

JASON C. EDWARDS
Certificate Number 15269

CONFIDENTIAL

DEVIATION SURVEYS
Well Name: Lybrook M28-2306 02H
API: 30-043-21175

MD (Feet)	Inclination (Degree)
346'	0.40
726'	0.30
1042'	1.20
1358'	1.30
1674'	0.40
1990'	0.70
2306'	0.20
2622'	0.70
2970'	1.30
3286'	0.80
3602'	0.60
3919'	0.40
4235'	0.40
4551'	1.00
4867'	2.70
5024'	22.10

RCVD SEP 18 '14
OIL CONS. DIV.
DIST. 3

OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Cristi BAUER

Cristi Bauer, Operations Technician

9/16/14

Date

ACKNOWLEDGMENT

State of Colorado
City and County of Denver

This instrument was acknowledged before me on this *16th* day of *September*, 2014 by Cristi Bauer as Attorney in Fact of Encana Oil & Gas (USA) Inc., on behalf of said corporation.

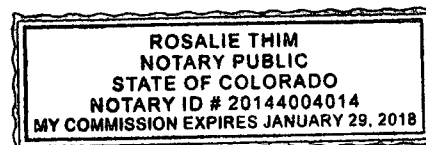
In witness whereof, I hereunto set my hand and official seal.

Notary Public:

Rosalie Thim

My Commission Expires:

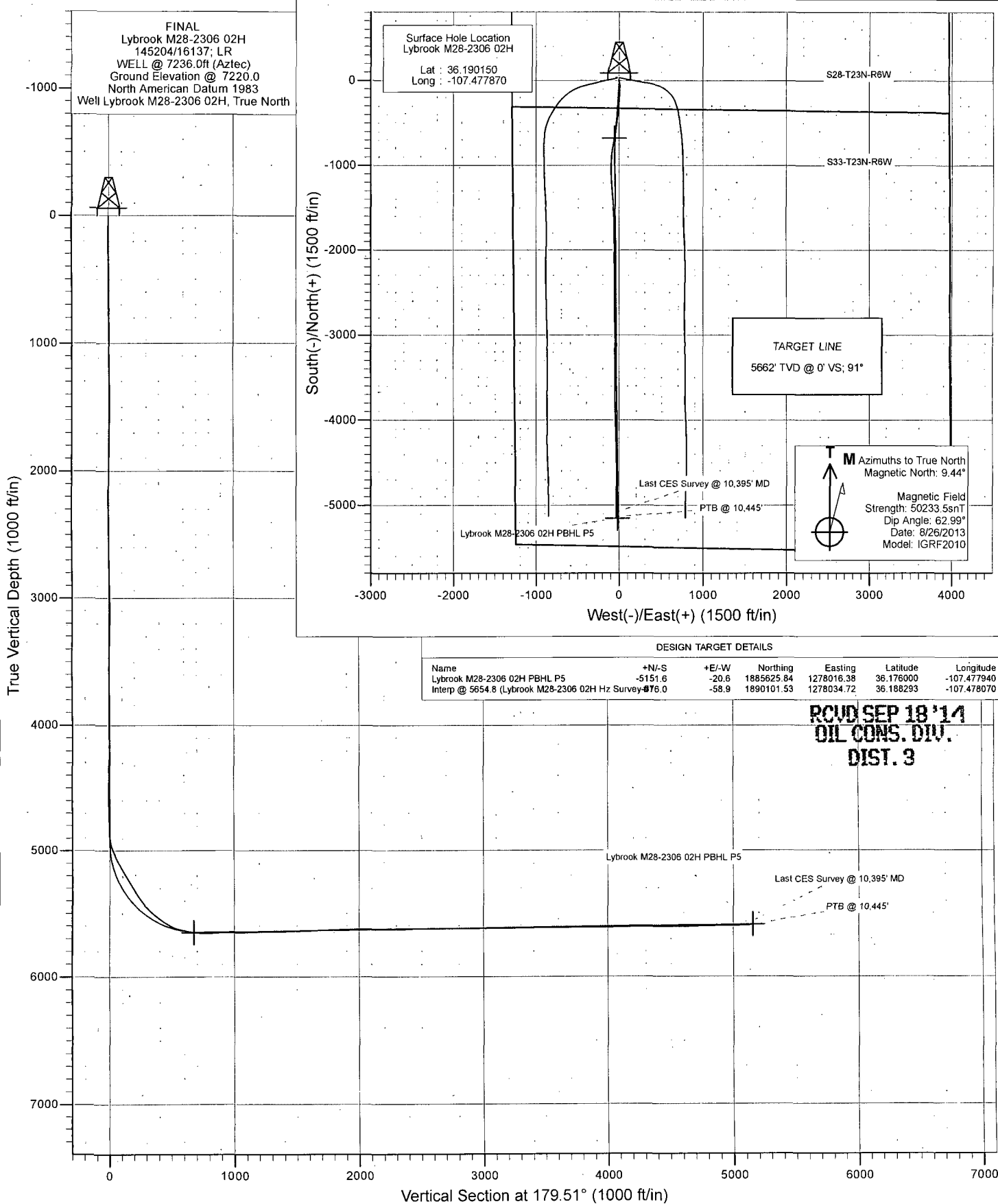
1/29/18



encana

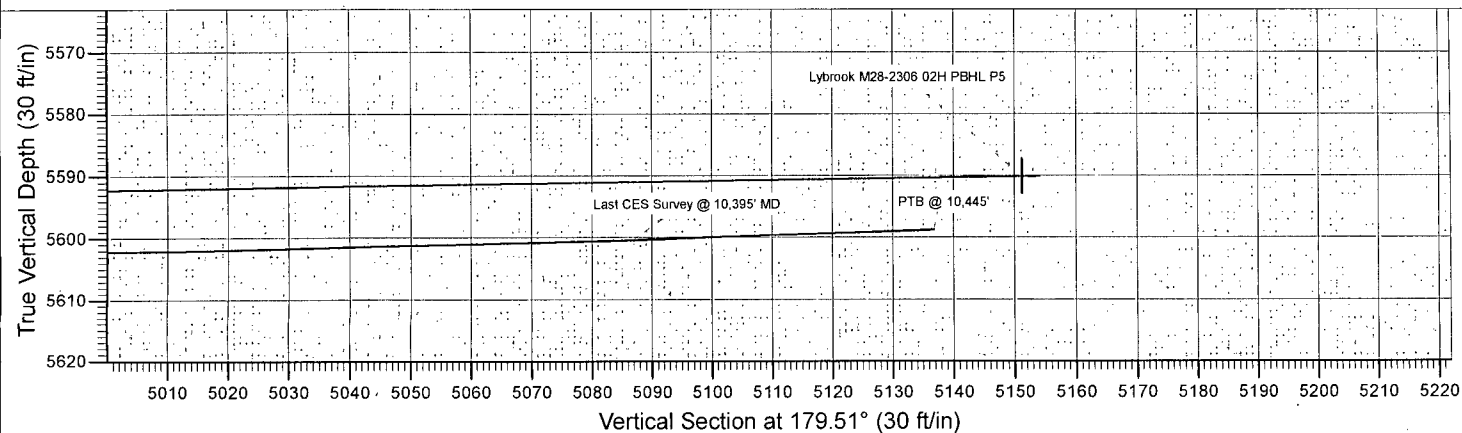
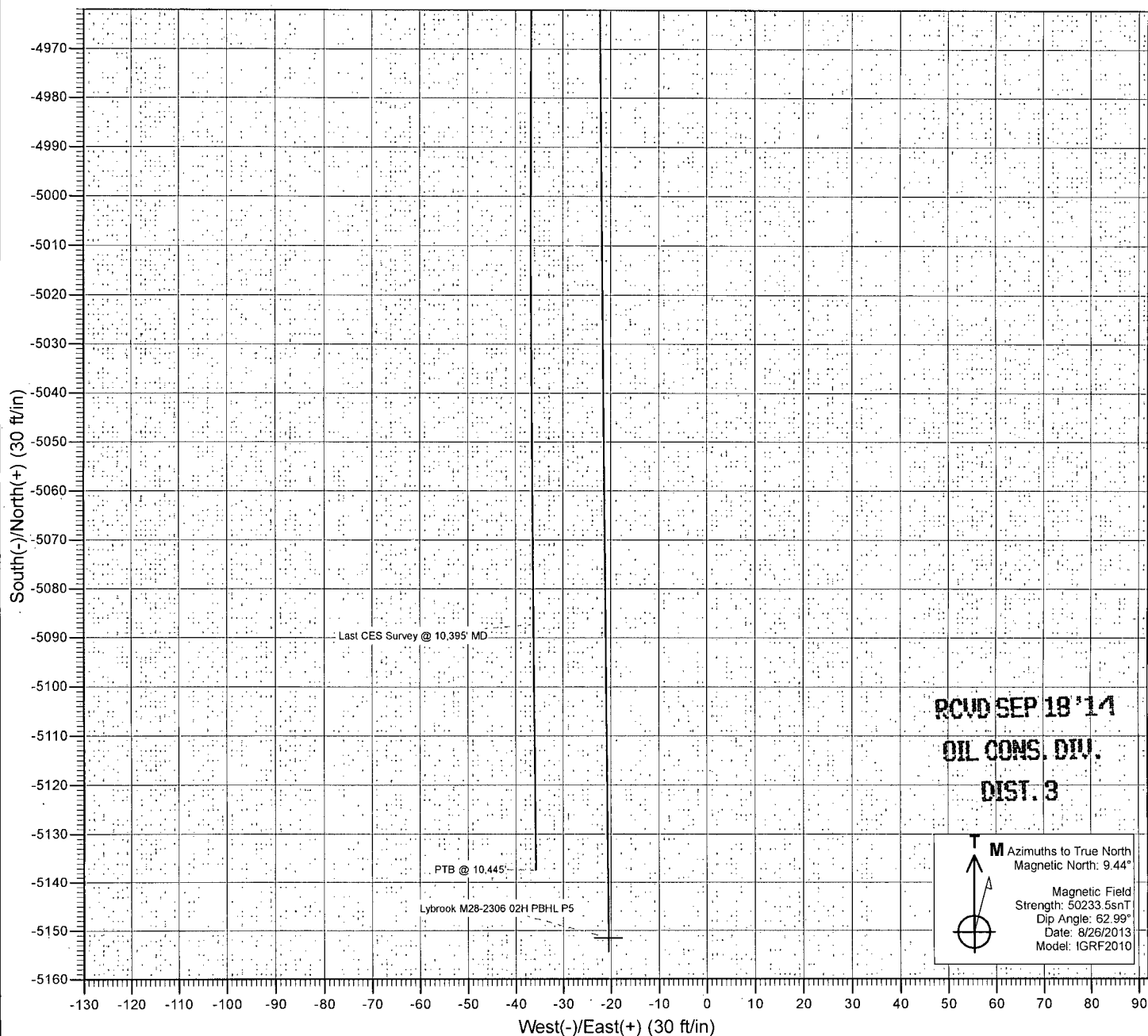
natural gas

Project: Sandoval County, NM
Site: Lybrook
Well: Lybrook M28-2306 02H
Wellbore: Hz
Design: FINAL





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Site: Lybrook
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Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Aztec)
Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Sandoval County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Lybrook				
Site Position:		Northing:	1,882,676.45 ft	Latitude:	36.168210
From:	Lat/Long	Easting:	1,287,068.90 ft	Longitude:	-107.447150
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-0.71 °

Well	Lybrook M28-2306 02H					
Well Position	+N/-S	0.0 ft	Northing:	1,890,776.73 ft	Latitude:	36.190150
	+E/-W	0.0 ft	Easting:	1,278,102.22 ft	Longitude:	-107.477870
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	7,220.0 ft

Wellbore	Hz				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/26/2013	9.44	62.99	50,233

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	179.51

Survey Program		Date 7/22/2014		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
157.0	10,445.0	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	
157.0	0.10	351.10	157.0	0.1	0.0	-0.1	0.06	0.06	
220.0	0.20	314.90	220.0	0.3	-0.1	-0.3	0.21	0.16	
283.0	0.20	320.00	283.0	0.4	-0.3	-0.4	0.03	0.00	
346.0	0.40	281.70	346.0	0.6	-0.5	-0.6	0.43	0.32	
439.0	0.50	275.90	439.0	0.7	-1.3	-0.7	0.12	0.11	
536.0	0.30	279.30	536.0	0.8	-1.9	-0.8	0.21	-0.21	
599.0	0.40	285.90	599.0	0.8	-2.3	-0.9	0.17	0.16	
663.0	0.20	279.30	663.0	0.9	-2.6	-0.9	0.32	-0.31	
726.0	0.30	279.30	726.0	1.0	-2.9	-1.0	0.16	0.16	
789.0	0.40	279.30	789.0	1.0	-3.3	-1.1	0.16	0.16	
852.0	0.40	270.30	852.0	1.1	-3.7	-1.1	0.10	0.00	
916.0	1.40	122.10	916.0	0.6	-3.3	-0.7	2.74	1.56	

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Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	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
979.0	1.40	131.50	979.0	-0.3	-2.1	0.3	0.36	0.00	
1,042.0	1.20	130.70	1,041.9	-1.2	-1.0	1.2	0.32	-0.32	
1,105.0	1.50	131.60	1,104.9	-2.2	0.1	2.2	0.48	0.48	
1,169.0	1.10	139.50	1,168.9	-3.2	1.2	3.2	0.68	-0.62	
1,232.0	0.90	140.70	1,231.9	-4.1	1.9	4.1	0.32	-0.32	
1,295.0	1.00	135.30	1,294.9	-4.8	2.6	4.9	0.21	0.16	
1,358.0	1.30	143.30	1,357.9	-5.8	3.4	5.8	0.54	0.48	
1,421.0	0.10	138.30	1,420.9	-6.4	3.8	6.4	1.91	-1.90	
1,484.0	0.50	332.00	1,483.9	-6.2	3.8	6.2	0.95	0.63	
1,548.0	0.50	339.60	1,547.9	-5.7	3.5	5.7	0.10	0.00	
1,611.0	0.40	342.10	1,610.9	-5.2	3.4	5.3	0.16	-0.16	
1,674.0	0.40	327.60	1,673.9	-4.8	3.2	4.9	0.16	0.00	
1,737.0	0.40	338.80	1,736.9	-4.4	3.0	4.5	0.12	0.00	
1,800.0	0.70	1.80	1,799.9	-3.9	2.9	3.9	0.58	0.48	
1,864.0	0.80	17.40	1,863.9	-3.0	3.1	3.1	0.35	0.16	
1,927.0	0.90	18.40	1,926.9	-2.2	3.3	2.2	0.16	0.16	
1,990.0	0.70	0.80	1,989.8	-1.3	3.5	1.3	0.50	-0.32	
2,053.0	0.60	335.10	2,052.8	-0.6	3.4	0.6	0.48	-0.16	
2,116.0	0.50	347.00	2,115.8	0.0	3.2	0.1	0.24	-0.16	
2,179.0	0.40	358.90	2,178.8	0.4	3.1	-0.4	0.22	-0.16	
2,242.0	0.30	344.50	2,241.8	0.8	3.1	-0.8	0.21	-0.16	
2,306.0	0.20	262.60	2,305.8	1.0	2.9	-0.9	0.53	-0.16	
2,369.0	0.20	189.50	2,368.8	0.8	2.8	-0.8	0.38	0.00	
2,432.0	0.30	227.70	2,431.8	0.6	2.6	-0.6	0.30	0.16	
2,495.0	0.20	182.90	2,494.8	0.4	2.5	-0.4	0.34	-0.16	
2,558.0	0.50	241.50	2,557.8	0.2	2.3	-0.1	0.68	0.48	
2,622.0	0.70	232.40	2,621.8	-0.2	1.7	0.2	0.35	0.31	
2,685.0	0.70	232.60	2,684.8	-0.7	1.1	0.7	0.00	0.00	
2,748.0	0.70	227.10	2,747.8	-1.2	0.5	1.2	0.11	0.00	
2,844.0	0.90	226.00	2,843.8	-2.1	-0.5	2.1	0.21	0.21	
2,907.0	1.10	223.30	2,906.8	-2.9	-1.2	2.9	0.33	0.32	
2,970.0	1.30	216.30	2,969.8	-3.9	-2.1	3.9	0.39	0.32	
3,033.0	1.40	220.50	3,032.8	-5.1	-3.0	5.0	0.22	0.16	
3,096.0	0.70	246.40	3,095.8	-5.8	-3.8	5.8	1.32	-1.11	
3,160.0	0.70	311.50	3,159.8	-5.7	-4.5	5.7	1.18	0.00	
3,223.0	0.70	10.50	3,222.8	-5.1	-4.7	5.0	1.09	0.00	
3,286.0	0.80	44.90	3,285.7	-4.4	-4.3	4.3	0.72	0.16	
3,349.0	0.80	39.80	3,348.7	-3.7	-3.7	3.7	0.11	0.00	
3,413.0	0.70	35.90	3,412.7	-3.1	-3.2	3.0	0.18	-0.16	
3,476.0	0.70	23.80	3,475.7	-2.4	-2.8	2.4	0.23	0.00	
3,539.0	0.70	37.40	3,538.7	-1.7	-2.5	1.7	0.26	0.00	
3,602.0	0.60	40.00	3,601.7	-1.2	-2.0	1.2	0.17	-0.16	
3,666.0	0.50	52.00	3,665.7	-0.8	-1.6	0.7	0.24	-0.16	
3,729.0	0.40	3.30	3,728.7	-0.4	-1.3	0.4	0.61	-0.16	
3,792.0	0.40	325.30	3,791.7	0.0	-1.5	-0.1	0.41	0.00	
3,855.0	0.40	304.50	3,854.7	0.3	-1.8	-0.4	0.23	0.00	
3,919.0	0.40	303.80	3,918.7	0.6	-2.1	-0.6	0.01	0.00	
3,982.0	0.30	319.60	3,981.7	0.8	-2.4	-0.9	0.22	-0.16	
4,045.0	0.40	299.00	4,044.7	1.1	-2.7	-1.1	0.25	0.16	
4,108.0	0.30	298.30	4,107.7	1.3	-3.1	-1.3	0.16	-0.16	
4,172.0	0.40	279.30	4,171.7	1.4	-3.4	-1.4	0.24	0.16	
4,235.0	0.40	317.90	4,234.7	1.6	-3.8	-1.6	0.42	0.00	
4,298.0	0.60	357.40	4,297.7	2.1	-4.0	-2.1	0.61	0.32	

Cathedral Energy Services

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Wellbore:	Hz	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
4,361.0	0.70	333.00	4,360.7	2.7	-4.1	-2.8	0.46	0.16	
4,425.0	0.90	315.40	4,424.7	3.4	-4.7	-3.5	0.49	0.31	
4,488.0	1.00	309.70	4,487.7	4.1	-5.4	-4.2	0.22	0.16	
4,551.0	1.00	306.20	4,550.7	4.8	-6.3	-4.9	0.10	0.00	
4,614.0	1.00	292.80	4,613.7	5.4	-7.3	-5.4	0.37	0.00	
4,677.0	0.40	233.10	4,676.7	5.4	-7.9	-5.5	1.38	-0.95	
4,740.0	1.00	180.10	4,739.7	4.8	-8.1	-4.8	1.31	0.95	
4,804.0	0.80	153.80	4,803.7	3.8	-7.9	-3.9	0.71	-0.31	
4,867.0	2.70	145.60	4,866.6	2.2	-6.9	-2.2	3.03	3.02	
4,898.0	6.90	157.40	4,897.5	-0.1	-5.8	0.1	13.85	13.55	
4,930.0	11.40	161.30	4,929.1	-4.9	-4.0	4.9	14.19	14.06	
4,961.0	16.00	163.00	4,959.2	-11.9	-1.8	11.9	14.89	14.84	
4,993.0	20.00	163.70	4,989.6	-21.4	1.0	21.4	12.52	12.50	
5,024.0	22.10	165.20	5,018.6	-32.1	4.0	32.1	6.99	6.77	
5,056.0	24.00	170.20	5,048.0	-44.3	6.7	44.4	8.52	5.94	
5,088.0	26.70	178.30	5,076.9	-57.9	8.0	58.0	13.72	8.44	
5,119.0	29.40	183.40	5,104.3	-72.5	7.7	72.6	11.64	8.71	
5,151.0	30.60	182.70	5,132.0	-88.5	6.9	88.5	3.91	3.75	
5,182.0	30.70	182.40	5,158.7	-104.3	6.2	104.3	0.59	0.32	
5,214.0	30.30	181.90	5,186.2	-120.5	5.6	120.5	1.48	-1.25	
5,246.0	29.70	181.50	5,214.0	-136.5	5.1	136.5	1.98	-1.87	
5,277.0	30.20	182.70	5,240.8	-152.0	4.5	152.0	2.52	1.61	
5,309.0	31.40	184.70	5,268.3	-168.3	3.5	168.3	4.93	3.75	
5,341.0	32.20	185.40	5,295.5	-185.1	2.0	185.1	2.75	2.50	
5,372.0	33.00	183.90	5,321.6	-201.8	0.6	201.7	3.67	2.58	
5,404.0	33.50	181.70	5,348.4	-219.3	-0.2	219.3	4.08	1.56	
5,435.0	34.50	180.80	5,374.1	-236.6	-0.6	236.6	3.61	3.23	
5,467.0	35.10	181.10	5,400.4	-254.9	-0.9	254.8	1.95	1.87	
5,499.0	37.90	184.10	5,426.1	-273.9	-1.8	273.8	10.37	8.75	
5,530.0	41.10	186.80	5,450.0	-293.5	-3.7	293.4	11.71	10.32	
5,562.0	45.40	187.50	5,473.3	-315.2	-6.4	315.2	13.52	13.44	
5,593.0	49.70	187.10	5,494.2	-337.9	-9.3	337.8	13.90	13.87	
5,625.0	51.80	186.60	5,514.5	-362.5	-12.3	362.4	6.67	6.56	
5,657.0	52.70	187.10	5,534.1	-387.6	-15.3	387.5	3.07	2.81	
5,688.0	52.70	187.00	5,552.8	-412.1	-18.3	411.9	0.26	0.00	
5,720.0	54.20	187.80	5,571.9	-437.6	-21.6	437.4	5.10	4.69	
5,752.0	58.80	187.90	5,589.6	-464.0	-25.3	463.8	14.38	14.37	
5,783.0	63.80	187.60	5,604.4	-491.0	-28.9	490.7	16.15	16.13	
5,815.0	69.10	186.40	5,617.2	-520.1	-32.5	519.8	16.92	16.56	
5,846.0	74.20	186.50	5,627.0	-549.3	-35.8	549.0	16.45	16.45	
5,881.0	75.90	188.60	5,636.0	-582.8	-40.2	582.5	7.56	4.86	
5,916.0	77.60	191.10	5,644.0	-616.4	-46.1	616.0	8.48	4.86	
5,947.0	79.80	192.20	5,650.1	-646.2	-52.2	645.7	7.90	7.10	
5,979.0	82.90	193.30	5,654.9	-677.0	-59.2	676.5	10.27	9.69	
6,011.0	86.70	192.10	5,657.8	-708.1	-66.2	707.5	12.45	11.87	
6,074.0	90.60	188.80	5,659.3	-770.0	-77.6	769.3	8.11	6.19	
6,137.0	92.70	187.20	5,657.5	-832.4	-86.4	831.6	4.19	3.33	
6,200.0	92.30	185.60	5,654.7	-894.9	-93.4	894.1	2.62	-0.63	
6,264.0	91.10	182.40	5,652.8	-958.7	-97.8	957.8	5.34	-1.87	
6,327.0	89.70	179.80	5,652.4	-1,021.7	-99.1	1,020.8	4.69	-2.22	
6,390.0	90.80	178.00	5,652.1	-1,084.7	-97.8	1,083.8	3.35	1.75	
6,450.0	91.50	177.80	5,650.9	-1,144.6	-95.7	1,143.8	1.21	1.17	
6,511.0	91.80	177.10	5,649.2	-1,205.5	-92.9	1,204.7	1.25	0.49	

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6,572.0	89.20	175.40	5,648.6	-1,266.4	-88.9	1,265.6	5.09	-4.26	
6,632.0	89.60	175.50	5,649.3	-1,326.2	-84.2	1,325.4	0.69	0.67	
6,693.0	90.90	175.50	5,649.0	-1,387.0	-79.4	1,386.3	2.13	2.13	
6,753.0	91.70	175.60	5,647.6	-1,446.8	-74.7	1,446.1	1.34	1.33	
6,814.0	92.40	175.20	5,645.4	-1,507.6	-69.9	1,506.9	1.32	1.15	
6,874.0	92.80	176.50	5,642.7	-1,567.4	-65.5	1,566.7	2.26	0.67	
6,935.0	92.70	178.40	5,639.8	-1,628.2	-62.8	1,627.6	3.12	-0.16	
6,997.0	92.20	179.30	5,637.1	-1,690.2	-61.6	1,689.6	1.66	-0.81	
7,057.0	91.60	179.60	5,635.2	-1,750.1	-61.0	1,749.5	1.12	-1.00	
7,118.0	92.10	179.60	5,633.2	-1,811.1	-60.6	1,810.5	0.82	0.82	
7,178.0	92.70	179.40	5,630.7	-1,871.0	-60.0	1,870.5	1.05	1.00	
7,239.0	92.40	179.70	5,628.0	-1,932.0	-59.6	1,931.4	0.70	-0.49	
7,300.0	90.40	181.00	5,626.5	-1,993.0	-59.9	1,992.4	3.91	-3.28	
7,360.0	90.20	180.40	5,626.2	-2,052.9	-60.7	2,052.4	1.05	-0.33	
7,421.0	89.20	179.00	5,626.5	-2,113.9	-60.4	2,113.3	2.82	-1.64	
7,481.0	89.90	179.00	5,626.9	-2,173.9	-59.3	2,173.3	1.17	1.17	
7,542.0	91.00	178.90	5,626.5	-2,234.9	-58.2	2,234.3	1.81	1.80	
7,602.0	90.40	180.10	5,625.7	-2,294.9	-57.7	2,294.3	2.24	-1.00	
7,666.0	89.50	180.20	5,625.8	-2,358.9	-57.8	2,358.3	1.41	-1.41	
7,729.0	90.20	180.00	5,626.0	-2,421.9	-57.9	2,421.3	1.16	1.11	
7,792.0	91.10	180.40	5,625.2	-2,484.9	-58.2	2,484.3	1.56	1.43	
7,855.0	90.20	179.60	5,624.5	-2,547.9	-58.2	2,547.3	1.91	-1.43	
7,918.0	89.00	180.30	5,625.0	-2,610.9	-58.1	2,610.3	2.21	-1.90	
7,981.0	89.50	179.80	5,625.8	-2,673.9	-58.2	2,673.3	1.12	0.79	
8,045.0	90.50	179.90	5,625.8	-2,737.9	-58.0	2,737.3	1.57	1.56	
8,108.0	90.10	178.80	5,625.5	-2,800.9	-57.3	2,800.3	1.86	-0.63	
8,171.0	90.50	178.60	5,625.1	-2,863.9	-55.8	2,863.3	0.71	0.63	
8,234.0	91.20	178.30	5,624.2	-2,926.8	-54.1	2,926.3	1.21	1.11	
8,298.0	90.40	179.30	5,623.3	-2,990.8	-52.8	2,990.3	2.00	-1.25	
8,361.0	90.80	179.10	5,622.6	-3,053.8	-51.9	3,053.2	0.71	0.63	
8,424.0	90.20	179.10	5,622.1	-3,116.8	-50.9	3,116.2	0.95	-0.95	
8,487.0	91.00	179.80	5,621.4	-3,179.8	-50.3	3,179.2	1.69	1.27	
8,551.0	91.20	180.90	5,620.2	-3,243.8	-50.7	3,243.2	1.75	0.31	
8,614.0	90.00	180.50	5,619.5	-3,306.8	-51.5	3,306.2	2.01	-1.90	
8,677.0	90.30	180.20	5,619.4	-3,369.8	-51.9	3,369.2	0.67	0.48	
8,740.0	90.70	179.90	5,618.8	-3,432.8	-51.9	3,432.2	0.79	0.63	
8,803.0	89.60	180.30	5,618.7	-3,495.8	-52.0	3,495.2	1.86	-1.75	
8,867.0	90.00	179.90	5,618.9	-3,559.8	-52.2	3,559.2	0.88	0.62	
8,930.0	90.50	179.70	5,618.6	-3,622.8	-51.9	3,622.2	0.85	0.79	
8,993.0	91.30	179.70	5,617.6	-3,685.7	-51.6	3,685.2	1.27	1.27	
9,057.0	90.20	179.70	5,616.8	-3,749.7	-51.3	3,749.2	1.72	-1.72	
9,120.0	90.50	179.50	5,616.4	-3,812.7	-50.8	3,812.2	0.57	0.48	
9,183.0	91.00	179.30	5,615.6	-3,875.7	-50.2	3,875.2	0.85	0.79	
9,246.0	91.00	178.30	5,614.5	-3,938.7	-48.9	3,938.1	1.59	0.00	
9,309.0	89.80	178.10	5,614.0	-4,001.7	-46.9	4,001.1	1.93	-1.90	
9,373.0	90.10	178.20	5,614.1	-4,065.6	-44.8	4,065.1	0.49	0.47	
9,436.0	90.50	178.60	5,613.8	-4,128.6	-43.0	4,128.1	0.90	0.63	
9,499.0	91.00	178.70	5,612.9	-4,191.6	-41.6	4,191.1	0.81	0.79	
9,562.0	91.60	178.90	5,611.5	-4,254.6	-40.2	4,254.1	1.00	0.95	
9,625.0	89.60	178.70	5,610.8	-4,317.6	-38.9	4,317.1	3.19	-3.17	
9,689.0	89.60	178.50	5,611.3	-4,381.5	-37.4	4,381.1	0.31	0.00	
9,752.0	90.20	178.30	5,611.4	-4,444.5	-35.6	4,444.0	1.00	0.95	
9,815.0	90.40	179.50	5,611.1	-4,507.5	-34.4	4,507.0	1.93	0.32	

Cathedral Energy Services

Survey Report

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Aztec)
Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	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
9,878.0	90.90	179.80	5,610.4	-4,570.5	-34.0	4,570.0	0.93	0.79	
9,941.0	91.80	179.70	5,608.9	-4,633.5	-33.7	4,633.0	1.44	1.43	
10,004.0	91.90	180.10	5,606.8	-4,696.4	-33.6	4,696.0	0.65	0.16	
10,068.0	91.80	180.80	5,604.8	-4,760.4	-34.1	4,759.9	1.10	-0.16	
10,131.0	91.40	181.40	5,603.0	-4,823.4	-35.3	4,822.9	1.14	-0.63	
10,194.0	89.90	180.40	5,602.3	-4,886.4	-36.3	4,885.9	2.86	-2.38	
10,257.0	89.90	180.20	5,602.4	-4,949.4	-36.7	4,948.9	0.32	0.00	
10,320.0	90.70	179.90	5,602.1	-5,012.3	-36.7	5,011.9	1.36	1.27	
10,395.0	91.90	179.40	5,600.4	-5,087.3	-36.3	5,086.8	1.73	1.60	Last CES Survey @ 10,395' MD
10,445.0	91.90	179.40	5,598.7	-5,137.3	-35.7	5,136.8	0.00	0.00	PTB @ 10,445'

Targets									
Target Name	- hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	
- Shape									Latitude Longitude
Lybrook M28-2306 02H I	- actual wellpath misses target center by 637.9ft at 5881.0ft MD (5636.0 TVD, -582.8 N, -40.2 E)	0.00	0.00	5,695.6	-659.0	590.2	1,890,110.35	1,278,684.08	36.188340 -107.475870
- Point									
Lybrook M28-2306 02H I	- actual wellpath misses target center by 22.5ft at 10445.0ft MD (5598.7 TVD, -5137.3 N, -35.7 E)	0.00	0.00	5,590.1	-5,151.6	-20.6	1,885,625.84	1,278,016.38	36.176000 -107.477940
- Point									
Lybrook M28-2306 02H I	- actual wellpath misses target center by 33.8ft at 10445.0ft MD (5598.7 TVD, -5137.3 N, -35.7 E)	0.00	0.00	5,572.1	-5,151.6	-20.6	1,885,625.84	1,278,016.38	36.176000 -107.477940
- Point									
Lybrook M28-2306 02H I	- actual wellpath misses target center by 6.6ft at 5950.7ft MD (5650.7 TVD, -649.7 N, -53.0 E)	0.00	0.00	5,652.9	-648.0	-59.0	1,890,129.48	1,278,035.00	36.188370 -107.478070
- Point									
Lybrook M28-2306 02H I	- actual wellpath misses target center by 666.3ft at 10445.0ft MD (5598.7 TVD, -5137.3 N, -35.7 E)	0.00	0.00	5,640.9	-5,162.5	628.7	1,885,606.71	1,278,665.56	36.175970 -107.475740
- Point									
Lybrook M28-2306 02H I	- actual wellpath misses target center by 669.9ft at 10445.0ft MD (5598.7 TVD, -5137.3 N, -35.7 E)	0.00	0.00	5,679.9	-5,162.5	628.7	1,885,606.71	1,278,665.56	36.175970 -107.475740
- Point									
Interp @ 5654.8 (Lybrook)	- actual wellpath hits target center	0.00	0.00	5,654.8	-676.0	-58.9	1,890,101.53	1,278,034.72	36.188293 -107.478070
- Point									
Lybrook M28-2306 02H I	- actual wellpath misses target center by 635.4ft at 5879.1ft MD (5635.5 TVD, -581.0 N, -40.0 E)	0.00	0.00	5,656.6	-659.0	590.2	1,890,110.35	1,278,684.08	36.188340 -107.475870
- Point									

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,395.0	5,600.4	-5,087.3	-36.3	Last CES Survey @ 10,395' MD
10,445.0	5,598.7	-5,137.3	-35.7	PTB @ 10,445'

Checked By: _____ Approved By: _____ Date: _____

EnCana Oil & Gas (USA) Inc

Sandoval County, NM

Lybrook

Lybrook M28-2306 02H

Hz

Design: FINAL

Survey Report - Geographic

22 July, 2014

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Aztec)
Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Sandoval County, NM		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Central Zone		

Site	Lybrook		
Site Position:		Northing:	1,882,676.45 ft
From:	Lat/Long	Easting:	1,287,068.90 ft
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in
		Latitude:	36.168210
		Longitude:	-107.447150
		Grid Convergence:	-0.71 °

Well	Lybrook M28-2306 02H		
Well Position	+N/-S	0.0 ft	Northing:
	+E/-W	0.0 ft	Easting:
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft
		Latitude:	36.190150
		Longitude:	-107.477870
		Ground Level:	7,220.0 ft

Wellbore	Hz		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	8/26/2013	9.44
			Dip Angle
			(°)
			Field Strength
			(nT)
			50,233

Design	FINAL		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.0	0.0	0.0
			Direction
			(°)
			179.51

Survey Program	Date 7/22/2014		
From	To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
157.0	10,445.0	Survey #1 (Hz)	Geolink MWD
			Description
			Geolink MWD

Survey									
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map	Latitude	Longitude
Depth	(°)	(°)	Depth	(ft)	(ft)	Northing	Easting		
(ft)			(ft)			(ft)	(ft)		
0.0	0.00	0.00	0.0	0.0	0.0	1,890,776.73	1,278,102.22	36.190150	-107.477870
157.0	0.10	351.10	157.0	0.1	0.0	1,890,776.86	1,278,102.20	36.190150	-107.477870
220.0	0.20	314.90	220.0	0.3	-0.1	1,890,777.00	1,278,102.11	36.190151	-107.477871
283.0	0.20	320.00	283.0	0.4	-0.3	1,890,777.16	1,278,101.97	36.190151	-107.477871
346.0	0.40	281.70	346.0	0.6	-0.5	1,890,777.29	1,278,101.68	36.190152	-107.477872
439.0	0.50	275.90	439.0	0.7	-1.3	1,890,777.41	1,278,100.96	36.190152	-107.477875
536.0	0.30	279.30	536.0	0.8	-1.9	1,890,777.50	1,278,100.29	36.190152	-107.477877
599.0	0.40	285.90	599.0	0.8	-2.3	1,890,777.60	1,278,099.92	36.190152	-107.477878
663.0	0.20	279.30	663.0	0.9	-2.6	1,890,777.68	1,278,099.59	36.190153	-107.477879
726.0	0.30	279.30	726.0	1.0	-2.9	1,890,777.73	1,278,099.32	36.190153	-107.477880
789.0	0.40	279.30	789.0	1.0	-3.3	1,890,777.79	1,278,098.94	36.190153	-107.477881
852.0	0.40	270.30	852.0	1.1	-3.7	1,890,777.84	1,278,098.51	36.190153	-107.477883

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Aztec)
Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
916.0	1.40	122.10	916.0	0.6	-3.3	1,890,777.42	1,278,098.94	36.190152	-107.477881
979.0	1.40	131.50	979.0	-0.3	-2.1	1,890,776.48	1,278,100.16	36.190149	-107.477877
1,042.0	1.20	130.70	1,041.9	-1.2	-1.0	1,890,775.53	1,278,101.22	36.190147	-107.477874
1,105.0	1.50	131.60	1,104.9	-2.2	0.1	1,890,774.54	1,278,102.33	36.190144	-107.477870
1,169.0	1.10	139.50	1,168.9	-3.2	1.2	1,890,773.50	1,278,103.34	36.190141	-107.477866
1,232.0	0.90	140.70	1,231.9	-4.1	1.9	1,890,772.65	1,278,104.03	36.190139	-107.477864
1,295.0	1.00	135.30	1,294.9	-4.8	2.6	1,890,771.87	1,278,104.72	36.190137	-107.477862
1,358.0	1.30	143.30	1,357.9	-5.8	3.4	1,890,770.89	1,278,105.53	36.190134	-107.477859
1,421.0	0.10	138.30	1,420.9	-6.4	3.8	1,890,770.27	1,278,105.98	36.190132	-107.477857
1,484.0	0.50	332.00	1,483.9	-6.2	3.8	1,890,770.47	1,278,105.89	36.190133	-107.477858
1,548.0	0.50	339.60	1,547.9	-5.7	3.5	1,890,770.99	1,278,105.67	36.190134	-107.477858
1,611.0	0.40	342.10	1,610.9	-5.2	3.4	1,890,771.45	1,278,105.51	36.190136	-107.477859
1,674.0	0.40	327.60	1,673.9	-4.8	3.2	1,890,771.85	1,278,105.33	36.190137	-107.477860
1,737.0	0.40	338.80	1,736.9	-4.4	3.0	1,890,772.25	1,278,105.14	36.190138	-107.477860
1,800.0	0.70	1.80	1,799.9	-3.9	2.9	1,890,772.84	1,278,105.08	36.190139	-107.477860
1,864.0	0.80	17.40	1,863.9	-3.0	3.1	1,890,773.65	1,278,105.24	36.190142	-107.477860
1,927.0	0.90	18.40	1,926.9	-2.2	3.3	1,890,774.54	1,278,105.54	36.190144	-107.477859
1,990.0	0.70	0.80	1,989.8	-1.3	3.5	1,890,775.39	1,278,105.71	36.190147	-107.477858
2,053.0	0.60	335.10	2,052.8	-0.6	3.4	1,890,776.07	1,278,105.58	36.190148	-107.477859
2,116.0	0.50	347.00	2,115.8	0.0	3.2	1,890,776.64	1,278,105.39	36.190150	-107.477860
2,179.0	0.40	358.90	2,178.8	0.4	3.1	1,890,777.13	1,278,105.33	36.190151	-107.477860
2,242.0	0.30	344.50	2,241.8	0.8	3.1	1,890,777.51	1,278,105.29	36.190152	-107.477860
2,306.0	0.20	262.60	2,305.8	1.0	2.9	1,890,777.66	1,278,105.13	36.190153	-107.477860
2,369.0	0.20	189.50	2,368.8	0.8	2.8	1,890,777.54	1,278,105.00	36.190152	-107.477861
2,432.0	0.30	227.70	2,431.8	0.6	2.6	1,890,777.32	1,278,104.86	36.190152	-107.477861
2,495.0	0.20	182.90	2,494.8	0.4	2.5	1,890,777.10	1,278,104.73	36.190151	-107.477862
2,558.0	0.50	241.50	2,557.8	0.2	2.3	1,890,776.86	1,278,104.48	36.190151	-107.477863
2,622.0	0.70	232.40	2,621.8	-0.2	1.7	1,890,776.50	1,278,103.92	36.190150	-107.477864
2,685.0	0.70	232.60	2,684.8	-0.7	1.1	1,890,776.04	1,278,103.30	36.190148	-107.477867
2,748.0	0.70	227.10	2,747.8	-1.2	0.5	1,890,775.55	1,278,102.71	36.190147	-107.477869
2,844.0	0.90	226.00	2,843.8	-2.1	-0.5	1,890,774.64	1,278,101.73	36.190144	-107.477872
2,907.0	1.10	223.30	2,906.8	-2.9	-1.2	1,890,773.87	1,278,100.95	36.190142	-107.477874
2,970.0	1.30	216.30	2,969.8	-3.9	-2.1	1,890,772.86	1,278,100.10	36.190139	-107.477877
3,033.0	1.40	220.50	3,032.8	-5.1	-3.0	1,890,771.71	1,278,099.16	36.190136	-107.477880
3,096.0	0.70	246.40	3,095.8	-5.8	-3.8	1,890,770.98	1,278,098.30	36.190134	-107.477883
3,160.0	0.70	311.50	3,159.8	-5.7	-4.5	1,890,771.09	1,278,097.65	36.190134	-107.477886
3,223.0	0.70	10.50	3,222.8	-5.1	-4.7	1,890,771.73	1,278,097.44	36.190136	-107.477886
3,286.0	0.80	44.90	3,285.7	-4.4	-4.3	1,890,772.42	1,278,097.83	36.190138	-107.477885
3,349.0	0.80	39.80	3,348.7	-3.7	-3.7	1,890,773.06	1,278,098.43	36.190140	-107.477883
3,413.0	0.70	35.90	3,412.7	-3.1	-3.2	1,890,773.71	1,278,098.95	36.190142	-107.477881
3,476.0	0.70	23.80	3,475.7	-2.4	-2.8	1,890,774.37	1,278,099.34	36.190144	-107.477880
3,539.0	0.70	37.40	3,538.7	-1.7	-2.5	1,890,775.02	1,278,099.74	36.190145	-107.477879
3,602.0	0.60	40.00	3,601.7	-1.2	-2.0	1,890,775.58	1,278,100.19	36.190147	-107.477877
3,666.0	0.50	52.00	3,665.7	-0.8	-1.6	1,890,776.00	1,278,100.63	36.190148	-107.477876
3,729.0	0.40	3.30	3,728.7	-0.4	-1.3	1,890,776.38	1,278,100.86	36.190149	-107.477875
3,792.0	0.40	325.30	3,791.7	0.0	-1.5	1,890,776.79	1,278,100.76	36.190150	-107.477875
3,855.0	0.40	304.50	3,854.7	0.3	-1.8	1,890,777.10	1,278,100.45	36.190151	-107.477876
3,919.0	0.40	303.80	3,918.7	0.6	-2.1	1,890,777.35	1,278,100.09	36.190152	-107.477878
3,982.0	0.30	319.60	3,981.7	0.8	-2.4	1,890,777.60	1,278,099.80	36.190152	-107.477878
4,045.0	0.40	299.00	4,044.7	1.1	-2.7	1,890,777.84	1,278,099.50	36.190153	-107.477880
4,108.0	0.30	298.30	4,107.7	1.3	-3.1	1,890,778.03	1,278,099.17	36.190154	-107.477881
4,172.0	0.40	279.30	4,171.7	1.4	-3.4	1,890,778.15	1,278,098.80	36.190154	-107.477882
4,235.0	0.40	317.90	4,234.7	1.6	-3.8	1,890,778.35	1,278,098.44	36.190154	-107.477883
4,298.0	0.60	357.40	4,297.7	2.1	-4.0	1,890,778.85	1,278,098.28	36.190156	-107.477884
4,361.0	0.70	333.00	4,360.7	2.7	-4.1	1,890,779.52	1,278,098.10	36.190158	-107.477884

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Aztec)
Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
4,425.0	0.90	315.40	4,424.7	3.4	-4.7	1,890,780.23	1,278,097.58	36.190160	-107.477886
4,488.0	1.00	309.70	4,487.7	4.1	-5.4	1,890,780.95	1,278,096.82	36.190161	-107.477889
4,551.0	1.00	306.20	4,550.7	4.8	-6.3	1,890,781.63	1,278,095.96	36.190163	-107.477892
4,614.0	1.00	292.80	4,613.7	5.4	-7.3	1,890,782.18	1,278,095.02	36.190165	-107.477895
4,677.0	0.40	233.10	4,676.7	5.4	-7.9	1,890,782.27	1,278,094.34	36.190165	-107.477897
4,740.0	1.00	180.10	4,739.7	4.8	-8.1	1,890,781.59	1,278,094.15	36.190163	-107.477898
4,804.0	0.80	153.80	4,803.7	3.8	-7.9	1,890,780.63	1,278,094.34	36.190161	-107.477897
4,867.0	2.70	145.60	4,866.6	2.2	-6.9	1,890,779.00	1,278,095.35	36.190156	-107.477894
4,898.0	6.90	157.40	4,897.5	-0.1	-5.8	1,890,776.66	1,278,096.45	36.190150	-107.477890
4,930.0	11.40	161.30	4,929.1	-4.9	-4.0	1,890,771.87	1,278,098.14	36.190137	-107.477884
4,961.0	16.00	163.00	4,959.2	-11.9	-1.8	1,890,764.85	1,278,100.28	36.190117	-107.477876
4,993.0	20.00	163.70	4,989.6	-21.4	1.0	1,890,755.34	1,278,102.99	36.190091	-107.477867
5,024.0	22.10	165.20	5,018.6	-32.1	4.0	1,890,744.58	1,278,105.83	36.190062	-107.477857
5,056.0	24.00	170.20	5,048.0	-44.3	6.7	1,890,732.31	1,278,108.32	36.190028	-107.477848
5,088.0	26.70	178.30	5,076.9	-57.9	8.0	1,890,718.69	1,278,109.47	36.189991	-107.477843
5,119.0	29.40	183.40	5,104.3	-72.5	7.7	1,890,704.13	1,278,109.04	36.189951	-107.477844
5,151.0	30.60	182.70	5,132.0	-88.5	6.9	1,890,688.16	1,278,107.99	36.189907	-107.477847
5,182.0	30.70	182.40	5,158.7	-104.3	6.2	1,890,672.39	1,278,107.09	36.189864	-107.477849
5,214.0	30.30	181.90	5,186.2	-120.5	5.6	1,890,656.17	1,278,106.27	36.189819	-107.477851
5,246.0	29.70	181.50	5,214.0	-136.5	5.1	1,890,640.18	1,278,105.60	36.189775	-107.477853
5,277.0	30.20	182.70	5,240.8	-152.0	4.5	1,890,624.72	1,278,104.83	36.189733	-107.477855
5,309.0	31.40	184.70	5,268.3	-168.3	3.5	1,890,608.39	1,278,103.56	36.189688	-107.477858
5,341.0	32.20	185.40	5,295.5	-185.1	2.0	1,890,591.61	1,278,101.87	36.189642	-107.477864
5,372.0	33.00	183.90	5,321.6	-201.8	0.6	1,890,574.99	1,278,100.30	36.189596	-107.477868
5,404.0	33.50	181.70	5,348.4	-219.3	-0.2	1,890,557.48	1,278,099.23	36.189548	-107.477871
5,435.0	34.50	180.80	5,374.1	-236.6	-0.6	1,890,540.15	1,278,098.63	36.189500	-107.477872
5,467.0	35.10	181.10	5,400.4	-254.9	-0.9	1,890,521.90	1,278,098.10	36.189450	-107.477873
5,499.0	37.90	184.10	5,426.1	-273.9	-1.8	1,890,502.90	1,278,096.98	36.189398	-107.477876
5,530.0	41.10	186.80	5,450.0	-293.5	-3.7	1,890,483.31	1,278,094.84	36.189344	-107.477883
5,562.0	45.40	187.50	5,473.3	-315.2	-6.4	1,890,461.59	1,278,091.83	36.189284	-107.477892
5,593.0	49.70	187.10	5,494.2	-337.9	-9.3	1,890,438.95	1,278,088.64	36.189222	-107.477902
5,625.0	51.80	186.60	5,514.5	-362.5	-12.3	1,890,414.39	1,278,085.38	36.189154	-107.477912
5,657.0	52.70	187.10	5,534.1	-387.6	-15.3	1,890,389.31	1,278,082.04	36.189085	-107.477922
5,688.0	52.70	187.00	5,552.8	-412.1	-18.3	1,890,364.87	1,278,078.71	36.189018	-107.477932
5,720.0	54.20	187.80	5,571.9	-437.6	-21.6	1,890,339.43	1,278,075.07	36.188948	-107.477943
5,752.0	58.80	187.90	5,589.6	-464.0	-25.3	1,890,313.05	1,278,071.09	36.188875	-107.477956
5,783.0	63.80	187.60	5,604.4	-491.0	-28.9	1,890,286.16	1,278,067.09	36.188802	-107.477968
5,815.0	69.10	186.40	5,617.2	-520.1	-32.5	1,890,257.10	1,278,063.15	36.188722	-107.477980
5,846.0	74.20	186.50	5,627.0	-549.3	-35.8	1,890,227.92	1,278,059.48	36.188641	-107.477992
5,881.0	75.90	188.60	5,636.0	-582.8	-40.2	1,890,194.46	1,278,054.61	36.188549	-107.478007
5,916.0	77.60	191.10	5,644.0	-616.4	-46.1	1,890,160.97	1,278,048.35	36.188457	-107.478026
5,947.0	79.80	192.20	5,650.1	-646.2	-52.2	1,890,131.28	1,278,041.84	36.188375	-107.478047
5,979.0	82.90	193.30	5,654.9	-677.0	-59.2	1,890,100.52	1,278,034.47	36.188291	-107.478071
6,011.0	86.70	192.10	5,657.8	-708.1	-66.2	1,890,069.53	1,278,027.07	36.188205	-107.478095
6,074.0	90.60	188.80	5,659.3	-770.0	-77.6	1,890,007.76	1,278,014.87	36.188035	-107.478133
6,137.0	92.70	187.20	5,657.5	-832.4	-86.4	1,889,945.52	1,278,005.32	36.187864	-107.478163
6,200.0	92.30	185.60	5,654.7	-894.9	-93.4	1,889,883.07	1,277,997.51	36.187692	-107.478187
6,264.0	91.10	182.40	5,652.8	-958.7	-97.8	1,889,819.33	1,277,992.24	36.187517	-107.478202
6,327.0	89.70	179.80	5,652.4	-1,021.7	-99.1	1,889,756.37	1,277,990.24	36.187344	-107.478206
6,390.0	90.80	178.00	5,652.1	-1,084.7	-97.8	1,889,693.37	1,277,990.65	36.187171	-107.478202
6,450.0	91.50	177.80	5,650.9	-1,144.6	-95.7	1,889,633.40	1,277,992.09	36.187006	-107.478194
6,511.0	91.80	177.10	5,649.2	-1,205.5	-92.9	1,889,572.46	1,277,994.03	36.186839	-107.478185
6,572.0	89.20	175.40	5,648.6	-1,266.4	-88.9	1,889,511.55	1,277,997.25	36.186672	-107.478172
6,632.0	89.60	175.50	5,649.3	-1,326.2	-84.2	1,889,451.69	1,278,001.25	36.186507	-107.478156
6,693.0	90.90	175.50	5,649.0	-1,387.0	-79.4	1,889,390.83	1,278,005.27	36.186340	-107.478139

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Aztec)
Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
6,753.0	91.70	175.60	5,647.6	-1,446.8	-74.7	1,889,330.97	1,278,009.16	36.186176	-107.478124
6,814.0	92.40	175.20	5,645.4	-1,507.6	-69.9	1,889,270.15	1,278,013.28	36.186009	-107.478107
6,874.0	92.80	176.50	5,642.7	-1,567.4	-65.5	1,889,210.32	1,278,016.86	36.185845	-107.478092
6,935.0	92.70	178.40	5,639.8	-1,628.2	-62.8	1,889,149.42	1,278,018.80	36.185678	-107.478083
6,997.0	92.20	179.30	5,637.1	-1,690.2	-61.6	1,889,087.48	1,278,019.26	36.185508	-107.478079
7,057.0	91.60	179.60	5,635.2	-1,750.1	-61.0	1,889,027.51	1,278,019.08	36.185343	-107.478077
7,118.0	92.10	179.60	5,633.2	-1,811.1	-60.6	1,888,966.55	1,278,018.73	36.185175	-107.478076
7,178.0	92.70	179.40	5,630.7	-1,871.0	-60.0	1,888,906.60	1,278,018.50	36.185011	-107.478074
7,239.0	92.40	179.70	5,628.0	-1,932.0	-59.6	1,888,845.66	1,278,018.20	36.184843	-107.478072
7,300.0	90.40	181.00	5,626.5	-1,993.0	-59.9	1,888,784.69	1,278,017.06	36.184676	-107.478073
7,360.0	90.20	180.40	5,626.2	-2,052.9	-60.7	1,888,724.71	1,278,015.57	36.184511	-107.478076
7,421.0	89.20	179.00	5,626.5	-2,113.9	-60.4	1,888,663.72	1,278,015.12	36.184344	-107.478075
7,481.0	89.90	179.00	5,626.9	-2,173.9	-59.3	1,888,603.72	1,278,015.40	36.184179	-107.478071
7,542.0	91.00	178.90	5,626.5	-2,234.9	-58.2	1,888,542.73	1,278,015.75	36.184011	-107.478067
7,602.0	90.40	180.10	5,625.7	-2,294.9	-57.7	1,888,482.73	1,278,015.51	36.183847	-107.478066
7,666.0	89.50	180.20	5,625.8	-2,358.9	-57.8	1,888,418.74	1,278,014.54	36.183671	-107.478066
7,729.0	90.20	180.00	5,626.0	-2,421.9	-57.9	1,888,355.75	1,278,013.63	36.183498	-107.478067
7,792.0	91.10	180.40	5,625.2	-2,484.9	-58.2	1,888,292.76	1,278,012.61	36.183325	-107.478067
7,855.0	90.20	179.60	5,624.5	-2,547.9	-58.2	1,888,229.77	1,278,011.81	36.183152	-107.478067
7,918.0	89.00	180.30	5,625.0	-2,610.9	-58.1	1,888,166.78	1,278,011.07	36.182979	-107.478067
7,981.0	89.50	179.80	5,625.8	-2,673.9	-58.2	1,888,103.79	1,278,010.22	36.182806	-107.478067
8,045.0	90.50	179.90	5,625.8	-2,737.9	-58.0	1,888,039.79	1,278,009.58	36.182630	-107.478067
8,108.0	90.10	178.80	5,625.5	-2,800.9	-57.3	1,887,976.80	1,278,009.49	36.182457	-107.478064
8,171.0	90.50	178.60	5,625.1	-2,863.9	-55.8	1,887,913.80	1,278,010.13	36.182284	-107.478060
8,234.0	91.20	178.30	5,624.2	-2,926.8	-54.1	1,887,850.81	1,278,011.03	36.182111	-107.478054
8,298.0	90.40	179.30	5,623.3	-2,990.8	-52.8	1,887,786.82	1,278,011.56	36.181935	-107.478049
8,361.0	90.80	179.10	5,622.6	-3,053.8	-51.9	1,887,723.83	1,278,011.65	36.181762	-107.478046
8,424.0	90.20	179.10	5,622.1	-3,116.8	-50.9	1,887,660.83	1,278,011.84	36.181589	-107.478043
8,487.0	91.00	179.80	5,621.4	-3,179.8	-50.3	1,887,597.84	1,278,011.65	36.181416	-107.478041
8,551.0	91.20	180.90	5,620.2	-3,243.8	-50.7	1,887,533.86	1,278,010.45	36.181240	-107.478042
8,614.0	90.00	180.50	5,619.5	-3,306.8	-51.5	1,887,470.88	1,278,008.88	36.181067	-107.478045
8,677.0	90.30	180.20	5,619.4	-3,369.8	-51.9	1,887,407.89	1,278,007.70	36.180894	-107.478046
8,740.0	90.70	179.90	5,618.8	-3,432.8	-51.9	1,887,344.90	1,278,006.84	36.180721	-107.478046
8,803.0	89.60	180.30	5,618.7	-3,495.8	-52.0	1,887,281.91	1,278,005.94	36.180548	-107.478047
8,867.0	90.00	179.90	5,618.9	-3,559.8	-52.2	1,887,217.92	1,278,005.02	36.180372	-107.478047
8,930.0	90.50	179.70	5,618.6	-3,622.8	-51.9	1,887,154.92	1,278,004.44	36.180199	-107.478046
8,993.0	91.30	179.70	5,617.6	-3,685.7	-51.6	1,887,091.93	1,278,003.97	36.180026	-107.478045
9,057.0	90.20	179.70	5,616.8	-3,749.7	-51.3	1,887,027.94	1,278,003.50	36.179851	-107.478044
9,120.0	90.50	179.50	5,616.4	-3,812.7	-50.8	1,886,964.94	1,278,003.14	36.179678	-107.478043
9,183.0	91.00	179.30	5,615.6	-3,875.7	-50.2	1,886,901.95	1,278,003.00	36.179504	-107.478040
9,246.0	91.00	178.30	5,614.5	-3,938.7	-48.9	1,886,838.96	1,278,003.52	36.179332	-107.478036
9,309.0	89.80	178.10	5,614.0	-4,001.7	-46.9	1,886,775.97	1,278,004.70	36.179159	-107.478029
9,373.0	90.10	178.20	5,614.1	-4,065.6	-44.8	1,886,711.99	1,278,005.96	36.178983	-107.478022
9,436.0	90.50	178.60	5,613.8	-4,128.6	-43.0	1,886,649.00	1,278,006.92	36.178810	-107.478016
9,499.0	91.00	178.70	5,612.9	-4,191.6	-41.6	1,886,586.00	1,278,007.61	36.178637	-107.478011
9,562.0	91.60	178.90	5,611.5	-4,254.6	-40.2	1,886,523.00	1,278,008.13	36.178464	-107.478007
9,625.0	89.60	178.70	5,610.8	-4,317.6	-38.9	1,886,460.01	1,278,008.65	36.178291	-107.478002
9,689.0	89.60	178.50	5,611.3	-4,381.5	-37.4	1,886,396.02	1,278,009.41	36.178115	-107.477997
9,752.0	90.20	178.30	5,611.4	-4,444.5	-35.6	1,886,333.03	1,278,010.37	36.177942	-107.477991
9,815.0	90.40	179.50	5,611.1	-4,507.5	-34.4	1,886,270.03	1,278,010.78	36.177769	-107.477987
9,878.0	90.90	179.80	5,610.4	-4,570.5	-34.0	1,886,207.04	1,278,010.37	36.177596	-107.477986
9,941.0	91.80	179.70	5,608.9	-4,633.5	-33.7	1,886,144.06	1,278,009.85	36.177423	-107.477985
10,004.0	91.90	180.10	5,606.8	-4,696.4	-33.6	1,886,081.09	1,278,009.16	36.177250	-107.477984
10,068.0	91.80	180.80	5,604.8	-4,760.4	-34.1	1,886,017.14	1,278,007.85	36.177075	-107.477986
10,131.0	91.40	181.40	5,603.0	-4,823.4	-35.3	1,885,954.20	1,278,005.84	36.176902	-107.477990

Cathedral Energy Services

Survey Report - Geographic

Company:	EnCana Oil & Gas (USA) Inc	Local Co-ordinate Reference:	Well Lybrook M28-2306 02H
Project:	Sandoval County, NM	TVD Reference:	WELL @ 7236.0ft (Aztec)
Site:	Lybrook	MD Reference:	WELL @ 7236.0ft (Aztec)
Well:	Lybrook M28-2306 02H	North Reference:	True
Wellbore:	Hz	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)	Map Northing (ft)	Map Easting (ft)	Latitude	Longitude
10,194.0	89.90	180.40	5,602.3	-4,886.4	-36.3	1,885,891.23	1,278,004.06	36.176729	-107.477993
10,257.0	89.90	180.20	5,602.4	-4,949.4	-36.7	1,885,828.24	1,278,002.93	36.176556	-107.477994
10,320.0	90.70	179.90	5,602.1	-5,012.3	-36.7	1,885,765.25	1,278,002.08	36.176382	-107.477995
10,395.0	91.90	179.40	5,600.4	-5,087.3	-36.3	1,885,690.29	1,278,001.59	36.176177	-107.477993
Last CES Survey @ 10,395' MD									
10,445.0	91.90	179.40	5,598.7	-5,137.3	-35.7	1,885,640.32	1,278,001.48	36.176039	-107.477991
PTB @ 10,445'									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Lybrook M28-2306 02H	0.00	0.00	5,590.1	-5,151.6	-20.6	1,885,625.84	1,278,016.38	36.176000	-107.477940
- actual wellpath misses target center by 22.5ft at 10445.0ft MD (5598.7 TVD, -5137.3 N, -35.7 E)									
- Point									
Interp @ 5654.8 (Lybrook)	0.00	0.00	5,654.8	-676.0	-58.9	1,890,101.53	1,278,034.72	36.188293	-107.478070
- actual wellpath hits target center									
- Point									

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
10,395.0	5,600.4	-5,087.3	-36.3	Last CES Survey @ 10,395' MD
10,445.0	5,598.7	-5,137.3	-35.7	PTB @ 10,445'

Checked By: _____ Approved By: _____ Date: _____