



Final Survey Plot

Projected Final Survey -
 8655'MD & 7932'TVD @ 3085' VS
 2.6 deg Inc 314.6 deg AZ

Project: SEC.22-T5N-R66W
 Site: T-Bone 5-3-22 Pad Sec.22-T5N-R66W
 Well: Westfork 1-1-22
 Plan: Wellbore #1



Mineral Resources Inc

SEC.22-T5N-R66W

T-Bone 5-3-22 Pad Sec.22-T5N-R66W

Westfork 1-1-22

Wellbore #1

Survey: Survey #1

Standard Survey Report

12 September, 2011

Company:	Mineral Resources Inc	Local Co-ordinate Reference:	Well Westfork 1-1-22
Project:	SEC.22-T5N-R66W	TVD Reference:	WELL @ 4819.0ft (Original Well Elev)
Site:	T-Bone 5-3-22 Pad Sec.22-T5N-R66W	MD Reference:	WELL @ 4819.0ft (Original Well Elev)
Well:	Westfork 1-1-22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.22-T5N-R66W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	Colorado Northern Zone		Using geodetic scale factor

Site	T-Bone 5-3-22 Pad Sec.22-T5N-R66W		
Site Position:		Northing:	1,383,707.65 ft
From:	Lat/Long	Easting:	3,204,741.67 ft
Position Uncertainty:	0.0 ft	Slot Radius:	"
		Latitude:	40.384350
		Longitude:	-104.765030
		Grid Convergence:	0.47 °

Well	Westfork 1-1-22		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	40.384350
		Longitude:	-104.764860
		Ground Level:	4,806.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/8/2011	8.87	67.04	53,125

Design	Wellbore #1				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	6,600.0	0.0	0.0	315.30	

Survey Program	Date	9/12/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
128.0	8,655.0	Survey #1 (Wellbore #1)	MWD	MWD - Standard	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
128.0	1.30	31.10	128.0	1.2	0.8	0.4	1.02	1.02	0.00	
220.0	0.60	15.90	220.0	2.6	1.4	0.8	0.80	-0.76	-16.52	
311.0	0.80	327.60	311.0	3.6	1.2	1.7	0.66	0.22	-53.08	
403.0	2.30	311.70	402.9	5.4	-0.5	4.2	1.68	1.63	-17.28	
494.0	4.00	315.00	493.8	8.8	-4.1	9.2	1.88	1.87	3.63	
563.0	5.30	318.50	562.6	12.9	-7.9	14.8	1.93	1.88	5.07	
641.0	6.20	317.60	640.2	18.7	-13.2	22.6	1.16	1.15	-1.15	
734.0	8.30	315.40	732.4	27.2	-21.3	34.3	2.28	2.26	-2.37	
827.0	10.70	315.00	824.1	38.1	-32.1	49.6	2.58	2.58	-0.43	
920.0	12.20	316.20	915.3	51.3	-45.0	68.1	1.63	1.61	1.29	
1,013.0	14.20	315.30	1,005.8	66.5	-59.8	89.3	2.16	2.15	-0.97	
1,106.0	16.20	315.30	1,095.6	83.8	-77.0	113.7	2.15	2.15	0.00	

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Well:	Westfork 1-1-22	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,198.0	17.80	314.10	1,183.5	102.7	-96.1	140.6	1.78	1.74	-1.30	
1,291.0	20.30	317.50	1,271.4	124.5	-117.2	171.0	2.94	2.69	3.66	
1,383.0	22.50	317.10	1,357.1	149.2	-140.0	204.5	2.40	2.39	-0.43	
1,476.0	24.40	314.60	1,442.4	175.7	-165.8	241.5	2.31	2.04	-2.69	
1,569.0	24.90	314.60	1,526.9	203.0	-193.4	280.3	0.54	0.54	0.00	
1,661.0	26.30	315.30	1,609.9	231.0	-221.5	320.0	1.56	1.52	0.76	
1,754.0	30.10	315.60	1,691.9	262.4	-252.3	364.0	4.09	4.09	0.32	
1,847.0	29.00	315.00	1,772.8	295.0	-284.6	409.8	1.22	-1.18	-0.65	
1,940.0	28.70	314.10	1,854.2	326.4	-316.6	454.7	0.57	-0.32	-0.97	
2,033.0	28.90	314.60	1,935.7	357.8	-348.6	499.5	0.34	0.22	0.54	
2,126.0	28.50	314.40	2,017.3	389.1	-380.5	544.2	0.44	-0.43	-0.22	
2,218.0	27.70	313.90	2,098.4	419.3	-411.5	587.5	0.91	-0.87	-0.54	
2,311.0	28.70	314.60	2,180.4	449.9	-443.0	631.4	1.13	1.08	0.75	
2,404.0	28.90	314.50	2,261.9	481.3	-474.9	676.2	0.22	0.22	-0.11	
2,497.0	28.70	316.00	2,343.4	513.2	-506.5	721.0	0.81	-0.22	1.61	
2,590.0	29.50	316.80	2,424.7	545.9	-537.7	766.2	0.96	0.86	0.86	
2,683.0	30.00	314.20	2,505.4	578.8	-570.0	812.4	1.49	0.54	-2.80	
2,775.0	29.80	316.10	2,585.2	611.3	-602.4	858.2	1.05	-0.22	2.07	
2,868.0	30.50	315.50	2,665.6	644.8	-634.9	904.9	0.82	0.75	-0.65	
2,961.0	31.40	315.80	2,745.3	679.0	-668.4	952.8	0.98	0.97	0.32	
3,054.0	32.60	315.30	2,824.2	714.2	-702.9	1,002.0	1.32	1.29	-0.54	
3,146.0	30.90	315.50	2,902.4	748.7	-736.9	1,050.5	1.85	-1.85	0.22	
3,240.0	30.80	315.40	2,983.1	783.0	-770.7	1,098.7	0.12	-0.11	-0.11	
3,333.0	30.50	315.30	3,063.1	816.7	-804.0	1,146.1	0.33	-0.32	-0.11	
3,426.0	28.90	314.40	3,143.9	849.2	-836.7	1,192.1	1.79	-1.72	-0.97	
3,518.0	28.00	314.50	3,224.8	879.9	-867.9	1,236.0	0.98	-0.98	0.11	
3,611.0	28.70	315.90	3,306.7	911.3	-899.1	1,280.1	1.04	0.75	1.51	
3,704.0	27.50	315.30	3,388.7	942.6	-929.7	1,323.9	1.33	-1.29	-0.65	
3,797.0	28.30	315.30	3,470.9	973.5	-960.3	1,367.4	0.86	0.86	0.00	
3,890.0	28.20	315.10	3,552.8	1,004.7	-991.3	1,411.5	0.15	-0.11	-0.22	
3,982.0	28.70	315.00	3,633.7	1,035.8	-1,022.3	1,455.3	0.55	0.54	-0.11	
4,075.0	29.80	314.90	3,714.8	1,067.9	-1,054.5	1,500.7	1.18	1.18	-0.11	
4,168.0	31.10	314.10	3,795.0	1,100.9	-1,088.1	1,547.9	1.46	1.40	-0.86	
4,262.0	32.60	313.40	3,874.8	1,135.2	-1,123.9	1,597.4	1.64	1.60	-0.74	
4,355.0	33.20	315.30	3,952.9	1,170.5	-1,160.0	1,647.9	1.28	0.65	2.04	
4,447.0	32.40	314.30	4,030.3	1,205.6	-1,195.4	1,697.8	1.05	-0.87	-1.09	
4,540.0	31.20	314.60	4,109.3	1,239.9	-1,230.4	1,746.8	1.30	-1.29	0.32	
4,634.0	29.30	314.20	4,190.5	1,273.1	-1,264.2	1,794.1	2.03	-2.02	-0.43	
4,727.0	30.60	314.20	4,271.1	1,305.4	-1,297.5	1,840.5	1.40	1.40	0.00	
4,820.0	28.30	316.50	4,352.1	1,337.9	-1,329.6	1,886.3	2.76	-2.47	2.47	
4,914.0	29.10	316.80	4,434.5	1,370.8	-1,360.6	1,931.4	0.86	0.85	0.32	
5,006.0	29.50	316.70	4,514.7	1,403.6	-1,391.5	1,976.4	0.44	0.43	-0.11	
5,098.0	29.10	317.60	4,595.0	1,436.6	-1,422.1	2,021.4	0.65	-0.43	0.98	
5,191.0	27.60	313.90	4,676.8	1,468.2	-1,452.9	2,065.5	2.48	-1.61	-3.98	
5,284.0	28.60	315.50	4,758.9	1,499.0	-1,484.0	2,109.3	1.35	1.08	1.72	
5,377.0	29.50	316.30	4,840.2	1,531.4	-1,515.4	2,154.5	1.05	0.97	0.86	
5,470.0	30.50	315.80	4,920.7	1,564.9	-1,547.7	2,201.0	1.11	1.08	-0.54	
5,563.0	30.10	315.90	5,001.0	1,598.6	-1,580.4	2,247.9	0.43	-0.43	0.11	
5,656.0	29.20	316.50	5,081.8	1,631.8	-1,612.2	2,293.9	1.02	-0.97	0.65	
5,750.0	27.20	315.30	5,164.7	1,663.7	-1,643.1	2,338.3	2.21	-2.13	-1.28	
5,842.0	28.50	317.20	5,246.0	1,694.7	-1,672.8	2,381.3	1.71	1.41	2.07	
5,935.0	28.80	316.60	5,327.6	1,727.3	-1,703.3	2,425.8	0.45	0.32	-0.65	
6,028.0	28.40	314.50	5,409.3	1,759.1	-1,734.4	2,470.4	1.16	-0.43	-2.26	
6,121.0	28.00	315.40	5,491.2	1,790.1	-1,765.6	2,514.3	0.63	-0.43	0.97	

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6,214.0	28.60	317.30	5,573.1	1,822.0	-1,796.0	2,558.4	1.16	0.65	2.04	
6,307.0	28.70	319.20	5,654.7	1,855.3	-1,825.7	2,602.9	0.99	0.11	2.04	
6,399.0	27.40	316.80	5,735.9	1,887.5	-1,854.6	2,646.1	1.87	-1.41	-2.61	
6,492.0	25.90	316.30	5,819.0	1,917.7	-1,883.3	2,687.8	1.63	-1.61	-0.54	
6,585.0	23.90	316.00	5,903.4	1,946.0	-1,910.4	2,727.0	2.15	-2.15	-0.32	
6,678.0	22.20	316.30	5,989.0	1,972.2	-1,935.6	2,763.4	1.83	-1.83	0.32	
6,771.0	20.00	315.70	6,075.7	1,996.3	-1,958.9	2,796.8	2.38	-2.37	-0.65	
6,863.0	17.50	313.30	6,162.8	2,017.1	-1,979.9	2,826.4	2.84	-2.72	-2.61	
6,957.0	15.70	310.90	6,252.9	2,035.1	-1,999.8	2,853.2	2.05	-1.91	-2.55	
7,050.0	13.40	313.30	6,342.9	2,050.7	-2,017.2	2,876.5	2.56	-2.47	2.58	
7,143.0	10.30	315.90	6,433.9	2,064.1	-2,030.8	2,895.6	3.38	-3.33	2.80	
7,236.0	9.50	313.90	6,525.6	2,075.4	-2,042.1	2,911.6	0.94	-0.86	-2.15	
7,306.7	9.57	312.38	6,595.3	2,083.4	-2,050.7	2,923.3	0.37	0.11	-2.16	
DRILL TARGET BHL 823'FNL, 815'FWL										
7,329.0	9.60	311.90	6,617.3	2,085.9	-2,053.4	2,927.0	0.37	0.11	-2.13	
7,345.7	9.69	312.09	6,633.8	2,087.8	-2,055.5	2,929.8	0.57	0.54	1.12	
PERMIT TARGET BHL 660'FNL, 654'FWL										
7,422.0	10.10	312.90	6,708.9	2,096.6	-2,065.2	2,942.9	0.57	0.54	1.07	
7,445.9	10.28	313.15	6,732.5	2,099.5	-2,068.3	2,947.1	0.78	0.76	1.03	
LEGAL BOX 400' X 400' 660'FNL & 655'FWL										
7,514.0	10.80	313.80	6,799.4	2,108.1	-2,077.3	2,959.6	0.78	0.76	0.96	
7,607.0	10.60	316.80	6,890.7	2,120.3	-2,089.5	2,976.8	0.64	-0.22	3.23	
7,700.0	10.20	315.30	6,982.2	2,132.4	-2,101.1	2,993.6	0.52	-0.43	-1.61	
7,793.0	9.30	314.60	7,073.9	2,143.6	-2,112.2	3,009.4	0.98	-0.97	-0.75	
7,886.0	8.70	316.10	7,165.7	2,153.9	-2,122.5	3,023.9	0.69	-0.65	1.61	
7,978.0	7.50	320.00	7,256.8	2,163.5	-2,131.2	3,036.9	1.43	-1.30	4.24	
8,071.0	6.00	320.20	7,349.2	2,171.9	-2,138.2	3,047.8	1.61	-1.61	0.22	
8,164.0	4.70	328.30	7,441.8	2,178.9	-2,143.3	3,056.3	1.61	-1.40	8.71	
8,257.0	4.20	326.70	7,534.5	2,185.0	-2,147.2	3,063.4	0.55	-0.54	-1.72	
8,350.0	3.30	323.70	7,627.3	2,190.0	-2,150.6	3,069.4	0.99	-0.97	-3.23	
8,443.0	3.10	315.90	7,720.1	2,193.9	-2,153.9	3,074.5	0.51	-0.22	-8.39	
8,536.0	2.60	313.20	7,813.0	2,197.2	-2,157.2	3,079.1	0.56	-0.54	-2.90	
8,607.0	2.60	314.60	7,883.9	2,199.4	-2,159.6	3,082.4	0.09	0.00	1.97	
8,655.0	2.60	314.60	7,931.9	2,200.9	-2,161.1	3,084.5	0.00	0.00	0.00	

Checked By: _____	Approved By: _____	Date: _____
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