

Provide Signature Page for Directional Survey

Schlumberger

Final Survey - Cimarex Energy Crawford 27-26 Fee 1H MWD 0ft - 19142ft (Surcon Corrected) 30.015 - 44693 (Def Survey)



Report Date: July 31, 2018 - 03:16 PM
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: Final Survey - Cimarex Energy Crawford 27-26 Fee 1H MWD 0ft - 19142ft (Surcon Corrected)
Survey Date: June 29, 2018
Tort / AHD / DDI / ERD Ratio: 299.202 ° / 10497.884 ft / 6.798 / 1.097
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: 2.10.720.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 90.160 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3375.000 ft above MSL
Seabed / Ground Elevation: 3349.000 ft above MSL
Magnetic Declination: 7.399 °
Total Gravity Field Strength: 998.4451mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47894.210 nT
Magnetic Dip Angle: 59.868 °
Declination Date: July 13, 2018
Magnetic Declination Model: HDGM 2018
North Reference: Grid North
Grid Convergence Used: 0.0239 °
Total Corr Mag North->Grid North: 7.3753 °
Local Coord Referenced To: Structure Reference Point

**NM OIL CONSERVATION
ARTESIA DISTRICT**

NOV 01 2018

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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	
	211.00	0.46	305.18	211.00	-0.69	0.49	-0.69	0.22	434150.69	555218.41	N 32 11 36.78 W 104 17 18.46	
	328.00	0.34	293.38	327.99	-1.40	0.90	-1.39	0.12	434151.10	555217.71	N 32 11 36.78 W 104 17 18.46	
	484.00	0.27	288.96	483.99	-2.17	1.20	-2.17	0.05	434151.40	555216.93	N 32 11 36.79 W 104 17 18.47	
	574.00	0.19	262.98	573.99	-2.52	1.25	-2.52	0.14	434151.45	555216.58	N 32 11 36.79 W 104 17 18.48	
	665.00	0.29	203.33	664.99	-2.76	1.02	-2.76	0.28	434151.22	555216.34	N 32 11 36.78 W 104 17 18.48	
	756.00	0.59	173.46	755.99	-2.80	0.34	-2.79	0.40	434150.54	555216.31	N 32 11 36.78 W 104 17 18.48	
	848.00	0.70	152.16	847.98	-2.48	-0.62	-2.48	0.28	434149.58	555216.62	N 32 11 36.77 W 104 17 18.48	
	942.00	1.24	148.54	941.97	-1.67	-2.00	-1.68	0.58	434148.20	555217.42	N 32 11 36.75 W 104 17 18.47	
	1037.00	1.77	141.96	1036.94	-0.23	-4.03	-0.24	0.59	434146.17	555218.86	N 32 11 36.73 W 104 17 18.45	
	1131.00	3.38	136.96	1130.84	2.57	-7.20	2.55	1.73	434143.00	555221.65	N 32 11 36.70 W 104 17 18.42	
	1226.00	3.05	130.21	1225.69	6.42	-10.88	6.39	0.53	434139.32	555225.49	N 32 11 36.67 W 104 17 18.37	
	1320.00	1.18	118.35	1319.62	9.19	-12.95	9.15	2.03	434137.25	555228.25	N 32 11 36.65 W 104 17 18.34	
	1414.00	1.63	72.95	1413.60	11.32	-13.02	11.28	1.24	434137.18	555230.38	N 32 11 36.65 W 104 17 18.32	
	1509.00	3.13	78.10	1508.51	15.14	-12.09	15.11	1.59	434138.11	555234.21	N 32 11 36.65 W 104 17 18.27	
	1604.00	2.23	57.36	1603.41	19.23	-10.56	19.20	1.38	434139.64	555238.30	N 32 11 36.67 W 104 17 18.22	
	1698.00	1.73	324.32	1697.37	19.94	-8.42	19.92	3.08	434141.78	555239.02	N 32 11 36.69 W 104 17 18.22	
	1720.00	2.07	317.79	1719.36	19.48	-7.85	19.46	1.83	434142.35	555238.55	N 32 11 36.70 W 104 17 18.22	
	1867.00	2.95	308.33	1866.22	14.72	-3.54	14.71	0.66	434146.66	555233.80	N 32 11 36.74 W 104 17 18.28	
	1961.00	4.57	321.79	1960.01	10.49	0.90	10.49	1.95	434151.10	555229.59	N 32 11 36.78 W 104 17 18.33	
	2056.00	4.73	321.85	2054.70	5.71	6.95	5.73	0.17	434157.15	555224.83	N 32 11 36.84 W 104 17 18.38	
	2150.00	4.77	335.46	2148.38	1.68	13.56	1.71	1.20	434163.76	555220.81	N 32 11 36.91 W 104 17 18.43	
	2245.00	5.04	338.27	2243.03	-1.53	21.03	-1.47	0.38	434171.23	555217.63	N 32 11 36.98 W 104 17 18.46	
	2340.00	4.72	347.95	2337.69	-3.91	28.73	-3.83	0.93	434178.92	555215.27	N 32 11 37.06 W 104 17 18.49	
	2434.00	4.67	349.44	2431.37	-5.44	36.27	-5.34	0.14	434186.47	555213.76	N 32 11 37.13 W 104 17 18.51	

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 ° ' '')
	2529.00	4.72	342.05	2526.06	-7.38	43.79	-7.25	0.64	434193.99	555211.85	N 32 11 37.21 W 104 17 18.53	
	2623.00	4.67	339.95	2619.74	-9.90	51.06	-9.76	0.19	434201.26	555209.34	N 32 11 37.28 W 104 17 18.56	
	2718.00	4.53	335.51	2714.44	-12.80	58.11	-12.64	0.40	434208.31	555206.46	N 32 11 37.35 W 104 17 18.59	
	2812.00	4.67	340.99	2808.13	-15.61	65.11	-15.43	0.49	434215.30	555203.68	N 32 11 37.42 W 104 17 18.63	
	2906.00	4.69	340.20	2901.82	-18.18	72.34	-17.97	0.07	434222.53	555201.13	N 32 11 37.49 W 104 17 18.66	
	3001.00	4.73	339.51	2996.50	-20.88	79.66	-20.66	0.07	434229.86	555198.44	N 32 11 37.56 W 104 17 18.69	
	3095.00	4.80	343.34	3090.17	-23.39	87.06	-23.14	0.35	434237.25	555195.96	N 32 11 37.64 W 104 17 18.72	
	3190.00	4.79	341.23	3184.84	-25.82	94.63	-25.56	0.19	434244.82	555193.54	N 32 11 37.71 W 104 17 18.74	
	3284.00	4.79	340.08	3278.51	-28.44	102.03	-28.16	0.10	434252.22	555190.94	N 32 11 37.78 W 104 17 18.78	
	3378.00	4.92	340.84	3372.18	-31.13	109.53	-30.82	0.15	434259.72	555188.28	N 32 11 37.86 W 104 17 18.81	
	3472.00	4.96	338.29	3465.83	-33.97	117.11	-33.65	0.24	434267.30	555185.46	N 32 11 37.93 W 104 17 18.84	
	3567.00	4.68	343.72	3560.49	-36.60	124.65	-36.25	0.56	434274.84	555182.85	N 32 11 38.01 W 104 17 18.87	
	3662.00	4.71	343.90	3655.17	-38.79	132.12	-38.42	0.04	434282.30	555180.68	N 32 11 38.08 W 104 17 18.89	
	3756.00	4.46	342.13	3748.87	-41.00	139.30	-40.61	0.31	434289.49	555178.49	N 32 11 38.15 W 104 17 18.92	
	3851.00	4.16	341.78	3843.60	-43.23	146.09	-42.82	0.32	434296.28	555176.28	N 32 11 38.22 W 104 17 18.95	
	3945.00	3.84	340.01	3937.37	-45.39	152.29	-44.96	0.36	434302.47	555174.14	N 32 11 38.28 W 104 17 18.97	
	4040.00	3.67	340.55	4032.17	-47.51	158.14	-47.06	0.18	434308.33	555172.04	N 32 11 38.34 W 104 17 18.99	
	4134.00	3.66	337.94	4125.98	-49.65	163.76	-49.19	0.18	434313.95	555169.91	N 32 11 38.39 W 104 17 19.02	
	4229.00	3.95	346.95	4220.77	-51.54	169.76	-51.07	0.70	434319.94	555168.03	N 32 11 38.45 W 104 17 19.04	
	4323.00	3.99	351.62	4314.54	-52.77	176.15	-52.28	0.35	434326.33	555166.83	N 32 11 38.52 W 104 17 19.06	
	4418.00	4.01	354.09	4409.31	-53.61	182.72	-53.10	0.18	434332.91	555166.00	N 32 11 38.58 W 104 17 19.06	
	4513.00	3.82	354.28	4504.09	-54.29	189.18	-53.76	0.20	434339.36	555165.35	N 32 11 38.65 W 104 17 19.07	
	4607.00	3.49	351.46	4597.90	-55.04	195.12	-54.50	0.40	434345.30	555164.61	N 32 11 38.70 W 104 17 19.08	
	4702.00	3.98	346.23	4692.70	-56.27	201.18	-55.71	0.63	434351.36	555163.39	N 32 11 38.76 W 104 17 19.10	
	4796.00	3.94	345.20	4786.47	-57.89	207.47	-57.31	0.09	434357.65	555161.79	N 32 11 38.83 W 104 17 19.11	
	4891.00	4.93	347.24	4881.19	-59.65	214.61	-59.05	1.06	434364.79	555160.06	N 32 11 38.90 W 104 17 19.13	
	4986.00	5.22	346.94	4975.82	-61.55	222.80	-60.93	0.31	434372.98	555158.18	N 32 11 38.98 W 104 17 19.16	
	5080.00	5.13	345.92	5069.43	-63.56	231.04	-62.91	0.14	434381.22	555156.19	N 32 11 39.06 W 104 17 19.18	
	5175.00	4.99	344.98	5164.06	-65.69	239.15	-65.02	0.17	434389.33	555154.09	N 32 11 39.14 W 104 17 19.20	
	5270.00	4.79	344.42	5258.72	-67.84	246.96	-67.15	0.22	434397.14	555151.95	N 32 11 39.22 W 104 17 19.23	
	5364.00	4.40	347.51	5352.41	-69.70	254.26	-68.99	0.49	434404.44	555150.12	N 32 11 39.29 W 104 17 19.25	
	5459.00	4.03	344.23	5447.16	-71.41	261.04	-70.68	0.46	434411.21	555148.42	N 32 11 39.36 W 104 17 19.27	
	5554.00	4.14	343.31	5541.92	-73.32	267.53	-72.58	0.13	434417.71	555146.53	N 32 11 39.42 W 104 17 19.29	
	5648.00	4.67	341.63	5635.64	-75.52	274.41	-74.76	0.58	434424.59	555144.35	N 32 11 39.49 W 104 17 19.32	
	5743.00	4.72	338.60	5730.32	-78.19	281.72	-77.40	0.27	434431.90	555141.71	N 32 11 39.56 W 104 17 19.35	
	5837.00	5.66	348.79	5823.93	-80.52	289.87	-79.71	1.40	434440.05	555139.39	N 32 11 39.64 W 104 17 19.37	
	5932.00	5.12	2.84	5918.52	-81.25	298.70	-80.41	1.50	434448.87	555138.69	N 32 11 39.73 W 104 17 19.38	
	6026.00	4.20	20.10	6012.21	-79.88	306.12	-79.02	1.77	434456.30	555140.08	N 32 11 39.80 W 104 17 19.37	
	6121.00	3.05	6.74	6107.02	-78.40	311.90	-77.53	1.49	434462.07	555141.58	N 32 11 39.86 W 104 17 19.35	
	6216.00	2.82	332.70	6201.90	-79.19	316.49	-78.31	1.82	434466.66	555140.80	N 32 11 39.91 W 104 17 19.36	
	6310.00	2.69	325.28	6295.80	-81.52	320.36	-80.62	0.40	434470.53	555138.48	N 32 11 39.94 W 104 17 19.38	
	6405.00	2.26	323.27	6390.71	-83.92	323.69	-83.01	0.46	434473.86	555136.09	N 32 11 39.98 W 104 17 19.41	
	6500.00	1.82	324.71	6485.65	-85.92	326.42	-85.01	0.47	434476.59	555134.10	N 32 11 40.00 W 104 17 19.44	
	6594.00	1.58	303.94	6579.61	-87.86	328.36	-86.94	0.70	434478.53	555132.17	N 32 11 40.02 W 104 17 19.46	
	6689.00	0.86	316.13	6674.58	-89.44	329.61	-88.52	0.80	434479.78	555130.58	N 32 11 40.04 W 104 17 19.48	
	6783.00	1.25	331.49	6768.57	-90.43	331.02	-89.50	0.51	434481.19	555129.61	N 32 11 40.05 W 104 17 19.49	
	6878.00	1.25	326.83	6863.55	-91.49	332.80	-90.56	0.11	434482.97	555128.55	N 32 11 40.07 W 104 17 19.50	
	6972.00	1.14	315.44	6957.52	-92.71	334.32	-91.78	0.28	434484.49	555127.33	N 32 11 40.08 W 104 17 19.51	
	7066.00	0.45	309.99	7051.52	-93.65	335.22	-92.72	0.74	434485.39	555126.39	N 32 11 40.09 W 104 17 19.53	
	7161.00	0.52	275.97	7146.51	-94.37	335.51	-93.43	0.31	434485.68	555125.68	N 32 11 40.09 W 104 17 19.53	
	7256.00	1.46	165.88	7241.50	-94.50	334.38	-93.57	1.80	434484.55	555125.54	N 32 11 40.08 W 104 17 19.54	
	7350.00	2.20	148.61	7335.45	-93.26	331.68	-92.34	0.97	434481.85	555126.77	N 32 11 40.06 W 104 17 19.52	
	7445.00	1.72	152.52	7430.40	-91.65	328.86	-90.73	0.52	434479.03	555128.38	N 32 11 40.03 W 104 17 19.50	
	7539.00	2.03	152.47	7524.35	-90.22	326.13	-89.31	0.33	434476.30	555129.80	N 32 11 40.00 W 104 17 19.49	
	7634.00	2.53	162.95	7619.27	-88.82	322.63	-87.91	0.68	434472.80	555131.19	N 32 11 39.97 W 104 17 19.47	
	7728.00	1.86	182.41	7713.20	-88.26	319.12	-87.37	1.06	434469.30	555131.74	N 32 11 39.93 W 104 17 19.46	
	7823.00	1.42	266.60	7808.18	-89.50	317.51	-88.61	2.34	434467.69	555130.50	N 32 11 39.92 W 104 17 19.48	
	7917.00	1.10	272.44	7902.15	-91.56	317.48	-90.67	0.37	434467.65	555128.43	N 32 11 39.92 W 104 17 19.50	
	8012.00	1.00	298.85	7997.14	-93.20	317.92	-92.31	0.52	434468.09	555126.80	N 32 11 39.92 W 104 17 19.52	

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 ° ' ")
	8201.00	1.03	265.95	8186.11	-96.34	318.60	-95.45	0.30	434468.77	555123.66	N 32 11 39.93	W 104 17 19.56
	8296.00	1.14	265.23	8281.09	-98.13	318.46	-97.24	0.12	434468.63	555121.86	N 32 11 39.93	W 104 17 19.58
	8391.00	0.95	256.35	8376.08	-99.84	318.20	-98.95	0.26	434468.37	555120.16	N 32 11 39.92	W 104 17 19.60
	8486.00	1.28	214.18	8471.06	-101.20	317.13	-100.31	0.90	434467.30	555118.80	N 32 11 39.91	W 104 17 19.61
	8674.00	1.66	325.35	8659.03	-103.93	317.63	-103.04	1.30	434467.81	555116.07	N 32 11 39.92	W 104 17 19.65
	8732.00	1.98	328.64	8717.00	-104.93	319.18	-104.04	0.58	434469.35	555115.07	N 32 11 39.93	W 104 17 19.66
	8808.00	4.48	24.10	8792.88	-104.41	323.01	-103.51	4.91	434473.18	555115.60	N 32 11 39.97	W 104 17 19.65
	8839.00	8.73	30.07	8823.67	-102.75	326.16	-101.84	13.87	434476.33	555117.27	N 32 11 40.00	W 104 17 19.63
	8902.00	15.84	35.44	8885.19	-95.39	337.31	-94.45	11.42	434487.48	555124.66	N 32 11 40.11	W 104 17 19.55
	8934.00	20.54	38.50	8915.59	-89.38	345.27	-88.42	14.98	434495.44	555130.69	N 32 11 40.19	W 104 17 19.48
	8966.00	23.00	42.53	8945.30	-81.68	354.27	-80.69	8.99	434504.44	555138.41	N 32 11 40.28	W 104 17 19.39
	8997.00	23.95	49.81	8973.74	-72.80	362.80	-71.79	9.84	434512.96	555147.32	N 32 11 40.36	W 104 17 19.28
	9028.00	25.83	58.41	9001.87	-62.26	370.40	-61.23	13.14	434520.56	555157.88	N 32 11 40.44	W 104 17 19.16
	9060.00	28.07	64.84	9030.40	-49.52	377.25	-48.47	11.48	434527.42	555170.63	N 32 11 40.51	W 104 17 19.01
	9092.00	29.72	69.46	9058.42	-35.30	383.24	-34.23	8.67	434533.40	555184.88	N 32 11 40.57	W 104 17 18.84
First Legal Take Point	9144.00	35.47	75.01	9102.22	-8.65	391.67	-7.55	12.45	434541.84	555211.55	N 32 11 40.65	W 104 17 18.53
	9186.00	40.26	78.44	9135.37	16.42	397.55	17.53	12.45	434547.71	555236.63	N 32 11 40.71	W 104 17 18.24
	9218.00	45.90	79.30	9158.73	37.85	401.76	38.97	17.72	434551.92	555258.07	N 32 11 40.75	W 104 17 17.99
	9249.00	50.93	81.61	9179.31	60.70	405.58	61.83	17.15	434555.75	555280.92	N 32 11 40.79	W 104 17 17.73
	9281.00	55.43	84.75	9198.48	86.11	408.60	87.26	16.10	434558.77	555306.35	N 32 11 40.82	W 104 17 17.43
	9312.00	59.47	88.54	9215.16	112.18	410.11	113.33	16.61	434560.28	555332.42	N 32 11 40.83	W 104 17 17.13
	9344.00	62.54	91.26	9230.67	140.17	410.15	141.31	12.14	434560.31	555360.40	N 32 11 40.83	W 104 17 16.80
	9375.00	65.83	92.05	9244.17	168.06	409.34	169.20	10.86	434559.51	555388.29	N 32 11 40.82	W 104 17 16.48
	9407.00	67.66	92.24	9256.80	197.44	408.24	198.58	5.74	434558.41	555417.66	N 32 11 40.81	W 104 17 16.13
	9506.00	75.93	87.29	9287.72	291.36	408.72	292.51	9.61	434558.89	555511.58	N 32 11 40.82	W 104 17 15.04
	9569.00	81.33	88.17	9300.14	353.05	411.17	354.20	8.68	434561.33	555573.27	N 32 11 40.84	W 104 17 14.32
	9601.00	83.59	90.00	9304.34	384.76	411.67	385.91	9.06	434561.83	555604.98	N 32 11 40.85	W 104 17 13.95
	9632.00	84.14	92.01	9307.65	415.58	411.13	416.73	6.69	434561.29	555635.79	N 32 11 40.84	W 104 17 13.60
	9664.00	84.21	92.00	9310.90	447.40	410.02	448.55	0.22	434560.18	555667.60	N 32 11 40.83	W 104 17 13.23
	9696.00	84.49	91.66	9314.05	479.23	409.00	480.37	1.37	434559.16	555699.43	N 32 11 40.82	W 104 17 12.86
	9727.00	85.21	92.15	9316.83	510.09	407.97	511.23	2.81	434558.14	555730.28	N 32 11 40.81	W 104 17 12.50
	9759.00	87.52	92.08	9318.86	542.01	406.79	543.14	7.22	434556.96	555762.19	N 32 11 40.80	W 104 17 12.13
	9804.00	91.17	91.33	9319.38	586.98	405.46	588.11	8.28	434555.62	555807.16	N 32 11 40.78	W 104 17 11.60
	9854.00	88.76	92.26	9319.41	636.95	403.89	638.08	5.17	434554.05	555857.12	N 32 11 40.77	W 104 17 11.02
	9900.00	88.93	91.74	9320.33	682.92	402.29	684.05	1.19	434552.45	555903.08	N 32 11 40.75	W 104 17 10.49
	9949.00	89.28	92.51	9321.10	731.88	400.47	733.01	1.73	434550.63	555952.04	N 32 11 40.73	W 104 17 9.92
	10044.00	88.97	92.00	9322.55	826.81	396.73	827.92	0.63	434546.89	556046.94	N 32 11 40.70	W 104 17 8.81
	10138.00	88.66	92.08	9324.49	920.74	393.39	921.84	0.34	434543.55	556140.86	N 32 11 40.66	W 104 17 7.72
	10233.00	88.52	91.75	9326.83	1015.67	390.21	1016.76	0.38	434540.38	556235.77	N 32 11 40.63	W 104 17 6.61
	10328.00	88.49	91.94	9329.31	1110.59	387.15	1111.68	0.20	434537.32	556330.67	N 32 11 40.60	W 104 17 5.51
	10423.00	89.00	92.19	9331.39	1205.52	383.73	1206.59	0.60	434533.90	556425.58	N 32 11 40.57	W 104 17 4.40
	10518.00	87.35	91.60	9334.42	1300.42	380.59	1301.49	1.84	434530.76	556520.47	N 32 11 40.53	W 104 17 3.30
	10612.00	88.76	92.40	9337.61	1394.32	377.31	1395.37	1.72	434527.48	556614.35	N 32 11 40.50	W 104 17 2.21
	10707.00	88.31	89.94	9340.04	1489.26	375.37	1490.32	2.63	434525.54	556709.28	N 32 11 40.48	W 104 17 1.10
	10802.00	88.21	90.81	9342.92	1584.22	374.75	1585.27	0.92	434524.92	556804.22	N 32 11 40.48	W 104 17 0.00
	10897.00	88.52	90.39	9345.63	1679.17	373.76	1680.23	0.55	434523.92	556899.17	N 32 11 40.46	W 104 16 58.89
	10992.00	87.35	89.55	9349.05	1774.11	373.81	1775.16	1.52	434523.97	556994.10	N 32 11 40.47	W 104 16 57.79
	11087.00	89.55	91.72	9351.62	1869.06	372.75	1870.11	3.25	434522.92	557089.04	N 32 11 40.45	W 104 16 56.68
	11182.00	91.44	93.39	9350.80	1963.97	368.52	1965.00	2.65	434518.69	557183.92	N 32 11 40.41	W 104 16 55.58
	11276.00	90.89	91.59	9348.89	2057.87	364.44	2058.89	2.00	434514.60	557277.80	N 32 11 40.37	W 104 16 54.49
	11371.00	87.97	90.68	9349.84	2152.84	362.56	2153.86	3.22	434512.72	557372.76	N 32 11 40.35	W 104 16 53.38
	11466.00	89.90	88.95	9351.60	2247.81	362.86	2248.83	2.73	434513.03	557467.72	N 32 11 40.35	W 104 16 52.28
	11561.00	89.21	88.07	9352.34	2342.77	365.33	2343.79	1.18	434515.50	557562.68	N 32 11 40.38	W 104 16 51.17
	11656.00	90.17	87.68	9352.85	2437.69	368.86	2438.73	1.09	434519.02	557657.60	N 32 11 40.41	W 104 16 50.07
	11751.00	88.45	88.47	9354.00	2532.61	372.05	2533.66	1.99	434522.21	557752.53	N 32 11 40.44	W 104 16 48.96
	11845.00	88.59	89.24	9356.43	2626.56	373.92	2627.61	0.83	434524.09	557846.47	N 32 11 40.46	W 104 16 47.87
	11940.00	84.73	91.19	9361.96	2721.37	373.57	2722.43	4.55	434523.74	557941.27	N 32 11 40.46	W 104 16 46.77
	12035.00	89.48	90.69	9366.76	2816.22	372.02	2817.26	5.03	434522.18	558036.10	N 32 11 40.44	W 104 16 45.66

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 ° ' ")
	12130.00	89.38	90.65	9367.70	2911.21	370.91	2912.25	0.11	434521.07	558131.08	N 32 11 40.43	W 104 16 44.56
	12225.00	88.56	90.02	9369.41	3006.19	370.35	3007.24	1.09	434520.52	558226.06	N 32 11 40.42	W 104 16 43.45
	12320.00	89.93	91.09	9370.66	3101.18	369.43	3102.22	1.83	434519.60	558321.03	N 32 11 40.42	W 104 16 42.35
	12415.00	90.55	90.69	9370.26	3196.17	367.95	3197.21	0.78	434518.12	558416.01	N 32 11 40.40	W 104 16 41.24
	12509.00	91.89	92.60	9368.26	3290.11	365.26	3291.14	2.48	434515.42	558509.93	N 32 11 40.37	W 104 16 40.15
	12540.00	89.76	92.96	9367.82	3321.07	363.75	3322.10	6.97	434513.92	558540.89	N 32 11 40.36	W 104 16 39.79
	12572.00	90.00	92.20	9367.88	3353.04	362.31	3354.07	2.49	434512.48	558572.85	N 32 11 40.34	W 104 16 39.42
	12604.00	90.00	91.16	9367.88	3385.03	361.37	3386.05	3.25	434511.54	558604.84	N 32 11 40.33	W 104 16 39.04
	12635.00	90.14	90.68	9367.85	3416.03	360.88	3417.05	1.61	434511.04	558635.83	N 32 11 40.33	W 104 16 38.68
	12699.00	90.24	90.86	9367.63	3480.02	360.02	3481.04	0.32	434510.18	558699.82	N 32 11 40.32	W 104 16 37.94
	12794.00	91.17	88.89	9366.46	3575.01	360.22	3576.03	2.29	434510.39	558794.80	N 32 11 40.32	W 104 16 36.83
	12888.00	89.35	89.18	9366.04	3668.98	361.81	3670.01	1.96	434511.97	558888.77	N 32 11 40.34	W 104 16 35.74
	12983.00	87.69	88.57	9368.49	3763.93	363.67	3764.96	1.86	434513.84	558983.71	N 32 11 40.35	W 104 16 34.63
	13078.00	88.62	89.16	9371.55	3858.85	365.55	3859.89	1.16	434515.72	559078.63	N 32 11 40.37	W 104 16 33.53
	13173.00	88.59	88.65	9373.86	3953.80	367.37	3954.84	0.54	434517.53	559173.57	N 32 11 40.39	W 104 16 32.42
	13268.00	88.45	89.24	9376.32	4048.75	369.12	4049.79	0.64	434519.28	559268.52	N 32 11 40.41	W 104 16 31.32
	13363.00	88.42	89.67	9378.91	4143.70	370.02	4144.75	0.45	434520.18	559363.47	N 32 11 40.42	W 104 16 30.21
	13458.00	90.17	89.15	9380.08	4238.68	371.00	4239.74	1.92	434521.16	559458.44	N 32 11 40.42	W 104 16 29.11
	13553.00	89.42	90.01	9380.42	4333.68	371.69	4334.73	1.20	434521.86	559553.43	N 32 11 40.43	W 104 16 28.00
	13647.00	87.73	90.03	9382.76	4427.64	371.66	4428.70	1.80	434521.83	559647.39	N 32 11 40.43	W 104 16 26.91
	13742.00	87.76	89.40	9386.50	4522.57	372.13	4523.62	0.66	434522.30	559742.30	N 32 11 40.43	W 104 16 25.81
	13837.00	88.62	89.31	9389.50	4617.51	373.20	4618.57	0.91	434523.37	559837.24	N 32 11 40.44	W 104 16 24.70
	13932.00	89.14	90.38	9391.35	4712.49	373.46	4713.55	1.25	434523.62	559932.21	N 32 11 40.45	W 104 16 23.59
	14027.00	87.73	89.94	9393.95	4807.45	373.19	4808.51	1.55	434523.36	560027.16	N 32 11 40.44	W 104 16 22.49
	14122.00	89.69	90.69	9396.09	4902.42	372.67	4903.48	2.21	434522.84	560122.13	N 32 11 40.44	W 104 16 21.38
	14217.00	88.18	90.08	9397.85	4997.40	372.03	4998.46	1.71	434522.20	560217.09	N 32 11 40.43	W 104 16 20.28
	14312.00	83.97	89.04	9404.35	5092.15	372.76	5093.21	4.56	434522.92	560311.84	N 32 11 40.44	W 104 16 19.18
	14407.00	86.56	89.66	9412.19	5186.81	373.83	5187.87	2.80	434524.00	560406.49	N 32 11 40.45	W 104 16 18.08
	14502.00	86.73	89.47	9417.75	5281.64	374.55	5282.71	0.27	434524.72	560501.32	N 32 11 40.45	W 104 16 16.97
	14597.00	86.90	91.02	9423.03	5376.49	374.15	5377.55	1.64	434524.31	560596.16	N 32 11 40.45	W 104 16 15.87
	14692.00	87.45	91.62	9427.72	5471.35	371.96	5472.41	0.86	434522.13	560691.01	N 32 11 40.43	W 104 16 14.76
	14787.00	87.83	92.18	9431.63	5566.23	368.81	5567.28	0.71	434518.98	560785.86	N 32 11 40.40	W 104 16 13.66
	14882.00	87.97	91.95	9435.11	5661.11	365.39	5662.15	0.28	434515.56	560880.73	N 32 11 40.36	W 104 16 12.56
	14976.00	87.08	90.99	9439.17	5755.00	362.98	5756.03	1.39	434513.15	560974.60	N 32 11 40.34	W 104 16 11.46
	15071.00	87.63	91.28	9443.55	5849.88	361.10	5850.91	0.65	434511.27	561069.47	N 32 11 40.32	W 104 16 10.36
	15166.00	88.07	91.56	9447.12	5944.79	358.75	5945.82	0.55	434508.92	561164.37	N 32 11 40.29	W 104 16 9.26
	15261.00	88.35	89.91	9450.08	6039.74	357.53	6040.76	1.76	434507.70	561259.30	N 32 11 40.28	W 104 16 8.15
	15356.00	90.52	90.42	9451.02	6134.73	357.26	6135.75	2.35	434507.43	561354.28	N 32 11 40.28	W 104 16 7.04
	15451.00	86.97	89.50	9453.10	6229.69	357.32	6230.71	3.86	434507.49	561449.23	N 32 11 40.28	W 104 16 5.94
	15546.00	88.28	89.80	9457.04	6324.60	357.90	6325.62	1.41	434508.07	561544.14	N 32 11 40.28	W 104 16 4.84
	15641.00	86.21	89.56	9461.60	6419.48	358.43	6420.51	2.19	434508.60	561639.01	N 32 11 40.29	W 104 16 3.73
	15736.00	86.04	89.85	9468.02	6514.26	358.92	6515.29	0.35	434509.09	561733.79	N 32 11 40.29	W 104 16 2.63
	15831.00	88.73	91.21	9472.36	6609.15	358.04	6610.18	3.17	434508.21	561828.66	N 32 11 40.28	W 104 16 1.52
	15929.00	91.10	91.66	9472.50	6707.12	355.59	6708.14	2.46	434505.76	561926.62	N 32 11 40.26	W 104 16 0.38
	15964.00	90.58	91.18	9471.99	6742.11	354.72	6743.12	2.02	434504.89	561961.60	N 32 11 40.25	W 104 15 59.98
	16024.00	90.14	90.85	9471.61	6802.10	353.66	6803.11	0.92	434503.83	562021.58	N 32 11 40.24	W 104 15 59.28
	16119.00	88.66	89.79	9472.61	6897.09	353.13	6898.10	1.92	434503.30	562116.56	N 32 11 40.23	W 104 15 58.17
	16214.00	88.35	89.63	9475.09	6992.05	353.61	6993.07	0.37	434503.78	562211.52	N 32 11 40.24	W 104 15 57.07
	16309.00	87.32	89.26	9478.67	7086.98	354.53	7087.99	1.15	434504.70	562306.44	N 32 11 40.25	W 104 15 55.96
	16404.00	87.35	89.48	9483.09	7181.86	355.57	7182.88	0.23	434505.74	562401.32	N 32 11 40.26	W 104 15 54.86
	16499.00	87.56	89.81	9487.31	7276.77	356.16	7277.79	0.41	434506.33	562496.21	N 32 11 40.26	W 104 15 53.76
	16594.00	88.38	90.36	9490.68	7371.71	356.02	7372.73	1.04	434506.19	562591.14	N 32 11 40.26	W 104 15 52.65
	16689.00	86.01	89.26	9495.32	7466.58	356.33	7467.61	2.75	434506.50	562686.01	N 32 11 40.26	W 104 15 51.55
	16784.00	85.42	89.11	9502.42	7561.30	357.68	7562.33	0.64	434507.85	562780.73	N 32 11 40.27	W 104 15 50.44
	16879.00	85.63	89.11	9509.83	7656.00	359.15	7657.03	0.22	434509.32	562875.42	N 32 11 40.29	W 104 15 49.34
	16974.00	85.66	88.95	9517.05	7750.70	360.75	7751.74	0.17	434510.92	562970.12	N 32 11 40.30	W 104 15 48.24
	17069.00	86.28	88.20	9523.72	7845.43	363.11	7846.48	1.02	434513.28	563064.85	N 32 11 40.33	W 104 15 47.14
	17164.00	88.97	88.41	9527.66	7940.29	365.92	7941.34	2.84	434516.08	563159.71	N 32 11 40.35	W 104 15 46.03
	17259.00	89.69	88.23	9528.77	8035.23	368.70	8036.30	0.78	434518.87	563254.65	N 32 11 40.38	W 104 15 44.93

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 ° ' ")
	17354.00	89.86	88.48	9529.15	8130.19	371.43	8131.26	0.32	434521.60	563349.60	N 32 11 40.41 W 104 15 43.82	
	17449.00	91.10	90.27	9528.35	8225.17	372.47	8226.24	2.29	434522.63	563444.58	N 32 11 40.42 W 104 15 42.72	
	17544.00	90.86	90.23	9526.72	8320.15	372.05	8321.23	0.26	434522.22	563539.55	N 32 11 40.41 W 104 15 41.61	
	17639.00	88.80	90.09	9527.01	8415.15	371.79	8416.22	2.17	434521.95	563634.54	N 32 11 40.41 W 104 15 40.51	
	17734.00	89.28	89.60	9528.60	8510.13	372.04	8511.21	0.72	434522.21	563729.52	N 32 11 40.41 W 104 15 39.40	
	17829.00	88.45	89.76	9530.48	8605.11	372.57	8606.19	0.89	434522.74	563824.49	N 32 11 40.41 W 104 15 38.30	
	17924.00	86.73	89.42	9534.47	8700.02	373.25	8701.09	1.85	434523.42	563919.39	N 32 11 40.42 W 104 15 37.19	
	18019.00	86.63	89.70	9539.98	8794.85	373.98	8795.93	0.31	434524.15	564014.22	N 32 11 40.43 W 104 15 36.09	
	18113.00	86.49	90.64	9545.62	8888.68	373.70	8889.76	1.01	434523.87	564108.04	N 32 11 40.42 W 104 15 35.00	
	18208.00	87.59	92.30	9550.52	8983.53	371.27	8984.60	2.09	434521.43	564202.87	N 32 11 40.40 W 104 15 33.89	
	18304.00	88.11	92.00	9554.12	9079.40	367.67	9080.46	0.63	434517.84	564298.72	N 32 11 40.36 W 104 15 32.78	
	18399.00	86.59	91.14	9558.52	9174.27	365.07	9175.32	1.84	434515.24	564393.57	N 32 11 40.34 W 104 15 31.67	
	18494.00	88.56	91.55	9562.54	9269.16	362.84	9270.21	2.12	434513.01	564488.45	N 32 11 40.31 W 104 15 30.57	
	18589.00	89.07	91.82	9564.50	9364.10	360.05	9365.14	0.61	434510.22	564583.38	N 32 11 40.28 W 104 15 29.46	
	18684.00	88.49	91.33	9566.52	9459.05	357.44	9460.09	0.80	434507.61	564678.31	N 32 11 40.26 W 104 15 28.36	
	18779.00	89.79	91.47	9567.95	9554.02	355.12	9555.05	1.38	434505.28	564773.26	N 32 11 40.23 W 104 15 27.25	
	18874.00	89.59	92.06	9568.46	9648.98	352.19	9650.00	0.66	434502.36	564868.20	N 32 11 40.21 W 104 15 26.15	
	18969.00	89.55	91.56	9569.18	9743.93	349.19	9744.95	0.53	434499.36	564963.14	N 32 11 40.17 W 104 15 25.05	
	19064.00	88.62	90.29	9570.69	9838.91	347.66	9839.92	1.66	434497.83	565058.11	N 32 11 40.16 W 104 15 23.94	
	19099.00	88.62	90.30	9571.54	9873.90	347.48	9874.91	0.03	434497.65	565093.09	N 32 11 40.16 W 104 15 23.53	
TD, Projection to Bit	19142.00	88.62	90.30	9572.57	9916.89	347.25	9917.90	0.00	434497.42	565136.08	N 32 11 40.15 W 104 15 23.03	

Survey Type: Def Survey

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)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/98.425	12.250	9.625	NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Final Survey - Cimarex Energy Crawford 27-26 Fee 1H MWD 0ft - 19142ft
	1	26.000	26.000	Act Stns	12.250	9.625	NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Final Survey - Cimarex Energy Crawford 27-26 Fee 1H MWD 0ft - 19142ft
	1	26.000	1780.000	Act Stns	12.250	9.625	NAL_MWD_IFR1+MS	Original Borehole / Final Survey - Cimarex Energy Crawford 27-26
	1	1780.000	9468.000	Act Stns	8.750	7.000	NAL_MWD_IFR1+MS	Original Borehole / Final Survey - Cimarex Energy Crawford 27-26
	1	9468.000	19142.000	Act Stns	6.000	4.500	NAL_MWD_IFR1+MS	Original Borehole / Final Survey - Cimarex Energy Crawford 27-26

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Crawford 27-26 Fee 1H	NM Eddy County (NAD 83)	Cimarex Crawford 27-26 Fee 1H
Drill & Magnetic Parameters	Surface Location	MADEP Near Mexico State Plane, Eastern Zone, US Feet	Measurements
Model: HD08 2018	Lat: N 32 11 38.77	Northings: 424180.2018	Stat: Cimarex Crawford 27-26
MagDec: 7.339°	Long: W 104 17 18.46	Eastings: 688215.1028	Plan: Fee 1H
Dip: 89.889°		Grid Conv: 0.0239°	TVD Ref: RDB(2478) above NSL
FC: 4784.31e7		Scale Fact: 0.99990321	Plan Survey: Cimarex Energy Crawford 27-26 Fee 1H MWD DB - 19142R (Surcon Corrected)
Date: 13-Jul-2018			
Gravity FC: 980.483m/s (8.0086 Based)			

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL (782' FNL, 330' FNL)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
First Legal Take Point	9144.00	35.47	75.01	9102.22	-8.65	361.67	-7.55	12.45
TD, Projection to Bit	19142.00	88.62	90.30	9572.57	9916.59	347.25	9917.80	0.00



Grid
True
Mag
Grid North
Tot Cor (M-G 7.375°)
Mag Dec (7.389°)
Grid Conv (0.024°)

CONTROLLED	
File of	WELL SURVEY - CIMA-REX ENERGY CRAWFORD 27-26 Fee 1H MWD DB - 19142R (Surcon Corrected)
Drawing of	
Drawn by	at
Date	13-Jul-2018
1. Check	
2. Check	
3. Check	
4. Check	
5. Check	
6. Check	
7. Check	
8. Check	
9. Check	
10. Check	

