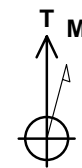
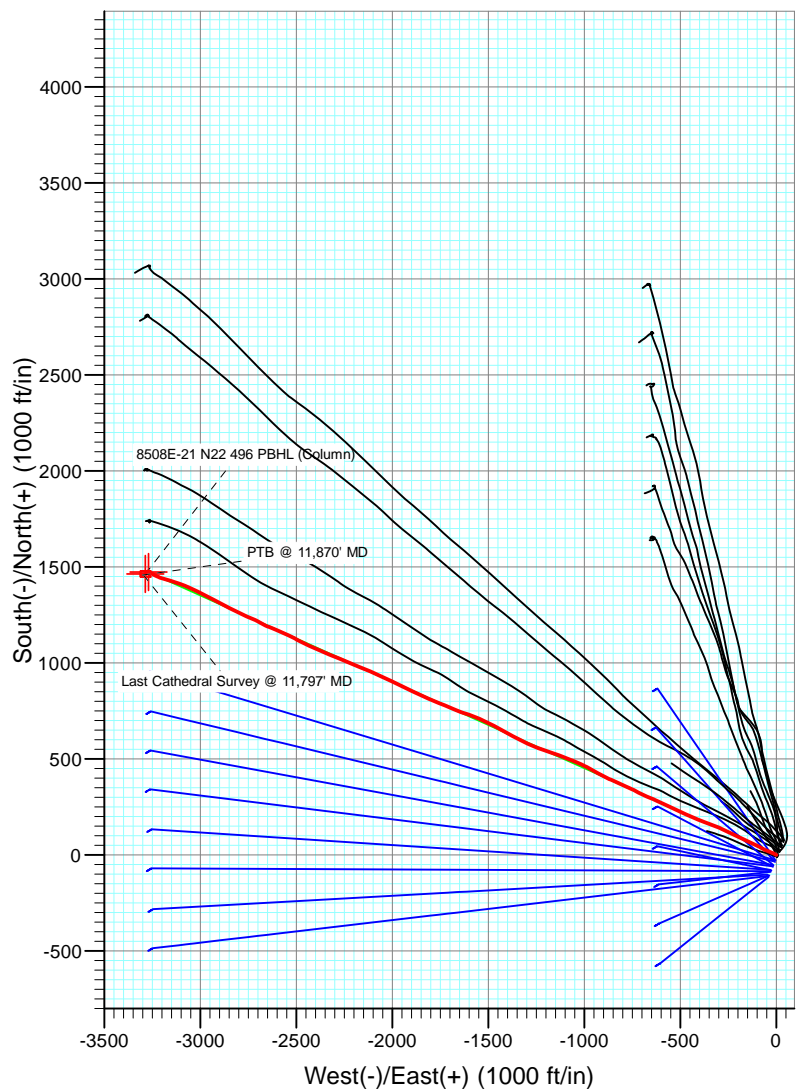
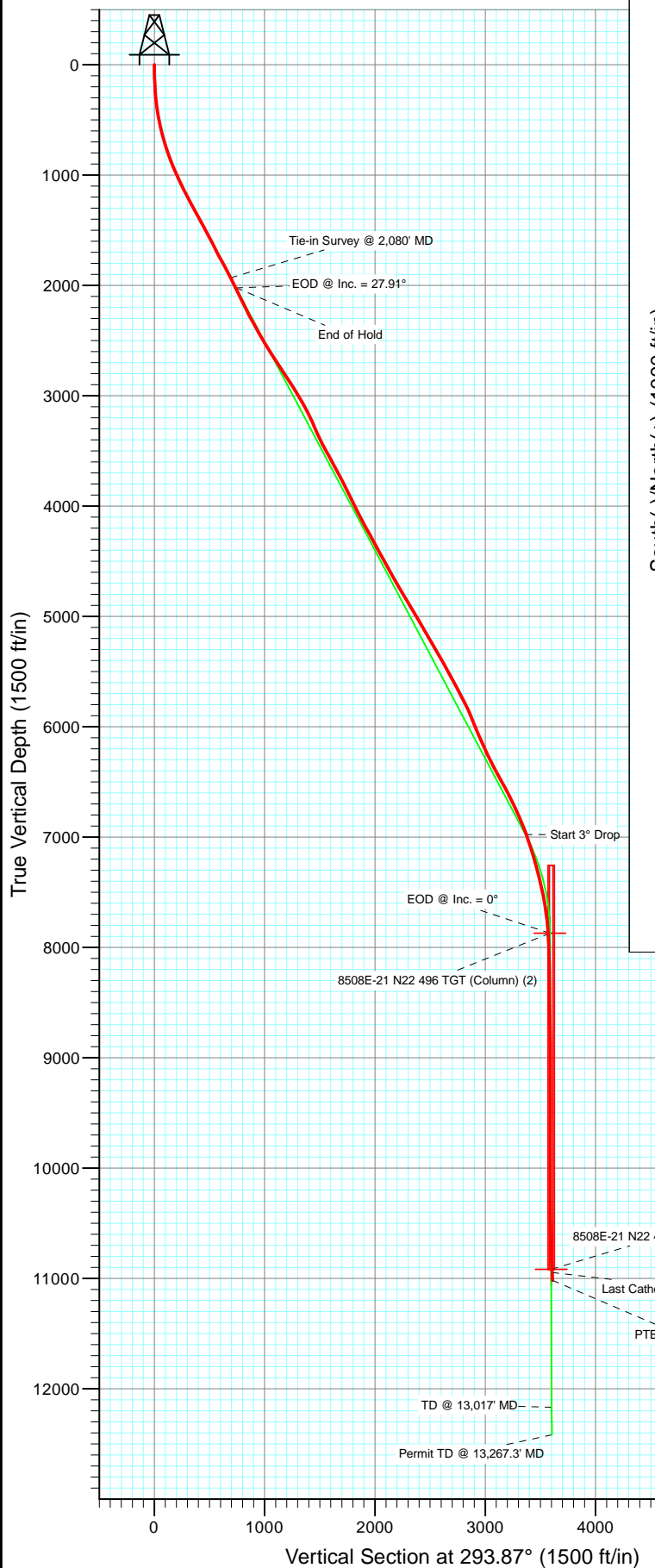




Project: Story Gulch
Site: S22-T4S-R96W (N22 496) (Column Pattern)
Well: 8508E-21 N22 496
Wellbore: DD
Design: Final Survey



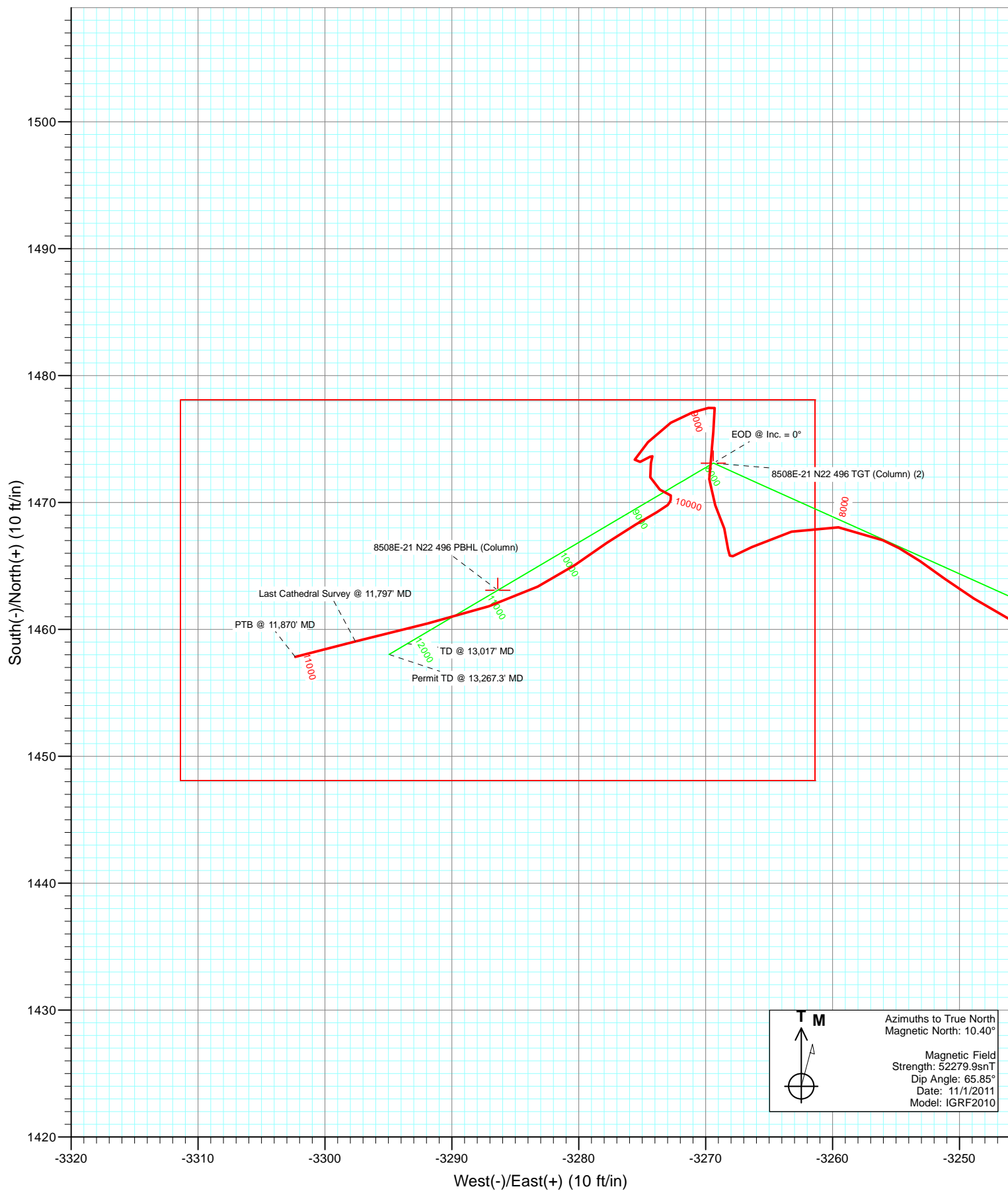
Azimuths to True North
Magnetic North: 10.40°

Magnetic Field
Strength: 52279.9snT
Dip Angle: 65.85°
Date: 11/1/2011
Model: IGRF2010

DD
8508E-21 N22 496
115482/119655 (SH) 125051/129855 (MH); LR

WELL @ 7602.0ft (Patterson 306)
North American Datum 1983
Well 8508E-21 N22 496, True North

Type User	Target No Target (Freehand)	Azimuth 293.87	Origin Type Slot	N/S 0.0	E/W 0.0	From TVD 0.0
Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
8508E-21 N22 496 TGT (Column)	7257.0	1473.1	-3269.4	39° 41' 17.06 N	108° 10' 7.45 W	
8508E-21 N22 496 TGT (Column) (2)	7870.3	1473.1	-3269.4	39° 41' 17.06 N	108° 10' 7.45 W	
8508E-21 N22 496 PBHL (Column)	0917.0	1463.1	-3286.4	39° 41' 16.96 N	108° 10' 7.66 W	



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8508E-21 N22 496
Project:	Story Gulch	TVD Reference:	WELL @ 7602.0ft (Patterson 306)
Site:	S22-T4S-R96W (N22 496) (Column Pattern)	MD Reference:	WELL @ 7602.0ft (Patterson 306)
Well:	8508E-21 N22 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	Database:	USA EDM 5000 Multi Users DB

Project	Story Gulch		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		S22-T4S-R96W (N22 496) (Column Pattern)			
Site Position:		Northing:	1,685,048.56 ft	Latitude:	39° 41' 3.24 N
From:	Lat/Long	Easting:	2,252,316.79 ft	Longitude:	108° 9' 25.11 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.68 °

Well	8508E-21 N22 496					
Well Position	+N/-S	0.0 ft	Northing:	1,684,975.50 ft	Latitude:	39° 41' 2.50 N
	+E/-W	0.0 ft	Easting:	2,252,274.40 ft	Longitude:	108° 9' 25.62 W
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,569.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	11/1/2011	10.40	65.85	52,280

Design	DD				
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	293.87	

Survey Program	Date	1/30/2012			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
180.0	2,080.0	Survey #1 (DD)	MWD	Geolink MWD	
2,180.0	11,870.0	Survey #2 (DD)	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	
180.0	2.60	298.50	179.9	1.9	-3.6	4.1	1.44	1.44	
241.0	3.40	298.90	240.9	3.5	-6.4	7.3	1.31	1.31	
333.0	6.70	298.80	332.5	7.4	-13.5	15.3	3.59	3.59	
424.0	9.40	289.60	422.6	12.4	-25.1	28.0	3.28	2.97	
516.0	11.30	292.40	513.1	18.4	-40.5	44.5	2.14	2.07	
610.0	13.70	294.90	604.8	26.6	-59.2	64.9	2.62	2.55	
701.0	16.20	297.80	692.8	37.1	-80.2	88.3	2.87	2.75	
792.0	18.80	296.50	779.5	49.5	-104.5	115.6	2.89	2.86	
884.0	21.40	295.90	865.9	63.5	-132.9	147.2	2.83	2.83	
975.0	23.60	294.90	950.0	78.4	-164.4	182.0	2.45	2.42	
1,067.0	24.40	295.60	1,034.0	94.4	-198.2	219.4	0.92	0.87	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8508E-21 N22 496
Project:	Story Gulch	TVD Reference:	WELL @ 7602.0ft (Patterson 306)
Site:	S22-T4S-R96W (N22 496) (Column Pattern)	MD Reference:	WELL @ 7602.0ft (Patterson 306)
Well:	8508E-21 N22 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	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
1,159.0	26.10	296.00	1,117.3	111.4	-233.5	258.6	1.86	1.85	
1,250.0	28.20	295.60	1,198.2	129.5	-270.9	300.1	2.32	2.31	
1,341.0	29.20	291.60	1,278.0	147.0	-310.9	343.8	2.38	1.10	
1,433.0	28.40	290.50	1,358.7	162.9	-352.3	388.1	1.04	-0.87	
1,524.0	28.60	292.70	1,438.6	178.9	-392.7	431.5	1.17	0.22	
1,616.0	27.20	292.30	1,519.9	195.4	-432.4	474.5	1.54	-1.52	
1,707.0	27.30	293.10	1,600.8	211.4	-470.9	516.2	0.42	0.11	
1,798.0	27.80	295.30	1,681.5	228.7	-509.3	558.2	1.25	0.55	
1,890.0	28.90	296.00	1,762.5	247.6	-548.6	601.9	1.25	1.20	
1,980.0	27.60	295.30	1,841.8	266.0	-587.0	644.5	1.49	-1.44	
2,080.0	28.00	294.30	1,930.2	285.6	-629.4	691.1	0.61	0.40	Last Cathedral Survey @ 2,080' MD
2,180.0	25.20	290.30	2,019.6	302.7	-670.7	735.9	3.32	-2.80	
2,272.0	25.40	298.40	2,102.8	318.8	-706.5	775.1	3.77	0.22	
2,363.0	26.30	296.30	2,184.7	337.1	-741.7	814.7	1.41	0.99	
2,455.0	29.20	294.70	2,266.2	355.5	-780.4	857.5	3.25	3.15	
2,546.0	28.70	294.20	2,345.8	373.7	-820.5	901.5	0.61	-0.55	
2,638.0	28.00	293.80	2,426.7	391.5	-860.4	945.2	0.79	-0.76	
2,729.0	31.20	297.50	2,505.9	411.0	-900.9	990.1	4.05	3.52	
2,821.0	33.20	298.80	2,583.7	434.1	-944.1	1,039.0	2.30	2.17	
2,912.0	31.30	297.80	2,660.7	457.2	-986.8	1,087.4	2.17	-2.09	
3,004.0	33.20	293.50	2,738.5	478.3	-1,031.1	1,136.5	3.24	2.07	
3,095.0	34.60	291.60	2,814.0	497.8	-1,077.9	1,187.2	1.93	1.54	
3,187.0	33.40	290.30	2,890.3	516.2	-1,126.0	1,238.6	1.52	-1.30	
3,279.0	30.80	288.20	2,968.2	532.3	-1,172.1	1,287.3	3.08	-2.83	
3,370.0	28.30	290.10	3,047.4	547.0	-1,214.5	1,332.0	2.93	-2.75	
3,462.0	28.60	293.30	3,128.3	563.2	-1,255.2	1,375.8	1.69	0.33	
3,553.0	26.10	293.60	3,209.1	579.9	-1,293.6	1,417.6	2.75	-2.75	
3,645.0	22.90	294.10	3,292.8	595.3	-1,328.5	1,455.7	3.49	-3.48	
3,736.0	25.00	300.10	3,376.0	612.2	-1,361.3	1,492.6	3.53	2.31	
3,828.0	28.30	299.90	3,458.2	632.8	-1,397.0	1,533.6	3.59	3.59	
3,920.0	29.20	298.60	3,538.9	654.4	-1,435.6	1,577.6	1.19	0.98	
4,011.0	28.20	295.60	3,618.7	674.3	-1,474.5	1,621.3	1.93	-1.10	
4,103.0	28.00	296.00	3,699.8	693.2	-1,513.5	1,664.6	0.30	-0.22	
4,194.0	27.90	293.50	3,780.2	711.0	-1,552.2	1,707.2	1.29	-0.11	
4,286.0	26.10	290.40	3,862.2	726.7	-1,591.0	1,748.9	2.48	-1.96	
4,377.0	25.60	287.50	3,944.1	739.6	-1,628.5	1,788.5	1.49	-0.55	
4,469.0	27.10	291.80	4,026.5	753.3	-1,666.9	1,829.2	2.64	1.63	
4,560.0	28.10	295.10	4,107.2	770.1	-1,705.5	1,871.3	2.01	1.10	
4,660.0	28.90	291.60	4,195.1	789.0	-1,749.3	1,919.0	1.85	0.80	
4,727.0	28.30	291.30	4,253.9	800.7	-1,779.2	1,951.0	0.92	-0.90	
4,818.0	28.00	293.60	4,334.1	817.1	-1,818.9	1,994.0	1.24	-0.33	
4,910.0	28.80	294.90	4,415.1	835.1	-1,858.8	2,037.7	1.10	0.87	
5,001.0	29.10	298.00	4,494.7	854.7	-1,898.2	2,081.7	1.68	0.33	
5,093.0	29.10	294.50	4,575.1	874.5	-1,938.3	2,126.4	1.85	0.00	
5,185.0	28.70	294.00	4,655.6	892.8	-1,978.8	2,170.8	0.51	-0.43	
5,276.0	30.40	295.70	4,734.8	911.6	-2,019.5	2,215.7	2.08	1.87	
5,368.0	31.50	295.50	4,813.7	932.1	-2,062.2	2,263.0	1.20	1.20	
5,459.0	32.00	293.40	4,891.1	951.9	-2,105.8	2,310.9	1.33	0.55	
5,551.0	29.60	291.40	4,970.1	969.9	-2,149.3	2,358.0	2.84	-2.61	
5,642.0	29.50	293.50	5,049.3	987.0	-2,190.8	2,402.8	1.14	-0.11	
5,825.0	30.50	291.60	5,207.8	1,022.1	-2,275.3	2,494.3	0.75	0.55	
5,917.0	31.70	293.10	5,286.5	1,040.1	-2,319.3	2,541.8	1.55	1.30	
6,009.0	29.40	293.40	5,365.8	1,058.6	-2,362.2	2,588.5	2.51	-2.50	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8508E-21 N22 496
Project:	Story Gulch	TVD Reference:	WELL @ 7602.0ft (Patterson 306)
Site:	S22-T4S-R96W (N22 496) (Column Pattern)	MD Reference:	WELL @ 7602.0ft (Patterson 306)
Well:	8508E-21 N22 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	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
6,100.0	28.30	293.40	5,445.5	1,076.0	-2,402.5	2,632.5	1.21	-1.21	
6,192.0	28.50	293.90	5,526.4	1,093.6	-2,442.6	2,676.2	0.34	0.22	
6,283.0	29.50	298.90	5,606.0	1,113.2	-2,482.1	2,720.2	2.88	1.10	
6,374.0	27.60	297.00	5,685.9	1,133.6	-2,520.5	2,763.6	2.31	-2.09	
6,466.0	26.60	294.60	5,767.8	1,151.9	-2,558.2	2,805.5	1.61	-1.09	
6,557.0	24.90	292.70	5,849.8	1,167.7	-2,594.4	2,845.0	2.08	-1.87	
6,649.0	22.90	291.10	5,933.9	1,181.7	-2,629.0	2,882.3	2.29	-2.17	
6,740.0	22.40	296.30	6,017.9	1,195.7	-2,661.0	2,917.3	2.27	-0.55	
6,832.0	22.50	298.60	6,102.9	1,211.9	-2,692.2	2,952.3	0.96	0.11	
6,924.0	24.50	295.30	6,187.3	1,228.5	-2,724.9	2,989.0	2.60	2.17	
7,016.0	26.70	292.60	6,270.2	1,244.6	-2,761.2	3,028.7	2.71	2.39	
7,107.0	27.60	295.00	6,351.2	1,261.4	-2,799.2	3,070.2	1.56	0.99	
7,198.0	28.40	296.80	6,431.6	1,280.0	-2,837.6	3,112.9	1.28	0.88	
7,290.0	28.70	298.60	6,512.4	1,300.5	-2,876.6	3,156.8	0.99	0.33	
7,381.0	27.30	297.00	6,592.7	1,320.4	-2,914.3	3,199.4	1.75	-1.54	
7,472.0	26.30	297.80	6,673.9	1,339.3	-2,950.8	3,240.3	1.17	-1.10	
7,564.0	25.50	298.00	6,756.7	1,358.1	-2,986.3	3,280.4	0.87	-0.87	
7,655.0	22.50	295.50	6,839.8	1,374.8	-3,019.3	3,317.4	3.48	-3.30	
7,747.0	21.40	293.90	6,925.2	1,389.2	-3,050.5	3,351.8	1.36	-1.20	
7,838.0	19.20	291.00	7,010.5	1,401.2	-3,079.7	3,383.3	2.66	-2.42	
7,930.0	17.40	290.00	7,097.8	1,411.4	-3,106.7	3,412.1	1.99	-1.96	
8,021.0	16.50	288.50	7,184.9	1,420.1	-3,131.8	3,438.6	1.10	-0.99	
8,113.0	15.40	287.80	7,273.4	1,428.0	-3,155.8	3,463.7	1.21	-1.20	
8,205.0	13.80	284.20	7,362.4	1,434.4	-3,178.1	3,486.7	2.00	-1.74	
8,296.0	13.30	288.20	7,450.8	1,440.4	-3,198.5	3,507.8	1.17	-0.55	
8,388.0	11.30	292.20	7,540.7	1,447.1	-3,216.9	3,527.4	2.36	-2.17	
8,479.0	8.60	296.50	7,630.4	1,453.5	-3,231.3	3,543.1	3.08	-2.97	
8,571.0	7.40	295.80	7,721.5	1,459.1	-3,242.8	3,555.9	1.31	-1.30	
8,662.0	4.90	306.70	7,811.9	1,464.0	-3,251.2	3,565.5	3.02	-2.75	
8,721.5	3.19	299.72	7,871.3	1,466.3	-3,254.6	3,569.6	2.98	-2.87	8508E-21 N22 496 TGT (Column) (2)
8,754.0	2.30	291.60	7,903.7	1,467.0	-3,256.0	3,571.2	2.98	-2.74	
8,845.0	2.30	280.90	7,994.7	1,468.0	-3,259.5	3,574.8	0.47	0.00	
8,937.0	2.50	250.00	8,086.6	1,467.7	-3,263.2	3,578.0	1.41	0.22	
9,029.0	1.70	246.60	8,178.5	1,466.5	-3,266.4	3,580.4	0.88	-0.87	
9,120.0	0.40	236.30	8,269.5	1,465.8	-3,267.9	3,581.5	1.44	-1.43	
9,212.0	0.90	352.90	8,361.5	1,466.3	-3,268.2	3,582.0	1.24	0.54	
9,303.0	1.20	347.10	8,452.5	1,467.9	-3,268.5	3,583.0	0.35	0.33	
9,395.0	1.30	331.10	8,544.5	1,469.8	-3,269.2	3,584.4	0.39	0.11	
9,487.0	1.40	1.60	8,636.5	1,471.8	-3,269.7	3,585.6	0.78	0.11	
9,603.0	2.30	7.10	8,752.4	1,475.6	-3,269.4	3,586.9	0.79	0.78	
9,692.0	0.20	313.10	8,841.4	1,477.4	-3,269.3	3,587.5	2.46	-2.36	
9,783.0	0.50	256.60	8,932.4	1,477.5	-3,269.8	3,588.0	0.47	0.33	
9,875.0	1.10	253.30	9,024.4	1,477.1	-3,271.0	3,589.0	0.65	0.65	
9,967.0	1.30	236.90	9,116.3	1,476.3	-3,272.7	3,590.2	0.43	0.22	
10,058.0	1.70	224.00	9,207.3	1,474.8	-3,274.5	3,591.2	0.57	0.44	
10,150.0	0.50	193.10	9,299.3	1,473.4	-3,275.6	3,591.6	1.41	-1.30	
10,241.0	0.70	67.30	9,390.3	1,473.2	-3,275.2	3,591.2	1.18	0.22	
10,333.0	0.40	55.10	9,482.3	1,473.6	-3,274.4	3,590.6	0.35	-0.33	
10,424.0	0.20	207.50	9,573.3	1,473.6	-3,274.2	3,590.5	0.64	-0.22	
10,516.0	0.50	186.20	9,665.3	1,473.1	-3,274.3	3,590.4	0.35	0.33	
10,607.0	0.90	180.70	9,756.3	1,472.0	-3,274.4	3,590.0	0.45	0.44	
10,699.0	1.00	108.60	9,848.3	1,471.0	-3,273.6	3,588.9	1.22	0.11	
10,790.0	0.30	152.00	9,939.3	1,470.6	-3,272.7	3,587.9	0.89	-0.77	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8508E-21 N22 496
Project:	Story Gulch	TVD Reference:	WELL @ 7602.0ft (Patterson 306)
Site:	S22-T4S-R96W (N22 496) (Column Pattern)	MD Reference:	WELL @ 7602.0ft (Patterson 306)
Well:	8508E-21 N22 496	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	DD	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
10,882.0	0.20	227.10	10,031.3	1,470.2	-3,272.8	3,587.8	0.34	-0.11	
10,973.0	0.10	132.20	10,122.3	1,470.1	-3,272.8	3,587.8	0.25	-0.11	
11,065.0	0.40	228.10	10,214.3	1,469.8	-3,273.0	3,587.8	0.46	0.33	
11,156.0	0.90	239.80	10,305.2	1,469.2	-3,273.8	3,588.4	0.57	0.55	
11,248.0	1.50	239.80	10,397.2	1,468.3	-3,275.5	3,589.5	0.65	0.65	
11,339.0	1.90	235.70	10,488.2	1,466.8	-3,277.8	3,591.0	0.46	0.44	
11,431.0	1.90	235.00	10,580.1	1,465.1	-3,280.3	3,592.6	0.03	0.00	
11,522.0	2.40	243.60	10,671.1	1,463.4	-3,283.2	3,594.6	0.65	0.55	
11,614.0	2.80	252.10	10,763.0	1,461.8	-3,287.1	3,597.5	0.60	0.43	
11,705.0	3.50	256.00	10,853.8	1,460.5	-3,291.9	3,601.3	0.80	0.77	
11,767.7	3.70	256.07	10,916.4	1,459.5	-3,295.7	3,604.4	0.33	0.33	8508E-21 N22 496 PBHL (Column)
11,797.0	3.80	256.10	10,945.6	1,459.1	-3,297.6	3,606.0	0.33	0.33	Last Cathedral Survey @ 11,797' MD
11,870.0	3.90	255.10	11,018.5	1,457.8	-3,302.3	3,609.8	0.16	0.14	PTB @ 11,870' MD

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
8508E-21 N22 496 TGT - actual wellpath misses target center by 122.2ft at 8127.8ft MD (7287.7 TVD, 1429.2 N, -3159.5 E) - Point	0.00	0.00	7,257.0	1,473.1	-3,269.4	1,686,543.59	2,249,049.48	39° 41' 17.06 N	108° 10' 7.45 W
8508E-21 N22 496 PBH - actual wellpath misses target center by 10.0ft at 11767.7ft MD (10916.4 TVD, 1459.5 N, -3295.7 E) - Rectangle (sides W30.0 H50.0 D0.0)	0.00	0.00	10,917.0	1,463.1	-3,286.4	1,686,534.07	2,249,032.22	39° 41' 16.96 N	108° 10' 7.66 W
8508E-21 N22 496 TGT - actual wellpath misses target center by 16.3ft at 8721.5ft MD (7871.3 TVD, 1466.3 N, -3254.6 E) - Point	0.00	0.00	7,870.3	1,473.1	-3,269.4	1,686,543.59	2,249,049.48	39° 41' 17.06 N	108° 10' 7.45 W

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	+E/-W (ft)	Comment
2,080.0	1,930.2	285.6	-629.4	Last Cathedral Survey @ 2,080' MD
11,797.0	10,945.6	1,459.1	-3,297.6	Last Cathedral Survey @ 11,797' MD
11,870.0	11,018.5	1,457.8	-3,302.3	PTB @ 11,870' MD

Checked By: _____ Approved By: _____ Date: _____