

Whiting Oil and Gas Corporation

Weld County, CO

Sec. 27-T10N-R58W (#27 J Pad)

Razor #27J-3412B

Plan B

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

26 August, 2014

Well Coordinates: 1,541,619.97 N, 3,457,137.45 E (40° 48' 30.40" N, 103° 50' 54.92" W)

Ground Level: 4,764.00 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 Razor #27J-3412B

KB 22 ft @ 4786.00usft (Frontier 26)

N

True

API - US Survey Feet - Custom

HALLIBURTON

Design Report for Razor #27J-3412B - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
177.00	0.34	55.34	177.00	0.30	0.43	-0.26	0.19
First Sperry MWD Survey @ 177.00 ft							
268.00	0.40	46.11	268.00	0.67	0.88	-0.60	0.09
360.00	0.50	58.96	359.99	1.10	1.46	-0.99	0.15
452.00	1.24	34.13	451.98	2.13	2.36	-1.94	0.88
543.00	1.92	5.56	542.95	4.47	3.06	-4.21	1.12
634.00	3.56	355.26	633.84	8.80	2.98	-8.54	1.87
726.00	4.73	2.12	725.60	15.44	2.88	-15.17	1.38
818.00	6.81	10.23	817.13	24.60	3.99	-24.21	2.42
909.00	8.81	20.07	907.29	36.45	7.34	-35.77	2.64
1,000.00	10.61	28.04	996.98	50.39	13.67	-49.18	2.46
1,091.00	12.99	33.65	1,086.06	66.30	23.28	-64.29	2.90
1,181.00	14.66	35.58	1,173.45	83.99	35.51	-80.97	1.92
1,273.00	15.71	36.94	1,262.23	103.41	49.77	-99.23	1.21
1,364.00	15.74	36.52	1,349.83	123.18	64.52	-117.79	0.13
1,455.00	15.05	35.07	1,437.56	142.77	78.65	-136.22	0.87
1,557.00	14.46	30.26	1,536.20	164.61	92.68	-156.91	1.33
1,636.00	14.15	28.54	1,612.75	181.61	102.26	-173.11	0.67
1,727.00	12.07	32.02	1,701.38	199.45	112.62	-190.09	2.44
1,818.00	12.23	33.88	1,790.34	215.52	123.04	-205.30	0.46
1,908.00	12.82	37.67	1,878.20	231.34	134.46	-220.19	1.12
2,000.00	14.00	33.18	1,967.69	248.73	146.79	-236.57	1.71
2,092.00	13.90	31.33	2,056.98	267.49	158.62	-254.34	0.50
2,183.00	13.31	28.89	2,145.43	285.99	169.37	-271.96	0.90
2,274.00	12.50	32.42	2,234.13	303.48	179.71	-288.59	1.24
2,366.00	14.27	38.04	2,323.63	320.82	192.03	-304.92	2.39
2,458.00	13.17	34.39	2,413.00	338.39	204.94	-321.44	1.52
2,549.00	14.75	38.48	2,501.32	356.02	218.01	-338.00	2.05
2,640.00	14.36	35.82	2,589.40	374.24	231.82	-355.09	0.85
2,732.00	13.79	34.66	2,678.63	392.51	244.73	-372.30	0.69
2,823.00	13.33	32.74	2,767.10	410.25	256.57	-389.07	0.71
2,914.00	12.82	33.85	2,855.74	427.46	267.87	-405.35	0.62
3,006.00	12.21	30.31	2,945.55	444.34	278.47	-421.35	1.07
3,097.00	12.31	32.84	3,034.48	460.80	288.58	-436.97	0.60
3,189.00	12.87	40.55	3,124.27	476.82	300.56	-452.02	1.92
3,281.00	14.63	41.48	3,213.63	493.31	314.92	-467.34	1.93
3,372.00	14.21	41.18	3,301.77	510.33	329.89	-483.14	0.47
3,464.00	14.49	40.63	3,390.90	527.56	344.82	-499.16	0.34
3,555.00	14.47	40.33	3,479.00	544.87	359.59	-515.27	0.09
3,647.00	14.82	41.15	3,568.02	562.49	374.77	-531.66	0.44
3,739.00	13.87	39.03	3,657.15	579.92	389.46	-547.89	1.18
3,830.00	12.36	38.42	3,745.77	596.02	402.38	-562.94	1.67
3,922.00	13.42	37.47	3,835.45	612.21	414.99	-578.10	1.17
4,013.00	12.30	37.31	3,924.17	628.30	427.29	-593.19	1.23
4,104.00	13.80	32.01	4,012.82	645.22	438.92	-609.14	2.11
4,196.00	12.72	30.82	4,102.36	663.22	449.93	-626.24	1.21
4,287.00	12.79	35.23	4,191.12	680.05	460.87	-642.17	1.07
4,379.00	12.92	33.51	4,280.81	696.95	472.42	-658.11	0.44
4,469.00	13.31	28.85	4,368.47	714.41	482.98	-674.70	1.25

Design Report for Razor #27J-3412B - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,561.00	11.79	26.32	4,458.27	732.11	492.25	-691.63	1.76
4,653.00	10.54	19.56	4,548.53	748.47	499.24	-707.39	1.97
4,747.00	8.92	20.56	4,641.17	763.39	504.68	-721.85	1.73
4,842.00	7.72	21.59	4,735.17	776.22	509.61	-734.26	1.27
4,937.00	6.48	18.50	4,829.44	787.24	513.66	-744.93	1.37
5,032.00	5.10	14.62	4,923.96	796.41	516.43	-753.85	1.51
5,127.00	4.23	358.96	5,018.65	804.00	517.43	-761.34	1.62
5,222.00	2.38	12.12	5,113.48	809.43	517.78	-766.73	2.09
5,254.00	0.29	241.41	5,145.48	810.04	517.85	-767.33	8.06
5,285.00	2.54	196.00	5,176.46	809.34	517.59	-766.66	7.57
5,317.00	2.46	190.76	5,208.43	807.99	517.27	-765.33	0.76
5,348.00	3.08	189.15	5,239.40	806.51	517.01	-763.88	2.02
5,380.00	4.83	193.33	5,271.32	804.35	516.56	-761.76	5.54
5,412.00	7.38	188.20	5,303.14	801.01	515.96	-758.47	8.14
5,443.00	9.26	191.74	5,333.81	796.59	515.17	-754.13	6.28
5,475.00	10.70	195.85	5,365.32	791.21	513.83	-748.88	5.02
5,507.00	12.83	198.28	5,396.65	784.98	511.91	-742.81	6.83
5,538.00	15.40	197.59	5,426.71	777.79	509.58	-735.82	8.31
5,569.00	16.93	190.30	5,456.49	769.42	507.53	-727.64	8.19
5,601.00	20.99	189.79	5,486.75	759.19	505.72	-717.58	12.70
5,633.00	23.50	195.21	5,516.37	747.38	503.07	-706.01	10.12
5,664.00	27.41	196.56	5,544.35	734.57	499.42	-693.52	12.75
5,696.00	30.84	192.35	5,572.30	719.49	495.56	-678.79	12.48
5,727.00	33.25	191.68	5,598.58	703.40	492.14	-663.02	7.86
5,759.00	37.56	189.72	5,624.66	685.19	488.72	-645.13	13.93
5,790.00	42.99	189.65	5,648.30	665.44	485.35	-625.70	17.52
5,822.00	49.87	190.53	5,670.34	642.63	481.28	-603.28	21.59
5,854.00	55.45	190.15	5,689.74	617.61	476.72	-578.69	17.46
5,885.00	61.41	190.67	5,705.96	591.65	471.94	-553.17	19.28
5,917.00	68.43	191.27	5,719.52	563.22	466.43	-525.25	22.00
5,948.00	74.79	191.70	5,729.30	534.40	460.57	-496.98	20.56
5,980.00	80.16	191.26	5,736.23	503.80	454.36	-466.95	16.83
6,012.00	86.72	189.06	5,739.89	472.53	448.76	-436.21	21.61
6,028.00	88.50	187.46	5,740.55	456.71	446.46	-420.62	14.95
6,113.00	90.00	176.83	5,741.67	371.90	443.28	-336.31	12.63
6,208.00	90.65	174.88	5,741.13	277.15	450.15	-241.32	2.16
6,302.00	93.60	174.97	5,737.65	183.60	458.46	-147.40	3.14
6,397.00	92.53	175.15	5,732.57	89.09	466.63	-52.54	1.14
6,491.00	91.60	174.46	5,729.18	-4.47	475.13	41.39	1.23
6,586.00	91.99	174.48	5,726.20	-98.98	484.28	136.32	0.41
6,680.00	89.78	172.17	5,724.75	-192.32	495.21	230.23	3.40
6,775.00	90.83	173.67	5,724.25	-286.59	506.92	325.13	1.93
6,870.00	89.85	173.90	5,723.68	-381.03	517.20	420.08	1.06
6,964.00	89.82	176.40	5,723.95	-474.68	525.15	514.07	2.66
7,059.00	90.43	179.38	5,723.75	-569.60	528.65	608.98	3.20
7,154.00	90.32	179.17	5,723.12	-664.60	529.85	703.77	0.25
7,248.00	90.59	178.21	5,722.38	-758.57	532.00	797.63	1.06
7,343.00	90.52	179.60	5,721.46	-853.54	533.81	892.46	1.46
7,438.00	90.56	179.25	5,720.56	-948.53	534.77	987.23	0.37
7,533.00	90.86	179.33	5,719.38	-1,043.52	535.94	1,082.02	0.33
7,628.00	89.91	178.89	5,718.75	-1,138.50	537.42	1,176.84	1.10

Design Report for Razor #27J-3412B - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
7,723.00	89.45	180.48	5,719.28	-1,233.50	537.94	1,271.58	1.74
7,817.00	90.34	185.04	5,719.45	-1,327.36	533.42	1,364.81	4.94
7,912.00	90.15	185.33	5,719.04	-1,421.97	524.83	1,458.47	0.36
8,007.00	90.14	183.34	5,718.80	-1,516.70	517.65	1,552.35	2.09
8,102.00	89.72	181.39	5,718.92	-1,611.61	513.73	1,646.67	2.10
8,197.00	89.92	178.33	5,719.22	-1,706.60	513.96	1,741.39	3.23
8,292.00	91.33	177.31	5,718.18	-1,801.52	517.57	1,836.30	1.83
8,385.00	93.67	176.94	5,714.12	-1,894.31	522.23	1,929.17	2.55
8,475.00	92.58	177.35	5,709.22	-1,984.06	526.71	2,019.00	1.29
8,567.00	89.84	177.69	5,707.28	-2,075.95	530.69	2,110.92	3.00
8,659.00	87.78	176.53	5,709.19	-2,167.80	535.33	2,202.86	2.57
8,751.00	89.04	178.98	5,711.74	-2,259.69	538.93	2,294.74	2.99
8,843.00	89.15	180.35	5,713.19	-2,351.67	539.47	2,386.49	1.49
8,934.00	88.72	182.15	5,714.88	-2,442.63	537.48	2,477.02	2.03
9,027.00	86.90	180.86	5,718.44	-2,535.52	535.04	2,569.44	2.40
9,118.00	86.90	179.07	5,723.36	-2,626.39	535.10	2,660.04	1.96
9,210.00	86.21	178.27	5,728.89	-2,718.20	537.23	2,751.73	1.15
9,301.00	87.49	178.18	5,733.89	-2,809.01	540.04	2,842.49	1.41
9,393.00	89.11	178.85	5,736.62	-2,900.94	542.42	2,934.33	1.91
9,485.00	89.72	179.62	5,737.56	-2,992.92	543.65	3,026.13	1.07
9,576.00	92.38	180.48	5,735.89	-3,083.90	543.57	3,116.82	3.07
9,668.00	92.18	180.13	5,732.23	-3,175.82	543.08	3,208.43	0.44
9,760.00	91.66	178.79	5,729.15	-3,267.77	543.95	3,300.16	1.56
9,851.00	89.69	178.99	5,728.08	-3,358.74	545.71	3,391.00	2.18
9,942.00	91.22	182.89	5,727.35	-3,449.70	544.22	3,481.57	4.60
10,032.00	87.55	180.94	5,728.32	-3,539.63	541.21	3,570.99	4.62
10,124.00	85.60	179.98	5,733.81	-3,631.46	540.48	3,662.48	2.36
10,215.00	87.78	178.81	5,739.07	-3,722.29	541.44	3,753.12	2.72
10,306.00	91.15	178.76	5,739.92	-3,813.25	543.37	3,843.95	3.70
10,397.00	91.05	179.30	5,738.17	-3,904.22	544.91	3,934.77	0.60
10,489.00	91.06	179.79	5,736.48	-3,996.20	545.64	4,026.53	0.53
10,580.00	89.99	179.82	5,735.64	-4,087.20	545.95	4,117.27	1.18
10,671.00	89.00	178.08	5,736.45	-4,178.18	547.61	4,208.10	2.20
10,763.00	89.60	178.76	5,737.57	-4,270.13	550.15	4,299.98	0.99
10,854.00	90.65	178.30	5,737.37	-4,361.10	552.48	4,390.85	1.26
10,945.00	90.57	179.30	5,736.40	-4,452.08	554.39	4,481.70	1.10
11,035.00	88.40	179.09	5,737.21	-4,542.06	555.65	4,571.51	2.42
11,126.00	90.70	181.49	5,737.93	-4,633.04	555.19	4,662.18	3.65
11,218.00	89.28	180.37	5,737.94	-4,725.02	553.70	4,753.77	1.97
11,309.00	91.53	180.24	5,737.30	-4,816.02	553.22	4,844.45	2.48
11,401.00	90.74	181.38	5,735.48	-4,907.99	551.91	4,936.04	1.51
11,492.00	91.70	182.46	5,733.54	-4,998.91	548.87	5,026.45	1.59
11,584.00	92.68	181.49	5,730.02	-5,090.79	545.70	5,117.80	1.50
11,675.00	91.31	181.57	5,726.85	-5,181.70	543.27	5,208.25	1.51
11,767.00	91.60	180.34	5,724.52	-5,273.65	541.74	5,299.81	1.37
11,858.00	93.49	178.66	5,720.48	-5,364.55	542.53	5,390.49	2.78
11,949.00	90.34	180.27	5,717.44	-5,455.48	543.38	5,481.22	3.89
12,041.00	90.31	180.16	5,716.92	-5,547.48	543.03	5,572.91	0.12
12,132.00	88.06	181.14	5,718.21	-5,638.46	542.00	5,663.53	2.70
12,223.00	88.83	180.03	5,720.68	-5,729.42	541.07	5,754.14	1.48

Design Report for Razor #27J-3412B - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
12,315.00	90.39	180.93	5,721.31	-5,821.41	540.30	5,845.80	1.96
12,407.00	88.46	178.74	5,722.23	-5,913.39	540.57	5,937.52	3.17
12,498.00	88.79	179.60	5,724.41	-6,004.36	541.88	6,028.31	1.01
12,590.00	89.48	179.36	5,725.80	-6,096.34	542.72	6,120.08	0.79
12,682.00	89.94	179.55	5,726.27	-6,188.34	543.59	6,211.87	0.54
12,773.00	90.40	182.44	5,726.00	-6,279.31	542.01	6,302.45	3.22
12,865.00	88.54	180.21	5,726.85	-6,371.28	539.89	6,393.96	3.16
12,957.00	89.41	181.11	5,728.49	-6,463.25	538.83	6,485.58	1.36
13,048.00	90.62	181.22	5,728.47	-6,554.23	536.98	6,576.14	1.34
13,139.00	90.40	179.95	5,727.66	-6,645.22	536.05	6,666.78	1.42
13,231.00	89.74	179.36	5,727.55	-6,737.22	536.60	6,758.55	0.96
13,322.00	89.64	180.63	5,728.04	-6,828.22	536.61	6,849.27	1.40
13,414.00	90.19	182.93	5,728.18	-6,920.16	533.75	6,940.72	2.57
13,451.00	90.17	183.15	5,728.06	-6,957.11	531.79	6,977.40	0.60
Final Sperry MWD Survey @ 13451.00 ft							
13,500.00	90.17	183.15	5,727.91	-7,006.04	529.10	7,025.97	0.00
Straight Line Projection to TD @ 13500.00 ft							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
177.00	177.00	0.30	0.43	First Sperry MWD Survey @ 177.00 ft
13,451.00	5,728.06	-6,957.11	531.79	Final Sperry MWD Survey @ 13451.00 ft
13,500.00	5,727.91	-7,006.04	529.10	Straight Line Projection to TD @ 13500.00 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
Target	Razor #27J-3412B_Rev B0_BHL Tgt	175.54	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
177.00	1,455.00	Surface_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
1,455.00	6,028.00	Vertical & Build_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
6,028.00	13,500.00	Lateral_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,605.00		9 5/8"	9-5/8	13-1/2
6,061.00	5,741.25	7"	7	8-3/4

Design Report for Razor #27J-3412B - 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
Razor #27J_Sec 27_N	0.00	0.00	0.00	75.07	-66.16	1,541,693.80	3,457,069.90	40° 48' 31.140 N	103° 50' 55.781 W
- actual wellpath misses target center by 100.07usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	278.58	-3,304.21	1,541,910.80	3,453,761.07	
Point 2				0.00	361.51	1,974.88	1,542,092.03	3,459,037.72	
Razor #27J_Sec 27_1	0.00	0.00	0.00	75.07	-66.16	1,541,693.80	3,457,069.90	40° 48' 31.140 N	103° 50' 55.781 W
- actual wellpath misses target center by 100.07usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	178.58	-3,304.21	1,541,810.82	3,453,762.93	
Point 2				0.00	261.51	1,974.88	1,541,992.04	3,459,039.58	
Razor #27J_Southern	0.00	0.00	0.00	75.07	-98.27	1,541,693.19	3,457,037.80	40° 48' 31.140 N	103° 50' 56.198 W
- actual wellpath misses target center by 123.66usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	-2,286.12	1,949.29	1,539,443.76	3,459,029.33	
Point 2				0.00	-7,023.63	2,035.30	1,534,708.66	3,459,203.55	
Point 3				0.00	-7,041.73	-3,081.49	1,534,595.27	3,454,087.96	
Point 4				0.00	-2,373.07	-3,133.14	1,539,262.18	3,453,949.38	
Point 5				0.00	2,330.24	-3,211.05	1,543,963.24	3,453,783.90	
Point 6				0.00	2,369.37	-662.93	1,544,049.82	3,456,330.86	
Point 7				0.00	2,408.06	1,863.59	1,544,135.55	3,458,856.23	
Point 8				0.00	-2,286.12	1,949.29	1,539,443.76	3,459,029.33	
Razor #27J_Southern	0.00	0.00	0.00	75.07	-98.27	1,541,693.19	3,457,037.80	40° 48' 31.140 N	103° 50' 56.198 W
- actual wellpath misses target center by 123.66usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				0.00	-2,373.07	-3,233.14	1,539,260.32	3,453,849.40	
Point 2				0.00	-2,286.12	2,049.29	1,539,445.62	3,459,129.31	
Point 3				0.00	-7,623.63	2,135.30	1,534,110.62	3,459,314.71	
Point 4				0.00	-7,641.73	-3,181.49	1,533,993.51	3,453,999.15	
Point 5				0.00	-2,373.07	-3,233.14	1,539,260.32	3,453,849.40	
Point 6				0.00	2,930.24	-3,311.05	1,544,561.28	3,453,672.74	
Point 7				0.00	2,969.37	-662.93	1,544,649.72	3,456,319.68	
Point 8				0.00	3,008.06	1,963.59	1,544,737.31	3,458,945.04	
Point 9				0.00	-2,286.12	2,049.29	1,539,445.62	3,459,129.31	
Razor #27J_Northern	0.00	0.00	-3.00	75.07	-66.16	1,541,693.80	3,457,069.90	40° 48' 31.140 N	103° 50' 55.781 W
- actual wellpath misses target center by 100.11usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-3.00	2,930.24	-3,343.16	1,544,561.29	3,453,672.74	
Point 2				-3.00	2,969.37	-695.04	1,544,649.73	3,456,319.69	
Point 3				-3.00	3,008.05	1,931.48	1,544,737.31	3,458,945.04	
Point 4				-3.00	-2,286.13	2,017.17	1,539,445.62	3,459,129.31	
Point 5				-3.00	-2,373.07	-3,265.25	1,539,260.33	3,453,849.40	
Point 6				-3.00	2,930.24	-3,343.16	1,544,561.29	3,453,672.74	
Point 7				-3.00	8,221.18	-3,387.54	1,549,850.51	3,453,529.84	
Point 8				-3.00	8,324.12	1,825.08	1,550,050.50	3,458,739.66	
Point 9				-3.00	3,008.05	1,931.48	1,544,737.31	3,458,945.04	
Point 10				-3.00	2,969.37	-695.04	1,544,649.73	3,456,319.69	
Razor #27J_Sec 27_1	0.00	0.00	-3.00	75.07	-66.16	1,541,693.80	3,457,069.90	40° 48' 31.140 N	103° 50' 55.781 W
- actual wellpath misses target center by 100.11usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-3.00	378.58	-3,304.21	1,542,010.78	3,453,759.20	
Point 2				-3.00	461.51	1,974.88	1,542,192.01	3,459,035.86	
Razor #27J_Northern	0.00	0.00	-3.00	75.07	-66.16	1,541,693.80	3,457,069.90	40° 48' 31.140 N	103° 50' 55.781 W
- actual wellpath misses target center by 100.11usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-3.00	3,008.05	1,831.48	1,544,735.45	3,458,845.06	
Point 2				-3.00	-2,186.13	1,917.17	1,539,543.74	3,459,027.46	
Point 3				-3.00	-2,273.07	-3,165.25	1,539,362.17	3,453,947.52	
Point 4				-3.00	2,930.24	-3,243.16	1,544,563.15	3,453,772.73	
Point 5				-3.00	8,121.18	-3,287.54	1,549,752.39	3,453,631.69	
Point 6				-3.00	8,224.12	1,725.08	1,549,948.65	3,458,641.54	
Point 7				-3.00	3,008.05	1,831.48	1,544,735.45	3,458,845.06	

Design Report for Razor #27J-3412B - Actual Field Surveys

Razor #27J-3412B_Re	0.00	0.00	5,727.00	-6,953.49	542.19	1,534,677.76	3,457,809.04	40° 47' 21.691 N	103° 50' 47.872 W
- actual wellpath misses target center by 10.24usft at 13446.83usft MD (5728.07 TVD, -6952.95 N, 532.02 E)									
- Point									

Directional Difficulty Index

Average Dogleg over Survey:	2.31 °/100usft	Maximum Dogleg over Survey:	22.00 °/100usft at 5,917.00 usft
Net Tortousity applicable to Plans:	1.44 °/100usft	Directional Difficulty Index:	6.810

Audit Info

North Reference Sheet for Sec. 27-T10N-R58W (#27 J Pad) - Razor #27J-3412B - 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 KB 22 ft @ 4786.00usft (Frontier 26). Northing and Easting are relative to Razor #27J-3412B

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: 1.00000417

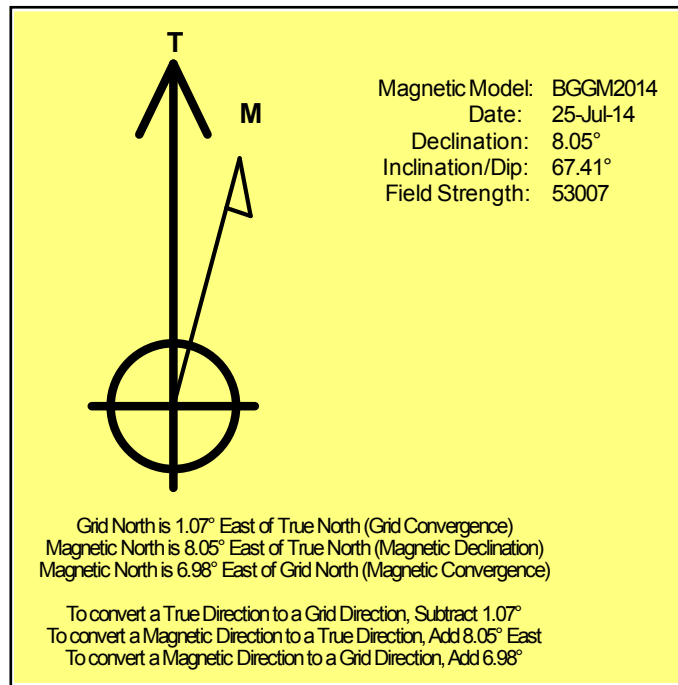
Grid Coordinates of Well: 1,541,619.97 usft N, 3,457,137.45 usft E

Geographical Coordinates of Well: 40° 48' 30.40" N, 103° 50' 54.92" W

Grid Convergence at Surface is: 1.07°

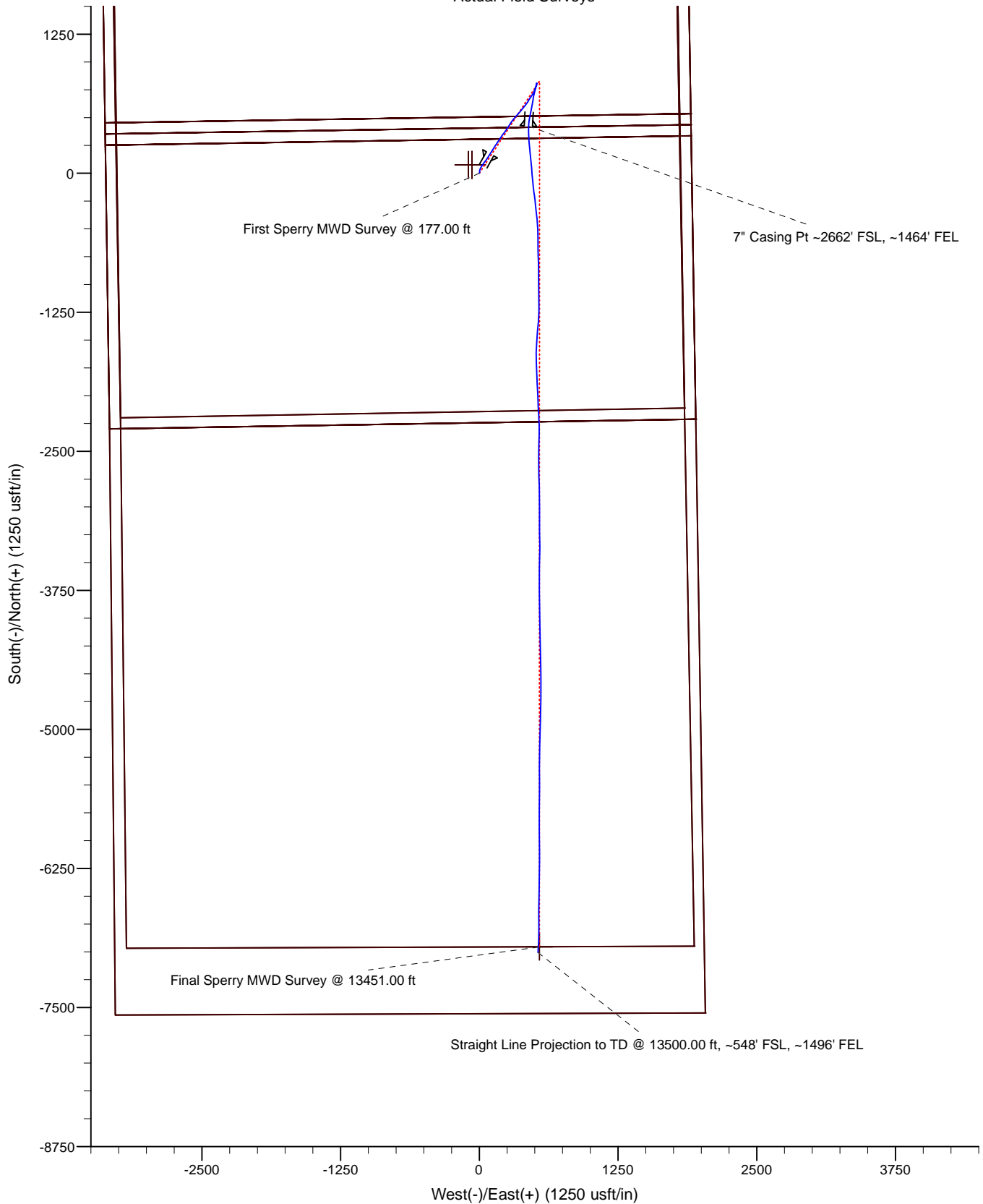
Based upon Minimum Curvature type calculations, at a Measured Depth of 13,500.00usft the Bottom Hole Displacement is 7,025.99usft in the Direction of 175.68° (True).

Magnetic Convergence at surface is: -6.98° (25 July 2014, , BGGM2014)



LEGEND

- Razor #27J-3412B, Plan B
- Actual Field Surveys



Project: Weld County, CO

Site: Sec. 27-T10N-R58W (#27 J Pad)

Well: Razor #27J-3412B

Whiting Oil and Gas Corporation

HALLIBURTON

Sperry Drilling

