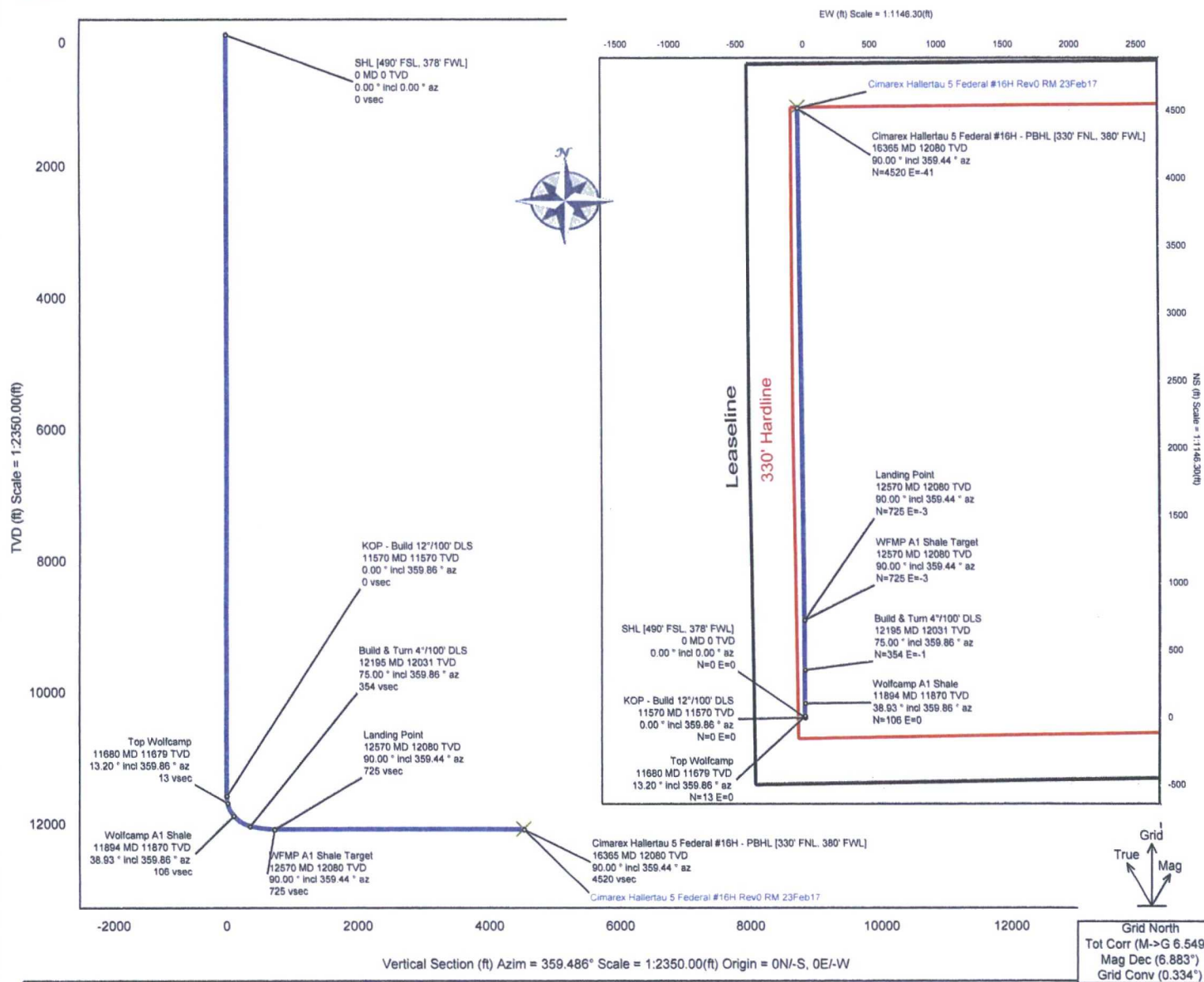


Borehole:			Well:			Field:			Structure:		
Original Borehole			Cimarex Hallertau 5 Federal #16H			NM Lea County (NAD 83)			Cimarex Hallertau 5 Federal #16H		
Gravity & Magnetic Parameters				Surface Location				Miscellaneous			
Model: HDGM 2016 Dip: 59.781° Date: 23-Feb-2017				NAD83 New Mexico State Plane, Eastern Zone, US Feet				Cimarex			
Lat: N 32 3 88.80 Northings: 388406.478US Grid Conv: 0.3338°				Slot: Hallertau 5 TVD Ref: RKB(3291.9ft above MSL)				Federal #16H			
MagDec: 6.883° FB: 47996.889nT Gravity FB: 998.426mgm (9.80665 Based)				Lon: W 103 42 16.59 Eastings: 736096.048US Scale Fact: 0.99995253				Plan: Cimarex Hallertau 5 Federal #16H Rev0 RM 23Feb17			



Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [490' FSL, 378' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
KOP - Build 12"/100' DLS	11569.98	0.00	359.86	11569.98	0.00	0.00	0.00	0.00
Top Wolfcamp	11679.97	13.20	359.86	11679.00	12.61	12.61	-0.03	12.00
Wolfcamp A1 Shale	11894.39	38.93	359.86	11870.00	106.03	106.03	-0.26	12.00
Build & Turn 4"/100' DLS	12194.98	75.00	359.86	12031.18	353.88	353.89	-0.86	12.00
Landing Point	12570.13	90.00	359.44	12080.00	724.75	724.76	-3.17	4.00
WFMP A1 Shale Target	12570.13	90.00	359.44	12080.00	724.76	724.76	-3.17	0.00
Cimarex Hallertau 5 Federal #16H - PBHL [330' FNL, 380' FWL]	16365.15	90.00	359.44	12080.00	4519.78	4519.59	-40.55	0.00

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	359.86	2600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2700.00	0.00	359.86	2700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2800.00	0.00	359.86	2800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2900.00	0.00	359.86	2900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3000.00	0.00	359.86	3000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3100.00	0.00	359.86	3100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3200.00	0.00	359.86	3200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3300.00	0.00	359.86	3300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3400.00	0.00	359.86	3400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3500.00	0.00	359.86	3500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3600.00	0.00	359.86	3600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3700.00	0.00	359.86	3700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3800.00	0.00	359.86	3800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	3900.00	0.00	359.86	3900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4000.00	0.00	359.86	4000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4100.00	0.00	359.86	4100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4200.00	0.00	359.86	4200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4300.00	0.00	359.86	4300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4400.00	0.00	359.86	4400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4500.00	0.00	359.86	4500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4600.00	0.00	359.86	4600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4700.00	0.00	359.86	4700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4800.00	0.00	359.86	4800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	4900.00	0.00	359.86	4900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5000.00	0.00	359.86	5000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5100.00	0.00	359.86	5100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5200.00	0.00	359.86	5200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5300.00	0.00	359.86	5300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5400.00	0.00	359.86	5400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5500.00	0.00	359.86	5500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5600.00	0.00	359.86	5600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5700.00	0.00	359.86	5700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5800.00	0.00	359.86	5800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	5900.00	0.00	359.86	5900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6000.00	0.00	359.86	6000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6100.00	0.00	359.86	6100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6200.00	0.00	359.86	6200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6300.00	0.00	359.86	6300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6400.00	0.00	359.86	6400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6500.00	0.00	359.86	6500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6600.00	0.00	359.86	6600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6700.00	0.00	359.86	6700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6800.00	0.00	359.86	6800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	6900.00	0.00	359.86	6900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7000.00	0.00	359.86	7000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7100.00	0.00	359.86	7100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7200.00	0.00	359.86	7200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7300.00	0.00	359.86	7300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7400.00	0.00	359.86	7400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7500.00	0.00	359.86	7500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7600.00	0.00	359.86	7600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7700.00	0.00	359.86	7700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7800.00	0.00	359.86	7800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	7900.00	0.00	359.86	7900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	8000.00	0.00	359.86	8000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	8100.00	0.00	359.86	8100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	8200.00	0.00	359.86	8200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	8300.00	0.00	359.86	8300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	8400.00	0.00	359.86	8400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	



Cimarex Hallertau 5 Federal #16H Rev0 RM 23Feb17 Proposal Geodetic Report

(Non-Def Plan)



Report Date:	February 23, 2017 - 10:24 AM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex	Vertical Section Azimuth:	359.486 ° (Grid North)
Field:	NM Lea County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Hallertau 5 Federal #16H / Cimarex Hallertau 5 Federal #16H	TVD Reference Datum:	RKB
Well:	Cimarex Hallertau 5 Federal #16H	TVD Reference Elevation:	3291.900 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	3271.900 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	6.883 °
Survey Name:	Cimarex Hallertau 5 Federal #16H Rev0 RM 23Feb17	Total Gravity Field Strength:	998.4259mgn (9.80665 Based)
Survey Date:	February 23, 2017	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	90.006 ° / 4519.787 ft / 5.741 / 0.374	Total Magnetic Field Strength:	47996.889 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.781 °
Location Lat / Long:	N 32° 3' 58.49860", W 103° 42' 16.59183"	Declination Date:	February 23, 2017
Location Grid N/E Y/X:	N 388406.470 ftUS, E 736096.040 ftUS	Magnetic Declination Model:	HDGM 2016
CRS Grid Convergence Angle:	0.3338 °	North Reference:	Grid North
Grid Scale Factor:	0.99995253	Grid Convergence Used:	0.3338 °
Version / Patch:	2.10.254.0	Total Corr Mag North->Grid North:	6.5488 °
		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 [490' FSL, 378' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	100.00	0.00	359.86	100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	200.00	0.00	359.86	200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	300.00	0.00	359.86	300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	400.00	0.00	359.86	400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	500.00	0.00	359.86	500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	600.00	0.00	359.86	600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	700.00	0.00	359.86	700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	800.00	0.00	359.86	800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	900.00	0.00	359.86	900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1000.00	0.00	359.86	1000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1100.00	0.00	359.86	1100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1200.00	0.00	359.86	1200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1300.00	0.00	359.86	1300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1400.00	0.00	359.86	1400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1500.00	0.00	359.86	1500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1600.00	0.00	359.86	1600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1700.00	0.00	359.86	1700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1800.00	0.00	359.86	1800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	1900.00	0.00	359.86	1900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2000.00	0.00	359.86	2000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2100.00	0.00	359.86	2100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2200.00	0.00	359.86	2200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2300.00	0.00	359.86	2300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2400.00	0.00	359.86	2400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	
	2500.00	0.00	359.86	2500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W 103 42 16.59	

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 ° ' ")
	8500.00	0.00	359.86	8500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	8600.00	0.00	359.86	8600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	8700.00	0.00	359.86	8700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	8800.00	0.00	359.86	8800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	8900.00	0.00	359.86	8900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9000.00	0.00	359.86	9000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9100.00	0.00	359.86	9100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9200.00	0.00	359.86	9200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9300.00	0.00	359.86	9300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9400.00	0.00	359.86	9400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9500.00	0.00	359.86	9500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9600.00	0.00	359.86	9600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9700.00	0.00	359.86	9700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9800.00	0.00	359.86	9800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	9900.00	0.00	359.86	9900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10000.00	0.00	359.86	10000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10100.00	0.00	359.86	10100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10200.00	0.00	359.86	10200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10300.00	0.00	359.86	10300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10400.00	0.00	359.86	10400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10500.00	0.00	359.86	10500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10600.00	0.00	359.86	10600.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10700.00	0.00	359.86	10700.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10800.00	0.00	359.86	10800.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	10900.00	0.00	359.86	10900.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	11000.00	0.00	359.86	11000.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	11100.00	0.00	359.86	11100.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	11200.00	0.00	359.86	11200.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	11300.00	0.00	359.86	11300.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	11400.00	0.00	359.86	11400.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	11500.00	0.00	359.86	11500.00	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
KOP - Build 12°/100' DLS	11569.98	0.00	359.86	11569.98	0.00	0.00	0.00	0.00	388406.47	736096.04	N 32 3 58.50 W	103 42 16.59
	11600.00	3.60	359.86	11599.98	0.94	0.94	0.00	12.00	388407.41	736096.04	N 32 3 58.51 W	103 42 16.59
Top Wolfcamp	11679.97	13.20	359.86	11679.00	12.61	12.61	-0.03	12.00	388419.08	736096.01	N 32 3 58.62 W	103 42 16.59
	11700.00	15.60	359.86	11698.40	17.59	17.59	-0.04	12.00	388424.06	736096.00	N 32 3 58.67 W	103 42 16.59
	11800.00	27.60	359.86	11791.21	54.34	54.34	-0.13	12.00	388460.81	736095.91	N 32 3 59.04 W	103 42 16.59
Wolfcamp A1 Shale	11894.39	38.93	359.86	11870.00	106.03	106.03	-0.26	12.00	388512.50	736095.78	N 32 3 59.55 W	103 42 16.59
	11900.00	39.60	359.86	11874.34	109.58	109.58	-0.27	12.00	388516.05	736095.77	N 32 3 59.58 W	103 42 16.59
	12000.00	51.60	359.86	11944.18	180.90	180.90	-0.44	12.00	388587.36	736095.60	N 32 4 0.29 W	103 42 16.58
	12100.00	63.60	359.86	11997.66	265.18	265.18	-0.65	12.00	388671.64	736095.39	N 32 4 1.12 W	103 42 16.58
Build & Turn 4°/100' DLS	12194.98	75.00	359.86	12031.18	353.88	353.89	-0.86	12.00	388760.34	736095.18	N 32 4 2.00 W	103 42 16.58
	12200.00	75.20	359.85	12032.47	358.73	358.74	-0.88	4.00	388765.19	736095.16	N 32 4 2.05 W	103 42 16.58
	12300.00	79.20	359.74	12054.62	456.23	456.23	-1.22	4.00	388862.68	736094.82	N 32 4 3.01 W	103 42 16.58
	12400.00	83.20	359.62	12069.92	555.03	555.03	-1.78	4.00	388961.48	736094.26	N 32 4 3.99 W	103 42 16.57
	12500.00	87.20	359.51	12078.29	654.66	654.66	-2.53	4.00	389061.10	736093.51	N 32 4 4.98 W	103 42 16.58
WFMP A1 Shale Target Landing Point	12570.13	90.00	359.44	12080.00	724.75	724.76	-3.17	4.00	389131.19	736092.87	N 32 4 5.67 W	103 42 16.58
	12600.00	90.00	359.44	12080.00	754.63	754.63	-3.46	0.00	389161.06	736092.58	N 32 4 5.97 W	103 42 16.58
	12700.00	90.00	359.44	12080.00	854.63	854.62	-4.45	0.00	389261.05	736091.59	N 32 4 6.96 W	103 42 16.59
	12800.00	90.00	359.44	12080.00	954.63	954.62	-5.43	0.00	389361.04	736090.61	N 32 4 7.95 W	103 42 16.59
	12900.00	90.00	359.44	12080.00	1054.63	1054.61	-6.42	0.00	389461.03	736089.62	N 32 4 8.93 W	103 42 16.60
	13000.00	90.00	359.44	12080.00	1154.63	1154.61	-7.40	0.00	389561.02	736088.64	N 32 4 9.92 W	103 42 16.60
	13100.00	90.00	359.44	12080.00	1254.63	1254.60	-8.39	0.00	389661.01	736087.65	N 32 4 10.91 W	103 42 16.60
	13200.00	90.00	359.44	12080.00	1354.63	1354.60	-9.37	0.00	389761.00	736086.67	N 32 4 11.90 W	103 42 16.61
	13300.00	90.00	359.44	12080.00	1454.63	1454.59	-10.36	0.00	389860.99	736085.68	N 32 4 12.89 W	103 42 16.61

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 ° ' '')
	13400.00	90.00	359.44	12080.00	1554.63	1554.59	-11.34	0.00	389960.98	736084.70	N 32 4 13.88 W	103 42 16.62
	13500.00	90.00	359.44	12080.00	1654.63	1654.58	-12.33	0.00	390060.97	736083.71	N 32 4 14.87 W	103 42 16.62
	13600.00	90.00	359.44	12080.00	1754.63	1754.58	-13.31	0.00	390160.96	736082.73	N 32 4 15.86 W	103 42 16.63
	13700.00	90.00	359.44	12080.00	1854.63	1854.57	-14.30	0.00	390260.95	736081.74	N 32 4 16.85 W	103 42 16.63
	13800.00	90.00	359.44	12080.00	1954.63	1954.57	-15.28	0.00	390360.94	736080.76	N 32 4 17.84 W	103 42 16.64
	13900.00	90.00	359.44	12080.00	2054.63	2054.56	-16.27	0.00	390460.93	736079.77	N 32 4 18.83 W	103 42 16.64
	14000.00	90.00	359.44	12080.00	2154.63	2154.56	-17.25	0.00	390560.92	736078.79	N 32 4 19.82 W	103 42 16.65
	14100.00	90.00	359.44	12080.00	2254.63	2254.55	-18.24	0.00	390660.91	736077.80	N 32 4 20.81 W	103 42 16.65
	14200.00	90.00	359.44	12080.00	2354.63	2354.55	-19.22	0.00	390760.90	736076.82	N 32 4 21.80 W	103 42 16.66
	14300.00	90.00	359.44	12080.00	2454.63	2454.54	-20.21	0.00	390860.89	736075.83	N 32 4 22.79 W	103 42 16.66
	14400.00	90.00	359.44	12080.00	2554.63	2554.54	-21.19	0.00	390960.88	736074.85	N 32 4 23.78 W	103 42 16.67
	14500.00	90.00	359.44	12080.00	2654.63	2654.53	-22.18	0.00	391060.87	736073.86	N 32 4 24.77 W	103 42 16.67
	14600.00	90.00	359.44	12080.00	2754.63	2754.53	-23.16	0.00	391160.86	736072.88	N 32 4 25.76 W	103 42 16.67
	14700.00	90.00	359.44	12080.00	2854.63	2854.52	-24.15	0.00	391260.85	736071.89	N 32 4 26.75 W	103 42 16.68
	14800.00	90.00	359.44	12080.00	2954.63	2954.52	-25.13	0.00	391360.84	736070.91	N 32 4 27.74 W	103 42 16.68
	14900.00	90.00	359.44	12080.00	3054.63	3054.52	-26.12	0.00	391460.83	736069.92	N 32 4 28.73 W	103 42 16.69
	15000.00	90.00	359.44	12080.00	3154.63	3154.51	-27.10	0.00	391560.82	736068.94	N 32 4 29.71 W	103 42 16.69
	15100.00	90.00	359.44	12080.00	3254.63	3254.51	-28.09	0.00	391660.81	736067.95	N 32 4 30.70 W	103 42 16.70
	15200.00	90.00	359.44	12080.00	3354.63	3354.50	-29.07	0.00	391760.80	736066.97	N 32 4 31.69 W	103 42 16.70
	15300.00	90.00	359.44	12080.00	3454.63	3454.50	-30.06	0.00	391860.79	736065.98	N 32 4 32.68 W	103 42 16.71
	15400.00	90.00	359.44	12080.00	3554.63	3554.49	-31.04	0.00	391960.78	736065.00	N 32 4 33.67 W	103 42 16.71
	15500.00	90.00	359.44	12080.00	3654.63	3654.49	-32.03	0.00	392060.78	736064.01	N 32 4 34.66 W	103 42 16.72
	15600.00	90.00	359.44	12080.00	3754.63	3754.48	-33.01	0.00	392160.77	736063.03	N 32 4 35.65 W	103 42 16.72
	15700.00	90.00	359.44	12080.00	3854.63	3854.48	-34.00	0.00	392260.76	736062.04	N 32 4 36.64 W	103 42 16.73
	15800.00	90.00	359.44	12080.00	3954.63	3954.47	-34.98	0.00	392360.75	736061.06	N 32 4 37.63 W	103 42 16.73
	15900.00	90.00	359.44	12080.00	4054.63	4054.47	-35.97	0.00	392460.74	736060.07	N 32 4 38.62 W	103 42 16.74
	16000.00	90.00	359.44	12080.00	4154.63	4154.46	-36.96	0.00	392560.73	736059.09	N 32 4 39.61 W	103 42 16.74
	16100.00	90.00	359.44	12080.00	4254.63	4254.46	-37.94	0.00	392660.72	736058.10	N 32 4 40.60 W	103 42 16.74
	16200.00	90.00	359.44	12080.00	4354.63	4354.45	-38.93	0.00	392760.71	736057.12	N 32 4 41.59 W	103 42 16.75
	16300.00	90.00	359.44	12080.00	4454.63	4454.45	-39.91	0.00	392860.70	736056.13	N 32 4 42.58 W	103 42 16.75
Cimarex Hallertau 5 Federal #16H - PBHL [330' FNL, 380' FWL]	16365.15	90.00	359.44	12080.00	4519.78	4519.59	-40.55	0.00	392925.84	736055.49	N 32 4 43.22 W	103 42 16.76

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 Hallertau 5 Federal #16H Rev0 RM 23Feb17
	1	20.000	16365.150	1/100.000	30.000	30.000		NAL_MWD_PLUS_0.5_DEG	Original Borehole / Cimarex Hallertau 5 Federal #16H Rev0