

Murchison Oil and Gas

Ramsey
Ogden 5B
Ogden 5B
Ogden 5B Leg 3 ST9

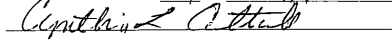
Design: Ogden 5^B Leg 3 ST9

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.



Notary Signature
County of Collin
State of Texas



MOJO
DIRECTIONAL CORPORATION

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well Ogdén 5B
Project:	Ramsey	TVD Reference:	Well @ 3390.0usft (HWD 4)
Site:	Ogden 5B	MD Reference:	Well @ 3390.0usft (HWD 4)
Well:	Ogden 5B	North Reference:	Grid
Wellbore:	Ogden 5B Leg 3 ST9	Survey Calculation Method:	Minimum Curvature
Design:	Ogden 5B Leg 3 ST9	Database:	EDM 5000.1 Single User Db

Project:	Ramsey, Pinnate Appraisal Well		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Ogden 5B		
Site Position:		Northing:	419,069.17 usft
From:	Lat/Long	Easting:	563,741.80 usft
Position Uncertainty:	1.0 usft	Slot Radius:	15 "
		Latitude:	32° 9' 7.484 N
		Longitude:	104° 15' 39.380 W
		Grid Convergence:	0.04 °

Well:	Ogden 5B, Multi-Lateral Horizontal Intersection		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	1.0 usft		Wellhead Elevation:
			Latitude:
			Longitude:
			Ground Level:

Wellbore:	Ogden 5B Leg 3 ST9		
Magnetics:	Model Name	Sample Date	Declination
	IGRF200510	18/11/2011	(°)
			7.83
			Dip Angle
			(°)
			60.01
			Field Strength
			(nT)
			48,493

Design:	Ogden 5B Leg 3 ST9		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	3,532.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			25.18

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 Wellbore: Ogden 5B Leg 3 ST9
 Design: Ogden 5B Leg 3 ST9

Local Co-ordinate Reference: Well Ogden 5B
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 MD Reference: Well @ 3390 0usft (HWD 4)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: EDM 5000.1 Single User Db

Survey Program Date: 10/05/2012

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	2,891.0	Ogden 5B Leg 3 (Ogden 5B)		
3,021.0	3,532.0	Ogden 5B Leg 3 ST7 (Ogden 5B Leg 3 ST)		
3,623.0	5,000.0	Ogden 5B Leg 3 ST9 (Ogden 5B Leg 3 ST)		

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

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 Project: Ramsey
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 Well: Ogden 5B
 Wellbore: Ogden 5B Leg 3 ST9
 Design: Ogden 5B Leg 3 ST9

Local Co-ordinate Reference: Well Ogden 5B
 TVD Reference: Well @ 3390.0usft (HWD 4)
 MD Reference: Well @ 3390.0usft (HWD 4)
 North Reference: Grd
 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)	
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	
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	

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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)
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
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
3,021.0	89.60	18.80	2,068.3	1,143.5	219.7	4.16	420,212.71	563,961.45	10.87	1,164.45
3,064.0	90.60	19.50	2,068.2	1,184.2	233.8	2.84	420,253.33	563,975.56	11.17	1,207.01
3,107.0	90.90	22.00	2,067.7	1,224.4	249.0	5.86	420,293.54	563,990.79	11.50	1,249.43
3,150.0	90.40	23.10	2,067.2	1,264.1	265.5	2.81	420,333.25	564,007.28	11.86	1,291.65
3,191.4	90.00	26.00	2,067.0	1,301.7	282.7	7.07	420,370.90	564,024.48	12.25	1,332.07
3,279.0	91.10	26.70	2,066.2	1,380.2	321.6	1.49	420,449.39	564,063.36	13.11	1,417.18
3,365.0	88.70	27.20	2,066.3	1,456.9	360.5	2.85	420,526.05	564,102.33	13.90	1,500.82
3,494.0	89.80	30.10	2,068.0	1,570.1	422.4	2.40	420,639.23	564,164.17	15.06	1,625.88
3,532.0	90.15	30.10	2,068.0	1,602.9	441.4	0.92	420,672.11	564,183.23	15.40	1,662.60
3,623.0	89.20	36.10	2,068.6	1,679.1	491.1	6.68	420,748.30	564,232.90	16.30	1,749.47
3,795.0	90.30	38.20	2,069.3	1,816.2	595.0	1.38	420,885.38	564,336.76	18.14	1,911.18
3,968.0	91.20	40.20	2,067.0	1,950.3	704.3	1.27	421,019.43	564,446.08	19.86	2,073.53
4,097.0	89.30	40.60	2,066.5	2,048.5	787.9	1.51	421,117.66	564,529.69	21.04	2,194.79
4,269.0	91.70	40.00	2,065.0	2,179.7	899.1	1.44	421,248.83	564,640.92	22.42	2,357.82
4,355.0	92.80	40.00	2,061.6	2,245.5	954.4	1.28	421,314.65	564,696.16	23.03	2,439.88

Company: Murchison Oil and Gas
 Project: Ramsey
 Site: Ogden 5B
 Well: Ogden 5B
 Wellbore: Ogden 5B Leg 3 ST9
 Design: Ogden 5B Leg 3 ST9

Local Co-ordinate Reference:
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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)	Closure Azimuth (°)	Closure Distance (usft)
4,441.0	90.50	40.80	2,059.1	2,310.9	1,010.1	2.83	421,380.11	564,751.87	23.61	2,522.04
4,570.0	89.60	41.00	2,059.0	2,408.4	1,094.5	0.71	421,477.62	564,836.33	24.44	2,645.49
4,699.0	90.50	40.00	2,058.9	2,506.5	1,178.3	1.04	421,575.71	564,920.11	25.18	2,769.68
4,828.0	87.70	41.10	2,060.9	2,604.5	1,262.2	2.33	421,673.70	565,003.95	25.85	2,894.24
4,963.0	88.70	40.90	2,065.2	2,706.4	1,350.7	0.76	421,775.54	565,092.47	26.52	3,024.69
5,000.0	88.70	40.90	2,066.0	2,734.3	1,374.9	0.00	421,803.50	565,116.69	26.69	3,060.54

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