

# Conoco Phillips Company

Adams County, Colorado

Sec. 35-T3S-R65W

Reserve 3-65 34-35 1H

Plan A (Pilot)

Design: Actual Field Surveys

## Sperry Drilling Services

### Standard Report

02 August, 2014

Well Coordinates: 1,153,905.53 N, 3,246,521.45 E (39° 45' 08.97" N, 104° 37' 23.58" W)

Ground Level: 5,506.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Reserve 3-65 34-35 1H

KB 24 ft @ 5530.00usft (H&P 280)

N

True

API - US Survey Feet - Custom

**HALLIBURTON**

**Design Report for Reserve 3-65 34-35 1H - Actual Field Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
1,981.00	0.15	272.94	1,980.98	-1.81	-2.24	-1.81	0.07
<b>Tie-On to Gyro Surveys @ 1981.00 ft</b>							
2,133.00	0.41	242.67	2,132.97	-2.05	-2.92	-2.05	0.19
<b>First Sperry MWD Survey @ 2133.00 ft</b>							
2,227.00	0.50	241.49	2,226.97	-2.40	-3.58	-2.40	0.10
2,322.00	0.41	251.57	2,321.97	-2.70	-4.27	-2.70	0.13
2,416.00	0.45	248.49	2,415.97	-2.94	-4.93	-2.94	0.05
2,511.00	0.45	250.15	2,510.96	-3.21	-5.63	-3.21	0.01
2,605.00	0.45	64.92	2,604.96	-3.18	-5.64	-3.18	0.96
2,700.00	0.70	74.32	2,699.96	-2.86	-4.74	-2.86	0.28
2,794.00	0.63	82.26	2,793.95	-2.64	-3.68	-2.64	0.12
2,889.00	0.64	82.46	2,888.95	-2.50	-2.64	-2.50	0.01
2,983.00	0.67	75.92	2,982.94	-2.29	-1.58	-2.29	0.09
3,078.00	0.57	67.90	3,077.93	-1.98	-0.61	-1.98	0.14
3,172.00	0.61	46.92	3,171.93	-1.46	0.19	-1.46	0.23
3,266.00	0.72	26.50	3,265.92	-0.59	0.82	-0.59	0.28
3,361.00	0.72	7.86	3,360.92	0.53	1.17	0.53	0.25
3,455.00	0.50	336.18	3,454.91	1.49	1.08	1.49	0.42
3,550.00	0.49	298.91	3,549.91	2.07	0.56	2.07	0.33
3,644.00	0.58	294.39	3,643.90	2.46	-0.22	2.46	0.11
3,739.00	0.80	303.93	3,738.90	3.03	-1.21	3.03	0.26
3,833.00	0.70	328.30	3,832.89	3.88	-2.06	3.88	0.35
3,928.00	0.70	10.43	3,927.88	4.95	-2.26	4.95	0.53
4,022.00	0.87	26.49	4,021.87	6.15	-1.84	6.15	0.29
4,117.00	0.33	259.61	4,116.87	6.75	-1.78	6.75	1.16
4,211.00	0.64	241.07	4,210.87	6.44	-2.51	6.44	0.37
4,306.00	0.55	245.79	4,305.86	6.00	-3.39	6.00	0.11
4,401.00	0.48	245.36	4,400.86	5.65	-4.17	5.65	0.07
4,495.00	0.53	239.09	4,494.85	5.26	-4.90	5.26	0.08
4,589.00	0.41	150.39	4,588.85	4.75	-5.10	4.75	0.70
4,684.00	0.41	162.88	4,683.85	4.12	-4.84	4.12	0.09
4,779.00	0.44	207.25	4,778.85	3.48	-4.90	3.48	0.34
4,873.00	0.90	147.88	4,872.84	2.53	-4.68	2.53	0.82
4,967.00	1.30	137.54	4,966.82	1.12	-3.56	1.12	0.47
5,061.00	1.05	137.04	5,060.80	-0.30	-2.26	-0.30	0.27
5,156.00	0.36	171.31	5,155.80	-1.23	-1.62	-1.23	0.82
5,251.00	0.31	213.15	5,250.79	-1.74	-1.71	-1.74	0.26
5,345.00	0.45	233.28	5,344.79	-2.18	-2.15	-2.18	0.20
5,440.00	0.51	236.72	5,439.79	-2.63	-2.80	-2.63	0.07
5,534.00	0.49	243.88	5,533.79	-3.04	-3.51	-3.04	0.07
5,629.00	0.51	348.92	5,628.78	-2.80	-3.96	-2.80	0.84
5,723.00	0.62	347.21	5,722.78	-1.89	-4.15	-1.89	0.12
5,817.00	0.44	306.38	5,816.77	-1.18	-4.55	-1.18	0.43
5,912.00	0.48	30.67	5,911.77	-0.63	-4.64	-0.63	0.65
6,006.00	1.17	56.57	6,005.76	0.24	-3.64	0.24	0.82
6,101.00	1.16	59.25	6,100.74	1.27	-2.01	1.27	0.06
6,195.00	1.26	59.88	6,194.72	2.27	-0.30	2.27	0.11
6,290.00	0.59	83.78	6,289.71	2.85	1.09	2.85	0.80
6,384.00	0.51	92.88	6,383.71	2.88	1.99	2.88	0.13
6,479.00	0.79	89.23	6,478.70	2.87	3.07	2.87	0.30

**Design Report for Reserve 3-65 34-35 1H - Actual Field Surveys**

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
6,573.00	1.02	91.91	6,572.69	2.85	4.55	2.85	0.25
6,667.00	0.37	134.38	6,666.68	2.61	5.61	2.61	0.84
6,762.00	0.47	142.51	6,761.68	2.09	6.06	2.09	0.12
6,856.00	0.70	140.36	6,855.67	1.34	6.67	1.34	0.25
6,951.00	0.67	199.73	6,950.67	0.37	6.85	0.37	0.71
7,045.00	0.92	196.23	7,044.66	-0.87	6.45	-0.87	0.27
7,140.00	1.05	190.60	7,139.64	-2.46	6.08	-2.46	0.17
7,234.00	1.22	188.60	7,233.63	-4.30	5.77	-4.30	0.19
7,329.00	1.38	188.85	7,328.60	-6.43	5.44	-6.43	0.17
7,423.00	1.49	190.56	7,422.57	-8.75	5.04	-8.75	0.13
7,517.00	0.70	232.00	7,516.55	-10.30	4.37	-10.30	1.14
7,612.00	0.74	241.54	7,611.55	-10.95	3.37	-10.95	0.13
7,707.00	0.31	203.68	7,706.54	-11.48	2.73	-11.48	0.56
7,801.00	0.80	206.42	7,800.54	-12.30	2.33	-12.30	0.52
7,896.00	1.56	206.37	7,895.52	-14.05	1.47	-14.05	0.80
7,936.00	1.67	202.87	7,935.50	-15.08	1.00	-15.08	0.37
<b>Final Sperry MWD Survey @ 7936.00 ft</b>							
8,000.00	1.67	202.87	7,999.47	-16.80	0.27	-16.80	0.00
<b>Straight Line Projection to TD @ 8000.00 ft - Straight Line Projection to TD</b>							

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,981.00	1,980.98	-1.81	-2.24	Tie-On to Gyro Surveys @ 1981.00 ft
2,133.00	2,132.97	-2.05	-2.92	First Sperry MWD Survey @ 2133.00 ft
7,936.00	7,935.50	-15.08	1.00	Final Sperry MWD Survey @ 7936.00 ft
8,000.00	7,999.47	-16.80	0.27	Straight Line Projection to TD @ 8000.00 ft
8,000.00	7,999.47	-16.80	0.27	Straight Line Projection to TD

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	Reserve 3-65 34-35 1H_Rev A2 (Pilot)_BHL Tgt	0.00	Slot	0.00	0.00	0.00

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
75.00	1,981.00	Surface_Gyro	NS-GYRO-MS
2,133.00	8,000.00	Vertical_Sperry MWD Surveys	MWD

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,981.00	1,980.98	9 5/8"	9-5/8	13-1/2

## Design Report for Reserve 3-65 34-35 1H - Actual Field Surveys

**Wellbore Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Reserve 3-65 34-35	0.00	0.00	0.00	0.00	0.00	1,153,905.53	3,246,521.45	39° 45' 8.969 N	104° 37' 23.580 W
- actual wellpath misses target center by 1980.98usft at 1981.00usft MD (1980.98 TVD, -1.81 N, -2.24 E)									
- Polygon									
Point 1				0.00	-4,132.48	-4,911.38	1,149,724.71	3,241,651.20	
Point 2				0.00	-4,147.06	-2,268.45	1,149,736.26	3,244,294.13	
Point 3				0.00	-4,161.01	-84.94	1,149,743.90	3,246,477.66	
Point 4				0.00	-1,982.23	-70.92	1,151,922.70	3,246,470.13	
Point 5				0.00	197.64	-56.34	1,154,102.60	3,246,463.16	
Point 6				0.00	226.53	-4,881.38	1,154,083.78	3,241,638.10	
Point 7				0.00	270.75	-9,722.16	1,154,080.13	3,236,797.14	
Point 8				0.00	-1,915.31	-9,730.27	1,151,894.11	3,236,810.65	
Point 9				0.00	-4,101.37	-9,736.69	1,149,708.11	3,236,825.84	
Point 10				0.00	-4,132.48	-4,911.38	1,149,724.71	3,241,651.20	
Reserve 3-64 34-35	0.00	0.00	0.00	0.00	0.00	1,153,905.53	3,246,521.45	39° 45' 8.969 N	104° 37' 23.580 W
- actual wellpath misses target center by 1980.98usft at 1981.00usft MD (1980.98 TVD, -1.81 N, -2.24 E)									
- Polygon									
Point 1				0.00	686.53	-4,881.38	1,154,543.75	3,241,633.55	
Point 2				0.00	-1,940.23	-4,898.21	1,151,916.97	3,241,642.69	
Point 3				0.00	-4,592.48	-4,911.38	1,149,264.74	3,241,655.75	
Point 4				0.00	-4,607.06	-2,268.45	1,149,276.29	3,244,298.68	
Point 5				0.00	-4,621.01	375.06	1,149,288.48	3,246,942.18	
Point 6				0.00	-1,982.23	389.08	1,151,927.25	3,246,930.11	
Point 7				0.00	657.64	403.66	1,154,567.12	3,246,918.59	
Point 8				0.00	686.53	-4,881.38	1,154,543.75	3,241,633.55	
Point 9				0.00	730.75	-10,182.16	1,154,535.56	3,236,332.62	
Point 10				0.00	-1,915.31	-10,190.27	1,151,889.57	3,236,350.67	
Point 11				0.00	-4,561.37	-10,196.69	1,149,243.59	3,236,370.42	
Point 12				0.00	-4,592.48	-4,911.38	1,149,264.74	3,241,655.75	
Reserve 3-65 34-35	0.00	0.00	8,209.00	0.01	0.00	1,153,905.53	3,246,521.45	39° 45' 8.969 N	104° 37' 23.580 W
- actual wellpath misses target center by 210.20usft at 8000.00usft MD (7999.47 TVD, -16.80 N, 0.27 E)									
- Point									

**Directional Difficulty Index**

Average Dogleg over Survey:	0.28 °/100usft	Maximum Dogleg over Survey:	1.16 °/100usft at 4,117.00 usft
Net Tortousity applicable to Plans:	0.28 °/100usft	Directional Difficulty Index:	3.265

**Audit Info**

**North Reference Sheet for Sec. 35-T3S-R65W - Reserve 3-65 34-35 1H - Plan A  
(Pilot)**

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference .

Vertical Depths are relative to KB 24 ft @ 5530.00usft (H&P 280). Northing and Easting are relative to Reserve 3-65 34-35 1H

Coordinate System is US State Plane 1983, Colorado Northern 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:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99999441

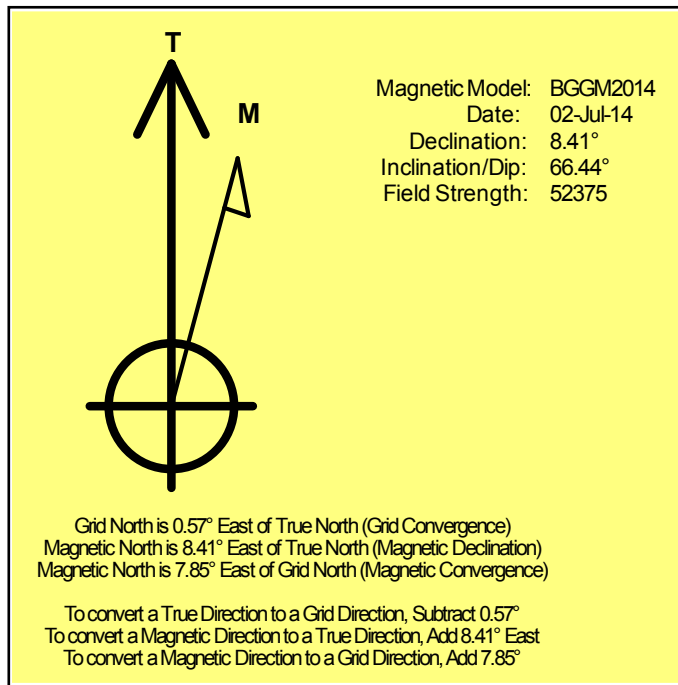
Grid Coordinates of Well: 1,153,905.53 usft N, 3,246,521.45 usft E

Geographical Coordinates of Well: 39° 45' 08.97" N, 104° 37' 23.58" W

Grid Convergence at Surface is: 0.57°

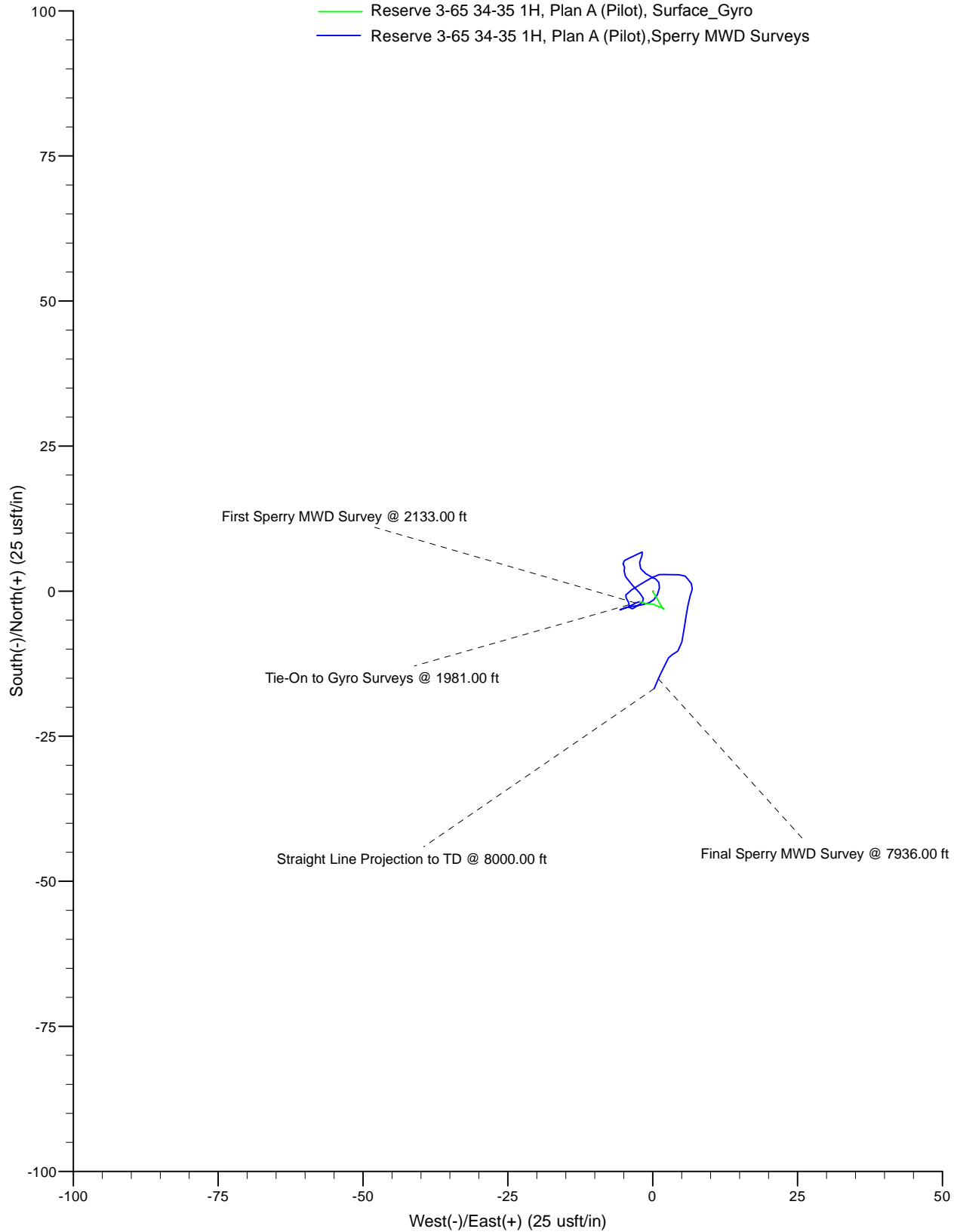
Based upon Minimum Curvature type calculations, at a Measured Depth of 8,000.00usft  
the Bottom Hole Displacement is 16.80usft in the Direction of 179.07° ( True).

Magnetic Convergence at surface is: -7.85° ( 2 July 2014, , BGGM2014)



## LEGEND

- ..... Reserve 3-65 34-35 1H, Plan A (Pilot)
- ..... Reserve 3-65 34-35 1H, Plan A (Pilot), Surface\_Gyro
- ..... Reserve 3-65 34-35 1H, Plan A (Pilot), Sperry MWD Surveys



Project: Adams County, Colorado  
Site: Sec. 35-T3S-R65W  
Well: Reserve 3-65 34-35 1H

# Conoco Phillips Company

