

Conoco Phillips Company

Arapahoe County, Colorado

Sec. 4-T5S-R64W

Tebo 4-1H

Plan A

Plan: Plan A Rev 1 (Lateral)

Sperry Drilling Services

Proposal Report

10 May, 2013

Well Coordinates: 1,659,445.49 N, 3,263,185.27 E (39° 38' 24.92" N, 104° 33' 55.62" W)

Ground Level: 5,884.00 ft

Local Coordinate Origin:

Centered on Well Tebo 4-1H

Viewing Datum:

RKB 24 ft @ 5908.00ft (H&P 280)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Version: 2003.16 Build: 431

HALLIBURTON

Plan: Plan A Rev 1 (Lateral) (Teb0 4-1H/Plan A)	
Created By: Matthew R. Epp	Date: 10:50, May 10 2013
Checked: _____	Date: _____
Reviewed: _____	Date: _____
Approved: _____	Date: _____

Plan Report for Tebo 4-1H - Plan A Rev 1 (Lateral)

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)	Toolface Azimuth (°)
6,950.00	0.00	0.00	6,943.76	-240.75	0.00	16.29	0.00	0.00	0.00	0.00
Tie-On to Surface Casing (Assuming Vertical) @ 6950.00 ft										
7,000.00	0.00	0.00	6,993.76	-240.75	0.00	16.29	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,093.76	-240.75	0.00	16.29	0.00	0.00	0.00	0.00
7,176.39	0.00	0.00	7,170.15	-240.75	0.00	16.29	0.00	0.00	0.00	0.00
7,176.43	0.00	90.86	7,170.19	-240.75	0.00	16.29	0.00	0.00	0.00	90.86
Kick Off Point 7176.43 ft										
7,200.00	2.36	90.86	7,193.75	-240.76	0.49	16.77	10.02	10.02	0.00	90.86
7,300.00	12.36	90.86	7,292.80	-240.95	13.28	29.55	10.00	10.00	0.00	0.00
7,400.00	22.36	90.86	7,388.13	-241.40	43.08	59.31	10.00	10.00	0.00	0.00
7,500.00	32.36	90.86	7,476.83	-242.09	88.97	105.15	10.00	10.00	0.00	0.00
7,600.00	42.36	90.86	7,556.21	-243.00	149.57	165.67	10.00	10.00	0.00	0.00
Build Rate 10.00 °/100 ft										
7,610.63	43.42	90.86	7,564.00	-243.10	156.81	172.90	10.00	10.00	0.00	0.00
Sharon Springs Shale										
7,667.05	49.07	90.86	7,603.00	-243.72	197.54	213.58	10.00	10.00	0.00	0.00
Niobrara Fm.										
7,700.00	52.36	90.86	7,623.86	-244.10	223.04	239.04	10.00	10.00	0.00	0.00
7,765.86	58.95	90.86	7,661.00	-244.91	277.38	293.32	10.00	10.00	0.00	0.00
Niobrara B										
7,800.00	62.36	90.86	7,677.73	-245.36	307.13	323.02	10.00	10.00	0.00	0.00
7,889.82	71.34	90.86	7,713.00	-246.60	389.63	405.42	10.00	10.00	0.00	0.00
Niobrara C										
7,900.00	72.36	90.86	7,716.17	-246.74	399.30	415.07	10.00	10.00	0.00	0.00
8,000.00	82.36	90.86	7,738.02	-248.21	496.74	512.39	10.00	10.00	0.00	0.00
8,087.63	91.12	90.86	7,743.00	-249.52	584.13	599.67	10.00	10.00	0.00	0.00
End Build 8087.67 ft - 7" Casing Pt.										
8,100.00	91.12	90.86	7,742.75	-249.71	596.50	612.02	0.00	0.00	0.00	0.00
8,200.00	91.12	90.86	7,740.79	-251.21	696.47	711.87	0.00	0.00	0.00	0.00
8,300.00	91.12	90.86	7,738.83	-252.71	796.44	811.71	0.00	0.00	0.00	0.00
8,400.00	91.12	90.86	7,736.87	-254.21	896.41	911.55	0.00	0.00	0.00	0.00
8,500.00	91.12	90.86	7,734.91	-255.71	996.38	1,011.39	0.00	0.00	0.00	0.00
8,600.00	91.12	90.86	7,732.95	-257.21	1,096.34	1,111.23	0.00	0.00	0.00	0.00
8,700.00	91.12	90.86	7,730.99	-258.71	1,196.31	1,211.08	0.00	0.00	0.00	0.00
8,800.00	91.12	90.86	7,729.03	-260.21	1,296.28	1,310.92	0.00	0.00	0.00	0.00
8,900.00	91.12	90.86	7,727.07	-261.71	1,396.25	1,410.76	0.00	0.00	0.00	0.00
9,000.00	91.12	90.86	7,725.10	-263.21	1,496.22	1,510.60	0.00	0.00	0.00	0.00
Hold Inc 91.12°, Azi 90.85°										
9,100.00	91.12	90.86	7,723.14	-264.71	1,596.19	1,610.44	0.00	0.00	0.00	0.00
9,200.00	91.12	90.86	7,721.18	-266.21	1,696.16	1,710.29	0.00	0.00	0.00	0.00
9,300.00	91.12	90.86	7,719.22	-267.72	1,796.13	1,810.13	0.00	0.00	0.00	0.00
9,400.00	91.12	90.86	7,717.26	-269.22	1,896.10	1,909.97	0.00	0.00	0.00	0.00
9,500.00	91.12	90.86	7,715.30	-270.72	1,996.07	2,009.81	0.00	0.00	0.00	0.00
9,600.00	91.12	90.86	7,713.34	-272.22	2,096.04	2,109.65	0.00	0.00	0.00	0.00
9,700.00	91.12	90.86	7,711.38	-273.72	2,196.01	2,209.50	0.00	0.00	0.00	0.00
9,800.00	91.12	90.86	7,709.42	-275.22	2,295.98	2,309.34	0.00	0.00	0.00	0.00
9,900.00	91.12	90.86	7,707.45	-276.72	2,395.95	2,409.18	0.00	0.00	0.00	0.00
10,000.00	91.12	90.86	7,705.49	-278.22	2,495.92	2,509.02	0.00	0.00	0.00	0.00
10,100.00	91.12	90.86	7,703.53	-279.72	2,595.89	2,608.86	0.00	0.00	0.00	0.00
10,200.00	91.12	90.86	7,701.57	-281.22	2,695.86	2,708.71	0.00	0.00	0.00	0.00
10,300.00	91.12	90.86	7,699.61	-282.72	2,795.83	2,808.55	0.00	0.00	0.00	0.00
10,400.00	91.12	90.86	7,697.65	-284.23	2,895.80	2,908.39	0.00	0.00	0.00	0.00
10,500.00	91.12	90.86	7,695.69	-285.73	2,995.77	3,008.23	0.00	0.00	0.00	0.00
10,600.00	91.12	90.86	7,693.73	-287.23	3,095.74	3,108.07	0.00	0.00	0.00	0.00
10,700.00	91.12	90.86	7,691.77	-288.73	3,195.70	3,207.92	0.00	0.00	0.00	0.00
10,800.00	91.12	90.86	7,689.80	-290.23	3,295.67	3,307.76	0.00	0.00	0.00	0.00
10,900.00	91.12	90.86	7,687.84	-291.73	3,395.64	3,407.60	0.00	0.00	0.00	0.00
11,000.00	91.12	90.86	7,685.88	-293.23	3,495.61	3,507.44	0.00	0.00	0.00	0.00

Plan Report for Tebo 4-1H - Plan A Rev 1 (Lateral)

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)	Toolface Azimuth (°)
11,100.00	91.12	90.86	7,683.92	-294.73	3,595.58	3,607.28	0.00	0.00	0.00	0.00
11,200.00	91.12	90.86	7,681.96	-296.23	3,695.55	3,707.13	0.00	0.00	0.00	0.00
11,300.00	91.12	90.86	7,680.00	-297.73	3,795.52	3,806.97	0.00	0.00	0.00	0.00
11,400.00	91.12	90.86	7,678.04	-299.23	3,895.49	3,906.81	0.00	0.00	0.00	0.00
11,500.00	91.12	90.86	7,676.08	-300.73	3,995.46	4,006.65	0.00	0.00	0.00	0.00
11,600.00	91.12	90.86	7,674.12	-302.24	4,095.43	4,106.49	0.00	0.00	0.00	0.00
11,700.00	91.12	90.86	7,672.15	-303.74	4,195.40	4,206.34	0.00	0.00	0.00	0.00
11,800.00	91.12	90.86	7,670.19	-305.24	4,295.37	4,306.18	0.00	0.00	0.00	0.00
11,900.00	91.12	90.86	7,668.23	-306.74	4,395.34	4,406.02	0.00	0.00	0.00	0.00
12,000.00	91.12	90.86	7,666.27	-308.24	4,495.31	4,505.86	0.00	0.00	0.00	0.00
12,064.79	91.12	90.86	7,665.00	-309.21	4,560.08	4,570.55	0.00	0.00	0.00	0.00

Total Depth 12064.79 ft - Tebo 4-1H PAR1_BHL tgt

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
6,950.00	6,943.76	-240.75	0.00	Tie-On to Surface Casing (Assuming Vertical) @ 6950.00 ft
7,176.43	7,170.19	-240.75	0.00	Kick Off Point 7176.43 ft
7,600.00	7,556.21	-243.00	149.57	Build Rate 10.00 °/100 ft
8,087.63	7,743.00	-249.52	584.13	End Build 8087.67 ft
9,000.00	7,725.10	-263.21	1,496.22	Hold Inc 91.12°, Azi 90.85°
12,064.79	7,665.00	-309.21	4,560.08	Total Depth 12064.79 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Tebo 4-1H PAR1_BHL tgt	93.88	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
6,950.00	12,064.79	Plan A Rev 1 (Lateral)	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
8,087.63	7,743.00	7" Casing Pt.	7	8-3/4

Plan Report for Tebo 4-1H - Plan A Rev 1 (Lateral)

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	1,825.00	Fox Hills Aquifer		0.00	
	1,963.00	Pierre Shale (Base Fox Hills)			
	7,781.00	Niobrara D Chalk			
	7,908.00	Fort Hays Limestone			
	7,937.00	Carlisle Shale			
	8,006.00	Greenhorn			
	8,335.00	D Sand			
	8,360.00	Mowry Shale			
	8,521.00	Plainview			
	8,685.00	Morrison			
	9,018.00	Lykins			
	9,271.00	Forelle			
	9,440.00	Lyons			
	9,800.00	Pilot Hole TD			
7,610.63	7,564.00	Sharon Springs Shale			
7,667.05	7,603.00	Niobrara Fm.			
7,765.86	7,661.00	Niobrara B			
7,889.82	7,713.00	Niobrara C			

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Tebo 4-1H PAR1_BHL tgt	7,665.00	-309.21	4,560.08	Point
Sec 4-T5S-R64W SL	0.00	0.00	0.00	Polygon
Sec 4-T5S-R64W SB (460)	0.00	0.00	0.00	Polygon

North Reference Sheet for Sec. 4-T5S-R64W - Tebo 4-1H - 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 @ 5908.00ft (H&P 280). Northing and Easting are relative to Tebo 4-1H
 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 -105.50°, 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: 0.99998013
 Grid Coordinates of Well: 1,659,445.49 ft N, 3,263,185.27 ft E
 Geographical Coordinates of Well: 39° 38' 24.92" N, 104° 33' 55.62" W
 Grid Convergence at Surface is: 0.59°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,064.79ft
 the Bottom Hole Displacement is 4,570.55ft in the Direction of 93.88° (True).
 Magnetic Convergence at surface is: -7.90° (30 June 2013, , BGGM2012)

