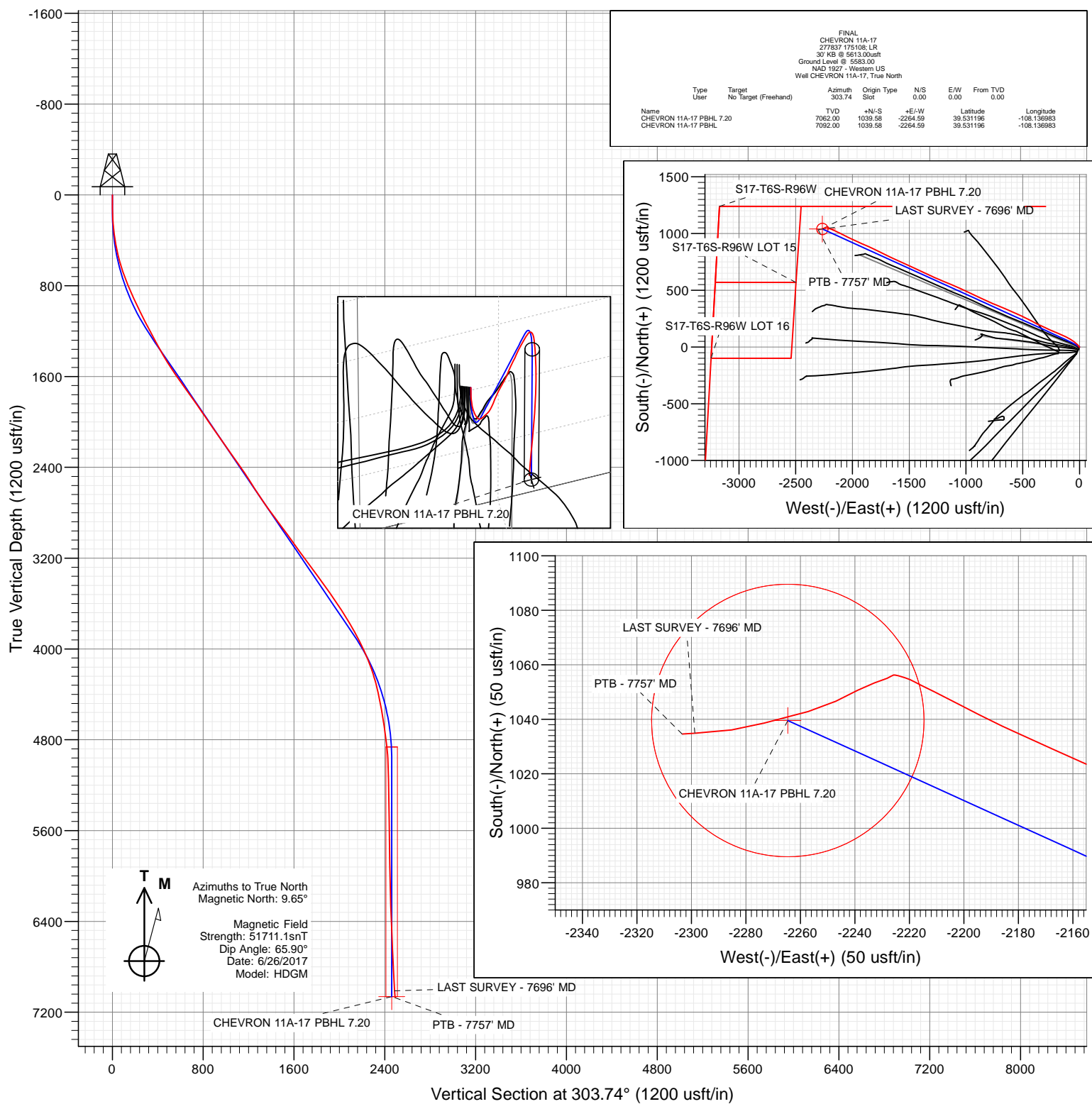




Project: Garfield County, CO (UTM 12N)
 Site: S17-T6S-R96W (PC5A)
 Well: CHEVRON 11A-17
 Wellbore: OH
 Design: FINAL



FINAL CHEVRON 11A-17 277837 175108 LR 30' KB @ 5613.00usft Ground Level @ 5583.00 NAD 1927 - Western US Well CHEVRON 11A-17, True North									
Type	Target	No. Target (Freehand)	Azimuth	Origin Type	N/S	E/W	From TVD	Latitude	Longitude
Name			TVD	+N/-S	+E/-W				
CHEVRON 11A-17 PBHL 7.20			7062.00	1039.58	-2264.59			39.531196	-108.136983
CHEVRON 11A-17 PBHL			7092.00	1039.58	-2264.59			39.531196	-108.136983



WELL DETAILS: CHEVRON 11A-17

+N/-S 0.00 +E/-W 0.00 Northing 14367221.80 Ground Level: 5583.00 Easting 2450045.40 Latitude 39.528344 Longitude -108.128958



Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well CHEVRON 11A-17
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 5613.00usft
Site:	S17-T6S-R96W (PC5A)	MD Reference:	30' KB @ 5613.00usft
Well:	CHEVRON 11A-17	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Project	Garfield County, CO (UTM 12N)		
Map System:	Universal Transverse Mercator (US Survey Feet)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 - Western US		
Map Zone:	Zone 12N (114 W to 108 W)		

Site	S17-T6S-R96W (PC5A)		
Site Position:		Northing:	14,367,212.50 usft
From:	Map	Easting:	2,450,041.70 usft
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"
		Latitude:	39.528318
		Longitude:	-108.128972
		Grid Convergence:	1.83 °

Well	CHEVRON 11A-17		
Well Position	+N/-S	0.00 usft	Northing: 14,367,221.80 usft
	+E/-W	0.00 usft	Easting: 2,450,045.40 usft
Position Uncertainty	0.00 usft	Wellhead Elevation:	0.00 usft
		Latitude:	39.528344
		Longitude:	-108.128958
		Ground Level:	5,583.00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination (°)
	HDGM	6/26/2017	9.65
			Dip Angle (°)
			65.90
			Field Strength (nT)
			51,711.10000000

Design	FINAL		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.00	0.00	0.00
			Direction (°)
			303.74

Survey Program	Date	7/1/2017		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
118.00	7,757.00	Survey #1 (OH)	MWD+HDGM	OWSG MWD + HDGM

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
118.00	0.88	315.96	118.00	0.65	-0.63	0.89	0.75	0.75	
148.00	1.54	322.55	147.99	1.14	-1.04	1.49	2.24	2.20	
209.00	3.38	324.13	208.93	3.25	-2.59	3.95	3.02	3.02	
301.00	6.24	314.47	300.60	8.95	-7.75	11.41	3.22	3.11	
394.00	9.19	317.63	392.75	17.98	-16.36	23.59	3.20	3.17	
486.00	11.82	314.47	483.20	30.01	-28.04	39.98	2.93	2.86	
577.00	14.94	308.31	571.72	43.81	-43.90	60.84	3.76	3.43	
672.00	18.28	303.13	662.75	59.55	-65.99	87.95	3.84	3.52	
766.00	21.18	297.50	751.23	75.45	-93.41	119.58	3.69	3.09	
860.00	23.73	294.95	838.10	91.28	-125.62	155.16	2.90	2.71	
955.00	25.93	294.87	924.31	108.08	-161.80	194.58	2.32	2.32	
1,083.00	26.15	294.25	1,039.32	131.43	-212.91	250.05	0.27	0.17	

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well CHEVRON 11A-17
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 5613.00usft
Site:	S17-T6S-R96W (PC5A)	MD Reference:	30' KB @ 5613.00usft
Well:	CHEVRON 11A-17	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
1,178.00	27.55	293.37	1,124.07	148.75	-252.17	292.31	1.53	1.47	
1,272.00	28.17	293.64	1,207.18	166.27	-292.45	335.54	0.67	0.66	
1,367.00	28.43	294.34	1,290.82	184.58	-333.60	379.93	0.44	0.27	
1,461.00	29.31	296.36	1,373.14	204.02	-374.60	424.82	1.40	0.94	
1,556.00	31.16	297.77	1,455.21	225.80	-417.19	472.33	2.09	1.95	
1,649.00	34.63	297.68	1,533.29	249.29	-461.89	522.55	3.73	3.73	
1,744.00	35.82	294.78	1,610.90	273.48	-511.04	576.86	2.16	1.25	
1,838.00	35.20	294.07	1,687.42	296.06	-560.75	630.74	0.79	-0.66	
1,933.00	35.82	293.11	1,764.75	318.14	-611.32	685.05	0.88	0.65	
2,027.00	35.20	292.58	1,841.27	339.34	-661.63	738.67	0.74	-0.66	
2,122.00	35.73	293.64	1,918.64	360.97	-712.33	792.84	0.85	0.56	
2,216.00	34.54	292.14	1,995.52	382.02	-762.16	845.97	1.56	-1.27	
2,311.00	35.42	294.51	2,073.36	403.60	-812.15	899.53	1.70	0.93	
2,405.00	36.12	296.01	2,149.63	427.05	-861.84	953.87	1.19	0.74	
2,499.00	34.50	294.60	2,226.33	450.28	-910.95	1,007.61	1.93	-1.72	
2,594.00	36.17	295.48	2,303.83	473.54	-960.72	1,061.92	1.84	1.76	
2,688.00	35.51	295.22	2,380.03	497.11	-1,010.46	1,116.37	0.72	-0.70	
2,783.00	34.32	294.87	2,457.93	520.13	-1,059.72	1,170.12	1.27	-1.25	
2,877.00	32.61	293.11	2,536.35	541.22	-1,107.06	1,221.20	2.09	-1.82	
2,972.00	33.40	291.88	2,616.02	561.01	-1,154.87	1,271.95	1.09	0.83	
3,067.00	34.72	292.14	2,694.72	580.95	-1,204.20	1,324.04	1.40	1.39	
3,161.00	36.65	293.02	2,771.06	602.01	-1,254.82	1,377.84	2.12	2.05	
3,255.00	37.31	295.92	2,846.16	625.44	-1,306.27	1,433.63	1.98	0.70	
3,350.00	36.48	295.04	2,922.14	649.98	-1,357.75	1,490.07	1.04	-0.87	
3,444.00	37.13	295.04	2,997.40	673.81	-1,408.77	1,545.74	0.69	0.69	
3,539.00	36.08	294.34	3,073.66	697.48	-1,460.24	1,601.68	1.19	-1.11	
3,633.00	35.95	294.16	3,149.69	720.18	-1,510.64	1,656.19	0.18	-0.14	
3,728.00	36.78	295.31	3,226.19	743.75	-1,561.79	1,711.83	1.13	0.87	
3,822.00	35.99	294.07	3,301.87	767.05	-1,612.45	1,766.89	1.15	-0.84	
3,917.00	36.34	295.92	3,378.57	790.74	-1,663.25	1,822.29	1.21	0.37	
4,011.00	35.86	295.92	3,454.52	814.94	-1,713.07	1,877.16	0.51	-0.51	
4,105.00	35.68	295.83	3,530.79	838.92	-1,762.50	1,931.59	0.20	-0.19	
4,200.00	34.19	295.39	3,608.67	862.44	-1,811.56	1,985.45	1.59	-1.57	
4,294.00	32.74	294.60	3,687.08	884.35	-1,858.53	2,036.68	1.61	-1.54	
4,389.00	30.98	294.07	3,767.76	905.02	-1,904.22	2,086.15	1.88	-1.85	
4,483.00	29.80	293.64	3,848.85	924.25	-1,947.71	2,132.99	1.28	-1.26	
4,578.00	27.16	295.04	3,932.34	942.90	-1,988.98	2,177.67	2.87	-2.78	
4,672.00	24.21	296.71	4,017.05	960.64	-2,025.65	2,218.02	3.23	-3.14	
4,766.00	21.93	296.45	4,103.53	977.13	-2,058.58	2,254.56	2.43	-2.43	
4,861.00	18.81	296.27	4,192.57	991.81	-2,088.21	2,287.35	3.28	-3.28	
4,955.00	15.91	295.39	4,282.28	1,004.05	-2,113.44	2,315.13	3.10	-3.09	
5,050.00	13.23	295.48	4,374.22	1,014.31	-2,135.02	2,338.78	2.82	-2.82	
5,144.00	10.42	294.16	4,466.21	1,022.42	-2,152.49	2,357.81	3.00	-2.99	
5,238.00	9.67	294.16	4,558.77	1,029.13	-2,167.45	2,373.98	0.80	-0.80	
5,333.00	9.40	294.69	4,652.46	1,035.63	-2,181.78	2,389.51	0.30	-0.28	
5,427.00	8.04	296.80	4,745.37	1,041.80	-2,194.62	2,403.61	1.49	-1.45	
5,522.00	6.42	297.85	4,839.61	1,047.28	-2,205.25	2,415.49	1.71	-1.71	
5,616.00	4.40	295.22	4,933.19	1,051.27	-2,213.16	2,424.29	2.16	-2.15	
5,711.00	1.67	300.67	5,028.05	1,053.53	-2,217.65	2,429.27	2.89	-2.87	
5,805.00	1.19	291.00	5,122.02	1,054.58	-2,219.74	2,431.59	0.57	-0.51	
5,900.00	1.23	290.38	5,217.00	1,055.29	-2,221.61	2,433.55	0.04	0.04	
5,995.00	1.76	282.74	5,311.97	1,055.97	-2,223.99	2,435.90	0.59	0.56	
6,089.00	0.44	267.88	5,405.95	1,056.27	-2,225.76	2,437.54	1.42	-1.40	

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well CHEVRON 11A-17
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	30' KB @ 5613.00usft
Site:	S17-T6S-R96W (PC5A)	MD Reference:	30' KB @ 5613.00usft
Well:	CHEVRON 11A-17	North Reference:	True
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	FINAL	Database:	USA EDM 5000 Multi Users DB

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usf)	Build Rate (°/100u)	Formations / Comments
6,184.00	0.79	232.99	5,500.94	1,055.86	-2,226.65	2,438.05	0.52	0.37	
6,278.00	1.27	246.61	5,594.93	1,055.06	-2,228.12	2,438.83	0.57	0.51	
6,467.00	1.76	253.21	5,783.86	1,053.39	-2,232.82	2,441.81	0.27	0.26	
6,656.00	2.37	240.99	5,972.74	1,050.66	-2,239.02	2,445.45	0.40	0.32	
6,845.00	3.03	245.38	6,161.53	1,046.68	-2,246.98	2,449.86	0.37	0.35	
7,034.00	3.56	252.85	6,350.21	1,042.87	-2,257.13	2,456.18	0.36	0.28	
7,129.00	3.08	257.86	6,445.05	1,041.46	-2,262.44	2,459.82	0.59	-0.51	
7,318.00	3.65	253.21	6,633.73	1,038.66	-2,273.16	2,467.17	0.33	0.30	
7,507.00	3.87	262.96	6,822.32	1,036.14	-2,285.25	2,475.83	0.36	0.12	
7,696.00	4.35	266.48	7,010.84	1,034.91	-2,298.74	2,486.36	0.29	0.25	LAST SURVEY - 7696' MD
7,757.00	4.35	266.48	7,071.66	1,034.63	-2,303.36	2,490.05	0.00	0.00	PTB - 7757' MD

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
CHEVRON 11A-17 PBH - actual wellpath misses target center by 38.24usft at 7744.41usft MD (7059.11 TVD, 1034.69 N, -2302.40 E) - Circle (radius 50.00)	0.00	0.00	7,062.00	1,039.58	-2,264.59	14,368,188.60	2,447,748.80	39.531196	-108.136983
CHEVRON 11A-17 PBH - actual wellpath misses target center by 44.06usft at 7757.00usft MD (7071.66 TVD, 1034.63 N, -2303.36 E) - Point	0.00	0.00	7,092.00	1,039.58	-2,264.59	14,368,188.60	2,447,748.80	39.531196	-108.136983

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
7,696.00	7,010.84	1,034.91	-2,298.74	LAST SURVEY - 7696' MD
7,757.00	7,071.66	1,034.63	-2,303.36	PTB - 7757' MD

Checked By: _____ Approved By: _____ Date: _____