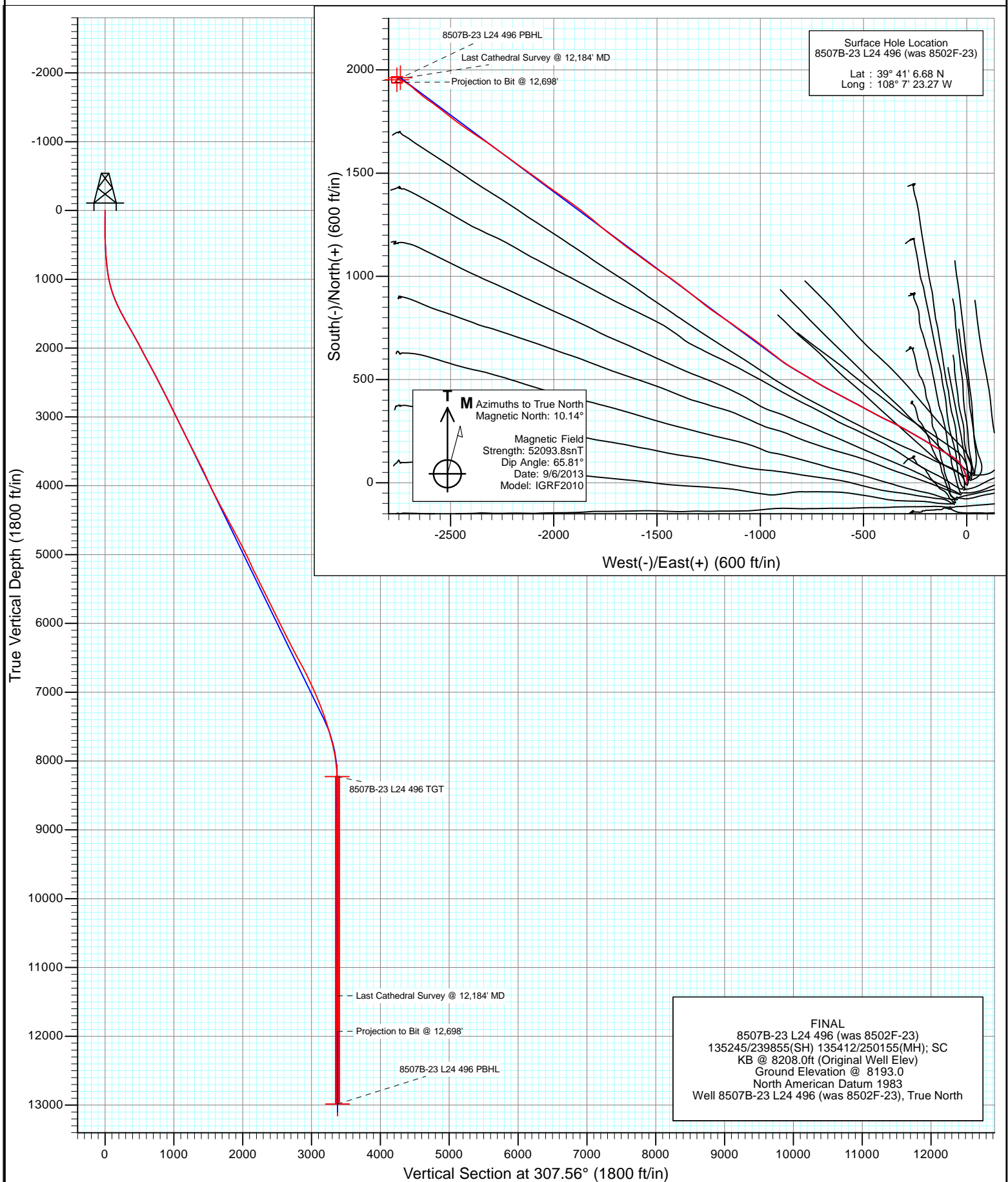


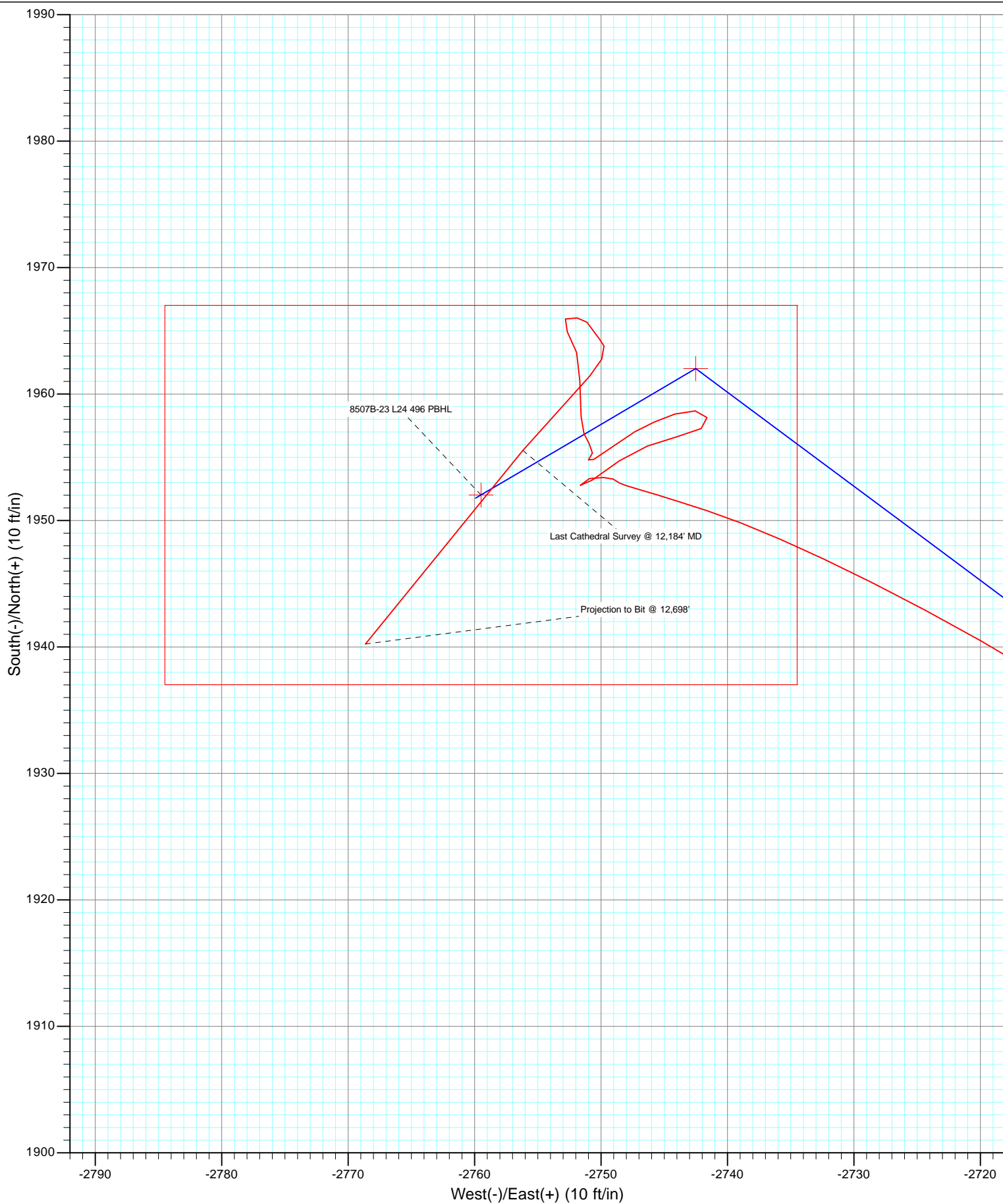


Project: Story Gulch
Site: L24 496
Well: 8507B-23 L24 496 (was 8502F-23)
Wellbore: DD
Design: FINAL





Project: Story Gulch
Site: L24 496
Well: 8507B-23 L24 496 (was 8502F-23)
Wellbore: DD
Design: FINAL



Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8507B-23 L24 496 (was 8502F-23)
Project:	Story Gulch	TVD Reference:	KB @ 8208.0ft (Original Well Elev)
Site:	L24 496	MD Reference:	KB @ 8208.0ft (Original Well Elev)
Well:	8507B-23 L24 496 (was 8502F-23)	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	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	8507B-23 L24 496 (was 8502F-23)			
Well Position	+N/-S	0.0 ft	Northing:	1,685,119.97 ft
	+E/-W	0.0 ft	Easting:	2,261,848.22 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	9/6/2013	10.14	65.81	52,094

Design	FINAL			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 3,155.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(ft)	(ft)	(ft)	(°)
	0.0	0.0	0.0	307.56

Survey Program	Date	10/8/2013			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
85.0	3,155.0	Survey #1 (GYRO)	Gyro	Gyro	
3,365.0	12,698.0	Survey #3 (DD)	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	
85.0	0.48	119.46	85.0	-0.2	0.3	-0.4	0.56	0.56	
185.0	0.31	101.28	185.0	-0.4	0.9	-1.0	0.21	-0.17	
285.0	0.79	31.91	285.0	0.1	1.6	-1.2	0.74	0.48	
385.0	1.96	22.56	385.0	2.3	2.6	-0.7	1.19	1.17	
485.0	3.12	348.88	484.9	6.5	2.7	1.8	1.84	1.16	
585.0	5.97	350.61	584.5	14.3	1.3	7.7	2.86	2.86	
685.0	5.70	350.42	684.0	24.3	-0.3	15.1	0.28	-0.28	
785.0	7.72	339.19	783.3	35.5	-3.5	24.5	2.40	2.03	
885.0	7.80	339.19	882.4	48.1	-8.3	36.0	0.08	0.08	
985.0	11.84	336.48	980.9	63.9	-14.9	50.7	4.06	4.03	
1,085.0	15.46	327.47	1,078.1	84.5	-26.1	72.2	4.19	3.62	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well 8507B-23 L24 496 (was 8502F-23)
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Site:	L24 496	MD Reference:	KB @ 8208.0ft (Original Well Elev)
Well:	8507B-23 L24 496 (was 8502F-23)	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
1,185.0	17.97	314.36	1,173.9	106.6	-44.3	100.1	4.52	2.51	
1,285.0	21.39	301.35	1,268.1	126.9	-71.0	133.6	5.54	3.42	
1,385.0	25.10	298.59	1,360.0	146.5	-105.2	172.7	3.87	3.71	
1,485.0	26.73	300.50	1,449.9	168.1	-143.2	216.0	1.83	1.62	
1,585.0	28.77	300.62	1,538.4	191.8	-183.3	262.2	2.05	2.05	
1,685.0	29.53	301.10	1,625.7	216.7	-225.1	310.5	0.79	0.76	
1,785.0	30.15	298.49	1,712.5	241.5	-268.3	359.8	1.44	0.62	
1,885.0	30.01	300.33	1,799.0	266.1	-311.9	409.5	0.93	-0.15	
1,985.0	29.41	295.70	1,885.9	289.3	-355.6	458.3	2.37	-0.60	
2,085.0	28.04	295.79	1,973.6	310.2	-398.9	505.3	1.37	-1.37	
2,185.0	28.24	298.68	2,061.8	331.8	-440.8	551.7	1.38	0.20	
2,285.0	28.48	297.91	2,149.8	354.3	-482.7	598.6	0.44	0.25	
2,385.0	28.67	298.54	2,237.6	376.9	-524.8	645.8	0.36	0.19	
2,485.0	28.67	297.46	2,325.3	399.4	-567.2	693.1	0.52	0.00	
2,585.0	27.90	297.94	2,413.4	421.5	-609.1	739.8	0.81	-0.77	
2,685.0	27.84	298.08	2,501.8	443.4	-650.4	785.9	0.09	-0.06	
2,785.0	27.37	298.42	2,590.4	465.3	-691.2	831.6	0.50	-0.47	
2,885.0	26.54	301.75	2,679.5	488.0	-730.4	876.5	1.72	-0.82	
2,985.0	26.08	300.98	2,769.2	511.1	-768.3	920.6	0.57	-0.46	
3,085.0	26.62	299.63	2,858.8	533.5	-806.6	964.6	0.81	0.54	
3,155.0	27.16	301.46	2,921.2	549.6	-833.9	996.0	1.41	0.77	Last Gyro Survey @ 3,170' MD
3,365.0	24.50	307.40	3,110.2	601.1	-909.4	1,087.3	1.77	-1.27	
3,457.0	26.00	309.00	3,193.5	625.4	-940.2	1,126.5	1.79	1.63	
3,549.0	28.30	307.70	3,275.3	651.4	-973.1	1,168.5	2.58	2.50	
3,641.0	27.70	306.20	3,356.5	677.4	-1,007.6	1,211.7	1.01	-0.65	
3,732.0	26.80	305.70	3,437.4	701.8	-1,041.4	1,253.3	1.02	-0.99	
3,824.0	26.20	304.60	3,519.8	725.5	-1,074.9	1,294.3	0.84	-0.65	
3,916.0	27.50	306.60	3,601.9	749.7	-1,108.7	1,335.9	1.72	1.41	
4,008.0	26.70	304.20	3,683.8	773.9	-1,142.8	1,377.7	1.47	-0.87	
4,100.0	25.80	303.50	3,766.3	796.6	-1,176.6	1,418.3	1.03	-0.98	
4,192.0	25.40	304.20	3,849.2	818.8	-1,209.6	1,458.0	0.55	-0.43	
4,284.0	24.00	306.70	3,932.8	841.0	-1,241.0	1,496.4	1.90	-1.52	
4,376.0	25.10	308.10	4,016.5	864.2	-1,271.3	1,534.6	1.35	1.20	
4,467.0	27.30	308.50	4,098.2	889.2	-1,302.8	1,574.8	2.43	2.42	
4,559.0	28.00	309.10	4,179.6	915.9	-1,336.1	1,617.5	0.82	0.76	
4,651.0	27.40	307.90	4,261.1	942.5	-1,369.6	1,660.2	0.89	-0.65	
4,743.0	29.10	306.50	4,342.1	968.8	-1,404.3	1,703.8	1.98	1.85	
4,835.0	28.40	305.40	4,422.8	994.8	-1,440.1	1,748.0	0.95	-0.76	
4,927.0	27.60	303.60	4,504.0	1,019.3	-1,475.7	1,791.1	1.26	-0.87	
5,019.0	27.90	304.80	4,585.5	1,043.4	-1,511.1	1,833.9	0.69	0.33	
5,111.0	28.70	306.50	4,666.5	1,068.8	-1,546.5	1,877.5	1.23	0.87	
5,203.0	28.20	307.00	4,747.3	1,095.0	-1,581.7	1,921.3	0.60	-0.54	
5,295.0	27.40	305.20	4,828.7	1,120.3	-1,616.3	1,964.2	1.26	-0.87	
5,386.0	26.80	307.00	4,909.7	1,144.7	-1,649.8	2,005.6	1.12	-0.66	
5,478.0	26.20	308.60	4,992.1	1,169.9	-1,682.2	2,046.7	1.01	-0.65	
5,570.0	25.40	306.60	5,074.9	1,194.3	-1,714.0	2,086.7	1.28	-0.87	
5,662.0	24.50	309.00	5,158.3	1,218.1	-1,744.6	2,125.5	1.47	-0.98	
5,754.0	25.90	310.50	5,241.6	1,243.1	-1,774.7	2,164.7	1.67	1.52	
5,846.0	27.20	310.50	5,323.9	1,269.8	-1,806.0	2,205.7	1.41	1.41	
5,937.0	26.80	309.30	5,404.9	1,296.3	-1,837.7	2,247.0	0.74	-0.44	
6,029.0	27.00	307.30	5,487.0	1,322.1	-1,870.4	2,288.6	1.01	0.22	
6,121.0	26.00	306.40	5,569.3	1,346.8	-1,903.2	2,329.7	1.17	-1.09	
6,213.0	25.40	304.60	5,652.2	1,369.9	-1,935.7	2,369.5	1.07	-0.65	

Cathedral Energy Services

Survey Report

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Site:	L24 496	MD Reference:	KB @ 8208.0ft (Original Well Elev)
Well:	8507B-23 L24 496 (was 8502F-23)	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
6,305.0	25.10	305.10	5,735.4	1,392.4	-1,967.9	2,408.7	0.40	-0.33	
6,396.0	26.30	305.10	5,817.4	1,415.0	-2,000.2	2,448.2	1.32	1.32	
6,488.0	27.60	307.00	5,899.4	1,439.6	-2,033.9	2,489.8	1.69	1.41	
6,580.0	26.00	305.80	5,981.6	1,464.2	-2,067.2	2,531.3	1.84	-1.74	
6,671.0	26.30	306.30	6,063.2	1,487.8	-2,099.7	2,571.4	0.41	0.33	
6,763.0	26.50	304.90	6,145.6	1,511.6	-2,132.9	2,612.3	0.71	0.22	
6,855.0	28.40	306.40	6,227.3	1,536.4	-2,167.4	2,654.7	2.20	2.07	
6,947.0	27.30	306.00	6,308.6	1,561.7	-2,202.0	2,697.6	1.21	-1.20	
7,039.0	27.30	306.00	6,390.4	1,586.5	-2,236.2	2,739.8	0.00	0.00	
7,131.0	27.30	304.70	6,472.1	1,611.0	-2,270.6	2,782.0	0.65	0.00	
7,223.0	29.00	306.10	6,553.3	1,636.1	-2,306.0	2,825.3	1.98	1.85	
7,315.0	28.10	303.60	6,634.1	1,661.2	-2,342.0	2,869.2	1.63	-0.98	
7,406.0	26.90	303.60	6,714.8	1,684.5	-2,377.0	2,911.2	1.32	-1.32	
7,498.0	26.20	304.10	6,797.1	1,707.4	-2,411.2	2,952.2	0.80	-0.76	
7,590.0	25.30	306.20	6,879.9	1,730.4	-2,443.9	2,992.1	1.39	-0.98	
7,682.0	24.30	305.50	6,963.5	1,753.0	-2,475.1	3,030.7	1.13	-1.09	
7,774.0	22.10	309.90	7,048.0	1,775.1	-2,503.8	3,066.9	3.04	-2.39	
7,866.0	21.90	307.50	7,133.3	1,796.6	-2,530.7	3,101.4	1.00	-0.22	
7,958.0	21.80	307.50	7,218.7	1,817.5	-2,557.9	3,135.6	0.11	-0.11	
8,049.0	20.10	305.80	7,303.7	1,836.9	-2,584.0	3,168.1	1.98	-1.87	
8,141.0	18.90	303.90	7,390.4	1,854.5	-2,609.2	3,198.8	1.48	-1.30	
8,233.0	17.60	309.90	7,477.8	1,871.7	-2,632.2	3,227.6	2.48	-1.41	
8,325.0	16.00	307.90	7,565.9	1,888.4	-2,652.9	3,254.2	1.85	-1.74	
8,417.0	14.80	311.80	7,654.6	1,904.0	-2,671.7	3,278.5	1.72	-1.30	
8,509.0	13.80	309.10	7,743.7	1,918.8	-2,688.9	3,301.2	1.31	-1.09	
8,601.0	12.00	304.90	7,833.4	1,931.2	-2,705.3	3,321.8	2.20	-1.96	
8,693.0	9.80	299.30	7,923.7	1,940.5	-2,720.0	3,339.1	2.65	-2.39	
8,785.0	7.70	295.20	8,014.7	1,947.0	-2,732.4	3,352.8	2.38	-2.28	
8,877.0	4.80	288.10	8,106.1	1,950.8	-2,741.6	3,362.5	3.26	-3.15	
8,969.0	2.00	285.80	8,197.9	1,952.4	-2,746.8	3,367.6	3.05	-3.04	
9,061.0	0.30	304.80	8,289.9	1,953.0	-2,748.6	3,369.3	1.87	-1.85	
9,153.0	0.40	299.70	8,381.9	1,953.3	-2,749.0	3,369.9	0.11	0.11	
9,244.0	0.60	266.10	8,472.9	1,953.4	-2,749.8	3,370.6	0.38	0.22	
9,336.0	0.80	265.30	8,564.9	1,953.3	-2,750.9	3,371.4	0.22	0.22	
9,428.0	0.60	190.50	8,656.9	1,952.8	-2,751.6	3,371.7	0.94	-0.22	
9,520.0	1.70	49.10	8,748.9	1,953.2	-2,750.7	3,371.2	2.39	1.20	
9,612.0	1.60	60.80	8,840.8	1,954.7	-2,748.5	3,370.4	0.38	-0.11	
9,704.0	1.50	64.00	8,932.8	1,955.9	-2,746.3	3,369.3	0.14	-0.11	
9,796.0	1.60	80.50	9,024.8	1,956.6	-2,744.0	3,367.9	0.50	0.11	
9,887.0	1.00	56.50	9,115.7	1,957.3	-2,742.1	3,366.8	0.88	-0.66	
9,979.0	0.60	333.80	9,207.7	1,958.1	-2,741.6	3,367.0	1.19	-0.43	
10,071.0	0.90	277.20	9,299.7	1,958.7	-2,742.5	3,368.0	0.82	0.33	
10,163.0	1.20	248.80	9,391.7	1,958.4	-2,744.2	3,369.2	0.64	0.33	
10,255.0	1.00	248.90	9,483.7	1,957.8	-2,745.8	3,370.1	0.22	-0.22	
10,348.0	1.10	238.60	9,576.7	1,957.0	-2,747.3	3,370.8	0.23	0.11	
10,440.0	1.50	234.60	9,668.7	1,955.9	-2,749.1	3,371.5	0.45	0.43	
10,531.0	0.80	237.90	9,759.6	1,954.8	-2,750.6	3,372.1	0.77	-0.77	
10,623.0	0.40	20.30	9,851.6	1,954.8	-2,751.0	3,372.4	1.24	-0.43	
10,715.0	0.40	42.20	9,943.6	1,955.3	-2,750.7	3,372.5	0.17	0.00	
10,804.0	0.90	317.20	10,032.6	1,956.1	-2,750.9	3,373.1	1.07	0.56	
10,899.0	1.90	355.60	10,127.6	1,958.2	-2,751.6	3,374.9	1.39	1.05	
10,991.0	1.70	0.40	10,219.6	1,961.1	-2,751.7	3,376.7	0.27	-0.22	
11,083.0	1.10	343.00	10,311.5	1,963.3	-2,751.9	3,378.3	0.79	-0.65	

Cathedral Energy Services

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Site:	L24 496	MD Reference:	KB @ 8208.0ft (Original Well Elev)
Well:	8507B-23 L24 496 (was 8502F-23)	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
11,174.0	1.20	329.00	10,402.5	1,964.9	-2,752.7	3,379.9	0.33	0.11	
11,266.0	0.50	64.50	10,494.5	1,965.9	-2,752.8	3,380.6	1.46	-0.76	
11,358.0	0.70	100.10	10,586.5	1,966.0	-2,751.9	3,379.9	0.45	0.22	
11,450.0	0.40	134.20	10,678.5	1,965.7	-2,751.1	3,379.1	0.47	-0.33	
11,596.0	0.60	150.30	10,824.5	1,964.7	-2,750.4	3,377.9	0.17	0.14	
11,633.0	0.50	135.00	10,861.5	1,964.4	-2,750.1	3,377.6	0.48	-0.27	
11,725.0	0.40	159.90	10,953.5	1,963.8	-2,749.8	3,376.9	0.24	-0.11	
11,817.0	1.00	201.70	11,045.5	1,962.8	-2,749.9	3,376.4	0.82	0.65	
11,909.0	1.10	227.80	11,137.5	1,961.4	-2,750.9	3,376.3	0.53	0.11	
12,184.0	2.20	219.10	11,412.4	1,955.5	-2,756.2	3,376.9	0.41	0.40	Last Cathedral Survey @ 12,184' MD Projection to Bit @ 12,698'
12,698.0	2.20	219.10	11,926.0	1,940.2	-2,768.6	3,377.5	0.00	0.00	

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
8507B-23 L24 496 PBHI	0.00	0.00	12,984.0	1,952.0	-2,759.5	1,687,150.84	2,259,146.24	39° 41' 25.97 N	108° 7' 58.57 W
- actual wellpath misses target center by 1058.1ft at 12698.0ft MD (11926.0 TVD, 1940.2 N, -2768.6 E)									
- Rectangle (sides W30.0 H50.0 D0.0)									
8507B-23 L24 496 TGT	0.00	0.00	8,225.0	1,962.0	-2,742.5	1,687,160.34	2,259,163.51	39° 41' 26.07 N	108° 7' 58.35 W
- actual wellpath misses target center by 10.7ft at 8996.0ft MD (8225.0 TVD, 1952.6 N, -2747.6 E)									
- Point									

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
3,155.0	2,921.2	549.6	-833.9	Last Gyro Survey @ 3,170' MD	
12,184.0	11,412.4	1,955.5	-2,756.2	Last Cathedral Survey @ 12,184' MD	
12,698.0	11,926.0	1,940.2	-2,768.6	Projection to Bit @ 12,698'	

Checked By: _____ Approved By: _____ Date: _____