

30: 005-64329

Markham State Com 1H, Plan 1

Operator Mack Energy Corp	Units feet, °/100ft	10:52 Thursday, February 07, 2019 Page 1 of 4
Field Round Tank	County Chaves	Vertical Section Azimuth 179.72
Well Name Markham State Com 1H	State New Mexico	Survey Calculation Method Minimum Curvature
Plan 1	Country USA	Database Access
Location SL: 330 FSL & 990 FEL Sec 23-T15S-R28E BHL: 1 FSL & 990 FEL Sec 26-T15S-R28E	Map Zone UTM	Lat Long Ref
Site	Surface X 1917315.4	Surface Long
Slot Name	Surface Y 11978036.2	Surface Lat
Well Number	Surface Z 3591.5	Global Z Ref Mean Sea Level
Project	Ground Level 3574	Local North Ref Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	% (100%)	ft	ft	ft	ft
*** TIE (at MD = 2080.00)										
2080.00	0.00	0.0	2080.00	0.00	0.00		0.00	1917315.40	11978036.20	1511.50
2100.00	0.00	0.0	2100.00	0.00	0.00	0.00	0.00	1917315.40	11978036.20	1491.50
2150.00	0.00	0.0	2150.00	0.00	0.00	0.00	0.00	1917315.40	11978036.20	1441.50
*** KOP 8 DEGREES (at MD = 2180.00)										
2180.00	0.00	0.0	2180.00	0.00	0.00	0.00	0.00	1917315.40	11978036.20	1411.50
2200.00	1.60	179.7	2200.00	-0.28	0.00	8.00	0.28	1917315.40	11978035.92	1391.50
2250.00	5.60	179.7	2249.89	-3.42	0.02	8.00	3.42	1917315.42	11978032.78	1341.61
2300.00	9.60	179.7	2299.44	-10.03	0.05	8.00	10.03	1917315.45	11978026.17	1292.06
2350.00	13.60	179.7	2348.41	-20.08	0.10	8.00	20.08	1917315.50	11978016.12	1243.09
2400.00	17.60	179.7	2396.56	-33.52	0.16	8.00	33.52	1917315.56	11978002.68	1194.94
2450.00	21.60	179.7	2443.65	-50.29	0.25	8.00	50.29	1917315.65	11977985.91	1147.85
2500.00	25.60	179.7	2489.46	-70.31	0.34	8.00	70.31	1917315.74	11977965.89	1102.04
2550.00	29.60	179.7	2533.76	-93.47	0.46	8.00	93.47	1917315.86	11977942.73	1057.74
2600.00	33.60	179.7	2576.34	-119.66	0.58	8.00	119.66	1917315.98	11977916.54	1015.16
2650.00	37.60	179.7	2616.98	-148.76	0.73	8.00	148.76	1917316.13	11977887.44	974.52
2700.00	41.60	179.7	2655.50	-180.62	0.88	8.00	180.63	1917316.28	11977855.58	936.00
2750.00	45.60	179.7	2691.70	-215.10	1.05	8.00	215.10	1917316.45	11977821.10	899.80
2800.00	49.60	179.7	2725.41	-252.01	1.23	8.00	252.02	1917316.63	11977784.19	866.09
2850.00	53.60	179.7	2756.46	-291.19	1.42	8.00	291.19	1917316.82	11977745.01	835.04
*** 55 DEGREE TANGENT (at MD = 2867.50)										
2867.50	55.00	179.7	2766.67	-305.40	1.49	8.00	305.40	1917316.89	11977730.80	824.83
2900.00	55.00	179.7	2785.32	-332.02	1.62	0.00	332.03	1917317.02	11977704.18	806.18
2950.00	55.00	179.7	2813.99	-372.98	1.82	0.00	372.98	1917317.22	11977663.22	777.51
*** 12 DEGREE BUILD (at MD = 2967.50)										
2967.50	55.00	179.7	2824.03	-387.31	1.89	0.00	387.32	1917317.29	11977648.89	767.47
3000.00	58.90	179.7	2841.75	-414.55	2.03	12.00	414.55	1917317.43	11977621.65	749.75
3050.00	64.90	179.7	2865.29	-458.64	2.24	12.00	458.64	1917317.64	11977577.56	726.21
3100.00	70.90	179.7	2884.10	-504.94	2.47	12.00	504.95	1917317.87	11977531.26	707.40
3150.00	76.90	179.7	2897.96	-552.96	2.70	12.00	552.96	1917318.10	11977483.24	693.54
3200.00	82.90	179.7	2906.72	-602.16	2.94	12.00	602.17	1917318.34	11977434.04	684.78
3250.00	88.90	179.7	2910.29	-652.01	3.19	12.00	652.02	1917318.59	11977384.19	681.21
*** LANDING POINT (at MD = 3263.33)										
3263.33	90.50	179.7	2910.36	-665.34	3.25	12.00	665.35	1917318.65	11977370.86	681.14
3300.00	90.50	179.7	2910.04	-702.00	3.43	0.00	702.01	1917318.83	11977334.20	681.46
3350.00	90.50	179.7	2909.61	-752.00	3.68	0.00	752.01	1917319.08	11977284.20	681.89
3400.00	90.50	179.7	2909.17	-802.00	3.92	0.00	802.01	1917319.32	11977234.20	682.33
3450.00	90.50	179.7	2908.73	-852.00	4.16	0.00	852.01	1917319.56	11977184.20	682.77
3500.00	90.50	179.7	2908.30	-901.99	4.41	0.00	902.01	1917319.81	11977134.21	683.20

Markham State Com 1H, Plan 1

Operator Mack Energy Corp	Units feet, °/100ft	10:52 Thursday, February 07, 2019 Page 2 of 4
Field Round Tank	County Chaves	Vertical Section Azimuth 179.72
Well Name Markham State Com 1H	State New Mexico	Survey Calculation Method Minimum Curvature
Plan 1	Country USA	Database Access

Location SL: 330 FSL & 990 FEL Sec 23-T15S-R28E BHL: 1 FSL & 990 FEL Sec 26-T15S-R28E	Map Zone UTM	Lat Long Ref
Site	Surface X 1917315.4	Surface Long
Slot Name	Surface Y 11978036.2	Surface Lat
Well Number	Surface Z 3591.5	Global Z Ref Mean Sea Level
Project	Ground Level 3574	Local North Ref Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
#	deg	deg	#	#	#	°/100#	#	#	#	#
3550.00	90.50	179.7	2907.86	-951.99	4.65	0.00	952.00	1917320.05	11977084.21	683.64
3600.00	90.50	179.7	2907.42	-1001.99	4.90	0.00	1002.00	1917320.30	11977034.21	684.08
3650.00	90.50	179.7	2906.99	-1051.99	5.14	0.00	1052.00	1917320.54	11976984.21	684.51
3700.00	90.50	179.7	2906.55	-1101.98	5.39	0.00	1102.00	1917320.79	11976934.22	684.95
3750.00	90.50	179.7	2906.12	-1151.98	5.63	0.00	1152.00	1917321.03	11976884.22	685.38
3800.00	90.50	179.7	2905.68	-1201.98	5.87	0.00	1201.99	1917321.27	11976834.22	685.82
3850.00	90.50	179.7	2905.24	-1251.98	6.12	0.00	1251.99	1917321.52	11976784.22	686.26
3900.00	90.50	179.7	2904.81	-1301.97	6.36	0.00	1301.99	1917321.76	11976734.23	686.69
3950.00	90.50	179.7	2904.37	-1351.97	6.61	0.00	1351.99	1917322.01	11976684.23	687.13
4000.00	90.50	179.7	2903.93	-1401.97	6.85	0.00	1401.99	1917322.25	11976634.23	687.57
4050.00	90.50	179.7	2903.50	-1451.97	7.10	0.00	1451.98	1917322.50	11976584.23	688.00
4100.00	90.50	179.7	2903.06	-1501.96	7.34	0.00	1501.98	1917322.74	11976534.24	688.44
4150.00	90.50	179.7	2902.62	-1551.96	7.58	0.00	1551.98	1917322.98	11976484.24	688.88
4200.00	90.50	179.7	2902.19	-1601.96	7.83	0.00	1601.98	1917323.23	11976434.24	689.31
4250.00	90.50	179.7	2901.75	-1651.96	8.07	0.00	1651.98	1917323.47	11976384.24	689.75
4300.00	90.50	179.7	2901.32	-1701.95	8.32	0.00	1701.98	1917323.72	11976334.25	690.18
4350.00	90.50	179.7	2900.88	-1751.95	8.56	0.00	1751.97	1917323.96	11976284.25	690.62
4400.00	90.50	179.7	2900.44	-1801.95	8.81	0.00	1801.97	1917324.21	11976234.25	691.06
4450.00	90.50	179.7	2900.01	-1851.95	9.05	0.00	1851.97	1917324.45	11976184.25	691.49
4500.00	90.50	179.7	2899.57	-1901.94	9.29	0.00	1901.97	1917324.69	11976134.26	691.93
4550.00	90.50	179.7	2899.13	-1951.94	9.54	0.00	1951.97	1917324.94	11976084.26	692.37
4600.00	90.50	179.7	2898.70	-2001.94	9.78	0.00	2001.96	1917325.18	11976034.26	692.80
4650.00	90.50	179.7	2898.26	-2051.94	10.03	0.00	2051.96	1917325.43	11975984.26	693.24
4700.00	90.50	179.7	2897.83	-2101.93	10.27	0.00	2101.96	1917325.67	11975934.27	693.67
4750.00	90.50	179.7	2897.39	-2151.93	10.52	0.00	2151.96	1917325.92	11975884.27	694.11
4800.00	90.50	179.7	2896.95	-2201.93	10.76	0.00	2201.96	1917326.16	11975834.27	694.55
4850.00	90.50	179.7	2896.52	-2251.93	11.01	0.00	2251.95	1917326.41	11975784.27	694.98
4900.00	90.50	179.7	2896.08	-2301.92	11.25	0.00	2301.95	1917326.65	11975734.28	695.42
4950.00	90.50	179.7	2895.64	-2351.92	11.49	0.00	2351.95	1917326.89	11975684.28	695.86
5000.00	90.50	179.7	2895.21	-2401.92	11.74	0.00	2401.95	1917327.14	11975634.28	696.29
5050.00	90.50	179.7	2894.77	-2451.92	11.98	0.00	2451.95	1917327.38	11975584.28	696.73
5100.00	90.50	179.7	2894.33	-2501.91	12.23	0.00	2501.94	1917327.63	11975534.29	697.17
5150.00	90.50	179.7	2893.90	-2551.91	12.47	0.00	2551.94	1917327.87	11975484.29	697.60
5200.00	90.50	179.7	2893.46	-2601.91	12.72	0.00	2601.94	1917328.12	11975434.29	698.04
5250.00	90.50	179.7	2893.03	-2651.91	12.96	0.00	2651.94	1917328.36	11975384.29	698.47
5300.00	90.50	179.7	2892.59	-2701.90	13.20	0.00	2701.94	1917328.60	11975334.30	698.91
5350.00	90.50	179.7	2892.15	-2751.90	13.45	0.00	2751.94	1917328.85	11975284.30	699.35

Markham State Com 1H, Plan 1

Operator Mack Energy Corp	Units feet, °/100ft	10:52 Thursday, February 07, 2019 Page 3 of 4
Field Round Tank	County Chaves	Vertical Section Azimuth 179.72
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Plan 1	Country USA	Database Access

Location SL: 330 FSL & 990 FEL Sec 23-T15S-R28E BHL: 1 FSL & 990 FEL Sec 26-T15S-R28E	Map Zone UTM	Lat Long Ref
Site	Surface X 1917315.4	Surface Long
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DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
ft	deg	deg	ft	ft	ft	%/100ft	ft	ft	ft	ft
5400.00	90.50	179.7	2891.72	-2801.90	13.69	0.00	2801.93	1917329.09	11975234.30	699.78
5450.00	90.50	179.7	2891.28	-2851.90	13.94	0.00	2851.93	1917329.34	11975184.30	700.22
5500.00	90.50	179.7	2890.84	-2901.89	14.18	0.00	2901.93	1917329.58	11975134.31	700.66
5550.00	90.50	179.7	2890.41	-2951.89	14.43	0.00	2951.93	1917329.83	11975084.31	701.09
5600.00	90.50	179.7	2889.97	-3001.89	14.67	0.00	3001.93	1917330.07	11975034.31	701.53
5650.00	90.50	179.7	2889.54	-3051.89	14.91	0.00	3051.92	1917330.31	11974984.31	701.96
5700.00	90.50	179.7	2889.10	-3101.88	15.16	0.00	3101.92	1917330.56	11974934.32	702.40
5750.00	90.50	179.7	2888.66	-3151.88	15.40	0.00	3151.92	1917330.80	11974884.32	702.84
5800.00	90.50	179.7	2888.23	-3201.88	15.65	0.00	3201.92	1917331.05	11974834.32	703.27
5850.00	90.50	179.7	2887.79	-3251.88	15.89	0.00	3251.92	1917331.29	11974784.32	703.71
5900.00	90.50	179.7	2887.35	-3301.87	16.14	0.00	3301.91	1917331.54	11974734.33	704.15
5950.00	90.50	179.7	2886.92	-3351.87	16.38	0.00	3351.91	1917331.78	11974684.33	704.58
6000.00	90.50	179.7	2886.48	-3401.87	16.62	0.00	3401.91	1917332.02	11974634.33	705.02
6050.00	90.50	179.7	2886.04	-3451.87	16.87	0.00	3451.91	1917332.27	11974584.33	705.46
6100.00	90.50	179.7	2885.61	-3501.86	17.11	0.00	3501.91	1917332.51	11974534.34	705.89
6150.00	90.50	179.7	2885.17	-3551.86	17.36	0.00	3551.90	1917332.76	11974484.34	706.33
6200.00	90.50	179.7	2884.74	-3601.86	17.60	0.00	3601.90	1917333.00	11974434.34	706.76
6250.00	90.50	179.7	2884.30	-3651.86	17.85	0.00	3651.90	1917333.25	11974384.34	707.20
6300.00	90.50	179.7	2883.86	-3701.85	18.09	0.00	3701.90	1917333.49	11974334.35	707.64
6350.00	90.50	179.7	2883.43	-3751.85	18.34	0.00	3751.90	1917333.74	11974284.35	708.07
6400.00	90.50	179.7	2882.99	-3801.85	18.58	0.00	3801.90	1917333.98	11974234.35	708.51
6450.00	90.50	179.7	2882.55	-3851.85	18.82	0.00	3851.89	1917334.22	11974184.35	708.95
6500.00	90.50	179.7	2882.12	-3901.84	19.07	0.00	3901.89	1917334.47	11974134.36	709.38
6550.00	90.50	179.7	2881.68	-3951.84	19.31	0.00	3951.89	1917334.71	11974084.36	709.82
6600.00	90.50	179.7	2881.24	-4001.84	19.56	0.00	4001.89	1917334.96	11974034.36	710.26
6650.00	90.50	179.7	2880.81	-4051.84	19.80	0.00	4051.89	1917335.20	11973984.36	710.69
6700.00	90.50	179.7	2880.37	-4101.83	20.05	0.00	4101.88	1917335.45	11973934.37	711.13
6750.00	90.50	179.7	2879.94	-4151.83	20.29	0.00	4151.88	1917335.69	11973884.37	711.56
6800.00	90.50	179.7	2879.50	-4201.83	20.53	0.00	4201.88	1917335.93	11973834.37	712.00
6850.00	90.50	179.7	2879.06	-4251.83	20.78	0.00	4251.88	1917336.18	11973784.37	712.44
6900.00	90.50	179.7	2878.63	-4301.82	21.02	0.00	4301.88	1917336.42	11973734.38	712.87
6950.00	90.50	179.7	2878.19	-4351.82	21.27	0.00	4351.87	1917336.67	11973684.38	713.31
7000.00	90.50	179.7	2877.75	-4401.82	21.51	0.00	4401.87	1917336.91	11973634.38	713.75
7050.00	90.50	179.7	2877.32	-4451.82	21.76	0.00	4451.87	1917337.16	11973584.38	714.18
7100.00	90.50	179.7	2876.88	-4501.81	22.00	0.00	4501.87	1917337.40	11973534.39	714.62
7150.00	90.50	179.7	2876.45	-4551.81	22.24	0.00	4551.87	1917337.64	11973484.39	715.05
7200.00	90.50	179.7	2876.01	-4601.81	22.49	0.00	4601.86	1917337.89	11973434.39	715.49

Markham State Com 1H, Plan 1

Operator Mack Energy Corp	Units feet, °/100ft	10:52 Thursday, February 07, 2019 Page 4 of 4
Field Round Tank	County Chaves	Vertical Section Azimuth 179.72
Well Name Markham State Com 1H	State New Mexico	Survey Calculation Method Minimum Curvature
Plan 1	Country USA	Database Access
Location SL: 330 FSL & 990 FEL Sec 23-T15S-R28E BHL: 1 FSL & 990 FEL Sec 26-T15S-R28E	Map Zone UTM	Lat Long Ref
Site	Surface X 1917315.4	Surface Long
Slot Name	Surface Y 11978036.2	Surface Lat
Well Number	Surface Z 3591.5	Global Z Ref Mean Sea Level
Project	Ground Level 3574	Local North Ref Grid

DIRECTIONAL WELL PLAN

MD*	INC*	AZI*	TVD*	N*	E*	DLS*	V. S.*	MapE*	MapN*	SysTVD*
#	deg	deg	#	#	#	°/100ft	#	#	#	#
7250.00	90.50	179.7	2875.57	-4651.81	22.73	0.00	4651.86	1917338.13	11973384.39	715.93
7300.00	90.50	179.7	2875.14	-4701.80	22.98	0.00	4701.86	1917338.38	11973334.40	716.36
7350.00	90.50	179.7	2874.70	-4751.80	23.22	0.00	4751.86	1917338.62	11973284.40	716.80
7400.00	90.50	179.7	2874.26	-4801.80	23.47	0.00	4801.86	1917338.87	11973234.40	717.24
7450.00	90.50	179.7	2873.83	-4851.80	23.71	0.00	4851.86	1917339.11	11973184.40	717.67
7500.00	90.50	179.7	2873.39	-4901.79	23.95	0.00	4901.85	1917339.35	11973134.41	718.11
7550.00	90.50	179.7	2872.95	-4951.79	24.20	0.00	4951.85	1917339.60	11973084.41	718.55
7600.00	90.50	179.7	2872.52	-5001.79	24.44	0.00	5001.85	1917339.84	11973034.41	718.98
7650.00	90.50	179.7	2872.08	-5051.79	24.69	0.00	5051.85	1917340.09	11972984.41	719.42
7700.00	90.50	179.7	2871.65	-5101.78	24.93	0.00	5101.85	1917340.33	11972934.42	719.85
7750.00	90.50	179.7	2871.21	-5151.78	25.18	0.00	5151.84	1917340.58	11972884.42	720.29
7800.00	90.50	179.7	2870.77	-5201.78	25.42	0.00	5201.84	1917340.82	11972834.42	720.73
7850.00	90.50	179.7	2870.34	-5251.78	25.67	0.00	5251.84	1917341.07	11972784.42	721.16
7900.00	90.50	179.7	2869.90	-5301.77	25.91	0.00	5301.84	1917341.31	11972734.43	721.60
7950.00	90.50	179.7	2869.46	-5351.77	26.15	0.00	5351.84	1917341.55	11972684.43	722.04
8000.00	90.50	179.7	2869.03	-5401.77	26.40	0.00	5401.83	1917341.80	11972634.43	722.47
8050.00	90.50	179.7	2868.59	-5451.77	26.64	0.00	5451.83	1917342.04	11972584.43	722.91
8100.00	90.50	179.7	2868.16	-5501.76	26.89	0.00	5501.83	1917342.29	11972534.44	723.34
8150.00	90.50	179.7	2867.72	-5551.76	27.13	0.00	5551.83	1917342.53	11972484.44	723.78
8200.00	90.50	179.7	2867.28	-5601.76	27.38	0.00	5601.83	1917342.78	11972434.44	724.22
*** TD (at MD = 8219.33)										
8219.33	90.50	179.7	2867.11	-5621.09	27.47	0.00	5621.16	1917342.87	11972415.11	724.39