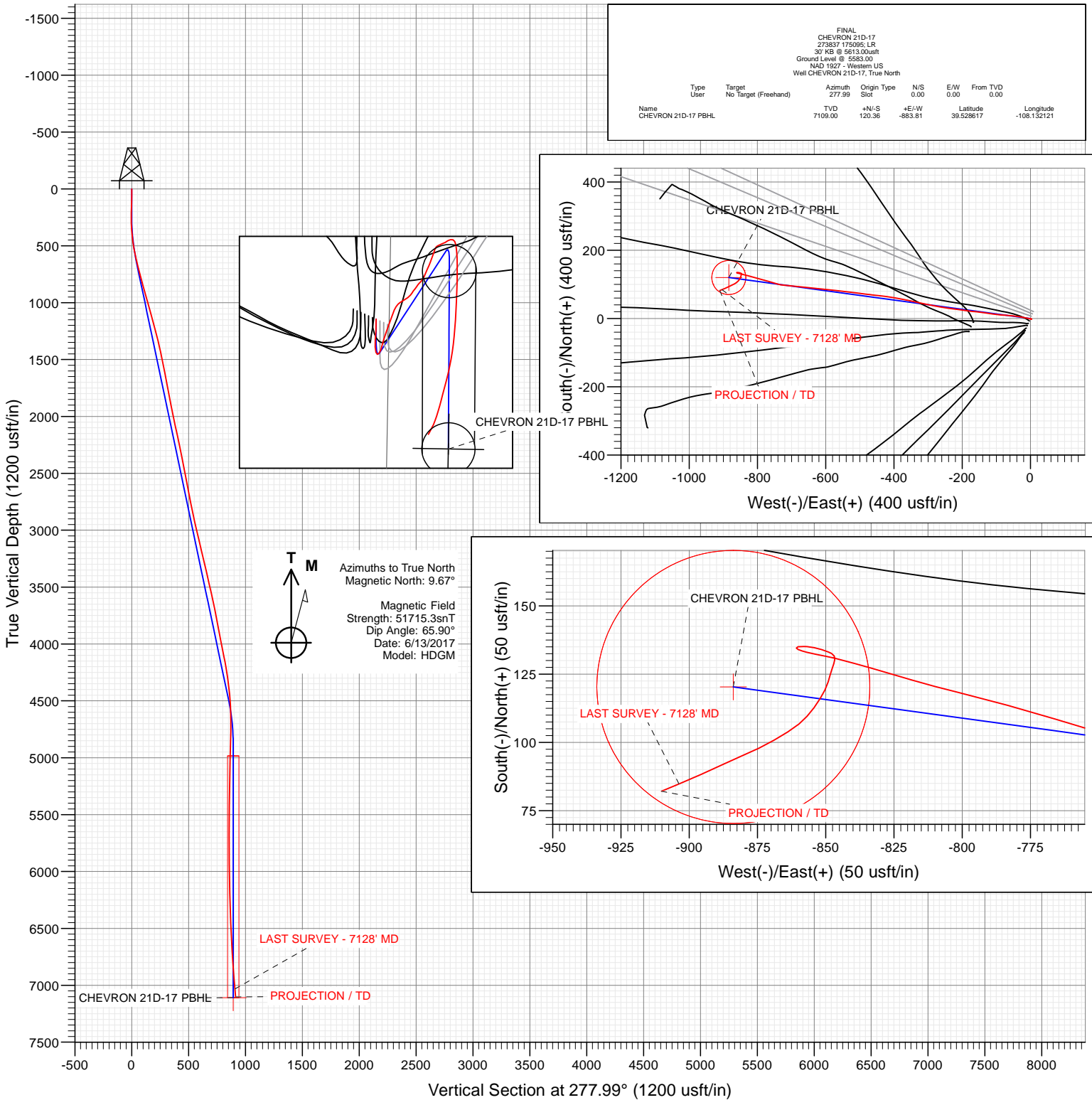




Project: Garfield County, CO (UTM 12N)
 Site: S17-T6S-R96W (PC5A)
 Well: CHEVRON 21D-17
 Wellbore: OH
 Design: FINAL



Cathedral Energy Services

Survey Report

Company: Caerus Oil & Gas	Local Co-ordinate Reference: Well CHEVRON 21D-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 21D-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	Latitude: 39.528318	
From: Map	Easting: 2,450,041.70 usft	Longitude: -108.128972	
Position Uncertainty: 0.00 usft	Slot Radius: 13-3/16"	Grid Convergence: 1.83 °	

Well CHEVRON 21D-17			
Well Position	+N/-S 0.00 usft	Northing: 14,367,200.90 usft	Latitude: 39.528287
	+E/-W 0.00 usft	Easting: 2,450,037.20 usft	Longitude: -108.128989
Position Uncertainty	0.00 usft	Wellhead Elevation: 0.00 usft	Ground Level: 5,583.00 usft

Wellbore OH					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM	6/13/2017	9.67	65.90	51,715.30000000

Design FINAL				
Audit Notes:				
Version: 1.0	Phase: ACTUAL	Tie On Depth: 0.00		
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0.00	0.00	277.99

Survey Program		Date 6/19/2017
From (usft)	To (usft)	Survey (Wellbore)
118.00	7,199.00	Survey #1 (OH)
Tool Name	Description	
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	1.80	109.86	117.98	-0.63	1.74	-1.81	1.53	1.53	
209.00	1.01	133.23	208.95	-1.66	3.67	-3.87	1.06	-0.87	
301.00	1.63	283.79	300.94	-1.91	2.99	-3.23	2.78	0.67	
394.00	4.97	286.25	393.78	-0.47	-2.16	2.08	3.59	3.59	
486.00	8.61	280.01	485.12	1.85	-12.77	12.91	4.03	3.96	
577.00	12.22	280.89	574.60	4.85	-28.94	29.34	3.97	3.97	
672.00	14.24	275.97	667.08	7.97	-50.44	51.06	2.43	2.13	
766.00	14.63	272.28	758.11	9.64	-73.80	74.43	1.06	0.41	
860.00	15.16	277.99	848.96	11.82	-97.84	98.53	1.66	0.56	
955.00	15.56	277.90	940.57	15.30	-122.76	123.69	0.42	0.42	
1,083.00	15.86	276.41	1,063.78	19.61	-157.15	158.35	0.39	0.23	
1,178.00	14.72	277.99	1,155.42	22.74	-182.00	183.39	1.28	-1.20	

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well CHEVRON 21D-17
Project:	Garfield County, CO (UTM 12N)	TD Reference:	30' KB @ 5613.00usft
Site:	S17-T6S-R96W (PC5A)	MD Reference:	30' KB @ 5613.00usft
Well:	CHEVRON 21D-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
1,272.00	15.34	276.85	1,246.20	25.88	-206.17	207.77	0.73	0.66	
1,367.00	13.67	277.29	1,338.17	28.81	-229.78	231.56	1.76	-1.76	
1,461.00	12.17	279.92	1,429.79	31.92	-250.56	252.57	1.71	-1.60	
1,556.00	11.56	278.34	1,522.76	35.03	-269.84	272.09	0.73	-0.64	
1,649.00	10.90	282.12	1,613.98	38.23	-287.66	290.18	1.06	-0.71	
1,744.00	10.81	282.82	1,707.28	42.09	-305.13	308.02	0.17	-0.09	
1,838.00	10.55	281.68	1,799.65	45.79	-322.15	325.39	0.36	-0.28	
1,932.00	11.16	282.74	1,891.97	49.54	-339.45	343.04	0.68	0.65	
2,027.00	11.47	282.03	1,985.13	53.53	-357.66	361.63	0.36	0.33	
2,122.00	12.39	279.66	2,078.07	57.21	-376.94	381.24	1.10	0.97	
2,216.00	12.17	278.69	2,169.92	60.40	-396.68	401.23	0.32	-0.23	
2,310.00	11.73	278.78	2,261.88	63.36	-415.92	420.69	0.47	-0.47	
2,405.00	11.47	277.99	2,354.94	66.14	-434.82	439.79	0.32	-0.27	
2,499.00	11.60	275.71	2,447.05	68.38	-453.48	458.58	0.50	0.14	
2,594.00	9.80	278.25	2,540.39	70.49	-470.98	476.21	1.96	-1.89	
2,688.00	10.85	276.32	2,632.87	72.61	-487.69	493.05	1.18	1.12	
2,783.00	11.16	276.94	2,726.12	74.71	-505.71	511.18	0.35	0.33	
2,877.00	12.13	276.58	2,818.19	76.94	-524.55	530.15	1.03	1.03	
2,972.00	12.66	276.58	2,910.97	79.28	-544.81	550.54	0.56	0.56	
3,066.00	12.96	276.76	3,002.63	81.70	-565.51	571.37	0.32	0.32	
3,161.00	12.96	276.58	3,095.21	84.17	-586.67	592.67	0.04	0.00	
3,255.00	13.23	275.71	3,186.77	86.45	-607.84	613.96	0.36	0.29	
3,350.00	13.10	276.67	3,279.27	88.78	-629.35	635.58	0.27	-0.14	
3,444.00	13.49	275.44	3,370.75	91.06	-650.85	657.19	0.51	0.41	
3,538.00	12.57	275.00	3,462.33	92.99	-671.95	678.35	0.98	-0.98	
3,633.00	12.88	274.65	3,555.00	94.75	-692.80	699.25	0.34	0.33	
3,727.00	11.82	275.62	3,646.82	96.54	-712.83	719.33	1.15	-1.13	
3,822.00	10.81	280.89	3,739.97	99.18	-731.26	737.95	1.52	-1.06	
3,916.00	10.99	286.43	3,832.28	103.38	-748.51	755.61	1.13	0.19	
4,011.00	10.99	286.96	3,925.54	108.58	-765.86	773.52	0.11	0.00	
4,105.00	11.34	285.37	4,017.76	113.64	-783.34	791.53	0.50	0.37	
4,200.00	11.25	283.70	4,110.92	118.31	-801.35	810.01	0.36	-0.09	
4,294.00	10.20	286.34	4,203.28	122.83	-818.24	827.37	1.23	-1.12	
4,389.00	8.44	286.43	4,297.02	127.17	-833.00	842.59	1.85	-1.85	
4,483.00	6.50	283.79	4,390.22	130.39	-844.79	854.71	2.10	-2.06	
4,577.00	4.22	280.54	4,483.80	132.29	-853.36	863.46	2.45	-2.43	
4,672.00	2.33	288.27	4,578.64	133.53	-858.63	868.85	2.04	-1.99	
4,766.00	0.62	326.15	4,672.61	134.55	-860.73	871.07	2.00	-1.82	
4,861.00	1.10	83.66	4,767.60	135.08	-860.11	870.53	1.57	0.51	
4,955.00	1.45	90.96	4,861.58	135.16	-858.02	868.48	0.41	0.37	
5,049.00	1.36	99.31	4,955.55	134.96	-855.73	866.18	0.24	-0.10	
5,144.00	1.32	101.42	5,050.52	134.56	-853.54	863.96	0.07	-0.04	
5,238.00	1.36	109.68	5,144.50	133.97	-851.43	861.79	0.21	0.04	
5,332.00	1.19	107.04	5,238.48	133.31	-849.45	859.73	0.19	-0.18	
5,427.00	0.97	119.61	5,333.46	132.62	-847.81	858.01	0.34	-0.23	
5,521.00	0.75	153.63	5,427.45	131.68	-846.84	856.92	0.58	-0.23	
5,616.00	0.88	187.38	5,522.44	130.40	-846.66	856.57	0.51	0.14	
5,710.00	1.06	199.59	5,616.43	128.86	-847.04	856.73	0.29	0.19	
5,805.00	1.27	197.04	5,711.41	127.03	-847.65	857.08	0.23	0.22	
5,900.00	1.54	196.16	5,806.38	124.80	-848.31	857.42	0.29	0.28	
5,994.00	1.80	196.69	5,900.34	122.17	-849.09	857.83	0.28	0.28	
6,089.00	2.07	206.89	5,995.28	119.21	-850.29	858.61	0.46	0.28	
6,183.00	2.24	210.93	6,089.22	116.12	-852.00	859.87	0.24	0.18	

Cathedral Energy Services

Survey Report

Company: Caerus Oil & Gas	Local Co-ordinate Reference: Well CHEVRON 21D-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 21D-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
6,278.00	2.68	215.85	6,184.13	112.73	-854.26	861.63	0.51	0.46	
6,372.00	2.29	222.09	6,278.04	109.55	-856.80	863.71	0.50	-0.41	
6,467.00	2.64	231.85	6,372.95	106.79	-859.80	866.29	0.57	0.37	
6,561.00	3.47	236.77	6,466.82	103.90	-863.88	869.93	0.93	0.88	
6,656.00	3.56	240.64	6,561.64	100.87	-868.85	874.44	0.27	0.09	
6,751.00	4.13	243.80	6,656.43	97.92	-874.49	879.62	0.64	0.60	
6,845.00	4.31	247.40	6,750.17	95.07	-880.79	885.46	0.34	0.19	
6,939.00	5.01	244.59	6,843.86	91.95	-887.76	891.92	0.78	0.74	
7,034.00	5.32	245.91	6,938.47	88.37	-895.53	899.12	0.35	0.33	
7,128.00	5.58	247.49	7,032.05	84.84	-903.73	906.75	0.32	0.28	LAST SURVEY - 7128' MD
7,199.00	5.58	247.49	7,102.71	82.20	-910.11	912.70	0.00	0.00	PROJECTION / TD

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
CHEVRON 21D-17 PBH	0.00	0.00	7,109.00	120.36	-883.81	14,367,293.00	2,449,150.00	39.528617	-108.132121
- hit/miss target - Shape - actual wellpath misses target center by 46.77usft at 7199.00usft MD (7102.71 TVD, 82.20 N, -910.11 E) - Circle (radius 50.00)									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
7,128.00	7,032.05	84.84	-903.73	LAST SURVEY - 7128' MD	
7,199.00	7,102.71	82.20	-910.11	PROJECTION / TD	

Checked By: _____	Approved By: _____	Date: _____
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