

Conoco Phillips Company

Arapahoe County, Colorado

Sec. 2-T4S-R64W

Cline 4-64-2-1H

Plan B

Survey: Lateral

Job No. Lateral

Sperry Drilling Services

Standard Report

28 October, 2013

Well Coordinates: 1,693,322.60 N, 3,278,656.40 E (39° 43' 58.09" N, 104° 30' 33.14" W)

Ground Level: 5,586.00 ft

Local Coordinate Origin:

Centered on Well Cline 4-64-2-1H

Viewing Datum:

Rkb 24 ft @ 5610.00ft (H&P 280)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Version: 2003.16 Build: 431

HALLIBURTON

Survey Report for Cline 4-64-2-1H - Lateral

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
7,656.00	86.66	272.01	7,353.47	18.84	-558.01	558.30	0.00
7,657.00	86.70	272.03	7,353.53	18.88	-559.01	559.29	4.55
Tie on survey							
7,738.00	90.12	273.41	7,355.77	22.72	-639.87	640.23	4.55
First survey							
7,833.00	91.24	272.97	7,354.65	28.00	-734.72	735.17	1.27
7,928.00	91.61	272.70	7,352.28	32.70	-829.57	830.10	0.48
8,023.00	88.76	271.18	7,351.98	35.92	-924.50	925.08	3.40
8,118.00	90.93	271.72	7,352.24	38.32	-1,019.47	1,020.08	2.35
8,150.00	90.80	271.58	7,351.75	39.24	-1,051.45	1,052.07	0.60
8,213.00	90.12	271.19	7,351.25	40.76	-1,114.43	1,115.07	1.24
8,308.00	87.22	270.35	7,353.45	42.04	-1,209.38	1,210.03	3.18
8,403.00	87.84	270.57	7,357.55	42.80	-1,304.29	1,304.93	0.69
8,498.00	89.51	271.26	7,359.74	44.32	-1,399.25	1,399.90	1.90
8,593.00	89.63	271.26	7,360.45	46.41	-1,494.22	1,494.90	0.13
8,688.00	90.31	271.35	7,360.50	48.57	-1,589.20	1,589.90	0.72
8,783.00	89.81	271.16	7,360.41	50.65	-1,684.18	1,684.90	0.56
8,878.00	88.52	270.68	7,361.79	52.18	-1,779.15	1,779.88	1.45
8,973.00	87.53	270.19	7,365.06	52.90	-1,874.09	1,874.81	1.16
9,067.00	86.11	269.94	7,370.28	53.01	-1,967.94	1,968.64	1.53
9,162.00	87.59	270.15	7,375.50	53.08	-2,062.80	2,063.47	1.57
9,257.00	87.96	270.08	7,379.19	53.27	-2,157.72	2,158.38	0.40
9,352.00	87.84	269.98	7,382.67	53.32	-2,252.66	2,253.29	0.16
9,447.00	89.51	270.58	7,384.86	53.78	-2,347.63	2,348.25	1.87
9,542.00	90.49	270.85	7,384.86	54.97	-2,442.62	2,443.24	1.07
9,637.00	90.56	271.31	7,383.99	56.76	-2,537.60	2,538.23	0.49
9,668.00	90.37	271.33	7,383.74	57.47	-2,568.59	2,569.23	0.62
9,732.00	88.39	270.68	7,384.43	58.60	-2,632.57	2,633.23	3.26
9,826.00	88.58	271.19	7,386.92	60.13	-2,726.53	2,727.19	0.58
9,921.00	87.90	272.18	7,389.84	62.92	-2,821.44	2,822.14	1.26
10,016.00	88.83	272.25	7,392.55	66.59	-2,916.33	2,917.09	0.98
10,111.00	88.08	271.68	7,395.11	69.85	-3,011.24	3,012.05	0.99
10,206.00	88.70	271.85	7,397.78	72.77	-3,106.16	3,107.01	0.68
10,301.00	87.90	271.64	7,400.60	75.67	-3,201.07	3,201.96	0.87
10,395.00	89.01	272.66	7,403.13	79.19	-3,294.97	3,295.92	1.60
10,490.00	89.26	272.63	7,404.57	83.57	-3,389.85	3,390.88	0.27
10,585.00	89.51	272.85	7,405.59	88.12	-3,484.74	3,485.84	0.35
10,680.00	89.20	272.73	7,406.65	92.74	-3,579.62	3,580.81	0.35
10,775.00	88.83	272.05	7,408.29	96.70	-3,674.52	3,675.78	0.81
10,870.00	87.90	271.12	7,411.00	99.33	-3,769.45	3,770.73	1.38
10,965.00	86.54	270.67	7,415.61	100.81	-3,864.32	3,865.62	1.51
11,060.00	87.47	270.91	7,420.57	102.12	-3,959.18	3,960.48	1.01
11,154.00	88.02	271.08	7,424.27	103.75	-4,053.09	4,054.41	0.61
11,178.00	87.93	270.78	7,425.12	104.14	-4,077.08	4,078.39	1.30
Final survey							
11,240.00	87.90	270.78	7,427.37	104.98	-4,139.03	4,140.35	0.05
Projection to bit							

Survey Report for Cline 4-64-2-1H - Lateral

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
7,657.00	7,353.53	18.88	-559.01	Tie on survey
7,738.00	7,355.77	22.72	-639.87	First survey
11,178.00	7,425.12	104.14	-4,077.08	Final survey
11,240.00	7,427.37	104.98	-4,139.03	Projection to bit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Cline 4-64-2-1H_Rev B0_BHL Tgt	271.32	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
99.00	1,894.00	Surface Hole	SRG-GYRO-MS
1,924.00	7,656.00	Vertical / Build	MWD
7,738.00	11,240.00	Lateral	MWD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Cline 4-64-2-1H_Rev E	0.00	0.00	7,426.00	82.92	-3,599.04	1,693,366.27	3,275,056.68	39° 43' 58.907 N	104° 31' 19.208 W
- survey misses target center by 21.87ft at 10699.32ft MD (7406.94 TVD, 93.64 N, -3598.92 E)									
- Point									
Cline 4-64-2-1H_Rev E	0.00	0.00	7,426.00	104.63	-4,541.40	1,693,377.70	3,274,114.13	39° 43' 59.120 N	104° 31' 31.270 W
- survey misses target center by 402.38ft at 11240.00ft MD (7427.37 TVD, 104.98 N, -4139.03 E)									
- Point									
Cline 4-64-2-1H_SB	0.00	0.00	0.00	0.00	0.00	1,693,322.60	3,278,656.40	39° 43' 58.090 N	104° 30' 33.140 W
- survey misses target center by 7374.64ft at 7656.00ft MD (7353.47 TVD, 18.84 N, -558.01 E)									
- Polygon									
Cline 4-64-2-1H_SL	0.00	0.00	0.00	0.00	0.00	1,693,322.60	3,278,656.40	39° 43' 58.090 N	104° 30' 33.140 W
- survey misses target center by 7374.64ft at 7656.00ft MD (7353.47 TVD, 18.84 N, -558.01 E)									
- Polygon									
Cline 4-64-2-1H_Rev E	0.00	0.00	7,352.00	33.40	-1,449.61	1,693,340.19	3,277,206.51	39° 43' 58.420 N	104° 30' 51.695 W
- survey misses target center by 14.52ft at 8548.05ft MD (7360.14 TVD, 45.42 N, -1449.28 E)									
- Point									

North Reference Sheet for Sec. 2-T4S-R64W - Cline 4-64-2-1H - Plan B

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 @ 5610.00ft (H&P 280). Northing and Easting are relative to Cline 4-64-2-1H
 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° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:39° 45' 0.000 N°
 False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99999664

Grid Coordinates of Well: 1,693,322.60 ft N, 3,278,656.40 ft E
 Geographical Coordinates of Well: 39° 43' 58.09" N, 104° 30' 33.14" W
 Grid Convergence at Surface is: 0.62°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,240.00ft
 the Bottom Hole Displacement is 4,140.36ft in the Direction of 271.45° (True).

Magnetic Convergence at surface is: -7.77° (15 October 2013, , BGGM2013)

