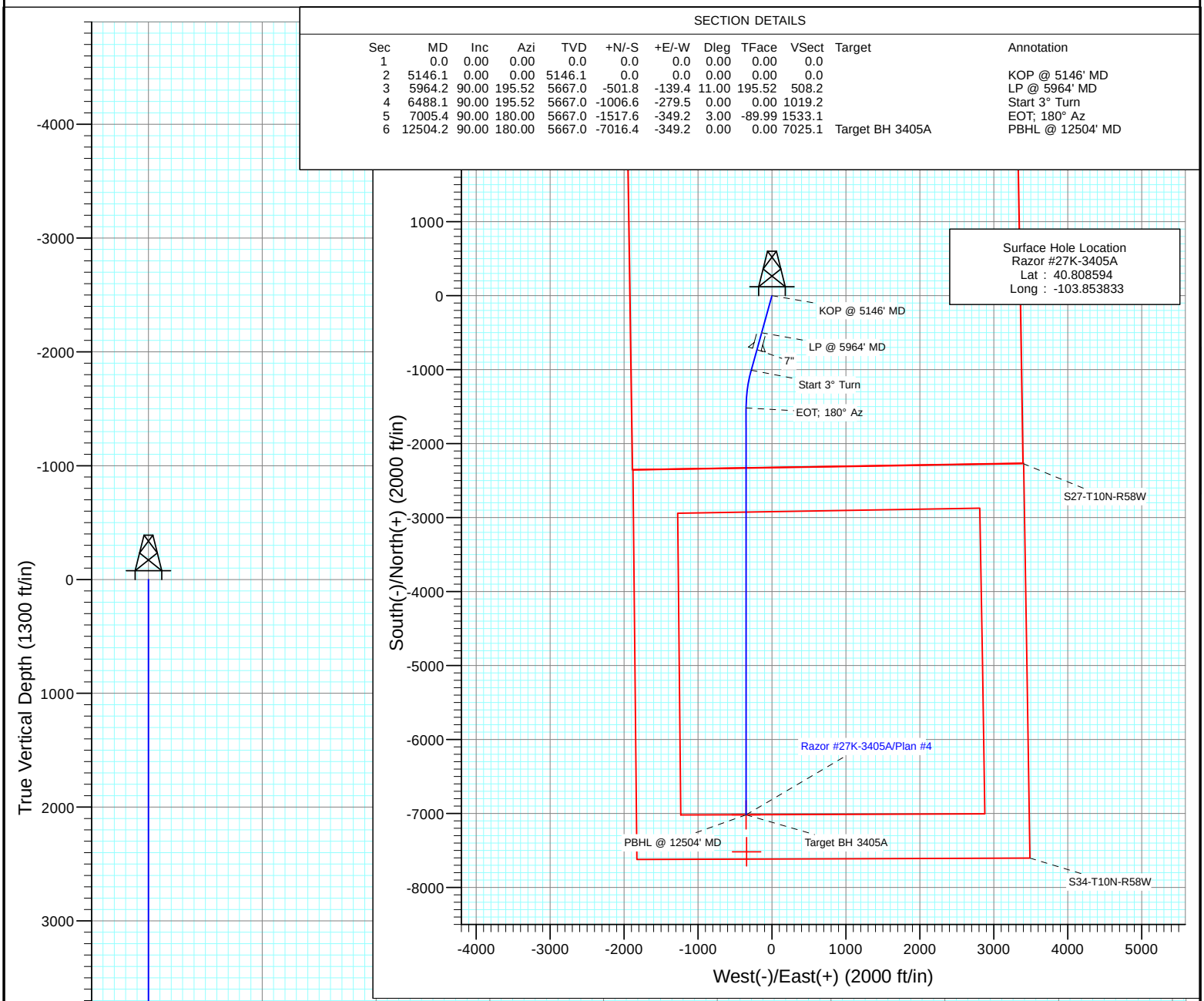
WHITING PETROLEUM CORPORATION

Project: Weld County, CO
Site: S27-T10N-R58W
Well: Razor #27K-3405A
Wellbore: HZ
Design: Plan #4

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	Annotation
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0		
2	5146.1	0.00	0.00	5146.1	0.0	0.0	0.00	0.00	0.0		KOP @ 5146' MD
3	5964.2	90.00	195.52	5667.0	-501.8	-139.4	11.00	195.52	508.2		LP @ 5964' MD
4	6488.1	90.00	195.52	5667.0	-1006.6	-279.5	0.00	0.00	1019.2		Start 3° Turn
5	7005.4	90.00	180.00	5667.0	-1517.6	-349.2	3.00	-89.99	1533.1		EOT; 180° Az
6	12504.2	90.00	180.00	5667.0	-7016.4	-349.2	0.00	0.00	7025.1	Target BH 3405A	PBHL @ 12504' MD



Plan #4
Razor #27K-3405A
WELL @ 4766.5ft (Original Well Elev)
GL @ 4750.0
North American Datum 1983
Well Razor #27K-3405A, True North

Type	Target	Azimuth	Origin Type	N/S	E/W	From TVD
TD	No Target (Freehand)	182.85	Slot	0.0	0.0	0.0

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
PBHL 3405A	5667.0	-7516.3	-343.9	40.787964	-103.855075
Target BH 3405A	5667.0	-7016.4	-349.2	40.789336	-103.855094

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site:	S27-T10N-R58W	**North Reference:**	True
Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #4		

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:**	40.808594
From:	Lat/Long	**Easting:**	3,455,691.89 ft	**Longitude:**	-103.853833
Position Uncertainty:	0.0 ft	**Slot Radius:**	13.200 in	**Grid Convergence:**	1.06 °

Well Razor #27K-3405A

Well Position	**+N/-S**	0.0 ft	**Northing:**	1,541,650.71 ft	**Latitude:**	40.808594
	+E/-W	0.0 ft	**Easting:**	3,455,691.89 ft	**Longitude:**	-103.853833
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,750.0 ft

Wellbore HZ

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/1/2013	8.15	67.46	53,248

Design Plan #4

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	182.85

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,146.1	0.00	0.00	5,146.1	0.0	0.0	0.00	0.00	0.00	0.00	
5,964.2	90.00	195.52	5,667.0	-501.8	-139.4	11.00	11.00	0.00	195.52	
6,488.1	90.00	195.52	5,667.0	-1,006.6	-279.5	0.00	0.00	0.00	0.00	
7,005.4	90.00	180.00	5,667.0	-1,517.6	-349.2	3.00	0.00	-3.00	-89.99	
12,504.2	90.00	180.00	5,667.0	-7,016.4	-349.2	0.00	0.00	0.00	0.00	Target BH 3405A

Database:	USA EDM 5000 Multi Users DB	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Company:	Whiting Petroleum Corporation	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Project:	Weld County, CO	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site:	S27-T10N-R58W	**North Reference:**	True
Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	HZ		
Design:	Plan #4		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
5,146.1	0.00	0.00	5,146.1	0.0	0.0	0.0	0.00	0.00	KOP @ 5146' MD
5,734.3	64.70	195.52	5,617.0	-287.4	-79.8	291.0	11.00	11.00	Niobrara A
5,964.2	89.99	195.52	5,667.0	-501.8	-139.4	508.1	11.00	11.00	LP @ 5964' MD
6,200.0	90.00	195.52	5,667.0	-729.0	-202.5	738.2	0.00	0.00	7"
6,488.1	90.00	195.52	5,667.0	-1,006.6	-279.5	1,019.2	0.00	0.00	Start 3° Turn
7,005.4	90.00	180.00	5,667.0	-1,517.6	-349.2	1,533.1	3.00	0.00	EOT; 180° Az
12,504.2	90.00	180.00	5,667.0	-7,016.4	-349.2	7,025.1	0.00	0.00	PBHL @ 12504' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL 3405A	0.00	1.06	5,667.0	-7,516.3	-343.9	1,534,129.34	3,455,487.55	40.787964	-103.855075
- plan misses target center by 499.9ft at 12504.2ft MD (5667.0 TVD, -7016.4 N, -349.2 E)									
- Point									
Target BH 3405A	0.00	1.06	5,667.0	-7,016.4	-349.2	1,534,629.03	3,455,473.01	40.789336	-103.855094
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
6,200.0	5,667.0	7"	7.000	7.500

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,734.3	5,617.0	Niobrara A		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
5,146.1	5,146.1	0.0	0.0	KOP @ 5146' MD
5,964.2	5,667.0	-501.8	-139.4	LP @ 5964' MD
6,488.1	5,667.0	-1,006.6	-279.5	Start 3° Turn
7,005.4	5,667.0	-1,517.6	-349.2	EOT; 180° Az
12,504.2	5,667.0	-7,016.4	-349.2	PBHL @ 12504' MD

Whiting Petroleum Corporation

Weld County, CO
S27-T10N-R58W
Razor #27K-3405A
HZ
Plan #3

Anticollision Report

11 June, 2013

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Plan #3

Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	Stations	**Error Model:**	Systematic Ellipse
Depth Range:	Unlimited	**Scan Method:**	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	**Error Surface:**	Elliptical Conic
Warning Levels Evaluated at:	2.00 **Sigma**		

Survey Tool Program **Date** 6/11/2013

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	12,504.2	Plan #3 (HZ)	ISCWSA MWD	MWD - ISCWSA

Summary

Site Name Offset Well - Wellbore - Design	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
S27-T10N-R58W						
Razor #27K-3406B - HZ - Plan #4	5,425.1	5,402.8	61.4	37.8	2.606	CC, ES
Razor #27K-3406B - HZ - Plan #4	12,504.2	12,471.8	341.3	81.8	1.315	Level 3, SF
Razor #27K-3407A - HZ - Plan #3	5,130.4	5,131.4	65.3	42.5	2.865	CC
Razor #27K-3407A - HZ - Plan #3	5,150.0	5,150.9	65.3	42.5	2.855	ES, SF
Razor #27K-3408B - HZ - Plan #3	1,000.0	999.0	123.4	119.2	29.173	CC, ES
Razor #27K-3408B - HZ - Plan #3	5,500.0	5,407.7	252.3	228.9	10.779	SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3406B - HZ - Plan #4

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	156.20	-74.7	32.9	81.7				
100.0	100.0	98.0	98.0	0.1	0.1	156.20	-74.7	32.9	81.7	81.5	0.19	439.444	
200.0	200.0	198.0	198.0	0.3	0.3	156.20	-74.7	32.9	81.7	81.0	0.63	129.047	
300.0	300.0	298.0	298.0	0.5	0.5	156.20	-74.7	32.9	81.7	80.6	1.08	75.445	
400.0	400.0	398.0	398.0	0.8	0.8	156.20	-74.7	32.9	81.7	80.1	1.53	53.304	
500.0	500.0	498.0	498.0	1.0	1.0	156.20	-74.7	32.9	81.7	79.7	1.98	41.210	
600.0	600.0	598.0	598.0	1.2	1.2	156.20	-74.7	32.9	81.7	79.2	2.43	33.589	
700.0	700.0	698.0	698.0	1.4	1.4	156.20	-74.7	32.9	81.7	78.8	2.88	28.347	
800.0	800.0	798.0	798.0	1.7	1.7	156.20	-74.7	32.9	81.7	78.3	3.33	24.520	
900.0	900.0	898.0	898.0	1.9	1.9	156.20	-74.7	32.9	81.7	77.9	3.78	21.604	
1,000.0	1,000.0	998.0	998.0	2.1	2.1	156.20	-74.7	32.9	81.7	77.4	4.23	19.307	
1,100.0	1,100.0	1,098.0	1,098.0	2.3	2.3	156.20	-74.7	32.9	81.7	77.0	4.68	17.452	
1,200.0	1,200.0	1,198.0	1,198.0	2.6	2.6	156.20	-74.7	32.9	81.7	76.5	5.13	15.922	
1,300.0	1,300.0	1,298.0	1,298.0	2.8	2.8	156.20	-74.7	32.9	81.7	76.1	5.58	14.639	
1,400.0	1,400.0	1,398.0	1,398.0	3.0	3.0	156.20	-74.7	32.9	81.7	75.6	6.03	13.547	
1,500.0	1,500.0	1,498.0	1,498.0	3.2	3.2	156.20	-74.7	32.9	81.7	75.2	6.48	12.607	
1,600.0	1,600.0	1,598.0	1,598.0	3.5	3.5	156.20	-74.7	32.9	81.7	74.7	6.93	11.789	
1,700.0	1,700.0	1,698.0	1,698.0	3.7	3.7	156.20	-74.7	32.9	81.7	74.3	7.38	11.070	
1,800.0	1,800.0	1,798.0	1,798.0	3.9	3.9	156.20	-74.7	32.9	81.7	73.8	7.83	10.434	
1,900.0	1,900.0	1,898.0	1,898.0	4.1	4.1	156.20	-74.7	32.9	81.7	73.4	8.27	9.867	
2,000.0	2,000.0	1,998.0	1,998.0	4.4	4.4	156.20	-74.7	32.9	81.7	72.9	8.72	9.359	
2,100.0	2,100.0	2,098.0	2,098.0	4.6	4.6	156.20	-74.7	32.9	81.7	72.5	9.17	8.900	
2,200.0	2,200.0	2,198.0	2,198.0	4.8	4.8	156.20	-74.7	32.9	81.7	72.0	9.62	8.485	
2,300.0	2,300.0	2,298.0	2,298.0	5.0	5.0	156.20	-74.7	32.9	81.7	71.6	10.07	8.106	
2,400.0	2,400.0	2,398.0	2,398.0	5.3	5.3	156.20	-74.7	32.9	81.7	71.1	10.52	7.760	
2,500.0	2,500.0	2,498.0	2,498.0	5.5	5.5	156.20	-74.7	32.9	81.7	70.7	10.97	7.442	
2,600.0	2,600.0	2,598.0	2,598.0	5.7	5.7	156.20	-74.7	32.9	81.7	70.2	11.42	7.149	
2,700.0	2,700.0	2,698.0	2,698.0	5.9	5.9	156.20	-74.7	32.9	81.7	69.8	11.87	6.878	
2,800.0	2,800.0	2,798.0	2,798.0	6.2	6.2	156.20	-74.7	32.9	81.7	69.3	12.32	6.627	
2,900.0	2,900.0	2,898.0	2,898.0	6.4	6.4	156.20	-74.7	32.9	81.7	68.9	12.77	6.394	
3,000.0	3,000.0	2,998.0	2,998.0	6.6	6.6	156.20	-74.7	32.9	81.7	68.4	13.22	6.176	
3,100.0	3,100.0	3,098.0	3,098.0	6.8	6.8	156.20	-74.7	32.9	81.7	68.0	13.67	5.973	
3,200.0	3,200.0	3,198.0	3,198.0	7.1	7.1	156.20	-74.7	32.9	81.7	67.5	14.12	5.783	
3,300.0	3,300.0	3,298.0	3,298.0	7.3	7.3	156.20	-74.7	32.9	81.7	67.1	14.57	5.605	
3,400.0	3,400.0	3,398.0	3,398.0	7.5	7.5	156.20	-74.7	32.9	81.7	66.6	15.02	5.437	
3,500.0	3,500.0	3,498.0	3,498.0	7.7	7.7	156.20	-74.7	32.9	81.7	66.2	15.47	5.279	
3,600.0	3,600.0	3,598.0	3,598.0	8.0	8.0	156.20	-74.7	32.9	81.7	65.7	15.92	5.130	
3,700.0	3,700.0	3,698.0	3,698.0	8.2	8.2	156.20	-74.7	32.9	81.7	65.3	16.37	4.989	
3,800.0	3,800.0	3,798.0	3,798.0	8.4	8.4	156.20	-74.7	32.9	81.7	64.8	16.82	4.856	
3,900.0	3,900.0	3,898.0	3,898.0	8.6	8.6	156.20	-74.7	32.9	81.7	64.4	17.27	4.729	
4,000.0	4,000.0	3,998.0	3,998.0	8.9	8.9	156.20	-74.7	32.9	81.7	63.9	17.71	4.609	
4,100.0	4,100.0	4,098.0	4,098.0	9.1	9.1	156.20	-74.7	32.9	81.7	63.5	18.16	4.495	
4,200.0	4,200.0	4,198.0	4,198.0	9.3	9.3	156.20	-74.7	32.9	81.7	63.0	18.61	4.386	
4,300.0	4,300.0	4,298.0	4,298.0	9.5	9.5	156.20	-74.7	32.9	81.7	62.6	19.06	4.283	
4,400.0	4,400.0	4,398.0	4,398.0	9.8	9.8	156.20	-74.7	32.9	81.7	62.1	19.51	4.184	
4,500.0	4,500.0	4,498.0	4,498.0	10.0	10.0	156.20	-74.7	32.9	81.7	61.7	19.96	4.090	
4,600.0	4,600.0	4,598.0	4,598.0	10.2	10.2	156.20	-74.7	32.9	81.7	61.2	20.41	4.000	
4,700.0	4,700.0	4,698.0	4,698.0	10.4	10.4	156.20	-74.7	32.9	81.7	60.8	20.86	3.914	
4,800.0	4,800.0	4,798.0	4,798.0	10.7	10.7	156.20	-74.7	32.9	81.7	60.3	21.31	3.831	
4,900.0	4,900.0	4,898.0	4,898.0	10.9	10.9	156.20	-74.7	32.9	81.7	59.9	21.76	3.752	
5,000.0	5,000.0	4,998.0	4,998.0	11.1	11.1	156.20	-74.7	32.9	81.7	59.4	22.21	3.676	
5,100.0	5,100.0	5,098.0	5,098.0	11.3	11.3	156.20	-74.7	32.9	81.7	59.0	22.66	3.603	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3406B - HZ - Plan #4

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,146.1	5,146.1	5,144.1	5,144.1	11.4	11.4	156.20	-74.7	32.9	81.7	58.8	22.87	3.571	
5,150.0	5,150.0	5,148.0	5,148.0	11.4	11.4	-39.32	-74.7	32.9	81.6	58.8	22.88	3.568	
5,200.0	5,199.9	5,197.9	5,197.9	11.5	11.6	-40.74	-74.7	32.9	79.5	56.5	23.02	3.455	
5,250.0	5,249.3	5,245.7	5,245.7	11.6	11.7	-44.72	-74.9	32.9	74.1	51.1	23.06	3.214	
5,300.0	5,297.8	5,289.8	5,289.7	11.7	11.7	-50.29	-77.9	32.8	68.5	45.5	23.06	2.973	
5,350.0	5,344.8	5,334.5	5,333.9	11.8	11.8	-57.51	-84.7	32.5	64.2	41.1	23.13	2.775	
5,400.0	5,390.1	5,379.8	5,377.9	11.9	11.9	-66.24	-95.5	32.1	61.7	38.4	23.37	2.641	
5,425.1	5,412.0	5,402.8	5,399.8	11.9	11.9	-71.02	-102.4	31.8	61.4	37.8	23.56	2.606	CC, ES
5,450.0	5,433.0	5,425.7	5,421.3	12.0	12.0	-75.89	-110.2	31.5	61.7	38.0	23.76	2.598	
5,500.0	5,473.4	5,472.3	5,463.9	12.1	12.1	-85.51	-129.0	30.8	64.6	40.4	24.17	2.673	
5,550.0	5,510.7	5,519.6	5,505.2	12.3	12.1	-94.16	-151.9	29.8	70.3	45.8	24.45	2.875	
5,600.0	5,544.7	5,567.7	5,544.9	12.5	12.3	-101.31	-179.0	28.8	78.4	53.9	24.56	3.194	
5,650.0	5,575.0	5,616.5	5,582.6	12.8	12.4	-106.86	-210.1	27.5	88.6	64.0	24.57	3.606	
5,700.0	5,601.4	5,666.3	5,617.8	13.1	12.6	-110.97	-245.2	26.1	100.3	75.7	24.57	4.081	
5,750.0	5,623.5	5,717.0	5,650.0	13.5	12.9	-113.88	-284.3	24.5	113.1	88.5	24.66	4.587	
5,800.0	5,641.3	5,768.7	5,678.8	13.9	13.2	-115.85	-327.3	22.8	126.7	101.9	24.89	5.091	
5,850.0	5,654.5	5,821.6	5,703.6	14.4	13.5	-117.07	-373.8	20.9	140.9	115.6	25.33	5.564	
5,900.0	5,663.0	5,875.6	5,724.0	14.9	14.0	-117.70	-423.8	18.9	155.4	129.4	25.97	5.984	
5,950.0	5,666.8	5,930.9	5,739.4	15.5	14.5	-117.87	-476.8	16.8	170.0	143.2	26.84	6.336	
5,964.2	5,667.0	5,946.9	5,742.8	15.6	14.6	-117.85	-492.4	16.2	174.2	147.1	27.12	6.423	
6,000.0	5,667.0	5,987.7	5,749.3	16.1	15.0	-118.31	-532.7	14.5	184.0	156.2	27.79	6.621	
6,100.0	5,667.0	6,095.4	5,753.1	17.3	16.3	-115.93	-640.1	10.2	205.9	175.2	30.71	6.704	
6,200.0	5,667.0	6,192.7	5,753.0	18.7	17.5	-113.41	-737.4	6.3	226.7	192.9	33.81	6.706	
6,300.0	5,667.0	6,290.1	5,753.0	20.2	18.9	-111.32	-834.7	2.4	248.0	211.0	37.01	6.700	
6,400.0	5,667.0	6,387.4	5,753.0	21.8	20.3	-109.55	-931.9	-1.5	269.5	229.2	40.30	6.686	
6,488.1	5,667.0	6,473.2	5,753.0	23.2	21.6	-108.22	-1,017.6	-4.9	288.6	245.3	43.26	6.671	
6,500.0	5,667.0	6,484.8	5,753.0	23.4	21.8	-108.03	-1,029.2	-5.4	291.1	247.5	43.68	6.666	
6,600.0	5,667.0	6,582.8	5,753.0	24.8	23.4	-106.73	-1,127.2	-9.4	310.0	262.9	47.05	6.587	
6,700.0	5,667.0	6,681.7	5,753.0	26.3	25.0	-105.87	-1,226.0	-13.3	323.9	273.6	50.37	6.431	
6,800.0	5,667.0	6,781.3	5,753.0	27.8	26.6	-105.36	-1,325.5	-17.3	332.9	279.3	53.60	6.212	
6,900.0	5,667.0	6,871.2	5,753.0	29.4	28.0	-105.08	-1,415.3	-19.4	338.5	282.1	56.41	6.001	
7,005.4	5,667.0	6,973.5	5,753.0	31.0	29.8	-104.94	-1,517.6	-19.4	341.3	281.8	59.51	5.735	
7,100.0	5,667.0	7,068.0	5,753.0	32.6	31.4	-104.94	-1,612.2	-19.4	341.3	278.7	62.65	5.449	
7,200.0	5,667.0	7,168.0	5,753.0	34.2	33.2	-104.94	-1,712.2	-19.4	341.3	275.3	66.03	5.170	
7,300.0	5,667.0	7,268.0	5,753.0	35.9	35.0	-104.94	-1,812.2	-19.4	341.3	271.9	69.44	4.915	
7,400.0	5,667.0	7,368.0	5,753.0	37.7	36.8	-104.94	-1,912.2	-19.4	341.3	268.4	72.89	4.683	
7,500.0	5,667.0	7,468.0	5,753.0	39.4	38.6	-104.94	-2,012.2	-19.4	341.3	265.0	76.37	4.470	
7,600.0	5,667.0	7,568.0	5,753.0	41.2	40.4	-104.94	-2,112.2	-19.4	341.3	261.5	79.86	4.274	
7,700.0	5,667.0	7,668.0	5,753.0	42.9	42.2	-104.94	-2,212.2	-19.4	341.3	258.0	83.38	4.094	
7,800.0	5,667.0	7,768.0	5,753.0	44.7	44.1	-104.94	-2,312.2	-19.4	341.3	254.4	86.92	3.927	
7,900.0	5,667.0	7,868.0	5,753.0	46.5	45.9	-104.94	-2,412.2	-19.4	341.3	250.9	90.47	3.773	
8,000.0	5,667.0	7,968.0	5,753.0	48.3	47.8	-104.94	-2,512.2	-19.4	341.3	247.3	94.04	3.630	
8,100.0	5,667.0	8,068.0	5,753.0	50.1	49.6	-104.94	-2,612.2	-19.4	341.3	243.7	97.62	3.497	
8,200.0	5,667.0	8,168.0	5,753.0	52.0	51.5	-104.94	-2,712.2	-19.4	341.3	240.1	101.21	3.373	
8,300.0	5,667.0	8,268.0	5,753.0	53.8	53.3	-104.94	-2,812.2	-19.4	341.3	236.5	104.81	3.257	
8,400.0	5,667.0	8,368.0	5,753.0	55.6	55.2	-104.94	-2,912.2	-19.4	341.3	232.9	108.42	3.148	
8,500.0	5,667.0	8,468.0	5,753.0	57.5	57.1	-104.94	-3,012.2	-19.4	341.3	229.3	112.03	3.047	
8,600.0	5,667.0	8,568.0	5,753.0	59.3	58.9	-104.94	-3,112.2	-19.4	341.3	225.7	115.66	2.951	
8,700.0	5,667.0	8,668.0	5,753.0	61.2	60.8	-104.94	-3,212.2	-19.4	341.3	222.0	119.29	2.861	
8,800.0	5,667.0	8,768.0	5,753.0	63.0	62.7	-104.94	-3,312.2	-19.4	341.3	218.4	122.92	2.777	
8,900.0	5,667.0	8,868.0	5,753.0	64.9	64.6	-104.94	-3,412.2	-19.4	341.3	214.8	126.57	2.697	
9,000.0	5,667.0	8,968.0	5,753.0	66.7	66.5	-104.94	-3,512.2	-19.4	341.3	211.1	130.21	2.621	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3406B - HZ - Plan #4

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
9,100.0	5,667.0	9,068.0	5,753.0	68.6	68.4	-104.94	-3,612.2	-19.4	341.3	207.5	133.87	2.550	
9,200.0	5,667.0	9,168.0	5,753.0	70.5	70.2	-104.94	-3,712.2	-19.4	341.3	203.8	137.52	2.482	
9,300.0	5,667.0	9,268.0	5,753.0	72.3	72.1	-104.94	-3,812.2	-19.4	341.3	200.2	141.18	2.418	
9,400.0	5,667.0	9,368.0	5,753.0	74.2	74.0	-104.94	-3,912.2	-19.4	341.3	196.5	144.85	2.357	
9,500.0	5,667.0	9,468.0	5,753.0	76.1	75.9	-104.94	-4,012.2	-19.4	341.3	192.8	148.51	2.298	
9,600.0	5,667.0	9,568.0	5,753.0	78.0	77.8	-104.94	-4,112.2	-19.4	341.3	189.2	152.18	2.243	
9,700.0	5,667.0	9,668.0	5,753.0	79.9	79.7	-104.94	-4,212.2	-19.4	341.3	185.5	155.86	2.190	
9,800.0	5,667.0	9,768.0	5,753.0	81.7	81.6	-104.94	-4,312.2	-19.4	341.3	181.8	159.53	2.140	
9,900.0	5,667.0	9,868.0	5,753.0	83.6	83.5	-104.94	-4,412.2	-19.4	341.3	178.1	163.21	2.091	
10,000.0	5,667.0	9,968.0	5,753.0	85.5	85.4	-104.94	-4,512.2	-19.4	341.3	174.4	166.89	2.045	
10,100.0	5,667.0	10,068.0	5,753.0	87.4	87.3	-104.94	-4,612.2	-19.4	341.3	170.8	170.57	2.001	
10,200.0	5,667.0	10,168.0	5,753.0	89.3	89.2	-104.94	-4,712.2	-19.4	341.3	167.1	174.26	1.959	
10,300.0	5,667.0	10,268.0	5,753.0	91.2	91.1	-104.94	-4,812.2	-19.4	341.3	163.4	177.95	1.918	
10,400.0	5,667.0	10,368.0	5,753.0	93.1	93.0	-104.94	-4,912.2	-19.4	341.3	159.7	181.64	1.879	
10,500.0	5,667.0	10,468.0	5,753.0	95.0	94.9	-104.94	-5,012.2	-19.4	341.3	156.0	185.33	1.842	
10,600.0	5,667.0	10,568.0	5,753.0	96.8	96.8	-104.94	-5,112.2	-19.4	341.3	152.3	189.02	1.806	
10,700.0	5,667.0	10,668.0	5,753.0	98.7	98.7	-104.94	-5,212.2	-19.4	341.3	148.6	192.71	1.771	
10,800.0	5,667.0	10,768.0	5,753.0	100.6	100.6	-104.94	-5,312.2	-19.4	341.3	144.9	196.41	1.738	
10,900.0	5,667.0	10,868.0	5,753.0	102.5	102.5	-104.94	-5,412.2	-19.4	341.3	141.2	200.10	1.706	
11,000.0	5,667.0	10,968.0	5,753.0	104.4	104.4	-104.94	-5,512.2	-19.4	341.3	137.5	203.80	1.675	
11,100.0	5,667.0	11,068.0	5,753.0	106.3	106.3	-104.94	-5,612.2	-19.4	341.3	133.8	207.50	1.645	
11,200.0	5,667.0	11,168.0	5,753.0	108.2	108.3	-104.94	-5,712.2	-19.4	341.3	130.1	211.20	1.616	
11,300.0	5,667.0	11,268.0	5,753.0	110.1	110.2	-104.94	-5,812.2	-19.4	341.3	126.4	214.90	1.588	
11,400.0	5,667.0	11,368.0	5,753.0	112.0	112.1	-104.94	-5,912.2	-19.4	341.3	122.7	218.60	1.561	
11,500.0	5,667.0	11,468.0	5,753.0	113.9	114.0	-104.94	-6,012.2	-19.4	341.3	119.0	222.30	1.535	
11,600.0	5,667.0	11,568.0	5,753.0	115.8	115.9	-104.94	-6,112.2	-19.4	341.3	115.3	226.01	1.510	
11,700.0	5,667.0	11,668.0	5,753.0	117.7	117.8	-104.94	-6,212.2	-19.4	341.3	111.6	229.71	1.486	Level 3
11,800.0	5,667.0	11,768.0	5,753.0	119.6	119.7	-104.94	-6,312.2	-19.4	341.3	107.9	233.42	1.462	Level 3
11,900.0	5,667.0	11,868.0	5,753.0	121.5	121.6	-104.94	-6,412.2	-19.4	341.3	104.2	237.12	1.439	Level 3
12,000.0	5,667.0	11,968.0	5,753.0	123.4	123.5	-104.94	-6,512.2	-19.4	341.3	100.5	240.83	1.417	Level 3
12,100.0	5,667.0	12,068.0	5,753.0	125.3	125.4	-104.94	-6,612.2	-19.4	341.3	96.8	244.54	1.396	Level 3
12,200.0	5,667.0	12,168.0	5,753.0	127.3	127.4	-104.94	-6,712.2	-19.4	341.3	93.1	248.25	1.375	Level 3
12,300.0	5,667.0	12,268.0	5,753.0	129.2	129.3	-104.94	-6,812.2	-19.4	341.3	89.4	251.96	1.355	Level 3
12,400.0	5,667.0	12,368.0	5,753.0	131.1	131.2	-104.94	-6,912.2	-19.4	341.3	85.7	255.67	1.335	Level 3
12,463.7	5,667.0	12,431.8	5,753.0	132.3	132.4	-104.94	-6,975.9	-19.4	341.3	83.3	258.00	1.323	Level 3
12,504.2	5,667.0	12,471.8	5,753.0	133.1	133.2	-104.94	-7,015.9	-19.4	341.3	81.8	259.52	1.315	Level 3, SF

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3407A - HZ - Plan #3

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	1.0	1.0	0.0	0.0	90.00	0.0	65.3	65.3				
100.0	100.0	101.0	101.0	0.1	0.1	90.00	0.0	65.3	65.3	65.1	0.19	343.986	
200.0	200.0	201.0	201.0	0.3	0.3	90.00	0.0	65.3	65.3	64.7	0.64	102.168	
300.0	300.0	301.0	301.0	0.5	0.5	90.00	0.0	65.3	65.3	64.2	1.09	59.993	
400.0	400.0	401.0	401.0	0.8	0.8	90.00	0.0	65.3	65.3	63.8	1.54	42.464	
500.0	500.0	501.0	501.0	1.0	1.0	90.00	0.0	65.3	65.3	63.3	1.99	32.862	
600.0	600.0	601.0	601.0	1.2	1.2	90.00	0.0	65.3	65.3	62.9	2.44	26.802	
700.0	700.0	701.0	701.0	1.4	1.4	90.00	0.0	65.3	65.3	62.4	2.89	22.629	
800.0	800.0	801.0	801.0	1.7	1.7	90.00	0.0	65.3	65.3	62.0	3.34	19.580	
900.0	900.0	901.0	901.0	1.9	1.9	90.00	0.0	65.3	65.3	61.5	3.79	17.255	
1,000.0	1,000.0	1,001.0	1,001.0	2.1	2.1	90.00	0.0	65.3	65.3	61.1	4.24	15.424	
1,100.0	1,100.0	1,101.0	1,101.0	2.3	2.3	90.00	0.0	65.3	65.3	60.6	4.69	13.944	
1,200.0	1,200.0	1,201.0	1,201.0	2.6	2.6	90.00	0.0	65.3	65.3	60.2	5.13	12.724	
1,300.0	1,300.0	1,301.0	1,301.0	2.8	2.8	90.00	0.0	65.3	65.3	59.7	5.58	11.699	
1,400.0	1,400.0	1,401.0	1,401.0	3.0	3.0	90.00	0.0	65.3	65.3	59.3	6.03	10.828	
1,500.0	1,500.0	1,501.0	1,501.0	3.2	3.2	90.00	0.0	65.3	65.3	58.8	6.48	10.077	
1,600.0	1,600.0	1,601.0	1,601.0	3.5	3.5	90.00	0.0	65.3	65.3	58.4	6.93	9.424	
1,700.0	1,700.0	1,701.0	1,701.0	3.7	3.7	90.00	0.0	65.3	65.3	57.9	7.38	8.850	
1,800.0	1,800.0	1,801.0	1,801.0	3.9	3.9	90.00	0.0	65.3	65.3	57.5	7.83	8.342	
1,900.0	1,900.0	1,901.0	1,901.0	4.1	4.1	90.00	0.0	65.3	65.3	57.1	8.28	7.889	
2,000.0	2,000.0	2,001.0	2,001.0	4.4	4.4	90.00	0.0	65.3	65.3	56.6	8.73	7.483	
2,100.0	2,100.0	2,101.0	2,101.0	4.6	4.6	90.00	0.0	65.3	65.3	56.2	9.18	7.116	
2,200.0	2,200.0	2,201.0	2,201.0	4.8	4.8	90.00	0.0	65.3	65.3	55.7	9.63	6.784	
2,300.0	2,300.0	2,301.0	2,301.0	5.0	5.0	90.00	0.0	65.3	65.3	55.3	10.08	6.482	
2,400.0	2,400.0	2,401.0	2,401.0	5.3	5.3	90.00	0.0	65.3	65.3	54.8	10.53	6.205	
2,500.0	2,500.0	2,501.0	2,501.0	5.5	5.5	90.00	0.0	65.3	65.3	54.4	10.98	5.951	
2,600.0	2,600.0	2,601.0	2,601.0	5.7	5.7	90.00	0.0	65.3	65.3	53.9	11.43	5.717	
2,700.0	2,700.0	2,701.0	2,701.0	5.9	5.9	90.00	0.0	65.3	65.3	53.5	11.88	5.500	
2,800.0	2,800.0	2,801.0	2,801.0	6.2	6.2	90.00	0.0	65.3	65.3	53.0	12.33	5.300	
2,900.0	2,900.0	2,901.0	2,901.0	6.4	6.4	90.00	0.0	65.3	65.3	52.6	12.78	5.113	
3,000.0	3,000.0	3,001.0	3,001.0	6.6	6.6	90.00	0.0	65.3	65.3	52.1	13.23	4.940	
3,100.0	3,100.0	3,101.0	3,101.0	6.8	6.8	90.00	0.0	65.3	65.3	51.7	13.68	4.777	
3,200.0	3,200.0	3,201.0	3,201.0	7.1	7.1	90.00	0.0	65.3	65.3	51.2	14.13	4.625	
3,300.0	3,300.0	3,301.0	3,301.0	7.3	7.3	90.00	0.0	65.3	65.3	50.8	14.57	4.483	
3,400.0	3,400.0	3,401.0	3,401.0	7.5	7.5	90.00	0.0	65.3	65.3	50.3	15.02	4.348	
3,500.0	3,500.0	3,501.0	3,501.0	7.7	7.7	90.00	0.0	65.3	65.3	49.9	15.47	4.222	
3,600.0	3,600.0	3,601.0	3,601.0	8.0	8.0	90.00	0.0	65.3	65.3	49.4	15.92	4.103	
3,700.0	3,700.0	3,701.0	3,701.0	8.2	8.2	90.00	0.0	65.3	65.3	49.0	16.37	3.990	
3,800.0	3,800.0	3,801.0	3,801.0	8.4	8.4	90.00	0.0	65.3	65.3	48.5	16.82	3.884	
3,900.0	3,900.0	3,901.0	3,901.0	8.6	8.6	90.00	0.0	65.3	65.3	48.1	17.27	3.783	
4,000.0	4,000.0	4,001.0	4,001.0	8.9	8.9	90.00	0.0	65.3	65.3	47.6	17.72	3.687	
4,100.0	4,100.0	4,101.0	4,101.0	9.1	9.1	90.00	0.0	65.3	65.3	47.2	18.17	3.595	
4,200.0	4,200.0	4,201.0	4,201.0	9.3	9.3	90.00	0.0	65.3	65.3	46.7	18.62	3.509	
4,300.0	4,300.0	4,301.0	4,301.0	9.5	9.5	90.00	0.0	65.3	65.3	46.3	19.07	3.426	
4,400.0	4,400.0	4,401.0	4,401.0	9.8	9.8	90.00	0.0	65.3	65.3	45.8	19.52	3.347	
4,500.0	4,500.0	4,501.0	4,501.0	10.0	10.0	90.00	0.0	65.3	65.3	45.4	19.97	3.272	
4,600.0	4,600.0	4,601.0	4,601.0	10.2	10.2	90.00	0.0	65.3	65.3	44.9	20.42	3.200	
4,700.0	4,700.0	4,701.0	4,701.0	10.4	10.4	90.00	0.0	65.3	65.3	44.5	20.87	3.131	
4,800.0	4,800.0	4,801.0	4,801.0	10.7	10.7	90.00	0.0	65.3	65.3	44.0	21.32	3.065	
4,900.0	4,900.0	4,901.0	4,901.0	10.9	10.9	90.00	0.0	65.3	65.3	43.6	21.77	3.001	
5,000.0	5,000.0	5,001.0	5,001.0	11.1	11.1	90.00	0.0	65.3	65.3	43.1	22.22	2.941	
5,100.0	5,100.0	5,101.0	5,101.0	11.3	11.3	90.00	0.0	65.3	65.3	42.7	22.67	2.882	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3407A - HZ - Plan #3

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,130.4	5,130.4	5,131.4	5,131.4	11.4	11.4	90.00	0.0	65.3	65.3	42.5	22.80	2.865	CC
5,146.1	5,146.1	5,147.1	5,147.1	11.4	11.4	90.00	0.0	65.3	65.3	42.5	22.87	2.856	
5,150.0	5,150.0	5,150.9	5,150.9	11.4	11.4	-105.51	0.0	65.3	65.3	42.5	22.89	2.855	ES, SF
5,200.0	5,199.9	5,200.0	5,199.9	11.5	11.5	-105.31	-2.7	65.9	66.6	43.6	23.04	2.891	
5,250.0	5,249.3	5,248.3	5,247.7	11.6	11.6	-104.92	-9.8	67.2	70.1	46.9	23.18	3.022	
5,300.0	5,297.8	5,296.7	5,294.6	11.7	11.7	-104.37	-21.2	69.5	75.6	52.3	23.31	3.244	
5,350.0	5,344.8	5,344.7	5,340.0	11.8	11.8	-103.68	-36.7	72.5	83.2	59.8	23.45	3.551	
5,400.0	5,390.1	5,392.3	5,383.2	11.9	11.9	-102.89	-56.1	76.2	92.8	69.2	23.61	3.932	
5,450.0	5,433.0	5,439.3	5,424.1	12.0	12.0	-101.99	-78.9	80.7	104.3	80.5	23.82	4.379	
5,500.0	5,473.4	5,485.8	5,462.2	12.1	12.1	-101.01	-104.9	85.8	117.5	93.4	24.09	4.879	
5,550.0	5,510.7	5,531.7	5,497.5	12.3	12.3	-99.95	-133.8	91.4	132.4	107.9	24.43	5.418	
5,600.0	5,544.7	5,577.1	5,529.6	12.5	12.4	-98.81	-165.3	97.5	148.7	123.8	24.86	5.979	
5,650.0	5,575.0	5,621.9	5,558.4	12.8	12.7	-97.59	-198.9	104.1	166.3	140.9	25.39	6.549	
5,700.0	5,601.4	5,666.3	5,584.0	13.1	12.9	-96.31	-234.5	111.0	185.1	159.0	26.01	7.114	
5,750.0	5,623.5	5,710.3	5,606.3	13.5	13.2	-94.97	-271.7	118.2	204.8	178.1	26.73	7.663	
5,800.0	5,641.3	5,754.0	5,625.1	13.9	13.6	-93.58	-310.5	125.8	225.4	197.9	27.54	8.186	
5,850.0	5,654.5	5,797.6	5,640.5	14.4	14.0	-92.16	-350.5	133.6	246.7	218.3	28.44	8.675	
5,900.0	5,663.0	5,841.2	5,652.5	14.9	14.4	-90.72	-391.6	141.6	268.5	239.1	29.41	9.127	
5,950.0	5,666.8	5,884.9	5,660.9	15.5	14.9	-89.27	-433.6	149.8	290.6	260.1	30.46	9.539	
5,964.2	5,667.0	5,897.4	5,662.7	15.6	15.0	-88.86	-445.8	152.1	296.9	266.1	30.76	9.650	
6,000.0	5,667.0	5,929.0	5,665.8	16.1	15.4	-89.55	-476.7	158.1	312.8	281.2	31.57	9.908	
6,100.0	5,667.0	6,018.3	5,667.0	17.3	16.5	-89.82	-564.3	175.2	357.5	323.5	33.99	10.518	
6,200.0	5,667.0	6,107.8	5,667.0	18.7	17.7	-89.84	-652.1	192.3	402.2	365.6	36.61	10.987	
6,300.0	5,667.0	6,197.3	5,667.0	20.2	19.0	-89.86	-740.0	209.4	446.9	407.5	39.39	11.343	
6,400.0	5,667.0	6,286.7	5,667.0	21.8	20.4	-89.87	-827.8	226.5	491.5	449.2	42.33	11.613	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3408B - HZ - Plan #3 — **Offset Site Error:** 0.0 ft

Survey Program: 0-ISCWSA MWD — **Offset Well Error:** 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	127.23	-74.7	98.3	123.4				
100.0	100.0	99.0	99.0	0.1	0.1	127.23	-74.7	98.3	123.4	123.2	0.19	661.004	
200.0	200.0	199.0	199.0	0.3	0.3	127.23	-74.7	98.3	123.4	122.8	0.63	194.400	
300.0	300.0	299.0	299.0	0.5	0.5	127.23	-74.7	98.3	123.4	122.4	1.08	113.819	
400.0	400.0	399.0	399.0	0.8	0.8	127.23	-74.7	98.3	123.4	121.9	1.53	80.466	
500.0	500.0	499.0	499.0	1.0	1.0	127.23	-74.7	98.3	123.4	121.5	1.98	62.230	
600.0	600.0	599.0	599.0	1.2	1.2	127.23	-74.7	98.3	123.4	121.0	2.43	50.732	
700.0	700.0	699.0	699.0	1.4	1.4	127.23	-74.7	98.3	123.4	120.6	2.88	42.821	
800.0	800.0	799.0	799.0	1.7	1.7	127.23	-74.7	98.3	123.4	120.1	3.33	37.044	
900.0	900.0	899.0	899.0	1.9	1.9	127.23	-74.7	98.3	123.4	119.7	3.78	32.641	
1,000.0	1,000.0	999.0	999.0	2.1	2.1	127.23	-74.7	98.3	123.4	119.2	4.23	29.173	CC, ES
1,100.0	1,100.0	1,095.2	1,095.2	2.3	2.3	127.54	-76.1	99.0	124.9	120.3	4.65	26.886	
1,200.0	1,200.0	1,195.0	1,194.9	2.6	2.5	128.17	-79.1	100.7	128.1	123.1	5.05	25.366	
1,300.0	1,300.0	1,294.9	1,294.8	2.8	2.7	128.78	-82.2	102.3	131.3	125.9	5.46	24.047	
1,400.0	1,400.0	1,394.9	1,394.7	3.0	2.9	129.36	-85.3	104.0	134.5	128.7	5.88	22.888	
1,500.0	1,500.0	1,494.8	1,494.5	3.2	3.1	129.92	-88.4	105.6	137.8	131.5	6.30	21.867	
1,600.0	1,600.0	1,594.7	1,594.4	3.5	3.3	130.45	-91.4	107.3	141.0	134.3	6.73	20.962	
1,700.0	1,700.0	1,694.7	1,694.3	3.7	3.5	130.95	-94.5	108.9	144.3	137.1	7.16	20.156	
1,800.0	1,800.0	1,794.6	1,794.2	3.9	3.7	131.43	-97.6	110.6	147.6	140.0	7.59	19.435	
1,900.0	1,900.0	1,894.6	1,894.0	4.1	3.9	131.89	-100.7	112.2	150.8	142.8	8.03	18.788	
2,000.0	2,000.0	1,994.5	1,993.9	4.4	4.1	132.33	-103.7	113.9	154.1	145.6	8.47	18.204	
2,100.0	2,100.0	2,094.4	2,093.8	4.6	4.3	132.76	-106.8	115.5	157.4	148.5	8.91	17.675	
2,200.0	2,200.0	2,194.4	2,193.7	4.8	4.6	133.16	-109.9	117.2	160.7	151.4	9.35	17.193	
2,300.0	2,300.0	2,294.3	2,293.6	5.0	4.8	133.55	-113.0	118.8	164.0	154.2	9.79	16.754	
2,400.0	2,400.0	2,394.2	2,393.4	5.3	5.0	133.92	-116.0	120.5	167.3	157.1	10.23	16.351	
2,500.0	2,500.0	2,494.2	2,493.3	5.5	5.2	134.28	-119.1	122.1	170.7	160.0	10.68	15.981	
2,600.0	2,600.0	2,594.1	2,593.2	5.7	5.5	134.63	-122.2	123.8	174.0	162.9	11.13	15.640	
2,700.0	2,700.0	2,694.1	2,693.1	5.9	5.7	134.96	-125.2	125.4	177.3	165.8	11.57	15.325	
2,800.0	2,800.0	2,794.0	2,793.0	6.2	5.9	135.28	-128.3	127.1	180.7	168.7	12.02	15.033	
2,900.0	2,900.0	2,893.9	2,892.8	6.4	6.1	135.59	-131.4	128.7	184.0	171.6	12.47	14.761	
3,000.0	3,000.0	2,993.9	2,992.7	6.6	6.4	135.89	-134.5	130.4	187.4	174.5	12.92	14.508	
3,100.0	3,100.0	3,093.8	3,092.6	6.8	6.6	136.17	-137.5	132.0	190.7	177.4	13.37	14.272	
3,200.0	3,200.0	3,193.8	3,192.5	7.1	6.8	136.45	-140.6	133.7	194.1	180.3	13.82	14.051	
3,300.0	3,300.0	3,293.7	3,292.3	7.3	7.1	136.72	-143.7	135.3	197.5	183.2	14.27	13.843	
3,400.0	3,400.0	3,393.6	3,392.2	7.5	7.3	136.98	-146.8	137.0	200.9	186.1	14.72	13.649	
3,500.0	3,500.0	3,493.6	3,492.1	7.7	7.5	137.23	-149.8	138.6	204.2	189.1	15.17	13.466	
3,600.0	3,600.0	3,593.5	3,592.0	8.0	7.8	137.47	-152.9	140.3	207.6	192.0	15.62	13.293	
3,700.0	3,700.0	3,693.5	3,691.9	8.2	8.0	137.70	-156.0	141.9	211.0	194.9	16.07	13.130	
3,800.0	3,800.0	3,793.4	3,791.7	8.4	8.2	137.93	-159.0	143.6	214.4	197.9	16.52	12.976	
3,900.0	3,900.0	3,893.3	3,891.6	8.6	8.4	138.15	-162.1	145.2	217.8	200.8	16.97	12.830	
4,000.0	4,000.0	3,993.3	3,991.5	8.9	8.7	138.36	-165.2	146.9	221.2	203.7	17.43	12.692	
4,100.0	4,100.0	4,093.2	4,091.4	9.1	8.9	138.57	-168.3	148.5	224.6	206.7	17.88	12.561	
4,200.0	4,200.0	4,193.2	4,191.2	9.3	9.1	138.77	-171.3	150.2	228.0	209.6	18.33	12.436	
4,300.0	4,300.0	4,293.1	4,291.1	9.5	9.4	138.96	-174.4	151.8	231.4	212.6	18.78	12.317	
4,400.0	4,400.0	4,393.0	4,391.0	9.8	9.6	139.15	-177.5	153.5	234.8	215.5	19.24	12.204	
4,500.0	4,500.0	4,493.0	4,490.9	10.0	9.8	139.33	-180.6	155.1	238.2	218.5	19.69	12.096	
4,600.0	4,600.0	4,592.9	4,590.8	10.2	10.1	139.51	-183.6	156.8	241.6	221.4	20.14	11.992	
4,700.0	4,700.0	4,692.8	4,690.6	10.4	10.3	139.69	-186.7	158.4	245.0	224.4	20.60	11.894	
4,800.0	4,800.0	4,792.8	4,790.5	10.7	10.5	139.85	-189.8	160.1	248.4	227.4	21.05	11.799	
4,900.0	4,900.0	4,892.7	4,890.4	10.9	10.8	140.02	-192.8	161.7	251.8	230.3	21.51	11.709	
5,000.0	5,000.0	4,992.7	4,990.3	11.1	11.0	140.18	-195.9	163.4	255.2	233.3	21.96	11.622	
5,100.0	5,100.0	5,092.6	5,090.2	11.3	11.2	140.33	-199.0	165.0	258.7	236.2	22.42	11.539	

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Offset Design S27-T10N-R58W - Razor #27K-3408B - HZ - Plan #3

Offset Site Error: 0.0 ft

Survey Program: 0-ISCWSA MWD

Offset Well Error: 0.0 ft

Reference Measured Depth (ft)	Reference Vertical Depth (ft)	Offset Measured Depth (ft)	Offset Vertical Depth (ft)	Semi Major Axis Reference (ft)	Semi Major Axis Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	Offset Wellbore Centre +E/-W (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Total Uncertainty Axis	Separation Factor	Warning
5,146.1	5,146.1	5,138.7	5,136.2	11.4	11.4	140.40	-200.4	165.8	260.2	237.6	22.63	11.502	
5,150.0	5,150.0	5,142.6	5,140.1	11.4	11.4	-55.10	-200.5	165.8	260.4	237.9	22.48	11.582	
5,200.0	5,199.9	5,192.5	5,190.0	11.5	11.5	-55.52	-202.1	166.7	260.5	237.8	22.66	11.498	
5,250.0	5,249.3	5,242.1	5,239.5	11.6	11.6	-57.04	-203.6	167.5	258.0	235.2	22.78	11.324	
5,300.0	5,297.8	5,278.6	5,276.0	11.7	11.7	-58.98	-205.3	168.4	254.1	231.2	22.85	11.117	
5,350.0	5,344.8	5,311.5	5,308.7	11.8	11.8	-61.22	-208.7	170.2	251.1	228.2	22.91	10.958	
5,400.0	5,390.1	5,350.0	5,346.5	11.9	11.9	-64.28	-214.9	173.5	249.6	226.6	23.04	10.833	
5,421.1	5,408.5	5,357.6	5,354.0	11.9	11.9	-64.96	-216.4	174.4	249.4	226.3	23.07	10.810	
5,450.0	5,433.0	5,376.2	5,371.9	12.0	12.0	-66.60	-220.5	176.6	249.8	226.6	23.17	10.780	
5,500.0	5,473.4	5,407.7	5,402.0	12.1	12.1	-69.51	-228.8	181.0	252.3	228.9	23.41	10.779	SF
5,550.0	5,510.7	5,438.6	5,430.9	12.3	12.2	-72.36	-238.5	186.2	257.6	233.8	23.73	10.853	
5,600.0	5,544.7	5,468.8	5,458.4	12.5	12.4	-75.02	-249.3	192.0	265.8	241.7	24.13	11.015	
5,650.0	5,575.0	5,500.0	5,486.1	12.8	12.5	-77.59	-262.0	198.9	277.3	252.7	24.62	11.265	
5,700.0	5,601.4	5,526.7	5,509.1	13.1	12.7	-79.29	-274.1	205.3	292.1	266.9	25.14	11.616	
5,750.0	5,623.5	5,550.0	5,528.5	13.5	12.8	-80.17	-285.3	211.4	310.0	284.4	25.67	12.077	
5,800.0	5,641.3	5,581.2	5,553.6	13.9	13.0	-81.67	-301.7	220.1	331.0	304.6	26.36	12.556	
5,850.0	5,654.5	5,607.1	5,573.5	14.4	13.2	-82.07	-316.2	227.9	354.7	327.7	27.02	13.127	
5,900.0	5,663.0	5,632.0	5,591.9	14.9	13.4	-81.92	-331.0	235.9	380.9	353.1	27.71	13.745	
5,950.0	5,666.8	5,656.0	5,608.9	15.5	13.5	-81.26	-345.9	243.9	409.2	380.8	28.41	14.402	
5,964.2	5,667.0	5,662.6	5,613.4	15.6	13.6	-80.98	-350.2	246.2	417.6	389.0	28.62	14.594	
6,000.0	5,667.0	5,679.8	5,624.9	16.1	13.7	-83.11	-361.4	252.2	439.5	410.2	29.31	14.996	

Company:	Whiting Petroleum Corporation	**Local Co-ordinate Reference:**	Well Razor #27K-3405A
Project:	Weld County, CO	**TVD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Reference Site:	S27-T10N-R58W	**MD Reference:**	WELL @ 4766.5ft (Original Well Elev)
Site Error:	0.0ft	**North Reference:**	True
Reference Well:	Razor #27K-3405A	**Survey Calculation Method:**	Minimum Curvature
Well Error:	0.0ft	**Output errors are at**	2.00 sigma
Reference Wellbore	HZ	**Database:**	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	**Offset TVD Reference:**	Offset Datum

Reference Depths are relative to WELL @ 4766.5ft (Original Well Elev)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Razor #27K-3405A
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 1.06°