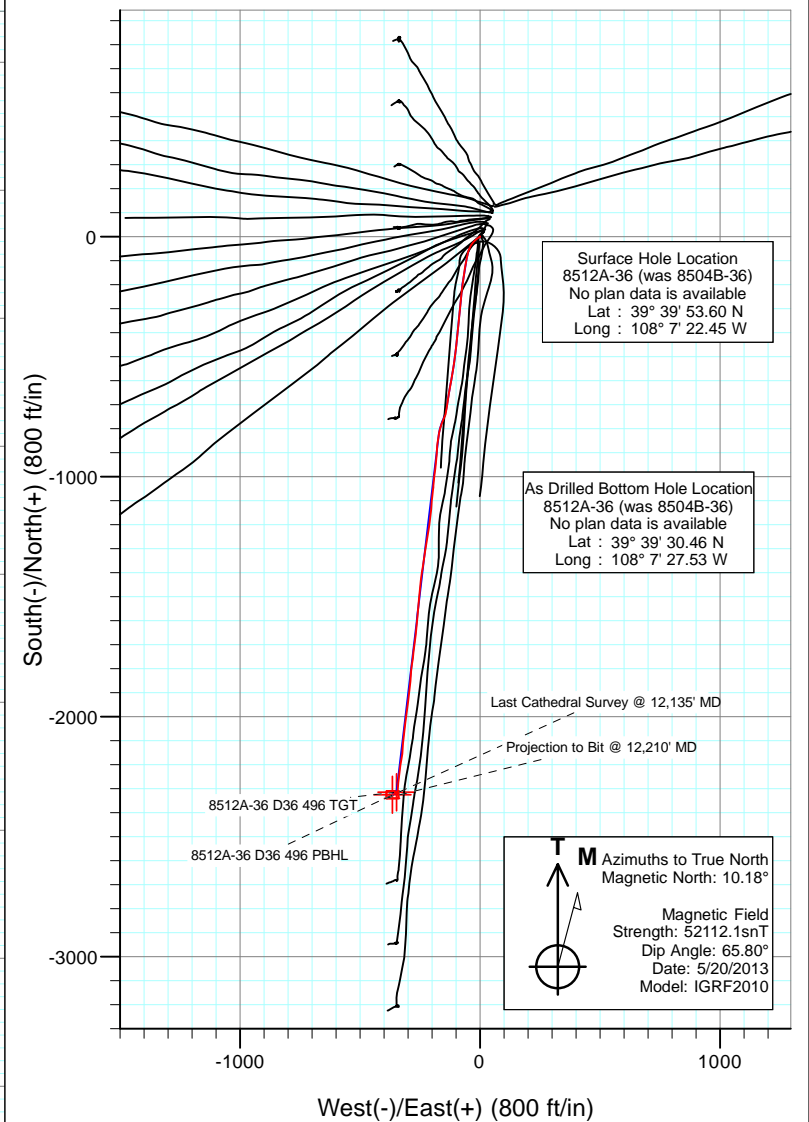
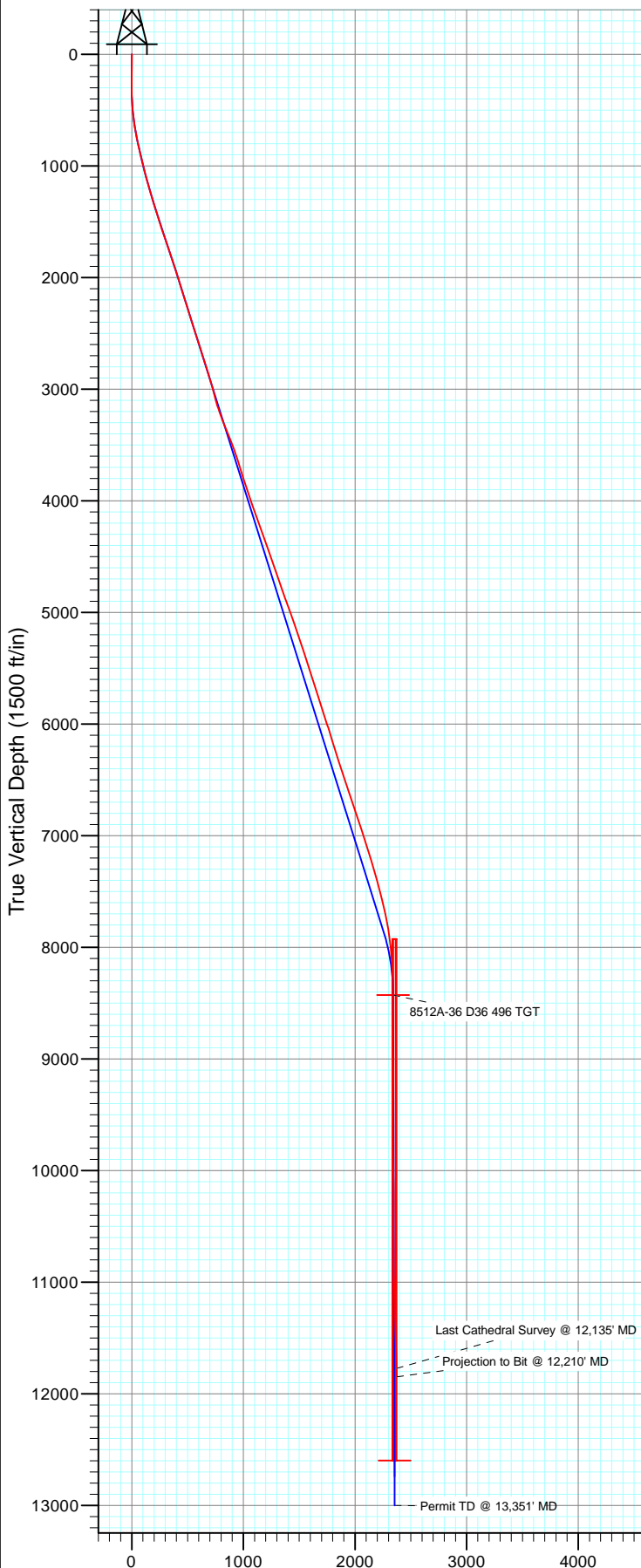




Project: Story Gulch
Site: S36-T4S-R96W (D36 496)
Well: 8512A-36 (was 8504B-36)
Wellbore: DD
Design: FINAL

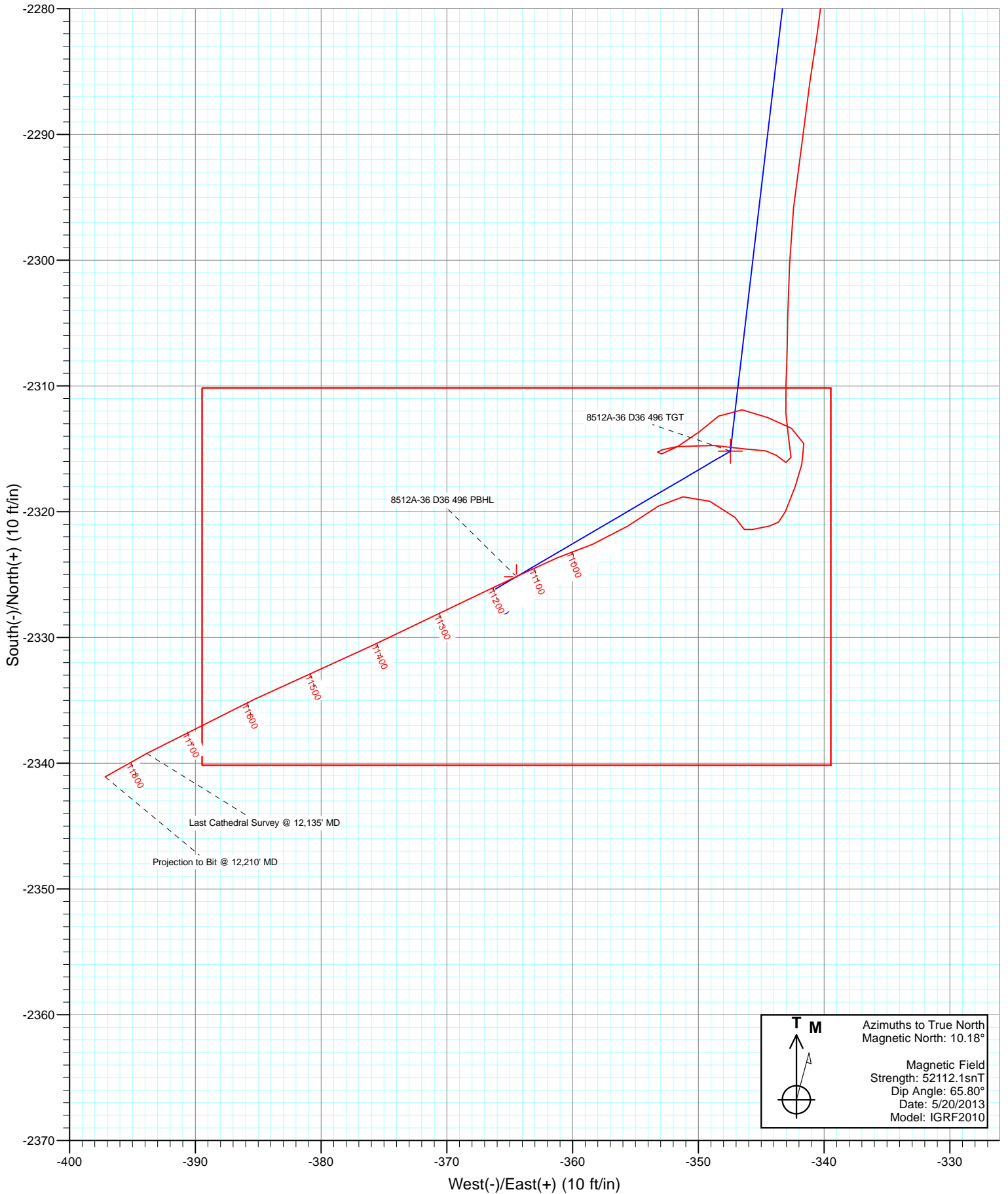


FINAL
8512A-36 (was 8504B-36)
135087/222155 (SH) 125230/223455 (MH): SC
KBE @ 8323.0ft (Patterson 326)
Ground Elevation @ 8291.0
North American Datum 1983
Well 8512A-36 (was 8504B-36), True North

Vertical Section at 188.91° (1500 ft/in)



Project: Story Gulch
Site: S36-T4S-R96W (D36 496)
Well: 8512A-36 (was 8504B-36)
Wellbore: DD
Design: FINAL





Cathedral Energy Services Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well 8512A-36 (was 8504B-36)
Project: Story Gulch	TVD Reference: KBE @ 8323.0ft (Patterson 326)
Site: S36-T4S-R96W (D36 496)	MD Reference: KBE @ 8323.0ft (Patterson 326)
Well: 8512A-36 (was 8504B-36)	North Reference: True
Wellbore: DD	Survey Calculation Method: Minimum Curvature
Design: FINAL	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 S36-T4S-R96W (D36 496)					
Site Position:		Northing: 1,590,537.44 ft	Latitude: 39° 25' 42.24 N		
From: Lat/Long		Easting: 2,297,786.47 ft	Longitude: 107° 59' 10.64 W		
Position Uncertainty: 0.0 ft		Slot Radius: 13.200 in	Grid Convergence: -1.57 °		

Well 8512A-36 (was 8504B-36)					
Well Position	+N/-S 0.0 ft	Northing: 1,677,726.69 ft	Latitude: 39° 39' 53.60 N		
	+E/-W 0.0 ft	Easting: 2,261,698.84 ft	Longitude: 108° 7' 22.45 W		
Position Uncertainty	0.0 ft	Wellhead Elevation: ft	Ground Level: 8,291.0 ft		

Wellbore DD					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/20/2013	10.18	65.80	52,112

Design FINAL					
Audit Notes:					
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.0			
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	188.91	

Survey Program Date 5/28/2013					
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
206.0	12,210.0	Survey #1 (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	
206.0	0.40	37.50	206.0	0.6	0.4	-0.6	0.19	0.19	
237.0	0.40	34.10	237.0	0.7	0.6	-0.8	0.08	0.00	
267.0	0.40	35.80	267.0	0.9	0.7	-1.0	0.04	0.00	
298.0	0.40	257.80	298.0	1.0	0.6	-1.1	2.41	0.00	
328.0	1.10	249.10	328.0	0.9	0.3	-0.9	2.36	2.33	
359.0	2.20	240.30	359.0	0.5	-0.5	-0.4	3.63	3.55	
389.0	3.20	230.60	388.9	-0.4	-1.7	0.6	3.65	3.33	
419.0	4.30	226.60	418.9	-1.7	-3.1	2.1	3.77	3.67	
450.0	5.40	236.40	449.8	-3.3	-5.2	4.0	4.43	3.55	
480.0	6.50	236.50	479.6	-5.0	-7.8	6.1	3.67	3.67	
511.0	7.40	230.30	510.4	-7.2	-10.8	8.8	3.78	2.90	
541.0	8.40	229.10	540.1	-9.9	-13.9	11.9	3.38	3.33	



Cathedral Energy Services Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well 8512A-36 (was 8504B-36)
Project: Story Gulch	TVD Reference: KBE @ 8323.0ft (Patterson 326)
Site: S36-T4S-R96W (D36 496)	MD Reference: KBE @ 8323.0ft (Patterson 326)
Well: 8512A-36 (was 8504B-36)	North Reference: True
Wellbore: DD	Survey Calculation Method: Minimum Curvature
Design: FINAL	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
571.0	9.20	229.20	569.7	-12.9	-17.4	15.4	2.67	2.67	
602.0	10.10	228.90	600.3	-16.3	-21.3	19.4	2.91	2.90	
696.0	11.60	216.10	692.6	-29.4	-33.1	34.1	3.01	1.60	
788.0	12.20	203.20	782.7	-45.8	-42.4	51.8	2.96	0.65	
879.0	13.40	195.80	871.4	-64.8	-49.0	71.6	2.23	1.32	
971.0	14.00	192.30	960.8	-85.9	-54.3	93.3	1.11	0.65	
1,062.0	14.20	188.50	1,049.1	-107.7	-58.3	115.4	1.04	0.22	
1,153.0	15.20	188.40	1,137.1	-130.5	-61.7	138.5	1.10	1.10	
1,245.0	16.40	190.20	1,225.6	-155.2	-65.8	163.6	1.41	1.30	
1,336.0	17.10	189.30	1,312.7	-181.1	-70.2	189.8	0.82	0.77	
1,428.0	16.90	185.90	1,400.7	-207.7	-73.8	216.7	1.10	-0.22	
1,520.0	17.90	185.60	1,488.5	-235.1	-76.5	244.1	1.09	1.09	
1,611.0	19.10	186.00	1,574.8	-263.8	-79.4	273.0	1.33	1.32	
1,702.0	18.50	186.10	1,661.0	-293.0	-82.5	302.2	0.66	-0.66	
1,794.0	19.20	185.70	1,748.0	-322.6	-85.6	331.9	0.77	0.76	
1,885.0	18.40	184.70	1,834.2	-351.8	-88.3	361.2	0.95	-0.88	
1,976.0	17.20	185.30	1,920.8	-379.5	-90.7	388.9	1.33	-1.32	
2,068.0	17.40	186.40	2,008.6	-406.7	-93.5	416.3	0.42	0.22	
2,159.0	17.20	186.80	2,095.5	-433.6	-96.6	443.3	0.26	-0.22	
2,250.0	17.60	185.40	2,182.4	-460.6	-99.5	470.5	0.64	0.44	
2,342.0	17.30	187.00	2,270.1	-488.1	-102.4	498.0	0.62	-0.33	
2,434.0	17.30	188.00	2,358.0	-515.2	-106.0	525.4	0.32	0.00	
2,525.0	17.80	189.10	2,444.7	-542.3	-110.1	552.8	0.66	0.55	
2,617.0	17.80	190.50	2,532.3	-570.0	-114.9	580.9	0.47	0.00	
2,708.0	18.20	189.20	2,618.9	-597.7	-119.7	609.1	0.62	0.44	
2,800.0	17.30	188.90	2,706.5	-625.4	-124.1	637.1	0.98	-0.98	
2,891.0	17.70	190.20	2,793.3	-652.4	-128.6	664.5	0.61	0.44	
2,975.0	17.40	189.50	2,873.4	-677.4	-133.0	689.8	0.44	-0.36	
3,081.0	14.70	187.40	2,975.2	-706.3	-137.3	719.1	2.60	-2.55	
3,172.0	14.60	190.80	3,063.3	-729.1	-141.0	742.1	0.95	-0.11	
3,264.0	18.50	202.50	3,151.5	-754.0	-148.7	767.9	5.56	4.24	
3,355.0	21.10	201.00	3,237.1	-782.6	-160.1	797.9	2.91	2.86	
3,447.0	21.40	191.80	3,322.9	-814.5	-169.5	830.9	3.64	0.33	
3,538.0	22.60	187.50	3,407.2	-848.1	-175.2	865.0	2.21	1.32	
3,630.0	20.60	184.70	3,492.8	-881.7	-178.8	898.8	2.45	-2.17	
3,721.0	18.90	182.70	3,578.4	-912.4	-180.8	929.4	2.01	-1.87	
3,813.0	17.20	186.70	3,665.9	-940.8	-183.1	957.8	2.29	-1.85	
3,905.0	18.30	187.60	3,753.5	-968.6	-186.6	985.9	1.23	1.20	
3,996.0	17.50	186.20	3,840.1	-996.4	-190.0	1,013.8	1.00	-0.88	
4,088.0	17.20	184.10	3,927.9	-1,023.7	-192.4	1,041.2	0.75	-0.33	
4,178.0	20.20	187.10	4,013.2	-1,052.4	-195.3	1,070.0	3.50	3.33	
4,270.0	20.20	186.10	4,099.5	-1,084.0	-198.9	1,101.7	0.38	0.00	
4,361.0	19.00	183.10	4,185.2	-1,114.4	-201.4	1,132.1	1.72	-1.32	
4,453.0	19.70	185.90	4,272.0	-1,144.8	-203.8	1,162.5	1.26	0.76	
4,544.0	20.50	188.10	4,357.5	-1,175.8	-207.6	1,193.8	1.21	0.88	
4,636.0	18.90	186.90	4,444.1	-1,206.6	-211.7	1,224.8	1.79	-1.74	
4,727.0	20.00	189.60	4,529.9	-1,236.5	-216.1	1,255.1	1.56	1.21	
4,818.0	18.30	189.70	4,615.9	-1,266.0	-221.1	1,284.9	1.87	-1.87	
4,910.0	19.50	188.20	4,702.9	-1,295.4	-225.7	1,314.7	1.41	1.30	
5,001.0	18.80	188.00	4,788.9	-1,324.9	-229.9	1,344.6	0.77	-0.77	
5,093.0	20.40	188.60	4,875.5	-1,355.5	-234.4	1,375.4	1.75	1.74	
5,184.0	18.40	191.60	4,961.4	-1,385.2	-239.6	1,405.6	2.45	-2.20	
5,276.0	20.10	186.30	5,048.2	-1,415.2	-244.3	1,435.9	2.65	1.85	



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8512A-36 (was 8504B-36)
Project:	Story Gulch	TVD Reference:	KBE @ 8323.0ft (Patterson 326)
Site:	S36-T4S-R96W (D36 496)	MD Reference:	KBE @ 8323.0ft (Patterson 326)
Well:	8512A-36 (was 8504B-36)	North Reference:	True
Wellbore:	DD	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	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
5,368.0	18.90	185.10	5,135.0	-1,445.7	-247.3	1,466.6	1.38	-1.30	
5,459.0	19.40	187.10	5,220.9	-1,475.4	-250.5	1,496.4	0.91	0.55	
5,551.0	18.00	184.20	5,308.1	-1,504.8	-253.4	1,525.9	1.83	-1.52	
5,642.0	19.10	184.90	5,394.3	-1,533.6	-255.8	1,554.7	1.23	1.21	
5,733.0	17.70	185.00	5,480.7	-1,562.2	-258.2	1,583.4	1.54	-1.54	
5,825.0	17.10	186.30	5,568.5	-1,589.6	-260.9	1,610.8	0.78	-0.65	
5,916.0	18.20	186.00	5,655.2	-1,617.0	-263.9	1,638.4	1.21	1.21	
6,008.0	16.30	184.10	5,743.0	-1,644.2	-266.3	1,665.6	2.15	-2.07	
6,100.0	17.80	186.10	5,831.0	-1,671.1	-268.7	1,692.5	1.75	1.63	
6,191.0	18.30	187.50	5,917.5	-1,699.1	-272.1	1,720.7	0.73	0.55	
6,282.0	19.10	188.20	6,003.7	-1,728.0	-276.1	1,749.9	0.91	0.88	
6,374.0	17.10	187.40	6,091.2	-1,756.3	-279.9	1,778.4	2.19	-2.17	
6,465.0	17.00	187.70	6,178.2	-1,782.7	-283.5	1,805.1	0.15	-0.11	
6,556.0	17.50	186.00	6,265.1	-1,809.5	-286.7	1,832.1	0.78	0.55	
6,648.0	17.60	183.80	6,352.8	-1,837.2	-289.0	1,859.8	0.73	0.11	
6,739.0	18.60	184.00	6,439.3	-1,865.4	-291.0	1,887.9	1.10	1.10	
6,831.0	18.40	187.60	6,526.5	-1,894.4	-293.9	1,917.1	1.26	-0.22	
6,922.0	18.50	187.10	6,612.8	-1,923.0	-297.6	1,945.8	0.21	0.11	
7,013.0	19.40	186.90	6,698.9	-1,952.3	-301.2	1,975.4	0.99	0.99	
7,105.0	17.50	187.50	6,786.2	-1,981.2	-304.8	2,004.5	2.08	-2.07	
7,196.0	18.30	186.90	6,872.8	-2,008.9	-308.3	2,032.4	0.90	0.88	
7,288.0	17.80	186.70	6,960.2	-2,037.2	-311.7	2,060.9	0.55	-0.54	
7,379.0	18.90	187.50	7,046.6	-2,065.7	-315.3	2,089.6	1.24	1.21	
7,471.0	17.70	187.20	7,134.0	-2,094.3	-319.0	2,118.4	1.31	-1.30	
7,563.0	16.70	184.90	7,221.9	-2,121.3	-321.8	2,145.6	1.31	-1.09	
7,655.0	15.60	181.20	7,310.2	-2,146.9	-323.2	2,171.0	1.64	-1.20	
7,747.0	15.20	191.10	7,398.9	-2,171.1	-325.8	2,195.4	2.89	-0.43	
7,838.0	14.90	188.30	7,486.8	-2,194.4	-329.8	2,219.0	0.86	-0.33	
7,929.0	13.90	188.10	7,575.0	-2,216.8	-333.0	2,241.6	1.10	-1.10	
8,021.0	13.20	188.20	7,664.4	-2,238.1	-336.1	2,263.2	0.76	-0.76	
8,112.0	11.50	184.20	7,753.3	-2,257.4	-338.2	2,282.6	2.09	-1.87	
8,204.0	8.80	185.50	7,843.9	-2,273.6	-339.6	2,298.8	2.95	-2.93	
8,295.0	6.70	189.60	7,934.0	-2,285.8	-341.1	2,311.0	2.38	-2.31	
8,387.0	6.00	184.90	8,025.5	-2,295.9	-342.4	2,321.2	0.95	-0.76	
8,478.0	4.80	180.80	8,116.0	-2,304.4	-342.9	2,329.7	1.38	-1.32	
8,570.0	1.90	183.20	8,207.9	-2,309.8	-343.0	2,335.0	3.16	-3.15	
8,662.0	1.10	175.50	8,299.9	-2,312.2	-343.0	2,337.4	0.89	-0.87	
8,754.0	1.20	171.90	8,391.8	-2,314.0	-342.8	2,339.2	0.13	0.11	
8,788.2	1.09	172.65	8,426.0	-2,314.7	-342.7	2,339.8	0.33	-0.33	8512A-36 D36 496 TGT
8,845.0	0.90	174.30	8,482.8	-2,315.7	-342.6	2,340.8	0.33	-0.33	
8,936.0	0.70	301.00	8,573.8	-2,316.1	-343.0	2,341.3	1.57	-0.22	
9,027.0	0.50	315.00	8,664.8	-2,315.5	-343.8	2,340.8	0.27	-0.22	
9,119.0	0.70	277.00	8,756.8	-2,315.2	-344.6	2,340.6	0.47	0.22	
9,210.0	1.40	274.70	8,847.8	-2,315.0	-346.3	2,340.7	0.77	0.77	
9,302.0	1.70	277.70	8,939.8	-2,314.7	-348.8	2,340.8	0.34	0.33	
9,394.0	2.00	260.10	9,031.7	-2,314.8	-351.7	2,341.4	0.69	0.33	
9,485.0	0.20	173.90	9,122.7	-2,315.3	-353.2	2,342.0	2.19	-1.98	
9,576.0	0.40	87.90	9,213.7	-2,315.4	-352.9	2,342.1	0.48	0.22	
9,667.0	1.40	58.60	9,304.7	-2,314.8	-351.6	2,341.3	1.17	1.10	
9,758.0	1.20	52.90	9,395.7	-2,313.7	-349.9	2,339.9	0.26	-0.22	
9,850.0	1.30	48.90	9,487.6	-2,312.4	-348.4	2,338.4	0.14	0.11	
9,941.0	1.40	99.70	9,578.6	-2,311.9	-346.5	2,337.7	1.28	0.11	
10,032.0	1.30	114.70	9,669.6	-2,312.5	-344.5	2,338.0	0.40	-0.11	



Cathedral Energy Services Survey Report

Company: EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference: Well 8512A-36 (was 8504B-36)
Project: Story Gulch	TVD Reference: KBE @ 8323.0ft (Patterson 326)
Site: S36-T4S-R96W (D36 496)	MD Reference: KBE @ 8323.0ft (Patterson 326)
Well: 8512A-36 (was 8504B-36)	North Reference: True
Wellbore: DD	Survey Calculation Method: Minimum Curvature
Design: FINAL	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
10,123.0	1.30	113.70	9,760.6	-2,313.4	-342.6	2,338.5	0.02	0.00	
10,215.0	1.00	177.40	9,852.5	-2,314.6	-341.6	2,339.6	1.35	-0.33	
10,306.0	1.10	193.20	9,943.5	-2,316.2	-341.8	2,341.2	0.34	0.11	
10,397.0	1.20	199.90	10,034.5	-2,318.0	-342.3	2,343.0	0.18	0.11	
10,489.0	1.50	202.70	10,126.5	-2,320.0	-343.1	2,345.1	0.33	0.33	
10,579.0	1.00	266.30	10,216.4	-2,321.1	-344.3	2,346.5	1.54	-0.56	
10,671.0	0.80	248.80	10,308.4	-2,321.4	-345.7	2,346.9	0.37	-0.22	
10,763.0	0.30	353.90	10,400.4	-2,321.4	-346.3	2,347.0	1.01	-0.54	
10,853.0	1.30	315.50	10,490.4	-2,320.4	-347.1	2,346.2	1.20	1.11	
10,945.0	1.70	292.50	10,582.4	-2,319.2	-349.1	2,345.3	0.78	0.43	
11,037.0	1.10	259.70	10,674.4	-2,318.8	-351.2	2,345.2	1.06	-0.65	
11,220.0	2.10	233.10	10,857.3	-2,321.1	-355.6	2,348.2	0.67	0.55	
11,312.0	1.90	253.10	10,949.3	-2,322.6	-358.4	2,350.1	0.78	-0.22	
11,403.0	1.90	244.90	11,040.2	-2,323.7	-361.2	2,351.6	0.30	0.00	
11,495.0	1.90	246.10	11,132.2	-2,324.9	-364.0	2,353.3	0.04	0.00	
11,586.0	2.60	243.40	11,223.1	-2,326.5	-367.2	2,355.3	0.78	0.77	
11,769.0	3.40	245.20	11,405.8	-2,330.6	-375.9	2,360.7	0.44	0.44	
11,952.0	3.10	245.70	11,588.5	-2,334.9	-385.3	2,366.4	0.16	-0.16	
12,135.0	2.90	240.70	11,771.3	-2,339.2	-393.9	2,372.0	0.18	-0.11	Last Cathedral Survey @ 12,135' MD
12,210.0	2.90	240.70	11,846.2	-2,341.1	-397.2	2,374.3	0.00	0.00	Projection to Bit @ 12,210' MD - 8512A-36 D36 4

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
8512A-36 D36 496 TGT - hit/miss target - Shape	0.00	0.00	8,426.0	-2,315.2	-347.4	1,675,422.50	2,261,284.70	39° 39' 30.72 N	108° 7' 26.89 W
- actual wellpath misses target center by 4.7ft at 8788.2ft MD (8426.0 TVD, -2314.7 N, -342.7 E)									
- Point									
8512A-36 D36 496 PBH	0.00	0.00	12,596.0	-2,325.2	-364.5	1,675,413.02	2,261,267.42	39° 39' 30.62 N	108° 7' 27.11 W
- actual wellpath misses target center by 750.7ft at 12210.0ft MD (11846.2 TVD, -2341.1 N, -397.2 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
12,135.0	11,771.3	-2,339.2	-393.9	Last Cathedral Survey @ 12,135' MD	
12,210.0	11,846.2	-2,341.1	-397.2	Projection to Bit @ 12,210' MD	

Checked By: _____ Approved By: _____ Date: _____