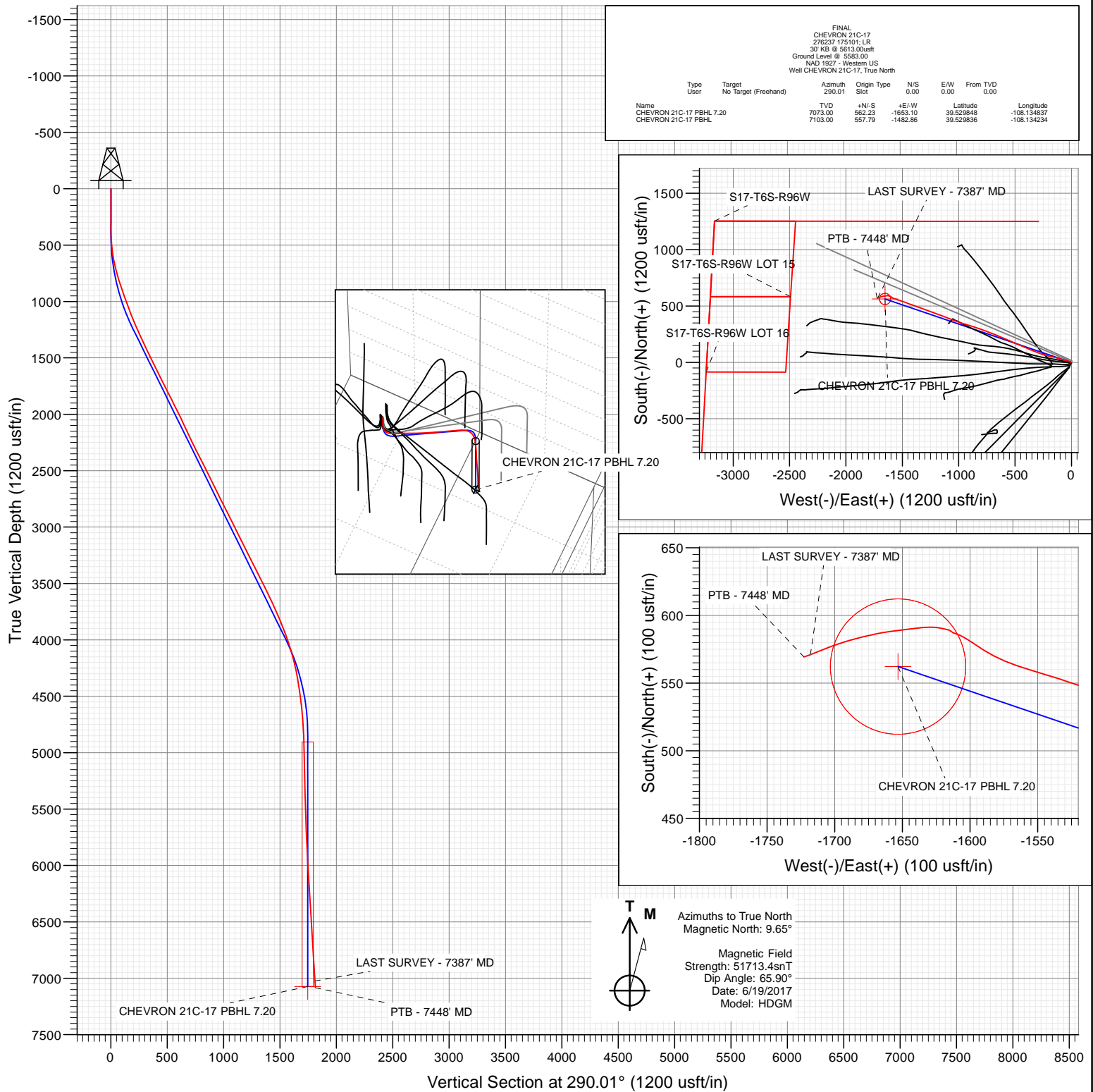




Project: Garfield County, CO (UTM 12N)
 Site: S17-T6S-R96W (PC5A)
 Well: CHEVRON 21C-17
 Wellbore: OH
 Design: FINAL



WELL DETAILS: CHEVRON 21C-17

+N/-S 0.00 +E/-W 0.00 Northing 14367207.80 Ground Level: 5583.00 Easting 2450039.90 Latitude 39.528306 Longitude -108.128979



Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well CHEVRON 21C-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 21C-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 21C-17					
Well Position	+N/-S	0.00 usft	Northing:	14,367,207.80 usft	Latitude:	39.528306
	+E/-W	0.00 usft	Easting:	2,450,039.90 usft	Longitude:	-108.128979
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	6/19/2017	9.65	65.90	51,713.40000000

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	290.01	

Survey Program	Date	6/21/2017			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
118.00	7,448.00	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	0.40	246.09	118.00	-0.17	-0.38	0.30	0.34	0.34		
179.00	0.44	243.98	179.00	-0.36	-0.78	0.61	0.07	0.07		
209.00	0.48	259.62	209.00	-0.43	-1.01	0.80	0.44	0.13		
301.00	0.35	50.35	301.00	-0.32	-1.17	0.99	0.87	-0.14		
394.00	1.19	313.06	393.99	0.52	-1.66	1.74	1.38	0.90		
486.00	4.35	294.78	485.87	2.64	-5.53	6.09	3.52	3.43		
577.00	8.35	290.30	576.29	6.38	-14.86	16.14	4.43	4.40		
672.00	12.57	288.71	669.69	12.09	-31.13	33.39	4.45	4.44		
766.00	15.60	284.49	760.86	18.53	-53.06	56.20	3.40	3.22		
860.00	18.11	285.37	850.82	25.57	-79.39	83.34	2.68	2.67		
955.00	20.13	286.34	940.57	34.08	-109.31	114.38	2.15	2.13		
1,083.00	20.44	281.77	1,060.64	44.84	-152.33	158.48	1.26	0.24		

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well CHEVRON 21C-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 21C-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	21.75	284.06	1,149.27	52.50	-185.65	192.41	1.63	1.38	
1,272.00	24.52	286.16	1,235.71	62.16	-221.29	229.20	3.07	2.95	
1,367.00	24.92	285.90	1,322.00	73.13	-259.47	268.83	0.44	0.42	
1,461.00	25.01	288.54	1,407.22	84.88	-297.36	308.45	1.19	0.10	
1,556.00	26.37	294.51	1,492.84	100.02	-335.60	349.56	3.08	1.43	
1,649.00	25.97	292.14	1,576.31	116.26	-373.25	390.50	1.20	-0.43	
1,744.00	27.47	294.43	1,661.17	133.16	-412.47	433.14	1.91	1.58	
1,838.00	27.07	294.43	1,744.72	150.97	-451.69	476.08	0.43	-0.43	
1,933.00	25.93	293.37	1,829.74	168.15	-490.44	518.37	1.30	-1.20	
2,027.00	27.20	293.28	1,913.81	184.80	-529.04	560.34	1.35	1.35	
2,122.00	26.32	292.84	1,998.64	201.55	-568.39	603.05	0.95	-0.93	
2,216.00	24.79	290.38	2,083.44	216.51	-606.07	643.57	1.98	-1.63	
2,311.00	25.31	292.05	2,169.50	231.07	-643.57	683.78	0.92	0.55	
2,405.00	25.93	291.79	2,254.26	246.24	-681.27	724.41	0.67	0.66	
2,499.00	27.07	291.70	2,338.38	261.78	-720.23	766.33	1.21	1.21	
2,594.00	26.28	291.88	2,423.27	277.61	-759.83	808.96	0.84	-0.83	
2,688.00	26.85	289.94	2,507.35	292.60	-799.10	850.98	1.10	0.61	
2,783.00	26.41	288.27	2,592.27	306.54	-839.33	893.56	0.91	-0.46	
2,877.00	26.19	288.19	2,676.54	319.57	-878.89	935.18	0.24	-0.23	
2,972.00	26.90	285.64	2,761.53	331.91	-919.50	977.57	1.41	0.75	
3,066.00	27.20	288.45	2,845.25	344.44	-960.36	1,020.25	1.40	0.32	
3,161.00	26.24	288.27	2,930.11	357.90	-1,000.90	1,062.94	1.01	-1.01	
3,255.00	26.85	291.09	3,014.20	372.05	-1,040.44	1,104.94	1.49	0.65	
3,350.00	25.75	291.17	3,099.37	387.22	-1,079.70	1,147.02	1.16	-1.16	
3,444.00	26.94	290.56	3,183.60	402.08	-1,118.68	1,188.73	1.30	1.27	
3,539.00	26.32	290.21	3,268.52	416.91	-1,158.60	1,231.31	0.67	-0.65	
3,633.00	27.47	290.30	3,352.35	431.63	-1,198.49	1,273.83	1.22	1.22	
3,727.00	26.90	290.56	3,435.97	446.62	-1,238.73	1,316.78	0.62	-0.61	
3,822.00	26.46	289.77	3,520.86	461.33	-1,278.77	1,359.43	0.59	-0.46	
3,916.00	25.62	290.03	3,605.31	475.37	-1,317.57	1,400.70	0.90	-0.89	
4,011.00	24.74	290.12	3,691.28	489.25	-1,355.53	1,441.12	0.93	-0.93	
4,105.00	23.34	289.50	3,777.13	502.23	-1,391.56	1,479.41	1.51	-1.49	
4,200.00	22.10	288.98	3,864.76	514.32	-1,426.20	1,516.10	1.32	-1.31	
4,294.00	20.30	291.44	3,952.39	526.04	-1,458.10	1,550.08	2.14	-1.91	
4,389.00	17.58	290.47	4,042.24	537.08	-1,486.89	1,580.91	2.88	-2.86	
4,483.00	15.43	288.36	4,132.36	545.98	-1,512.06	1,607.60	2.37	-2.29	
4,578.00	13.10	287.66	4,224.43	553.23	-1,534.31	1,631.00	2.46	-2.45	
4,672.00	10.68	286.87	4,316.40	558.99	-1,552.80	1,650.34	2.58	-2.57	
4,766.00	8.83	289.42	4,409.04	563.92	-1,567.94	1,666.25	2.02	-1.97	
4,861.00	7.82	296.71	4,503.04	569.25	-1,580.59	1,679.96	1.54	-1.06	
4,955.00	6.33	303.92	4,596.32	575.01	-1,590.61	1,691.35	1.84	-1.59	
5,049.00	4.70	302.34	4,689.89	579.97	-1,598.16	1,700.14	1.74	-1.73	
5,144.00	3.30	300.58	4,784.65	583.44	-1,603.80	1,706.63	1.48	-1.47	
5,238.00	1.89	295.39	4,878.55	585.48	-1,607.53	1,710.83	1.52	-1.50	
5,333.00	1.89	283.53	4,973.50	586.52	-1,610.47	1,713.95	0.41	0.00	
5,427.00	1.06	303.57	5,067.47	587.36	-1,612.70	1,716.34	1.03	-0.88	
5,522.00	0.84	312.27	5,162.46	588.32	-1,613.95	1,717.83	0.28	-0.23	
5,616.00	1.23	291.97	5,256.44	589.16	-1,615.40	1,719.48	0.56	0.41	
5,711.00	1.58	280.01	5,351.41	589.77	-1,617.63	1,721.79	0.48	0.37	
5,805.00	1.80	284.23	5,445.37	590.35	-1,620.34	1,724.53	0.27	0.23	
5,900.00	1.98	277.20	5,540.32	590.93	-1,623.41	1,727.62	0.31	0.19	
5,994.00	2.15	273.07	5,634.26	591.23	-1,626.79	1,730.89	0.24	0.18	
6,089.00	2.55	271.14	5,729.18	591.36	-1,630.68	1,734.59	0.43	0.42	

Cathedral Energy Services

Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well CHEVRON 21C-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 21C-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
6,183.00	2.90	263.49	5,823.08	591.13	-1,635.13	1,738.70	0.54	0.37	
6,278.00	3.47	262.70	5,917.93	590.50	-1,640.37	1,743.40	0.60	0.60	
6,373.00	3.52	263.58	6,012.75	589.81	-1,646.12	1,748.57	0.08	0.05	
6,467.00	3.69	262.70	6,106.57	589.10	-1,651.99	1,753.84	0.19	0.18	
6,562.00	3.82	261.56	6,201.36	588.25	-1,658.15	1,759.34	0.16	0.14	
6,656.00	3.78	261.47	6,295.15	587.33	-1,664.31	1,764.82	0.04	-0.04	
6,751.00	4.04	258.48	6,389.93	586.19	-1,670.69	1,770.42	0.35	0.27	
6,845.00	4.44	255.58	6,483.68	584.63	-1,677.46	1,776.24	0.48	0.43	
6,940.00	4.48	254.70	6,578.39	582.73	-1,684.60	1,782.30	0.08	0.04	
7,034.00	4.26	254.00	6,672.12	580.80	-1,691.49	1,788.12	0.24	-0.23	
7,129.00	4.53	251.45	6,766.84	578.63	-1,698.44	1,793.91	0.35	0.28	
7,223.00	4.75	247.93	6,860.53	575.99	-1,705.57	1,799.70	0.38	0.23	
7,318.00	4.61	248.46	6,955.21	573.11	-1,712.76	1,805.48	0.15	-0.15	
7,387.00	4.70	249.16	7,023.98	571.09	-1,717.99	1,809.69	0.15	0.13	LAST SURVEY - 7387' MD
7,448.00	4.70	249.16	7,084.78	569.31	-1,722.66	1,813.47	0.00	0.00	PTB - 7448' MD

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
CHEVRON 21C-17 PBH	0.00	0.00	7,073.00	562.23	-1,653.10	14,367,717.00	2,448,369.70	39.529848	-108.134837
- actual wellpath misses target center by 68.86usft at 7431.14usft MD (7067.98 TVD, 569.80 N, -1721.37 E)									
- Circle (radius 50.00)									
CHEVRON 21C-17 PBH	0.00	0.00	7,103.00	557.79	-1,482.86	14,367,718.00	2,448,540.00	39.529836	-108.134234
- actual wellpath misses target center by 240.76usft at 7448.00usft MD (7084.78 TVD, 569.31 N, -1722.66 E)									
- Point									

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
7,387.00	7,023.98	571.09	-1,717.99	LAST SURVEY - 7387' MD
7,448.00	7,084.78	569.31	-1,722.66	PTB - 7448' MD

Checked By: _____ Approved By: _____ Date: _____