

Conoco Phillips Company

Arapahoe County, Colorado

Sec. 2-T5S-R64W

Moran Trust 2-1

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

22 August, 2013

Well Coordinates: 1,660,118.59 N, 3,276,928.21 E (39° 38' 30.14" N, 104° 30' 59.86" W)

Ground Level: 5,975.00 ft

Local Coordinate Origin:

Centered on Well Moran Trust 2-1

Viewing Datum:

RKB 24 ft @ 5999.00ft (H&P 280)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Version: 2003.16 Build: 431

HALLIBURTON

Design Report for Moran Trust 2-1 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
2,265.80	0.88	220.85	2,265.71	-14.29	-11.66	16.13	0.29
Tie On to 3rd Pary Gyro @ 2265.80 ft							
2,317.00	0.95	212.58	2,316.90	-14.94	-12.15	16.86	0.29
First Sperry MWD Survey @ 2317.00 ft							
2,380.00	0.98	225.07	2,379.89	-15.76	-12.81	17.78	0.34
2,475.00	1.00	213.72	2,474.88	-17.03	-13.85	19.21	0.21
2,570.00	0.43	223.47	2,569.87	-17.97	-14.55	20.27	0.61
2,664.00	0.36	189.85	2,663.87	-18.52	-14.85	20.86	0.25
2,759.00	0.00	273.51	2,758.87	-18.82	-14.90	21.16	0.38
2,854.00	0.17	354.97	2,853.87	-18.67	-14.91	21.02	0.18
2,949.00	0.24	142.36	2,948.87	-18.69	-14.80	21.02	0.41
3,044.00	0.32	175.05	3,043.87	-19.11	-14.66	21.41	0.18
3,139.00	0.70	85.16	3,138.87	-19.33	-14.05	21.51	0.81
3,234.00	0.40	80.22	3,233.86	-19.22	-13.15	21.25	0.32
3,329.00	0.72	101.95	3,328.86	-19.29	-12.24	21.15	0.40
3,424.00	0.63	118.45	3,423.85	-19.66	-11.20	21.34	0.22
3,519.00	0.81	129.53	3,518.84	-20.34	-10.22	21.83	0.24
3,614.00	0.28	147.94	3,613.84	-20.96	-9.58	22.33	0.58
3,708.00	0.46	121.91	3,707.84	-21.36	-9.13	22.64	0.26
3,803.00	0.38	145.32	3,802.83	-21.82	-8.63	23.00	0.20
3,898.00	0.93	89.19	3,897.83	-22.07	-7.68	23.08	0.83
3,993.00	0.81	84.34	3,992.82	-21.99	-6.24	22.75	0.15
4,088.00	0.88	48.98	4,087.81	-21.44	-5.02	22.00	0.54
4,183.00	0.79	19.38	4,182.80	-20.35	-4.26	20.78	0.46
4,278.00	1.01	11.03	4,277.79	-18.91	-3.88	19.30	0.27
4,373.00	1.51	12.78	4,372.76	-16.87	-3.44	17.21	0.53
4,468.00	0.99	352.78	4,467.74	-14.83	-3.27	15.18	0.71
4,563.00	0.62	342.95	4,562.73	-13.53	-3.52	13.94	0.41
4,658.00	0.55	300.96	4,657.73	-12.80	-4.06	13.32	0.45
4,753.00	1.02	326.21	4,752.72	-11.86	-4.92	12.55	0.60
4,847.00	0.31	292.27	4,846.71	-11.07	-5.63	11.89	0.83
4,942.00	0.31	304.29	4,941.71	-10.83	-6.08	11.73	0.07
5,037.00	0.13	306.44	5,036.71	-10.62	-6.37	11.58	0.19
5,132.00	0.35	232.52	5,131.71	-10.73	-6.69	11.75	0.36
5,227.00	0.61	246.17	5,226.70	-11.11	-7.38	12.25	0.30
5,321.00	0.44	254.81	5,320.70	-11.41	-8.19	12.68	0.20
5,416.00	0.58	277.55	5,415.70	-11.44	-9.02	12.86	0.26
5,511.00	0.40	327.30	5,510.69	-11.10	-9.67	12.64	0.47
5,606.00	0.90	6.97	5,605.69	-10.08	-9.76	11.65	0.68
5,701.00	0.69	352.99	5,700.68	-8.77	-9.74	10.36	0.30
5,796.00	0.53	14.86	5,795.67	-7.78	-9.70	9.37	0.29
5,891.00	0.59	29.96	5,890.67	-6.93	-9.34	8.48	0.17
5,986.00	0.26	4.97	5,985.67	-6.29	-9.08	7.80	0.39
6,081.00	0.85	282.12	6,080.66	-5.93	-9.75	7.56	0.90
6,176.00	1.06	247.04	6,175.65	-6.12	-11.25	8.02	0.64
6,271.00	0.19	204.83	6,270.64	-6.61	-12.12	8.65	0.98
6,365.00	0.59	149.53	6,364.64	-7.17	-11.94	9.17	0.54
6,460.00	0.75	116.17	6,459.63	-7.86	-11.14	9.71	0.44
6,555.00	0.75	117.87	6,554.63	-8.43	-10.03	10.07	0.02
6,650.00	0.93	153.33	6,649.62	-9.41	-9.13	10.88	0.57

Design Report for Moran Trust 2-1 - Actual Field Surveys

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6,745.00	1.97	149.66	6,744.59	-11.51	-7.96	12.74	1.10
6,840.00	1.06	114.43	6,839.55	-13.28	-6.34	14.19	1.33
6,935.00	0.66	46.85	6,934.54	-13.27	-5.14	13.97	1.07
7,030.00	0.42	37.23	7,029.54	-12.62	-4.53	13.22	0.27
7,062.00	0.69	50.30	7,061.54	-12.40	-4.31	12.97	0.93
7,093.00	0.62	18.61	7,092.54	-12.12	-4.11	12.66	1.17
7,125.00	0.59	36.74	7,124.53	-11.83	-3.96	12.34	0.60
7,157.00	0.59	53.31	7,156.53	-11.60	-3.73	12.07	0.53
7,188.00	0.62	36.63	7,187.53	-11.37	-3.50	11.81	0.57
7,220.00	0.55	62.11	7,219.53	-11.16	-3.26	11.56	0.83
7,252.00	0.39	15.67	7,251.53	-10.98	-3.10	11.35	1.25
7,283.00	0.47	43.40	7,282.53	-10.79	-2.98	11.14	0.71
7,315.00	0.25	49.54	7,314.53	-10.64	-2.84	10.98	0.70
7,346.00	0.55	23.15	7,345.53	-10.46	-2.73	10.78	1.11
7,378.00	0.55	56.88	7,377.52	-10.24	-2.54	10.53	1.00
7,410.00	0.36	60.03	7,409.52	-10.10	-2.32	10.36	0.60
7,430.00	0.39	78.46	7,429.52	-10.06	-2.20	10.29	0.62
Final Sperry MWD Survey @ 7430.00 ft							
7,490.00	0.40	78.46	7,489.52	-9.98	-1.80	10.14	0.02
Projection to TD @ 7490.00 ft							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,265.80	2,265.71	-14.29	-11.66	Tie On to 3rd Pary Gyro @ 2265.80 ft
2,317.00	2,316.90	-14.94	-12.15	First Sperry MWD Survey @ 2317.00 ft
7,430.00	7,429.52	-10.06	-2.20	Final Sperry MWD Survey @ 7430.00 ft
7,490.00	7,489.52	-9.98	-1.80	Projection to TD @ 7490.00 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
TD	No Target (Freehand)	190.21	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
70.10	2,234.30	Surface Casing Gyro Surface	SRG-GYRO-MS
2,265.80	7,490.00	Sperry MWD Survey	MWD

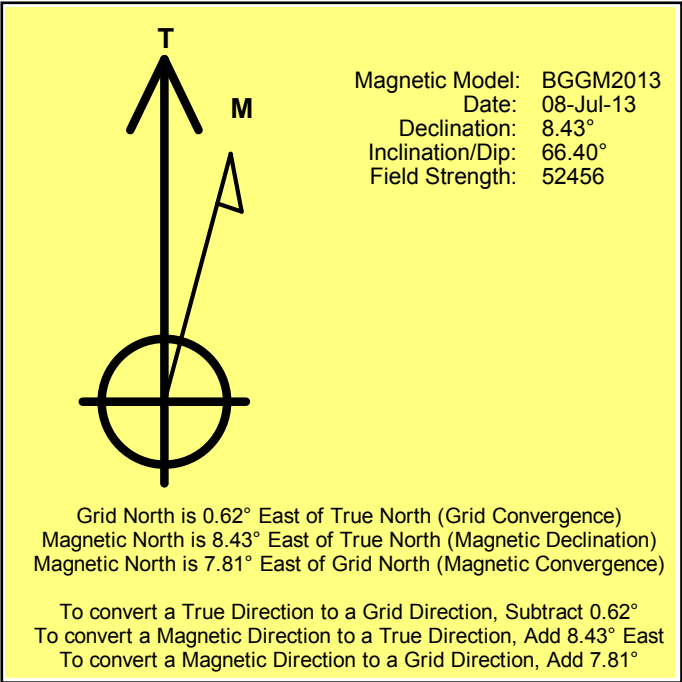
North Reference Sheet for Sec. 2-T5S-R64W - Moran Trust 2-1 - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
 Vertical Depths are relative to RKB 24 ft @ 5999.00ft (H&P 280). Northing and Easting are relative to Moran Trust 2-1
 Coordinate System is US State Plane 1983, Colorado Central Zone using datum North American Datum 1983, ellipsoid GRS 1980
 Projection method is Lambert Conformal Conic (2 parallel)
 Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:39.750000°
 False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99998037

Grid Coordinates of Well: 1,660,118.59 ft N, 3,276,928.21 ft E
 Geographical Coordinates of Well: 39° 38' 30.14" N, 104° 30' 59.86" W
 Grid Convergence at Surface is: 0.62°

Based upon Minimum Curvature type calculations, at a Measured Depth of 7,490.00ft
 the Bottom Hole Displacement is 10.14ft in the Direction of 190.21° (True).

Magnetic Convergence at surface is: -7.81° (8 July 2013, , BGGM2013)



LEGEND

- Moran Trust 2-1, Sperry MWD Survey
- Moran Trust 2-1, Surface Casing Gyro Surface
- Moran Trust 2-1, Plan A

