



DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Marcus State 3B-36H PBHL P2	4557.2	-679.8	1280493.79	3214692.66	40.100790	-104.732540

FINAL
 Marcus State 3B-36H
 251755 135331; AT
 KBE @ 5052.0ft (Ensign 135)
 Ground Elevation @ 5039.0
 North American Datum 1983
 Well Marcus State 3B-36H, True North

M Azimuths to True North
 Magnetic North: 8.53°
 Magnetic Field
 Strength: 52740.8snT
 Dip Angle: 66.73°
 Date: 8/16/2013
 Model: IGRF2010

Vertical Section at 0.00° (1200 ft/in)

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3B-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft (Ensign 135)
Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft (Ensign 135)
Well:	Marcus State 3B-36H	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	HZ	Database:	USA EDM 5000 Multi Users DB

Project	DJ Wattenberg		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site		S36 T2N-R66W (Marcus State)			
Site Position:		Northing:	1,275,942.66 ft	Latitude:	40.088280
From:	Lat/Long	Easting:	3,215,403.58 ft	Longitude:	-104.730140
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.50 °

Well	Marcus State 3B-36H					
Well Position	+N/-S	0.0 ft	Northing:	1,275,942.71 ft	Latitude:	40.088280
	+E/-W	0.0 ft	Easting:	3,215,411.97 ft	Longitude:	-104.730110
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,039.0 ft

Wellbore	HZ				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/16/2013	8.53	66.73	52,741

Design	HZ				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0.0	0.0	0.0	0.00	

Survey Program	Date	8/24/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
142.0	11,900.0	Survey #1 (HZ)	Geolink MWD	Geolink MWD	

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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
142.0	0.60	175.00	142.0	-0.7	0.1	-0.7	0.42	0.42	
234.0	0.50	173.40	234.0	-1.6	0.2	-1.6	0.11	-0.11	
326.0	1.40	249.50	326.0	-2.4	-0.9	-2.4	1.49	0.98	
418.0	2.20	249.40	417.9	-3.4	-3.6	-3.4	0.87	0.87	
510.0	2.60	258.10	509.9	-4.5	-7.3	-4.5	0.59	0.43	
602.0	3.30	243.20	601.7	-6.1	-11.7	-6.1	1.12	0.76	
694.0	4.20	254.10	693.5	-8.2	-17.3	-8.2	1.24	0.98	
787.0	5.40	258.70	786.2	-10.0	-24.8	-10.0	1.35	1.29	
878.0	6.30	249.80	876.7	-12.6	-33.7	-12.6	1.40	0.99	
970.0	7.10	243.20	968.1	-16.9	-43.5	-16.9	1.21	0.87	
1,062.0	5.90	237.90	1,059.5	-22.0	-52.6	-22.0	1.46	-1.30	
1,154.0	5.60	239.60	1,151.1	-26.7	-60.5	-26.7	0.37	-0.33	

Cathedral Energy Services

Survey Report

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Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft (Ensign 135)
Well:	Marcus State 3B-36H	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	HZ	Database:	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
1,180.0	5.40	242.60	1,176.9	-27.9	-62.7	-27.9	1.35	-0.77	
1,285.0	4.30	230.70	1,281.6	-32.7	-70.1	-32.7	1.41	-1.05	
1,377.0	5.10	242.70	1,373.3	-36.8	-76.4	-36.8	1.37	0.87	
1,469.0	6.00	242.10	1,464.8	-40.9	-84.3	-40.9	0.98	0.98	
1,562.0	7.20	248.70	1,557.2	-45.3	-94.0	-45.3	1.52	1.29	
1,653.0	6.70	242.40	1,647.5	-49.8	-104.0	-49.8	1.00	-0.55	
1,745.0	8.60	249.00	1,738.7	-54.8	-115.2	-54.8	2.27	2.07	
1,837.0	8.00	246.90	1,829.8	-59.7	-127.5	-59.7	0.73	-0.65	
1,929.0	7.50	240.60	1,920.9	-65.2	-138.6	-65.2	1.07	-0.54	
2,024.0	7.80	246.30	2,015.1	-70.8	-149.9	-70.8	0.86	0.32	
2,119.0	7.50	243.10	2,109.2	-76.2	-161.4	-76.2	0.55	-0.32	
2,213.0	6.90	241.90	2,202.5	-81.7	-171.8	-81.7	0.66	-0.64	
2,308.0	6.50	240.70	2,296.8	-87.0	-181.6	-87.0	0.45	-0.42	
2,403.0	6.10	256.50	2,391.3	-90.8	-191.1	-90.8	1.87	-0.42	
2,498.0	5.00	254.40	2,485.8	-93.1	-200.0	-93.1	1.18	-1.16	
2,593.0	5.80	251.50	2,580.4	-95.7	-208.6	-95.7	0.89	0.84	
2,687.0	6.50	259.40	2,673.9	-98.2	-218.3	-98.2	1.17	0.74	
2,782.0	4.80	264.60	2,768.4	-99.6	-227.6	-99.6	1.87	-1.79	
2,877.0	5.80	252.30	2,863.0	-101.4	-236.1	-101.4	1.59	1.05	
2,971.0	6.30	238.50	2,956.5	-105.6	-245.0	-105.6	1.63	0.53	
3,066.0	5.50	237.00	3,051.0	-110.8	-253.3	-110.8	0.86	-0.84	
3,161.0	5.30	236.20	3,145.5	-115.7	-260.7	-115.7	0.22	-0.21	
3,256.0	6.00	230.70	3,240.1	-121.3	-268.2	-121.3	0.93	0.74	
3,350.0	5.50	231.90	3,333.6	-127.2	-275.6	-127.2	0.55	-0.53	
3,445.0	6.00	239.20	3,428.1	-132.5	-283.4	-132.5	0.93	0.53	
3,540.0	7.40	246.00	3,522.5	-137.5	-293.3	-137.5	1.69	1.47	
3,635.0	6.20	254.40	3,616.8	-141.4	-303.8	-141.4	1.64	-1.26	
3,730.0	6.40	253.70	3,711.2	-144.3	-313.8	-144.3	0.23	0.21	
3,824.0	7.10	253.10	3,804.6	-147.4	-324.4	-147.4	0.75	0.74	
3,919.0	6.90	259.00	3,898.9	-150.2	-335.6	-150.2	0.79	-0.21	
4,014.0	6.90	250.50	3,993.2	-153.2	-346.6	-153.2	1.07	0.00	
4,109.0	6.10	238.20	4,087.6	-157.8	-356.3	-157.8	1.69	-0.84	
4,203.0	7.00	242.70	4,181.0	-163.0	-365.6	-163.0	1.10	0.96	
4,298.0	7.50	235.60	4,275.2	-169.2	-375.9	-169.2	1.08	0.53	
4,393.0	7.30	246.90	4,369.4	-175.1	-386.6	-175.1	1.54	-0.21	
4,488.0	6.10	235.50	4,463.8	-180.3	-396.3	-180.3	1.88	-1.26	
4,583.0	6.50	234.80	4,558.2	-186.3	-404.8	-186.3	0.43	0.42	
4,677.0	7.60	237.40	4,651.5	-192.7	-414.4	-192.7	1.22	1.17	
4,772.0	7.30	250.10	4,745.7	-198.1	-425.4	-198.1	1.76	-0.32	
4,867.0	5.40	250.30	4,840.1	-201.7	-435.3	-201.7	2.00	-2.00	
4,961.0	7.90	242.90	4,933.5	-206.1	-445.2	-206.1	2.81	2.66	
5,056.0	5.80	238.90	5,027.8	-211.6	-455.1	-211.6	2.27	-2.21	
5,151.0	6.20	245.60	5,122.3	-216.2	-463.9	-216.2	0.85	0.42	
5,245.0	5.70	249.40	5,215.8	-219.9	-472.9	-219.9	0.68	-0.53	
5,340.0	6.40	252.00	5,310.2	-223.2	-482.3	-223.2	0.79	0.74	
5,435.0	6.50	247.40	5,404.6	-226.9	-492.3	-226.9	0.55	0.11	
5,530.0	6.50	247.40	5,499.0	-231.0	-502.3	-231.0	0.00	0.00	
5,624.0	6.30	242.10	5,592.4	-235.5	-511.7	-235.5	0.66	-0.21	
5,719.0	7.30	249.60	5,686.8	-240.0	-522.0	-240.0	1.41	1.05	
5,814.0	4.70	249.50	5,781.2	-243.5	-531.3	-243.5	2.74	-2.74	
5,909.0	5.00	254.10	5,875.9	-246.0	-538.9	-246.0	0.52	0.32	
6,003.0	5.10	240.20	5,969.5	-249.2	-546.5	-249.2	1.30	0.11	
6,098.0	6.10	228.40	6,064.1	-254.6	-553.9	-254.6	1.60	1.05	

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Design:	HZ	Database:	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
6,193.0	5.60	252.80	6,158.6	-259.4	-562.1	-259.4	2.65	-0.53	
6,288.0	6.20	250.00	6,253.1	-262.5	-571.4	-262.5	0.70	0.63	
6,382.0	6.40	243.20	6,346.5	-266.6	-580.8	-266.6	0.82	0.21	
6,477.0	6.30	249.90	6,441.0	-270.8	-590.4	-270.8	0.79	-0.11	
6,572.0	6.10	238.70	6,535.4	-275.2	-599.6	-275.2	1.29	-0.21	
6,666.0	5.50	239.10	6,628.9	-280.1	-607.8	-280.1	0.64	-0.64	
6,698.0	4.80	240.60	6,660.8	-281.5	-610.3	-281.5	2.23	-2.19	
6,729.0	4.90	258.70	6,691.7	-282.4	-612.7	-282.4	4.93	0.32	
6,761.0	7.10	291.50	6,723.5	-282.0	-615.9	-282.0	12.46	6.87	
6,792.0	10.00	310.30	6,754.2	-279.5	-619.7	-279.5	12.88	9.35	
6,824.0	13.30	318.10	6,785.5	-275.0	-624.3	-275.0	11.40	10.31	
6,856.0	16.00	321.90	6,816.5	-268.8	-629.5	-268.8	8.95	8.44	
6,888.0	17.80	327.20	6,847.1	-261.2	-634.8	-261.2	7.40	5.62	
6,919.0	19.50	333.60	6,876.5	-252.6	-639.7	-252.6	8.58	5.48	
6,951.0	21.80	337.60	6,906.4	-242.3	-644.3	-242.3	8.43	7.19	
6,982.0	24.40	340.40	6,934.9	-230.9	-648.7	-230.9	9.10	8.39	
7,014.0	27.60	344.10	6,963.7	-217.6	-652.9	-217.6	11.21	10.00	
7,045.0	30.60	346.40	6,990.8	-203.0	-656.8	-203.0	10.33	9.68	
7,077.0	33.10	347.60	7,017.9	-186.6	-660.6	-186.6	8.06	7.81	
7,109.0	34.80	348.60	7,044.5	-169.1	-664.2	-169.1	5.59	5.31	
7,140.0	37.70	349.90	7,069.5	-151.1	-667.6	-151.1	9.68	9.35	
7,172.0	41.10	350.90	7,094.2	-131.0	-671.0	-131.0	10.81	10.62	
7,203.0	45.20	352.20	7,116.8	-110.1	-674.1	-110.1	13.53	13.23	
7,235.0	48.40	353.90	7,138.7	-86.9	-676.9	-86.9	10.72	10.00	
7,266.0	50.90	355.20	7,158.8	-63.4	-679.2	-63.4	8.67	8.06	
7,298.0	54.20	356.00	7,178.3	-38.1	-681.1	-38.1	10.50	10.31	
7,330.0	57.20	357.30	7,196.3	-11.7	-682.7	-11.7	9.96	9.37	
7,361.0	60.10	358.30	7,212.4	14.8	-683.7	14.8	9.75	9.35	
7,393.0	62.90	359.50	7,227.7	42.9	-684.2	42.9	9.35	8.75	
7,424.0	66.30	0.40	7,241.0	70.9	-684.2	70.9	11.28	10.97	
7,456.0	69.10	1.00	7,253.1	100.5	-683.9	100.5	8.92	8.75	
7,488.0	71.00	1.10	7,264.0	130.5	-683.3	130.5	5.94	5.94	
7,519.0	73.10	1.00	7,273.6	160.0	-682.8	160.0	6.78	6.77	
7,551.0	75.10	0.70	7,282.4	190.8	-682.3	190.8	6.31	6.25	
7,582.0	77.70	0.70	7,289.6	220.9	-682.0	220.9	8.39	8.39	
7,614.0	80.00	359.90	7,295.8	252.3	-681.8	252.3	7.59	7.19	
7,645.0	83.60	359.40	7,300.3	283.0	-682.0	283.0	11.72	11.61	
7,657.0	85.20	359.70	7,301.4	295.0	-682.1	295.0	13.55	13.32	
7,734.0	87.70	0.20	7,306.2	371.8	-682.1	371.8	3.31	3.25	
7,828.0	86.30	359.80	7,311.1	465.7	-682.1	465.7	1.55	-1.49	
7,923.0	87.30	0.20	7,316.4	560.5	-682.1	560.5	1.13	1.05	
8,018.0	88.50	0.80	7,319.9	655.4	-681.3	655.4	1.41	1.26	
8,112.0	88.60	359.80	7,322.3	749.4	-680.8	749.4	1.07	0.11	
8,207.0	88.80	359.90	7,324.4	844.4	-681.1	844.4	0.24	0.21	
8,302.0	88.80	359.40	7,326.4	939.4	-681.7	939.4	0.53	0.00	
8,397.0	88.70	359.50	7,328.5	1,034.3	-682.6	1,034.3	0.15	-0.11	
8,492.0	88.80	359.40	7,330.6	1,129.3	-683.5	1,129.3	0.15	0.11	
8,586.0	90.20	358.90	7,331.4	1,223.3	-684.9	1,223.3	1.58	1.49	
8,649.0	89.50	358.60	7,331.5	1,286.3	-686.2	1,286.3	1.21	-1.11	
8,713.0	89.60	358.50	7,332.1	1,350.2	-687.9	1,350.2	0.22	0.16	
8,776.0	89.90	358.90	7,332.3	1,413.2	-689.3	1,413.2	0.79	0.48	
8,870.0	91.70	0.40	7,331.0	1,507.2	-689.9	1,507.2	2.49	1.91	
8,965.0	92.60	0.10	7,327.5	1,602.1	-689.5	1,602.1	1.00	0.95	
9,060.0	92.30	0.10	7,323.4	1,697.1	-689.3	1,697.1	0.32	-0.32	

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Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft (Ensign 135)
Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft (Ensign 135)
Well:	Marcus State 3B-36H	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	HZ	Database:	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
9,155.0	90.90	1.10	7,320.7	1,792.0	-688.3	1,792.0	1.81	-1.47	
9,249.0	89.60	0.40	7,320.3	1,886.0	-687.1	1,886.0	1.57	-1.38	
9,344.0	92.20	1.50	7,318.8	1,981.0	-685.5	1,981.0	2.97	2.74	
9,439.0	90.70	1.20	7,316.4	2,075.9	-683.3	2,075.9	1.61	-1.58	
9,534.0	89.10	0.30	7,316.6	2,170.9	-682.0	2,170.9	1.93	-1.68	
9,628.0	88.30	0.40	7,318.7	2,264.9	-681.4	2,264.9	0.86	-0.85	
9,723.0	88.20	0.30	7,321.6	2,359.8	-680.9	2,359.8	0.15	-0.11	
9,818.0	88.00	0.40	7,324.8	2,454.8	-680.3	2,454.8	0.24	-0.21	
9,912.0	87.60	0.40	7,328.4	2,548.7	-679.6	2,548.7	0.43	-0.43	
10,007.0	88.50	1.00	7,331.6	2,643.6	-678.5	2,643.6	1.14	0.95	
10,101.0	90.30	0.80	7,332.6	2,737.6	-677.0	2,737.6	1.93	1.91	
10,196.0	91.30	1.30	7,331.3	2,832.6	-675.2	2,832.6	1.18	1.05	
10,291.0	91.70	0.90	7,328.8	2,927.5	-673.4	2,927.5	0.60	0.42	
10,385.0	90.30	2.20	7,327.2	3,021.5	-670.9	3,021.5	2.03	-1.49	
10,480.0	88.00	1.90	7,328.6	3,116.4	-667.5	3,116.4	2.44	-2.42	
10,575.0	88.20	1.20	7,331.7	3,211.3	-664.9	3,211.3	0.77	0.21	
10,670.0	89.20	0.20	7,333.9	3,306.3	-663.8	3,306.3	1.49	1.05	
10,764.0	89.10	359.20	7,335.3	3,400.3	-664.2	3,400.3	1.07	-0.11	
10,859.0	88.50	359.80	7,337.3	3,495.2	-665.1	3,495.2	0.89	-0.63	
10,954.0	87.70	359.20	7,340.4	3,590.2	-665.9	3,590.2	1.05	-0.84	
11,048.0	89.00	359.50	7,343.1	3,684.1	-667.0	3,684.1	1.42	1.38	
11,143.0	88.70	359.30	7,345.0	3,779.1	-668.0	3,779.1	0.38	-0.32	
11,238.0	88.40	358.90	7,347.4	3,874.1	-669.5	3,874.1	0.53	-0.32	
11,332.0	87.60	358.30	7,350.7	3,968.0	-671.7	3,968.0	1.06	-0.85	
11,427.0	87.30	358.80	7,354.9	4,062.9	-674.1	4,062.9	0.61	-0.32	
11,522.0	89.60	358.80	7,357.5	4,157.8	-676.1	4,157.8	2.42	2.42	
11,617.0	92.10	359.90	7,356.1	4,252.8	-677.2	4,252.8	2.87	2.63	
11,711.0	92.30	359.70	7,352.5	4,346.7	-677.5	4,346.7	0.30	0.21	
11,806.0	92.30	0.30	7,348.7	4,441.6	-677.5	4,441.6	0.63	0.00	
11,851.0	92.40	0.30	7,346.8	4,486.6	-677.3	4,486.6	0.22	0.22	Last Cathedral Survey @ 11,851' MD
11,900.0	92.40	0.30	7,344.8	4,535.5	-677.1	4,535.5	0.00	0.00	Projection to TD @ 11,900' MD

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Marcus State 3B-36H
Project:	DJ Wattenberg	TVD Reference:	KBE @ 5052.0ft (Ensign 135)
Site:	S36 T2N-R66W (Marcus State)	MD Reference:	KBE @ 5052.0ft (Ensign 135)
Well:	Marcus State 3B-36H	North Reference:	True
Wellbore:	HZ	Survey Calculation Method:	Minimum Curvature
Design:	HZ	Database:	USA EDM 5000 Multi Users DB

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
Marcus State 3B-36H PĒ	0.00	0.00	7,318.0	4,557.2	-679.8	1,280,493.79	3,214,692.66	40.100790	-104.732540
- survey misses target center by 34.5ft at 11900.0ft MD (7344.8 TVD, 4535.5 N, -677.1 E)									
- Point									
Marcus State 3B-36H PĒ	0.00	0.00	7,284.0	4,557.2	-679.8	1,280,493.79	3,214,692.66	40.100790	-104.732540
- survey misses target center by 64.6ft at 11900.0ft MD (7344.8 TVD, 4535.5 N, -677.1 E)									
- Point									
Marcus State 3B-36H TĒ	0.00	0.00	7,335.0	1,100.0	-679.8	1,277,036.77	3,214,722.65	40.091300	-104.732540
- survey misses target center by 6.1ft at 8462.8ft MD (7329.9 TVD, 1100.1 N, -683.2 E)									
- Point									
Marcus State 3B-36H LF	0.00	0.00	7,288.0	277.2	-679.8	1,276,214.00	3,214,729.79	40.089041	-104.732540
- survey misses target center by 11.7ft at 7637.5ft MD (7299.4 TVD, 275.6 N, -681.9 E)									
- Point									
Marcus State 3B-36H PĒ	0.00	0.00	7,334.0	4,557.2	-679.8	1,280,493.79	3,214,692.66	40.100790	-104.732540
- survey misses target center by 24.3ft at 11900.0ft MD (7344.8 TVD, 4535.5 N, -677.1 E)									
- Point									
Marcus State 3B-36H PĒ	0.00	0.00	7,281.0	4,557.2	-679.8	1,280,493.79	3,214,692.66	40.100790	-104.732540
- survey misses target center by 67.4ft at 11900.0ft MD (7344.8 TVD, 4535.5 N, -677.1 E)									
- Point									
Marcus State 3B-36H TĒ	0.00	0.00	7,335.0	3,000.0	-679.8	1,278,936.69	3,214,706.15	40.096515	-104.732540
- survey misses target center by 11.2ft at 10363.2ft MD (7327.3 TVD, 2999.6 N, -671.7 E)									
- Point									
Marcus State 3B-36H TĒ	0.00	0.00	7,318.0	3,091.3	-679.8	1,279,027.99	3,214,705.36	40.096766	-104.732540
- survey misses target center by 15.1ft at 10454.3ft MD (7327.8 TVD, 3090.7 N, -668.3 E)									
- Point									
Marcus State 3B-36H TĒ	0.00	0.00	7,318.0	1,791.3	-679.8	1,277,728.04	3,214,716.64	40.093197	-104.732540
- survey misses target center by 8.9ft at 9154.5ft MD (7320.7 TVD, 1791.5 N, -688.3 E)									
- Point									

Survey Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(ft)	(ft)	+N/-S	+E/-W	Comment	
(ft)	(ft)	(ft)	(ft)		
11,851.0	7,346.8	4,486.6	-677.3	Last Cathedral Survey @ 11,851' MD	
11,900.0	7,344.8	4,535.5	-677.1	Projection to TD @ 11,900' MD	

Checked By: _____ Approved By: _____ Date: _____