

Conoco Phillips Company

Arapahoe County, Colorado

Sec. 11-T4S-R64W

Youngberg 10-11-1H

Plan E

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

17 October, 2013

Well Coordinates: 1,686,122.86 N, 3,278,652.93 E (39° 42' 46.94" N, 104° 30' 34.19" W)

Ground Level: 5,673.00 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 Youngberg 10-11-1H

RKB 24 ft @ 5697.00usft (H&P 280)

N

True

API - US Survey Feet - Custom

HALLIBURTON

Design Report for Youngberg 10-11-1H - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
1,947.45	1.01	197.60	1,947.29	-16.65	-15.29	13.27	0.07
Tie-On to Surface Gyro Surveys @ 1947.45 ft							
2,024.00	0.74	182.58	2,023.83	-17.78	-15.52	13.36	0.46
First Sperry MWD Survey @ 2024.00 ft							
2,119.00	0.82	186.03	2,118.82	-19.07	-15.62	13.31	0.10
2,214.00	0.91	175.36	2,213.81	-20.50	-15.63	13.16	0.19
2,309.00	0.86	179.80	2,308.80	-21.97	-15.56	12.93	0.09
2,404.00	0.56	124.82	2,403.79	-22.94	-15.18	12.43	0.74
2,499.00	1.11	74.23	2,498.78	-22.96	-13.91	11.17	0.92
2,593.00	1.14	73.12	2,592.77	-22.44	-12.14	9.47	0.04
2,688.00	1.33	69.13	2,687.74	-21.77	-10.21	7.63	0.22
2,783.00	1.41	67.91	2,782.72	-20.94	-8.09	5.62	0.09
2,878.00	1.52	72.62	2,877.69	-20.12	-5.81	3.45	0.17
2,973.00	1.54	71.38	2,972.65	-19.34	-3.40	1.14	0.04
3,068.00	1.33	73.17	3,067.62	-18.61	-1.13	-1.02	0.23
3,163.00	1.25	82.92	3,162.60	-18.17	0.95	-3.04	0.25
3,258.00	1.25	83.02	3,257.58	-17.91	3.01	-5.06	0.00
3,353.00	1.33	86.20	3,352.55	-17.71	5.14	-7.15	0.11
3,448.00	1.28	80.65	3,447.53	-17.47	7.28	-9.25	0.14
3,543.00	1.00	96.11	3,542.51	-17.38	9.16	-11.10	0.44
3,638.00	0.50	345.13	3,637.50	-17.07	9.87	-11.78	1.33
3,733.00	1.05	330.49	3,732.49	-15.91	9.34	-11.11	0.61
3,828.00	1.25	327.93	3,827.48	-14.28	8.36	-9.95	0.22
3,923.00	0.25	110.09	3,922.47	-13.47	8.00	-9.50	1.53
4,017.00	0.69	115.29	4,016.47	-13.78	8.71	-10.24	0.47
4,112.00	0.74	101.39	4,111.46	-14.15	9.83	-11.39	0.19
4,207.00	0.56	285.22	4,206.46	-14.15	9.98	-11.55	1.37
4,302.00	0.74	310.71	4,301.45	-13.63	9.07	-10.58	0.35
4,397.00	0.58	8.90	4,396.44	-12.75	8.68	-10.09	0.69
4,492.00	0.67	21.35	4,491.44	-11.76	8.95	-10.25	0.17
4,587.00	1.00	10.11	4,586.43	-10.42	9.30	-10.44	0.39
4,682.00	0.39	6.37	4,681.42	-9.29	9.48	-10.49	0.64
4,777.00	0.20	313.07	4,776.42	-8.85	9.40	-10.36	0.33
4,872.00	0.58	256.00	4,871.42	-8.86	8.81	-9.77	0.53
4,967.00	0.33	261.38	4,966.42	-9.01	8.07	-9.06	0.27
5,062.00	0.50	256.75	5,061.41	-9.15	7.40	-8.40	0.18
5,157.00	0.31	235.53	5,156.41	-9.39	6.78	-7.82	0.25
5,251.00	0.19	191.75	5,250.41	-9.69	6.54	-7.62	0.23
5,346.00	0.25	226.50	5,345.41	-9.98	6.36	-7.47	0.15
5,441.00	0.22	277.31	5,440.41	-10.10	6.03	-7.15	0.21
5,536.00	0.31	340.70	5,535.41	-9.84	5.76	-6.86	0.30
5,631.00	0.64	340.75	5,630.40	-9.09	5.50	-6.51	0.35
5,726.00	0.20	27.58	5,725.40	-8.45	5.40	-6.34	0.55
5,821.00	0.14	34.39	5,820.40	-8.20	5.55	-6.46	0.07
5,916.00	0.36	38.58	5,915.40	-7.87	5.80	-6.67	0.23
6,011.00	0.36	29.13	6,010.40	-7.38	6.13	-6.94	0.06
6,106.00	0.17	34.46	6,105.40	-7.00	6.36	-7.12	0.20
6,201.00	0.64	63.64	6,200.39	-6.65	6.91	-7.63	0.52
6,296.00	0.77	42.33	6,295.39	-5.94	7.82	-8.45	0.31
6,391.00	0.72	350.30	6,390.38	-4.88	8.14	-8.65	0.69

Design Report for Youngberg 10-11-1H - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
6,486.00	0.47	347.20	6,485.38	-3.91	7.96	-8.36	0.27
6,581.00	0.19	5.39	6,580.37	-3.38	7.89	-8.22	0.31
6,676.00	0.22	8.11	6,675.37	-3.04	7.93	-8.22	0.03
6,771.00	0.31	9.55	6,770.37	-2.61	8.00	-8.24	0.09
6,834.00	1.16	297.83	6,833.37	-2.14	7.46	-7.66	1.75
6,866.00	5.15	281.20	6,865.31	-1.71	5.76	-5.92	12.66
6,897.00	8.37	284.90	6,896.09	-0.86	2.22	-2.30	10.48
6,929.00	11.35	284.71	6,927.62	0.54	-3.08	3.12	9.31
6,961.00	14.21	281.76	6,958.82	2.14	-9.97	10.15	9.16
6,992.00	17.07	279.37	6,988.67	3.66	-18.19	18.49	9.46
7,024.00	19.29	276.38	7,019.07	5.01	-28.08	28.47	7.52
7,056.00	21.41	273.90	7,049.07	5.99	-39.16	39.59	7.15
7,087.00	23.97	271.81	7,077.67	6.58	-51.10	51.52	8.66
7,119.00	26.85	271.68	7,106.57	6.99	-64.82	65.20	9.00
7,150.00	29.57	272.09	7,133.89	7.48	-79.47	79.80	8.80
7,182.00	31.96	274.11	7,161.38	8.37	-95.81	96.13	8.14
7,214.00	34.21	275.26	7,188.19	9.81	-113.22	113.59	7.30
7,245.00	36.28	276.63	7,213.51	11.66	-131.01	131.48	7.15
7,277.00	39.70	278.02	7,238.73	14.18	-150.54	151.17	11.02
7,309.00	42.95	277.85	7,262.76	17.10	-171.46	172.29	10.16
7,340.00	45.51	277.47	7,284.97	19.98	-192.89	193.91	8.30
7,372.00	48.16	276.41	7,306.86	22.79	-216.06	217.25	8.63
7,404.00	51.37	276.15	7,327.52	25.47	-240.34	241.67	10.05
7,435.00	55.01	276.00	7,346.09	28.09	-265.01	266.48	11.75
7,467.00	58.62	276.11	7,363.61	30.92	-291.64	293.26	11.28
7,499.00	62.10	276.04	7,379.43	33.86	-319.29	321.07	10.88
7,530.00	65.49	276.41	7,393.12	36.87	-346.94	348.88	10.99
7,562.00	68.76	276.89	7,405.55	40.29	-376.22	378.36	10.31
7,593.00	71.67	277.08	7,416.05	43.84	-405.17	407.52	9.40
7,625.00	74.04	277.17	7,425.48	47.63	-435.51	438.10	7.41
7,657.00	76.60	277.65	7,433.59	51.62	-466.20	469.05	8.13
7,688.00	79.56	277.73	7,439.99	55.68	-496.26	499.37	9.55
7,720.00	83.31	277.32	7,444.75	59.82	-527.62	531.00	11.79
7,759.00	87.77	277.05	7,447.79	64.69	-566.19	569.87	11.46
7,887.00	89.81	278.95	7,450.49	82.49	-692.90	697.79	2.18
7,937.00	90.00	278.94	7,450.57	90.27	-742.30	747.75	0.38
7,969.00	89.75	278.72	7,450.64	95.18	-773.92	779.73	1.04
8,032.00	89.38	278.21	7,451.12	104.45	-836.23	842.70	1.00
8,064.00	89.51	278.05	7,451.43	108.98	-867.91	874.68	0.64
8,127.00	89.38	277.77	7,452.04	117.65	-930.30	937.66	0.49
8,159.00	89.14	277.46	7,452.45	121.89	-962.02	969.66	1.23
8,190.00	89.14	277.45	7,452.92	125.91	-992.75	1,000.65	0.03
8,222.00	89.07	277.50	7,453.42	130.07	-1,024.48	1,032.64	0.27
8,253.00	89.63	276.30	7,453.77	133.80	-1,055.25	1,063.64	4.27
8,285.00	90.12	276.23	7,453.84	137.29	-1,087.06	1,095.64	1.55
8,317.00	90.62	276.30	7,453.63	140.78	-1,118.87	1,127.64	1.58
8,412.00	89.57	275.56	7,453.48	150.60	-1,213.36	1,222.63	1.35
8,475.00	89.75	275.08	7,453.85	156.44	-1,276.08	1,285.61	0.81
8,507.00	89.38	274.67	7,454.09	159.16	-1,307.97	1,317.59	1.73
8,601.00	89.75	274.22	7,454.81	166.44	-1,401.68	1,411.52	0.62
8,696.00	89.94	274.71	7,455.06	173.84	-1,496.39	1,506.46	0.55

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8,791.00	88.95	275.52	7,455.98	182.31	-1,591.01	1,601.42	1.35
8,886.00	89.81	275.94	7,457.01	191.79	-1,685.53	1,696.40	1.01
8,981.00	90.25	276.25	7,456.96	201.88	-1,779.99	1,791.39	0.57
9,076.00	90.43	277.03	7,456.40	212.86	-1,874.35	1,886.39	0.84
9,171.00	87.47	276.57	7,458.14	224.11	-1,968.65	1,981.36	3.15
9,266.00	88.02	276.91	7,461.88	235.25	-2,062.92	2,076.29	0.68
9,298.00	88.27	276.88	7,462.91	239.09	-2,094.68	2,108.27	0.79
9,393.00	89.75	276.43	7,464.55	250.10	-2,189.02	2,203.25	1.63
9,456.00	89.94	276.15	7,464.73	257.00	-2,251.64	2,266.25	0.54
9,487.00	89.75	275.98	7,464.81	260.27	-2,282.47	2,297.25	0.82
9,551.00	89.75	275.62	7,465.09	266.74	-2,346.14	2,361.24	0.56
9,614.00	90.37	275.91	7,465.02	273.07	-2,408.82	2,424.24	1.09
9,646.00	90.68	276.20	7,464.73	276.44	-2,440.64	2,456.23	1.33
9,709.00	90.49	276.29	7,464.09	283.30	-2,503.26	2,519.23	0.33
9,741.00	90.37	276.35	7,463.85	286.82	-2,535.07	2,551.23	0.42
9,836.00	89.26	276.23	7,464.15	297.23	-2,629.49	2,646.22	1.18
9,899.00	89.38	276.45	7,464.90	304.18	-2,692.10	2,709.22	0.40
9,931.00	89.69	276.63	7,465.16	307.83	-2,723.89	2,741.22	1.12
9,994.00	89.94	277.03	7,465.36	315.32	-2,786.44	2,804.22	0.75
10,025.00	90.12	277.02	7,465.35	319.11	-2,817.21	2,835.22	0.58
10,120.00	89.07	277.67	7,466.02	331.26	-2,911.43	2,930.20	1.30
10,215.00	89.32	277.53	7,467.35	343.82	-3,005.58	3,025.18	0.30
10,310.00	89.51	277.44	7,468.32	356.19	-3,099.77	3,120.17	0.22
10,405.00	90.19	277.78	7,468.57	368.78	-3,193.93	3,215.15	0.80
10,500.00	89.69	278.40	7,468.67	382.14	-3,287.99	3,310.12	0.84
10,595.00	89.57	279.52	7,469.28	396.94	-3,381.82	3,405.04	1.19
10,690.00	87.04	279.22	7,472.09	412.40	-3,475.51	3,499.88	2.68
10,753.00	87.04	279.13	7,475.35	422.43	-3,537.62	3,562.73	0.14
10,785.00	87.16	278.79	7,476.97	427.41	-3,569.19	3,594.66	1.13
10,817.00	87.53	278.32	7,478.45	432.16	-3,600.80	3,626.61	1.87
10,848.00	87.78	278.20	7,479.72	436.61	-3,631.45	3,657.57	0.89
10,880.00	87.71	277.68	7,480.98	441.03	-3,663.12	3,689.54	1.64
10,912.00	87.71	277.34	7,482.26	445.21	-3,694.82	3,721.51	1.06
10,943.00	88.27	276.50	7,483.34	448.94	-3,725.57	3,752.49	3.26
10,975.00	88.52	276.38	7,484.24	452.53	-3,757.36	3,784.48	0.87
11,006.00	89.20	276.02	7,484.86	455.88	-3,788.17	3,815.47	2.48
11,101.00	90.93	275.97	7,484.75	465.80	-3,882.65	3,910.46	1.82
11,165.00	90.99	276.20	7,483.68	472.58	-3,946.28	3,974.45	0.37
11,260.00	89.57	275.83	7,483.21	482.54	-4,040.75	4,069.44	1.54
11,355.00	88.27	275.81	7,485.00	492.17	-4,135.24	4,164.41	1.37
11,449.00	88.33	276.04	7,487.79	501.87	-4,228.70	4,258.36	0.25
11,544.00	88.33	276.11	7,490.56	511.92	-4,323.13	4,353.32	0.07
11,639.00	88.09	276.45	7,493.53	522.30	-4,417.51	4,448.27	0.44
11,734.00	88.70	276.29	7,496.19	532.84	-4,511.89	4,543.23	0.66
11,798.00	88.89	275.99	7,497.53	539.68	-4,575.50	4,607.21	0.55
11,829.00	88.39	276.01	7,498.27	542.92	-4,606.33	4,638.20	1.61
11,924.00	89.57	275.90	7,499.96	552.78	-4,700.80	4,733.18	1.25
12,019.00	88.21	276.28	7,501.80	562.85	-4,795.24	4,828.16	1.49
12,114.00	88.64	276.40	7,504.41	573.34	-4,889.62	4,923.12	0.47
12,177.00	88.83	276.66	7,505.80	580.50	-4,952.20	4,986.10	0.51

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12,209.00	89.01	276.83	7,506.41	584.26	-4,983.97	5,018.10	0.77
12,272.00	88.83	276.83	7,507.59	591.75	-5,046.51	5,081.09	0.29
12,304.00	88.89	276.90	7,508.23	595.57	-5,078.28	5,113.08	0.29
12,335.00	89.14	277.03	7,508.76	599.33	-5,109.04	5,144.07	0.91
12,398.00	89.38	276.72	7,509.58	606.87	-5,171.59	5,207.07	0.62
12,493.00	89.44	278.36	7,510.55	619.34	-5,265.76	5,302.05	1.73
12,588.00	88.27	276.79	7,512.45	631.86	-5,359.90	5,397.01	2.06
12,620.00	88.83	276.47	7,513.26	635.55	-5,391.68	5,429.00	2.02
12,683.00	89.51	276.13	7,514.18	642.47	-5,454.29	5,491.99	1.21
12,747.00	90.25	275.46	7,514.31	648.93	-5,517.96	5,555.98	1.56
12,778.00	90.43	275.17	7,514.13	651.80	-5,548.83	5,586.98	1.10
12,810.00	90.86	275.31	7,513.77	654.72	-5,580.69	5,618.96	1.41
12,842.00	90.80	275.52	7,513.30	657.74	-5,612.55	5,650.95	0.68
12,873.00	90.68	275.58	7,512.90	660.74	-5,643.40	5,681.95	0.43
12,968.00	91.05	275.72	7,511.47	670.09	-5,737.93	5,776.92	0.42
13,000.00	90.80	275.60	7,510.95	673.25	-5,769.77	5,808.91	0.87
13,063.00	90.86	275.64	7,510.04	679.41	-5,832.46	5,871.90	0.11
13,158.00	88.21	275.68	7,510.81	688.78	-5,926.98	5,966.87	2.79
13,253.00	88.09	275.72	7,513.88	698.21	-6,021.46	6,061.81	0.13
13,284.00	88.08	275.82	7,514.91	701.33	-6,052.29	6,092.79	0.32
13,347.00	88.64	275.69	7,516.71	707.64	-6,114.95	6,155.76	0.91
13,442.00	88.70	275.48	7,518.92	716.89	-6,209.47	6,250.71	0.23
13,537.00	90.06	276.08	7,519.95	726.45	-6,303.98	6,345.70	1.56
13,632.00	89.20	275.84	7,520.56	736.32	-6,398.46	6,440.69	0.94
13,727.00	90.19	276.27	7,521.07	746.34	-6,492.93	6,535.68	1.14
13,822.00	90.62	276.57	7,520.40	756.96	-6,587.33	6,630.68	0.55
13,917.00	90.12	276.57	7,519.78	767.83	-6,681.71	6,725.67	0.53
14,012.00	89.75	277.22	7,519.89	779.23	-6,776.02	6,820.67	0.79
14,107.00	88.46	278.00	7,521.37	791.81	-6,870.17	6,915.64	1.59
14,202.00	88.27	278.62	7,524.08	805.54	-6,964.13	7,010.56	0.68
14,297.00	87.90	279.02	7,527.26	820.09	-7,057.95	7,105.44	0.57
14,360.00	88.27	278.55	7,529.36	829.71	-7,120.18	7,168.36	0.95
14,423.00	88.21	278.32	7,531.30	838.95	-7,182.47	7,231.30	0.38
14,486.00	88.08	277.93	7,533.34	847.85	-7,244.80	7,294.24	0.65
14,551.00	88.33	276.92	7,535.37	856.24	-7,309.23	7,359.20	1.60
14,582.00	88.52	276.74	7,536.23	859.93	-7,339.99	7,390.19	0.84
14,677.00	89.38	276.54	7,537.97	870.91	-7,434.34	7,485.18	0.93
14,772.00	90.12	276.24	7,538.38	881.48	-7,528.75	7,580.17	0.84
14,867.00	91.17	276.90	7,537.31	892.35	-7,623.12	7,675.17	1.31
14,962.00	91.17	276.19	7,535.37	903.18	-7,717.48	7,770.14	0.75
15,057.00	90.93	276.49	7,533.63	913.67	-7,811.88	7,865.13	0.40
15,089.00	90.62	276.66	7,533.20	917.33	-7,843.67	7,897.12	1.10
15,152.00	90.43	276.94	7,532.62	924.79	-7,906.22	7,960.12	0.54
15,247.00	90.62	276.58	7,531.75	935.97	-8,000.56	8,055.12	0.43
15,342.00	90.68	276.71	7,530.67	946.97	-8,094.91	8,150.11	0.15
15,437.00	90.62	276.66	7,529.60	958.02	-8,189.26	8,245.10	0.08
15,468.00	90.31	276.57	7,529.34	961.59	-8,220.05	8,276.10	1.04
15,532.00	89.32	276.66	7,529.55	968.97	-8,283.63	8,340.10	1.55
15,626.00	89.07	276.80	7,530.87	979.98	-8,376.97	8,434.09	0.30
15,721.00	89.57	276.96	7,532.00	991.36	-8,471.28	8,529.08	0.55
15,816.00	89.69	277.26	7,532.61	1,003.12	-8,565.55	8,624.08	0.34

Design Report for Youngberg 10-11-1H - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
15,911.00	89.14	276.49	7,533.58	1,014.49	-8,659.86	8,719.07	1.00
16,006.00	89.35	274.64	7,534.83	1,023.70	-8,754.40	8,814.04	1.96
16,101.00	90.71	274.60	7,534.78	1,031.35	-8,849.09	8,908.98	1.43
16,164.00	91.54	275.06	7,533.55	1,036.66	-8,911.85	8,971.94	1.51
16,259.00	90.61	275.02	7,531.77	1,045.00	-9,006.46	9,066.89	0.98
16,323.00	90.18	274.78	7,531.32	1,050.47	-9,070.23	9,130.86	0.77
16,386.00	90.40	274.88	7,531.01	1,055.77	-9,133.00	9,193.82	0.38
16,473.00	90.77	275.10	7,530.12	1,063.34	-9,219.67	9,280.78	0.49
Final Sperry MWD Survey @ 16473.00 ft							
16,539.00	91.10	275.35	7,529.04	1,069.35	-9,285.39	9,346.75	0.63
Projection to TD @ 16539.00 ft							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,947.45	1,947.29	-16.65	-15.29	Tie-On to Surface Gyro Surveys @ 1947.45 ft
2,024.00	2,023.83	-17.78	-15.52	First Sperry MWD Survey @ 2024.00 ft
16,473.00	7,530.12	1,063.34	-9,219.67	Final Sperry MWD Survey @ 16473.00 ft
16,539.00	7,529.04	1,069.35	-9,285.39	Projection to TD @ 16539.00 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
Target	Youngberg 10-11-1H_Rev E1	276.62	Slot	0.00	0.00	0.00
	BHL Tgt					

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
98.89	1,947.45	Surface Casing Gyro Surveys	SRG-GYRO-MS
2,024.00	7,759.00	Sperry MWD Vertical and Build	MWD
7,887.00	16,539.00	Sperry MWD Lateral Survey	MWD

Design Report for Youngberg 10-11-1H - 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
Sec. 10711-T4S-R64W	0.00	0.00	0.00	0.00	0.00	1,686,122.86	3,278,652.93	39° 42' 46.940 N	104° 30' 34.189 W
- actual wellpath misses target center by 1947.42usft at 1947.45usft MD (1947.29 TVD, -16.65 N, -15.29 E)									
- Polygon									
Point 1				0.00	3,595.86	-4,972.57	1,689,664.26	3,273,641.49	
Point 2				0.00	3,529.91	-2,334.68	1,689,627.08	3,276,279.92	
Point 3				0.00	3,461.00	-156.80	1,689,581.92	3,278,458.41	
Point 4				0.00	0.00	-188.80	1,686,120.80	3,278,464.14	
Point 5				0.00	-866.65	-220.90	1,685,253.86	3,278,441.49	
Point 6				0.00	-792.59	-2,416.46	1,685,303.97	3,276,245.27	
Point 7				0.00	-719.35	-5,072.90	1,685,348.25	3,273,588.21	
Point 8				0.00	-690.29	-7,666.59	1,685,349.03	3,270,994.38	
Point 9				0.00	-660.97	-9,800.56	1,685,355.08	3,268,860.23	
Point 10				0.00	0.00	-9,771.92	1,686,016.32	3,268,881.66	
Point 11				0.00	3,700.87	-9,762.44	1,689,717.04	3,268,850.79	
Point 12				0.00	3,648.23	-7,597.00	1,689,688.02	3,271,016.66	
Point 13				0.00	3,595.86	-4,973.00	1,689,664.26	3,273,641.06	
Peterson Heirs #1-11_	0.00	0.00	0.00	-540.55	-4,431.36	1,685,534.03	3,274,227.76	39° 42' 41.594 N	104° 31' 30.893 W
- actual wellpath misses target center by 4854.70usft at 1947.45usft MD (1947.29 TVD, -16.65 N, -15.29 E)									
- Circle (radius 500.00)									
Frank Cavanaugh #1_	0.00	0.00	0.00	-455.82	-8,255.00	1,685,577.06	3,270,403.45	39° 42' 42.422 N	104° 32' 19.820 W
- actual wellpath misses target center by 7661.45usft at 15423.13usft MD (7529.75 TVD, 956.41 N, -8175.48 E)									
- Circle (radius 500.00)									
Peterson Heirs #2_50C	0.00	0.00	0.00	781.73	-4,403.00	1,686,856.54	3,274,241.70	39° 42' 54.662 N	104° 31' 30.533 W
- actual wellpath misses target center by 4866.34usft at 1947.45usft MD (1947.29 TVD, -16.65 N, -15.29 E)									
- Circle (radius 500.00)									
Kissler Dan #2-10_50C	0.00	0.00	0.00	-300.16	-9,647.84	1,685,717.53	3,269,009.00	39° 42' 43.956 N	104° 32' 37.644 W
- actual wellpath misses target center by 7661.16usft at 16539.00usft MD (7529.04 TVD, 1069.35 N, -9285.39 E)									
- Circle (radius 500.00)									
Kissler Dan #1-10_50C	0.00	0.00	0.00	-486.80	-6,986.46	1,685,559.92	3,271,672.25	39° 42' 42.120 N	104° 32' 3.588 W
- actual wellpath misses target center by 7253.28usft at 1947.45usft MD (1947.29 TVD, -16.65 N, -15.29 E)									
- Circle (radius 500.00)									
Sec. 10711-T4S-R64W	0.00	0.00	0.00	0.00	0.00	1,686,122.86	3,278,652.93	39° 42' 46.940 N	104° 30' 34.189 W
- actual wellpath misses target center by 1947.42usft at 1947.45usft MD (1947.29 TVD, -16.65 N, -15.29 E)									
- Polygon									
Point 1				0.00	-1,179.35	-5,072.90	1,684,888.28	3,273,593.23	
Point 2				0.00	1,438.25	-5,022.31	1,687,506.25	3,273,615.27	
Point 3				0.00	4,055.86	-4,972.57	1,690,124.23	3,273,636.47	
Point 4				0.00	3,989.91	-2,334.68	1,690,087.05	3,276,274.90	
Point 5				0.00	3,920.96	303.23	1,690,046.86	3,278,913.39	
Point 6				0.00	1,297.15	271.19	1,687,422.88	3,278,909.96	
Point 7				0.00	-1,326.65	239.14	1,684,798.90	3,278,906.52	
Point 8				0.00	-1,252.59	-2,416.46	1,684,844.00	3,276,250.29	
Point 9				0.00	-1,179.35	-5,072.90	1,684,888.28	3,273,593.23	
Point 10				0.00	-1,150.29	-7,666.59	1,684,889.06	3,270,999.39	
Point 11				0.00	-1,120.97	-10,260.56	1,684,890.09	3,268,405.27	
Point 12				0.00	1,550.18	-10,231.92	1,687,561.38	3,268,404.79	
Point 13				0.00	4,160.87	-10,222.44	1,690,172.00	3,268,385.81	
Point 14				0.00	4,108.23	-7,597.23	1,690,147.98	3,271,011.41	
Point 15				0.00	4,055.86	-4,972.57	1,690,124.23	3,273,636.47	
Youngberg 10-11-1H_f	0.00	0.00	7,532.00	1,078.10	-9,285.26	1,687,099.65	3,269,356.53	39° 42' 57.578 N	104° 32' 33.011 W
- actual wellpath misses target center by 9.24usft at 16539.00usft MD (7529.04 TVD, 1069.35 N, -9285.39 E)									
- Point									

Design Report for Youngberg 10-11-1H - Actual Field Surveys

Directional Difficulty Index

Average Dogleg over Survey:	1.17 °/100usft	Maximum Dogleg over Survey:	12.66 °/100usft at 6,866.00 usft
Net Tortousity applicable to Plans:	0.63 °/100usft	Directional Difficulty Index:	6.602

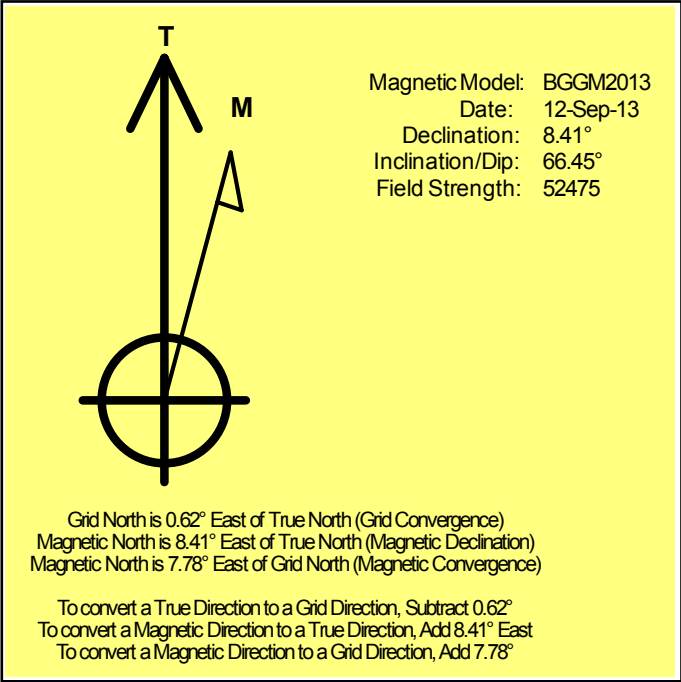
Audit Info

North Reference Sheet for Sec. 11-T4S-R64W - Youngberg 10-11-1H - Plan E

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 @ 5697.00usft (H&P 280). Northing and Easting are relative to Youngberg 10-11-1H
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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99999290

Grid Coordinates of Well: 1,686,122.86 usft N, 3,278,652.93 usft E
Geographical Coordinates of Well: 39° 42' 46.94" N, 104° 30' 34.19" W
Grid Convergence at Surface is: 0.62°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,539.00usft
the Bottom Hole Displacement is 9,346.76usft in the Direction of 276.57° (True).
Magnetic Convergence at surface is: -7.78° (12 September 2013, , BGGM2013)



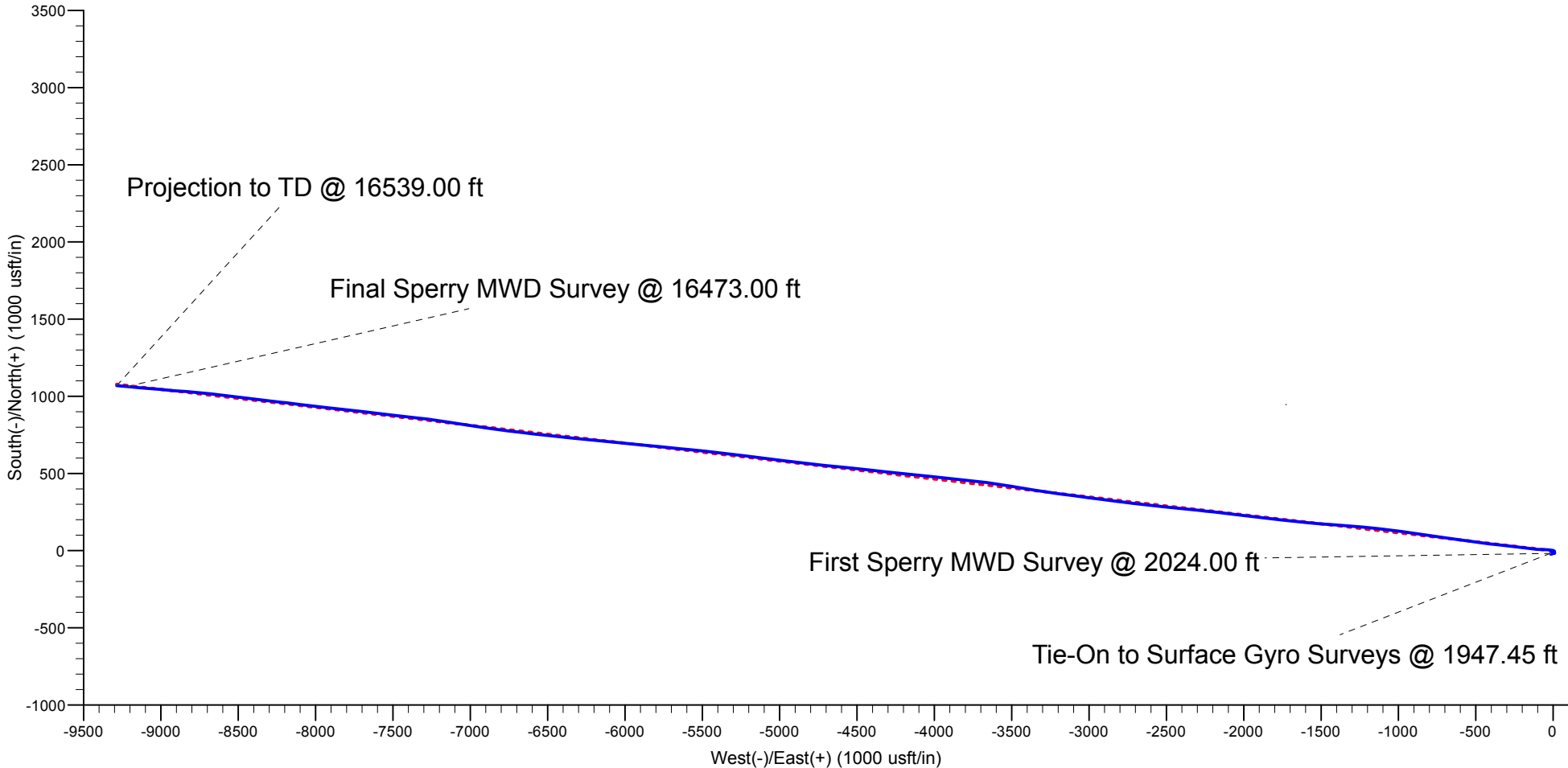
Project: Arapahoe County, Colorado
Site: Sec. 11-T4S-R64W
Well: Youngberg 10-11-1H

Conoco Phillips Company



LEGEND

- Youngberg 10-11-1H
- Actual Field Surveys



LEGEND

- Youngberg 10-11-1H
- Actual Field Surveys

