



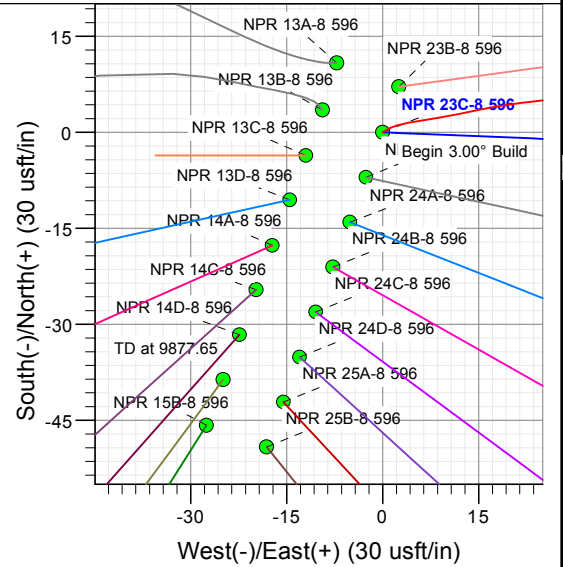
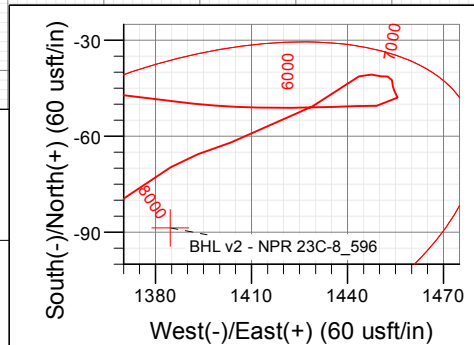
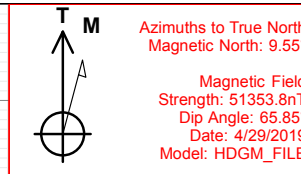
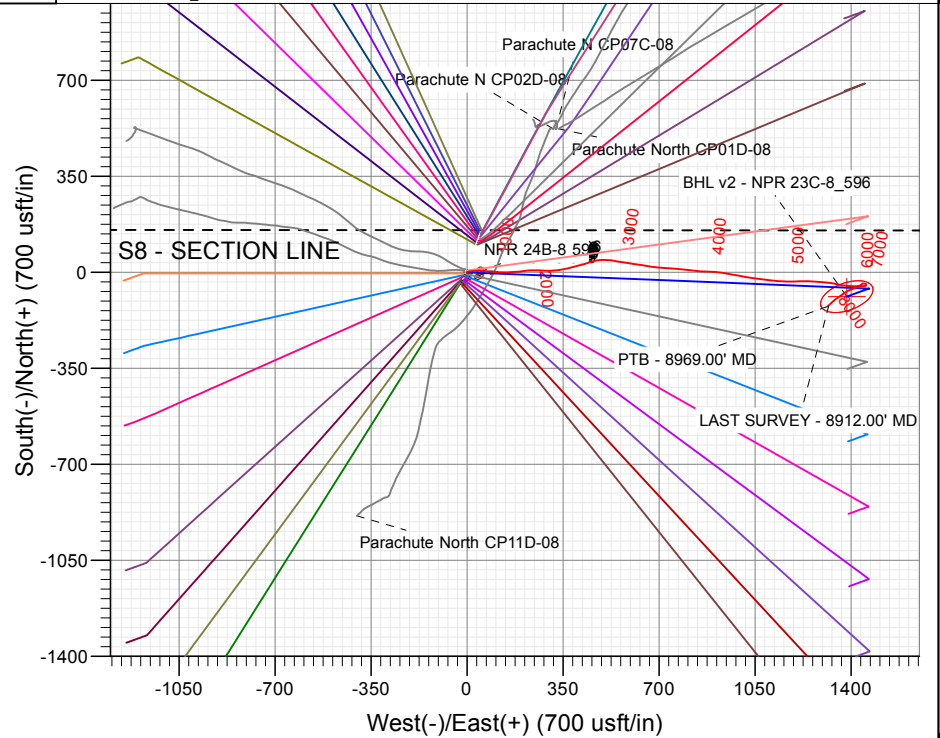
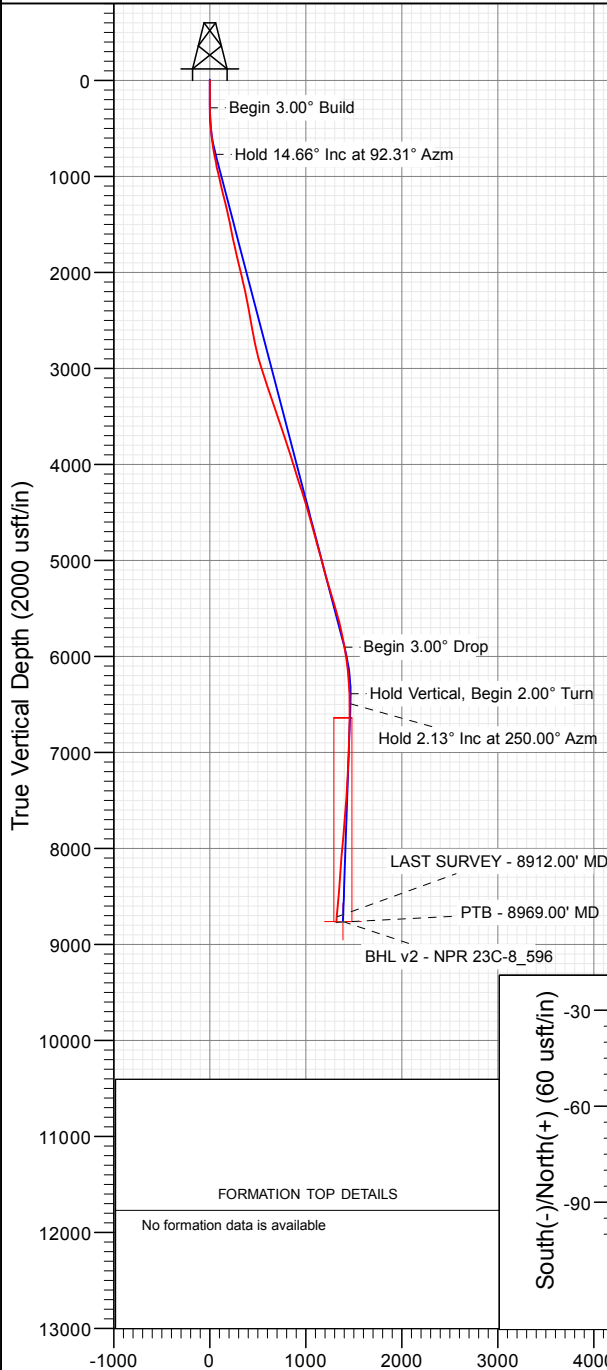
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	Vsect	Target
1	-6.00	0.00	0.00	-6.00	0.00	0.00	0.00	0.00	0.00	
2	294.00	0.00	0.00	294.00	0.00	0.00	0.00	0.00	0.00	
3	782.57	14.66	92.31	777.26	-2.50	62.10	3.00	92.31	62.13	
4	6088.73	14.66	92.31	5910.74	-56.60	1403.64	0.00	0.00	1404.39	
5	6577.30	0.00	0.00	6394.00	-59.10	1465.74	3.00	180.00	1466.52	
6	6684.11	2.14	250.00	6500.79	-59.78	1463.87	2.00	250.00	1464.70	
7	8946.89	2.14	250.00	8762.00	-88.63	1384.61	0.00	0.00	1387.44	BHL v2 - NPR 23C-8_596

Project: Garfield County, CO (UTM 12N)
Site: S8-T5S-R96W NPR K08 596 (H&P 330)
Well: NPR 23C-8 596
Wellbore: OH [481437]
Design: Final (H&P 330)
Gravity: 0.998731

Final (H&P 330)
NPR 23C-8 596
RKB @ 7787.00ust
Ground Level @ 7763.00
NAD 1927 - Western US
Well NPR 23C-8 596, True North

Name	Type	Target	Azimuth	Origin	Type	N/S	E/W	From	TVD	Latitude	Longitude
BHL v2 - NPR 23C-8_596	Target	BHL v2 - NPR 23C-8_596	93.66	Slot		0.00	0.00	0.00		39.628945	-108.187521
			TVD								
			8762.00								
			+N/-S								
			-88.63								
			+E/-W								
			1384.61								



Vertical Section at 93.66° (2000 usft/in)

WELL DETAILS: NPR 23C-8 596

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	14403383.40	2430994.50	39.629188	-108.192435

CATHEDRAL





Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well NPR 23C-8 596
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	RKB @ 7787.00usft
Site:	S8-T5S-R96W NPR K08 596 (H&P 330)	MD Reference:	RKB @ 7787.00usft
Well:	NPR 23C-8 596	North Reference:	True
Wellbore:	OH [481437]	Survey Calculation Method:	Minimum Curvature
Design:	Final (H&P 330)	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		S8-T5S-R96W NPR K08 596 (H&P 330), Gravity: 0.998731			
Site Position:		Northing:	14,403,394.00 usft	Latitude:	39.629218
From:	Map	Easting:	2,430,987.00 usft	Longitude:	-108.192461
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	1.79 °

Well	NPR 23C-8 596					
Well Position	+N/-S	0.00 usft	Northing:	14,403,383.40 usft	Latitude:	39.629188
	+E/-W	0.00 usft	Easting:	2,430,994.50 usft	Longitude:	-108.192435
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	7,763.00 usft

Wellbore	OH [481437]				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	HDGM_FILE	4/29/2019	9.55	65.85	51,353.80000000

Design	Final (H&P 330)				
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	93.66	

Survey Program	Date	5/5/2019			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
110.00	8,969.00	CES MWD Survey (OH [481437])	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		
110.00	0.07	63.08	110.00	0.03	0.06	0.06	0.06	0.06		
140.00	0.09	63.08	140.00	0.05	0.10	0.09	0.07	0.07		
171.00	0.32	59.46	171.00	0.10	0.19	0.19	0.74	0.74		
262.00	1.01	58.51	261.99	0.65	1.10	1.05	0.76	0.76		
353.00	2.77	79.60	352.94	1.47	3.94	3.84	2.05	1.93		
444.00	3.38	80.92	443.81	2.29	8.75	8.59	0.67	0.67		
536.00	5.01	77.75	535.56	3.57	15.36	15.10	1.79	1.77		
630.00	7.60	84.70	628.98	5.01	25.56	25.19	2.87	2.76		
724.00	8.83	89.53	722.02	5.65	38.97	38.53	1.50	1.31		
819.00	10.99	91.73	815.60	5.43	55.31	54.85	2.31	2.27		
913.00	12.39	96.65	907.65	4.00	74.28	73.88	1.83	1.49		
1,007.00	13.10	95.33	999.33	1.84	94.91	94.60	0.82	0.76		

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well NPR 23C-8 596
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	RKB @ 7787.00usft
Site:	S8-T5S-R96W NPR K08 596 (H&P 330)	MD Reference:	RKB @ 7787.00usft
Well:	NPR 23C-8 596	North Reference:	True
Wellbore:	OH [481437]	Survey Calculation Method:	Minimum Curvature
Design:	Final (H&P 330)	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
1,101.00	13.14	92.61	1,090.88	0.36	116.19	115.93	0.66	0.04	
1,195.00	13.54	90.23	1,182.34	-0.17	137.87	137.59	0.72	0.43	
1,289.00	14.24	88.04	1,273.59	0.18	160.42	160.09	0.93	0.74	
1,384.00	13.67	83.91	1,365.79	1.77	183.26	182.78	1.21	-0.60	
1,478.00	11.69	81.80	1,457.49	4.31	203.74	203.05	2.16	-2.11	
1,573.00	11.56	84.70	1,550.55	6.56	222.74	221.87	0.63	-0.14	
1,667.00	12.39	88.92	1,642.50	7.62	242.20	241.22	1.28	0.88	
1,761.00	12.61	94.19	1,734.28	7.06	262.52	261.53	1.24	0.23	
1,855.00	12.39	91.99	1,826.05	5.96	282.83	281.87	0.56	-0.23	
1,949.00	12.83	88.74	1,917.78	5.84	303.35	302.35	0.89	0.47	
2,044.00	13.71	85.31	2,010.25	6.99	325.11	324.00	1.24	0.93	
2,138.00	12.70	78.11	2,101.77	10.03	346.33	344.98	2.05	-1.07	
2,232.00	12.70	77.14	2,193.47	14.46	366.51	364.84	0.23	0.00	
2,326.00	12.35	76.52	2,285.23	19.11	386.36	384.35	0.40	-0.37	
2,420.00	12.04	75.91	2,377.11	23.84	405.64	403.29	0.36	-0.33	
2,445.00	12.13	73.89	2,401.55	25.20	410.70	408.25	1.73	0.36	
2,621.00	10.02	71.43	2,574.27	35.21	442.98	439.83	1.23	-1.20	
2,715.00	10.99	73.97	2,666.69	40.29	459.34	455.83	1.14	1.03	
2,809.00	12.48	83.64	2,758.73	43.89	478.05	474.27	2.62	1.59	
2,904.00	14.24	88.83	2,851.16	45.26	499.94	496.03	2.24	1.85	
2,998.00	16.96	98.23	2,941.71	43.54	525.08	521.22	3.94	2.89	
3,093.00	18.41	99.37	3,032.21	39.11	553.59	549.96	1.57	1.53	
3,187.00	17.71	99.46	3,121.58	34.34	582.34	578.96	0.75	-0.74	
3,281.00	17.45	98.85	3,211.19	29.82	610.37	607.22	0.34	-0.28	
3,375.00	19.42	98.85	3,300.36	25.25	639.74	636.82	2.10	2.10	
3,469.00	19.47	97.53	3,389.00	20.79	670.71	668.01	0.47	0.05	
3,563.00	19.16	94.72	3,477.71	17.47	701.62	699.07	1.04	-0.33	
3,752.00	17.89	94.01	3,656.92	12.89	761.49	759.11	0.68	-0.67	
3,846.00	18.11	97.88	3,746.32	9.88	790.36	788.12	1.29	0.23	
4,035.00	18.33	93.40	3,925.85	4.09	849.13	847.13	0.75	0.12	
4,129.00	16.70	93.84	4,015.49	2.31	877.36	875.42	1.74	-1.73	
4,223.00	17.18	92.61	4,105.41	0.77	904.71	902.81	0.64	0.51	
4,318.00	18.11	99.02	4,195.95	-2.18	933.31	931.54	2.27	0.98	
4,412.00	18.11	100.25	4,285.30	-7.08	962.11	960.60	0.41	0.00	
4,506.00	17.27	101.04	4,374.85	-12.35	990.19	988.95	0.93	-0.89	
4,600.00	16.66	99.99	4,464.76	-17.36	1,017.15	1,016.18	0.73	-0.65	
4,694.00	16.04	96.83	4,554.96	-21.24	1,043.32	1,042.54	1.15	-0.66	
4,789.00	14.46	98.76	4,646.61	-24.61	1,068.07	1,067.46	1.75	-1.66	
4,883.00	16.35	95.16	4,737.23	-27.58	1,092.85	1,092.38	2.25	2.01	
4,977.00	15.91	97.53	4,827.53	-30.46	1,118.80	1,118.46	0.84	-0.47	
5,071.00	14.41	93.66	4,918.26	-32.90	1,143.25	1,143.02	1.92	-1.60	
5,165.00	16.17	90.15	5,008.93	-33.68	1,168.01	1,167.78	2.11	1.87	
5,259.00	15.03	90.76	5,099.47	-33.87	1,193.29	1,193.02	1.23	-1.21	
5,354.00	15.03	87.25	5,191.22	-33.45	1,217.91	1,217.56	0.96	0.00	
5,448.00	16.13	88.39	5,281.76	-32.49	1,243.14	1,242.67	1.21	1.17	
5,542.00	16.48	96.91	5,372.00	-33.73	1,269.43	1,268.99	2.57	0.37	
5,637.00	17.84	94.19	5,462.77	-36.42	1,297.32	1,297.00	1.66	1.43	
5,731.00	16.26	97.53	5,552.64	-39.19	1,324.73	1,324.53	1.98	-1.68	
5,825.00	13.40	103.24	5,643.50	-43.41	1,348.39	1,348.41	3.41	-3.04	
5,919.00	12.57	96.74	5,735.10	-47.11	1,369.15	1,369.36	1.79	-0.88	
6,014.00	11.21	97.00	5,828.06	-49.45	1,388.58	1,388.90	1.43	-1.43	
6,108.00	9.19	91.82	5,920.57	-50.80	1,405.15	1,405.53	2.36	-2.15	
6,202.00	8.79	90.41	6,013.42	-51.09	1,419.84	1,420.20	0.49	-0.43	



Survey Report

Company:	Caerus Oil & Gas	Local Co-ordinate Reference:	Well NPR 23C-8 596
Project:	Garfield County, CO (UTM 12N)	TVD Reference:	RKB @ 7787.00usft
Site:	S8-T5S-R96W NPR K08 596 (H&P 330)	MD Reference:	RKB @ 7787.00usft
Well:	NPR 23C-8 596	North Reference:	True
Wellbore:	OH [481437]	Survey Calculation Method:	Minimum Curvature
Design:	Final (H&P 330)	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
6,296.00	7.30	88.12	6,106.49	-50.95	1,432.99	1,433.32	1.62	-1.59	
6,391.00	3.91	86.72	6,201.02	-50.56	1,442.26	1,442.54	3.57	-3.57	
6,485.00	4.48	91.20	6,294.77	-50.46	1,449.13	1,449.39	0.70	0.61	
6,674.00	1.71	342.22	6,483.57	-47.92	1,455.65	1,455.74	2.80	-1.47	
6,768.00	1.19	320.68	6,577.54	-45.83	1,454.61	1,454.56	0.79	-0.55	
6,862.00	0.88	14.21	6,671.53	-44.38	1,454.17	1,454.03	1.03	-0.33	
6,957.00	1.49	339.14	6,766.51	-42.52	1,453.90	1,453.65	0.97	0.64	
7,050.00	1.19	273.40	6,859.49	-41.33	1,452.51	1,452.18	1.59	-0.32	
7,144.00	1.23	268.21	6,953.47	-41.30	1,450.53	1,450.20	0.12	0.04	
7,239.00	2.51	286.05	7,048.42	-40.76	1,447.51	1,447.16	1.46	1.35	
7,333.00	2.73	241.05	7,142.33	-41.27	1,443.57	1,443.26	2.14	0.23	
7,616.00	4.31	234.64	7,424.79	-50.69	1,429.00	1,429.32	0.57	0.56	
7,900.00	7.08	253.10	7,707.38	-61.96	1,403.54	1,404.64	1.16	0.98	
7,994.00	6.37	247.56	7,800.73	-65.63	1,393.18	1,394.53	1.02	-0.76	
8,088.00	5.10	241.05	7,894.26	-69.64	1,384.71	1,386.33	1.52	-1.35	
8,277.00	5.23	231.12	8,082.50	-79.12	1,370.65	1,372.90	0.48	0.07	
8,466.00	5.41	235.78	8,270.68	-89.54	1,356.58	1,359.52	0.25	0.10	
8,655.00	6.15	233.67	8,458.72	-100.54	1,341.05	1,344.74	0.41	0.39	
8,912.00	6.99	224.62	8,714.04	-119.83	1,318.98	1,323.94	0.52	0.33	LAST SURVEY - 8912.00' MD
8,969.00	6.99	224.62	8,770.62	-124.77	1,314.10	1,319.39	0.00	0.00	PTB - 8969.00' 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									
BHL v2 - NPR 23C-8_59	0.00	0.00	8,762.00	-88.63	1,384.61	14,403,338.10	2,432,381.20	39.628945	-108.187521
- actual wellpath misses target center by 77.70usft at 8951.29usft MD (8753.04 TVD, -123.24 N, 1315.62 E)									
- Ellipse (radii L100.00 W50.00 on 250.00 azi)									

Design Annotations

	Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
			+N/-S (usft)	+E/-W (usft)	
	8,912.00	8,714.04	-119.83	1,318.98	LAST SURVEY - 8912.00' MD
	8,969.00	8,770.62	-124.77	1,314.10	PTB - 8969.00' MD

Checked By: _____ Approved By: _____ Date: _____