



Survey Report

Company:	Whiting Petroleum Corporation	Local Co-ordinate Reference:	Well Razor #11G-0210B
Project:	Weld County, CO	TVD Reference:	WELL @ 4989.7usft (Xtreme 18)
Site:	S11-T10N-R58W	MD Reference:	WELL @ 4989.7usft (Xtreme 18)
Well:	Razor #11G-0210B	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL HOLE	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		S11-T10N-R58W			
Site Position:		Northing:	1,558,620.57 usft	Latitude:	40.854775
From:	Lat/Long	Easting:	3,463,389.92 usft	Longitude:	-103.824847
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.08 °

Well	Razor #11G-0210B					
Well Position	+N/-S	0.0 usft	Northing:	1,558,402.76 usft	Latitude:	40.854244
	+E/-W	0.0 usft	Easting:	3,462,094.35 usft	Longitude:	-103.829544
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	4,972.9 usft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	1/22/2015	7.89	67.43	53,079

Design	ORIGINAL HOLE				
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	356.36	

Survey Program	Date	4/22/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
165.0	8,160.0	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		
165.0	0.80	277.11	165.0	0.1	-1.1	0.2	0.48	0.48		
257.0	0.83	279.53	257.0	0.3	-2.4	0.5	0.05	0.03		
350.0	0.69	270.02	350.0	0.4	-3.7	0.7	0.20	-0.15		
442.0	0.95	278.44	442.0	0.6	-5.0	0.9	0.31	0.28		
534.0	1.05	283.77	534.0	0.9	-6.5	1.3	0.15	0.11		
626.0	1.47	286.97	625.9	1.4	-8.5	2.0	0.46	0.46		
717.0	3.15	242.61	716.9	0.6	-11.8	1.4	2.57	1.85		
808.0	6.42	227.28	807.5	-4.0	-17.8	-2.9	3.83	3.59		
900.0	10.09	224.02	898.6	-13.3	-27.2	-11.5	4.02	3.99		
992.0	12.74	219.36	988.7	-26.9	-39.2	-24.4	3.05	2.88		
1,085.0	12.17	220.54	1,079.6	-42.3	-52.1	-38.9	0.67	-0.61		
1,177.0	13.55	212.58	1,169.2	-58.8	-64.2	-54.6	2.44	1.50		

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Site:	S11-T10N-R58W	MD Reference:	WELL @ 4989.7usft (Xtreme 18)
Well:	Razor #11G-0210B	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL HOLE	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
1,269.0	13.67	213.39	1,258.7	-76.9	-76.0	-71.9	0.24	0.13	
1,361.0	12.89	206.61	1,348.2	-95.2	-86.6	-89.5	1.89	-0.85	
1,454.0	13.08	206.19	1,438.8	-113.9	-95.8	-107.6	0.23	0.20	
1,546.0	13.03	207.60	1,528.5	-132.4	-105.2	-125.5	0.35	-0.05	
1,638.0	13.14	209.71	1,618.1	-150.7	-115.2	-143.1	0.53	0.12	
1,730.0	13.21	212.46	1,707.6	-168.6	-126.1	-160.3	0.69	0.08	
1,821.0	11.99	212.97	1,796.5	-185.4	-136.8	-176.3	1.35	-1.34	
1,840.0	11.50	213.39	1,815.1	-188.6	-138.9	-179.4	2.62	-2.58	
1,968.0	10.52	200.98	1,940.7	-210.2	-150.1	-200.2	2.00	-0.77	
2,060.0	9.77	197.93	2,031.3	-225.4	-155.5	-215.1	1.00	-0.82	
2,152.0	9.55	195.51	2,122.0	-240.2	-160.0	-229.6	0.50	-0.24	
2,244.0	10.33	199.24	2,212.6	-255.3	-164.7	-244.4	1.10	0.85	
2,336.0	10.35	198.46	2,303.1	-271.0	-170.1	-259.6	0.15	0.02	
2,429.0	10.89	206.40	2,394.5	-286.8	-176.6	-275.0	1.68	0.58	
2,522.0	10.89	204.73	2,485.8	-302.6	-184.2	-290.3	0.34	0.00	
2,613.0	10.12	215.64	2,575.3	-316.9	-192.4	-304.1	2.34	-0.85	
2,705.0	10.33	214.95	2,665.9	-330.3	-201.9	-316.8	0.26	0.23	
2,796.0	11.60	217.26	2,755.2	-344.2	-212.1	-330.1	1.48	1.40	
2,887.0	11.66	218.46	2,844.3	-358.7	-223.3	-343.8	0.27	0.07	
2,978.0	11.58	218.50	2,933.5	-373.1	-234.8	-357.4	0.09	-0.09	
3,069.0	12.83	212.54	3,022.4	-388.7	-245.9	-372.3	1.95	1.37	
3,162.0	11.89	210.88	3,113.2	-405.6	-256.3	-388.6	1.08	-1.01	
3,254.0	11.37	211.16	3,203.4	-421.5	-265.9	-403.8	0.57	-0.57	
3,346.0	10.53	210.84	3,293.7	-436.5	-274.9	-418.2	0.92	-0.91	
3,438.0	9.73	210.52	3,384.2	-450.4	-283.2	-431.5	0.87	-0.87	
3,531.0	11.16	214.63	3,475.7	-464.6	-292.3	-445.1	1.73	1.54	
3,622.0	10.93	214.53	3,565.0	-479.0	-302.2	-458.8	0.25	-0.25	
3,714.0	12.75	205.64	3,655.1	-495.3	-311.5	-474.5	2.80	1.98	
3,805.0	12.99	206.27	3,743.8	-513.5	-320.4	-492.2	0.31	0.26	
3,897.0	12.87	205.71	3,833.4	-532.0	-329.4	-510.0	0.19	-0.13	
3,988.0	12.08	205.05	3,922.3	-549.8	-337.8	-527.2	0.88	-0.87	
4,081.0	11.10	202.85	4,013.4	-566.9	-345.4	-543.8	1.16	-1.05	
4,173.0	10.21	203.89	4,103.8	-582.5	-352.2	-558.9	0.99	-0.97	
4,264.0	12.14	204.59	4,193.1	-598.6	-359.4	-574.5	2.13	2.12	
4,355.0	11.83	204.67	4,282.1	-615.7	-367.3	-591.2	0.34	-0.34	
4,447.0	11.52	203.70	4,372.2	-632.7	-374.9	-607.6	0.40	-0.34	
4,539.0	11.03	204.56	4,462.4	-649.1	-382.3	-623.5	0.56	-0.53	
4,632.0	10.27	205.26	4,553.8	-664.7	-389.5	-638.6	0.83	-0.82	
4,724.0	9.71	203.38	4,644.4	-679.3	-396.1	-652.7	0.70	-0.61	
4,817.0	8.98	203.41	4,736.2	-693.1	-402.1	-666.2	0.78	-0.78	
4,908.0	8.22	197.62	4,826.2	-705.8	-406.9	-678.6	1.27	-0.84	
4,999.0	7.28	197.42	4,916.3	-717.5	-410.6	-690.0	1.03	-1.03	
5,091.0	7.12	194.26	5,007.6	-728.6	-413.7	-700.9	0.46	-0.17	
5,182.0	5.53	208.56	5,098.0	-737.9	-417.2	-710.0	2.45	-1.75	
5,274.0	5.01	206.02	5,189.7	-745.4	-421.1	-717.2	0.62	-0.57	
5,366.0	4.82	204.87	5,281.3	-752.6	-424.5	-724.1	0.23	-0.21	
5,458.0	3.14	219.84	5,373.1	-758.0	-427.7	-729.3	2.13	-1.83	
5,550.0	2.68	213.90	5,465.0	-761.7	-430.5	-732.9	0.60	-0.50	
5,640.0	2.32	224.68	5,554.9	-764.8	-433.0	-735.7	0.66	-0.40	
5,732.0	5.40	1.06	5,646.8	-761.8	-434.2	-732.7	7.89	3.35	
5,824.0	10.25	356.05	5,737.9	-749.3	-434.7	-720.1	5.32	5.27	
5,916.0	18.09	2.99	5,827.0	-726.8	-434.5	-697.7	8.70	8.52	
6,012.0	29.09	1.71	5,914.9	-688.5	-433.0	-659.6	11.47	11.46	

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Well:	Razor #11G-0210B	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL HOLE	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
6,057.0	36.65	0.70	5,952.6	-664.1	-432.5	-635.3	16.84	16.80	
6,102.0	43.46	358.85	5,987.1	-635.1	-432.7	-606.4	15.36	15.13	
6,146.0	48.72	357.45	6,017.6	-603.5	-433.7	-574.7	12.17	11.95	
6,191.0	54.51	356.40	6,045.5	-568.2	-435.6	-539.4	13.00	12.87	
6,234.0	57.10	357.15	6,069.7	-532.7	-437.6	-503.9	6.19	6.02	
6,279.0	63.62	357.36	6,091.9	-493.7	-439.5	-464.8	14.49	14.49	
6,323.0	71.20	358.32	6,108.8	-453.1	-441.0	-424.2	17.34	17.23	
6,368.0	75.61	359.95	6,121.6	-410.0	-441.7	-381.2	10.40	9.80	
6,413.0	78.20	359.32	6,131.8	-366.2	-441.9	-337.4	5.91	5.76	
6,458.0	80.96	358.72	6,140.0	-321.9	-442.7	-293.2	6.27	6.13	
6,505.0	84.68	358.32	6,145.9	-275.3	-443.9	-246.6	7.96	7.91	
6,533.8	86.03	357.84	6,148.2	-246.6	-444.9	-217.9	4.97	4.69	7" (2197' FEL & 2566' FNL)
6,605.0	89.37	356.66	6,151.0	-175.6	-448.3	-146.8	4.97	4.69	
6,693.0	91.03	357.37	6,150.7	-87.7	-452.9	-58.8	2.05	1.89	
6,782.0	89.14	357.14	6,150.6	1.2	-457.1	30.2	2.14	-2.12	
6,872.0	91.28	2.07	6,150.3	91.1	-457.7	120.0	5.97	2.38	
6,961.0	89.01	0.33	6,150.0	180.1	-455.9	208.7	3.21	-2.55	
7,049.0	90.94	359.01	6,150.1	268.1	-456.4	296.5	2.66	2.19	
7,138.0	89.51	357.86	6,149.7	357.1	-458.8	385.5	2.06	-1.61	
7,226.0	92.16	359.59	6,148.5	445.0	-460.8	473.4	3.60	3.01	
7,315.0	90.50	359.00	6,146.4	534.0	-461.9	562.2	1.98	-1.87	
7,403.0	88.99	358.91	6,146.8	622.0	-463.5	650.1	1.72	-1.72	
7,490.0	89.41	359.66	6,148.0	708.9	-464.6	737.0	0.99	0.48	
7,579.0	90.97	0.04	6,147.7	797.9	-464.8	825.8	1.80	1.75	
7,669.0	91.08	359.67	6,146.1	887.9	-465.0	915.7	0.43	0.12	
7,756.0	91.10	1.44	6,144.4	974.9	-464.2	1,002.4	2.03	0.02	
7,846.0	92.47	1.39	6,141.6	1,064.8	-462.0	1,092.0	1.52	1.52	
7,933.0	93.20	1.50	6,137.3	1,151.7	-459.8	1,178.6	0.85	0.84	
8,021.0	94.70	2.40	6,131.3	1,239.4	-456.8	1,265.9	1.99	1.70	
8,110.0	97.10	0.80	6,122.1	1,327.9	-454.3	1,354.1	3.24	2.70	LAST CES SURVEY @ 8110' MD
8,160.0	97.10	0.80	6,115.9	1,377.5	-453.6	1,403.6	0.00	0.00	PTB @ 8160' MD - OH TD - 940' FNL, 2190' FEL

Survey Report

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Project:	Weld County, CO	TVD Reference:	WELL @ 4989.7usft (Xtreme 18)
Site:	S11-T10N-R58W	MD Reference:	WELL @ 4989.7usft (Xtreme 18)
Well:	Razor #11G-0210B	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	ORIGINAL HOLE	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
Razor #11G-0210B VP F - survey misses target center by 27.1usft at 5418.7usft MD (5333.9 TVD, -756.1 N, -426.3 E) - Point	0.00	0.00	5,332.1	-773.4	-447.1	1,557,621.08	3,461,661.88	40.852122	-103.831161
Razor #11G-0210B PBH - survey misses target center by 5657.6usft at 8160.0usft MD (6115.9 TVD, 1377.5 N, -453.6 E) - Point	0.00	0.00	5,957.0	7,032.9	-447.1	1,565,426.01	3,461,514.83	40.873547	-103.831161
Razor #11G-0210B VP F - survey misses target center by 26.5usft at 5428.7usft MD (5343.8 TVD, -756.6 N, -426.7 E) - Point	0.00	0.00	5,342.1	-773.4	-447.1	1,557,621.08	3,461,661.88	40.852122	-103.831161
Razor #11G-0210B VP (- survey misses target center by 47.1usft at 5218.3usft MD (5134.2 TVD, -741.0 N, -418.8 E) - Point	0.00	0.00	5,136.1	-703.4	-447.1	1,557,691.07	3,461,660.56	40.852314	-103.831161
Razor #11G-0210B PBH - survey misses target center by 5655.5usft at 8160.0usft MD (6115.9 TVD, 1377.5 N, -453.6 E) - Point	0.00	0.00	6,153.0	7,032.9	-447.1	1,565,426.01	3,461,514.83	40.873547	-103.831161
Razor #11G-0210B PBH - survey misses target center by 5655.6usft at 8160.0usft MD (6115.9 TVD, 1377.5 N, -453.6 E) - Point	0.00	0.00	6,163.0	7,032.9	-447.1	1,565,426.01	3,461,514.83	40.873547	-103.831161
Razor #11G-0210B PBH - survey misses target center by 5657.3usft at 8160.0usft MD (6115.9 TVD, 1377.5 N, -453.6 E) - Point	0.00	0.00	5,969.0	7,032.9	-447.1	1,565,426.01	3,461,514.83	40.873547	-103.831161

Casing Points				
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
6,533.8	6,148.2	7" (2197' FEL & 2566' FNL)	0	0

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,110.0	6,122.1	1,327.9	-454.3	LAST CES SURVEY @ 8110' MD
8,160.0	6,115.9	1,377.5	-453.6	PTB @ 8160' MD
8,160.0	6,115.9	1,377.5	-453.6	OH TD - 940' FNL, 2190' FEL

Checked By: _____ Approved By: _____ Date: _____