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MARATHON

BLACK RIVER 374 STATE 24 27 15 WA 8H

H&P 441

3/15/2018

Scientific Drilling

The Ultimate Partner In Wellbore Placement

SURVEY REPORT

BLACK RIVER 374 STATE 24 27 15 WA 8H

COMPUTED SURVEY

CUSTOMER **Marathon**
PROJECT **Black River**
FIELD **Wolfcamp A**

SDI JOB NO. **OP:008289**
SDI DISTRICT **Midland**
SDI KIT/UNIT **KIT MUD PULSE**

SITE INFORMATION

Site Name **Black River**
Lat/Long **32° 12' 38.202" N, 104° 10' 51.11" W**
Northing **440,373.41 ft**
Easting **547,156.41 ft**

Section **24**
Township **27**
Range **15**

MAP INFORMATION

North Reference **Grid North**
Grid Correction **-0.08 deg**
System **US State Plane 1927**
Datum **North American Datum 1927 (Clarke 1866)**
Map Zone **New Mexico East: 3001**

**WELL INFORMATION**

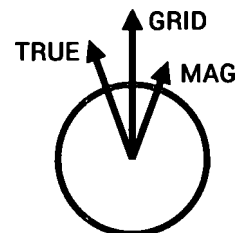
Lat/Long **32° 12' 38.2" N, 104° 10' 49.946" W**
Northing **440,373.36 ft**
Easting **547,256.4 ft**
UWI **30-015-44505**

DEPTH AND ELEVATION REFERENCE

Ground Level **3223 ft above Mean Sea Level**
Reference Datum **RKB**
Reference Height **26.5 ft above G.L.**
Reference Elevation **3249.5 ft**

VERTICAL SECTION REFERENCE

+N/-S **0 ft**
+E/-W **0 ft**
Proposal Direction **0.00°**
Calculation Method **Minimum Curvature**

**GEOMAGNETIC REFERENCE INFORMATION**Local Gravity: **998.516 mG [computed]**

MD	MODEL	DATE	DECLINATION	TRUE TO GRID	MAG TO GRID
0-13864 ft	HDGM2018	15 Mar 2018	7.37°	subtract 0.08°	add 7.29°

WELL NOTES**OPERATORS**

Calvin Searcy, Peter Bankov

SDI Operator Name (Printed)

SIGNATURE

DATE

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
81.10	0.60	260.29	81.10	-0.07	-0.07	-0.42	0.74
175.60	2.66	273.39	175.56	-0.03	-0.03	-3.10	2.20
265.90	2.32	260.10	265.77	-0.22	-0.22	-6.99	0.74
357.60	1.76	262.51	357.41	-0.72	-0.72	-10.21	0.62
449.30	1.76	260.73	449.07	-1.13	-1.13	-13.00	0.06
507.10	1.94	255.62	506.84	-1.51	-1.51	-14.82	0.42
593.00	1.11	255.24	592.71	-2.09	-2.09	-17.04	0.96
684.00	1.27	252.14	683.69	-2.62	-2.62	-18.85	0.19
774.00	1.02	255.78	773.67	-3.13	-3.13	-20.58	0.30
864.00	1.07	267.89	863.65	-3.35	-3.35	-22.20	0.25
955.00	1.01	274.39	954.64	-3.33	-3.33	-23.85	0.15
1046.00	0.77	20.50	1045.63	-2.69	-2.69	-24.43	1.56
1140.00	1.85	57.90	1139.61	-1.30	-1.30	-22.92	1.41
1235.00	2.02	53.60	1234.56	0.51	0.51	-20.28	0.23
1330.00	2.17	57.33	1329.49	2.47	2.47	-17.42	0.21
1424.00	2.73	67.29	1423.41	4.29	4.29	-13.86	0.75
1519.00	1.17	144.02	1518.36	4.38	4.38	-11.20	2.85
1613.00	1.53	178.74	1612.34	2.35	2.35	-10.61	0.93
1708.00	1.47	151.75	1707.30	0.00	0.00	-10.01	0.74
1802.00	2.55	119.01	1801.25	-2.07	-2.07	-7.61	1.63
1897.00	3.16	111.12	1896.13	-4.04	-4.04	-3.32	0.77
1992.00	2.75	130.46	1991.01	-6.46	-6.46	0.85	1.13
2086.00	2.89	138.26	2084.89	-9.69	-9.69	4.15	0.43
2181.00	1.20	128.65	2179.83	-12.10	-12.10	6.52	1.81
2275.00	0.48	103.10	2273.82	-12.80	-12.80	7.67	0.85
2372.00	1.20	89.54	2370.81	-12.89	-12.89	9.08	0.77
2467.00	1.24	91.03	2465.79	-12.90	-12.90	11.11	0.06
2562.00	2.71	103.45	2560.73	-13.44	-13.44	14.33	1.60
2656.00	4.29	107.10	2654.55	-14.99	-14.99	19.85	1.70
2751.00	4.15	109.28	2749.29	-17.17	-17.17	26.50	0.22
2845.00	4.11	107.55	2843.05	-19.31	-19.31	32.92	0.14
2939.00	3.90	110.36	2936.82	-21.44	-21.44	39.13	0.30

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
3034.00	3.71	102.90	3031.61	-23.25	-23.25	45.16	0.56
3129.00	3.18	102.46	3126.44	-24.51	-24.51	50.73	0.57
3223.00	4.35	107.80	3220.23	-26.16	-26.16	56.67	1.31
3318.00	4.94	104.91	3314.92	-28.32	-28.32	64.06	0.67
3412.00	4.93	101.88	3408.57	-30.19	-30.19	71.92	0.28
3507.00	4.46	98.55	3503.25	-31.58	-31.58	79.57	0.57
3601.00	4.90	106.40	3596.94	-33.26	-33.26	87.04	0.82
3696.00	5.15	108.59	3691.57	-35.76	-35.76	94.98	0.34
3791.00	4.91	108.80	3786.21	-38.43	-38.43	102.87	0.25
3885.00	5.17	114.36	3879.84	-41.48	-41.48	110.54	0.59
3980.00	5.38	111.48	3974.44	-44.88	-44.88	118.59	0.35
4075.00	5.02	114.14	4069.05	-48.21	-48.21	126.52	0.45
4169.00	5.35	116.86	4162.67	-51.87	-51.87	134.18	0.43
4264.00	5.32	118.05	4257.25	-55.94	-55.94	142.02	0.12
4358.00	5.36	114.03	4350.85	-59.77	-59.77	149.87	0.40
4453.00	5.75	115.99	4445.40	-63.66	-63.66	158.20	0.47
4548.00	5.69	120.66	4539.93	-68.15	-68.15	166.53	0.49
4642.00	4.52	120.60	4633.55	-72.42	-72.42	173.73	1.24
4737.00	4.40	120.78	4728.27	-76.19	-76.19	180.09	0.13
4832.00	4.46	119.59	4822.98	-79.88	-79.88	186.43	0.11
4926.00	3.73	119.56	4916.74	-83.19	-83.19	192.26	0.78
5021.00	4.64	113.28	5011.49	-86.23	-86.23	198.48	1.08
5115.00	4.80	113.10	5105.17	-89.27	-89.27	205.59	0.17
5210.00	4.68	111.64	5199.84	-92.27	-92.27	212.85	0.18
5305.00	4.40	113.41	5294.54	-95.14	-95.14	219.80	0.33
5399.00	4.40	108.12	5388.27	-97.70	-97.70	226.54	0.43
5494.00	5.26	114.45	5482.93	-100.63	-100.63	233.96	1.07
5589.00	6.01	116.51	5577.47	-104.65	-104.65	242.37	0.81
5684.00	5.71	116.80	5671.98	-109.00	-109.00	251.04	0.31
5778.00	5.37	118.29	5765.54	-113.20	-113.20	259.09	0.39
5873.00	4.42	111.00	5860.19	-116.62	-116.62	266.42	1.20
5967.00	4.34	112.00	5953.92	-119.25	-119.25	273.10	0.12
6062.00	3.27	99.14	6048.71	-121.02	-121.02	279.11	1.43

MD	INC	AZIM	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
6157.00	3.88	102.40	6143.52	-122.14	-122.14	284.92	0.67
6251.00	5.51	108.31	6237.20	-124.24	-124.24	292.31	1.81
6346.00	5.76	117.58	6331.75	-127.88	-127.88	300.87	0.99
6440.00	6.20	114.58	6425.23	-132.18	-132.18	309.67	0.57
6535.00	5.43	117.56	6519.74	-136.39	-136.39	318.32	0.88
6630.00	5.58	131.29	6614.31	-141.52	-141.52	325.77	1.39
6724.00	5.05	134.04	6707.91	-147.41	-147.41	332.18	0.63
6819.00	4.44	132.45	6802.58	-152.80	-152.80	337.90	0.66
6913.00	4.13	131.51	6896.32	-157.51	-157.51	343.13	0.34
7008.00	3.29	136.11	6991.12	-161.74	-161.74	347.58	0.94
7103.00	2.97	140.28	7085.97	-165.60	-165.60	351.04	0.41
7197.00	2.80	154.95	7179.86	-169.55	-169.55	353.57	0.80
7292.00	3.06	154.67	7274.73	-173.95	-173.95	355.64	0.27
7387.00	1.04	154.31	7369.67	-177.02	-177.02	357.10	2.12
7481.00	1.21	76.21	7463.65	-177.56	-177.56	358.44	1.52
7576.00	1.57	47.35	7558.63	-176.44	-176.44	360.37	0.82
7671.00	1.09	63.73	7653.60	-175.16	-175.16	362.13	0.64
7766.00	0.85	77.75	7748.59	-174.61	-174.61	363.63	0.35
7860.00	0.37	9.41	7842.58	-174.16	-174.16	364.36	0.84
7955.00	0.20	275.31	7937.58	-173.84	-173.84	364.25	0.46
8050.00	0.26	286.94	8032.58	-173.76	-173.76	363.88	0.08
8144.00	0.22	221.22	8126.58	-173.84	-173.84	363.56	0.28
8238.00	0.34	129.42	8220.58	-174.15	-174.15	363.65	0.44
8333.00	0.90	92.09	8315.57	-174.35	-174.35	364.61	0.70
8428.00	2.31	89.49	8410.53	-174.36	-174.36	367.27	1.49
8522.00	1.31	94.50	8504.49	-174.43	-174.43	370.24	1.08
8616.00	1.12	83.42	8598.47	-174.41	-174.41	372.22	0.32
8711.00	1.67	36.74	8693.44	-173.19	-173.19	373.98	1.28
8805.00	10.44	359.35	8786.84	-163.56	-163.56	374.70	9.76
8900.00	19.21	353.47	8878.59	-139.37	-139.37	372.82	9.35
8995.00	29.59	355.16	8964.99	-100.36	-100.36	369.05	10.95
9089.00	39.14	359.51	9042.51	-47.44	-47.44	366.83	10.48
9184.00	49.28	358.47	9110.51	18.70	18.70	365.61	10.70

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
9278.00	59.80	358.49	9164.97	95.13	95.13	363.58	11.20
9372.00	68.49	359.32	9205.92	179.63	179.63	361.99	9.28
9467.00	75.02	356.80	9235.65	269.74	269.74	358.90	7.32
9562.00	80.52	359.30	9255.78	362.48	362.48	355.76	6.34
9609.00	83.83	1.51	9262.17	409.04	409.04	356.10	8.46
9683.00	89.56	3.05	9266.43	482.82	482.82	359.04	8.01
9778.00	89.90	1.78	9266.88	577.73	577.73	363.04	1.38
9873.00	88.79	0.24	9267.97	672.71	672.71	364.72	2.00
9967.00	89.13	359.72	9269.67	766.69	766.69	364.69	0.66
10062.00	91.38	0.36	9269.26	861.69	861.69	364.76	2.46
10157.00	89.60	359.35	9268.45	956.68	956.68	364.52	2.15
10252.00	90.87	359.03	9268.06	1051.66	1051.66	363.18	1.38
10346.00	90.00	358.96	9267.35	1145.65	1145.65	361.52	0.93
10440.00	91.07	1.48	9266.47	1239.63	1239.63	361.88	2.91
10535.00	90.54	0.98	9265.13	1334.60	1334.60	363.92	0.77
10630.00	88.59	0.01	9265.86	1429.59	1429.59	364.75	2.29
10725.00	89.97	359.11	9267.05	1524.57	1524.57	364.02	1.73
10820.00	91.41	358.78	9265.91	1619.55	1619.55	362.27	1.56
10915.00	92.11	1.66	9262.99	1714.49	1714.49	362.63	3.12
11010.00	91.81	1.29	9259.74	1809.41	1809.41	365.07	0.50
11105.00	90.50	1.00	9257.83	1904.37	1904.37	366.97	1.41
11199.00	89.23	1.90	9258.05	1998.33	1998.33	369.35	1.66
11294.00	90.57	359.53	9258.22	2093.32	2093.32	370.54	2.87
11388.00	90.27	358.11	9257.53	2187.29	2187.29	368.60	1.54
11483.00	92.35	359.67	9255.35	2282.24	2282.24	366.75	2.74
11578.00	92.92	2.14	9250.98	2377.12	2377.12	368.25	2.67
11672.00	90.97	3.16	9247.78	2470.96	2470.96	372.60	2.34
11767.00	89.60	2.83	9247.31	2565.83	2565.83	377.56	1.49
11861.00	89.26	2.41	9248.24	2659.72	2659.72	381.86	0.57
11955.00	89.19	1.40	9249.51	2753.66	2753.66	384.99	1.08
12050.00	88.73	1.21	9251.23	2848.62	2848.62	387.16	0.53
12144.00	88.35	0.45	9253.63	2942.58	2942.58	388.52	0.89
12239.00	90.44	0.08	9254.63	3037.57	3037.57	388.96	2.23

MD ft	INC deg	AZIM deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
12334.00	91.07	359.73	9253.38	3132.56	3132.56	388.80	0.76
12428.00	91.24	359.44	9251.48	3226.54	3226.54	388.12	0.35
12523.00	92.04	359.41	9248.75	3321.49	3321.49	387.17	0.85
12617.00	91.31	359.60	9246.00	3415.45	3415.45	386.36	0.81
12712.00	89.40	0.75	9245.42	3510.44	3510.44	386.66	2.35
12807.00	91.48	0.58	9244.69	3605.42	3605.42	387.76	2.20
12902.00	90.20	3.70	9243.30	3700.33	3700.33	391.30	3.54
12996.00	88.92	0.61	9244.02	3794.25	3794.25	394.84	3.55
13091.00	88.59	0.52	9246.08	3889.22	3889.22	395.78	0.36
13184.00	89.16	0.03	9247.90	3982.20	3982.20	396.23	0.81
13279.00	88.39	359.48	9249.94	4077.18	4077.18	395.83	1.00
13373.00	91.21	359.37	9250.27	4171.17	4171.17	394.88	3.00
13467.00	90.84	358.83	9248.59	4265.14	4265.14	393.41	0.69
13562.00	94.36	0.46	9244.28	4360.02	4360.02	392.82	4.09
13657.00	92.82	1.59	9238.32	4454.81	4454.81	394.52	2.02
13752.00	89.63	2.15	9236.29	4549.73	4549.73	397.62	3.41
13847.00	90.81	0.73	9235.93	4644.69	4644.69	400.01	1.94
13864.00	90.67	1.23	9235.71	4661.69	4661.69	400.30	3.04
13914.00	90.67	1.23	9235.00	4711.00	4711.00	401.00	0.00