

30-015-40793
Amended ST4

Murchison Oil and Gas

Ogden North
Ogden #8
Ogden #8HML
Ogden 8HML ST 4

Plan: 121017 Ogden 8HML REV 1

MOJO Standard Well Plan

17 October, 2012



MOJO
DIRECTIONAL CORPORATION

Company:	Murchison Oil and Gas	Local Co-ordinate Reference:	Well Ogden #8HML
Project:	Ogden North	TVD Reference:	well @ 3373.6usft (4)
Site:	Ogden #8	MD Reference:	well @ 3373.6usft (4)
Well:	Ogden #8HML	North Reference:	Gnd
Wellbore:	Ogden 8HML-ST 4	Survey Calculation Method:	Minimum Curvature
Design:	121017.Ogden 8HML-REV 1	Database:	EDM 5000 1 Single User Db

Project:	Ogden North, 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 #8		
Site Position:		Northing:	422,609.00 usft
From:	Map	Easting:	565,133.00 usft
Position Uncertainty:	1.0 usft	Slot Radius:	15 "
		Latitude:	32° 9' 42.505 N
		Longitude:	104° 15' 23.167 W
		Grid Convergence:	0.04 °

Well:	Ogden #8HML		
Well Position	+N/-S	0.0 usft	Latitude:
	+E/-W	0.0 usft	Longitude:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
			Ground Level:
			3,361.6 usft

Wellbore:	Ogden 8HML-ST 4		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF200510	25/09/2012	7.73
			(°)
			60.01
			(nT)
			48,419

Design:	121017.Ogden 8HML-REV 1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			4,200.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			199.77

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Well:	Ogden #8HML	North Reference:	Grid
Wellbore:	Ogden 8HML ST.4	Survey Calculation Method:	Minimum Curvature
Design:	121017 Ogden 8HML REV 1	Database:	EDM 5000.1 Single User Db

Survey Tool Program		Date	17/10/2012			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description		
0 0	3,200 0	120925 Ogden #8HML (Ogden #8HML)	MWD	MWD - Standard		
3,200 0	4,200 0	120925 Ogden 8HML ST 3 (Ogden 8HML)				
4,200 0	5,949 0	121017 Ogden 8HML REV 1 (Ogden 8HML)	MWD	MWD - Standard		

Planned Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)	
0 0	0 00	0.00	0.00	0.0	-3,373.6	0 0	0 0	0 00	0 0	423,109.00	565,133.00
100.0	0 00	180.00	100.0	-3,273.6	0 0	0.0	0 00	0 0	423,109.00	565,133.00	
115 0	0.00	180.00	115.0	-3,258.6	0.0	0.0	0 00	0.0	423,109.00	565,133.00	
14" Conductor											
200.0	0.00	180.00	200.0	-3,173.6	0 0	0 0	0 00	0 0	423,109.00	565,133.00	
300 0	0 00	180.00	300 0	-3,073.6	0 0	0 0	0.00	0 0	423,109.00	565,133.00	
352 0	0 00	180.00	352 0	-3,021.6	0.0	0.0	0 00	0.0	423,109.00	565,133.00	
9 5/8" Surface Casing											
400 0	0.00	180.00	400.0	-2,973.6	0.0	0 0	0 00	0 0	423,109.00	565,133.00	
500.0	0 00	180.00	500.0	-2,873.6	0 0	0 0	0.00	0.0	423,109.00	565,133.00	
600 0	0 00	180.00	600.0	-2,773.6	0.0	0.0	0 00	0 0	423,109.00	565,133.00	
700 0	0 00	180.00	700 0	-2,673.6	0 0	0 0	0 00	0 0	423,109.00	565,133.00	
800.0	0.00	180.00	800 0	-2,573.6	0 0	0.0	0.00	0.0	423,109.00	565,133.00	
875.0	0.00	180.00	875 0	-2,498.6	0.0	0 0	0 00	0 0	423,109.00	565,133.00	
900.0	0.75	180.00	900.0	-2,473.6	-0.2	0.0	3.00	0.2	423,108.84	565,133.00	
975 0	3.00	180.00	975.0	-2,398.6	-2.6	0 0	3.00	2.5	423,106.38	565,133.00	
1,000 0	3.75	180.00	999.9	-2,373.7	-4.1	0 0	3.00	3.8	423,104.91	565,133.00	
1,100.0	6.75	180.00	1,099.5	-2,274.1	-13.2	0.0	3.00	12.5	423,095.76	565,133.00	
1,200 0	9.75	180.00	1,198.4	-2,175.2	-27.6	0.0	3.00	26.0	423,081.41	565,133.00	
1,300 0	12.75	180.00	1,296.5	-2,077.1	-47.1	0 0	3.00	44.3	423,061.91	565,133.00	
1,400.0	15.75	180.00	1,393.4	-1,980.2	-71.7	0 0	3.00	67.5	423,037.29	565,133.00	

Company: Murchison Oil and Gas
Project: Ogden North
Site: Ogden #8
Well: Ogden #8HML
Wellbore: Ogden 8HML ST 4
Design: 121017 Ogden 8HML REV 1

Local Co-ordinate Reference:**TVD Reference:****MD Reference:****North Reference:****Survey Calculation Method:****Database:**

Well Ogden #8HML

well @ 3373.6usft (4)

well @ 3373.6usft (4)

Grid

Minimum Curvature

EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
1,475.0	18.00	180.00	1,465.2	-1,908.4	-93.5	0.0	3.00	88.0	423,015.52	565,133.00
1,500.0	18.75	180.00	1,488.9	-1,884.7	-101.4	0.0	3.00	95.4	423,007.64	565,133.00
1,600.0	21.75	180.00	1,582.7	-1,790.9	-136.0	0.0	3.00	128.0	422,973.04	565,133.00
1,700.0	24.75	180.00	1,674.6	-1,699.0	-175.4	0.0	3.00	165.1	422,933.57	565,133.00
1,775.0	27.00	180.00	1,742.1	-1,631.5	-208.2	0.0	3.00	195.9	422,900.84	565,133.00
1,800.0	29.20	180.00	1,764.1	-1,609.5	-219.9	0.0	8.80	207.0	422,889.06	565,133.00
1,850.0	33.60	180.00	1,806.8	-1,566.8	-246.0	0.0	8.80	231.5	422,863.02	565,133.00
1,900.0	38.00	180.00	1,847.3	-1,526.3	-275.2	0.0	8.80	259.0	422,833.78	565,133.00
1,950.0	43.50	180.00	1,885.2	-1,488.4	-307.8	0.0	11.00	289.7	422,801.15	565,133.00
2,000.0	49.00	180.00	1,919.7	-1,453.9	-344.0	0.0	11.00	323.7	422,765.05	565,133.00
2,050.0	54.50	180.00	1,950.7	-1,422.9	-383.2	0.0	11.00	360.6	422,725.80	565,133.00
2,100.0	60.00	180.00	1,977.7	-1,395.9	-425.2	0.0	11.00	400.2	422,683.76	565,133.00
2,150.0	65.50	180.00	2,000.6	-1,373.0	-469.7	0.0	11.00	442.0	422,639.33	565,133.00
2,168.5	67.54	180.00	2,008.0	-1,365.6	-486.7	0.0	11.00	458.0	422,622.32	565,133.00
7" Production Casing										
2,200.0	71.00	180.00	2,019.1	-1,354.5	-516.1	0.0	11.00	485.7	422,592.91	565,133.00
2,250.0	76.50	180.00	2,033.1	-1,340.5	-564.1	0.0	11.00	530.8	422,544.92	565,133.00
2,300.0	82.00	180.00	2,042.4	-1,331.2	-613.2	0.0	11.00	577.0	422,495.82	565,133.00
2,350.0	86.42	180.00	2,047.5	-1,326.1	-662.9	0.0	8.84	623.8	422,446.09	565,133.00
2,395.0	90.40	180.00	2,048.7	-1,324.9	-707.9	0.0	8.84	666.2	422,401.11	565,133.00
2,400.0	90.40	180.00	2,048.7	-1,324.9	-712.9	0.0	0.00	670.9	422,396.11	565,133.00
2,500.0	90.40	180.00	2,048.0	-1,325.6	-812.9	0.0	0.00	765.0	422,296.11	565,133.00
2,600.0	90.40	180.00	2,047.3	-1,326.3	-912.9	0.0	0.00	859.1	422,196.12	565,133.00
2,700.0	90.40	180.00	2,046.6	-1,327.0	-1,012.9	0.0	0.00	953.2	422,096.12	565,133.00
2,800.0	90.40	180.00	2,045.9	-1,327.7	-1,112.9	0.0	0.00	1,047.3	421,996.12	565,133.00
2,900.0	90.40	180.00	2,045.2	-1,328.4	-1,212.9	0.0	0.00	1,141.4	421,896.12	565,133.00
3,000.0	90.40	180.00	2,044.5	-1,329.1	-1,312.9	0.0	0.00	1,235.5	421,796.13	565,133.00

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Well:	Ogden #8HML	North Reference:	Grid
Wellbore:	Ogden #8HML ST 4	Survey Calculation Method:	Minimum Curvature
Design:	121017 Ogden 8HML REV 1	Database:	EDM 5000.1 Single User Db

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
3,100.0	90.40	180.00	2,043.8	-1,329.8	-1,412.9	0.0	0.00	1,329.6	421,696.13	565,133.00
3,200.0	90.40	180.00	2,043.1	-1,330.5	-1,512.9	0.0	0.00	1,423.7	421,596.13	565,133.00
3,300.0	90.40	185.00	2,042.4	-1,331.2	-1,612.7	-4.4	5.00	1,519.2	421,496.26	565,128.64
3,400.0	90.39	190.00	2,041.7	-1,331.9	-1,711.9	-17.4	5.00	1,616.9	421,397.15	565,115.59
3,500.0	90.38	195.00	2,041.1	-1,332.5	-1,809.4	-39.0	5.00	1,716.0	421,299.55	565,093.95
3,600.0	90.37	200.00	2,040.4	-1,333.2	-1,904.8	-69.1	5.00	1,815.9	421,204.21	565,063.89
3,700.0	90.35	205.00	2,039.8	-1,333.8	-1,997.1	-107.4	5.00	1,915.8	421,111.86	565,025.64
3,800.0	90.35	205.00	2,039.2	-1,334.4	-2,087.8	-149.6	0.00	2,015.3	421,021.23	564,983.38
3,900.0	90.34	205.00	2,038.6	-1,335.0	-2,178.4	-191.9	0.00	2,114.9	420,930.60	564,941.12
4,000.0	90.34	205.00	2,038.0	-1,335.6	-2,269.0	-234.1	0.00	2,214.5	420,839.97	564,898.86
4,100.0	90.33	205.00	2,037.4	-1,336.2	-2,359.7	-276.4	0.00	2,314.1	420,749.34	564,856.59
4,200.0	90.33	205.00	2,036.8	-1,336.8	-2,450.3	-318.7	0.00	2,413.7	420,658.71	564,814.33
4,300.0	90.32	209.33	2,036.2	-1,337.4	-2,539.2	-364.3	4.33	2,512.8	420,569.77	564,768.69
4,400.0	90.31	213.67	2,035.7	-1,337.9	-2,624.5	-416.5	4.33	2,610.7	420,484.52	564,716.45
4,500.0	90.30	218.00	2,035.1	-1,338.5	-2,705.5	-475.1	4.33	2,706.8	420,403.47	564,657.92
4,600.0	90.30	218.09	2,034.6	-1,339.0	-2,784.3	-536.7	0.09	2,801.7	420,324.72	564,596.29
4,700.0	90.30	218.19	2,034.1	-1,339.5	-2,862.9	-598.5	0.09	2,896.6	420,246.07	564,534.53
4,800.0	90.30	218.28	2,033.6	-1,340.0	-2,941.5	-660.4	0.09	2,991.5	420,167.53	564,472.65
4,900.0	90.30	218.38	2,033.0	-1,340.6	-3,019.9	-722.4	0.09	3,086.3	420,089.08	564,410.63
5,000.0	90.30	218.47	2,032.5	-1,341.1	-3,098.3	-784.5	0.09	3,181.0	420,010.74	564,348.49
5,100.0	90.30	218.56	2,032.0	-1,341.6	-3,176.5	-846.8	0.09	3,275.7	419,932.49	564,286.22
5,200.0	90.30	218.66	2,031.5	-1,342.1	-3,254.6	-909.2	0.09	3,370.3	419,854.35	564,223.82
5,300.0	90.30	218.75	2,031.0	-1,342.6	-3,332.7	-971.7	0.09	3,464.9	419,776.31	564,161.29
5,400.0	90.30	218.80	2,030.4	-1,343.2	-3,410.6	-1,034.3	0.05	3,559.5	419,698.35	564,098.66
5,500.0	90.30	218.85	2,029.9	-1,343.7	-3,488.6	-1,097.0	0.05	3,654.0	419,620.45	564,035.97
5,600.0	90.30	218.90	2,029.4	-1,344.2	-3,566.4	-1,159.8	0.05	3,748.5	419,542.60	563,973.21
5,700.0	90.30	218.95	2,028.9	-1,344.7	-3,644.2	-1,222.6	0.05	3,843.0	419,464.80	563,910.38

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Wellbore:	Ogden 8HML ST-4	Survey Calculation Method:	Minimum Curvature
Design:	121017 Ogden 8HML REV 1	Database:	EDM 5000 1 Single User Db

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	TVDSS (usft)	N/S (usft)	E/W (usft)	DLeg (°/100usft)	V. Sec (usft)	Northing (usft)	Easting (usft)
5,800.0	90.30	219.00	2,028.3	-1,345.3	-3,721.9	-1,285.5	0.05	3,937.4	419,387.06	563,847.48
5,900.0	90.30	219.00	2,027.8	-1,345.8	-3,799.7	-1,348.5	0.00	4,031.8	419,309.35	563,784.55
5,949.0	90.30	219.00	2,027.6	-1,346.0	-3,837.7	-1,379.3	0.00	4,078.1	419,271.27	563,753.71

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
2,168.5	2,008.0	7" Production Casing	7	7	
352.0	352.0	9 5/8" Surface Casing	9-5/8	12-1/4	
115.0	115.0	14" Conductor	14	15	

Checked By _____	Approved By: _____	Date: _____
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