



Murchison Oil and Gas

Ramsey

Ogden 5B

Ogden 5B

Ogden 5B Leg 3 ST3

Design: Ogden ^H5B Leg 3 ST3

MOJO Standard Survey

17 May, 2012

This survey is correct to the best of my knowledge and is supported by actual field data.

Notarized this date 17 of may, 2012.

Cynthia L. Cottrell

Notary Signature

County of Collin

State of Texas



MOJO
DIRECTIONAL CORPORATION

Company: Murchison Oil and Gas
Project: Ramsey
Site: Ogden 5B
Well: Ogden 5B
Wellbore: Ogden 5B Leg 3 ST3
Design: Ogden 5B Leg 3 ST3

Local Co-ordinate Reference: Well Ogden 5B
TVD Reference: Well @ 3390.0usft (HWD 4)
MD Reference: Well @ 3390.0usft (HWD 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project Ramsey, Pinnate Appraisal Well

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site Ogden 5B

Site Position:		Northing:	419,069.17 usft	Latitude:	32° 9' 7.484 N
From:	Lat/Long	Easting:	563,741.80 usft	Longitude:	104° 15' 39.380 W
Position Uncertainty:	1.0 usft	Slot Radius:	15 "	Grid Convergence:	0.04 °

Well Ogden 5B, Multi-Lateral Horizontal Intersection

Well Position	+N/-S	0.0 usft	Northing:	419,069.17 usft	Latitude:	32° 9' 7.484 N
	+E/-W	0.0 usft	Easting:	563,741.80 usft	Longitude:	104° 15' 39.380 W
Position Uncertainty		1.0 usft	Wellhead Elevation:	usft	Ground Level:	3,378.0 usft

Wellbore Ogden 5B Leg 3 ST3

Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF200510	18/11/2011	(°) 7.83	(°) 60.01	(nT) 48,493

Design Ogden 5B Leg 3 ST3

Audit Notes:

Version:	1.0	Phase:	ACTUAL	Tie On Depth:	3,616.0
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Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.0	0.0	0.0	10.54

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Survey Program Date 27/04/2012

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
360.0	2,255.0	Ogden 5B Main bore (Ogden 5B)		
2,278.0	2,569.0	Ogden 5B Leg 2 (Ogden 5B)		
2,590.0	3,616.0	Ogden 5B Leg 3 (Ogden 5B)		
3,666.0	6,223.0	Ogden 5BH Leg 3 ST3 as drilled (Ogden 5)		

Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	Closure Azimuth (°)	Closure Distance (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.00	419,069.17	563,741.80	0.00	0.00
334.0	0.46	313.30	334.0	0.9	-1.0	0.14	419,070.10	563,740.81	313.30	1.35
9 5/8"										
360.0	0.50	313.30	360.0	1.1	-1.1	0.14	419,070.25	563,740.65	313.30	1.57
420.0	0.40	334.80	420.0	1.4	-1.4	0.32	419,070.62	563,740.37	315.47	2.03
574.0	0.60	339.80	574.0	2.7	-1.9	0.13	419,071.86	563,739.87	324.33	3.31
674.0	0.20	24.10	674.0	3.3	-2.0	0.48	419,072.51	563,739.76	328.59	3.91
774.0	1.00	319.60	774.0	4.2	-2.5	0.93	419,073.34	563,739.26	328.68	4.87
874.0	1.50	315.70	874.0	5.8	-4.0	0.51	419,074.94	563,737.78	325.16	7.02
974.0	1.50	314.90	973.9	7.6	-5.9	0.02	419,076.80	563,735.94	322.48	9.61
1,074.0	2.70	338.70	1,073.9	10.7	-7.6	1.46	419,079.92	563,734.16	324.59	13.18
1,174.0	2.70	341.50	1,173.7	15.2	-9.2	0.13	419,084.34	563,732.56	328.66	17.76
1,274.0	2.40	357.20	1,273.6	19.5	-10.1	0.76	419,088.67	563,731.71	332.64	21.95
1,349.0	2.40	3.30	1,348.6	22.6	-10.1	0.34	419,091.81	563,731.72	336.00	24.78
1,388.0	2.50	4.20	1,387.5	24.3	-10.0	0.27	419,093.47	563,731.83	337.70	26.26
1,433.0	2.60	11.90	1,432.5	26.3	-9.7	0.79	419,095.45	563,732.11	339.77	28.00
1,478.0	3.80	20.90	1,477.4	28.7	-8.9	2.88	419,097.84	563,732.85	342.67	30.03
1,523.0	5.80	27.20	1,522.3	32.1	-7.4	4.59	419,101.25	563,734.43	347.06	32.92
1,568.0	6.60	29.50	1,567.0	36.4	-5.1	1.86	419,105.53	563,736.74	352.08	36.71
1,613.0	7.10	26.70	1,611.7	41.1	-2.5	1.34	419,110.26	563,739.26	356.47	41.17

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1,658.0	8.20	22.30		1,656.3	46.5	-0.1	2.77	419,115.72	563,741.73	359.92	46.54	
1,703.0	9.50	18.90		1,700.7	53.0	2.4	3.11	419,122.20	563,744.15	2.54	53.08	
1,748.0	11.90	17.80		1,745.0	61.0	5.0	5.35	419,130.13	563,746.77	4.67	61.16	
1,799.0	16.60	14.00		1,794.4	73.0	8.3	9.39	419,142.21	563,750.14	6.52	73.52	
1,843.0	24.20	11.60		1,835.6	88.0	11.7	17.37	419,157.17	563,753.48	7.56	88.77	
1,879.0	30.00	10.50		1,867.6	104.1	14.8	16.17	419,173.26	563,756.61	8.10	105.14	
1,924.0	35.50	9.00		1,905.5	128.1	18.9	12.35	419,197.24	563,760.71	8.40	129.46	
1,969.0	40.90	7.50		1,940.8	155.6	22.9	12.18	419,224.78	563,764.67	8.36	157.28	
2,014.0	48.20	9.30		1,972.9	186.8	27.5	16.46	419,255.98	563,769.31	8.38	188.82	
2,059.0	55.10	12.20		2,000.8	221.4	34.1	16.14	419,290.61	563,775.93	8.76	224.06	
2,075.0	56.99	11.57		2,009.7	234.4	36.9	12.23	419,303.60	563,778.67	8.94	237.31	
7"												
2,098.0	59.70	10.70		2,021.8	253.6	40.6	12.23	419,322.81	563,782.44	9.10	256.87	
2,143.0	62.50	10.60		2,043.5	292.3	47.9	6.23	419,361.52	563,789.72	9.31	296.25	
2,188.0	72.00	3.30		2,060.9	333.5	52.8	25.86	419,402.64	563,794.64	9.01	337.63	
2,233.0	79.70	1.80		2,071.9	377.0	54.8	17.41	419,446.20	563,796.57	8.27	380.99	
2,255.0	82.00	1.10		2,075.4	398.7	55.3	10.92	419,467.91	563,797.12	7.90	402.56	
2,278.0	81.90	5.90		2,078.6	421.5	56.7	20.67	419,490.64	563,798.51	7.66	425.26	
2,302.0	86.80	12.50		2,081.0	445.0	60.5	34.14	419,514.19	563,802.33	7.75	449.12	
2,324.0	88.80	13.80		2,081.8	466.4	65.5	10.84	419,535.60	563,807.33	8.00	471.01	
2,354.0	90.20	15.00		2,082.1	495.5	73.0	6.15	419,564.65	563,814.79	8.38	500.83	
2,369.0	92.60	16.40		2,081.7	509.9	77.1	18.52	419,579.09	563,818.85	8.59	515.70	
2,392.0	95.40	16.70		2,080.1	531.9	83.6	12.24	419,601.08	563,825.39	8.93	538.43	
2,414.0	96.20	18.60		2,077.9	552.8	90.2	9.33	419,621.93	563,832.02	9.27	560.08	
2,430.0	96.30	19.50		2,076.2	567.8	95.4	5.63	419,636.97	563,837.21	9.54	575.76	
2,459.0	96.80	20.10		2,072.9	594.9	105.2	2.68	419,664.07	563,846.97	10.03	604.13	
2,479.0	95.30	18.40		2,070.8	613.7	111.7	11.30	419,682.85	563,853.53	10.32	623.77	

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2,504.0	92.70	15.10	2,069.0	637.6	118.9	16.78	419,706.73	563,860.71	10.57	648.55	
2,531.0	90.80	11.70	2,068.2	663.8	125.2	14.42	419,732.97	563,866.97	10.68	675.50	
2,569.0	91.60	10.00	2,067.4	701.1	132.3	4.94	419,770.28	563,874.12	10.69	713.49	
2,590.0	90.70	9.50	2,067.0	721.8	135.9	4.90	419,790.98	563,877.67	10.66	734.48	
2,633.0	87.80	5.90	2,067.5	764.4	141.6	10.75	419,833.57	563,883.43	10.50	777.41	
2,676.0	90.20	5.70	2,068.3	807.2	146.0	5.60	419,876.34	563,887.78	10.25	820.27	
2,719.0	90.70	7.50	2,067.9	849.9	150.9	4.34	419,919.06	563,892.72	10.07	863.18	
2,762.0	90.00	10.70	2,067.7	892.3	157.7	7.62	419,961.51	563,899.52	10.02	906.17	
2,805.0	90.60	10.90	2,067.5	934.6	165.8	1.47	420,003.75	563,907.58	10.06	949.16	
2,848.0	90.60	11.80	2,067.0	976.7	174.2	2.09	420,045.90	563,916.04	10.11	992.15	
2,891.0	89.30	13.40	2,067.0	1,018.7	183.6	4.79	420,087.86	563,925.42	10.22	1,035.11	
2,934.0	90.40	13.00	2,067.2	1,060.6	193.4	2.72	420,129.73	563,935.24	10.34	1,078.05	
2,977.0	89.80	11.20	2,067.1	1,102.6	202.5	4.41	420,171.77	563,944.25	10.40	1,121.03	
3,020.0	90.50	11.00	2,067.0	1,144.8	210.7	1.69	420,213.97	563,952.53	10.43	1,164.03	
3,063.0	92.10	9.30	2,066.0	1,187.1	218.3	5.43	420,256.28	563,960.10	10.42	1,207.01	
3,106.0	90.20	10.00	2,065.1	1,229.5	225.5	4.71	420,298.66	563,967.31	10.39	1,250.00	
3,149.0	88.90	12.90	2,065.5	1,271.6	234.0	7.39	420,340.80	563,975.84	10.43	1,292.98	
3,192.0	88.30	10.60	2,066.5	1,313.7	242.8	5.53	420,382.88	563,984.60	10.47	1,335.96	
3,235.0	89.10	8.10	2,067.5	1,356.1	249.8	6.10	420,425.29	563,991.58	10.44	1,378.93	
3,278.0	91.50	8.30	2,067.3	1,398.7	255.9	5.60	420,467.85	563,997.71	10.37	1,421.90	
3,321.0	91.60	7.40	2,066.1	1,441.3	261.8	2.11	420,510.43	564,003.58	10.29	1,464.84	
3,364.0	91.90	8.00	2,064.8	1,483.9	267.5	1.56	420,553.02	564,009.34	10.22	1,507.78	
3,401.0	89.60	8.10	2,064.3	1,520.5	272.7	6.22	420,589.65	564,014.52	10.17	1,544.75	
3,444.0	90.90	7.60	2,064.1	1,563.1	278.6	3.24	420,632.25	564,020.40	10.11	1,587.71	
3,487.0	89.80	7.50	2,063.9	1,605.7	284.2	2.57	420,674.88	564,026.05	10.04	1,630.67	
3,530.0	87.50	5.70	2,064.9	1,648.4	289.2	6.79	420,717.57	564,030.99	9.95	1,673.58	
3,573.0	88.90	4.40	2,066.2	1,691.2	293.0	4.44	420,760.38	564,034.77	9.83	1,716.40	

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3,616.0	90.40	4.00	2,066.5	1,734.1	296.1	3.61	420,803.27	564,037.92	9.69	1,759.20	
3,666.0	85.70	10.40	2,068.2	1,783.6	302.4	15.87	420,852.80	564,044.17	9.62	1,809.07	
3,709.0	86.00	9.00	2,071.3	1,825.9	309.6	3.32	420,895.07	564,051.40	9.62	1,851.96	
3,752.0	86.30	8.60	2,074.2	1,868.3	316.2	1.16	420,937.47	564,057.96	9.60	1,894.86	
3,795.0	87.70	8.90	2,076.4	1,910.7	322.7	3.33	420,979.91	564,064.49	9.59	1,937.79	
3,838.0	88.50	9.50	2,077.9	1,953.2	329.6	2.33	421,022.33	564,071.36	9.58	1,980.77	
3,881.0	90.10	10.90	2,078.4	1,995.5	337.2	4.94	421,064.65	564,078.98	9.59	2,023.76	
3,924.0	91.90	11.90	2,077.6	2,037.6	345.7	4.79	421,106.79	564,087.48	9.63	2,066.73	
3,967.0	91.10	13.40	2,076.5	2,079.6	355.1	3.95	421,148.73	564,096.89	9.69	2,109.66	
4,010.0	90.50	13.30	2,075.9	2,121.4	365.0	1.41	421,190.56	564,106.82	9.76	2,152.56	
4,053.0	90.20	14.80	2,075.6	2,163.1	375.5	3.56	421,232.27	564,117.25	9.85	2,195.44	
4,096.0	90.90	15.50	2,075.2	2,204.6	386.7	2.30	421,273.78	564,128.49	9.95	2,238.26	
4,139.0	92.40	14.70	2,074.0	2,246.1	397.9	3.95	421,315.27	564,139.69	10.05	2,281.07	
4,182.0	93.30	15.50	2,071.9	2,287.6	409.1	2.80	421,356.74	564,150.88	10.14	2,323.85	
4,225.0	92.60	14.80	2,069.6	2,329.0	420.3	2.30	421,398.19	564,162.10	10.23	2,366.64	
4,268.0	92.20	14.50	2,067.8	2,370.6	431.2	1.16	421,439.75	564,172.96	10.31	2,409.47	
4,311.0	90.50	15.60	2,066.8	2,412.1	442.3	4.71	421,481.26	564,184.13	10.39	2,452.31	
4,354.0	89.10	14.40	2,067.0	2,453.6	453.5	4.29	421,522.80	564,195.26	10.47	2,495.17	
4,397.0	90.20	15.10	2,067.2	2,495.2	464.4	3.03	421,564.38	564,206.20	10.54	2,538.05	
4,440.0	91.10	18.80	2,066.8	2,536.3	476.9	8.85	421,605.50	564,218.74	10.65	2,580.78	
4,483.0	91.20	17.80	2,065.9	2,577.1	490.4	2.34	421,646.31	564,232.23	10.77	2,623.39	
4,526.0	91.30	18.10	2,065.0	2,618.0	503.7	0.74	421,687.21	564,245.48	10.89	2,666.05	
4,569.0	90.10	18.40	2,064.4	2,658.9	517.2	2.88	421,728.05	564,258.95	11.01	2,708.70	
4,612.0	90.10	18.10	2,064.4	2,699.7	530.6	0.70	421,768.88	564,272.41	11.12	2,751.36	
4,655.0	89.00	17.70	2,064.7	2,740.6	543.8	2.72	421,809.80	564,285.63	11.22	2,794.06	
4,698.0	88.50	16.80	2,065.6	2,781.7	556.6	2.39	421,850.85	564,298.38	11.31	2,836.82	
4,741.0	89.10	17.60	2,066.5	2,822.7	569.3	2.33	421,891.92	564,311.09	11.40	2,879.58	

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4,784.0	89.10	17.00	2,067.2	2,863.8	582.1	1.40	421,932.97	564,323.88	11.49	2,922.36
4,827.0	90.30	17.00	2,067.4	2,904.9	594.7	2.79	421,974.09	564,336.45	11.57	2,965.16
4,870.0	90.20	17.50	2,067.2	2,946.0	607.4	1.19	422,015.16	564,349.20	11.65	3,007.95
4,913.0	89.80	17.70	2,067.2	2,987.0	620.4	1.04	422,056.14	564,362.20	11.73	3,050.72
4,956.0	89.60	17.70	2,067.5	3,027.9	633.5	0.47	422,097.11	564,375.27	11.82	3,093.49
4,993.0	90.40	17.00	2,067.5	3,063.3	644.5	2.87	422,132.42	564,386.31	11.88	3,130.32
5,036.0	90.00	15.90	2,067.3	3,104.5	656.7	2.72	422,173.66	564,398.48	11.94	3,173.18
5,079.0	90.50	16.10	2,067.1	3,145.8	668.5	1.25	422,214.99	564,410.34	12.00	3,216.08
5,122.0	91.00	16.10	2,066.6	3,187.1	680.5	1.16	422,256.30	564,422.26	12.05	3,258.96
5,165.0	91.70	16.50	2,065.6	3,228.4	692.5	1.87	422,297.56	564,434.32	12.11	3,301.83
5,208.0	92.30	16.30	2,064.1	3,269.6	704.7	1.47	422,338.79	564,446.46	12.16	3,344.69
5,251.0	93.00	15.60	2,062.1	3,310.9	716.5	2.30	422,380.09	564,458.26	12.21	3,387.55
5,294.0	91.70	15.80	2,060.3	3,352.3	728.1	3.06	422,421.45	564,469.89	12.25	3,430.43
5,337.0	93.00	14.90	2,058.5	3,393.7	739.5	3.68	422,462.88	564,481.26	12.29	3,473.33
5,380.0	93.30	16.10	2,056.2	3,435.1	750.9	2.87	422,504.25	564,492.73	12.33	3,516.20
5,423.0	91.90	15.20	2,054.2	3,476.4	762.5	3.87	422,545.61	564,504.32	12.37	3,559.09
5,466.0	86.80	14.90	2,054.7	3,517.9	773.7	11.88	422,587.12	564,515.48	12.40	3,602.02
5,509.0	88.00	14.20	2,056.7	3,559.5	784.5	3.23	422,628.70	564,526.27	12.43	3,644.95
5,554.0	88.20	16.30	2,058.2	3,602.9	796.3	4.69	422,672.09	564,538.10	12.46	3,689.87
5,598.0	89.20	16.20	2,059.2	3,645.1	808.6	2.28	422,714.32	564,550.41	12.51	3,733.76
5,644.0	90.80	15.50	2,059.2	3,689.4	821.2	3.80	422,758.57	564,562.97	12.55	3,779.68
5,689.0	88.60	17.70	2,059.4	3,732.5	834.0	6.91	422,801.69	564,575.83	12.60	3,824.56
5,734.0	89.50	17.20	2,060.1	3,775.4	847.5	2.29	422,844.61	564,589.32	12.65	3,869.40
5,778.0	90.70	17.00	2,060.1	3,817.5	860.5	2.76	422,886.66	564,602.26	12.70	3,913.26
5,823.0	88.00	17.50	2,060.6	3,860.5	873.8	6.10	422,929.63	564,615.60	12.75	3,958.12
5,868.0	89.10	16.60	2,061.7	3,903.5	887.0	3.16	422,972.64	564,628.79	12.80	4,002.98
5,913.0	90.80	16.70	2,061.7	3,946.6	899.9	3.78	423,015.75	564,641.68	12.84	4,047.87

Company: Murchison Oil and Gas
Project: Ramsey
Site: Ogden 5B
Well: Ogden 5B
Wellbore: Ogden 5B Leg 3 ST3
Design: Ogden 5B Leg 3 ST3

Local Co-ordinate Reference: Well Ogden 5B
TVD Reference: Well @ 3390.0usft (HWD 4)
MD Reference: Well @ 3390.0usft (HWD 4)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	Closure Azimuth (°)	Closure Distance (usft)	
5,958.0	91.50	16 40	2,060.8	3,989.7	912 7	1.69	423,058.88	564,654.50	12.89	4,092.77	
6,003.0	92.20	15 50	2,059.4	4,032 9	925.1	2 53	423,102 12	564,666.86	12 92	4,137.68	
6,048 0	93.10	15.60	2,057.3	4,076 3	937 1	2.01	423,145 43	564,678 91	12.95	4,182 59	
6,093 0	93 40	14 30	2,054 8	4,119 7	948 7	2.96	423,188.83	564,690.50	12.97	4,227.49	
6,138 0	94.40	13 50	2,051.7	4,163.2	959.5	2.84	423,232.41	564,701.28	12.98	4,272 38	
6,179 0	95.00	14.20	2,048.3	4,202 9	969 3	2.24	423,272.09	564,711 06	12.99	4,313 23	
6,223.0	96 89	14 95	2,043 8	4,245 3	980 3	4 62	423,314.44	564,722 08	13.00	4,356.98	

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
334 0	334 0	9 5/8"	12-1/4	12-1/4	
2,075 0	2,009 7	7"	7	8-3/4	

Checked By: STEVE MORRIS

Approved By: Joel Stackford

Date: 17/05/2012