

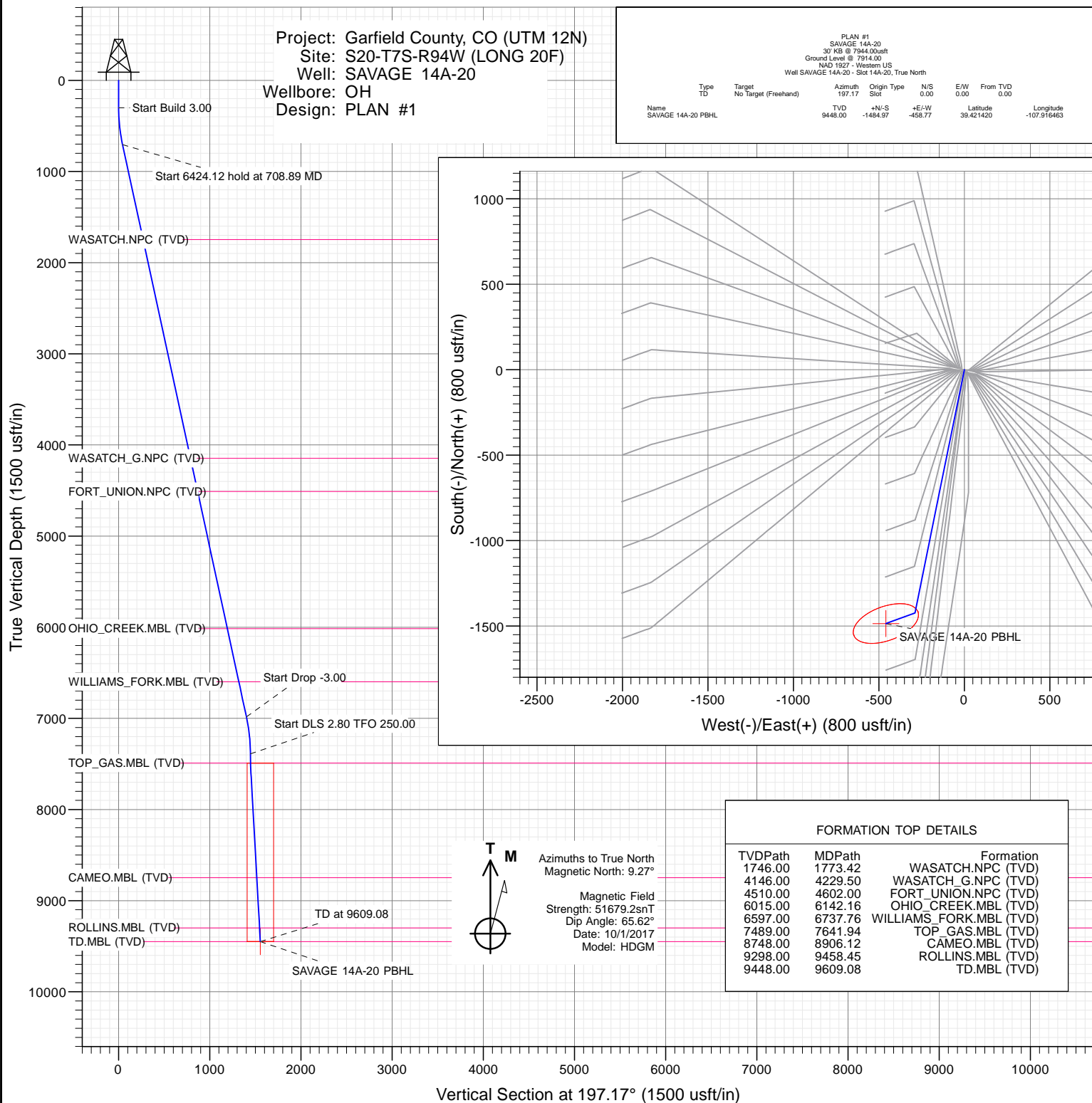


SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
3	708.89	12.27	191.47	705.78	-42.73	-8.67	3.00	191.47	43.39	
4	7133.01	12.27	191.47	6983.22	-1380.37	-280.10	0.00	0.00	1401.54	
5	7541.90	0.00	0.00	7389.00	-1423.10	-288.77	3.00	180.00	1444.93	
6	7729.87	5.26	250.00	7576.71	-1426.05	-296.87	2.80	250.00	1450.14	
7	9609.08	5.26	250.00	9448.00	-1484.97	-458.77	0.00	0.00	1554.23	SAVAGE 14A-20 PBHL

Project: Garfield County, CO (UTM 12N)
Site: S20-T7S-R94W (LONG 20F)
Well: SAVAGE 14A-20
Wellbore: OH
Design: PLAN #1

PLAN #1 SAVAGE 14A-20 30' KB @ 7944.00usft Ground Level @ 7914.00 NAD 1982 - Western US Well SAVAGE 14A-20 - Slot 14A-20, True North									
Name	Type	TD	Target	No Target (Freehand)	Azimuth	Origin Type	N/S	E/W	From TVD
SAVAGE 14A-20 PBHL					197.17	Slot	0.00	0.00	0.00
		TVD			9448.00		+N/-S	+E/-W	Latitude
							-1484.97	-458.77	39.421420
									Longitude
									-107.916463



WELL DETAILS: SAVAGE 14A-20

7914.00
+N/-S 0.00 +E/-W 0.00 Northing 14331763.80 Easting 2511720.50 Latitude 39.425495 Longitude -107.914840 14A-20

CATHEDRAL



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well SAVAGE 14A-20 - Slot 14A-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.00usft
Site:	S20-T7S-R94W (LONG 20F)	North Reference:	True
Well:	SAVAGE 14A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

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		S20-T7S-R94W (LONG 20F)			
Site Position:		Northing:	14,331,773.27 usft	Latitude:	39.425526
From:	Map	Easting:	2,511,668.92 usft	Longitude:	-107.915021
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16"	Grid Convergence:	1.96 °

Well	SAVAGE 14A-20 - Slot 14A-20					
Well Position	+N/-S	0.00 usft	Northing:	14,331,763.80 usft	Latitude:	39.425495
	+E/-W	0.00 usft	Easting:	2,511,720.50 usft	Longitude:	-107.914840
Position Uncertainty		0.00 usft	Wellhead Elevation:	usft	Ground Level:	7,914.00 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	HDGM	10/1/2017	9.27	65.62	51,679.20000000

Design	PLAN #1			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	197.17

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	
708.89	12.27	191.47	705.78	-42.73	-8.67	3.00	3.00	0.00	191.47	
7,133.01	12.27	191.47	6,983.22	-1,380.37	-280.10	0.00	0.00	0.00	0.00	
7,541.90	0.00	0.00	7,389.00	-1,423.10	-288.77	3.00	-3.00	0.00	180.00	
7,729.87	5.26	250.00	7,576.71	-1,426.05	-296.87	2.80	2.80	-58.52	250.00	
9,609.08	5.26	250.00	9,448.00	-1,484.97	-458.77	0.00	0.00	0.00	0.00	SAVAGE 14A-20 PBI-

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well SAVAGE 14A-20 - Slot 14A-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.00usft
Site:	S20-T7S-R94W (LONG 20F)	North Reference:	True
Well:	SAVAGE 14A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	
400.00	3.00	191.47	399.95	-2.57	-0.52	2.60	3.00	3.00	
500.00	6.00	191.47	499.63	-10.25	-2.08	10.41	3.00	3.00	
600.00	9.00	191.47	598.77	-23.04	-4.68	23.40	3.00	3.00	
700.00	12.00	191.47	697.08	-40.90	-8.30	41.53	3.00	3.00	
708.89	12.27	191.47	705.78	-42.73	-8.67	43.39	3.00	3.00	
800.00	12.27	191.47	794.80	-61.70	-12.52	62.65	0.00	0.00	
900.00	12.27	191.47	892.52	-82.53	-16.75	83.79	0.00	0.00	
1,000.00	12.27	191.47	990.24	-103.35	-20.97	104.93	0.00	0.00	
1,100.00	12.27	191.47	1,087.95	-124.17	-25.20	126.07	0.00	0.00	
1,200.00	12.27	191.47	1,185.67	-144.99	-29.42	147.22	0.00	0.00	
1,300.00	12.27	191.47	1,283.39	-165.81	-33.65	168.36	0.00	0.00	
1,400.00	12.27	191.47	1,381.10	-186.64	-37.87	189.50	0.00	0.00	
1,500.00	12.27	191.47	1,478.82	-207.46	-42.10	210.64	0.00	0.00	
1,600.00	12.27	191.47	1,576.54	-228.28	-46.32	231.78	0.00	0.00	
1,700.00	12.27	191.47	1,674.26	-249.10	-50.55	252.92	0.00	0.00	
1,773.42	12.27	191.47	1,746.00	-264.39	-53.65	268.45	0.00	0.00	WASATCH.NPC (TVD)
1,800.00	12.27	191.47	1,771.97	-269.92	-54.77	274.06	0.00	0.00	
1,900.00	12.27	191.47	1,869.69	-290.75	-59.00	295.21	0.00	0.00	
2,000.00	12.27	191.47	1,967.41	-311.57	-63.22	316.35	0.00	0.00	
2,100.00	12.27	191.47	2,065.12	-332.39	-67.45	337.49	0.00	0.00	
2,200.00	12.27	191.47	2,162.84	-353.21	-71.67	358.63	0.00	0.00	
2,300.00	12.27	191.47	2,260.56	-374.03	-75.90	379.77	0.00	0.00	
2,400.00	12.27	191.47	2,358.27	-394.86	-80.12	400.91	0.00	0.00	
2,500.00	12.27	191.47	2,455.99	-415.68	-84.35	422.05	0.00	0.00	
2,600.00	12.27	191.47	2,553.71	-436.50	-88.57	443.20	0.00	0.00	
2,700.00	12.27	191.47	2,651.42	-457.32	-92.80	464.34	0.00	0.00	
2,800.00	12.27	191.47	2,749.14	-478.14	-97.02	485.48	0.00	0.00	
2,900.00	12.27	191.47	2,846.86	-498.97	-101.25	506.62	0.00	0.00	
3,000.00	12.27	191.47	2,944.57	-519.79	-105.47	527.76	0.00	0.00	
3,100.00	12.27	191.47	3,042.29	-540.61	-109.70	548.90	0.00	0.00	
3,200.00	12.27	191.47	3,140.01	-561.43	-113.92	570.04	0.00	0.00	
3,300.00	12.27	191.47	3,237.73	-582.26	-118.15	591.19	0.00	0.00	
3,400.00	12.27	191.47	3,335.44	-603.08	-122.37	612.33	0.00	0.00	
3,500.00	12.27	191.47	3,433.16	-623.90	-126.60	633.47	0.00	0.00	
3,600.00	12.27	191.47	3,530.88	-644.72	-130.82	654.61	0.00	0.00	
3,700.00	12.27	191.47	3,628.59	-665.54	-135.05	675.75	0.00	0.00	
3,800.00	12.27	191.47	3,726.31	-686.37	-139.27	696.89	0.00	0.00	
3,900.00	12.27	191.47	3,824.03	-707.19	-143.50	718.03	0.00	0.00	
4,000.00	12.27	191.47	3,921.74	-728.01	-147.72	739.18	0.00	0.00	
4,100.00	12.27	191.47	4,019.46	-748.83	-151.95	760.32	0.00	0.00	
4,200.00	12.27	191.47	4,117.18	-769.65	-156.18	781.46	0.00	0.00	
4,229.50	12.27	191.47	4,146.00	-775.80	-157.42	787.70	0.00	0.00	WASATCH_G.NPC (TVD)
4,300.00	12.27	191.47	4,214.89	-790.48	-160.40	802.60	0.00	0.00	
4,400.00	12.27	191.47	4,312.61	-811.30	-164.63	823.74	0.00	0.00	
4,500.00	12.27	191.47	4,410.33	-832.12	-168.85	844.88	0.00	0.00	
4,600.00	12.27	191.47	4,508.05	-852.94	-173.08	866.02	0.00	0.00	
4,602.00	12.27	191.47	4,510.00	-853.36	-173.16	866.45	0.00	0.00	FORT_UNION.NPC (TVD)
4,700.00	12.27	191.47	4,605.76	-873.76	-177.30	887.17	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well SAVAGE 14A-20 - Slot 14A-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.00usft
Site:	S20-T7S-R94W (LONG 20F)	North Reference:	True
Well:	SAVAGE 14A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
4,800.00	12.27	191.47	4,703.48	-894.59	-181.53	908.31	0.00	0.00	
4,900.00	12.27	191.47	4,801.20	-915.41	-185.75	929.45	0.00	0.00	
5,000.00	12.27	191.47	4,898.91	-936.23	-189.98	950.59	0.00	0.00	
5,100.00	12.27	191.47	4,996.63	-957.05	-194.20	971.73	0.00	0.00	
5,200.00	12.27	191.47	5,094.35	-977.87	-198.43	992.87	0.00	0.00	
5,300.00	12.27	191.47	5,192.06	-998.70	-202.65	1,014.02	0.00	0.00	
5,400.00	12.27	191.47	5,289.78	-1,019.52	-206.88	1,035.16	0.00	0.00	
5,500.00	12.27	191.47	5,387.50	-1,040.34	-211.10	1,056.30	0.00	0.00	
5,600.00	12.27	191.47	5,485.21	-1,061.16	-215.33	1,077.44	0.00	0.00	
5,700.00	12.27	191.47	5,582.93	-1,081.98	-219.55	1,098.58	0.00	0.00	
5,800.00	12.27	191.47	5,680.65	-1,102.81	-223.78	1,119.72	0.00	0.00	
5,900.00	12.27	191.47	5,778.36	-1,123.63	-228.00	1,140.86	0.00	0.00	
6,000.00	12.27	191.47	5,876.08	-1,144.45	-232.23	1,162.01	0.00	0.00	
6,100.00	12.27	191.47	5,973.80	-1,165.27	-236.45	1,183.15	0.00	0.00	
6,142.16	12.27	191.47	6,015.00	-1,174.05	-238.23	1,192.06	0.00	0.00	OHIO_CREEK.MBL (TVD)
6,200.00	12.27	191.47	6,071.52	-1,186.09	-240.68	1,204.29	0.00	0.00	
6,300.00	12.27	191.47	6,169.23	-1,206.92	-244.90	1,225.43	0.00	0.00	
6,400.00	12.27	191.47	6,266.95	-1,227.74	-249.13	1,246.57	0.00	0.00	
6,500.00	12.27	191.47	6,364.67	-1,248.56	-253.35	1,267.71	0.00	0.00	
6,600.00	12.27	191.47	6,462.38	-1,269.38	-257.58	1,288.85	0.00	0.00	
6,700.00	12.27	191.47	6,560.10	-1,290.21	-261.80	1,310.00	0.00	0.00	
6,737.76	12.27	191.47	6,597.00	-1,298.07	-263.40	1,317.98	0.00	0.00	WILLIAMS_FORK.MBL (TVD)
6,800.00	12.27	191.47	6,657.82	-1,311.03	-266.03	1,331.14	0.00	0.00	
6,900.00	12.27	191.47	6,755.53	-1,331.85	-270.25	1,352.28	0.00	0.00	
7,000.00	12.27	191.47	6,853.25	-1,352.67	-274.48	1,373.42	0.00	0.00	
7,100.00	12.27	191.47	6,950.97	-1,373.49	-278.70	1,394.56	0.00	0.00	
7,133.01	12.27	191.47	6,983.22	-1,380.37	-280.10	1,401.54	0.00	0.00	
7,200.00	10.26	191.47	7,048.92	-1,393.19	-282.70	1,414.56	3.00	-3.00	
7,300.00	7.26	191.47	7,147.74	-1,408.11	-285.73	1,429.70	3.00	-3.00	
7,400.00	4.26	191.47	7,247.23	-1,417.94	-287.72	1,439.69	3.00	-3.00	
7,500.00	1.26	191.47	7,347.10	-1,422.65	-288.68	1,444.47	3.00	-3.00	
7,541.90	0.00	0.00	7,389.00	-1,423.10	-288.77	1,444.93	3.00	-3.00	
7,600.00	1.63	250.00	7,447.09	-1,423.38	-289.54	1,445.43	2.80	2.80	
7,641.94	2.80	250.00	7,489.00	-1,423.94	-291.07	1,446.40	2.80	2.80	TOP_GAS.MBL (TVD)
7,700.00	4.42	250.00	7,546.94	-1,425.19	-294.50	1,448.61	2.80	2.80	
7,729.87	5.26	250.00	7,576.71	-1,426.05	-296.87	1,450.14	2.80	2.80	
7,800.00	5.26	250.00	7,646.54	-1,428.25	-302.91	1,454.02	0.00	0.00	
7,900.00	5.26	250.00	7,746.12	-1,431.38	-311.53	1,459.56	0.00	0.00	
8,000.00	5.26	250.00	7,845.70	-1,434.52	-320.14	1,465.10	0.00	0.00	
8,100.00	5.26	250.00	7,945.27	-1,437.65	-328.76	1,470.64	0.00	0.00	
8,200.00	5.26	250.00	8,044.85	-1,440.79	-337.38	1,476.18	0.00	0.00	
8,300.00	5.26	250.00	8,144.43	-1,443.93	-345.99	1,481.72	0.00	0.00	
8,400.00	5.26	250.00	8,244.01	-1,447.06	-354.61	1,487.26	0.00	0.00	
8,500.00	5.26	250.00	8,343.59	-1,450.20	-363.22	1,492.79	0.00	0.00	
8,600.00	5.26	250.00	8,443.17	-1,453.33	-371.84	1,498.33	0.00	0.00	
8,700.00	5.26	250.00	8,542.75	-1,456.47	-380.45	1,503.87	0.00	0.00	
8,800.00	5.26	250.00	8,642.33	-1,459.60	-389.07	1,509.41	0.00	0.00	
8,900.00	5.26	250.00	8,741.90	-1,462.74	-397.68	1,514.95	0.00	0.00	
8,906.12	5.26	250.00	8,748.00	-1,462.93	-398.21	1,515.29	0.00	0.00	CAMEO.MBL (TVD)
9,000.00	5.26	250.00	8,841.48	-1,465.88	-406.30	1,520.49	0.00	0.00	
9,100.00	5.26	250.00	8,941.06	-1,469.01	-414.91	1,526.03	0.00	0.00	
9,200.00	5.26	250.00	9,040.64	-1,472.15	-423.53	1,531.57	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well SAVAGE 14A-20 - Slot 14A-20
Company:	Caerus Oil & Gas	TVD Reference:	30' KB @ 7944.00usft
Project:	Garfield County, CO (UTM 12N)	MD Reference:	30' KB @ 7944.00usft
Site:	S20-T7S-R94W (LONG 20F)	North Reference:	True
Well:	SAVAGE 14A-20	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100u)	Comments / Formations
9,300.00	5.26	250.00	9,140.22	-1,475.28	-432.14	1,537.11	0.00	0.00	
9,400.00	5.26	250.00	9,239.80	-1,478.42	-440.76	1,542.65	0.00	0.00	
9,458.45	5.26	250.00	9,298.00	-1,480.25	-445.79	1,545.88	0.00	0.00	ROLLINS.MBL (TVD)
9,500.00	5.26	250.00	9,339.38	-1,481.55	-449.37	1,548.18	0.00	0.00	
9,600.00	5.26	250.00	9,438.96	-1,484.69	-457.99	1,553.72	0.00	0.00	
9,609.08	5.26	250.00	9,448.00	-1,484.97	-458.77	1,554.23	0.00	0.00	TD.MBL (TVD)

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									
SAVAGE 14A-20 PBHL	0.00	0.00	9,448.00	-1,484.97	-458.77	14,330,264.00	2,511,312.80	39.421420	-107.916463
- plan hits target center									
- Ellipse (radii L200.00 W100.00 on 250.00 azi)									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
1,773.42	1,746.00	WASATCH.NPC (TVD)				
4,229.50	4,146.00	WASATCH_G.NPC (TVD)				
4,602.00	4,510.00	FORT_UNION.NPC (TVD)				
6,142.16	6,015.00	OHIO_CREEK.MBL (TVD)				
6,737.76	6,597.00	WILLIAMS_FORK.MBL (TVD)				
7,641.94	7,489.00	TOP_GAS.MBL (TVD)				
8,906.12	8,748.00	CAMEO.MBL (TVD)				
9,458.45	9,298.00	ROLLINS.MBL (TVD)				
9,609.08	9,448.00	TD.MBL (TVD)				