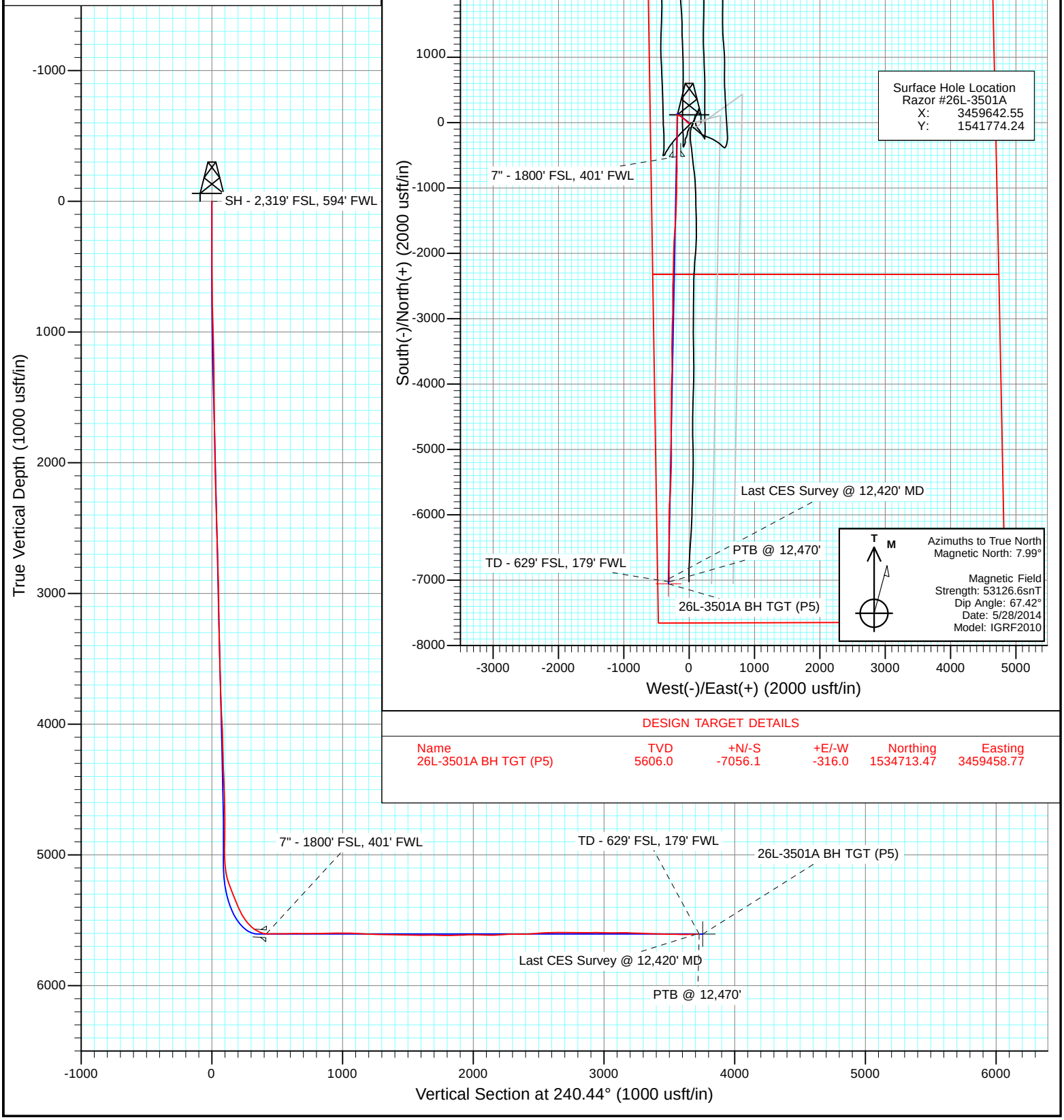
WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: S26-T10N-R58W
Well: Razor #26L-3501A
Wellbore: HZ
Design: FINAL

CATHEDRAL

FINAL
Razor #26L-3501A
145167/308555; SC
WELL @ 4751.0usft (Original Well Elev)
Ground Elevation @ 4734.5
North American Datum 1983
Well Razor #26L-3501A, True North



DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
26L-3501A BH TGT (P5)	5606.0	-7056.1	-316.0	1534713.47	3459458.77

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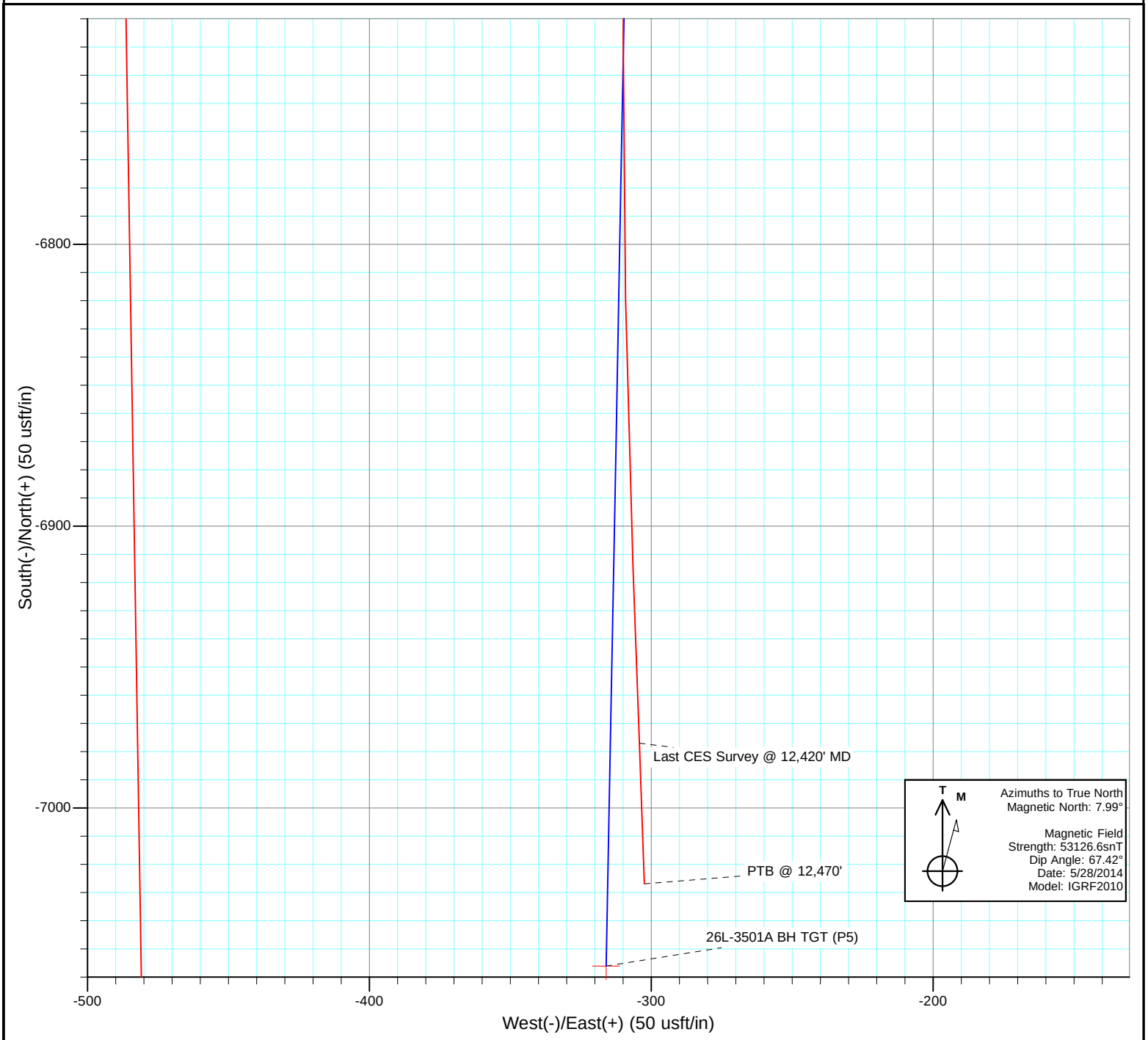

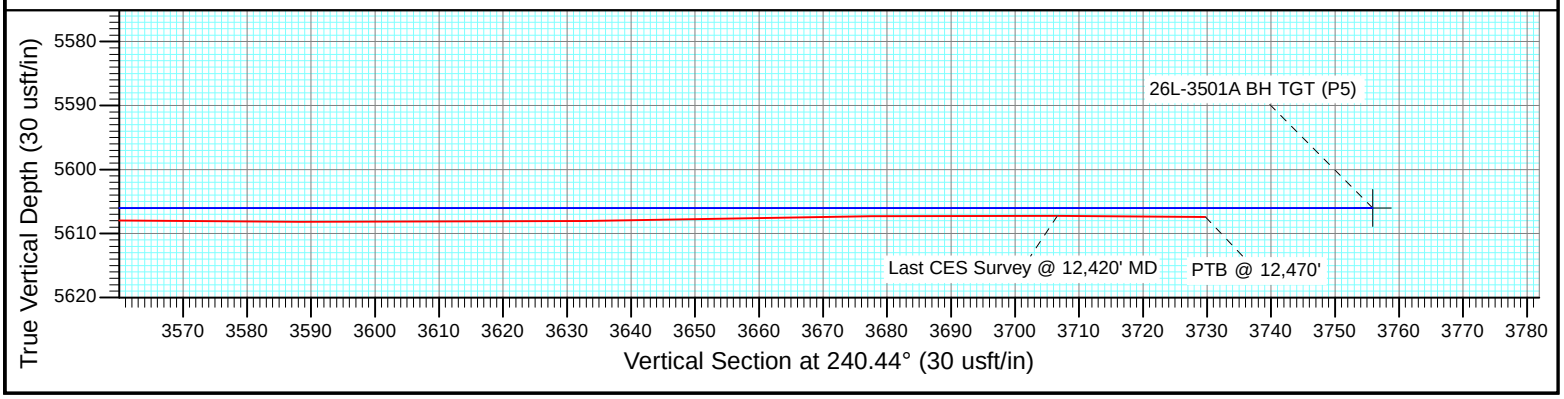

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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 #26L-3501A

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,541,774.24 usft	**Latitude:**	40.808739
	+E/-W	0.0 usft	**Easting:**	3,459,642.55 usft	**Longitude:**	-103.839531
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	5/28/2014	7.99	67.42	53,127

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	240.44

Survey Program **Date** 8/14/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
418.0	12,470.0	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	0.75	169.79	418.0	-2.7	0.5	0.9	0.18	0.18	
785.0	1.10	214.63	784.9	-8.0	-1.1	4.9	0.21	0.10	
876.0	1.67	224.11	875.9	-9.6	-2.5	6.9	0.67	0.63	
968.0	1.54	255.92	967.9	-10.9	-4.6	9.4	0.97	-0.14	
1,059.0	2.02	276.84	1,058.8	-11.0	-7.4	11.9	0.88	0.53	
1,151.0	2.07	303.73	1,150.8	-9.9	-10.4	13.9	1.03	0.05	
1,242.0	2.68	309.62	1,241.7	-7.6	-13.4	15.4	0.72	0.67	
1,490.0	2.24	325.06	1,489.5	0.1	-20.7	17.9	0.32	-0.18	
1,582.0	2.46	323.38	1,581.4	3.1	-22.9	18.4	0.25	0.24	
1,673.0	4.00	316.00	1,672.3	7.0	-26.2	19.4	1.75	1.69	
1,765.0	2.51	314.16	1,764.1	10.7	-29.9	20.7	1.62	-1.62	
1,856.0	4.62	318.06	1,854.9	14.8	-33.8	22.1	2.33	2.32	

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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
1,948.0	4.31	316.71	1,946.6	20.1	-38.6	23.7	0.36	-0.34	
2,039.0	4.53	312.49	2,037.4	25.0	-43.6	25.6	0.43	0.24	
2,131.0	3.82	306.77	2,129.1	29.3	-48.8	28.0	0.89	-0.77	
2,223.0	5.23	316.36	2,220.8	34.1	-54.1	30.2	1.73	1.53	
2,313.0	5.27	312.53	2,310.5	39.9	-60.0	32.5	0.39	0.04	
2,405.0	4.70	311.56	2,402.1	45.3	-65.9	35.0	0.63	-0.62	
2,496.0	4.75	307.96	2,492.8	50.1	-71.7	37.7	0.33	0.05	
2,588.0	4.66	307.59	2,584.5	54.7	-77.7	40.6	0.10	-0.10	
2,679.0	4.26	307.14	2,675.2	59.0	-83.3	43.3	0.44	-0.44	
2,771.0	4.40	308.25	2,767.0	63.2	-88.8	46.0	0.18	0.15	
2,863.0	4.22	308.12	2,858.7	67.5	-94.2	48.6	0.20	-0.20	
2,955.0	3.91	312.04	2,950.5	71.7	-99.2	50.9	0.45	-0.34	
3,047.0	3.47	316.50	3,042.3	75.8	-103.4	52.6	0.57	-0.48	
3,139.0	3.69	318.55	3,134.1	80.0	-107.3	53.9	0.28	0.24	
3,231.0	3.82	321.05	3,225.9	84.6	-111.2	55.0	0.23	0.14	
3,322.0	3.78	315.72	3,316.7	89.1	-115.2	56.2	0.39	-0.04	
3,414.0	3.82	308.90	3,408.5	93.2	-119.7	58.1	0.49	0.04	
3,505.0	3.69	306.43	3,499.3	96.9	-124.4	60.4	0.23	-0.14	
3,596.0	3.56	302.92	3,590.1	100.2	-129.2	62.9	0.28	-0.14	
3,688.0	3.25	301.39	3,682.0	103.1	-133.8	65.5	0.35	-0.34	
3,779.0	2.55	287.93	3,772.8	105.0	-137.9	68.1	1.07	-0.77	
3,871.0	2.64	273.32	3,864.7	105.8	-142.0	71.3	0.72	0.10	
3,962.0	3.78	271.07	3,955.6	106.0	-147.1	75.6	1.26	1.25	
4,054.0	3.34	286.52	4,047.4	106.8	-152.7	80.1	1.14	-0.48	
4,145.0	3.69	308.32	4,138.3	109.4	-157.5	83.0	1.51	0.38	
4,237.0	2.15	298.18	4,230.1	112.0	-161.3	85.1	1.76	-1.67	
4,329.0	2.55	282.79	4,322.1	113.3	-164.9	87.5	0.81	0.43	
4,421.0	4.13	291.24	4,413.9	114.9	-169.9	91.1	1.79	1.72	
4,512.0	3.03	282.20	4,504.7	116.6	-175.3	95.0	1.36	-1.21	
4,603.0	2.42	276.55	4,595.6	117.4	-179.6	98.3	0.73	-0.67	
4,694.0	1.36	345.08	4,686.6	118.6	-181.8	99.6	2.53	-1.16	
4,786.0	1.54	325.19	4,778.6	120.7	-182.8	99.5	0.58	0.20	
4,877.0	2.15	32.97	4,869.5	123.1	-182.6	98.0	2.33	0.67	
4,969.0	2.29	163.04	4,961.5	122.8	-181.1	96.9	4.38	0.15	
5,061.0	7.52	175.95	5,053.1	115.0	-180.1	99.9	5.77	5.68	
5,152.0	21.93	175.55	5,140.9	92.0	-178.4	109.7	15.84	15.84	
5,244.0	36.35	182.14	5,221.1	47.4	-178.0	131.5	16.04	15.67	
5,334.0	35.52	182.54	5,293.9	-5.4	-180.2	159.4	0.96	-0.92	
5,426.0	40.62	178.88	5,366.3	-62.0	-180.8	187.9	6.06	5.54	
5,456.0	42.07	179.94	5,388.9	-81.9	-180.6	197.5	5.37	4.83	
5,487.0	44.00	178.92	5,411.5	-103.0	-180.4	207.7	6.62	6.23	
5,517.0	46.73	178.88	5,432.6	-124.4	-180.0	217.9	9.10	9.10	
5,548.0	47.91	179.21	5,453.6	-147.1	-179.6	228.8	3.89	3.81	
5,578.0	50.33	180.52	5,473.2	-169.8	-179.5	240.0	8.72	8.07	
5,609.0	53.54	182.50	5,492.4	-194.2	-180.2	252.6	11.51	10.35	
5,640.0	55.82	183.41	5,510.3	-219.5	-181.5	266.2	7.73	7.35	
5,670.0	58.86	183.11	5,526.5	-244.7	-182.9	279.8	10.17	10.13	
5,701.0	61.36	182.51	5,541.9	-271.5	-184.3	294.2	8.24	8.06	
5,731.0	65.27	181.78	5,555.4	-298.3	-185.3	308.3	13.21	13.03	
5,762.0	70.29	180.78	5,567.1	-327.0	-185.9	323.0	16.47	16.19	
5,792.0	73.93	179.82	5,576.3	-355.5	-186.0	337.2	12.51	12.13	
5,822.0	76.66	179.76	5,583.9	-384.5	-185.9	351.4	9.10	9.10	
5,853.0	78.11	179.87	5,590.7	-414.8	-185.8	366.3	4.69	4.68	

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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
5,883.0	79.65	179.42	5,596.5	-444.2	-185.7	380.6	5.34	5.13	
5,914.0	83.52	179.33	5,601.0	-474.9	-185.3	395.5	12.49	12.48	
5,926.0	84.62	179.35	5,602.3	-486.8	-185.2	401.2	9.17	9.17	
5,985.0	91.12	179.33	5,604.5	-545.7	-184.5	429.7	11.02	11.02	
6,079.0	90.24	180.15	5,603.3	-639.7	-184.1	475.7	1.28	-0.94	
6,174.0	89.98	181.53	5,603.2	-734.7	-185.5	523.8	1.48	-0.27	
6,269.0	90.11	182.55	5,603.1	-829.6	-188.9	573.6	1.08	0.14	
6,363.0	90.15	180.90	5,602.9	-923.6	-191.7	622.4	1.76	0.04	
6,458.0	90.11	180.25	5,602.7	-1,018.6	-192.6	670.1	0.69	-0.04	
6,553.0	90.15	180.55	5,602.4	-1,113.6	-193.3	717.5	0.32	0.04	
6,648.0	89.58	180.39	5,602.7	-1,208.6	-194.1	765.1	0.62	-0.60	
6,743.0	90.64	183.64	5,602.5	-1,303.5	-197.4	814.8	3.60	1.12	
6,838.0	90.99	183.55	5,601.1	-1,398.3	-203.4	866.8	0.38	0.37	
6,933.0	90.90	182.69	5,599.6	-1,493.2	-208.5	918.0	0.91	-0.09	
7,027.0	89.89	183.72	5,598.9	-1,587.0	-213.8	968.9	1.53	-1.07	
7,122.0	90.02	184.61	5,599.0	-1,681.8	-220.7	1,021.7	0.95	0.14	
7,217.0	88.92	182.60	5,599.9	-1,776.6	-226.7	1,073.6	2.41	-1.16	
7,312.0	88.18	182.25	5,602.3	-1,871.4	-230.7	1,123.9	0.86	-0.78	
7,406.0	87.96	182.00	5,605.4	-1,965.3	-234.2	1,173.3	0.35	-0.23	
7,499.0	89.71	181.35	5,607.3	-2,058.3	-236.9	1,221.5	2.01	1.88	
7,592.0	89.23	180.42	5,608.2	-2,151.2	-238.3	1,268.6	1.13	-0.52	
7,684.0	89.32	181.19	5,609.4	-2,243.2	-239.6	1,315.1	0.84	0.10	
7,777.0	89.54	182.68	5,610.3	-2,336.2	-242.8	1,363.7	1.62	0.24	
7,869.0	89.49	182.19	5,611.1	-2,428.1	-246.7	1,412.4	0.54	-0.05	
7,960.0	88.35	180.09	5,612.8	-2,519.1	-248.5	1,458.9	2.63	-1.25	
8,052.0	90.02	180.52	5,614.1	-2,611.0	-249.0	1,504.7	1.87	1.82	
8,143.0	89.89	180.08	5,614.2	-2,702.0	-249.4	1,550.0	0.50	-0.14	
8,235.0	90.02	179.90	5,614.2	-2,794.0	-249.4	1,595.4	0.24	0.14	
8,326.0	90.46	179.68	5,613.8	-2,885.0	-249.1	1,640.0	0.54	0.48	
8,417.0	89.36	182.34	5,614.0	-2,976.0	-250.7	1,686.3	3.16	-1.21	
8,509.0	89.32	182.66	5,615.0	-3,067.9	-254.7	1,735.1	0.35	-0.04	
8,600.0	89.01	182.24	5,616.4	-3,158.8	-258.6	1,783.3	0.57	-0.34	
8,692.0	90.77	180.94	5,616.5	-3,250.8	-261.2	1,830.9	2.38	1.91	
8,783.0	91.38	181.49	5,614.8	-3,341.8	-263.1	1,877.5	0.90	0.67	
8,875.0	90.77	179.59	5,613.1	-3,433.7	-263.9	1,923.6	2.17	-0.66	
8,966.0	90.73	178.85	5,611.9	-3,524.7	-262.7	1,967.4	0.81	-0.04	
9,057.0	89.76	180.18	5,611.5	-3,615.7	-261.9	2,011.6	1.81	-1.07	
9,150.0	89.05	178.06	5,612.5	-3,708.7	-260.5	2,056.2	2.40	-0.76	
9,241.0	89.45	180.88	5,613.7	-3,799.7	-259.7	2,100.4	3.13	0.44	
9,333.0	90.11	182.72	5,614.0	-3,891.6	-262.6	2,148.3	2.12	0.72	
9,425.0	92.22	182.81	5,612.2	-3,983.5	-267.0	2,197.5	2.30	2.29	
9,517.0	92.26	181.92	5,608.6	-4,075.3	-270.8	2,246.1	0.97	0.04	
9,609.0	90.07	180.39	5,606.7	-4,167.3	-272.6	2,293.0	2.90	-2.38	
9,701.0	89.58	178.76	5,607.0	-4,259.3	-272.0	2,337.8	1.85	-0.53	
9,792.0	89.98	180.26	5,607.3	-4,350.3	-271.2	2,382.1	1.71	0.44	
9,883.0	91.91	181.05	5,605.8	-4,441.2	-272.2	2,427.8	2.29	2.12	
9,974.0	92.18	180.57	5,602.6	-4,532.2	-273.5	2,473.8	0.60	0.30	
10,066.0	92.62	180.44	5,598.7	-4,624.1	-274.3	2,519.9	0.50	0.48	
10,157.0	91.60	179.41	5,595.4	-4,715.0	-274.2	2,564.6	1.59	-1.12	
10,249.0	90.02	179.96	5,594.1	-4,807.0	-273.7	2,609.6	1.82	-1.72	
10,340.0	89.67	179.38	5,594.3	-4,898.0	-273.2	2,654.0	0.74	-0.38	
10,432.0	89.89	179.47	5,594.7	-4,990.0	-272.2	2,698.6	0.26	0.24	
10,524.0	89.67	179.10	5,595.0	-5,082.0	-271.1	2,743.0	0.47	-0.24	

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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
10,616.0	89.80	181.60	5,595.5	-5,174.0	-271.7	2,788.8	2.72	0.14	
10,707.0	90.11	181.91	5,595.5	-5,264.9	-274.4	2,836.1	0.48	0.34	
10,798.0	90.20	181.59	5,595.3	-5,355.9	-277.2	2,883.4	0.37	0.10	
10,889.0	90.33	181.15	5,594.9	-5,446.9	-279.4	2,930.2	0.50	0.14	
10,981.0	88.79	182.69	5,595.6	-5,538.8	-282.5	2,978.2	2.37	-1.67	
11,073.0	89.32	183.33	5,597.1	-5,630.7	-287.3	3,027.8	0.90	0.58	
11,164.0	90.02	183.27	5,597.6	-5,721.5	-292.6	3,077.1	0.77	0.77	
11,256.0	90.77	183.78	5,597.0	-5,813.3	-298.2	3,127.4	0.99	0.82	
11,347.0	89.23	182.07	5,597.0	-5,904.2	-302.9	3,176.2	2.53	-1.69	
11,439.0	89.01	181.12	5,598.4	-5,996.2	-305.4	3,223.8	1.06	-0.24	
11,531.0	89.19	180.68	5,599.8	-6,088.2	-306.9	3,270.5	0.52	0.20	
11,621.0	88.92	180.21	5,601.3	-6,178.1	-307.6	3,315.5	0.60	-0.30	
11,712.0	88.79	179.39	5,603.1	-6,269.1	-307.2	3,360.1	0.91	-0.14	
11,804.0	89.14	179.91	5,604.8	-6,361.1	-306.7	3,405.0	0.68	0.38	
11,896.0	89.01	179.63	5,606.3	-6,453.1	-306.3	3,450.0	0.34	-0.14	
11,987.0	89.48	181.39	5,607.5	-6,544.1	-307.1	3,495.6	2.00	0.52	
12,079.0	90.07	181.15	5,607.9	-6,636.0	-309.2	3,542.8	0.69	0.64	
12,170.0	89.54	179.82	5,608.2	-6,727.0	-309.9	3,588.3	1.57	-0.58	
12,262.0	90.60	179.10	5,608.1	-6,819.0	-309.1	3,632.9	1.39	1.15	
12,357.0	90.30	177.80	5,607.3	-6,914.0	-306.5	3,677.6	1.40	-0.32	
12,420.0	89.80	178.00	5,607.2	-6,977.0	-304.2	3,706.6	0.85	-0.79	**Last CES Survey @ 12,420' MD**
12,470.0	89.80	178.00	5,607.4	-7,026.9	-302.4	3,729.7	0.00	0.00	**PTB @ 12,470' - TD - 629' FSL, 179' FWL**

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**North Reference:**	True
Wellbore:	HZ	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL	**Database:**	USA EDM 5000 Multi Users DB

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
26L-3501A VP (P6)	0.00	1.07	4,785.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 17.7usft at 4793.0usft MD (4785.6 TVD, 120.8 N, -182.9 E)									
- Point									
26L-3501A BH TGT	0.00	1.07	5,587.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 38.1usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A WP4 TGT (te	0.00	1.07	5,600.0	-4,492.5	-268.0	1,537,277.51	3,459,458.72	40.796408	-103.840499
- actual wellpath misses target center by 6.5usft at 9934.4usft MD (5604.1 TVD, -4492.6 N, -273.0 E)									
- Point									
26L-3501A WP5 TGT (te	0.00	1.07	5,605.0	-5,992.8	-296.0	1,535,776.95	3,459,458.81	40.792290	-103.840600
- actual wellpath misses target center by 11.5usft at 11435.5usft MD (5598.3 TVD, -5992.6 N, -305.3 E)									
- Point									
26L-3501A BH TGT (P5)	0.00	1.07	5,606.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 32.2usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A BH TGT (tes	0.00	1.07	5,605.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 32.2usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A VP (P5)	0.00	1.07	4,985.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 16.8usft at 4991.2usft MD (4983.7 TVD, 121.7 N, -180.8 E)									
- Point									
26L-3501A VP	0.00	1.07	4,966.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 15.8usft at 4972.3usft MD (4964.8 TVD, 122.7 N, -181.0 E)									
- Point									
26L-3501A PBHL	0.00	1.07	5,587.0	-7,556.0	-308.2	1,534,213.84	3,459,475.88	40.788000	-103.840644
- actual wellpath misses target center by 529.5usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A WP2 TGT (te	0.00	1.07	5,610.0	-2,492.2	-230.5	1,539,278.17	3,459,458.76	40.801899	-103.840364
- actual wellpath misses target center by 17.9usft at 7932.7usft MD (5612.1 TVD, -2491.8 N, -248.3 E)									
- Point									
26L-3501A WP1 TGT (te	0.00	1.07	5,600.0	-1,492.0	-211.8	1,540,278.54	3,459,458.72	40.804644	-103.840296
- actual wellpath misses target center by 3.3usft at 6932.0usft MD (5599.6 TVD, -1492.2 N, -208.5 E)									
- Point									
26L-3501A WP3 TGT (te	0.00	1.07	5,615.0	-3,492.3	-249.2	1,538,277.89	3,459,458.79	40.799154	-103.840431
- actual wellpath misses target center by 14.3usft at 8933.7usft MD (5612.3 TVD, -3492.5 N, -263.3 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
5,958.4	5,604.3	7" - 1800' FSL, 401' FWL	0	0

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**North Reference:**	True
Wellbore:	HZ	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL	**Database:**	USA EDM 5000 Multi Users DB

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
26L-3501A VP (P6)	0.00	1.07	4,785.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 17.7usft at 4793.0usft MD (4785.6 TVD, 120.8 N, -182.9 E)									
- Point									
26L-3501A BH TGT	0.00	1.07	5,587.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 38.1usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A WP4 TGT (te	0.00	1.07	5,600.0	-4,492.5	-268.0	1,537,277.51	3,459,458.72	40.796408	-103.840499
- actual wellpath misses target center by 6.5usft at 9934.4usft MD (5604.1 TVD, -4492.6 N, -273.0 E)									
- Point									
26L-3501A WP5 TGT (te	0.00	1.07	5,605.0	-5,992.8	-296.0	1,535,776.95	3,459,458.81	40.792290	-103.840600
- actual wellpath misses target center by 11.5usft at 11435.5usft MD (5598.3 TVD, -5992.6 N, -305.3 E)									
- Point									
26L-3501A BH TGT (P5)	0.00	1.07	5,606.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 32.2usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A BH TGT (tes	0.00	1.07	5,605.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 32.2usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A VP (P5)	0.00	1.07	4,985.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 16.8usft at 4991.2usft MD (4983.7 TVD, 121.7 N, -180.8 E)									
- Point									
26L-3501A VP	0.00	1.07	4,966.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 15.8usft at 4972.3usft MD (4964.8 TVD, 122.7 N, -181.0 E)									
- Point									
26L-3501A PBHL	0.00	1.07	5,587.0	-7,556.0	-308.2	1,534,213.84	3,459,475.88	40.788000	-103.840644
- actual wellpath misses target center by 529.5usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A WP2 TGT (te	0.00	1.07	5,610.0	-2,492.2	-230.5	1,539,278.17	3,459,458.76	40.801899	-103.840364
- actual wellpath misses target center by 17.9usft at 7932.7usft MD (5612.1 TVD, -2491.8 N, -248.3 E)									
- Point									
26L-3501A WP1 TGT (te	0.00	1.07	5,600.0	-1,492.0	-211.8	1,540,278.54	3,459,458.72	40.804644	-103.840296
- actual wellpath misses target center by 3.3usft at 6932.0usft MD (5599.6 TVD, -1492.2 N, -208.5 E)									
- Point									
26L-3501A WP3 TGT (te	0.00	1.07	5,615.0	-3,492.3	-249.2	1,538,277.89	3,459,458.79	40.799154	-103.840431
- actual wellpath misses target center by 14.3usft at 8933.7usft MD (5612.3 TVD, -3492.5 N, -263.3 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
5,958.4	5,604.3	7" - 1800' FSL, 401' FWL	0	0

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
12,420.0	5,607.2	-6,977.0	-304.2	Last CES Survey @ 12,420' MD
12,470.0	5,607.4	-7,026.9	-302.4	PTB @ 12,470'
12,470.0	5,607.4	-7,026.9	-302.4	TD - 629' FSL, 179' FWL

Cathedral Energy Services

Survey Report

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**North Reference:**	True
Wellbore:	HZ	**Survey Calculation Method:**	Minimum Curvature
Design:	FINAL	**Database:**	USA EDM 5000 Multi Users DB

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
26L-3501A VP (P6)	0.00	1.07	4,785.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 17.7usft at 4793.0usft MD (4785.6 TVD, 120.8 N, -182.9 E)									
- Point									
26L-3501A BH TGT	0.00	1.07	5,587.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 38.1usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A WP4 TGT (te	0.00	1.07	5,600.0	-4,492.5	-268.0	1,537,277.51	3,459,458.72	40.796408	-103.840499
- actual wellpath misses target center by 6.5usft at 9934.4usft MD (5604.1 TVD, -4492.6 N, -273.0 E)									
- Point									
26L-3501A WP5 TGT (te	0.00	1.07	5,605.0	-5,992.8	-296.0	1,535,776.95	3,459,458.81	40.792290	-103.840600
- actual wellpath misses target center by 11.5usft at 11435.5usft MD (5598.3 TVD, -5992.6 N, -305.3 E)									
- Point									
26L-3501A BH TGT (P5)	0.00	1.07	5,606.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 32.2usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A BH TGT (tes	0.00	1.07	5,605.0	-7,056.1	-316.0	1,534,713.47	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 32.2usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A VP (P5)	0.00	1.07	4,985.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 16.8usft at 4991.2usft MD (4983.7 TVD, 121.7 N, -180.8 E)									
- Point									
26L-3501A VP	0.00	1.07	4,966.1	138.4	-181.2	1,541,909.24	3,459,458.75	40.809119	-103.840186
- actual wellpath misses target center by 15.8usft at 4972.3usft MD (4964.8 TVD, 122.7 N, -181.0 E)									
- Point									
26L-3501A PBHL	0.00	1.07	5,587.0	-7,556.0	-308.2	1,534,213.84	3,459,475.88	40.788000	-103.840644
- actual wellpath misses target center by 529.5usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									
26L-3501A WP2 TGT (te	0.00	1.07	5,610.0	-2,492.2	-230.5	1,539,278.17	3,459,458.76	40.801899	-103.840364
- actual wellpath misses target center by 17.9usft at 7932.7usft MD (5612.1 TVD, -2491.8 N, -248.3 E)									
- Point									
26L-3501A WP1 TGT (te	0.00	1.07	5,600.0	-1,492.0	-211.8	1,540,278.54	3,459,458.72	40.804644	-103.840296
- actual wellpath misses target center by 3.3usft at 6932.0usft MD (5599.6 TVD, -1492.2 N, -208.5 E)									
- Point									
26L-3501A WP3 TGT (te	0.00	1.07	5,615.0	-3,492.3	-249.2	1,538,277.89	3,459,458.79	40.799154	-103.840431
- actual wellpath misses target center by 14.3usft at 8933.7usft MD (5612.3 TVD, -3492.5 N, -263.3 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
5,958.4	5,604.3	7" - 1800' FSL, 401' FWL	0	0

Checked By: _____ Approved By: _____ Date: _____

Whiting Petroleum Corporation

Weld County, CO
S26-T10N-R58W
Razor #26L-3501A

HZ

Design: FINAL

Survey Report - Geographic

14 August, 2014

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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 #26L-3501A

Well Position	**+N/-S**	0.0 usft	**Northing:**	1,541,774.25 usft	**Latitude:**	40.808739
	+E/-W	0.0 usft	**Easting:**	3,459,642.55 usft	**Longitude:**	-103.839531
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	5/28/2014	7.99	67.42	53,127

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	240.44

Survey Program **Date** 8/14/2014

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
418.0	12,470.0	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	1,541,774.25	3,459,642.55	40.808739	-103.839531
418.0	0.75	169.79	418.0	-2.7	0.5	1,541,771.57	3,459,643.08	40.808732	-103.839530
785.0	1.10	214.63	784.9	-8.0	-1.1	1,541,766.28	3,459,641.61	40.808717	-103.839535
876.0	1.67	224.11	875.9	-9.6	-2.5	1,541,764.58	3,459,640.22	40.808713	-103.839540
968.0	1.54	255.92	967.9	-10.9	-4.6	1,541,763.28	3,459,638.11	40.808709	-103.839548
1,059.0	2.02	276.84	1,058.8	-11.0	-7.4	1,541,763.12	3,459,635.33	40.808709	-103.839558
1,151.0	2.07	303.73	1,150.8	-9.9	-10.4	1,541,764.18	3,459,632.32	40.808712	-103.839569
1,242.0	2.68	309.62	1,241.7	-7.6	-13.4	1,541,766.39	3,459,629.27	40.808718	-103.839580
1,490.0	2.24	325.06	1,489.5	0.1	-20.7	1,541,773.92	3,459,621.89	40.808739	-103.839606
1,582.0	2.46	323.38	1,581.4	3.1	-22.9	1,541,776.94	3,459,619.63	40.808748	-103.839614
1,673.0	4.00	316.00	1,672.3	7.0	-26.2	1,541,780.73	3,459,616.18	40.808758	-103.839626
1,765.0	2.51	314.16	1,764.1	10.7	-29.9	1,541,784.37	3,459,612.44	40.808768	-103.839639

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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
1,856.0	4.62	318.06	1,854.9	14.8	-33.8	1,541,788.41	3,459,608.49	40.808780	-103.839653
1,948.0	4.31	316.71	1,946.6	20.1	-38.6	1,541,793.59	3,459,603.54	40.808794	-103.839671
2,039.0	4.53	312.49	2,037.4	25.0	-43.6	1,541,798.41	3,459,598.45	40.808808	-103.839689
2,131.0	3.82	306.77	2,129.1	29.3	-48.8	1,541,802.60	3,459,593.24	40.808819	-103.839707
2,223.0	5.23	316.36	2,220.8	34.1	-54.1	1,541,807.37	3,459,587.80	40.808833	-103.839727
2,313.0	5.27	312.53	2,310.5	39.9	-60.0	1,541,813.02	3,459,581.82	40.808849	-103.839748
2,405.0	4.70	311.56	2,402.1	45.3	-65.9	1,541,818.27	3,459,575.79	40.808863	-103.839769
2,496.0	4.75	307.96	2,492.8	50.1	-71.7	1,541,822.95	3,459,569.94	40.808876	-103.839790
2,588.0	4.66	307.59	2,584.5	54.7	-77.7	1,541,827.46	3,459,563.89	40.808889	-103.839812
2,679.0	4.26	307.14	2,675.2	59.0	-83.3	1,541,831.65	3,459,558.18	40.808901	-103.839832
2,771.0	4.40	308.25	2,767.0	63.2	-88.8	1,541,835.79	3,459,552.61	40.808913	-103.839852
2,863.0	4.22	308.12	2,858.7	67.5	-94.2	1,541,839.97	3,459,547.10	40.808924	-103.839872
2,955.0	3.91	312.04	2,950.5	71.7	-99.2	1,541,844.06	3,459,542.03	40.808936	-103.839890
3,047.0	3.47	316.50	3,042.3	75.8	-103.4	1,541,848.10	3,459,537.70	40.808947	-103.839905
3,139.0	3.69	318.55	3,134.1	80.0	-107.3	1,541,852.27	3,459,533.75	40.808959	-103.839919
3,231.0	3.82	321.05	3,225.9	84.6	-111.2	1,541,856.80	3,459,529.78	40.808971	-103.839933
3,322.0	3.78	315.72	3,316.7	89.1	-115.2	1,541,861.23	3,459,525.69	40.808984	-103.839947
3,414.0	3.82	308.90	3,408.5	93.2	-119.7	1,541,865.24	3,459,521.11	40.808995	-103.839964
3,505.0	3.69	306.43	3,499.3	96.9	-124.4	1,541,868.79	3,459,516.33	40.809005	-103.839981
3,596.0	3.56	302.92	3,590.1	100.2	-129.2	1,541,871.98	3,459,511.54	40.809014	-103.839998
3,688.0	3.25	301.39	3,682.0	103.1	-133.8	1,541,874.80	3,459,506.87	40.809022	-103.840015
3,779.0	2.55	287.93	3,772.8	105.0	-137.9	1,541,876.69	3,459,502.70	40.809027	-103.840029
3,871.0	2.64	273.32	3,864.7	105.8	-142.0	1,541,877.36	3,459,498.63	40.809029	-103.840044
3,962.0	3.78	271.07	3,955.6	106.0	-147.1	1,541,877.45	3,459,493.53	40.809030	-103.840062
4,054.0	3.34	286.52	4,047.4	106.8	-152.7	1,541,878.16	3,459,487.92	40.809032	-103.840083
4,145.0	3.69	308.32	4,138.3	109.4	-157.5	1,541,880.64	3,459,483.03	40.809039	-103.840100
4,237.0	2.15	298.18	4,230.1	112.0	-161.3	1,541,883.22	3,459,479.14	40.809046	-103.840114
4,329.0	2.55	282.79	4,322.1	113.3	-164.9	1,541,884.42	3,459,475.60	40.809050	-103.840127
4,421.0	4.13	291.24	4,413.9	114.9	-169.9	1,541,885.98	3,459,470.48	40.809054	-103.840145
4,512.0	3.03	282.20	4,504.7	116.6	-175.3	1,541,887.57	3,459,465.05	40.809059	-103.840165
4,603.0	2.42	276.55	4,595.6	117.4	-179.6	1,541,888.22	3,459,460.77	40.809061	-103.840180
4,694.0	1.36	345.08	4,686.6	118.6	-181.8	1,541,889.44	3,459,458.56	40.809065	-103.840188
4,786.0	1.54	325.19	4,778.6	120.7	-182.8	1,541,891.49	3,459,457.54	40.809070	-103.840192
4,877.0	2.15	32.97	4,869.5	123.1	-182.6	1,541,893.93	3,459,457.72	40.809077	-103.840191
4,969.0	2.29	163.04	4,961.5	122.8	-181.1	1,541,893.65	3,459,459.21	40.809076	-103.840185
5,061.0	7.52	175.95	5,053.1	115.0	-180.1	1,541,885.90	3,459,460.31	40.809055	-103.840182
5,152.0	21.93	175.55	5,140.9	92.0	-178.4	1,541,862.93	3,459,462.49	40.808992	-103.840176
5,244.0	36.35	182.14	5,221.1	47.4	-178.0	1,541,818.33	3,459,463.64	40.808869	-103.840174
5,334.0	35.52	182.54	5,293.9	-5.4	-180.2	1,541,765.52	3,459,462.48	40.808724	-103.840182
5,426.0	40.62	178.88	5,366.3	-62.0	-180.8	1,541,708.83	3,459,462.94	40.808569	-103.840184
5,456.0	42.07	179.94	5,388.9	-81.9	-180.6	1,541,689.03	3,459,463.51	40.808514	-103.840184
5,487.0	44.00	178.92	5,411.5	-103.0	-180.4	1,541,667.88	3,459,464.12	40.808456	-103.840183
5,517.0	46.73	178.88	5,432.6	-124.4	-180.0	1,541,646.55	3,459,464.93	40.808398	-103.840181
5,548.0	47.91	179.21	5,453.6	-147.1	-179.6	1,541,623.78	3,459,465.74	40.808335	-103.840180
5,578.0	50.33	180.52	5,473.2	-169.8	-179.5	1,541,601.10	3,459,466.21	40.808273	-103.840180
5,609.0	53.54	182.50	5,492.4	-194.2	-180.2	1,541,576.70	3,459,466.02	40.808206	-103.840182
5,640.0	55.82	183.41	5,510.3	-219.5	-181.5	1,541,551.42	3,459,465.18	40.808137	-103.840187
5,670.0	58.86	183.11	5,526.5	-244.7	-182.9	1,541,526.19	3,459,464.22	40.808067	-103.840192
5,701.0	61.36	182.51	5,541.9	-271.5	-184.3	1,541,499.32	3,459,463.41	40.807994	-103.840197
5,731.0	65.27	181.78	5,555.4	-298.3	-185.3	1,541,472.53	3,459,462.91	40.807920	-103.840200
5,762.0	70.29	180.78	5,567.1	-327.0	-185.9	1,541,443.84	3,459,462.81	40.807842	-103.840203
5,792.0	73.93	179.82	5,576.3	-355.5	-186.0	1,541,415.30	3,459,463.20	40.807763	-103.840203
5,822.0	76.66	179.76	5,583.9	-384.5	-185.9	1,541,386.29	3,459,463.85	40.807684	-103.840203
5,853.0	78.11	179.87	5,590.7	-414.8	-185.8	1,541,356.05	3,459,464.51	40.807601	-103.840203
5,883.0	79.65	179.42	5,596.5	-444.2	-185.7	1,541,326.62	3,459,465.24	40.807520	-103.840202

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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
5,914.0	83.52	179.33	5,601.0	-474.9	-185.3	1,541,295.98	3,459,466.15	40.807436	-103.840201
5,926.0	84.62	179.35	5,602.3	-486.8	-185.2	1,541,284.05	3,459,466.51	40.807403	-103.840200
5,985.0	91.12	179.33	5,604.5	-545.7	-184.5	1,541,225.14	3,459,468.29	40.807241	-103.840198
6,079.0	90.24	180.15	5,603.3	-639.7	-184.1	1,541,131.18	3,459,470.48	40.806983	-103.840196
6,174.0	89.98	181.53	5,603.2	-734.7	-185.5	1,541,036.18	3,459,470.87	40.806722	-103.840201
6,269.0	90.11	182.55	5,603.1	-829.6	-188.9	1,540,941.21	3,459,469.26	40.806462	-103.840213
6,363.0	90.15	180.90	5,602.9	-923.6	-191.7	1,540,847.22	3,459,468.19	40.806204	-103.840224
6,458.0	90.11	180.25	5,602.7	-1,018.6	-192.6	1,540,752.22	3,459,469.02	40.805943	-103.840227
6,553.0	90.15	180.55	5,602.4	-1,113.6	-193.3	1,540,657.23	3,459,470.14	40.805683	-103.840229
6,648.0	89.58	180.39	5,602.7	-1,208.6	-194.1	1,540,562.24	3,459,471.13	40.805422	-103.840232
6,743.0	90.64	183.64	5,602.5	-1,303.5	-197.4	1,540,467.26	3,459,469.57	40.805161	-103.840244
6,838.0	90.99	183.55	5,601.1	-1,398.3	-203.4	1,540,372.37	3,459,465.39	40.804901	-103.840266
6,933.0	90.90	182.69	5,599.6	-1,493.2	-208.5	1,540,277.44	3,459,462.00	40.804641	-103.840285
7,027.0	89.89	183.72	5,598.9	-1,587.0	-213.8	1,540,183.51	3,459,458.50	40.804383	-103.840304
7,122.0	90.02	184.61	5,599.0	-1,681.8	-220.7	1,540,088.65	3,459,453.38	40.804123	-103.840328
7,217.0	88.92	182.60	5,599.9	-1,776.6	-226.7	1,539,993.75	3,459,449.18	40.803863	-103.840350
7,312.0	88.18	182.25	5,602.3	-1,871.4	-230.7	1,539,898.81	3,459,446.94	40.803602	-103.840365
7,406.0	87.96	182.00	5,605.4	-1,965.3	-234.2	1,539,804.88	3,459,445.22	40.803345	-103.840377
7,499.0	89.71	181.35	5,607.3	-2,058.3	-236.9	1,539,711.91	3,459,444.24	40.803090	-103.840387
7,592.0	89.23	180.42	5,608.2	-2,151.2	-238.3	1,539,618.92	3,459,444.54	40.802834	-103.840392
7,684.0	89.32	181.19	5,609.4	-2,243.2	-239.6	1,539,526.92	3,459,444.97	40.802582	-103.840397
7,777.0	89.54	182.68	5,610.3	-2,336.2	-242.8	1,539,433.93	3,459,443.57	40.802327	-103.840408
7,869.0	89.49	182.19	5,611.1	-2,428.1	-246.7	1,539,341.96	3,459,441.39	40.802075	-103.840422
7,960.0	88.35	180.09	5,612.8	-2,519.1	-248.5	1,539,250.98	3,459,441.28	40.801825	-103.840429
8,052.0	90.02	180.52	5,614.1	-2,611.0	-249.0	1,539,159.00	3,459,442.51	40.801572	-103.840431
8,143.0	89.89	180.08	5,614.2	-2,702.0	-249.4	1,539,068.01	3,459,443.74	40.801323	-103.840432
8,235.0	90.02	179.90	5,614.2	-2,794.0	-249.4	1,538,976.03	3,459,445.48	40.801070	-103.840432
8,326.0	90.46	179.68	5,613.8	-2,885.0	-249.1	1,538,885.05	3,459,447.52	40.800820	-103.840431
8,417.0	89.36	182.34	5,614.0	-2,976.0	-250.7	1,538,794.06	3,459,447.62	40.800571	-103.840437
8,509.0	89.32	182.66	5,615.0	-3,067.9	-254.7	1,538,702.09	3,459,445.33	40.800318	-103.840451
8,600.0	89.01	182.24	5,616.4	-3,158.8	-258.6	1,538,611.13	3,459,443.14	40.800069	-103.840465
8,692.0	90.77	180.94	5,616.5	-3,250.8	-261.2	1,538,519.14	3,459,442.31	40.799817	-103.840475
8,783.0	91.38	181.49	5,614.8	-3,341.8	-263.1	1,538,428.16	3,459,442.08	40.799567	-103.840481
8,875.0	90.77	179.59	5,613.1	-3,433.7	-263.9	1,538,336.18	3,459,442.94	40.799314	-103.840485
8,966.0	90.73	178.85	5,611.9	-3,524.7	-262.7	1,538,245.24	3,459,445.88	40.799065	-103.840480
9,057.0	89.76	180.18	5,611.5	-3,615.7	-261.9	1,538,154.28	3,459,448.35	40.798815	-103.840477
9,150.0	89.05	178.06	5,612.5	-3,708.7	-260.5	1,538,061.34	3,459,451.52	40.798560	-103.840472
9,241.0	89.45	180.88	5,613.7	-3,799.7	-259.7	1,537,970.39	3,459,454.07	40.798310	-103.840469
9,333.0	90.11	182.72	5,614.0	-3,891.6	-262.6	1,537,878.41	3,459,452.90	40.798058	-103.840480
9,425.0	92.22	182.81	5,612.2	-3,983.5	-267.0	1,537,786.47	3,459,450.19	40.797806	-103.840496
9,517.0	92.26	181.92	5,608.6	-4,075.3	-270.8	1,537,694.56	3,459,448.11	40.797553	-103.840509
9,609.0	90.07	180.39	5,606.7	-4,167.3	-272.6	1,537,602.59	3,459,447.98	40.797301	-103.840516
9,701.0	89.58	178.76	5,607.0	-4,259.3	-272.0	1,537,510.63	3,459,450.39	40.797049	-103.840514
9,792.0	89.98	180.26	5,607.3	-4,350.3	-271.2	1,537,419.66	3,459,452.87	40.796799	-103.840511
9,883.0	91.91	181.05	5,605.8	-4,441.2	-272.2	1,537,328.68	3,459,453.53	40.796549	-103.840514
9,974.0	92.18	180.57	5,602.6	-4,532.2	-273.5	1,537,237.74	3,459,453.95	40.796300	-103.840519
10,066.0	92.62	180.44	5,598.7	-4,624.1	-274.3	1,537,145.83	3,459,454.86	40.796047	-103.840522
10,157.0	91.60	179.41	5,595.4	-4,715.0	-274.2	1,537,054.91	3,459,456.68	40.795798	-103.840522
10,249.0	90.02	179.96	5,594.1	-4,807.0	-273.7	1,536,962.95	3,459,458.91	40.795545	-103.840520
10,340.0	89.67	179.38	5,594.3	-4,898.0	-273.2	1,536,871.98	3,459,461.14	40.795295	-103.840518
10,432.0	89.89	179.47	5,594.7	-4,990.0	-272.2	1,536,780.02	3,459,463.78	40.795043	-103.840515
10,524.0	89.67	179.10	5,595.0	-5,082.0	-271.1	1,536,688.06	3,459,466.65	40.794790	-103.840510
10,616.0	89.80	181.60	5,595.5	-5,174.0	-271.7	1,536,596.08	3,459,467.81	40.794538	-103.840512
10,707.0	90.11	181.91	5,595.5	-5,264.9	-274.4	1,536,505.09	3,459,466.73	40.794288	-103.840522
10,798.0	90.20	181.59	5,595.3	-5,355.9	-277.2	1,536,414.09	3,459,465.65	40.794039	-103.840532

Cathedral Energy Services

Survey Report - Geographic

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #26L-3501A
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 #26L-3501A	**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
10,889.0	90.33	181.15	5,594.9	-5,446.9	-279.4	1,536,323.10	3,459,465.18	40.793789	-103.840540
10,981.0	88.79	182.69	5,595.6	-5,538.8	-282.5	1,536,231.11	3,459,463.82	40.793537	-103.840551
11,073.0	89.32	183.33	5,597.1	-5,630.7	-287.3	1,536,139.18	3,459,460.71	40.793284	-103.840569
11,164.0	90.02	183.27	5,597.6	-5,721.5	-292.6	1,536,048.25	3,459,457.18	40.793035	-103.840588
11,256.0	90.77	183.78	5,597.0	-5,813.3	-298.2	1,535,956.34	3,459,453.24	40.792783	-103.840608
11,347.0	89.23	182.07	5,597.0	-5,904.2	-302.9	1,535,865.39	3,459,450.30	40.792534	-103.840625
11,439.0	89.01	181.12	5,598.4	-5,996.2	-305.4	1,535,773.41	3,459,449.46	40.792281	-103.840634
11,531.0	89.19	180.68	5,599.8	-6,088.2	-306.9	1,535,681.42	3,459,449.74	40.792029	-103.840639
11,621.0	88.92	180.21	5,601.3	-6,178.1	-307.6	1,535,591.44	3,459,450.73	40.791782	-103.840642
11,712.0	88.79	179.39	5,603.1	-6,269.1	-307.2	1,535,500.48	3,459,452.75	40.791532	-103.840641
11,804.0	89.14	179.91	5,604.8	-6,361.1	-306.7	1,535,408.52	3,459,455.03	40.791280	-103.840639
11,896.0	89.01	179.63	5,606.3	-6,453.1	-306.3	1,535,316.56	3,459,457.12	40.791027	-103.840637
11,987.0	89.48	181.39	5,607.5	-6,544.1	-307.1	1,535,225.57	3,459,458.02	40.790777	-103.840640
12,079.0	90.07	181.15	5,607.9	-6,636.0	-309.2	1,535,133.58	3,459,457.70	40.790525	-103.840648
12,170.0	89.54	179.82	5,608.2	-6,727.0	-309.9	1,535,042.58	3,459,458.63	40.790275	-103.840651
12,262.0	90.60	179.10	5,608.1	-6,819.0	-309.1	1,534,950.62	3,459,461.22	40.790023	-103.840647
12,357.0	90.30	177.80	5,607.3	-6,914.0	-306.5	1,534,855.73	3,459,465.57	40.789762	-103.840638
12,420.0	89.80	178.00	5,607.2	-6,977.0	-304.2	1,534,792.82	3,459,469.06	40.789589	-103.840630
Last CES Survey @ 12,420' MD									
12,470.0	89.80	178.00	5,607.4	-7,026.9	-302.4	1,534,742.90	3,459,471.74	40.789452	-103.840623
PTB @ 12,470' - TD - 629' FSL, 179' FWL									

Design 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
26L-3501A BH TGT (P5)	0.00	1.07	5,606.0	-7,056.1	-316.0	1,534,713.48	3,459,458.77	40.789372	-103.840672
- actual wellpath misses target center by 32.2usft at 12470.0usft MD (5607.4 TVD, -7026.9 N, -302.4 E)									
- Point									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
5,958.4	5,604.3	7" - 1800' FSL, 401' FWL	0	0

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
12,420.0	5,607.2	-6,977.0	-304.2	Last CES Survey @ 12,420' MD
12,470.0	5,607.4	-7,026.9	-302.4	PTB @ 12,470'
12,470.0	5,607.4	-7,026.9	-302.4	TD - 629' FSL, 179' FWL

Checked By: _____ Approved By: _____ Date: _____