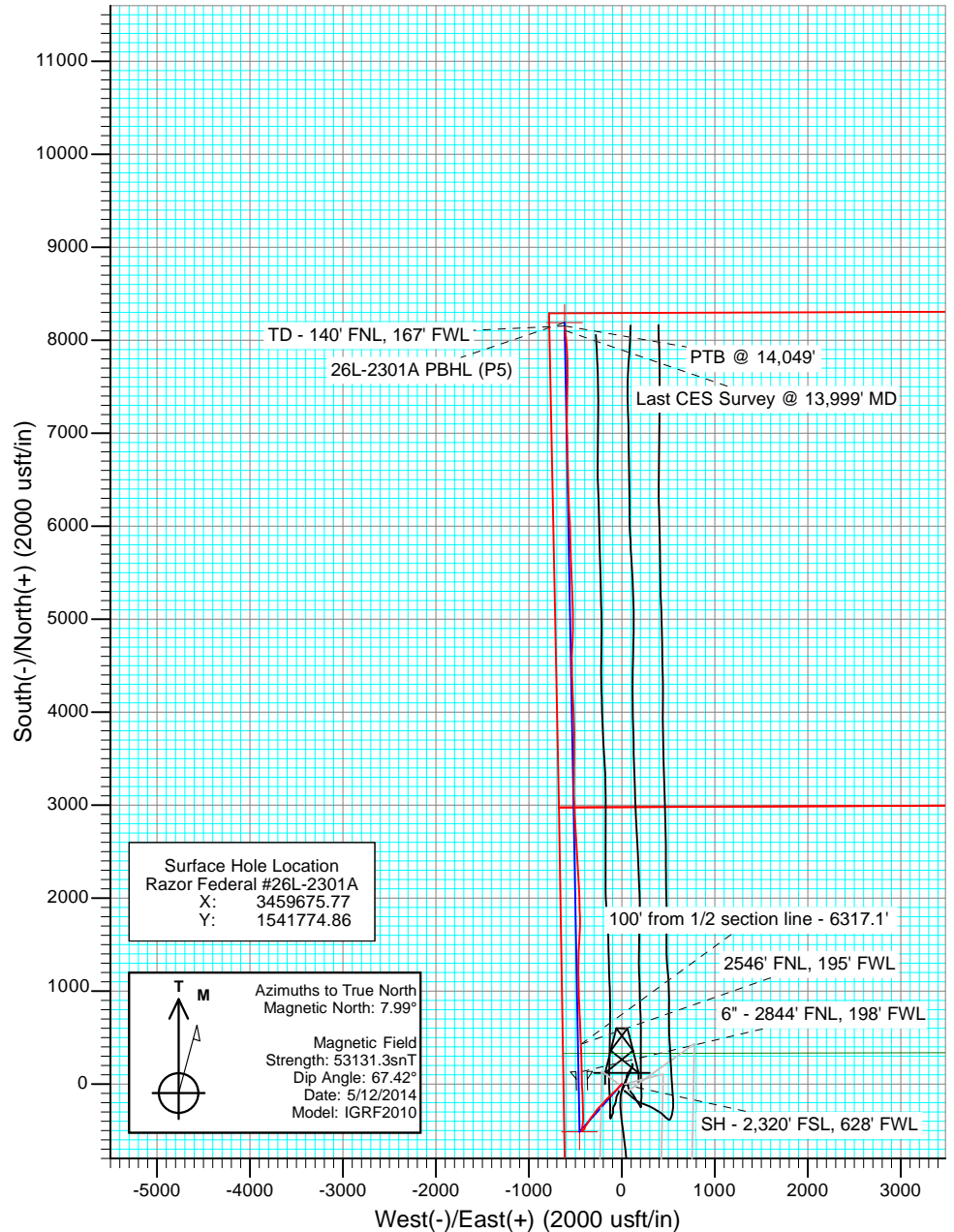
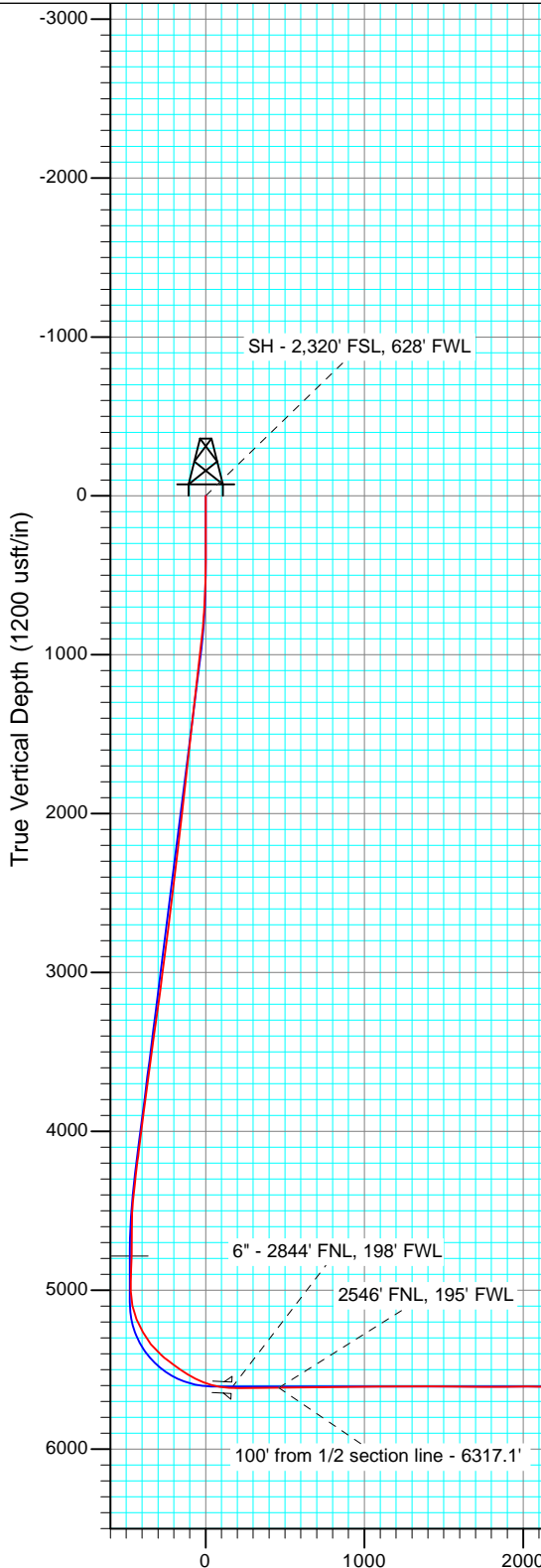




Project: Weld County, CO
 Site: S26-T10N-R58W
 Well: Razor Federal #26L-2301A
 Wellbore: HZ
 Design: FINAL



FINAL
 Razor Federal #26L-2301A
 145155/308855; SC
 WELL @ 4751.0usft (Original Well Elev)
 Ground Elevation @ 4734.5
 North American Datum 1983
 Well Razor Federal #26L-2301A, True North



Surface Hole Location
 Razor Federal #26L-2301A
 X: 3459675.77
 Y: 1541774.86

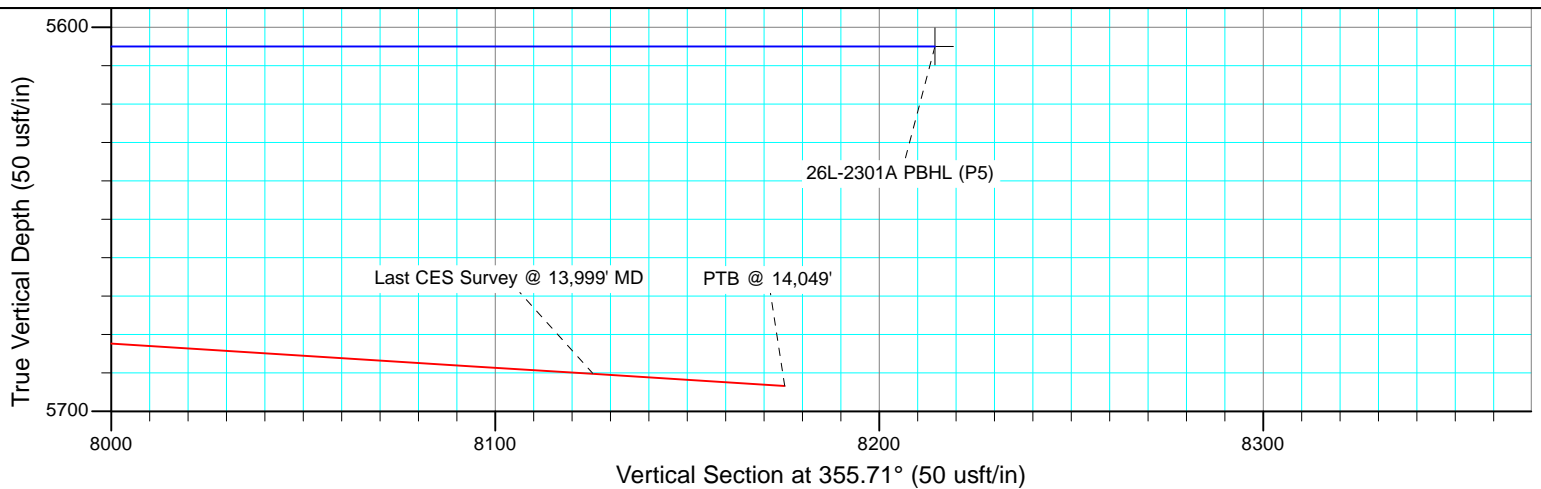
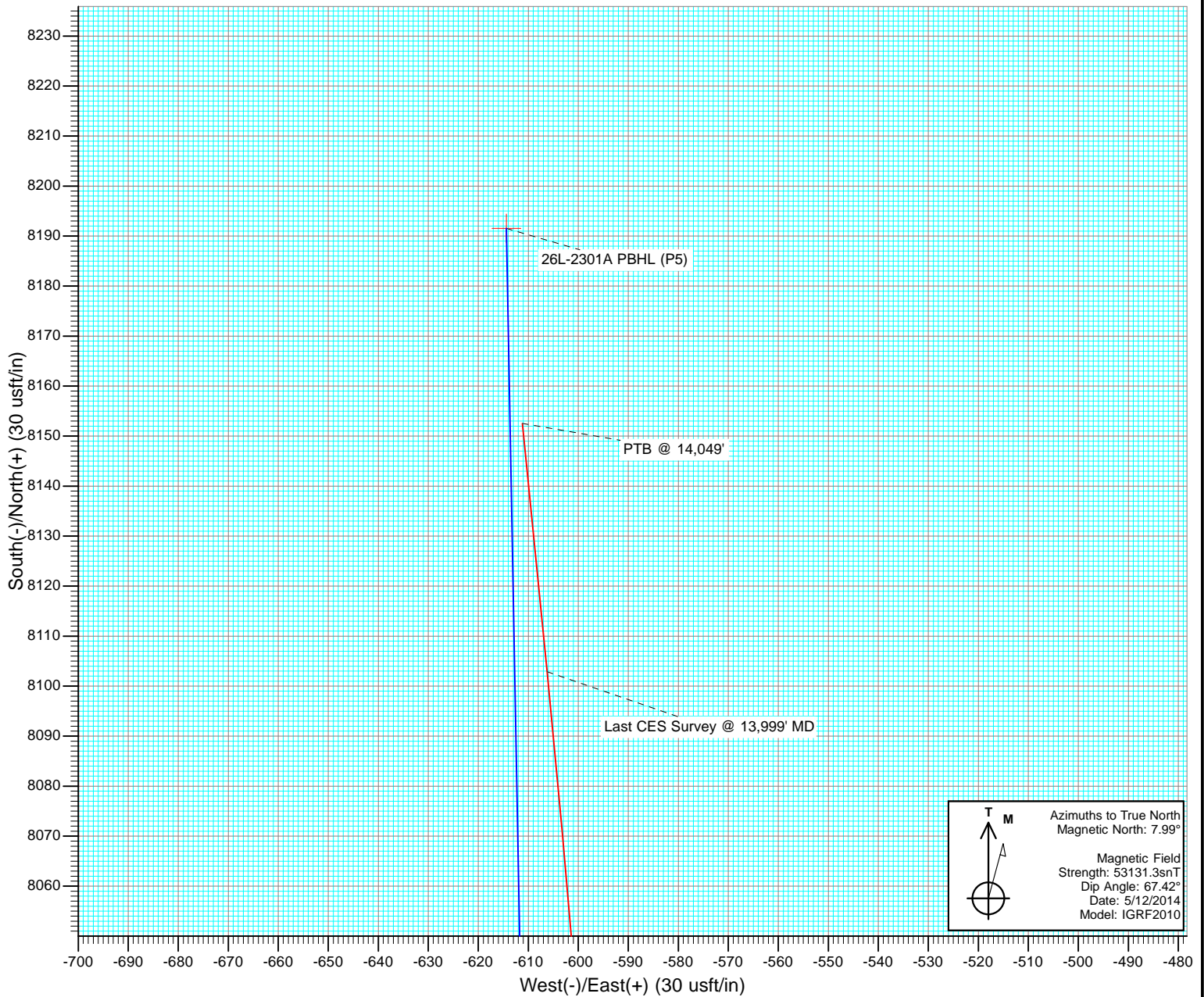
Azimuths to True North
 Magnetic North: 7.99°

Magnetic Field
 Strength: 53131.3nT
 Dip Angle: 67.42°
 Date: 5/12/2014
 Model: IGRF2010

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
26L-2301A VP (P6)	4784.1	-512.1	-453.0	1541254.36	3459232.47
26L-2301A PBHL (P5)	5605.0	8191.5	-614.4	1549953.43	3458908.12

Vertical Section at 355.71° (1200 usft/in)



Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	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		S26-T10N-R58W			
Site Position:		Northing:	1,541,774.28 usft	Latitude:	40.808739
From:	Lat/Long	Easting:	3,459,642.55 usft	Longitude:	-103.839531
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.07 °

Well	Razor Federal #26L-2301A,					
Well Position	+N/-S	0.0 usft	Northing:	1,541,774.86 usft	Latitude:	40.808739
	+E/-W	0.0 usft	Easting:	3,459,675.77 usft	Longitude:	-103.839411
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,734.5 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/12/2014	7.99	67.42	53,131

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	355.71	

Survey Program	Date	6/2/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
418.0	14,049.0	Survey #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
418.0	0.40	54.89	418.0	0.8	1.2	0.7	0.10	0.10		
510.0	1.67	215.64	510.0	-0.1	0.7	-0.1	2.23	1.38		
602.0	3.65	228.39	601.9	-3.1	-2.3	-2.9	2.23	2.15		
694.0	5.45	226.63	693.6	-8.0	-7.7	-7.4	1.96	1.96		
785.0	6.77	221.88	784.1	-15.0	-14.4	-13.9	1.55	1.45		
877.0	8.35	220.65	875.3	-24.1	-22.4	-22.4	1.73	1.72		
968.0	9.58	221.27	965.2	-34.8	-31.7	-32.4	1.36	1.35		
1,490.0	10.02	227.95	1,479.6	-97.9	-94.0	-90.6	0.23	0.08		
1,583.0	10.46	227.88	1,571.1	-109.0	-106.3	-100.7	0.47	0.47		
1,675.0	9.93	226.83	1,661.6	-120.0	-118.3	-110.8	0.61	-0.58		
1,767.0	9.89	224.78	1,752.2	-131.0	-129.6	-121.0	0.39	-0.04		
1,859.0	9.58	224.21	1,842.9	-142.1	-140.5	-131.2	0.35	-0.34		

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,950.0	8.88	225.87	1,932.7	-152.4	-150.9	-140.7	0.82	-0.77	
2,042.0	10.68	225.33	2,023.4	-163.4	-162.0	-150.8	1.96	1.96	
2,133.0	9.98	220.91	2,112.9	-175.3	-173.2	-161.8	1.16	-0.77	
2,225.0	9.19	219.17	2,203.6	-187.0	-183.0	-172.8	0.91	-0.86	
2,316.0	8.92	217.31	2,293.5	-198.2	-191.9	-183.3	0.44	-0.30	
2,408.0	9.85	220.42	2,384.3	-209.9	-201.3	-194.3	1.15	1.01	
2,499.0	10.90	228.85	2,473.8	-221.5	-212.9	-204.9	2.03	1.15	
2,590.0	10.55	226.63	2,563.2	-232.9	-225.4	-215.4	0.59	-0.38	
2,682.0	10.11	225.80	2,653.7	-244.3	-237.3	-225.9	0.50	-0.48	
2,773.0	11.69	219.35	2,743.1	-257.0	-248.9	-237.6	2.19	1.74	
2,864.0	10.64	222.73	2,832.3	-270.3	-260.4	-250.0	1.36	-1.15	
2,956.0	10.11	221.83	2,922.8	-282.5	-271.6	-261.4	0.60	-0.58	
3,047.0	8.66	209.85	3,012.6	-294.4	-280.3	-272.6	2.67	-1.59	
3,139.0	9.27	216.49	3,103.5	-306.4	-288.2	-284.0	1.30	0.66	
3,231.0	10.55	217.86	3,194.1	-319.0	-297.7	-295.8	1.41	1.39	
3,323.0	10.24	216.47	3,284.6	-332.2	-307.8	-308.3	0.43	-0.34	
3,414.0	10.81	216.67	3,374.1	-345.6	-317.7	-320.9	0.63	0.63	
3,506.0	11.21	218.68	3,464.4	-359.5	-328.4	-333.9	0.60	0.43	
3,596.0	10.77	213.43	3,552.8	-373.3	-338.5	-347.0	1.21	-0.49	
3,688.0	9.76	213.61	3,643.3	-387.0	-347.6	-359.9	1.10	-1.10	
3,779.0	7.82	207.37	3,733.2	-398.9	-354.7	-371.3	2.37	-2.13	
3,871.0	8.13	208.00	3,824.3	-410.2	-360.6	-382.1	0.35	0.34	
3,962.0	8.79	215.22	3,914.3	-421.6	-367.6	-392.9	1.37	0.73	
4,054.0	9.76	216.79	4,005.1	-433.6	-376.4	-404.2	1.09	1.05	
4,145.0	10.24	213.02	4,094.7	-446.5	-385.4	-416.5	0.89	0.53	
4,237.0	8.22	205.99	4,185.6	-459.3	-392.7	-428.6	2.51	-2.20	
4,329.0	7.30	194.77	4,276.7	-470.9	-397.1	-439.8	1.92	-1.00	
4,421.0	6.20	198.27	4,368.1	-481.2	-400.2	-450.0	1.28	-1.20	
4,512.0	6.37	208.19	4,458.5	-490.4	-404.1	-458.8	1.21	0.19	
4,603.0	4.40	257.21	4,549.2	-495.6	-409.9	-463.5	5.29	-2.16	
4,694.0	3.21	258.40	4,640.0	-496.9	-415.8	-464.4	1.31	-1.31	
4,786.0	2.95	259.81	4,731.8	-497.8	-420.6	-464.9	0.29	-0.28	
4,878.0	3.38	223.90	4,823.7	-500.2	-424.8	-467.0	2.17	0.47	
4,969.0	2.37	219.97	4,914.6	-503.5	-427.9	-470.1	1.13	-1.11	
5,061.0	1.32	287.98	5,006.5	-504.7	-430.1	-471.1	2.43	-1.14	
5,152.0	11.87	7.02	5,096.9	-495.0	-430.0	-461.5	12.85	11.59	
5,243.0	23.91	11.10	5,183.3	-467.5	-425.3	-434.4	13.29	13.23	
5,334.0	29.36	7.52	5,264.6	-427.3	-418.8	-394.8	6.24	5.99	
5,425.0	38.42	0.11	5,340.1	-376.8	-415.8	-344.6	10.93	9.96	
5,517.0	49.05	358.22	5,406.5	-313.3	-416.8	-281.2	11.64	11.55	
5,547.0	51.82	357.16	5,425.6	-290.2	-417.8	-258.1	9.63	9.23	
5,578.0	52.57	358.15	5,444.6	-265.7	-418.8	-233.6	3.50	2.42	
5,608.0	53.93	0.38	5,462.6	-241.7	-419.1	-209.7	7.48	4.53	
5,639.0	55.12	2.63	5,480.6	-216.4	-418.4	-184.5	7.05	3.84	
5,669.0	54.51	1.24	5,497.9	-191.9	-417.6	-160.2	4.30	-2.03	
5,700.0	54.95	359.32	5,515.8	-166.6	-417.5	-134.9	5.25	1.42	
5,730.0	58.46	357.10	5,532.2	-141.6	-418.3	-109.9	13.23	11.70	
5,761.0	61.76	354.39	5,547.7	-114.8	-420.3	-83.0	13.07	10.65	
5,791.0	65.63	352.84	5,561.0	-88.1	-423.3	-56.2	13.71	12.90	
5,822.0	68.62	354.01	5,573.0	-59.7	-426.5	-27.6	10.25	9.65	
5,852.0	69.36	357.92	5,583.8	-31.8	-428.5	0.4	12.41	2.47	
5,882.0	72.79	0.52	5,593.5	-3.4	-428.9	28.7	14.07	11.43	
5,913.0	76.57	0.10	5,601.7	26.5	-428.7	58.5	12.26	12.19	

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
5,943.0	81.23	358.97	5,607.5	55.9	-429.0	87.9	15.97	15.53	
5,974.0	84.31	357.91	5,611.4	86.7	-429.8	118.6	10.50	9.94	
6,080.0	90.73	358.81	5,615.9	192.5	-432.8	224.3	6.12	6.06	
6,174.0	90.55	358.45	5,614.9	286.4	-435.1	318.2	0.43	-0.19	
6,269.0	89.93	358.66	5,614.5	381.4	-437.5	413.1	0.69	-0.65	
6,317.1	90.45	358.17	5,614.3	429.5	-438.8	461.1	1.47	1.07	100' from 1/2 section line - 6317.1' - 2546' FNL, 1
6,364.0	90.95	357.70	5,613.8	476.4	-440.5	508.0	1.47	1.07	
6,459.0	90.95	357.56	5,612.2	571.3	-444.4	602.9	0.15	0.00	
6,554.0	91.21	357.31	5,610.4	666.1	-448.7	697.8	0.38	0.27	
6,649.0	90.95	358.16	5,608.6	761.1	-452.4	792.8	0.94	-0.27	
6,744.0	90.73	357.41	5,607.2	856.0	-456.1	887.7	0.82	-0.23	
6,838.0	91.16	357.57	5,605.7	949.9	-460.2	981.6	0.49	0.46	
6,933.0	89.80	358.70	5,604.9	1,044.8	-463.3	1,076.5	1.86	-1.43	
7,028.0	89.71	358.52	5,605.3	1,139.8	-465.6	1,171.4	0.21	-0.09	
7,123.0	89.85	0.09	5,605.6	1,234.8	-466.8	1,266.2	1.66	0.15	
7,218.0	89.93	1.08	5,605.8	1,329.8	-465.8	1,360.9	1.05	0.08	
7,312.0	89.93	2.92	5,605.9	1,423.7	-462.5	1,454.3	1.96	0.00	
7,407.0	90.02	3.02	5,606.0	1,518.6	-457.6	1,548.5	0.14	0.09	
7,502.0	89.67	3.25	5,606.2	1,613.4	-452.4	1,642.7	0.44	-0.37	
7,597.0	88.97	1.37	5,607.4	1,708.3	-448.6	1,737.1	2.11	-0.74	
7,692.0	90.86	358.51	5,607.5	1,803.3	-448.7	1,831.8	3.61	1.99	
7,787.0	90.33	357.40	5,606.5	1,898.3	-452.0	1,926.8	1.29	-0.56	
7,882.0	90.73	358.08	5,605.6	1,993.2	-455.8	2,021.7	0.83	0.42	
7,977.0	87.82	357.08	5,606.8	2,088.1	-459.8	2,116.6	3.24	-3.06	
8,072.0	87.43	357.05	5,610.8	2,182.9	-464.7	2,211.5	0.41	-0.41	
8,166.0	89.89	356.75	5,613.0	2,276.7	-469.7	2,305.5	2.64	2.62	
8,261.0	90.11	356.82	5,613.0	2,371.6	-475.1	2,400.4	0.24	0.23	
8,356.0	90.15	356.75	5,612.8	2,466.4	-480.4	2,495.4	0.08	0.04	
8,451.0	90.42	357.28	5,612.3	2,561.3	-485.3	2,590.4	0.63	0.28	
8,546.0	90.68	356.60	5,611.4	2,656.1	-490.4	2,685.4	0.77	0.27	
8,640.0	90.20	356.32	5,610.7	2,750.0	-496.2	2,779.4	0.59	-0.51	
8,733.0	90.24	356.25	5,610.3	2,842.8	-502.2	2,872.4	0.09	0.04	
8,826.0	89.32	357.48	5,610.7	2,935.6	-507.3	2,965.3	1.65	-0.99	
8,918.0	89.19	357.09	5,611.9	3,027.5	-511.7	3,057.3	0.45	-0.14	
9,011.0	88.09	359.72	5,614.1	3,120.4	-514.3	3,150.2	3.06	-1.18	
9,103.0	90.64	0.44	5,615.1	3,212.4	-514.1	3,241.9	2.88	2.77	
9,195.0	90.46	0.54	5,614.2	3,304.4	-513.4	3,333.5	0.22	-0.20	
9,287.0	90.55	0.96	5,613.4	3,396.4	-512.2	3,425.2	0.47	0.10	
9,378.0	90.73	0.42	5,612.4	3,487.4	-511.1	3,515.8	0.63	0.20	
9,470.0	90.37	0.06	5,611.5	3,579.4	-510.7	3,607.5	0.55	-0.39	
9,561.0	90.42	0.35	5,610.9	3,670.4	-510.4	3,698.3	0.32	0.05	
9,652.0	90.59	359.26	5,610.1	3,761.4	-510.7	3,789.0	1.21	0.19	
9,744.0	90.11	358.63	5,609.5	3,853.4	-512.4	3,880.9	0.86	-0.52	
9,835.0	89.58	357.57	5,609.7	3,944.3	-515.4	3,971.8	1.30	-0.58	
9,927.0	89.54	357.14	5,610.5	4,036.2	-519.6	4,063.8	0.47	-0.04	
10,018.0	89.45	356.69	5,611.3	4,127.1	-524.5	4,154.7	0.50	-0.10	
10,110.0	88.13	357.66	5,613.2	4,218.9	-529.0	4,246.7	1.78	-1.43	
10,201.0	89.01	359.30	5,615.5	4,309.9	-531.5	4,337.5	2.04	0.97	
10,292.0	88.92	358.73	5,617.1	4,400.8	-533.0	4,428.4	0.63	-0.10	
10,384.0	88.57	358.20	5,619.1	4,492.8	-535.5	4,520.2	0.69	-0.38	
10,475.0	91.82	0.99	5,618.8	4,583.8	-536.1	4,611.0	4.71	3.57	
10,566.0	91.96	4.18	5,615.8	4,674.6	-532.0	4,701.3	3.51	0.15	
10,658.0	90.33	1.32	5,614.0	4,766.5	-527.6	4,792.6	3.58	-1.77	

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
10,750.0	90.33	0.62	5,613.4	4,858.4	-526.1	4,884.2	0.76	0.00	
10,842.0	88.88	359.98	5,614.1	4,950.4	-525.6	4,975.9	1.72	-1.58	
10,933.0	88.75	359.91	5,616.0	5,041.4	-525.7	5,066.6	0.16	-0.14	
11,025.0	89.05	359.08	5,617.7	5,133.4	-526.5	5,158.4	0.96	0.33	
11,116.0	89.89	357.72	5,618.6	5,224.4	-529.0	5,249.3	1.76	0.92	
11,207.0	89.85	357.70	5,618.8	5,315.3	-532.7	5,340.2	0.05	-0.04	
11,299.0	89.85	357.59	5,619.0	5,407.2	-536.4	5,432.2	0.12	0.00	
11,390.0	89.85	357.57	5,619.3	5,498.1	-540.3	5,523.1	0.02	0.00	
11,481.0	89.27	357.50	5,620.0	5,589.0	-544.2	5,614.1	0.64	-0.64	
11,573.0	91.52	358.44	5,619.3	5,681.0	-547.5	5,706.0	2.65	2.45	
11,664.0	91.08	358.26	5,617.3	5,771.9	-550.1	5,796.9	0.52	-0.48	
11,756.0	90.68	357.93	5,615.8	5,863.8	-553.1	5,888.8	0.56	-0.43	
11,848.0	89.67	358.53	5,615.6	5,955.8	-556.0	5,980.7	1.28	-1.10	
11,940.0	89.01	357.16	5,616.6	6,047.7	-559.4	6,072.6	1.65	-0.72	
12,031.0	88.48	356.19	5,618.6	6,138.6	-564.7	6,163.6	1.21	-0.58	
12,122.0	87.38	357.84	5,621.9	6,229.4	-569.4	6,254.5	2.18	-1.21	
12,213.0	88.40	358.57	5,625.3	6,320.3	-572.3	6,345.4	1.38	1.12	
12,305.0	88.04	357.87	5,628.1	6,412.2	-575.1	6,437.2	0.86	-0.39	
12,397.0	90.90	359.31	5,629.0	6,504.1	-577.4	6,529.1	3.48	3.11	
12,488.0	91.25	359.23	5,627.3	6,595.1	-578.6	6,619.9	0.39	0.38	
12,580.0	89.67	358.36	5,626.5	6,687.1	-580.5	6,711.8	1.96	-1.72	
12,671.0	89.45	357.99	5,627.2	6,778.0	-583.4	6,802.7	0.47	-0.24	
12,762.0	89.76	359.18	5,627.8	6,869.0	-585.6	6,893.6	1.35	0.34	
12,853.0	90.11	358.63	5,627.9	6,960.0	-587.4	6,984.4	0.72	0.38	
12,944.0	89.27	359.66	5,628.4	7,051.0	-588.7	7,075.2	1.46	-0.92	
13,036.0	89.58	359.22	5,629.4	7,143.0	-589.6	7,167.0	0.59	0.34	
13,127.0	88.62	0.66	5,630.8	7,233.9	-589.7	7,257.8	1.90	-1.05	
13,219.0	86.81	1.07	5,634.5	7,325.9	-588.4	7,349.3	2.02	-1.97	
13,310.0	86.29	1.18	5,639.9	7,416.7	-586.6	7,439.8	0.58	-0.57	
13,402.0	86.20	0.99	5,646.0	7,508.5	-584.8	7,531.2	0.23	-0.10	
13,493.0	85.80	1.83	5,652.3	7,599.2	-582.6	7,621.5	1.02	-0.44	
13,588.0	85.01	359.83	5,659.9	7,693.9	-581.2	7,715.8	2.26	-0.83	
13,683.0	85.76	357.16	5,667.6	7,788.5	-583.7	7,810.4	2.91	0.79	
13,777.0	85.01	356.26	5,675.1	7,882.1	-589.1	7,904.1	1.24	-0.80	
13,872.0	86.29	355.88	5,682.3	7,976.6	-595.6	7,998.8	1.41	1.35	
13,967.0	86.55	354.86	5,688.3	8,071.1	-603.2	8,093.6	1.11	0.27	
13,999.0	86.37	354.32	5,690.2	8,102.9	-606.2	8,125.5	1.78	-0.56	Last CES Survey @ 13,999' MD
14,049.0	86.37	354.32	5,693.4	8,152.5	-611.2	8,175.4	0.00	0.00	PTB @ 14,049' - TD - 140' FNL, 167' FWL

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	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	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
26L-2301A VP 2	0.00	1.07	4,966.1	-512.1	-453.0	1,541,254.36	3,459,232.47	40.807333	-103.841047
- actual wellpath misses target center by 24.9usft at 5021.2usft MD (4966.8 TVD, -504.6 N, -429.2 E)									
- Point									
26L-2301A PBHL	0.00	1.07	5,587.0	8,191.5	-614.4	1,549,953.43	3,458,908.12	40.831222	-103.841631
- actual wellpath misses target center by 113.4usft at 14049.0usft MD (5693.4 TVD, 8152.5 N, -611.2 E)									
- Point									
26L-2301A VP	0.00	1.07	4,966.1	-506.4	-777.3	1,541,253.96	3,458,908.12	40.807349	-103.842219
- actual wellpath misses target center by 348.0usft at 5029.0usft MD (4974.6 TVD, -504.7 N, -429.4 E)									
- Point									
26L-2301A BHL Tgt (164	0.00	1.07	5,587.0	7,692.7	-604.1	1,549,454.92	3,458,927.69	40.829853	-103.841594
- actual wellpath misses target center by 76.1usft at 13580.7usft MD (5659.3 TVD, 7686.6 N, -581.2 E)									
- Point									
26L-2301A VP 2 (P5)	0.00	1.07	4,984.1	-512.1	-453.0	1,541,254.36	3,459,232.47	40.807333	-103.841047
- actual wellpath misses target center by 24.5usft at 5039.2usft MD (4984.8 TVD, -504.7 N, -429.6 E)									
- Point									
26L-2301A VP (P6)	0.00	1.07	4,784.1	-512.1	-453.0	1,541,254.36	3,459,232.47	40.807333	-103.841047
- actual wellpath misses target center by 32.6usft at 4840.0usft MD (4785.8 TVD, -498.8 N, -423.2 E)									
- Point									
26L-2301A PBHL (P5)	0.00	1.07	5,605.0	8,191.5	-614.4	1,549,953.43	3,458,908.12	40.831222	-103.841631
- actual wellpath misses target center by 96.7usft at 14049.0usft MD (5693.4 TVD, 8152.5 N, -611.2 E)									
- Point									

Casing Points				
Measured Depth	Vertical Depth	Name	Casing Diameter	Hole Diameter
(usft)	(usft)		(")	(")
6,020.0	5,614.8	6" - 2844' FNL, 198' FWL	0	0

Design Annotations				
Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
6,317.1	5,614.3	429.5	-438.8	100' from 1/2 section line - 6317.1'
6,317.1	5,614.3	429.5	-438.8	2546' FNL, 195' FWL
13,999.0	5,690.2	8,102.9	-606.2	Last CES Survey @ 13,999' MD
14,049.0	5,693.4	8,152.5	-611.2	PTB @ 14,049'
14,049.0	5,693.4	8,152.5	-611.2	TD - 140' FNL, 167' FWL

Checked By: _____ Approved By: _____ Date: _____

Whiting Petroleum Corporation

Weld County, CO

S26-T10N-R58W

Razor Federal #26L-2301A

HZ

Design: FINAL

Survey Report - Geographic

02 June, 2014

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	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	S26-T10N-R58W				
Site Position:		Northing:	1,541,774.28 usft	Latitude:	40.808739
From:	Lat/Long	Easting:	3,459,642.55 usft	Longitude:	-103.839531
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.07 °

Well	Razor Federal #26L-2301A,					
Well Position	+N/-S	0.0 usft	Northing:	1,541,774.86 usft	Latitude:	40.808739
	+E/-W	0.0 usft	Easting:	3,459,675.76 usft	Longitude:	-103.839411
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,734.5 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/12/2014	7.99	67.42	53,131

Design	FINAL				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	355.71	

Survey Program	Date	6/2/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
418.0	14,049.0	Survey #1 (HZ)	ISCWSA MWD	MWD - ISCWSA	

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
0.0	0.00	0.00	0.0	0.0	0.0	1,541,774.86	3,459,675.76	40.808739	-103.839411
418.0	0.40	54.89	418.0	0.8	1.2	1,541,775.72	3,459,676.94	40.808741	-103.839407
510.0	1.67	215.64	510.0	-0.1	0.7	1,541,774.81	3,459,676.44	40.808739	-103.839409
602.0	3.65	228.39	601.9	-3.1	-2.3	1,541,771.72	3,459,673.53	40.808730	-103.839420
694.0	5.45	226.63	693.6	-8.0	-7.7	1,541,766.67	3,459,668.25	40.808717	-103.839439
785.0	6.77	221.88	784.1	-15.0	-14.4	1,541,759.59	3,459,661.66	40.808698	-103.839463
877.0	8.35	220.65	875.3	-24.1	-22.4	1,541,750.33	3,459,653.86	40.808673	-103.839492
968.0	9.58	221.27	965.2	-34.8	-31.7	1,541,739.46	3,459,644.76	40.808643	-103.839526
1,490.0	10.02	227.95	1,479.6	-97.9	-94.0	1,541,675.23	3,459,583.58	40.808470	-103.839751
1,583.0	10.46	227.88	1,571.1	-109.0	-106.3	1,541,663.92	3,459,571.52	40.808440	-103.839795
1,675.0	9.93	226.83	1,661.6	-120.0	-118.3	1,541,652.67	3,459,559.75	40.808410	-103.839839
1,767.0	9.89	224.78	1,752.2	-131.0	-129.6	1,541,641.43	3,459,548.61	40.808379	-103.839880

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,859.0	9.58	224.21	1,842.9	-142.1	-140.5	1,541,630.13	3,459,537.91	40.808349	-103.839919
1,950.0	8.88	225.87	1,932.7	-152.4	-150.9	1,541,619.62	3,459,527.79	40.808321	-103.839956
2,042.0	10.68	225.33	2,023.4	-163.4	-162.0	1,541,608.47	3,459,516.83	40.808291	-103.839997
2,133.0	9.98	220.91	2,112.9	-175.3	-173.2	1,541,596.38	3,459,505.90	40.808258	-103.840037
2,225.0	9.19	219.17	2,203.6	-187.0	-183.0	1,541,584.48	3,459,496.26	40.808226	-103.840072
2,316.0	8.92	217.31	2,293.5	-198.2	-191.9	1,541,573.07	3,459,487.60	40.808195	-103.840104
2,408.0	9.85	220.42	2,384.3	-209.9	-201.3	1,541,561.23	3,459,478.40	40.808163	-103.840139
2,499.0	10.90	228.85	2,473.8	-221.5	-212.9	1,541,549.43	3,459,467.09	40.808131	-103.840180
2,590.0	10.55	226.63	2,563.2	-232.9	-225.4	1,541,537.81	3,459,454.77	40.808100	-103.840225
2,682.0	10.11	225.80	2,653.7	-244.3	-237.3	1,541,526.18	3,459,443.08	40.808068	-103.840268
2,773.0	11.69	219.35	2,743.1	-257.0	-248.9	1,541,513.26	3,459,431.74	40.808034	-103.840310
2,864.0	10.64	222.73	2,832.3	-270.3	-260.4	1,541,499.75	3,459,420.45	40.807997	-103.840352
2,956.0	10.11	221.83	2,922.8	-282.5	-271.6	1,541,487.29	3,459,409.53	40.807963	-103.840392
3,047.0	8.66	209.85	3,012.6	-294.4	-280.3	1,541,475.23	3,459,401.02	40.807931	-103.840424
3,139.0	9.27	216.49	3,103.5	-306.4	-288.2	1,541,463.12	3,459,393.39	40.807898	-103.840452
3,231.0	10.55	217.86	3,194.1	-319.0	-297.7	1,541,450.34	3,459,384.05	40.807863	-103.840487
3,323.0	10.24	216.47	3,284.6	-332.2	-307.8	1,541,436.92	3,459,374.27	40.807827	-103.840523
3,414.0	10.81	216.67	3,374.1	-345.6	-317.7	1,541,423.39	3,459,364.62	40.807790	-103.840559
3,506.0	11.21	218.68	3,464.4	-359.5	-328.4	1,541,409.29	3,459,354.14	40.807752	-103.840598
3,596.0	10.77	213.43	3,552.8	-373.3	-338.5	1,541,395.26	3,459,344.30	40.807714	-103.840634
3,688.0	9.76	213.61	3,643.3	-387.0	-347.6	1,541,381.42	3,459,335.50	40.807677	-103.840667
3,779.0	7.82	207.37	3,733.2	-398.9	-354.7	1,541,369.37	3,459,328.61	40.807644	-103.840692
3,871.0	8.13	208.00	3,824.3	-410.2	-360.6	1,541,357.96	3,459,322.89	40.807613	-103.840714
3,962.0	8.79	215.22	3,914.3	-421.6	-367.6	1,541,346.47	3,459,316.08	40.807582	-103.840739
4,054.0	9.76	216.79	4,005.1	-433.6	-376.4	1,541,334.32	3,459,307.58	40.807549	-103.840771
4,145.0	10.24	213.02	4,094.7	-446.5	-385.4	1,541,321.19	3,459,298.80	40.807513	-103.840803
4,237.0	8.22	205.99	4,185.6	-459.3	-392.7	1,541,308.28	3,459,291.70	40.807478	-103.840830
4,329.0	7.30	194.77	4,276.7	-470.9	-397.1	1,541,296.64	3,459,287.54	40.807447	-103.840846
4,421.0	6.20	198.27	4,368.1	-481.2	-400.2	1,541,286.22	3,459,284.69	40.807418	-103.840857
4,512.0	6.37	208.19	4,458.5	-490.4	-404.1	1,541,277.03	3,459,280.93	40.807393	-103.840871
4,603.0	4.40	257.21	4,549.2	-495.6	-409.9	1,541,271.70	3,459,275.24	40.807379	-103.840892
4,694.0	3.21	258.40	4,640.0	-496.9	-415.8	1,541,270.30	3,459,269.37	40.807375	-103.840913
4,786.0	2.95	259.81	4,731.8	-497.8	-420.6	1,541,269.27	3,459,264.53	40.807373	-103.840931
4,878.0	3.38	223.90	4,823.7	-500.2	-424.8	1,541,266.82	3,459,260.37	40.807366	-103.840946
4,969.0	2.37	219.97	4,914.6	-503.5	-427.9	1,541,263.39	3,459,257.36	40.807357	-103.840957
5,061.0	1.32	287.98	5,006.5	-504.7	-430.1	1,541,262.22	3,459,255.15	40.807354	-103.840965
5,152.0	11.87	7.02	5,096.9	-495.0	-430.0	1,541,271.86	3,459,255.12	40.807380	-103.840964
5,243.0	23.91	11.10	5,183.3	-467.5	-425.3	1,541,299.43	3,459,259.31	40.807456	-103.840947
5,334.0	29.36	7.52	5,264.6	-427.3	-418.8	1,541,339.79	3,459,265.03	40.807566	-103.840924
5,425.0	38.42	0.11	5,340.1	-376.8	-415.8	1,541,390.36	3,459,267.07	40.807705	-103.840913
5,517.0	49.05	358.22	5,406.5	-313.3	-416.8	1,541,453.82	3,459,264.85	40.807879	-103.840917
5,547.0	51.82	357.16	5,425.6	-290.2	-417.8	1,541,476.91	3,459,263.48	40.807943	-103.840920
5,578.0	52.57	358.15	5,444.6	-265.7	-418.8	1,541,501.36	3,459,262.03	40.808010	-103.840924
5,608.0	53.93	0.38	5,462.6	-241.7	-419.1	1,541,525.38	3,459,261.27	40.808076	-103.840925
5,639.0	55.12	2.63	5,480.6	-216.4	-418.4	1,541,550.62	3,459,261.47	40.808145	-103.840923
5,669.0	54.51	1.24	5,497.9	-191.9	-417.6	1,541,575.14	3,459,261.84	40.808212	-103.840920
5,700.0	54.95	359.32	5,515.8	-166.6	-417.5	1,541,600.44	3,459,261.48	40.808282	-103.840919
5,730.0	58.46	357.10	5,532.2	-141.6	-418.3	1,541,625.48	3,459,260.22	40.808350	-103.840922
5,761.0	61.76	354.39	5,547.7	-114.8	-420.3	1,541,652.23	3,459,257.72	40.808424	-103.840929
5,791.0	65.63	352.84	5,561.0	-88.1	-423.3	1,541,678.89	3,459,254.22	40.808497	-103.840940
5,822.0	68.62	354.01	5,573.0	-59.7	-426.5	1,541,707.19	3,459,250.42	40.808575	-103.840952
5,852.0	69.36	357.92	5,583.8	-31.8	-428.5	1,541,735.08	3,459,247.93	40.808652	-103.840959
5,882.0	72.79	0.52	5,593.5	-3.4	-428.9	1,541,763.44	3,459,247.02	40.808730	-103.840961
5,913.0	76.57	0.10	5,601.7	26.5	-428.7	1,541,793.33	3,459,246.62	40.808812	-103.840960
5,943.0	81.23	358.97	5,607.5	55.9	-429.0	1,541,822.75	3,459,245.83	40.808892	-103.840961

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
5,974.0	84.31	357.91	5,611.4	86.7	-429.8	1,541,853.47	3,459,244.42	40.808977	-103.840964
6,080.0	90.73	358.81	5,615.9	192.5	-432.8	1,541,959.19	3,459,239.41	40.809267	-103.840975
6,174.0	90.55	358.45	5,614.9	286.4	-435.1	1,542,053.10	3,459,235.40	40.809525	-103.840983
6,269.0	89.93	358.66	5,614.5	381.4	-437.5	1,542,148.01	3,459,231.23	40.809786	-103.840992
6,317.1	90.45	358.17	5,614.3	429.5	-438.8	1,542,196.05	3,459,229.00	40.809918	-103.840996
100' from 1/2 section line - 6317.1' - 2546' FNL, 195' FWL									
6,364.0	90.95	357.70	5,613.8	476.4	-440.5	1,542,242.88	3,459,226.43	40.810046	-103.841002
6,459.0	90.95	357.56	5,612.2	571.3	-444.4	1,542,337.70	3,459,220.73	40.810307	-103.841017
6,554.0	91.21	357.31	5,610.4	666.1	-448.7	1,542,432.49	3,459,214.70	40.810567	-103.841032
6,649.0	90.95	358.16	5,608.6	761.1	-452.4	1,542,527.31	3,459,209.17	40.810828	-103.841046
6,744.0	90.73	357.41	5,607.2	856.0	-456.1	1,542,622.14	3,459,203.73	40.811088	-103.841059
6,838.0	91.16	357.57	5,605.7	949.9	-460.2	1,542,715.94	3,459,197.85	40.811346	-103.841074
6,933.0	89.80	358.70	5,604.9	1,044.8	-463.3	1,542,810.81	3,459,192.98	40.811607	-103.841085
7,028.0	89.71	358.52	5,605.3	1,139.8	-465.6	1,542,905.72	3,459,188.90	40.811867	-103.841093
7,123.0	89.85	0.09	5,605.6	1,234.8	-466.8	1,543,000.67	3,459,185.97	40.812128	-103.841097
7,218.0	89.93	1.08	5,605.8	1,329.8	-465.8	1,543,095.67	3,459,185.16	40.812389	-103.841094
7,312.0	89.93	2.92	5,605.9	1,423.7	-462.5	1,543,189.65	3,459,186.68	40.812647	-103.841082
7,407.0	90.02	3.02	5,606.0	1,518.6	-457.6	1,543,284.60	3,459,189.83	40.812907	-103.841064
7,502.0	89.67	3.25	5,606.2	1,613.4	-452.4	1,543,379.54	3,459,193.24	40.813167	-103.841046
7,597.0	88.97	1.37	5,607.4	1,708.3	-448.6	1,543,474.51	3,459,195.30	40.813428	-103.841032
7,692.0	90.86	358.51	5,607.5	1,803.3	-448.7	1,543,569.47	3,459,193.42	40.813689	-103.841032
7,787.0	90.33	357.40	5,606.5	1,898.3	-452.0	1,543,664.33	3,459,188.25	40.813949	-103.841044
7,882.0	90.73	358.08	5,605.6	1,993.2	-455.8	1,543,759.16	3,459,182.73	40.814210	-103.841058
7,977.0	87.82	357.08	5,606.8	2,088.1	-459.8	1,543,853.96	3,459,176.94	40.814470	-103.841072
8,072.0	87.43	357.05	5,610.8	2,182.9	-464.7	1,543,948.65	3,459,170.31	40.814730	-103.841090
8,166.0	89.89	356.75	5,613.0	2,276.7	-469.7	1,544,042.37	3,459,163.47	40.814988	-103.841108
8,261.0	90.11	356.82	5,613.0	2,371.6	-475.1	1,544,137.10	3,459,156.37	40.815248	-103.841128
8,356.0	90.15	356.75	5,612.8	2,466.4	-480.4	1,544,231.84	3,459,149.26	40.815508	-103.841147
8,451.0	90.42	357.28	5,612.3	2,561.3	-485.3	1,544,326.60	3,459,142.54	40.815769	-103.841165
8,546.0	90.68	356.60	5,611.4	2,656.1	-490.4	1,544,421.34	3,459,135.69	40.816029	-103.841183
8,640.0	90.20	356.32	5,610.7	2,750.0	-496.2	1,544,515.04	3,459,128.13	40.816287	-103.841204
8,733.0	90.24	356.25	5,610.3	2,842.8	-502.2	1,544,607.71	3,459,120.37	40.816541	-103.841226
8,826.0	89.32	357.48	5,610.7	2,935.6	-507.3	1,544,700.46	3,459,113.55	40.816796	-103.841244
8,918.0	89.19	357.09	5,611.9	3,027.5	-511.7	1,544,792.25	3,459,107.47	40.817049	-103.841260
9,011.0	88.09	359.72	5,614.1	3,120.4	-514.3	1,544,885.11	3,459,103.14	40.817304	-103.841269
9,103.0	90.64	0.44	5,615.1	3,212.4	-514.1	1,544,977.08	3,459,101.55	40.817556	-103.841269
9,195.0	90.46	0.54	5,614.2	3,304.4	-513.4	1,545,069.08	3,459,100.61	40.817809	-103.841266
9,287.0	90.55	0.96	5,613.4	3,396.4	-512.2	1,545,161.07	3,459,100.09	40.818061	-103.841262
9,378.0	90.73	0.42	5,612.4	3,487.4	-511.1	1,545,252.06	3,459,099.49	40.818311	-103.841258
9,470.0	90.37	0.06	5,611.5	3,579.4	-510.7	1,545,344.05	3,459,098.15	40.818563	-103.841256
9,561.0	90.42	0.35	5,610.9	3,670.4	-510.4	1,545,435.03	3,459,096.77	40.818813	-103.841255
9,652.0	90.59	359.26	5,610.1	3,761.4	-510.7	1,545,526.01	3,459,094.76	40.819063	-103.841256
9,744.0	90.11	358.63	5,609.5	3,853.4	-512.4	1,545,617.94	3,459,091.34	40.819315	-103.841262
9,835.0	89.58	357.57	5,609.7	3,944.3	-515.4	1,545,708.82	3,459,086.62	40.819565	-103.841273
9,927.0	89.54	357.14	5,610.5	4,036.2	-519.6	1,545,800.62	3,459,080.65	40.819817	-103.841289
10,018.0	89.45	356.69	5,611.3	4,127.1	-524.5	1,545,891.38	3,459,074.06	40.820066	-103.841306
10,110.0	88.13	357.66	5,613.2	4,218.9	-529.0	1,545,983.14	3,459,067.80	40.820319	-103.841323
10,201.0	89.01	359.30	5,615.5	4,309.9	-531.5	1,546,074.02	3,459,063.69	40.820568	-103.841331
10,292.0	88.92	358.73	5,617.1	4,400.8	-533.0	1,546,164.94	3,459,060.42	40.820818	-103.841337
10,384.0	88.57	358.20	5,619.1	4,492.8	-535.5	1,546,256.82	3,459,056.24	40.821070	-103.841346
10,475.0	91.82	0.99	5,618.8	4,583.8	-536.1	1,546,347.77	3,459,053.89	40.821320	-103.841348
10,566.0	91.96	4.18	5,615.8	4,674.6	-532.0	1,546,438.68	3,459,056.29	40.821569	-103.841333
10,658.0	90.33	1.32	5,614.0	4,766.5	-527.6	1,546,530.61	3,459,058.98	40.821821	-103.841318
10,750.0	90.33	0.62	5,613.4	4,858.4	-526.1	1,546,622.61	3,459,058.82	40.822074	-103.841312
10,842.0	88.88	359.98	5,614.1	4,950.4	-525.6	1,546,714.59	3,459,057.57	40.822326	-103.841310

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
10,933.0	88.75	359.91	5,616.0	5,041.4	-525.7	1,546,805.56	3,459,055.78	40.822576	-103.841311
11,025.0	89.05	359.08	5,617.7	5,133.4	-526.5	1,546,897.50	3,459,053.25	40.822829	-103.841313
11,116.0	89.89	357.72	5,618.6	5,224.4	-529.0	1,546,988.40	3,459,049.01	40.823078	-103.841323
11,207.0	89.85	357.70	5,618.8	5,315.3	-532.7	1,547,079.24	3,459,043.67	40.823328	-103.841336
11,299.0	89.85	357.59	5,619.0	5,407.2	-536.4	1,547,171.08	3,459,038.17	40.823580	-103.841349
11,390.0	89.85	357.57	5,619.3	5,498.1	-540.3	1,547,261.91	3,459,032.62	40.823830	-103.841363
11,481.0	89.27	357.50	5,620.0	5,589.0	-544.2	1,547,352.73	3,459,027.01	40.824079	-103.841377
11,573.0	91.52	358.44	5,619.3	5,681.0	-547.5	1,547,444.59	3,459,022.03	40.824331	-103.841389
11,664.0	91.08	358.26	5,617.3	5,771.9	-550.1	1,547,535.46	3,459,017.71	40.824581	-103.841399
11,756.0	90.68	357.93	5,615.8	5,863.8	-553.1	1,547,627.32	3,459,012.93	40.824833	-103.841410
11,848.0	89.67	358.53	5,615.6	5,955.8	-556.0	1,547,719.21	3,459,008.36	40.825086	-103.841420
11,940.0	89.01	357.16	5,616.6	6,047.7	-559.4	1,547,811.05	3,459,003.18	40.825338	-103.841433
12,031.0	88.48	356.19	5,618.6	6,138.6	-564.7	1,547,901.76	3,458,996.21	40.825587	-103.841452
12,122.0	87.38	357.84	5,621.9	6,229.4	-569.4	1,547,992.47	3,458,989.77	40.825837	-103.841469
12,213.0	88.40	358.57	5,625.3	6,320.3	-572.3	1,548,083.29	3,458,985.22	40.826086	-103.841479
12,305.0	88.04	357.87	5,628.1	6,412.2	-575.1	1,548,175.13	3,458,980.65	40.826338	-103.841489
12,397.0	90.90	359.31	5,629.0	6,504.1	-577.4	1,548,267.03	3,458,976.66	40.826591	-103.841498
12,488.0	91.25	359.23	5,627.3	6,595.1	-578.6	1,548,357.97	3,458,973.80	40.826840	-103.841502
12,580.0	89.67	358.36	5,626.5	6,687.1	-580.5	1,548,449.89	3,458,970.14	40.827093	-103.841509
12,671.0	89.45	357.99	5,627.2	6,778.0	-583.4	1,548,540.77	3,458,965.54	40.827343	-103.841519
12,762.0	89.76	359.18	5,627.8	6,869.0	-585.6	1,548,631.68	3,458,961.59	40.827592	-103.841527
12,853.0	90.11	358.63	5,627.9	6,960.0	-587.4	1,548,722.62	3,458,958.15	40.827842	-103.841534
12,944.0	89.27	359.66	5,628.4	7,051.0	-588.7	1,548,813.56	3,458,955.09	40.828092	-103.841539
13,036.0	89.58	359.22	5,629.4	7,143.0	-589.6	1,548,905.52	3,458,952.47	40.828344	-103.841542
13,127.0	88.62	0.66	5,630.8	7,233.9	-589.7	1,548,996.49	3,458,950.67	40.828594	-103.841542
13,219.0	86.81	1.07	5,634.5	7,325.9	-588.4	1,549,088.41	3,458,950.33	40.828846	-103.841537
13,310.0	86.29	1.18	5,639.9	7,416.7	-586.6	1,549,179.24	3,458,950.42	40.829095	-103.841531
13,402.0	86.20	0.99	5,646.0	7,508.5	-584.8	1,549,271.05	3,458,950.43	40.829347	-103.841524
13,493.0	85.80	1.83	5,652.3	7,599.2	-582.6	1,549,361.82	3,458,950.97	40.829596	-103.841516
13,588.0	85.01	359.83	5,659.9	7,693.9	-581.2	1,549,456.51	3,458,950.57	40.829856	-103.841511
13,683.0	85.76	357.16	5,667.6	7,788.5	-583.7	1,549,551.10	3,458,946.31	40.830116	-103.841520
13,777.0	85.01	356.26	5,675.1	7,882.1	-589.1	1,549,644.52	3,458,939.18	40.830373	-103.841540
13,872.0	86.29	355.88	5,682.3	7,976.6	-595.6	1,549,738.88	3,458,930.92	40.830632	-103.841563
13,967.0	86.55	354.86	5,688.3	8,071.1	-603.2	1,549,833.23	3,458,921.50	40.830892	-103.841591
13,999.0	86.37	354.32	5,690.2	8,102.9	-606.2	1,549,864.96	3,458,917.89	40.830979	-103.841602
Last CES Survey @ 13,999' MD									
14,049.0	86.37	354.32	5,693.4	8,152.5	-611.2	1,549,914.51	3,458,912.02	40.831115	-103.841620
PTB @ 14,049' - TD - 140' FNL, 167' FWL									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
26L-2301A VP (P6)	0.00	1.07	4,784.1	-512.1	-453.0	1,541,254.36	3,459,232.46	40.807333	-103.841047
- actual wellpath misses target center by 32.6usft at 4840.0usft MD (4785.8 TVD, -498.8 N, -423.2 E)									
- Point									
26L-2301A PBHL (P5)	0.00	1.07	5,605.0	8,191.5	-614.4	1,549,953.43	3,458,908.12	40.831222	-103.841631
- actual wellpath misses target center by 96.7usft at 14049.0usft MD (5693.4 TVD, 8152.5 N, -611.2 E)									
- Point									

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor Federal #26L-2301A
Project:	Weld County, CO	TVD Reference:	WELL @ 4751.0usft (Original Well Elev)
Site:	S26-T10N-R58W	MD Reference:	WELL @ 4751.0usft (Original Well Elev)
Well:	Razor Federal #26L-2301A	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name		Casing Diameter (")	Hole Diameter (")
6,020.0	5,614.8	6" - 2844' FNL, 198' FWL		0	0

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
6,317.1	5,614.3	429.5	-438.8	100' from 1/2 section line - 6317.1'	
6,317.1	5,614.3	429.5	-438.8	2546' FNL, 195' FWL	
13,999.0	5,690.2	8,102.9	-606.2	Last CES Survey @ 13,999' MD	
14,049.0	5,693.4	8,152.5	-611.2	PTB @ 14,049'	
14,049.0	5,693.4	8,152.5	-611.2	TD - 140' FNL, 167' FWL	

Checked By: _____ Approved By: _____ Date: _____