

Whiting Oil and Gas Corporation

Weld County, CO

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

Razor #27J-3409A

Plan D_ST-1

Plan: Rev_D0

Sperry Drilling Services

Proposal Report

05 October, 2014

Well Coordinates: 1,541,693.17 N, 3,457,037.80 E (40° 48' 31.14" N, 103° 50' 56.20" W)

Ground Level: 4,767.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Razor #27J-3409A

KB 22 ft @ 4789.00usft (Frontier 26)

N

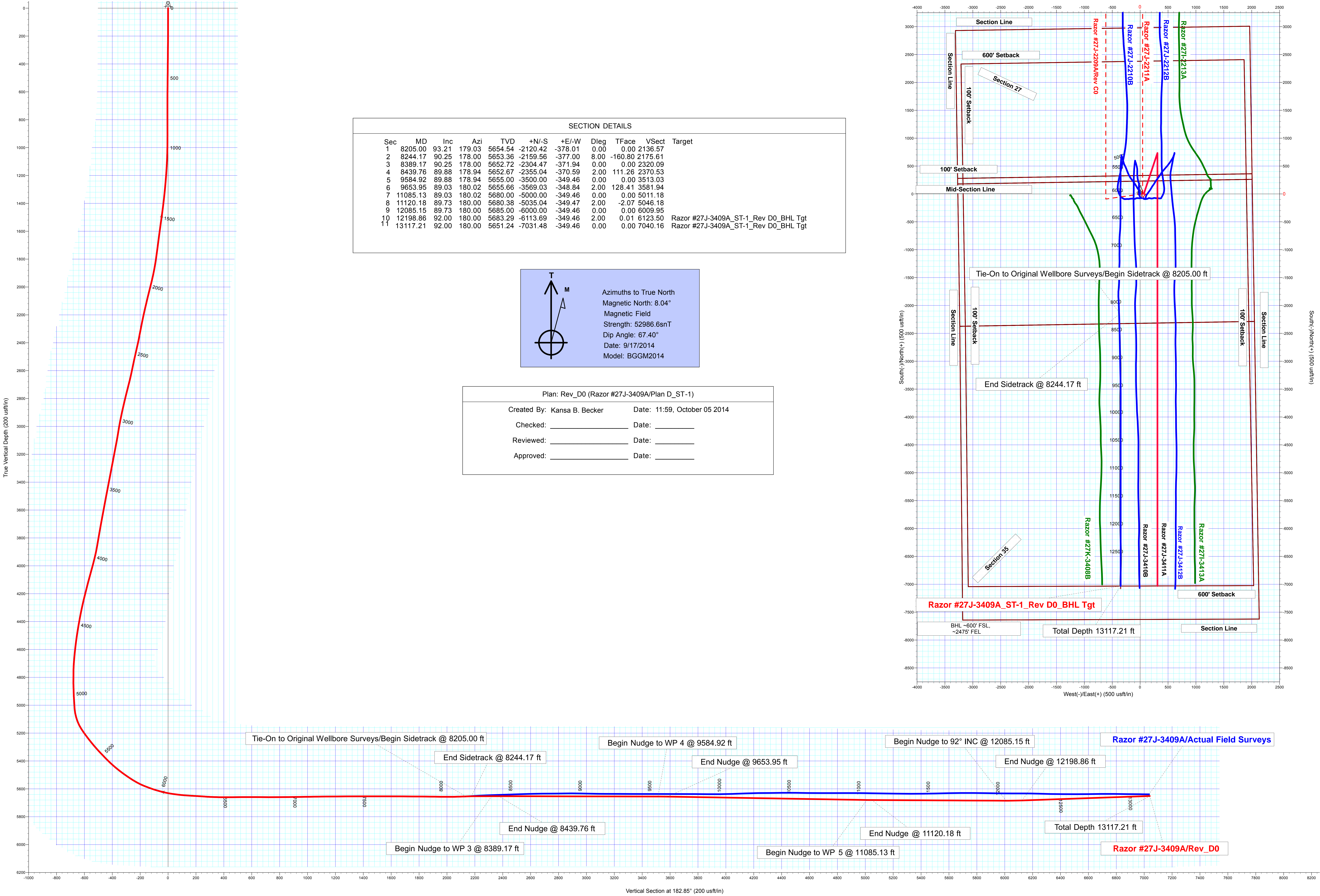
True

API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO
Site: Sec. 27-T10N-R58W (#27 J Pad)
Well: Razor #27J-3409A
Wellbore: Plan D_ST-1
Plan: Rev_D0

Whiting Oil and Gas Corporation



Plan Report for Razor #27J-3409A - Rev_D0

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
8,205.00	93.21	179.03	5,654.54	-2,120.42	-378.01	2,136.57	0.00	0.00	0.00	0.00
Tie-On to Original Wellbore Surveys/Begin Sidetrack @ 8205.00 ft										
8,244.17	90.25	178.00	5,653.36	-2,159.56	-377.00	2,175.61	8.00	-7.56	-2.63	-160.80
End Sidetrack @ 8244.17 ft										
8,300.00	90.25	178.00	5,653.11	-2,215.35	-375.05	2,231.24	0.00	0.00	0.00	0.00
8,389.17	90.25	178.00	5,652.72	-2,304.47	-371.94	2,320.09	0.00	0.00	0.00	0.00
Begin Nudge to WP 3 @ 8389.17 ft										
8,400.00	90.17	178.20	5,652.68	-2,315.29	-371.58	2,330.88	2.00	-0.73	1.86	111.26
8,439.76	89.88	178.94	5,652.67	-2,355.04	-370.59	2,370.53	2.00	-0.73	1.86	111.26
End Nudge @ 8439.76 ft										
8,500.00	89.88	178.94	5,652.79	-2,415.27	-369.47	2,430.63	0.00	0.00	0.00	0.00
8,600.00	89.88	178.94	5,652.99	-2,515.25	-367.63	2,530.40	0.00	0.00	0.00	0.00
8,700.00	89.88	178.94	5,653.20	-2,615.23	-365.79	2,630.17	0.00	0.00	0.00	0.00
8,800.00	89.88	178.94	5,653.40	-2,715.22	-363.94	2,729.93	0.00	0.00	0.00	0.00
8,900.00	89.88	178.94	5,653.60	-2,815.20	-362.10	2,829.70	0.00	0.00	0.00	0.00
9,000.00	89.88	178.94	5,653.81	-2,915.18	-360.25	2,929.47	0.00	0.00	0.00	0.00
9,100.00	89.88	178.94	5,654.01	-3,015.16	-358.41	3,029.24	0.00	0.00	0.00	0.00
9,200.00	89.88	178.94	5,654.22	-3,115.15	-356.56	3,129.01	0.00	0.00	0.00	0.00
9,300.00	89.88	178.94	5,654.42	-3,215.13	-354.72	3,228.77	0.00	0.00	0.00	0.00
9,400.00	89.88	178.94	5,654.62	-3,315.11	-352.87	3,328.54	0.00	0.00	0.00	0.00
9,500.00	89.88	178.94	5,654.83	-3,415.10	-351.03	3,428.31	0.00	0.00	0.00	0.00
9,584.92	89.88	178.94	5,655.00	-3,500.00	-349.46	3,513.03	0.00	0.00	0.00	0.00
Begin Nudge to WP 4 @ 9584.92 ft										
9,600.00	89.70	179.18	5,655.06	-3,515.08	-349.21	3,528.08	2.00	-1.24	1.57	128.41
9,653.95	89.03	180.02	5,655.66	-3,569.03	-348.84	3,581.94	2.00	-1.24	1.57	128.41
End Nudge @ 9653.95 ft										
9,700.00	89.03	180.02	5,656.44	-3,615.07	-348.86	3,627.93	0.00	0.00	0.00	0.00
9,732.88	89.03	180.02	5,657.00	-3,647.95	-348.87	3,660.77	0.00	0.00	0.00	0.00
N200 (A Chalk Base)										
9,800.00	89.03	180.02	5,658.14	-3,715.05	-348.90	3,727.79	0.00	0.00	0.00	0.00
9,900.00	89.03	180.02	5,659.84	-3,815.04	-348.95	3,827.66	0.00	0.00	0.00	0.00
10,000.00	89.03	180.02	5,661.54	-3,915.02	-348.99	3,927.52	0.00	0.00	0.00	0.00
10,100.00	89.03	180.02	5,663.24	-4,015.01	-349.03	4,027.38	0.00	0.00	0.00	0.00
10,200.00	89.03	180.02	5,664.95	-4,114.99	-349.08	4,127.25	0.00	0.00	0.00	0.00
10,300.00	89.03	180.02	5,666.65	-4,214.98	-349.12	4,227.11	0.00	0.00	0.00	0.00
10,400.00	89.03	180.02	5,668.35	-4,314.97	-349.16	4,326.98	0.00	0.00	0.00	0.00
10,500.00	89.03	180.02	5,670.05	-4,414.95	-349.21	4,426.84	0.00	0.00	0.00	0.00
10,600.00	89.03	180.02	5,671.75	-4,514.94	-349.25	4,526.71	0.00	0.00	0.00	0.00
10,614.79	89.03	180.02	5,672.00	-4,529.72	-349.26	4,541.47	0.00	0.00	0.00	0.00
N250										
10,700.00	89.03	180.02	5,673.45	-4,614.92	-349.29	4,626.57	0.00	0.00	0.00	0.00
10,800.00	89.03	180.02	5,675.15	-4,714.91	-349.34	4,726.44	0.00	0.00	0.00	0.00
10,849.96	89.03	180.02	5,676.00	-4,764.86	-349.36	4,776.33	0.00	0.00	0.00	0.00
N400										
10,900.00	89.03	180.02	5,676.85	-4,814.89	-349.38	4,826.30	0.00	0.00	0.00	0.00
11,000.00	89.03	180.02	5,678.55	-4,914.88	-349.42	4,926.16	0.00	0.00	0.00	0.00
11,085.13	89.03	180.02	5,680.00	-5,000.00	-349.46	5,011.18	0.00	0.00	0.00	0.00
Begin Nudge to WP 5 @ 11085.13 ft										
11,100.00	89.32	180.01	5,680.21	-5,014.86	-349.47	5,026.03	2.00	2.00	-0.07	-2.07
11,120.18	89.73	180.00	5,680.38	-5,035.04	-349.47	5,046.18	2.00	2.00	-0.07	-2.07
End Nudge @ 11120.18 ft										
11,200.00	89.73	180.00	5,680.76	-5,114.86	-349.47	5,125.90	0.00	0.00	0.00	0.00
11,300.00	89.73	180.00	5,681.24	-5,214.86	-349.47	5,225.78	0.00	0.00	0.00	0.00
11,400.00	89.73	180.00	5,681.72	-5,314.86	-349.47	5,325.66	0.00	0.00	0.00	0.00
11,500.00	89.73	180.00	5,682.20	-5,414.86	-349.46	5,425.53	0.00	0.00	0.00	0.00
11,600.00	89.73	180.00	5,682.68	-5,514.86	-349.46	5,525.41	0.00	0.00	0.00	0.00
11,700.00	89.73	180.00	5,683.16	-5,614.86	-349.46	5,625.28	0.00	0.00	0.00	0.00

Plan Report for Razor #27J-3409A - Rev_D0

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
11,800.00	89.73	180.00	5,683.64	-5,714.86	-349.46	5,725.16	0.00	0.00	0.00	0.00
11,900.00	89.73	180.00	5,684.11	-5,814.85	-349.46	5,825.03	0.00	0.00	0.00	0.00
12,000.00	89.73	180.00	5,684.59	-5,914.85	-349.46	5,924.91	0.00	0.00	0.00	0.00
12,085.15	89.73	180.00	5,685.00	-6,000.00	-349.46	6,009.95	0.00	0.00	0.00	0.00
Begin Nudge to 92° INC @ 12085.15 ft										
12,100.00	90.02	180.00	5,685.03	-6,014.85	-349.46	6,024.78	2.00	2.00	0.00	0.01
12,198.86	92.00	180.00	5,683.29	-6,113.69	-349.46	6,123.50	2.00	2.00	0.00	0.01
End Nudge @ 12198.86 ft										
12,200.00	92.00	180.00	5,683.25	-6,114.83	-349.46	6,124.64	0.00	0.00	0.00	0.00
12,300.00	92.00	180.00	5,679.76	-6,214.77	-349.46	6,224.46	0.00	0.00	0.00	0.00
12,400.00	92.00	180.00	5,676.27	-6,314.71	-349.46	6,324.27	0.00	0.00	0.00	0.00
12,500.00	92.00	180.00	5,672.78	-6,414.65	-349.46	6,424.09	0.00	0.00	0.00	0.00
12,600.00	92.00	180.00	5,669.29	-6,514.59	-349.46	6,523.90	0.00	0.00	0.00	0.00
12,700.00	92.00	180.00	5,665.80	-6,614.53	-349.46	6,623.72	0.00	0.00	0.00	0.00
12,800.00	92.00	180.00	5,662.31	-6,714.47	-349.46	6,723.54	0.00	0.00	0.00	0.00
12,900.00	92.00	180.00	5,658.82	-6,814.41	-349.46	6,823.35	0.00	0.00	0.00	0.00
13,000.00	92.00	180.00	5,655.33	-6,914.34	-349.46	6,923.17	0.00	0.00	0.00	0.00
13,100.00	92.00	180.00	5,651.84	-7,014.28	-349.46	7,022.98	0.00	0.00	0.00	0.00
13,117.21	92.00	180.00	5,651.24	-7,031.48	-349.46	7,040.16	0.00	0.00	0.00	0.00
Total Depth 13117.21 ft										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
8,205.00	5,654.54	-2,120.42	-378.01	Tie-On to Original Wellbore Surveys/Begin Sidetrack @ 8205.00 ft
8,244.17	5,653.36	-2,159.56	-377.00	End Sidetrack @ 8244.17 ft
8,389.17	5,652.72	-2,304.47	-371.94	Begin Nudge to WP 3 @ 8389.17 ft
8,439.76	5,652.67	-2,355.04	-370.59	End Nudge @ 8439.76 ft
9,584.92	5,655.00	-3,500.00	-349.46	Begin Nudge to WP 4 @ 9584.92 ft
9,653.95	5,655.66	-3,569.03	-348.84	End Nudge @ 9653.95 ft
11,085.13	5,680.00	-5,000.00	-349.46	Begin Nudge to WP 5 @ 11085.13 ft
11,120.18	5,680.38	-5,035.04	-349.47	End Nudge @ 11120.18 ft
12,085.15	5,685.00	-6,000.00	-349.46	Begin Nudge to 92° INC @ 12085.15 ft
12,198.86	5,683.29	-6,113.69	-349.46	End Nudge @ 12198.86 ft
13,117.21	5,651.24	-7,031.48	-349.46	Total Depth 13117.21 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	+E/-W (usft)	Start TVD (usft)
Target	Razor #27J-3409A_ST-1_Rev D0_BHL Tgt	182.85	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
177.00	1,542.00	Surface_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
1,636.00	6,112.00	Vertical & Build_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
6,221.00	8,205.00	Lateral_Sperry MWD+IFR1+MS+sag	MWD+IFR1+MS+sag
8,205.00	13,117.21	Rev_D0	MWD+IFR1+MS+sag

Plan Report for Razor #27J-3409A - Rev_D0**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,589.5	1,589.5	9 5/8" Casing Pt.	9-5/8	13-1/2
6,153.7	5,624.98	7" Casing Pt.	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,451.72	1,450.00	UPPER PIERRE			
3,368.18	3,312.00	HYGIENE			
3,626.70	3,565.00	LOWER PIERRE			
5,813.98	5,548.00	P200 MARKER		0.00	
5,874.05	5,575.00	P300 MARKER		0.00	
5,923.71	5,593.00	P350 MARKER		0.00	
5,956.71	5,604.00	SHARON SPRINGS		0.00	
5,987.66	5,613.00	NIOBRARA (A Chalk Top)		0.00	
6,035.03	5,625.00	N100		0.00	
6,353.35	5,657.00	N200 (A Chalk Base)		0.00	
10,614.79	5,672.00	N250		0.00	
10,849.96	5,676.00	N400		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Razor #27J_Sec 27_Mid-Line	3.00	0.03	32.11	Polygon
Razor #27J_Sec 27_100 ft S of Mid-Line	3.00	0.03	32.11	Polygon
Razor #27J_Southern_SB	3.00	0.02	0.00	Polygon
Razor #27J_Southern_SL	3.00	0.02	0.00	Polygon
Razor #27J-3409A_ST-1_Rev D0_BHL Tgt	5,651.24	-7,031.48	-349.46	Point
Razor #27J-3409A_ST-1_Rev D0_BHL Tgt	5,651.24	-7,031.48	-349.46	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.17 °/100usft	Maximum Dogleg over Survey:	8.00 °/100usft at 8,244.17 usft
Net Tortousity applicable to Plans:	0.17 °/100usft	Directional Difficulty Index:	6.677

Audit Info

North Reference Sheet for Sec. 27-T10N-R58W (#27 J Pad) - Razor #27J-3409A - Plan D_ST-1

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to KB 22 ft @ 4789.00usft (Frontier 26). Northing and Easting are relative to Razor #27J-3409A

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.50°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 1.00000421

Grid Coordinates of Well: 1,541,693.17 usft N, 3,457,037.80 usft E

Geographical Coordinates of Well: 40° 48' 31.14" N, 103° 50' 56.20" W

Grid Convergence at Surface is: 1.07°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,117.21usft the Bottom Hole Displacement is 7,040.16usft in the Direction of 182.85° (True).

Magnetic Convergence at surface is: -6.97° (17 September 2014, , BGGM2014)

