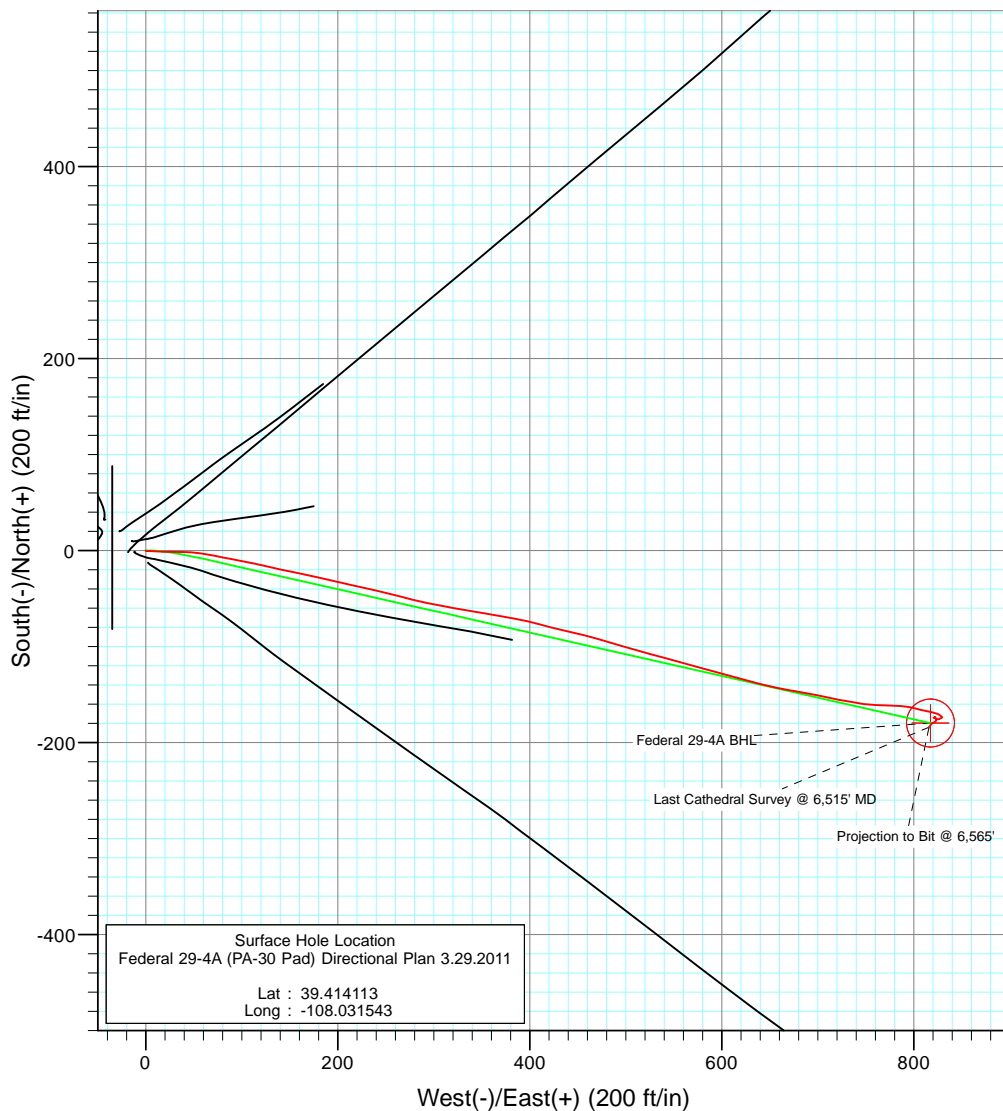
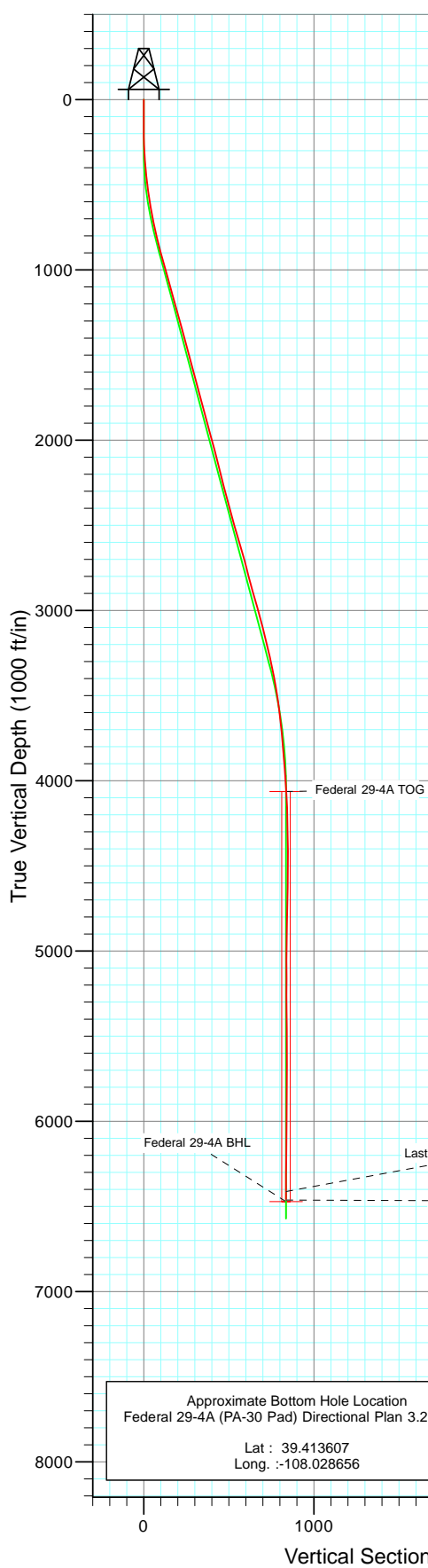




Project: S. Piceance (Parachute)  
 Site: SESE 19-7S-95W (PA-30 Pad)  
 Well: Federal 29-4A (PA-30 Pad) Directional Plan 3.29.2011  
 Wellbore: DD  
 Design: FINAL



Azimuths to True North  
 Magnetic North: 10.32°

Magnetic Field  
 Strength: 52174.2nT  
 Dip Angle: 65.66°  
 Date: 9/24/2011  
 Model: IGRF2010

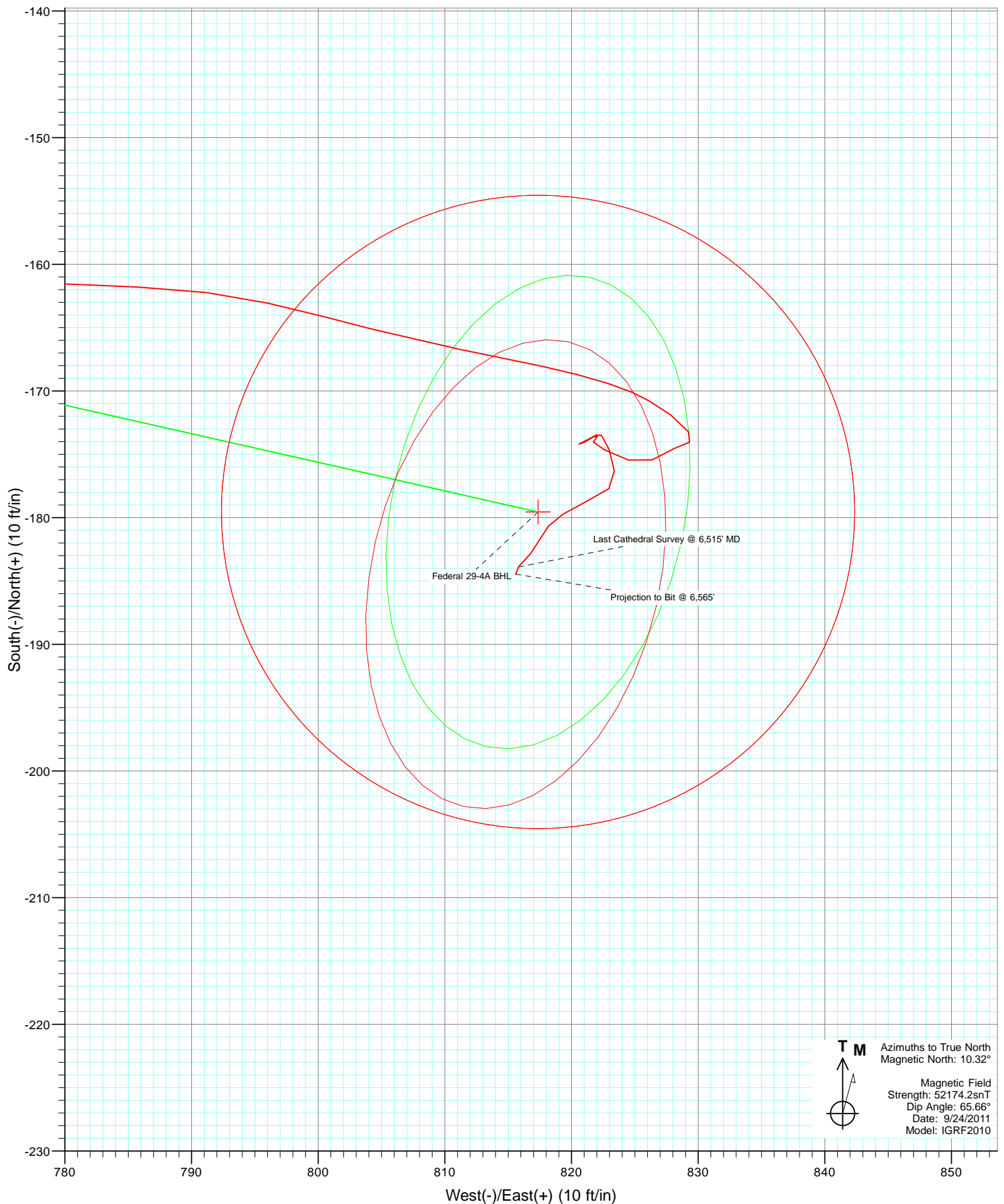
#### DESIGN DETAILS: DD

Job #115386: KR  
 WELL @ 5827.0ft (Nabors M13)

Target	Azimuth	Origin	N/S	E/W	From TVD
Federal 29-4A BHL	102.39	Slot	0.0	0.0	0.0

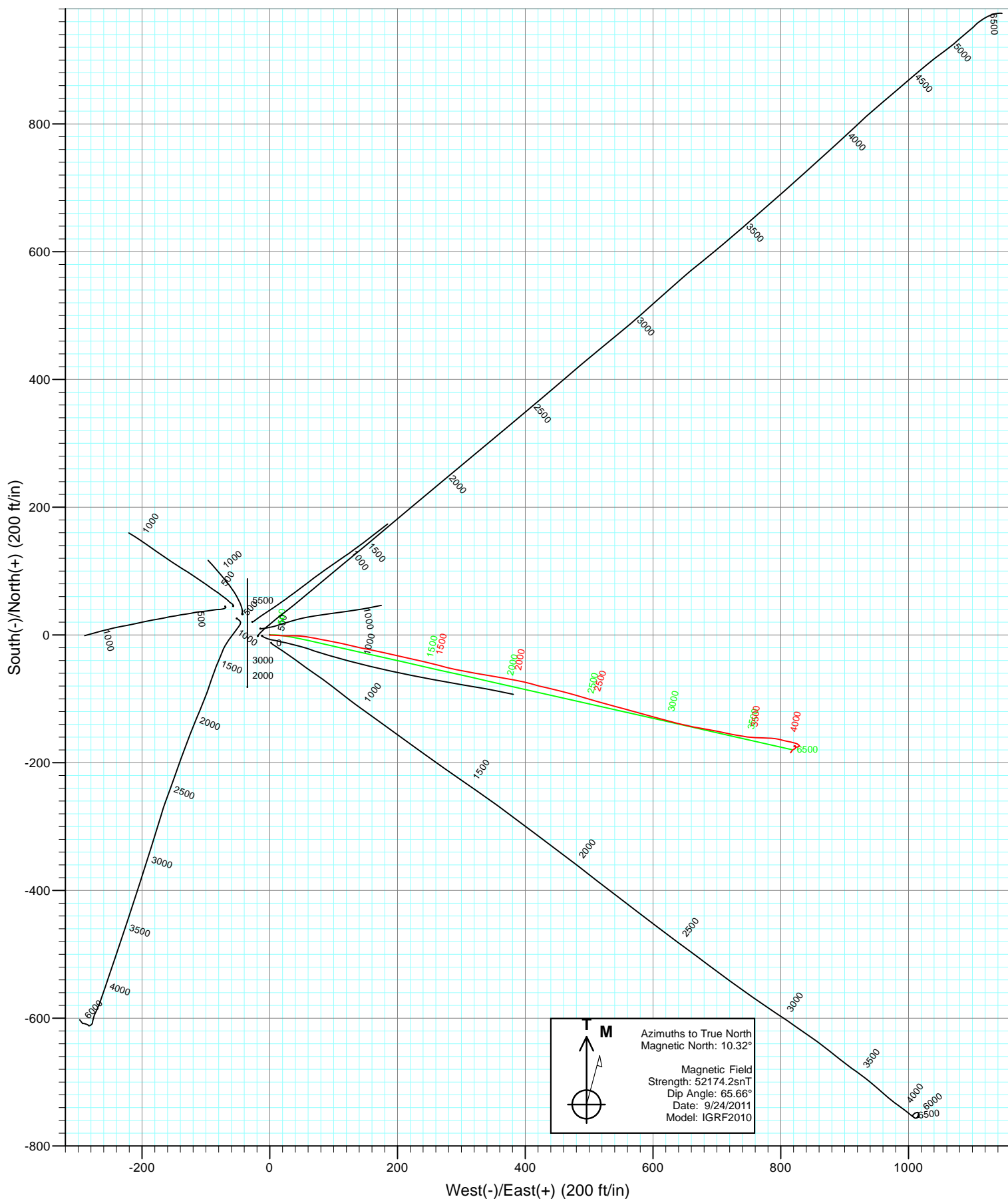


Project: S. Piceance (Parachute)  
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Project: S. Piceance (Parachute)  
Site: SESE 19-7S-95W (PA-30 Pad)  
Federal 29-4A (PA-30 Pad) Directional Plan 3.29.2011  
Wellbore: DD  
Design: FINAL



## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Federal 29-4A (PA-30 Pad) Directional Plan 3
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	WELL @ 5827.0ft (Nabors M13)
<b>Site:</b>	SESE 19-7S-95W (PA-30 Pad)	<b>MD Reference:</b>	WELL @ 5827.0ft (Nabors M13)
<b>Well:</b>	Federal 29-4A (PA-30 Pad) Directional Plan	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD 3.29.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB

<b>Project</b>	S. Piceance (Parachute), Garfield County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Central Zone		

<b>Site</b>	SESE 19-7S-95W (PA-30 Pad)			
<b>Site Position:</b>		<b>Northing:</b>	1,585,669.17 ft	<b>Latitude:</b> 39.414060
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,284,869.32 ft	<b>Longitude:</b> -108.031520
<b>Position Uncertainty:</b>	0.0 ft	<b>Slot Radius:</b>	13.200 in	<b>Grid Convergence:</b> -1.60 °

<b>Well</b>	Federal 29-4A (PA-30 Pad) Directional Plan 3.29.2011			
<b>Well Position</b>	<b>+N/-S</b>	0.0 ft	<b>Northing:</b>	1,585,688.64 ft
	<b>+E/-W</b>	0.0 ft	<b>Easting:</b>	2,284,863.36 ft
<b>Position Uncertainty</b>		0.0 ft	<b>Wellhead Elevation:</b>	ft
			<b>Ground Level:</b>	5,805.0 ft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	9/24/2011	10.32	65.66	52,174

<b>Design</b>	DD			
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	102.39

<b>Survey Program</b>	<b>Date</b>	10/8/2011		
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
127.0	863.0	Survey #1 (DD)	MWD	Geolink MWD
956.0	6,565.0	Survey #2 (DD)	MWD	Geolink MWD

<b>Survey</b>									
<b>Measured Depth (ft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Vertical Section (ft)</b>	<b>Dogleg Rate (°/100ft)</b>	<b>Build Rate (°/100ft)</b>	<b>Formations / Comments</b>
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
127.0	0.10	100.30	127.0	0.0	0.1	0.1	0.08	0.08	
173.0	0.20	160.20	173.0	-0.1	0.2	0.2	0.38	0.22	
219.0	0.70	100.30	219.0	-0.2	0.5	0.5	1.36	1.09	
265.0	2.00	90.30	265.0	-0.3	1.6	1.6	2.86	2.83	
311.0	3.80	89.70	310.9	-0.3	3.9	3.9	3.91	3.91	
402.0	5.10	96.60	401.6	-0.7	10.9	10.8	1.54	1.43	
495.0	6.70	89.90	494.2	-1.2	20.5	20.2	1.87	1.72	
587.0	8.90	90.50	585.3	-1.2	32.9	32.4	2.39	2.39	
679.0	11.00	93.90	675.9	-1.9	48.8	48.1	2.37	2.28	
771.0	12.80	101.40	765.9	-4.5	67.6	67.0	2.58	1.96	
863.0	14.90	100.10	855.3	-8.6	89.2	89.0	2.31	2.28	

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Federal 29-4A (PA-30 Pad) Directional Plan 3
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	WELL @ 5827.0ft (Nabors M13)
<b>Site:</b>	SESE 19-7S-95W (PA-30 Pad)	<b>MD Reference:</b>	WELL @ 5827.0ft (Nabors M13)
<b>Well:</b>	Federal 29-4A (PA-30 Pad) Directional Plan	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD9.2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
956.0	15.00	102.50	945.1	-13.3	112.7	113.0	0.67	0.11	
1,000.0	15.50	102.90	987.6	-15.9	124.0	124.5	1.16	1.14	
1,067.0	15.30	103.00	1,052.2	-19.8	141.4	142.3	0.30	-0.30	
1,163.0	15.10	100.80	1,144.8	-25.0	166.0	167.5	0.64	-0.21	
1,258.0	16.00	103.30	1,236.3	-30.4	190.9	192.9	1.18	0.95	
1,353.0	15.80	102.90	1,327.7	-36.3	216.2	219.0	0.24	-0.21	
1,448.0	14.90	102.30	1,419.3	-41.8	240.8	244.1	0.96	-0.95	
1,544.0	15.30	105.30	1,512.0	-47.7	265.0	269.1	0.91	0.42	
1,639.0	14.60	102.30	1,603.8	-53.6	288.8	293.6	1.10	-0.74	
1,735.0	15.30	100.60	1,696.5	-58.5	313.1	318.4	0.86	0.73	
1,830.0	14.50	98.50	1,788.3	-62.6	337.2	342.7	1.02	-0.84	
1,926.0	15.20	100.80	1,881.1	-66.7	361.4	367.3	0.95	0.73	
2,022.0	15.20	99.90	1,973.8	-71.2	386.2	392.5	0.25	0.00	
2,116.0	15.10	106.00	2,064.5	-76.7	410.1	417.0	1.70	-0.11	
2,211.0	14.50	102.60	2,156.3	-82.7	433.6	441.2	1.11	-0.63	
2,306.0	14.00	104.40	2,248.4	-88.2	456.3	464.6	0.70	-0.53	
2,402.0	15.10	105.60	2,341.3	-94.4	479.6	488.7	1.19	1.15	
2,497.0	14.80	107.40	2,433.1	-101.4	503.1	513.2	0.58	-0.32	
2,593.0	17.00	104.60	2,525.4	-108.6	528.4	539.4	2.43	2.29	
2,688.0	15.90	105.70	2,616.6	-115.6	554.4	566.3	1.20	-1.16	
2,784.0	15.60	104.60	2,709.0	-122.4	579.5	592.3	0.44	-0.31	
2,879.0	14.40	106.40	2,800.7	-129.0	603.2	616.8	1.35	-1.26	
2,974.0	15.60	104.70	2,892.5	-135.5	626.9	641.4	1.35	1.26	
3,070.0	15.50	101.80	2,985.0	-141.4	652.0	667.1	0.82	-0.10	
3,166.0	14.70	100.40	3,077.6	-146.3	676.5	692.1	0.92	-0.83	
3,261.0	14.50	101.40	3,169.6	-150.8	700.0	716.1	0.34	-0.21	
3,357.0	12.60	101.50	3,262.9	-155.3	722.0	738.5	1.98	-1.98	
3,452.0	11.60	98.80	3,355.8	-158.8	741.6	758.4	1.21	-1.05	
3,548.0	9.90	92.60	3,450.1	-160.6	759.4	776.2	2.14	-1.77	
3,643.0	7.50	92.60	3,544.0	-161.3	773.8	790.4	2.53	-2.53	
3,739.0	6.90	92.30	3,639.2	-161.8	785.8	802.2	0.63	-0.63	
3,834.0	5.60	103.00	3,733.7	-163.1	796.0	812.5	1.83	-1.37	
3,930.0	4.50	105.10	3,829.3	-165.1	804.2	820.9	1.16	-1.15	
4,025.0	4.10	100.80	3,924.0	-166.7	811.2	828.0	0.54	-0.42	
4,121.0	3.80	102.30	4,019.8	-168.0	817.6	834.6	0.33	-0.31	
4,216.0	2.80	108.00	4,114.7	-169.4	822.9	840.1	1.11	-1.05	
4,311.0	1.40	123.00	4,209.6	-170.8	826.1	843.5	1.57	-1.47	
4,407.0	1.10	123.10	4,305.6	-171.9	827.9	845.5	0.31	-0.31	
4,503.0	1.20	142.70	4,401.5	-173.2	829.2	847.1	0.42	0.10	
4,598.0	0.60	266.30	4,496.5	-174.0	829.3	847.4	1.70	-0.63	
4,694.0	1.00	237.30	4,592.5	-174.5	828.1	846.3	0.58	0.42	
4,789.0	1.40	246.30	4,687.5	-175.4	826.4	844.8	0.46	0.42	
4,884.0	1.10	299.00	4,782.5	-175.5	824.5	843.0	1.20	-0.32	
4,980.0	1.40	288.80	4,878.5	-174.6	822.6	840.9	0.39	0.31	
5,075.0	0.40	45.70	4,973.5	-174.0	821.7	839.9	1.71	-1.05	
5,170.0	0.30	18.70	5,068.5	-173.6	822.1	840.1	0.20	-0.11	
5,265.0	0.70	236.80	5,163.5	-173.6	821.6	839.8	1.00	0.42	
5,361.0	0.70	249.20	5,259.4	-174.2	820.6	838.9	0.16	0.00	
5,456.0	1.20	70.70	5,354.4	-174.1	821.0	839.2	2.00	0.53	
5,552.0	0.30	2.50	5,450.4	-173.5	822.0	840.0	1.17	-0.94	
5,647.0	0.60	125.60	5,545.4	-173.5	822.4	840.5	0.85	0.32	
5,743.0	1.00	166.90	5,641.4	-174.6	823.0	841.3	0.71	0.42	
5,838.0	1.10	166.00	5,736.4	-176.3	823.4	842.0	0.11	0.11	

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Federal 29-4A (PA-30 Pad) Directional Plan 3
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	WELL @ 5827.0ft (Nabors M13)
<b>Site:</b>	SESE 19-7S-95W (PA-30 Pad)	<b>MD Reference:</b>	WELL @ 5827.0ft (Nabors M13)
<b>Well:</b>	Federal 29-4A (PA-30 Pad) Directional Plan	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD 2011	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	DD	<b>Database:</b>	USA EDM 5000 Multi Users DB

Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Formations / Comments
5,933.0	1.00	232.30	5,831.4	-177.7	823.0	841.9	1.21	-0.11	
6,028.0	1.40	245.50	5,926.4	-178.7	821.2	840.5	0.51	0.42	
6,124.0	1.20	237.10	6,022.3	-179.7	819.3	838.8	0.29	-0.21	
6,219.0	0.60	216.90	6,117.3	-180.7	818.2	837.9	0.71	-0.63	
6,314.0	0.80	210.60	6,212.3	-181.6	817.6	837.5	0.23	0.21	
6,410.0	0.90	214.80	6,308.3	-182.8	816.8	837.0	0.12	0.10	
6,505.0	0.70	232.60	6,403.3	-183.8	815.9	836.3	0.33	-0.21	
6,515.0	0.70	201.50	6,413.3	-183.9	815.8	836.3	3.75	0.00	Last Cathedral Survey @ 6,515' MD
6,565.0	0.70	201.50	6,463.3	-184.5	815.6	836.2	0.00	0.00	Projection to Bit @ 6,565'

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
Federal 29-4A TOG - actual wellpath misses target center by 11.3ft at 4165.3ft MD (4064.0 TVD, -168.7 N, 820.3 E) - Point	0.00	0.00	4,064.0	-179.5	817.4	1,585,486.39	2,285,675.41	39.413620	-108.028650
Federal 29-4A BHL - actual wellpath misses target center by 10.1ft at 6565.0ft MD (6463.3 TVD, -184.5 N, 815.6 E) - Circle (radius 25.0)	0.00	0.00	6,472.0	-179.5	817.4	1,585,486.39	2,285,675.41	39.413620	-108.028650

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
6,515.0	6,413.3	-183.9	815.8	Last Cathedral Survey @ 6,515' MD	
6,565.0	6,463.3	-184.5	815.6	Projection to Bit @ 6,565'	

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_