206.38	362.19	8208.17	0.00	434512.36	563426.51	N 32 11 40.31	W 104 15 42.93
	17800.00	88.64	90.27	9599.90	8306.35	361.72	8308.15	0.00	434511.89	563526.48	N 32 11 40.31	W 104 15 41.76
	17900.00	88.64	90.27	9602.27	8406.32	361.25	8408.12	0.00	434511.41	563626.44	N 32 11 40.30	W 104 15 40.60
	18000.00	88.64	90.27	9604.63	8506.29	360.78	8508.09	0.00	434510.94	563726.40	N 32 11 40.30	W 104 15 39.44
	18100.00	88.64	90.27	9607.00	8606.26	360.31	8608.06	0.00	434510.47	563826.36	N 32 11 40.29	W 104 15 38.27
	18200.00	88.64	90.27	9609.36	8706.24	359.83	8708.03	0.00	434510.00	563926.32	N 32 11 40.29	W 104 15 37.11
	18300.00	88.64	90.27	9611.73	8806.21	359.36	8808.00	0.00	434509.53	564026.28	N 32 11 40.28	W 104 15 35.95
	18400.00	88.64	90.27	9614.09	8906.18	358.89	8907.97	0.00	434509.06	564126.24	N 32 11 40.28	W 104 15 34.78
	18500.00	88.64	90.27	9616.46	9006.15	358.42	9007.94	0.00	434508.59	564226.21	N 32 11 40.27	W 104 15 33.62
	18600.00	88.64	90.27	9618.82	9106.12	357.95	9107.91	0.00	434508.12	564326.17	N 32 11 40.27	W 104 15 32.46
	18700.00	88.64	90.27	9621.19	9206.10	357.48	9207.88	0.00	434507.65	564426.13	N 32 11 40.26	W 104 15 31.29
	18800.00	88.64	90.27	9623.55	9306.07	357.01	9307.85	0.00	434507.18	564526.09	N 32 11 40.26	W 104 15 30.13
	18900.00	88.64	90.27	9625.92	9406.04	356.54	9407.83	0.00	434506.71	564626.05	N 32 11 40.25	W 104 15 28.97
	19000.00	88.64	90.27	9628.28	9506.01	356.07	9507.80	0.00	434506.23	564726.01	N 32 11 40.24	W 104 15 27.80
	19100.00	88.64	90.27	9630.65	9605.98	355.60	9607.77	0.00	434505.76	564825.98	N 32 11 40.24	W 104 15 26.64
	19200.00	88.64	90.27	9633.02	9705.96	355.13	9707.74	0.00	434505.29	564925.94	N 32 11 40.23	W 104 15 25.48
	19300.00	88.64	90.27	9635.38	9805.93	354.65	9807.71	0.00	434504.82	565025.90	N 32 11 40.23	W 104 15 24.31
	19400.00	88.64	90.27	9637.75	9905.90	354.18	9907.68	0.00	434504.35	565125.86	N 32 11 40.22	W 104 15 23.15
Cimarex Crawford 27-26 Fee 1H - PBHL [380' FNL, 330' FEL]	19410.74	88.64	90.27	9638.00	9916.64	354.13	9918.42	0.00	434504.30	565136.60	N 32 11 40.22	W 104 15 23.03

Survey Type: Non-Def Plan

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

Survey Program:

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 ° ' ")
Description	Part		MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey		
	1		0.000	24.000	1/100.000	30.000	30.000		NAL_MWD_IFR1-Depth Only	Original Borehole / Cimarex Crawford 27-26 Fee 1H Rev1 RM		
	1		24.000	19410.743	1/100.000	30.000	30.000		NAL_MWD_IFR1	Original Borehole / Cimarex Crawford 27-26 Fee 1H Rev1 RM		

Cimarex Crawford 27-26 Fee 1H Rev1 RM 5Feb18 Proposal Geodetic Report

(Non-Def Plan)

Report Date: February 05, 2018 - 11:16 AM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Crawford 27-26 Fee 1H / Cimarex Crawford 27-26 Fee 1H
Well: Cimarex Crawford 27-26 Fee 1H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Crawford 27-26 Fee 1H Rev1 RM 5Feb18
Survey Date: January 19, 2018
Tort / AHD / DDI / ERD Ratio: 102.645° / 10691.124 ft / 6.344 / 1.109
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 11' 36.77392", W 104° 17' 18.44784"
Location Grid N/E Y/X: N 434150.200 ftUS, E 555219.100 ftUS
CRS Grid Convergence Angle: 0.0239°
Grid Scale Factor: 0.99980931
Version / Patch: 2.10.696.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 90.270° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3373.000 ft above MSL
Seabed / Ground Elevation: 3349.000 ft above MSL
Magnetic Declination: 7.445°
Total Gravity Field Strength: 998.4453mgm (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47944.070 nT
Magnetic Dip Angle: 59.886°
Declination Date: February 05, 2018
Magnetic Declination Model: HDGM 2017
North Reference: Grid North
Grid Convergence Used: 0.0239°
Total Corr Mag North->Grid North: 7.4209°
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 [762' FNL, 330' FWL] Nudge 2°/100'	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
DLS	2000.00	0.00	325.00	2000.00	0.00	0.00	0.00	0.00	434150.20	555219.10	N 32 11 36.77	W 104 17 18.45
Hold Nudge	2350.00	7.00	325.00	2349.13	-12.33	17.49	-12.25	2.00	434167.69	555206.85	N 32 11 36.95	W 104 17 18.59
Drop to Vertical	6028.29	7.00	325.00	6000.00	-271.18	384.69	-269.37	0.00	434534.86	554949.76	N 32 11 40.58	W 104 17 21.58
2°/100' DLS	6378.29	0.00	325.00	6349.13	-283.51	402.19	-281.61	2.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
Hold	8932.56	0.00	325.00	8903.40	-283.51	402.19	-281.61	0.00	434552.35	554937.51	N 32 11 40.75	W 104 17 21.72
KOP - Build	9557.56	75.00	90.27	9364.60	70.38	400.52	72.27	12.00	434550.68	555291.36	N 32 11 40.74	W 104 17 17.60
12°/100' DLS	9898.67	88.64	90.27	9413.00	407.23	398.93	409.12	4.00	434549.09	555628.18	N 32 11 40.72	W 104 17 13.69
Build 4°/100'	19410.74	88.64	90.27	9638.00	9916.64	354.13	9918.42	0.00	434504.30	565136.60	N 32 11 40.22	W 104 15 23.03
DLS												
Landing Point												
Cimarex												
Crawford 27-26												
Fee 1H - PBHL												
[380' FNL, 330' FEL]												

Survey Type: Non-Def Plan

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

Survey Program:

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Eastng (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Description	Part		MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey		
	1		0.000	24.000	1/100.000	30.000	30.000		NAL_MWD_IFR1-Depth Only	Original Borehole / Cimarex Crawford 27-26 Fee 1H Rev1 RM		
	1		24.000	19410.743	1/100.000	30.000	30.000		NAL_MWD_IFR1	Original Borehole / Cimarex Crawford 27-26 Fee 1H Rev1 RM		