

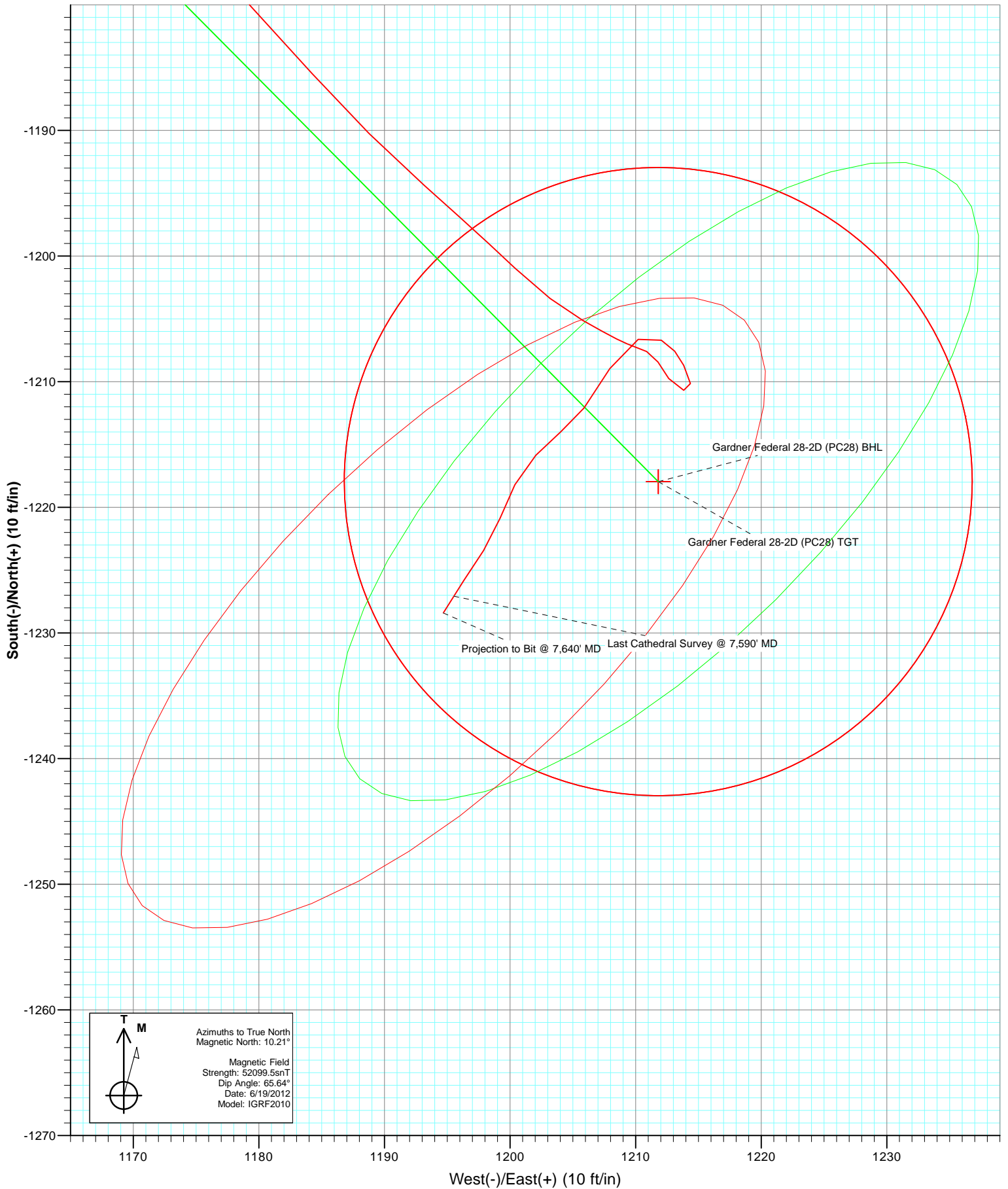
Azimuths to True North  
 Magnetic North: 10.21°

Magnetic Field  
 Strength: 52099.5snT  
 Dip Angle: 65.64°  
 Date: 6/19/2012  
 Model: IGRF2010

DESIGN DETAILS: FINAL

125393/174055 (SH)/ 125414; 174255 (MH) DN  
 KBE @ 6442.0ft (Nabors M13)

Target	Gardner Federal 28-2D (PC28) BHL.15	Origin Type	N/S	E/W
	Azimuth	Slot	0.0	0.0



# Cathedral Energy Services

## Survey Report

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well Gardner Federal 28-2D
<b>Project:</b> S. Piceance (Parachute)	<b>TVD Reference:</b> KBE @ 6442.0ft (Nabors M13)
<b>Site:</b> NENW Sec28-T7S-R95W (PC-28)	<b>MD Reference:</b> KBE @ 6442.0ft (Nabors M13)
<b>Well:</b> Gardner Federal 28-2D	<b>North Reference:</b> True
<b>Wellbore:</b> DD	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<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> NENW Sec28-T7S-R95W (PC-28)				
<b>Site Position:</b>	<b>Northing:</b> 1,585,994.78 ft	<b>Latitude:</b> 39.415560		
<b>From:</b> Lat/Long	<b>Easting:</b> 2,292,840.18 ft	<b>Longitude:</b> -108.003350		
<b>Position Uncertainty:</b> 0.0 ft	<b>Slot Radius:</b> 13.200 in	<b>Grid Convergence:</b> -1.58 °		

<b>Well</b> Gardner Federal 28-2D				
<b>Well Position</b>	<b>+N/-S</b> 0.0 ft	<b>Northing:</b> 1,586,003.35 ft	<b>Latitude:</b> 39.415581	
	<b>+E/-W</b> 0.0 ft	<b>Easting:</b> 2,292,807.06 ft	<b>Longitude:</b> -108.003468	
<b>Position Uncertainty</b>	0.0 ft	<b>Wellhead Elevation:</b> ft	<b>Ground Level:</b> 6,420.0 ft	

<b>Wellbore</b> DD					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	6/19/2012	10.22	65.64	52,100

<b>Design</b> FINAL				
<b>Audit Notes:</b>				
<b>Version:</b> 1.0	<b>Phase:</b> ACTUAL	<b>Tie On Depth:</b> 0.0		
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	135.15

<b>Survey Program</b>		<b>Date</b> 6/27/2012		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
143.0	7,640.0	Survey #1 (DD)	MWD	Geolink MWD

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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
143.0	1.90	216.00	143.0	-1.9	-1.4	0.4	1.33	1.33	
174.0	2.00	216.00	174.0	-2.8	-2.0	0.5	0.32	0.32	
204.0	1.10	220.20	203.9	-3.4	-2.5	0.7	3.02	-3.00	
235.0	0.20	304.80	234.9	-3.6	-2.7	0.6	3.55	-2.90	
266.0	0.80	7.60	265.9	-3.4	-2.8	0.4	2.36	1.94	
296.0	1.00	14.70	295.9	-2.9	-2.7	0.2	0.76	0.67	
327.0	1.30	52.10	326.9	-2.4	-2.3	0.1	2.55	0.97	
358.0	2.40	94.40	357.9	-2.3	-1.4	0.6	5.43	3.55	
389.0	3.30	109.30	388.9	-2.6	0.1	1.9	3.74	2.90	
420.0	4.30	110.20	419.8	-3.3	2.0	3.8	3.23	3.23	
451.0	5.40	114.90	450.7	-4.3	4.4	6.2	3.77	3.55	
482.0	6.00	121.50	481.5	-5.8	7.1	9.1	2.86	1.94	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b>	Well Gardner Federal 28-2D
<b>Project:</b>	S. Piceance (Parachute)	<b>TVD Reference:</b>	KBE @ 6442.0ft (Nabors M13)
<b>Site:</b>	NENW Sec28-T7S-R95W (PC-28)	<b>MD Reference:</b>	KBE @ 6442.0ft (Nabors M13)
<b>Well:</b>	Gardner Federal 28-2D	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<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
513.0	6.40	122.50	512.4	-7.6	10.0	12.4	1.34	1.29	
543.0	6.90	133.80	542.2	-9.7	12.7	15.8	4.66	1.67	
574.0	7.20	137.60	572.9	-12.4	15.3	19.6	1.79	0.97	
667.0	10.00	146.20	664.9	-23.4	23.8	33.4	3.31	3.01	
759.0	12.70	140.20	755.1	-37.8	34.7	51.3	3.20	2.93	
850.0	15.70	131.80	843.3	-53.7	50.3	73.6	3.99	3.30	
941.0	18.50	132.50	930.3	-71.7	70.1	100.3	3.09	3.08	
1,035.0	19.10	133.10	1,019.2	-92.3	92.3	130.5	0.67	0.64	
1,131.0	19.70	132.80	1,109.8	-114.0	115.7	162.4	0.63	0.62	
1,262.0	20.30	131.40	1,232.9	-144.0	148.9	207.2	0.59	0.46	
1,357.0	21.10	132.70	1,321.8	-166.5	173.8	240.7	0.97	0.84	
1,452.0	20.70	132.70	1,410.5	-189.5	198.8	274.5	0.42	-0.42	
1,548.0	20.80	135.90	1,500.3	-213.3	223.1	308.5	1.19	0.10	
1,643.0	20.20	134.60	1,589.3	-236.9	246.5	341.8	0.79	-0.63	
1,738.0	21.60	136.10	1,678.0	-261.0	270.3	375.7	1.58	1.47	
1,834.0	21.00	134.80	1,767.5	-285.9	294.8	410.6	0.80	-0.62	
1,929.0	21.30	138.00	1,856.1	-310.7	318.4	444.8	1.26	0.32	
2,024.0	20.20	136.90	1,944.9	-335.5	341.1	478.4	1.23	-1.16	
2,119.0	20.50	137.00	2,034.0	-359.6	363.7	511.5	0.32	0.32	
2,214.0	21.00	137.60	2,122.8	-384.4	386.5	545.1	0.57	0.53	
2,308.0	22.40	139.10	2,210.1	-410.3	409.6	579.8	1.60	1.49	
2,404.0	21.10	139.00	2,299.3	-437.2	432.9	615.3	1.35	-1.35	
2,499.0	21.20	137.70	2,387.9	-462.8	455.7	649.5	0.50	0.11	
2,594.0	21.60	136.70	2,476.4	-488.3	479.3	684.1	0.57	0.42	
2,690.0	20.40	136.30	2,566.0	-513.2	502.9	718.5	1.26	-1.25	
2,784.0	21.40	134.80	2,653.8	-537.1	526.4	752.1	1.21	1.06	
2,879.0	20.00	134.70	2,742.7	-560.8	550.3	785.6	1.47	-1.47	
2,974.0	21.20	132.20	2,831.6	-583.8	574.5	819.0	1.57	1.26	
3,070.0	21.80	133.10	2,920.9	-607.6	600.4	854.2	0.71	0.62	
3,165.0	22.50	134.40	3,008.9	-632.4	626.3	890.0	0.90	0.74	
3,261.0	21.60	134.80	3,097.9	-657.7	651.9	926.0	0.95	-0.94	
3,356.0	23.20	132.80	3,185.7	-682.7	678.1	962.2	1.87	1.68	
3,451.0	22.20	132.50	3,273.3	-707.5	705.0	998.9	1.06	-1.05	
3,545.0	23.00	134.20	3,360.1	-732.3	731.3	1,035.0	1.10	0.85	
3,640.0	22.50	133.00	3,447.7	-757.7	757.9	1,071.7	0.72	-0.53	
3,735.0	21.60	132.40	3,535.8	-781.9	784.1	1,107.3	0.98	-0.95	
3,831.0	20.90	133.50	3,625.3	-805.6	809.6	1,142.1	0.84	-0.73	
3,926.0	19.90	133.70	3,714.3	-828.4	833.6	1,175.2	1.06	-1.05	
4,022.0	21.00	133.70	3,804.2	-851.6	857.8	1,208.7	1.15	1.15	
4,117.0	21.10	133.90	3,892.9	-875.2	882.4	1,242.8	0.13	0.11	
4,212.0	20.40	134.70	3,981.7	-898.7	906.5	1,276.5	0.79	-0.74	
4,307.0	19.10	136.90	4,071.2	-921.7	928.9	1,308.6	1.58	-1.37	
4,402.0	19.90	135.60	4,160.7	-944.6	950.9	1,340.3	0.96	0.84	
4,497.0	20.50	135.60	4,249.9	-968.0	973.8	1,373.1	0.63	0.63	
4,592.0	20.70	134.30	4,338.8	-991.6	997.5	1,406.5	0.53	0.21	
4,687.0	21.70	134.80	4,427.4	-1,015.7	1,021.9	1,440.8	1.07	1.05	
4,782.0	20.30	134.80	4,516.0	-1,039.7	1,046.1	1,474.9	1.47	-1.47	
4,877.0	19.90	136.20	4,605.3	-1,063.0	1,069.0	1,507.5	0.66	-0.42	
4,972.0	18.90	136.50	4,694.9	-1,085.8	1,090.8	1,539.1	1.06	-1.05	
5,067.0	18.90	137.50	4,784.7	-1,108.4	1,111.7	1,569.8	0.34	0.00	
5,162.0	16.80	135.20	4,875.2	-1,129.4	1,131.8	1,598.9	2.33	-2.21	
5,257.0	13.70	138.10	4,966.8	-1,147.6	1,149.0	1,623.9	3.36	-3.26	
5,352.0	11.00	135.80	5,059.6	-1,162.4	1,162.8	1,644.2	2.89	-2.84	

# Cathedral Energy Services

## Survey Report

<b>Company:</b> EnCana Oil & Gas (USA) Inc	<b>Local Co-ordinate Reference:</b> Well Gardner Federal 28-2D
<b>Project:</b> S. Piceance (Parachute)	<b>TVD Reference:</b> KBE @ 6442.0ft (Nabors M13)
<b>Site:</b> NENW Sec28-T7S-R95W (PC-28)	<b>MD Reference:</b> KBE @ 6442.0ft (Nabors M13)
<b>Well:</b> Gardner Federal 28-2D	<b>North Reference:</b> True
<b>Wellbore:</b> DD	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> FINAL	<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
5,447.0	9.40	137.60	5,153.1	-1,174.7	1,174.4	1,661.0	1.72	-1.68	
5,542.0	8.30	137.80	5,247.0	-1,185.5	1,184.2	1,675.6	1.16	-1.16	
5,637.0	7.00	131.50	5,341.1	-1,194.4	1,193.2	1,688.3	1.63	-1.37	
5,732.0	4.80	133.50	5,435.6	-1,201.0	1,200.4	1,698.0	2.33	-2.32	
5,827.0	3.50	119.60	5,530.4	-1,205.1	1,205.8	1,704.8	1.72	-1.37	
5,915.0	1.46	114.24	5,618.3	-1,206.9	1,209.2	1,708.4	2.33	-2.32	Gardner Federal 28-2D (PC28) TGT
5,922.0	1.30	113.10	5,625.3	-1,207.0	1,209.3	1,708.6	2.33	-2.30	
6,018.0	0.70	108.10	5,721.3	-1,207.6	1,210.9	1,710.1	0.63	-0.62	
6,113.0	0.90	151.60	5,816.3	-1,208.4	1,211.8	1,711.3	0.65	0.21	
6,208.0	1.00	143.10	5,911.2	-1,209.7	1,212.6	1,712.9	0.18	0.11	
6,303.0	0.90	111.60	6,006.2	-1,210.7	1,213.8	1,714.4	0.55	-0.11	
6,398.0	1.00	349.40	6,101.2	-1,210.1	1,214.4	1,714.4	1.75	0.11	
6,493.0	0.90	328.70	6,196.2	-1,208.7	1,213.8	1,713.0	0.37	-0.11	
6,588.0	0.70	326.20	6,291.2	-1,207.6	1,213.1	1,711.7	0.21	-0.21	
6,684.0	1.00	298.30	6,387.2	-1,206.7	1,212.0	1,710.3	0.52	0.31	
6,779.0	1.40	253.00	6,482.2	-1,206.6	1,210.2	1,709.0	1.05	0.42	
6,873.0	2.80	210.50	6,576.1	-1,209.0	1,207.9	1,709.0	2.13	1.49	
6,969.0	1.70	217.90	6,672.0	-1,212.1	1,205.9	1,709.8	1.18	-1.15	
7,064.0	1.50	231.40	6,767.0	-1,214.0	1,204.0	1,709.8	0.45	-0.21	
7,159.0	1.80	222.70	6,862.0	-1,215.9	1,202.1	1,709.7	0.41	0.32	
7,254.0	1.70	208.00	6,956.9	-1,218.2	1,200.4	1,710.2	0.48	-0.11	
7,350.0	1.80	199.80	7,052.9	-1,220.9	1,199.2	1,711.3	0.28	0.10	
7,445.0	1.70	214.70	7,147.8	-1,223.4	1,197.9	1,712.2	0.49	-0.11	
7,541.0	1.70	212.20	7,243.8	-1,225.8	1,196.3	1,712.8	0.08	0.00	
7,590.0	1.80	212.60	7,292.8	-1,227.1	1,195.5	1,713.1	0.21	0.20	Last Cathedral Survey @ 7,590' MD - Gardner F
7,640.0	1.80	212.00	7,342.7	-1,228.4	1,194.7	1,713.4	0.04	0.00	Projection to Bit @ 7,640' MD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Gardner Federal 28-2D ( - hit/miss target - Shape)	0.00	358.42	7,316.0	-1,218.0	1,211.8	1,584,752.47	2,293,984.84	39.412237	-107.999179
- actual wellpath misses target center by 29.8ft at 7590.0ft MD (7292.8 TVD, -1227.1 N, 1195.5 E)									
- Circle (radius 25.0)									
Gardner Federal 28-2D ( - actual wellpath misses target center by 11.3ft at 5915.0ft MD (5618.3 TVD, -1206.9 N, 1209.2 E)	0.00	358.42	5,618.0	-1,218.0	1,211.8	1,584,752.47	2,293,984.84	39.412237	-107.999179
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment	
7,590.0	7,292.8	-1,227.1	1,195.5	Last Cathedral Survey @ 7,590' MD	
7,640.0	7,342.7	-1,228.4	1,194.7	Projection to Bit @ 7,640' MD	

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