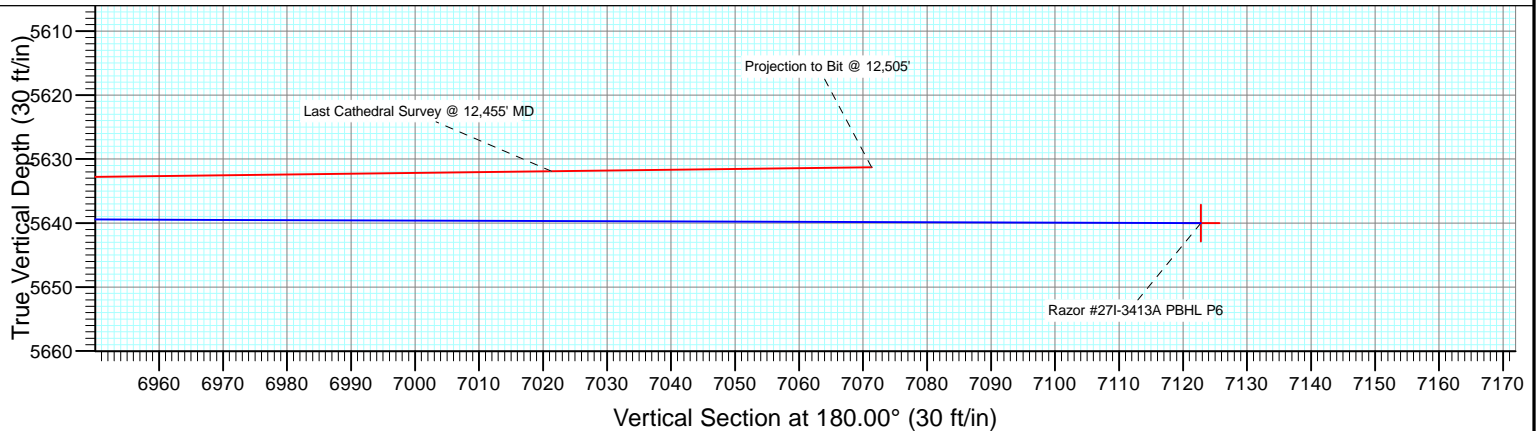
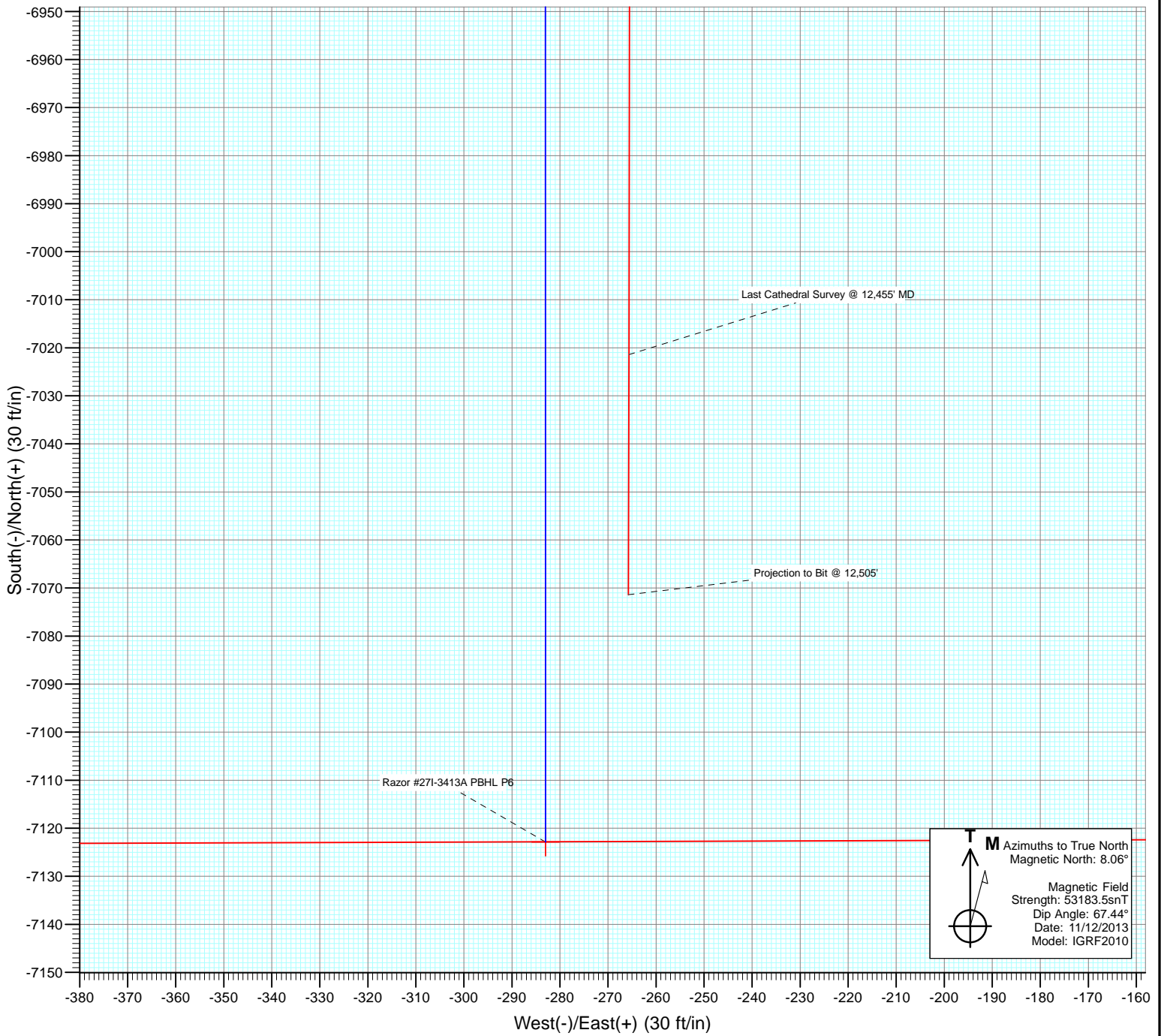




Project: Weld County, CO
Site: S27-T10N-R58W
Well: Razor #27I-3413A
Wellbore: HZ
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27I-3413A
Project:	Weld County, CO	TVD Reference:	HZ @ 4773.3ft
Site:	S27-T10N-R58W	MD Reference:	HZ @ 4773.3ft
Well:	Razor #27I-3413A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Weld County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S27-T10N-R58W			
Site Position:		Northing:	1,541,650.73 ft	Latitude:	40° 48' 30.94 N
From:	Lat/Long	Easting:	3,455,691.89 ft	Longitude:	103° 51' 13.80 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	1.06 °

Well	Razor #27I-3413A					
Well Position	+N/-S	0.0 ft	Northing:	1,541,814.71 ft	Latitude:	40° 48' 32.08 N
	+E/-W	0.0 ft	Easting:	3,458,295.94 ft	Longitude:	103° 50' 39.90 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,756.5 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/12/2013	8.06	67.44	53,184

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	180.00	

Survey Program	Date	12/5/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
165.0	12,505.0	Survey #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
165.0	0.40	185.00	165.0	-0.6	-0.1	0.6	0.24	0.24		
256.0	0.60	163.50	256.0	-1.3	0.1	1.3	0.30	0.22		
352.0	0.70	152.88	352.0	-2.4	0.5	2.4	0.16	0.10		
443.0	0.20	178.40	443.0	-3.0	0.7	3.0	0.58	-0.55		
535.0	0.30	90.47	535.0	-3.2	1.0	3.2	0.39	0.11		
626.0	0.30	110.51	626.0	-3.3	1.4	3.3	0.11	0.00		
717.0	0.40	121.28	717.0	-3.5	1.9	3.5	0.13	0.11		
809.0	0.30	109.32	809.0	-3.7	2.4	3.7	0.13	-0.11		
900.0	0.50	113.13	900.0	-4.0	3.0	4.0	0.22	0.22		
991.0	0.20	106.57	991.0	-4.2	3.5	4.2	0.33	-0.33		
1,083.0	0.20	44.65	1,083.0	-4.1	3.8	4.1	0.22	0.00		
1,173.0	0.80	54.40	1,173.0	-3.6	4.4	3.6	0.67	0.67		

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27I-3413A
Project:	Weld County, CO	TVD Reference:	HZ @ 4773.3ft
Site:	S27-T10N-R58W	MD Reference:	HZ @ 4773.3ft
Well:	Razor #27I-3413A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
1,265.0	0.70	6.60	1,265.0	-2.7	5.0	2.7	0.67	-0.11	
1,356.0	0.90	35.42	1,356.0	-1.6	5.5	1.6	0.49	0.22	
1,447.0	0.70	33.67	1,446.9	-0.5	6.2	0.5	0.22	-0.22	
1,538.0	0.70	15.10	1,537.9	0.5	6.7	-0.5	0.25	0.00	
1,597.0	0.80	11.18	1,596.9	1.2	6.8	-1.2	0.19	0.17	
1,670.0	0.90	12.50	1,669.9	2.3	7.1	-2.3	0.14	0.14	
1,762.0	0.90	347.80	1,761.9	3.7	7.1	-3.7	0.42	0.00	
1,853.0	1.10	351.00	1,852.9	5.3	6.8	-5.3	0.23	0.22	
1,944.0	0.80	326.90	1,943.9	6.7	6.3	-6.7	0.54	-0.33	
2,036.0	1.10	298.00	2,035.9	7.6	5.2	-7.6	0.60	0.33	
2,128.0	1.00	295.90	2,127.9	8.4	3.7	-8.4	0.12	-0.11	
2,220.0	1.10	288.00	2,219.8	9.0	2.1	-9.0	0.19	0.11	
2,311.0	1.10	289.50	2,310.8	9.6	0.4	-9.6	0.03	0.00	
2,402.0	0.90	287.80	2,401.8	10.1	-1.1	-10.1	0.22	-0.22	
2,493.0	1.10	286.00	2,492.8	10.5	-2.6	-10.5	0.22	0.22	
2,585.0	1.00	287.60	2,584.8	11.0	-4.2	-11.0	0.11	-0.11	
2,676.0	1.00	197.20	2,675.8	10.5	-5.2	-10.5	1.56	0.00	
2,768.0	0.90	199.80	2,767.8	9.0	-5.7	-9.0	0.12	-0.11	
2,859.0	0.70	216.00	2,858.8	7.9	-6.2	-7.9	0.33	-0.22	
2,950.0	0.70	226.20	2,949.8	7.1	-7.0	-7.1	0.14	0.00	
3,041.0	0.60	225.00	3,040.7	6.4	-7.7	-6.4	0.11	-0.11	
3,132.0	0.90	232.30	3,131.7	5.6	-8.6	-5.6	0.35	0.33	
3,224.0	0.70	113.60	3,223.7	4.9	-8.7	-4.9	1.50	-0.22	
3,316.0	1.10	82.20	3,315.7	4.8	-7.3	-4.8	0.67	0.43	
3,408.0	0.60	43.70	3,407.7	5.3	-6.1	-5.3	0.80	-0.54	
3,499.0	0.60	15.90	3,498.7	6.1	-5.6	-6.1	0.32	0.00	
3,591.0	0.70	10.10	3,590.7	7.1	-5.4	-7.1	0.13	0.11	
3,683.0	0.50	38.10	3,682.7	8.0	-5.0	-8.0	0.38	-0.22	
3,774.0	0.50	110.00	3,773.7	8.2	-4.4	-8.2	0.65	0.00	
3,866.0	0.70	124.20	3,865.7	7.7	-3.6	-7.7	0.27	0.22	
3,958.0	0.80	120.70	3,957.7	7.1	-2.6	-7.1	0.12	0.11	
4,049.0	1.10	115.60	4,048.7	6.4	-1.2	-6.4	0.34	0.33	
4,140.0	1.20	103.40	4,139.6	5.8	0.5	-5.8	0.29	0.11	
4,232.0	1.10	121.10	4,231.6	5.1	2.2	-5.1	0.40	-0.11	
4,323.0	1.60	121.60	4,322.6	4.0	4.0	-4.0	0.55	0.55	
4,413.0	1.80	121.10	4,412.6	2.6	6.3	-2.6	0.22	0.22	
4,505.0	1.60	127.60	4,504.5	1.0	8.6	-1.0	0.30	-0.22	
4,595.0	1.50	146.50	4,594.5	-0.7	10.2	0.7	0.58	-0.11	
4,689.0	1.50	152.90	4,688.5	-2.8	11.4	2.8	0.18	0.00	
4,781.0	1.30	18.00	4,780.4	-2.9	12.3	2.9	2.81	-0.22	
4,873.0	1.40	31.50	4,872.4	-1.0	13.2	1.0	0.36	0.11	
4,965.0	0.40	139.20	4,964.4	-0.2	14.0	0.2	1.70	-1.09	
5,056.0	1.20	183.20	5,055.4	-1.4	14.2	1.4	1.05	0.88	
5,149.0	13.30	233.60	5,147.5	-8.8	5.5	8.8	13.51	13.01	
5,240.0	25.80	233.60	5,233.1	-26.8	-19.0	26.8	13.74	13.74	
5,331.0	33.00	229.10	5,312.3	-54.8	-53.7	54.8	8.27	7.91	
5,422.0	39.70	219.50	5,385.7	-93.6	-91.0	93.6	9.64	7.36	
5,453.0	44.20	215.40	5,408.7	-110.0	-103.6	110.0	16.99	14.52	
5,484.0	46.80	210.00	5,430.4	-128.6	-115.5	128.6	14.98	8.39	
5,514.0	50.70	207.20	5,450.2	-148.4	-126.3	148.4	14.77	13.00	
5,545.0	55.70	205.10	5,468.8	-170.7	-137.2	170.7	17.02	16.13	
5,575.0	58.40	201.90	5,485.1	-193.8	-147.2	193.8	12.69	9.00	
5,605.0	59.50	200.00	5,500.6	-217.8	-156.4	217.8	6.55	3.67	

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27I-3413A
Project:	Weld County, CO	TVD Reference:	HZ @ 4773.3ft
Site:	S27-T10N-R58W	MD Reference:	HZ @ 4773.3ft
Well:	Razor #27I-3413A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,636.0	62.70	198.40	5,515.6	-243.4	-165.3	243.4	11.27	10.32	
5,666.0	66.70	197.60	5,528.4	-269.2	-173.7	269.2	13.55	13.33	
5,696.0	69.20	195.60	5,539.6	-295.9	-181.6	295.9	10.37	8.33	
5,727.0	70.10	196.10	5,550.4	-323.8	-189.6	323.8	3.27	2.90	
5,758.0	70.80	196.40	5,560.8	-351.9	-197.7	351.9	2.44	2.26	
5,788.0	70.50	196.30	5,570.7	-379.0	-205.7	379.0	1.05	-1.00	
5,818.0	70.20	196.40	5,580.8	-406.1	-213.7	406.1	1.05	-1.00	
5,849.0	71.80	195.90	5,590.9	-434.3	-221.8	434.3	5.38	5.16	
5,879.0	74.90	195.90	5,599.5	-461.9	-229.7	461.9	10.33	10.33	
5,910.0	78.20	194.90	5,606.7	-491.0	-237.7	491.0	11.10	10.65	
5,940.0	78.60	192.90	5,612.7	-519.5	-244.7	519.5	6.67	1.33	
5,971.0	79.90	193.40	5,618.5	-549.2	-251.7	549.2	4.48	4.19	
6,001.0	82.20	194.30	5,623.2	-577.9	-258.8	577.9	8.22	7.67	
6,032.0	85.40	193.80	5,626.5	-607.8	-266.3	607.8	10.45	10.32	
6,115.0	87.50	190.61	5,631.7	-688.8	-283.8	688.8	4.60	2.53	
6,210.0	92.90	187.12	5,631.4	-782.6	-298.4	782.6	6.77	5.68	
6,304.0	93.00	186.70	5,626.5	-875.8	-309.7	875.8	0.46	0.11	
6,399.0	89.90	184.71	5,624.1	-970.3	-319.1	970.3	3.88	-3.26	
6,494.0	90.40	182.75	5,623.9	-1,065.1	-325.3	1,065.1	2.13	0.53	
6,589.0	91.10	179.98	5,622.6	-1,160.0	-327.6	1,160.0	3.01	0.74	
6,684.0	90.80	180.62	5,621.0	-1,255.0	-328.1	1,255.0	0.74	-0.32	
6,778.0	90.80	180.76	5,619.7	-1,349.0	-329.2	1,349.0	0.15	0.00	
6,873.0	90.10	177.93	5,619.0	-1,444.0	-328.1	1,444.0	3.07	-0.74	
6,968.0	89.80	178.62	5,619.1	-1,538.9	-325.2	1,538.9	0.79	-0.32	
7,063.0	92.30	180.76	5,617.3	-1,633.9	-324.7	1,633.9	3.46	2.63	
7,158.0	92.60	180.62	5,613.3	-1,728.8	-325.9	1,728.8	0.35	0.32	
7,253.0	88.70	178.58	5,612.2	-1,823.8	-325.2	1,823.8	4.63	-4.11	
7,344.0	89.80	180.10	5,613.4	-1,914.8	-324.2	1,914.8	2.06	1.21	
7,436.0	90.50	180.72	5,613.1	-2,006.8	-324.8	2,006.8	1.02	0.76	
7,528.0	88.50	177.26	5,613.9	-2,098.7	-323.2	2,098.7	4.34	-2.17	
7,619.0	87.60	176.61	5,617.0	-2,189.5	-318.3	2,189.5	1.22	-0.99	
7,711.0	86.60	176.20	5,621.7	-2,281.2	-312.6	2,281.2	1.17	-1.09	
7,803.0	87.30	177.48	5,626.6	-2,373.0	-307.5	2,373.0	1.58	0.76	
7,894.0	89.50	181.18	5,629.1	-2,463.9	-306.5	2,463.9	4.73	2.42	
7,985.0	90.50	182.23	5,629.1	-2,554.9	-309.2	2,554.9	1.59	1.10	
8,076.0	90.00	182.52	5,628.7	-2,645.8	-312.9	2,645.8	0.64	-0.55	
8,168.0	89.70	175.72	5,629.0	-2,737.7	-311.5	2,737.7	7.40	-0.33	
8,260.0	91.40	179.08	5,628.1	-2,829.6	-307.3	2,829.6	4.09	1.85	
8,351.0	92.40	181.37	5,625.1	-2,920.5	-307.7	2,920.5	2.74	1.10	
8,443.0	89.20	179.11	5,623.8	-3,012.5	-308.1	3,012.5	4.26	-3.48	
8,534.0	88.30	174.93	5,625.8	-3,103.3	-303.4	3,103.3	4.70	-0.99	
8,625.0	87.40	174.83	5,629.2	-3,193.9	-295.2	3,193.9	1.00	-0.99	
8,717.0	86.70	175.40	5,633.9	-3,285.5	-287.4	3,285.5	0.98	-0.76	
8,808.0	89.50	176.94	5,636.9	-3,376.2	-281.3	3,376.2	3.51	3.08	
8,900.0	89.10	179.39	5,638.1	-3,468.1	-278.4	3,468.1	2.70	-0.43	
8,991.0	89.20	180.32	5,639.4	-3,559.1	-278.2	3,559.1	1.03	0.11	
9,081.0	88.50	179.53	5,641.2	-3,649.1	-278.1	3,649.1	1.17	-0.78	
9,173.0	90.70	180.16	5,641.9	-3,741.1	-277.8	3,741.1	2.49	2.39	
9,264.0	91.30	181.36	5,640.3	-3,832.1	-279.0	3,832.1	1.47	0.66	
9,356.0	91.20	180.75	5,638.3	-3,924.0	-280.7	3,924.0	0.67	-0.11	
9,447.0	90.40	179.61	5,637.0	-4,015.0	-281.0	4,015.0	1.53	-0.88	
9,539.0	90.50	180.36	5,636.3	-4,107.0	-281.0	4,107.0	0.82	0.11	
9,631.0	88.70	178.36	5,636.9	-4,199.0	-279.9	4,199.0	2.92	-1.96	

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27I-3413A
Project:	Weld County, CO	TVD Reference:	HZ @ 4773.3ft
Site:	S27-T10N-R58W	MD Reference:	HZ @ 4773.3ft
Well:	Razor #27I-3413A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
9,722.0	90.80	181.61	5,637.3	-4,290.0	-279.9	4,290.0	4.25	2.31	
9,814.0	90.70	182.76	5,636.1	-4,381.9	-283.4	4,381.9	1.25	-0.11	
9,906.0	92.40	183.87	5,633.6	-4,473.7	-288.7	4,473.7	2.21	1.85	
9,998.0	90.60	179.95	5,631.2	-4,565.6	-291.8	4,565.6	4.69	-1.96	
10,090.0	89.80	179.55	5,630.9	-4,657.6	-291.4	4,657.6	0.97	-0.87	
10,181.0	90.90	179.99	5,630.3	-4,748.6	-291.0	4,748.6	1.30	1.21	
10,272.0	89.90	178.40	5,629.7	-4,839.6	-289.8	4,839.6	2.06	-1.10	
10,363.0	88.20	176.98	5,631.2	-4,930.5	-286.1	4,930.5	2.43	-1.87	
10,454.0	88.10	176.80	5,634.1	-5,021.3	-281.2	5,021.3	0.23	-0.11	
10,545.0	89.50	177.30	5,636.1	-5,112.2	-276.5	5,112.2	1.63	1.54	
10,636.0	90.00	178.74	5,636.5	-5,203.1	-273.3	5,203.1	1.68	0.55	
10,727.0	89.50	176.49	5,636.8	-5,294.0	-269.5	5,294.0	2.53	-0.55	
10,818.0	92.60	180.26	5,635.2	-5,384.9	-267.0	5,384.9	5.36	3.41	
10,910.0	90.29	182.19	5,632.9	-5,476.9	-268.9	5,476.9	3.27	-2.51	
11,001.0	90.37	182.24	5,632.3	-5,567.8	-272.4	5,567.8	0.10	0.09	
11,093.0	90.81	182.87	5,631.4	-5,659.7	-276.5	5,659.7	0.84	0.48	
11,184.0	88.40	179.04	5,632.0	-5,750.7	-278.1	5,750.7	4.97	-2.65	
11,276.0	89.32	180.07	5,633.8	-5,842.7	-277.4	5,842.7	1.50	1.00	
11,367.0	89.41	179.99	5,634.9	-5,933.7	-277.4	5,933.7	0.13	0.10	
11,458.0	89.49	180.06	5,635.7	-6,024.6	-277.4	6,024.6	0.12	0.09	
11,550.0	89.58	179.13	5,636.5	-6,116.6	-276.8	6,116.6	1.02	0.10	
11,641.0	89.14	177.70	5,637.5	-6,207.6	-274.3	6,207.6	1.64	-0.48	
11,732.0	90.68	179.70	5,637.6	-6,298.6	-272.2	6,298.6	2.77	1.69	
11,823.0	91.52	180.42	5,635.9	-6,389.5	-272.3	6,389.5	1.22	0.92	
11,915.0	91.52	180.96	5,633.4	-6,481.5	-273.4	6,481.5	0.59	0.00	
12,006.0	89.67	179.54	5,632.5	-6,572.5	-273.8	6,572.5	2.56	-2.03	
12,097.0	88.66	177.97	5,633.8	-6,663.5	-271.8	6,663.5	2.05	-1.11	
12,189.0	90.29	177.60	5,634.7	-6,755.4	-268.3	6,755.4	1.82	1.77	
12,284.0	90.68	179.53	5,633.9	-6,850.4	-265.9	6,850.4	2.07	0.41	
12,379.0	90.61	180.04	5,632.8	-6,945.4	-265.5	6,945.4	0.54	-0.07	
12,455.0	90.73	180.11	5,631.9	-7,021.3	-265.6	7,021.3	0.18	0.16	Last Cathedral Survey @ 12,455' MD
12,505.0	90.73	180.11	5,631.3	-7,071.3	-265.7	7,071.3	0.00	0.00	Projection to Bit @ 12,505' - TD - 650' FSL, 1,13'

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #27I-3413A
Project:	Weld County, CO	TVD Reference:	HZ @ 4773.3ft
Site:	S27-T10N-R58W	MD Reference:	HZ @ 4773.3ft
Well:	Razor #27I-3413A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
- Shape									
Razor #27I-3413A 5600'	0.00	0.00	5,635.0	-5,600.0	-283.1	1,536,210.36	3,458,117.46	40° 47' 36.75 N	103° 50' 43.58 W
- actual wellpath misses target center by 9.7ft at 11033.6ft MD (5632.1 TVD, -5600.4 N, -273.8 E)									
- Point									
3413A BH Tgt P4	0.00	0.00	5,630.0	-7,122.8	-283.0	1,534,687.87	3,458,145.96	40° 47' 21.70 N	103° 50' 43.58 W
- actual wellpath misses target center by 54.3ft at 12505.0ft MD (5631.3 TVD, -7071.3 N, -265.7 E)									
- Point									
Razor #27I-3413A 1600'	0.00	0.00	5,620.0	-1,600.0	-323.3	1,540,208.91	3,458,002.57	40° 48' 16.27 N	103° 50' 44.11 W
- actual wellpath misses target center by 2.0ft at 7029.1ft MD (5618.4 TVD, -1600.0 N, -324.5 E)									
- Point									
Razor #27I-3413A 3600'	0.00	0.00	5,635.0	-3,600.0	-283.2	1,538,210.01	3,458,080.02	40° 47' 56.51 N	103° 50' 43.58 W
- actual wellpath misses target center by 7.1ft at 9031.8ft MD (5640.1 TVD, -3599.9 N, -278.3 E)									
- Point									
3413A BHL	0.00	0.00	5,649.3	-7,622.7	-275.3	1,534,188.23	3,458,163.04	40° 47' 16.76 N	103° 50' 43.48 W
- actual wellpath misses target center by 551.7ft at 12505.0ft MD (5631.3 TVD, -7071.3 N, -265.7 E)									
- Point									
3413A BH Tgt P3	0.00	0.00	5,625.0	-7,122.8	-283.0	1,534,687.87	3,458,145.96	40° 47' 21.70 N	103° 50' 43.58 W
- actual wellpath misses target center by 54.6ft at 12505.0ft MD (5631.3 TVD, -7071.3 N, -265.7 E)									
- Point									
Razor #27I-3413A PBHL	0.00	0.00	5,640.0	-7,122.8	-283.0	1,534,687.87	3,458,145.96	40° 47' 21.70 N	103° 50' 43.58 W
- actual wellpath misses target center by 55.0ft at 12505.0ft MD (5631.3 TVD, -7071.3 N, -265.7 E)									
- Point									
Razor #27I-3413A 2600'	0.00	0.00	5,620.0	-2,600.0	-303.2	1,539,209.50	3,458,041.29	40° 48' 6.39 N	103° 50' 43.84 W
- actual wellpath misses target center by 11.7ft at 8029.9ft MD (5628.8 TVD, -2599.7 N, -311.0 E)									
- Point									
3413A BH Tgt	0.00	0.00	5,649.3	-7,122.8	-283.0	1,534,687.87	3,458,145.96	40° 47' 21.70 N	103° 50' 43.58 W
- actual wellpath misses target center by 57.2ft at 12505.0ft MD (5631.3 TVD, -7071.3 N, -265.7 E)									
- Point									

Casing Points					
Measured Depth	Vertical Depth	Name		Casing Diameter	Hole Diameter
(ft)	(ft)			(in)	(in)
6,068.0	5,629.1	7" - 1,755' FSL, 1,036' FEL		0.000	0.000

Design Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(ft)	(ft)	+N/-S (ft)	+E/-W (ft)	
12,455.0	5,631.9	-7,021.3	-265.6	Last Cathedral Survey @ 12,455' MD
12,505.0	5,631.3	-7,071.3	-265.7	Projection to Bit @ 12,505'
12,505.0	5,631.3	-7,071.3	-265.7	TD - 650' FSL, 1,137' FEL

Checked By: _____ Approved By: _____ Date: _____