

Mineral Resources Inc

Well Name: ISLAND GROVE 2-32

Surface Location: ISLAND GROVE HOR PAD 32-6N-65W
North American Datum 1983 , US State Plane 1983 Colorado Northern Zone

Ground Elevation: 4647.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1404756.07	3223876.25	40.441670	-104.695660	

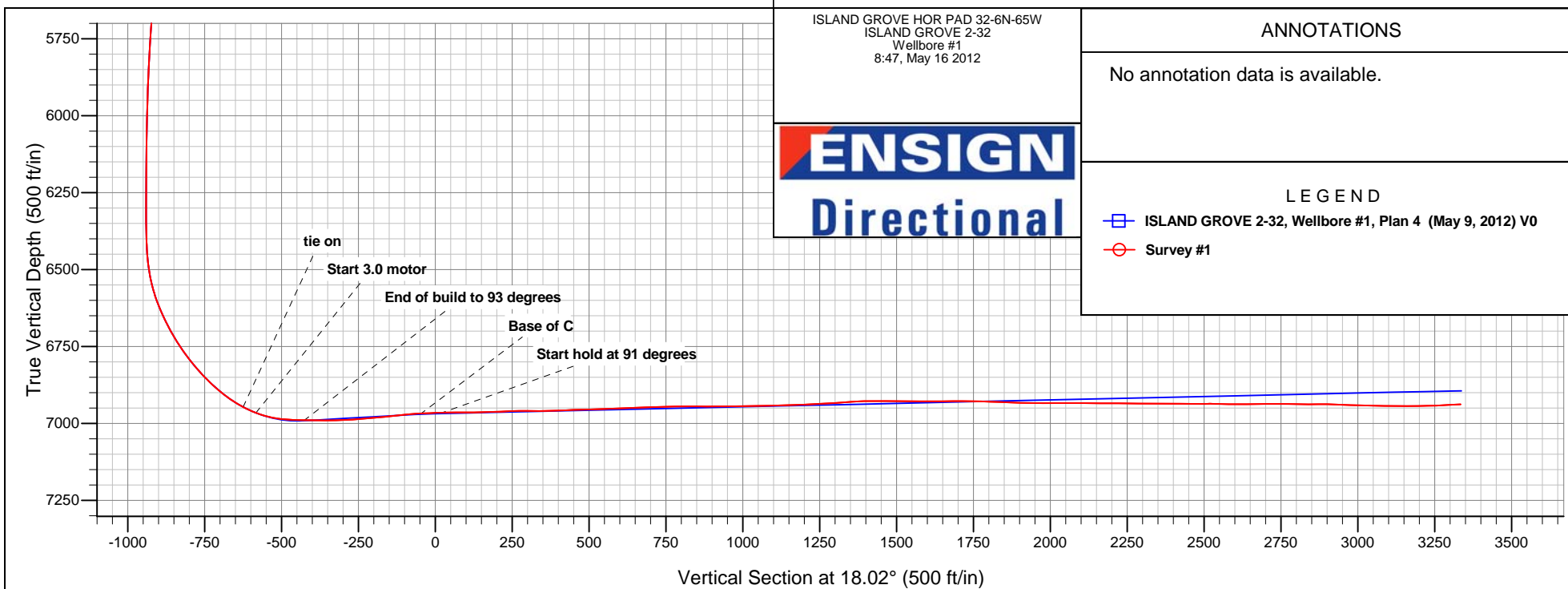
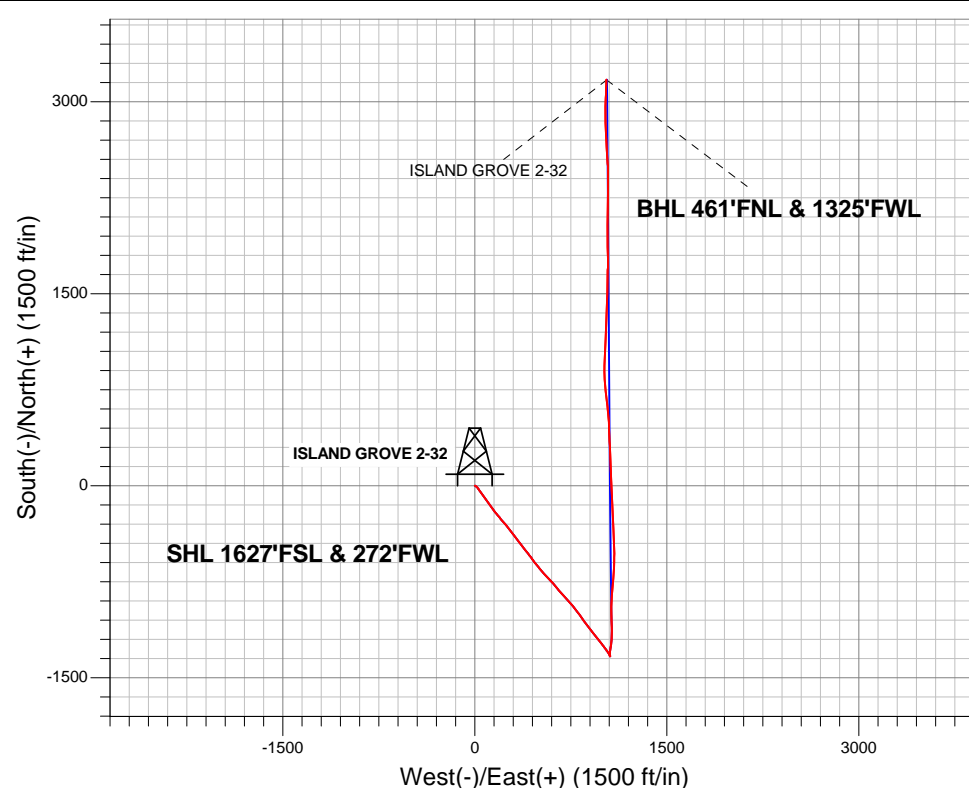
KB ENSIGN RIG 14 - 15'

RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')

FINAL SURVEY

Projected Bottom Hole Location
11531'MD 6938'TVD 3172'N & 1028'E of SHL

92.80 degree Incl @ 1.90 degree AZM





Mineral Resources Inc

SEC.32-T6N-R65W

ISLAND GROVE HOR PAD 32-6N-65W

ISLAND GROVE 2-32

Wellbore #1

Survey: Survey #1

Standard Survey Report

16 May, 2012

Company:	Mineral Resources Inc	Local Co-ordinate Reference:	Well ISLAND GROVE 2-32
Project:	SEC.32-T6N-R65W	TVD Reference:	RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')
Site:	ISLAND GROVE HOR PAD 32-6N-65W	MD Reference:	RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')
Well:	ISLAND GROVE 2-32	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Project	SEC.32-T6N-R65W, 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		ISLAND GROVE HOR PAD 32-6N-65W			
Site Position:		Northing:		1,404,756.07 ft	
From:	Lat/Long	Easting:		Longitude:	
		3,223,876.25 ft		-104.695660	
Position Uncertainty:		Slot Radius:		Grid Convergence:	
0.0 ft		"		0.52 °	

Well	ISLAND GROVE 2-32					
Well Position	+N/-S	0.0 ft	Northing:	1,404,756.07 ft	Latitude:	40.441670
	+E/-W	0.0 ft	Easting:	3,223,876.25 ft	Longitude:	-104.695660
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,647.0 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2/9/2012	8.74	67.07	53,093
	IGRF2010	4/27/2012	8.71	67.07	53,071

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 (°)
	6,894.0	0.0	0.0	18.02

Survey Program		Date	5/16/2012	
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
128.0	11,531.0	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
2.0	0.01	80.40	2.0	0.0	0.0	0.0	0.63	0.63	0.00
HARDLINE 460'FSL									
14.6	0.09	80.40	14.6	0.0	0.0	0.0	0.63	0.63	0.00
HARDLINE BHL 460'FNL									
128.0	0.80	80.40	128.0	0.1	0.9	0.4	0.63	0.63	0.00
219.0	1.90	111.90	219.0	-0.3	2.9	0.6	1.41	1.21	34.62
312.0	3.80	125.80	311.9	-2.7	6.8	-0.4	2.16	2.04	14.95
403.0	5.10	128.10	402.6	-6.9	12.5	-2.7	1.44	1.43	2.53
495.0	6.20	138.30	494.1	-13.2	19.0	-6.7	1.61	1.20	11.09
587.0	8.30	146.20	585.4	-22.4	26.0	-13.3	2.52	2.28	8.59
679.0	11.30	144.20	676.0	-35.2	35.0	-22.7	3.28	3.26	-2.17

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Site:	ISLAND GROVE HOR PAD 32-6N-65W	MD Reference:	RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')
Well:	ISLAND GROVE 2-32	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)	
771.0	12.80	144.80	766.0	-50.9	46.1	-34.1	1.64	1.63	0.65	
862.0	14.50	146.00	854.4	-68.6	58.3	-47.2	1.89	1.87	1.32	
954.0	16.00	144.90	943.2	-88.5	72.0	-61.9	1.66	1.63	-1.20	
1,046.0	17.90	141.40	1,031.2	-109.9	88.1	-77.2	2.34	2.07	-3.80	
1,137.0	19.30	143.40	1,117.4	-132.9	105.8	-93.6	1.69	1.54	2.20	
1,229.0	19.70	145.80	1,204.2	-157.9	123.6	-111.9	0.97	0.43	2.61	
1,321.0	19.30	144.20	1,290.9	-183.1	141.2	-130.4	0.73	-0.43	-1.74	
1,413.0	19.20	142.80	1,377.7	-207.5	159.3	-148.0	0.51	-0.11	-1.52	
1,507.0	19.10	139.10	1,466.5	-231.4	178.7	-164.8	1.30	-0.11	-3.94	
1,567.0	19.20	140.20	1,523.2	-246.4	191.4	-175.1	0.62	0.17	1.83	
1,630.0	19.30	140.50	1,582.7	-262.4	204.7	-186.2	0.22	0.16	0.48	
1,723.0	17.90	140.20	1,670.8	-285.3	223.6	-202.1	1.51	-1.51	-0.32	
1,816.0	17.60	137.60	1,759.4	-306.6	242.2	-216.6	0.91	-0.32	-2.80	
1,911.0	17.10	141.20	1,850.1	-328.1	260.7	-231.4	1.25	-0.53	3.79	
2,004.0	15.80	140.90	1,939.3	-348.6	277.2	-245.7	1.40	-1.40	-0.32	
2,097.0	16.10	143.50	2,028.7	-368.8	292.9	-260.1	0.83	0.32	2.80	
2,190.0	17.90	145.60	2,117.6	-390.9	308.6	-276.3	2.04	1.94	2.26	
2,282.0	17.90	144.40	2,205.2	-414.1	324.8	-293.3	0.40	0.00	-1.30	
2,375.0	18.20	139.30	2,293.6	-436.7	342.6	-309.3	1.73	0.32	-5.48	
2,468.0	18.90	143.40	2,381.8	-459.8	361.1	-325.5	1.59	0.75	4.41	
2,562.0	18.20	142.30	2,470.9	-483.7	379.1	-342.6	0.83	-0.74	-1.17	
2,655.0	18.20	139.70	2,559.3	-506.2	397.4	-358.4	0.87	0.00	-2.80	
2,748.0	20.80	142.80	2,646.9	-530.5	416.8	-375.5	3.01	2.80	3.33	
2,840.0	23.50	143.90	2,732.1	-558.3	437.5	-395.6	2.97	2.93	1.20	
2,933.0	19.50	142.30	2,818.6	-585.6	457.9	-415.2	4.35	-4.30	-1.72	
3,026.0	17.90	143.40	2,906.7	-609.3	475.9	-432.2	1.76	-1.72	1.18	
3,119.0	17.90	141.10	2,995.2	-631.9	493.4	-448.3	0.76	0.00	-2.47	
3,212.0	15.60	140.00	3,084.3	-652.7	510.4	-462.7	2.50	-2.47	-1.18	
3,305.0	15.70	139.00	3,173.8	-671.7	526.7	-475.8	0.31	0.11	-1.08	
3,398.0	17.10	137.20	3,263.0	-691.3	544.3	-488.9	1.60	1.51	-1.94	
3,490.0	18.40	136.20	3,350.7	-711.7	563.5	-502.4	1.45	1.41	-1.09	
3,583.0	18.60	136.30	3,438.8	-733.0	583.9	-516.3	0.22	0.22	0.11	
3,675.0	18.60	137.70	3,526.0	-754.4	603.9	-530.5	0.49	0.00	1.52	
3,768.0	20.80	140.50	3,613.6	-778.2	624.4	-546.8	2.57	2.37	3.01	
3,861.0	23.30	140.20	3,699.8	-805.0	646.7	-565.4	2.69	2.69	-0.32	
3,954.0	25.80	139.00	3,784.4	-834.4	671.7	-585.6	2.74	2.69	-1.29	
4,046.0	26.80	137.90	3,866.8	-864.9	698.8	-606.3	1.21	1.09	-1.20	
4,139.0	25.70	137.40	3,950.3	-895.3	726.5	-626.6	1.21	-1.18	-0.54	
4,232.0	24.20	139.70	4,034.6	-924.7	752.5	-646.5	1.92	-1.61	2.47	
4,324.0	22.60	140.90	4,119.0	-952.8	775.8	-666.0	1.81	-1.74	1.30	
4,417.0	19.50	142.30	4,205.8	-979.0	796.6	-684.5	3.38	-3.33	1.51	
4,510.0	20.60	144.20	4,293.2	-1,004.5	815.7	-702.8	1.37	1.18	2.04	
4,603.0	19.80	145.60	4,380.4	-1,030.8	834.1	-722.1	1.01	-0.86	1.51	
4,696.0	19.40	146.20	4,468.0	-1,056.6	851.6	-741.3	0.48	-0.43	0.65	
4,789.0	17.50	142.30	4,556.3	-1,080.5	868.8	-758.7	2.44	-2.04	-4.19	
4,882.0	17.50	139.80	4,645.0	-1,102.3	886.3	-773.9	0.81	0.00	-2.69	
4,974.0	18.10	140.70	4,732.6	-1,123.9	904.3	-788.9	0.72	0.65	0.98	
5,067.0	18.60	142.30	4,820.8	-1,146.8	922.5	-805.1	0.76	0.54	1.72	
5,161.0	19.50	143.50	4,909.7	-1,171.3	941.0	-822.6	1.04	0.96	1.28	
5,253.0	18.30	142.50	4,996.7	-1,195.1	959.0	-839.7	1.35	-1.30	-1.09	
5,345.0	14.90	141.80	5,084.9	-1,215.9	975.1	-854.5	3.70	-3.70	-0.76	
5,439.0	14.80	140.50	5,175.7	-1,234.6	990.2	-867.6	0.37	-0.11	-1.38	
5,531.0	12.40	142.00	5,265.1	-1,251.5	1,003.7	-879.5	2.64	-2.61	1.63	
5,624.0	11.70	144.20	5,356.1	-1,267.0	1,015.4	-890.6	0.90	-0.75	2.37	

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Well:	ISLAND GROVE 2-32	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)	
5,716.0	10.20	144.60	5,446.4	-1,281.2	1,025.6	-901.0	1.63	-1.63	0.43	
5,809.0	7.80	149.20	5,538.3	-1,293.3	1,033.6	-910.0	2.69	-2.58	4.95	
5,902.0	7.90	145.30	5,630.4	-1,304.0	1,040.5	-918.1	0.58	0.11	-4.19	
5,995.0	6.00	145.00	5,722.7	-1,313.2	1,046.9	-924.9	2.04	-2.04	-0.32	
6,088.0	4.90	147.90	5,815.3	-1,320.6	1,051.8	-930.3	1.22	-1.18	3.12	
6,182.0	2.90	150.70	5,909.1	-1,326.1	1,055.1	-934.5	2.14	-2.13	2.98	
6,275.0	1.80	155.70	6,002.0	-1,329.4	1,056.8	-937.2	1.20	-1.18	5.38	
6,368.0	0.70	182.20	6,095.0	-1,331.3	1,057.4	-938.8	1.31	-1.18	28.49	
6,461.0	0.50	235.30	6,188.0	-1,332.1	1,057.1	-939.7	0.61	-0.22	57.10	
6,554.0	0.80	273.40	6,281.0	-1,332.3	1,056.1	-940.2	0.55	0.32	40.97	
6,585.0	0.90	306.30	6,312.0	-1,332.2	1,055.7	-940.1	1.58	0.32	106.13	
6,629.0	0.90	307.70	6,355.9	-1,331.8	1,055.1	-939.9	0.05	0.00	3.18	
6,661.0	1.20	350.40	6,387.9	-1,331.3	1,054.9	-939.5	2.54	0.94	133.44	
6,692.0	3.20	354.50	6,418.9	-1,330.1	1,054.7	-938.5	6.47	6.45	13.23	
6,723.0	4.20	356.60	6,449.9	-1,328.1	1,054.6	-936.6	3.25	3.23	6.77	
6,753.0	7.10	353.10	6,479.7	-1,325.2	1,054.3	-933.9	9.73	9.67	-11.67	
6,784.0	10.30	358.20	6,510.3	-1,320.5	1,054.0	-929.6	10.61	10.32	16.45	
6,815.0	13.50	1.50	6,540.7	-1,314.1	1,054.0	-923.5	10.55	10.32	10.65	
6,846.0	16.80	4.50	6,570.6	-1,306.0	1,054.4	-915.7	10.94	10.65	9.68	
6,877.0	20.00	7.50	6,600.0	-1,296.3	1,055.5	-906.1	10.76	10.32	9.68	
6,908.0	23.20	8.20	6,628.8	-1,285.0	1,057.0	-894.9	10.36	10.32	2.26	
6,939.0	25.70	11.50	6,657.0	-1,272.4	1,059.2	-882.2	9.19	8.06	10.65	
6,970.0	27.80	9.90	6,684.7	-1,258.6	1,061.8	-868.3	7.16	6.77	-5.16	
7,001.0	30.10	7.50	6,711.8	-1,243.8	1,064.1	-853.5	8.31	7.42	-7.74	
7,031.0	32.80	5.90	6,737.4	-1,228.3	1,065.9	-838.2	9.42	9.00	-5.33	
7,063.0	35.70	4.50	6,763.9	-1,210.3	1,067.5	-820.6	9.39	9.06	-4.38	
7,093.0	38.70	2.90	6,787.8	-1,192.2	1,068.7	-803.1	10.51	10.00	-5.33	
7,124.0	41.50	1.90	6,811.5	-1,172.3	1,069.5	-783.8	9.27	9.03	-3.23	
7,155.0	43.30	0.30	6,834.4	-1,151.4	1,069.9	-763.8	6.77	5.81	-5.16	
7,182.4	45.77	359.32	6,853.9	-1,132.2	1,069.8	-745.6	9.37	9.03	-3.57	
T1 460°FSL & 1330°FWL										
7,186.0	46.10	359.20	6,856.4	-1,129.6	1,069.8	-743.1	9.37	9.05	-3.40	
7,217.0	49.10	359.00	6,877.3	-1,106.7	1,069.4	-721.5	9.69	9.68	-0.65	
7,248.0	52.30	358.20	6,897.0	-1,082.7	1,068.9	-698.9	10.51	10.32	-2.58	
7,279.0	55.60	359.00	6,915.2	-1,057.7	1,068.2	-675.2	10.85	10.65	2.58	
7,310.0	59.40	358.70	6,931.8	-1,031.5	1,067.7	-650.5	12.29	12.26	-0.97	
7,341.0	63.30	358.90	6,946.7	-1,004.3	1,067.1	-624.9	12.59	12.58	0.65	
7,372.0	67.60	359.20	6,959.6	-976.2	1,066.7	-598.2	13.90	13.87	0.97	
7,403.0	71.90	0.80	6,970.3	-947.1	1,066.7	-570.5	14.69	13.87	5.16	
7,434.0	76.90	1.90	6,978.6	-917.2	1,067.4	-541.9	16.49	16.13	3.55	
7,465.0	81.90	3.40	6,984.3	-886.8	1,068.8	-512.6	16.82	16.13	4.84	
7,515.0	88.40	4.70	6,988.6	-837.1	1,072.3	-464.3	13.26	13.00	2.60	
7,544.0	89.30	5.00	6,989.2	-808.3	1,074.8	-436.0	3.27	3.10	1.03	
7,575.0	88.50	5.00	6,989.7	-777.4	1,077.5	-405.8	2.58	-2.58	0.00	
7,606.0	89.40	4.70	6,990.3	-746.5	1,080.1	-375.6	3.06	2.90	-0.97	
7,638.0	90.70	3.80	6,990.3	-714.6	1,082.5	-344.6	4.94	4.06	-2.81	
7,668.0	91.50	3.40	6,989.7	-684.6	1,084.4	-315.5	2.98	2.67	-1.33	
7,700.0	92.60	2.70	6,988.6	-652.7	1,086.1	-284.6	4.07	3.44	-2.19	
7,730.0	93.60	2.40	6,986.9	-622.8	1,087.4	-255.8	3.48	3.33	-1.00	
7,762.0	94.70	1.70	6,984.6	-590.9	1,088.5	-225.1	4.07	3.44	-2.19	
7,793.0	95.40	1.50	6,981.9	-560.0	1,089.4	-195.5	2.35	2.26	-0.65	
7,824.0	95.80	0.60	6,978.9	-529.2	1,090.0	-165.9	3.16	1.29	-2.90	
7,855.0	96.00	359.60	6,975.7	-498.3	1,090.0	-136.6	3.27	0.65	-3.23	
7,886.0	95.60	359.00	6,972.6	-467.5	1,089.6	-107.4	2.32	-1.29	-1.94	

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7,917.0	94.30	358.00	6,969.9	-436.6	1,088.8	-78.3	5.28	-4.19	-3.23	
7,949.0	92.90	357.30	6,967.9	-404.7	1,087.5	-48.4	4.89	-4.38	-2.19	
7,980.0	92.10	356.40	6,966.5	-373.8	1,085.8	-19.5	3.88	-2.58	-2.90	
8,011.0	91.70	355.50	6,965.5	-342.9	1,083.6	9.2	3.18	-1.29	-2.90	
8,042.0	90.70	356.20	6,964.8	-312.0	1,081.4	37.9	3.94	-3.23	2.26	
8,073.0	90.80	356.40	6,964.4	-281.1	1,079.4	66.7	0.72	0.32	0.65	
8,105.0	90.00	357.10	6,964.2	-249.1	1,077.6	96.5	3.32	-2.50	2.19	
8,136.0	90.30	357.50	6,964.1	-218.1	1,076.1	125.5	1.61	0.97	1.29	
8,167.0	91.30	357.50	6,963.7	-187.2	1,074.8	154.6	3.23	3.23	0.00	
8,199.0	92.00	357.50	6,962.8	-155.2	1,073.4	184.5	2.19	2.19	0.00	
8,230.0	92.40	357.60	6,961.6	-124.3	1,072.0	213.5	1.33	1.29	0.32	
8,261.0	92.10	357.10	6,960.4	-93.3	1,070.6	242.5	1.88	-0.97	-1.61	
8,293.0	91.20	358.00	6,959.5	-61.4	1,069.2	272.5	3.98	-2.81	2.81	
8,324.0	89.40	358.30	6,959.3	-30.4	1,068.2	301.6	5.89	-5.81	0.97	
8,355.0	89.70	358.50	6,959.5	0.6	1,067.4	330.8	1.16	0.97	0.65	
8,387.0	91.00	358.00	6,959.3	32.6	1,066.4	361.0	4.35	4.06	-1.56	
8,418.0	91.70	358.20	6,958.6	63.6	1,065.4	390.1	2.35	2.26	0.65	
8,449.0	92.20	358.20	6,957.6	94.5	1,064.4	419.2	1.61	1.61	0.00	
8,481.0	91.70	357.80	6,956.5	126.5	1,063.3	449.3	2.00	-1.56	-1.25	
8,511.0	91.50	358.00	6,955.6	156.5	1,062.2	477.4	0.94	-0.67	0.67	
8,542.0	92.10	357.50	6,954.7	187.4	1,061.0	506.5	2.52	1.94	-1.61	
8,574.0	92.10	357.50	6,953.5	219.4	1,059.6	536.5	0.00	0.00	0.00	
8,605.0	91.50	357.10	6,952.5	250.3	1,058.1	565.4	2.33	-1.94	-1.29	
8,636.0	92.10	356.90	6,951.5	281.3	1,056.5	594.4	2.04	1.94	-0.65	
8,667.0	92.30	356.80	6,950.3	312.2	1,054.8	623.2	0.72	0.65	-0.32	
8,698.0	91.90	357.30	6,949.2	343.1	1,053.2	652.2	2.06	-1.29	1.61	
8,730.0	91.60	356.80	6,948.2	375.1	1,051.5	682.0	1.82	-0.94	-1.56	
8,761.0	92.10	356.60	6,947.2	406.0	1,049.8	710.9	1.74	1.61	-0.65	
8,792.0	91.50	357.10	6,946.3	436.9	1,048.1	739.8	2.52	-1.94	1.61	
8,822.0	91.60	357.30	6,945.4	466.9	1,046.6	767.8	0.75	0.33	0.67	
8,853.0	90.80	356.90	6,944.8	497.8	1,045.0	796.8	2.89	-2.58	-1.29	
8,885.0	89.70	355.70	6,944.7	529.8	1,043.0	826.5	5.09	-3.44	-3.75	
8,916.0	89.50	356.40	6,944.9	560.7	1,040.8	855.2	2.35	-0.65	2.26	
8,947.0	89.90	356.90	6,945.0	591.6	1,039.0	884.1	2.07	1.29	1.61	
8,978.0	90.70	354.60	6,944.9	622.6	1,036.7	912.8	7.86	2.58	-7.42	
9,009.0	90.50	353.80	6,944.5	653.4	1,033.6	941.1	2.66	-0.65	-2.58	
9,041.0	90.90	352.00	6,944.2	685.1	1,029.6	970.1	5.76	1.25	-5.63	
9,072.0	90.70	352.40	6,943.7	715.9	1,025.4	998.0	1.44	-0.65	1.29	
9,104.0	90.50	353.80	6,943.4	747.6	1,021.6	1,027.0	4.42	-0.63	4.38	
9,137.0	90.10	354.30	6,943.2	780.4	1,018.2	1,057.2	1.94	-1.21	1.52	
9,168.0	90.90	354.80	6,942.9	811.3	1,015.2	1,085.6	3.04	2.58	1.61	
9,200.0	91.60	356.90	6,942.2	843.2	1,012.9	1,115.2	6.92	2.19	6.56	
9,231.0	91.50	358.70	6,941.4	874.2	1,011.7	1,144.3	5.81	-0.32	5.81	
9,262.0	92.20	0.80	6,940.4	905.2	1,011.6	1,173.7	7.14	2.26	6.77	
9,293.0	92.80	1.90	6,939.1	936.1	1,012.3	1,203.4	4.04	1.94	3.55	
9,325.0	93.00	2.20	6,937.4	968.1	1,013.4	1,234.1	1.13	0.63	0.94	
9,356.0	93.60	2.20	6,935.6	999.0	1,014.6	1,263.9	1.94	1.94	0.00	
9,388.0	93.80	2.00	6,933.6	1,030.9	1,015.8	1,294.6	0.88	0.63	-0.63	
9,419.0	93.80	3.10	6,931.5	1,061.8	1,017.2	1,324.4	3.54	0.00	3.55	
9,450.0	93.20	3.40	6,929.6	1,092.7	1,018.9	1,354.3	2.16	-1.94	0.97	
9,481.0	92.80	3.60	6,928.0	1,123.6	1,020.8	1,384.3	1.44	-1.29	0.65	
9,513.0	90.50	2.90	6,927.1	1,155.5	1,022.6	1,415.2	7.51	-7.19	-2.19	
9,544.0	88.70	1.90	6,927.3	1,186.5	1,023.9	1,445.1	6.64	-5.81	-3.23	
9,576.0	89.30	2.00	6,927.9	1,218.5	1,025.0	1,475.8	1.90	1.88	0.31	

Company:	Mineral Resources Inc	Local Co-ordinate Reference:	Well ISLAND GROVE 2-32
Project:	SEC.32-T6N-R65W	TVD Reference:	RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')
Site:	ISLAND GROVE HOR PAD 32-6N-65W	MD Reference:	RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')
Well:	ISLAND GROVE 2-32	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)
9,607.0	89.10	2.20	6,928.3	1,249.4	1,026.2	1,505.6	0.91	-0.65	0.65
9,638.0	89.30	2.20	6,928.7	1,280.4	1,027.3	1,535.5	0.65	0.65	0.00
9,669.0	89.90	1.70	6,928.9	1,311.4	1,028.4	1,565.3	2.52	1.94	-1.61
9,700.0	90.80	2.00	6,928.8	1,342.4	1,029.4	1,595.0	3.06	2.90	0.97
9,731.0	91.50	1.90	6,928.1	1,373.4	1,030.5	1,624.8	2.28	2.26	-0.32
9,762.0	90.60	1.50	6,927.6	1,404.3	1,031.4	1,654.6	3.18	-2.90	-1.29
9,793.0	89.30	1.70	6,927.6	1,435.3	1,032.2	1,684.3	4.24	-4.19	0.65
9,825.0	89.90	1.70	6,927.8	1,467.3	1,033.2	1,715.0	1.88	1.88	0.00
9,856.0	89.10	1.90	6,928.1	1,498.3	1,034.2	1,744.8	2.66	-2.58	0.65
9,888.0	88.60	1.70	6,928.7	1,530.3	1,035.2	1,775.5	1.68	-1.56	-0.63
9,919.0	88.50	1.20	6,929.5	1,561.3	1,036.0	1,805.2	1.64	-0.32	-1.61
9,950.0	87.50	1.20	6,930.6	1,592.2	1,036.6	1,834.8	3.23	-3.23	0.00
9,982.0	87.80	1.30	6,931.9	1,624.2	1,037.3	1,865.4	0.99	0.94	0.31
10,013.0	87.90	1.20	6,933.1	1,655.2	1,038.0	1,895.1	0.46	0.32	-0.32
10,044.0	88.60	1.30	6,934.0	1,686.1	1,038.7	1,924.8	2.28	2.26	0.32
10,075.0	89.90	0.10	6,934.4	1,717.1	1,039.0	1,954.4	5.71	4.19	-3.87
10,106.0	91.20	0.60	6,934.1	1,748.1	1,039.2	1,983.9	4.49	4.19	1.61
10,138.0	90.10	0.30	6,933.8	1,780.1	1,039.5	2,014.4	3.56	-3.44	-0.94
10,169.0	89.00	358.90	6,934.0	1,811.1	1,039.3	2,043.8	5.74	-3.55	-4.52
10,200.0	89.30	358.50	6,934.5	1,842.1	1,038.6	2,073.1	1.61	0.97	-1.29
10,232.0	89.70	359.00	6,934.7	1,874.1	1,037.9	2,103.3	2.00	1.25	1.56
10,262.0	90.40	358.50	6,934.7	1,904.1	1,037.2	2,131.6	2.87	2.33	-1.67
10,293.0	90.00	359.90	6,934.6	1,935.1	1,036.8	2,160.9	4.70	-1.29	4.52
10,325.0	90.40	359.90	6,934.5	1,967.1	1,036.7	2,191.3	1.25	1.25	0.00
10,356.0	89.60	0.40	6,934.5	1,998.1	1,036.8	2,220.8	3.04	-2.58	1.61
10,387.0	88.50	0.40	6,935.0	2,029.1	1,037.0	2,250.4	3.55	-3.55	0.00
10,419.0	88.80	0.80	6,935.8	2,061.1	1,037.3	2,280.9	1.56	0.94	1.25
10,450.0	90.00	0.40	6,936.1	2,092.1	1,037.7	2,310.5	4.08	3.87	-1.29
10,481.0	91.00	0.80	6,935.8	2,123.1	1,038.0	2,340.1	3.47	3.23	1.29
10,512.0	90.00	0.80	6,935.6	2,154.1	1,038.4	2,369.7	3.23	-3.23	0.00
10,544.0	88.70	0.30	6,935.9	2,186.1	1,038.7	2,400.2	4.35	-4.06	-1.56
10,575.0	88.90	0.10	6,936.6	2,217.1	1,038.8	2,429.7	0.91	0.65	-0.65
10,607.0	90.00	0.40	6,936.9	2,249.0	1,039.0	2,460.2	3.56	3.44	0.94
10,638.0	90.80	1.00	6,936.7	2,280.0	1,039.4	2,489.8	3.23	2.58	1.94
10,669.0	89.80	0.80	6,936.5	2,311.0	1,039.8	2,519.4	3.29	-3.23	-0.65
10,700.0	88.40	359.60	6,937.0	2,342.0	1,040.0	2,548.9	5.95	-4.52	-3.87
10,732.0	89.10	0.10	6,937.7	2,374.0	1,039.9	2,579.3	2.69	2.19	1.56
10,763.0	90.10	359.90	6,937.9	2,405.0	1,039.9	2,608.8	3.29	3.23	-0.65
10,794.0	90.80	359.90	6,937.7	2,436.0	1,039.8	2,638.2	2.26	2.26	0.00
10,826.0	90.50	359.40	6,937.3	2,468.0	1,039.6	2,668.6	1.82	-0.94	-1.56
10,857.0	90.80	358.70	6,936.9	2,499.0	1,039.1	2,697.9	2.46	0.97	-2.26
10,889.0	90.20	357.30	6,936.7	2,531.0	1,038.0	2,728.0	4.76	-1.88	-4.38
10,920.0	89.20	356.20	6,936.8	2,561.9	1,036.2	2,756.9	4.80	-3.23	-3.55
10,951.0	88.80	356.60	6,937.4	2,592.9	1,034.3	2,785.7	1.82	-1.29	1.29
10,983.0	89.20	356.40	6,937.9	2,624.8	1,032.3	2,815.4	1.40	1.25	-0.63
11,014.0	90.00	354.60	6,938.1	2,655.7	1,029.9	2,844.1	6.35	2.58	-5.81
11,045.0	90.70	354.50	6,937.9	2,686.6	1,027.0	2,872.5	2.28	2.26	-0.32
11,076.0	89.40	356.40	6,937.9	2,717.5	1,024.5	2,901.1	7.43	-4.19	6.13
11,108.0	87.80	358.00	6,938.7	2,749.4	1,022.9	2,931.0	7.07	-5.00	5.00
11,139.0	87.80	359.00	6,939.9	2,780.4	1,022.1	2,960.2	3.22	0.00	3.23
11,170.0	87.80	359.20	6,941.1	2,811.4	1,021.6	2,989.5	0.64	0.00	0.65
11,201.0	88.20	359.20	6,942.2	2,842.3	1,021.2	3,018.8	1.29	1.29	0.00
11,233.0	89.10	359.60	6,942.9	2,874.3	1,020.9	3,049.2	3.08	2.81	1.25
11,264.0	89.40	0.10	6,943.3	2,905.3	1,020.8	3,078.6	1.88	0.97	1.61

Company:	Mineral Resources Inc	Local Co-ordinate Reference:	Well ISLAND GROVE 2-32
Project:	SEC.32-T6N-R65W	TVD Reference:	RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')
Site:	ISLAND GROVE HOR PAD 32-6N-65W	MD Reference:	RKB @ 4662.0ft (KB ENSIGN RIG 14 - 15')
Well:	ISLAND GROVE 2-32	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)	
11,295.0	88.90	359.70	6,943.8	2,936.3	1,020.7	3,108.1	2.07	-1.61	-1.29	
11,326.0	90.60	1.20	6,943.9	2,967.3	1,021.0	3,137.6	7.31	5.48	4.84	
11,357.0	90.20	1.30	6,943.7	2,998.3	1,021.7	3,167.3	1.33	-1.29	0.32	
11,388.0	90.40	2.60	6,943.5	3,029.3	1,022.7	3,197.1	4.24	0.65	4.19	
11,420.0	91.60	2.20	6,943.0	3,061.3	1,024.1	3,227.9	3.95	3.75	-1.25	
11,450.0	92.10	2.00	6,942.0	3,091.2	1,025.2	3,256.7	1.79	1.67	-0.67	
11,486.0	92.80	1.90	6,940.5	3,127.2	1,026.4	3,291.3	1.96	1.94	-0.28	
11,531.0	92.80	1.90	6,938.3	3,172.1	1,027.9	3,334.5	0.00	0.00	0.00	
BHL 460'FNL & 1330'FWL										

Checked By: _____	Approved By: _____	Date: _____
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