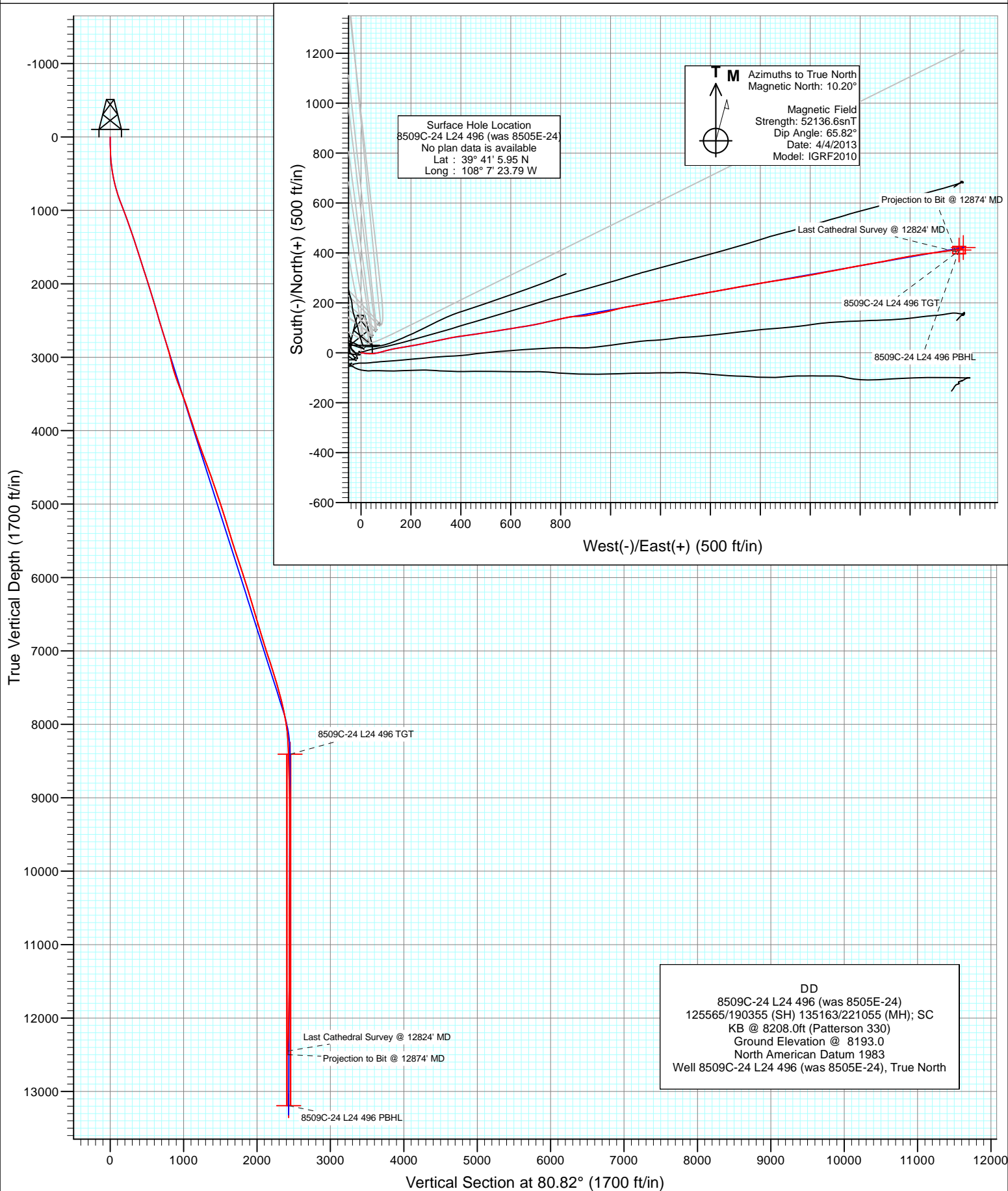


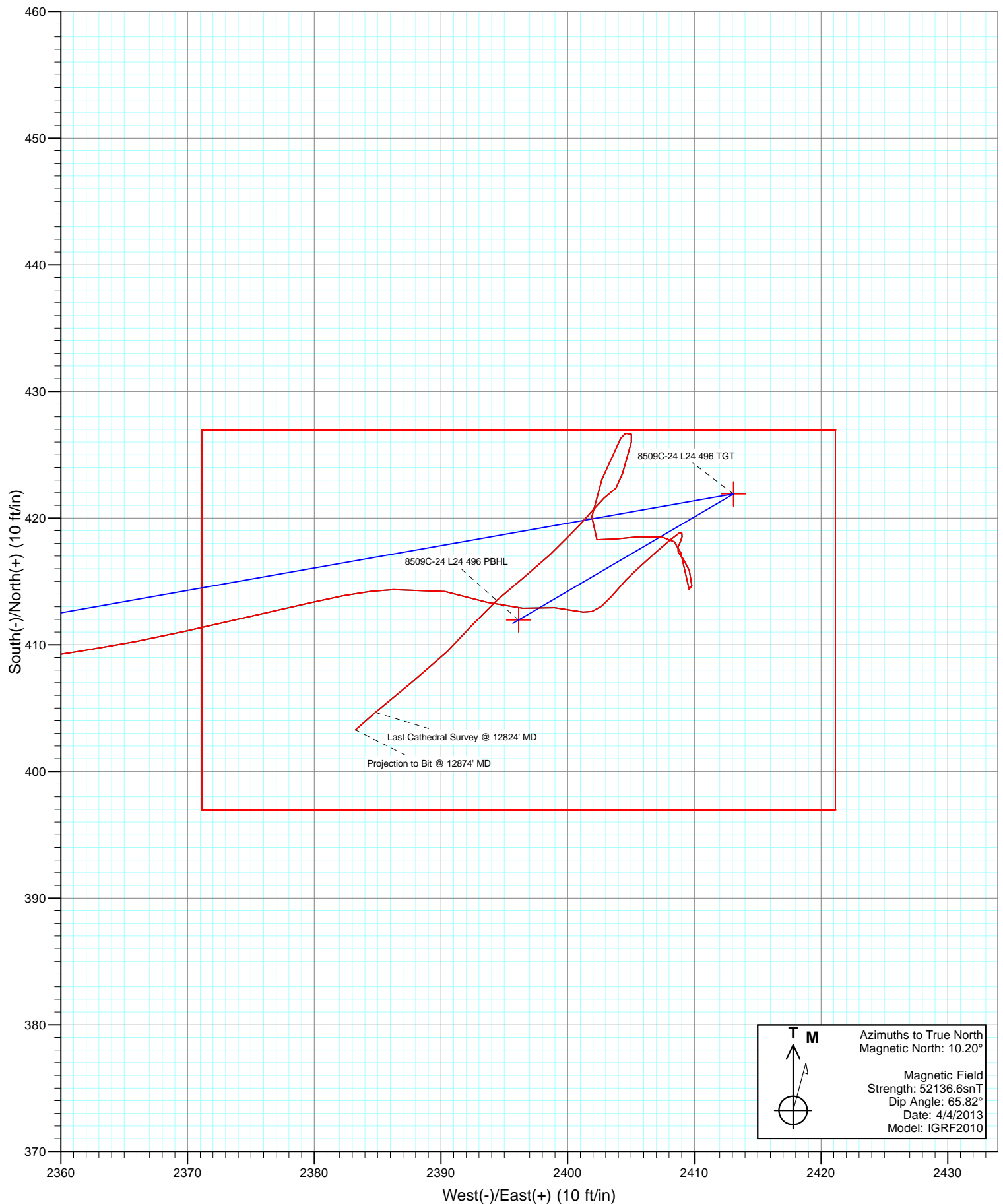


Project: Story Gulch
Site: L24 496
Well: 8509C-24 L24 496 (was 8505E-24)
Wellbore: DD
Design: DD





Project: Story Gulch
Site: L24 496
Well: 8509C-24 L24 496 (was 8505E-24)
Wellbore: DD
Design: DD





Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8509C-24 L24 496 (was 8505E-24)
Project:	Story Gulch	TVD Reference:	KB @ 8208.0ft (Patterson 330)
Site:	L24 496	MD Reference:	KB @ 8208.0ft (Patterson 330)
Well:	8509C-24 L24 496 (was 8505E-24)	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	L24 496			
Site Position:		Northing:	1,685,024.52 ft	Latitude: 39° 41' 5.72 N
From:	Lat/Long	Easting:	2,261,789.15 ft	Longitude: 108° 7' 23.99 W
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -1.65 °

Well	8509C-24 L24 496 (was 8505E-24)			
Well Position	+N/-S	0.0 ft	Northing:	1,685,047.31 ft
	+E/-W	0.0 ft	Easting:	2,261,805.45 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 8,193.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/4/2013	10.20	65.82	52,137

Design	DD			
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	80.82

Survey Program	Date	4/20/2013		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
207.0	2,980.0	Survey #1 (DD)	MWD	Geolink MWD
3,087.0	12,874.0	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	
207.0	1.90	91.60	207.0	-0.1	3.4	3.4	0.92	0.92	
237.0	2.80	96.10	236.9	-0.2	4.7	4.6	3.06	3.00	
268.0	3.70	94.50	267.9	-0.3	6.4	6.3	2.92	2.90	
299.0	4.70	100.80	298.8	-0.7	8.7	8.4	3.55	3.23	
330.0	5.30	101.00	329.7	-1.2	11.3	11.0	1.94	1.94	
360.0	6.20	100.30	359.5	-1.7	14.3	13.8	3.01	3.00	
391.0	6.90	99.40	390.3	-2.3	17.7	17.1	2.28	2.26	
422.0	7.80	96.30	421.1	-2.9	21.7	20.9	3.17	2.90	
452.0	8.60	94.30	450.8	-3.3	25.9	25.1	2.83	2.67	
483.0	9.40	93.50	481.4	-3.6	30.8	29.8	2.61	2.58	
513.0	10.60	91.00	510.9	-3.8	36.0	34.9	4.25	4.00	



Cathedral Energy Services

Survey Report

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Site:	L24 496	MD Reference:	KB @ 8208.0ft (Patterson 330)
Well:	8509C-24 L24 496 (was 8505E-24)	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
562.0	11.60	85.40	559.0	-3.5	45.4	44.3	3.00	2.04	
607.0	12.60	80.60	603.0	-2.3	54.7	53.7	3.15	2.22	
653.0	14.00	77.90	647.8	-0.3	65.1	64.2	3.33	3.04	
699.0	15.60	75.00	692.3	2.5	76.5	76.0	3.83	3.48	
791.0	18.50	75.00	780.2	9.4	102.6	102.8	3.15	3.15	
882.0	19.30	80.10	866.3	15.8	131.4	132.2	2.02	0.88	
974.0	21.10	80.50	952.6	21.1	162.7	164.0	1.96	1.96	
1,066.0	21.00	80.10	1,038.5	26.7	195.3	197.0	0.19	-0.11	
1,157.0	20.30	79.10	1,123.7	32.5	226.8	229.1	0.86	-0.77	
1,249.0	19.50	77.70	1,210.2	38.7	257.5	260.4	1.01	-0.87	
1,340.0	19.00	78.60	1,296.1	44.9	286.8	290.3	0.64	-0.55	
1,432.0	18.80	78.50	1,383.1	50.8	316.1	320.1	0.22	-0.22	
1,524.0	18.10	77.10	1,470.4	57.0	344.5	349.2	0.90	-0.76	
1,615.0	17.40	79.50	1,557.1	62.6	371.7	376.9	1.11	-0.77	
1,707.0	17.10	82.40	1,644.9	66.9	398.6	404.2	0.99	-0.33	
1,798.0	17.90	83.20	1,731.7	70.3	425.8	431.5	0.92	0.88	
1,890.0	18.70	82.40	1,819.0	74.0	454.4	460.4	0.91	0.87	
1,982.0	17.70	80.90	1,906.4	78.1	482.8	489.1	1.20	-1.09	
2,073.0	17.10	80.50	1,993.3	82.5	509.7	516.3	0.67	-0.66	
2,165.0	17.50	80.90	2,081.1	86.9	536.7	543.7	0.45	0.43	
2,257.0	17.30	81.50	2,168.9	91.1	563.9	571.2	0.29	-0.22	
2,348.0	16.60	81.20	2,256.0	95.1	590.1	597.7	0.78	-0.77	
2,440.0	15.60	80.80	2,344.3	99.1	615.3	623.2	1.09	-1.09	
2,531.0	16.00	80.70	2,431.9	103.1	639.8	648.0	0.44	0.44	
2,623.0	17.20	80.40	2,520.1	107.4	665.7	674.3	1.31	1.30	
2,714.0	17.40	79.40	2,607.0	112.2	692.3	701.4	0.39	0.22	
2,806.0	17.50	77.70	2,694.7	117.6	719.4	728.9	0.56	0.11	
2,897.0	17.10	77.10	2,781.6	123.5	745.8	755.9	0.48	-0.44	
2,980.0	16.70	77.20	2,861.0	128.9	769.3	780.0	0.48	-0.48	
3,096.0	14.50	78.40	2,972.7	135.5	799.8	811.2	1.92	-1.90	
3,187.0	14.70	75.50	3,060.8	140.7	822.1	834.0	0.83	0.22	
3,279.0	14.70	85.60	3,149.8	144.5	845.1	857.3	2.78	0.00	
3,371.0	18.20	86.60	3,238.0	146.3	871.1	883.2	3.82	3.80	
3,463.0	20.10	82.60	3,324.9	149.2	901.1	913.3	2.51	2.07	
3,555.0	21.40	78.90	3,411.0	154.4	933.2	945.9	2.01	1.41	
3,647.0	20.60	79.50	3,496.9	160.6	965.6	978.9	0.90	-0.87	
3,739.0	20.80	75.50	3,582.9	167.6	997.3	1,011.3	1.55	0.22	
3,830.0	17.70	74.70	3,668.8	175.3	1,026.3	1,041.2	3.42	-3.41	
3,922.0	17.80	79.60	3,756.5	181.6	1,053.7	1,069.1	1.63	0.11	
4,014.0	19.50	80.30	3,843.6	186.7	1,082.6	1,098.5	1.86	1.85	
4,106.0	18.40	78.90	3,930.6	192.1	1,112.0	1,128.4	1.29	-1.20	
4,198.0	17.00	79.60	4,018.3	197.3	1,139.5	1,156.4	1.54	-1.52	
4,290.0	18.60	80.60	4,105.9	202.1	1,167.2	1,184.5	1.77	1.74	
4,381.0	20.10	80.20	4,191.7	207.2	1,196.9	1,214.6	1.65	1.65	
4,473.0	20.20	81.10	4,278.1	212.3	1,228.2	1,246.3	0.35	0.11	
4,565.0	21.00	79.90	4,364.2	217.7	1,260.1	1,278.7	0.98	0.87	
4,657.0	20.30	79.00	4,450.3	223.6	1,292.0	1,311.1	0.84	-0.76	
4,748.0	20.00	79.90	4,535.7	229.3	1,322.8	1,342.5	0.47	-0.33	
4,840.0	19.30	79.50	4,622.4	234.9	1,353.3	1,373.4	0.77	-0.76	
4,932.0	19.30	80.70	4,709.2	240.1	1,383.2	1,403.8	0.43	0.00	
5,024.0	18.60	80.10	4,796.2	245.1	1,412.7	1,433.7	0.79	-0.76	
5,116.0	19.10	78.90	4,883.3	250.5	1,441.9	1,463.4	0.69	0.54	
5,208.0	18.20	78.80	4,970.4	256.2	1,470.8	1,492.8	0.98	-0.98	



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8509C-24 L24 496 (was 8505E-24)
Project:	Story Gulch	TVD Reference:	KB @ 8208.0ft (Patterson 330)
Site:	L24 496	MD Reference:	KB @ 8208.0ft (Patterson 330)
Well:	8509C-24 L24 496 (was 8505E-24)	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
5,300.0	18.20	80.80	5,057.8	261.3	1,499.0	1,521.5	0.68	0.00	
5,391.0	16.70	80.40	5,144.7	265.7	1,526.0	1,548.8	1.65	-1.65	
5,483.0	17.60	80.60	5,232.6	270.2	1,552.7	1,575.9	0.98	0.98	
5,575.0	17.10	80.30	5,320.4	274.8	1,579.8	1,603.4	0.55	-0.54	
5,667.0	17.00	79.60	5,408.3	279.5	1,606.3	1,630.3	0.25	-0.11	
5,759.0	17.00	79.80	5,496.3	284.3	1,632.8	1,657.2	0.06	0.00	
5,851.0	18.00	81.50	5,584.1	288.8	1,660.1	1,684.9	1.22	1.09	
5,942.0	19.00	81.70	5,670.4	293.0	1,688.7	1,713.8	1.10	1.10	
6,034.0	18.00	82.10	5,757.6	297.1	1,717.6	1,743.0	1.10	-1.09	
6,126.0	18.70	79.50	5,844.9	301.7	1,746.1	1,771.9	1.17	0.76	
6,218.0	17.70	79.80	5,932.3	306.9	1,774.4	1,800.6	1.09	-1.09	
6,310.0	17.90	80.70	6,019.9	311.7	1,802.1	1,828.8	0.37	0.22	
6,402.0	18.00	78.60	6,107.4	316.7	1,830.0	1,857.1	0.71	0.11	
6,494.0	16.00	78.50	6,195.4	322.1	1,856.4	1,884.0	2.17	-2.17	
6,586.0	16.70	79.90	6,283.7	326.9	1,881.8	1,909.9	0.87	0.76	
6,677.0	17.00	80.30	6,370.8	331.5	1,907.8	1,936.2	0.35	0.33	
6,769.0	16.70	78.20	6,458.8	336.4	1,934.0	1,962.9	0.74	-0.33	
6,861.0	15.60	79.20	6,547.2	341.5	1,959.1	1,988.5	1.23	-1.20	
6,953.0	16.70	79.80	6,635.6	346.1	1,984.2	2,014.1	1.21	1.20	
7,045.0	17.60	79.00	6,723.5	351.1	2,010.9	2,041.2	1.01	0.98	
7,137.0	17.60	79.90	6,811.2	356.2	2,038.3	2,069.0	0.30	0.00	
7,229.0	16.00	80.90	6,899.2	360.6	2,064.5	2,095.6	1.77	-1.74	
7,321.0	17.90	78.70	6,987.2	365.4	2,090.9	2,122.4	2.18	2.07	
7,412.0	19.10	78.70	7,073.5	371.1	2,119.2	2,151.2	1.32	1.32	
7,504.0	18.30	78.80	7,160.7	376.8	2,148.1	2,180.7	0.87	-0.87	
7,596.0	17.60	79.60	7,248.2	382.2	2,176.0	2,209.1	0.81	-0.76	
7,688.0	16.90	79.90	7,336.1	387.0	2,202.8	2,236.3	0.77	-0.76	
7,780.0	16.30	80.30	7,424.2	391.5	2,228.7	2,262.6	0.66	-0.65	
7,872.0	15.20	82.00	7,512.8	395.4	2,253.4	2,287.6	1.30	-1.20	
7,964.0	14.90	83.80	7,601.6	398.3	2,277.1	2,311.4	0.60	-0.33	
8,056.0	14.10	83.90	7,690.7	400.8	2,300.0	2,334.5	0.87	-0.87	
8,148.0	13.10	79.60	7,780.1	403.9	2,321.4	2,356.1	1.55	-1.09	
8,240.0	11.30	83.60	7,870.0	406.8	2,340.6	2,375.5	2.16	-1.96	
8,331.0	9.40	82.10	7,959.5	408.8	2,356.8	2,391.8	2.11	-2.09	
8,423.0	7.20	77.40	8,050.6	411.1	2,369.9	2,405.1	2.50	-2.39	
8,515.0	5.40	76.80	8,142.0	413.3	2,379.7	2,415.2	1.96	-1.96	
8,607.0	2.90	88.80	8,233.8	414.4	2,386.3	2,421.8	2.86	-2.72	
8,699.0	2.20	96.40	8,325.7	414.2	2,390.3	2,425.8	0.84	-0.76	
8,791.0	2.10	112.90	8,417.6	413.4	2,393.6	2,428.9	0.68	-0.11	
8,880.0	1.70	83.00	8,506.6	412.9	2,396.5	2,431.6	1.18	-0.45	
8,971.0	1.50	96.00	8,597.5	412.9	2,399.0	2,434.1	0.45	-0.22	
9,064.0	1.30	101.90	8,690.5	412.6	2,401.2	2,436.3	0.26	-0.22	
9,156.0	2.40	40.10	8,782.5	413.8	2,403.5	2,438.7	2.31	1.20	
9,247.0	1.40	49.10	8,873.4	416.0	2,405.6	2,441.1	1.14	-1.10	
9,339.0	1.10	46.30	8,965.4	417.4	2,407.0	2,442.8	0.33	-0.33	
9,431.0	0.70	54.90	9,057.4	418.3	2,408.1	2,444.0	0.46	-0.43	
9,523.0	0.30	45.70	9,149.4	418.8	2,408.8	2,444.7	0.44	-0.43	
9,615.0	0.20	154.30	9,241.4	418.8	2,409.0	2,445.0	0.45	-0.11	
9,707.0	0.20	197.90	9,333.4	418.5	2,409.0	2,444.9	0.16	0.00	
9,798.0	0.30	198.60	9,424.4	418.1	2,408.9	2,444.8	0.11	0.11	
9,890.0	0.30	210.10	9,516.4	417.7	2,408.7	2,444.5	0.07	0.00	
9,982.0	0.30	141.50	9,608.4	417.3	2,408.7	2,444.5	0.37	0.00	
10,074.0	0.50	146.20	9,700.4	416.8	2,409.1	2,444.8	0.22	0.22	



Cathedral Energy Services

Survey Report

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Site:	L24 496	MD Reference:	KB @ 8208.0ft (Patterson 330)
Well:	8509C-24 L24 496 (was 8505E-24)	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
10,166.0	0.80	155.50	9,792.4	415.9	2,409.6	2,445.1	0.34	0.33	
10,258.0	0.80	185.30	9,884.4	414.6	2,409.8	2,445.1	0.45	0.00	
10,350.0	0.50	337.30	9,976.4	414.4	2,409.6	2,444.8	1.37	-0.33	
10,442.0	1.20	351.40	10,068.3	415.7	2,409.3	2,444.8	0.79	0.76	
10,534.0	0.80	340.80	10,160.3	417.3	2,408.9	2,444.7	0.48	-0.43	
10,626.0	0.50	310.50	10,252.3	418.1	2,408.4	2,444.3	0.49	-0.33	
10,718.0	0.80	279.80	10,344.3	418.5	2,407.5	2,443.4	0.49	0.33	
10,809.0	1.50	266.30	10,435.3	418.5	2,405.7	2,441.6	0.82	0.77	
10,901.0	1.00	262.80	10,527.3	418.3	2,403.7	2,439.6	0.55	-0.54	
10,993.0	0.70	275.10	10,619.3	418.3	2,402.3	2,438.3	0.38	-0.33	
11,085.0	2.20	5.10	10,711.2	420.1	2,401.9	2,438.2	2.51	1.63	
11,177.0	1.70	28.00	10,803.2	423.1	2,402.7	2,439.4	1.00	-0.54	
11,269.0	1.50	20.80	10,895.2	425.4	2,403.8	2,440.9	0.31	-0.22	
11,361.0	0.50	66.80	10,987.1	426.7	2,404.6	2,441.9	1.31	-1.09	
11,452.0	0.30	158.00	11,078.1	426.6	2,405.0	2,442.3	0.65	-0.22	
11,544.0	0.50	192.70	11,170.1	426.0	2,405.0	2,442.2	0.33	0.22	
11,636.0	0.70	197.30	11,262.1	425.1	2,404.8	2,441.8	0.22	0.22	
11,728.0	1.30	194.90	11,354.1	423.5	2,404.3	2,441.1	0.65	0.65	
11,820.0	0.40	238.00	11,446.1	422.4	2,403.8	2,440.4	1.14	-0.98	
11,912.0	1.10	227.20	11,538.1	421.6	2,402.9	2,439.4	0.77	0.76	
12,003.0	0.90	217.10	11,629.1	420.4	2,401.8	2,438.1	0.29	-0.22	
12,095.0	0.40	231.50	11,721.1	419.6	2,401.1	2,437.3	0.57	-0.54	
12,187.0	1.20	221.40	11,813.1	418.7	2,400.2	2,436.3	0.88	0.87	
12,279.0	1.60	227.60	11,905.0	417.1	2,398.6	2,434.5	0.46	0.43	
12,371.0	1.80	230.50	11,997.0	415.3	2,396.6	2,432.2	0.24	0.22	
12,462.0	1.70	229.10	12,088.0	413.6	2,394.5	2,429.8	0.12	-0.11	
12,554.0	1.60	220.30	12,179.9	411.7	2,392.6	2,427.6	0.30	-0.11	
12,646.0	2.20	225.80	12,271.9	409.5	2,390.5	2,425.2	0.68	0.65	
12,738.0	2.50	231.90	12,363.8	407.0	2,387.7	2,422.0	0.42	0.33	
12,824.0	2.40	228.80	12,449.7	404.7	2,384.8	2,418.8	0.19	-0.12	Last Cathedral Survey @ 12824' MD Projection to Bit @ 12874' MD
12,874.0	2.40	228.80	12,499.7	403.3	2,383.3	2,417.1	0.00	0.00	



Cathedral Energy Services

Survey Report

Company: EnCana Oil & Gas (USA) Inc
Project: Story Gulch
Site: L24 496
Well: 8509C-24 L24 496 (was 8505E-24)
Wellbore: DD
Design: DD

Local Co-ordinate Reference: Well 8509C-24 L24 496 (was 8505E-24)
TVD Reference: KB @ 8208.0ft (Patterson 330)
MD Reference: KB @ 8208.0ft (Patterson 330)
North Reference: True
Survey Calculation Method: Minimum Curvature
Database: USA EDM 5000 Multi Users DB

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
8509C-24 L24 496 TGT	0.00	0.00	8,406.0	421.9	2,413.1	1,685,399.37	2,264,229.73	39° 41' 10.12 N	108° 6' 52.92 W
- actual wellpath misses target center by 21.5ft at 8780.0ft MD (8406.6 TVD, 413.5 N, 2393.3 E)									
- Point									
8509C-24 L24 496 PBHI	0.00	0.00	13,193.0	412.0	2,396.1	1,685,389.91	2,264,212.49	39° 41' 10.02 N	108° 6' 53.14 W
- actual wellpath misses target center by 693.5ft at 12874.0ft MD (12499.7 TVD, 403.3 N, 2383.3 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)	
12,824.0	12,449.7	404.7	2,384.8	Last Cathedral Survey @ 12824' MD
12,874.0	12,499.7	403.3	2,383.3	Projection to Bit @ 12874' MD

Checked By: _____ Approved By: _____ Date: _____