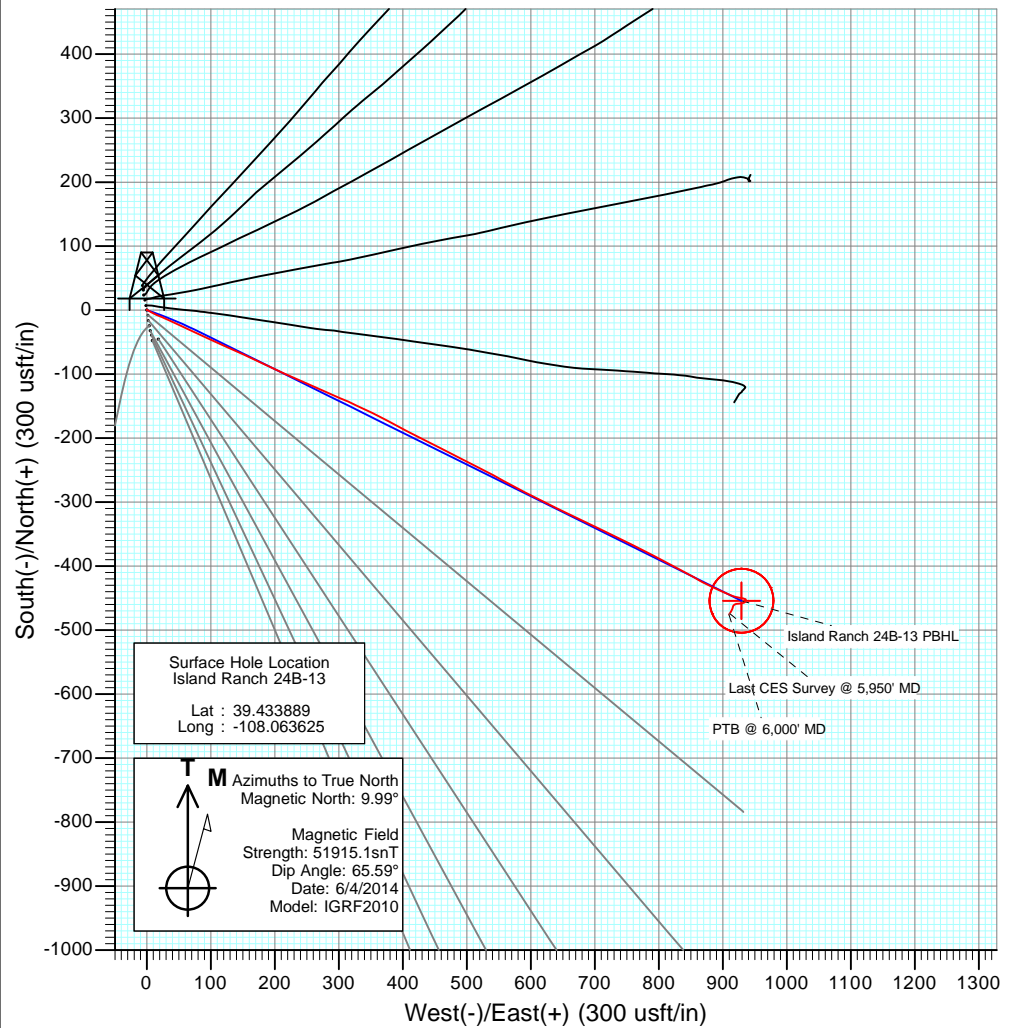
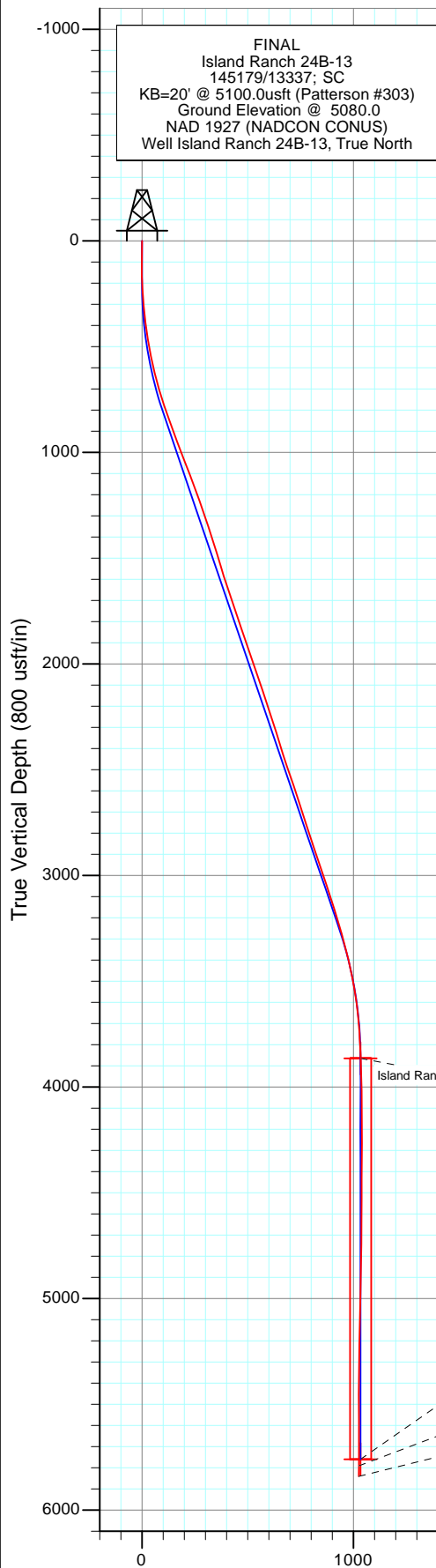


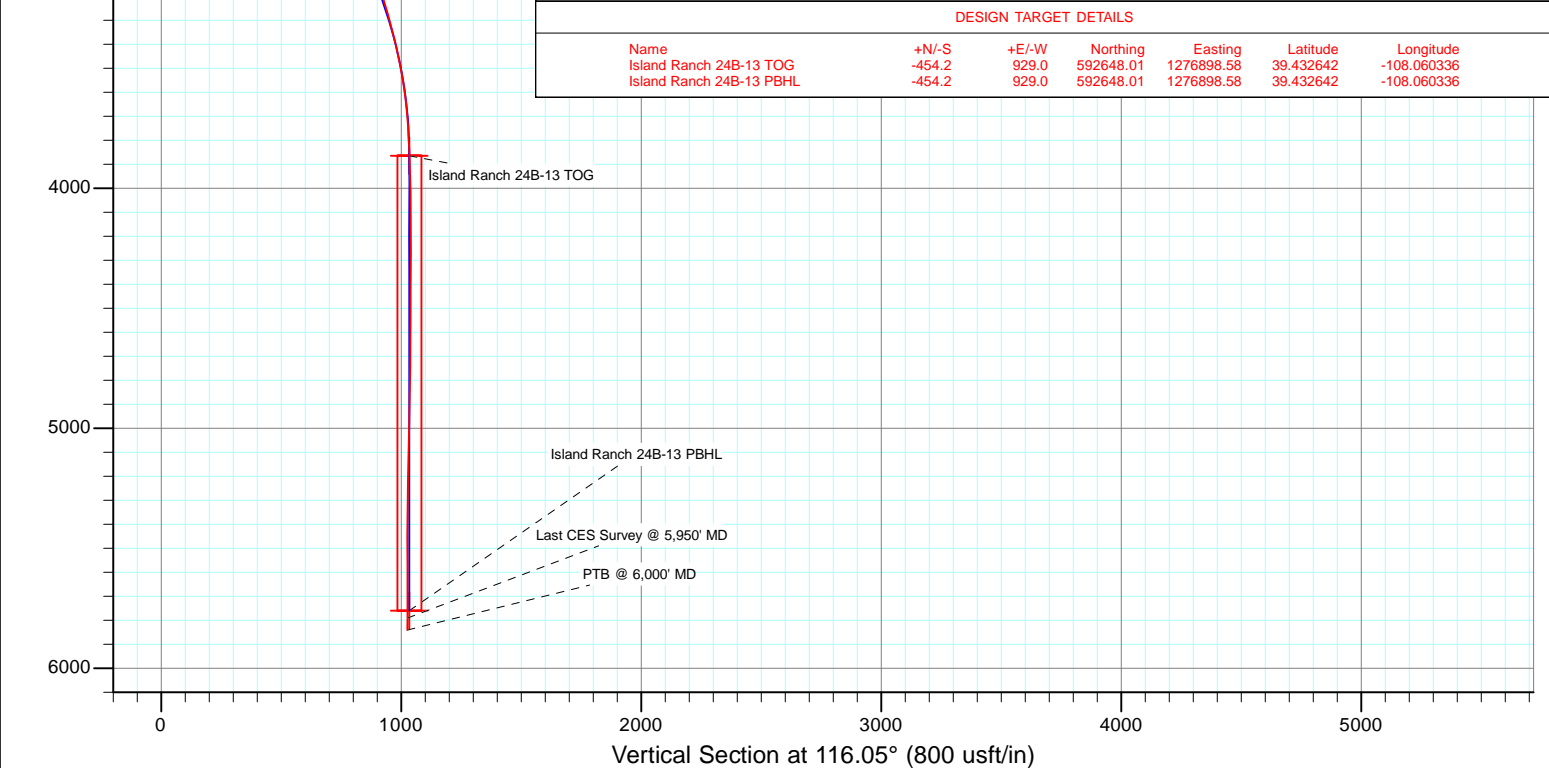


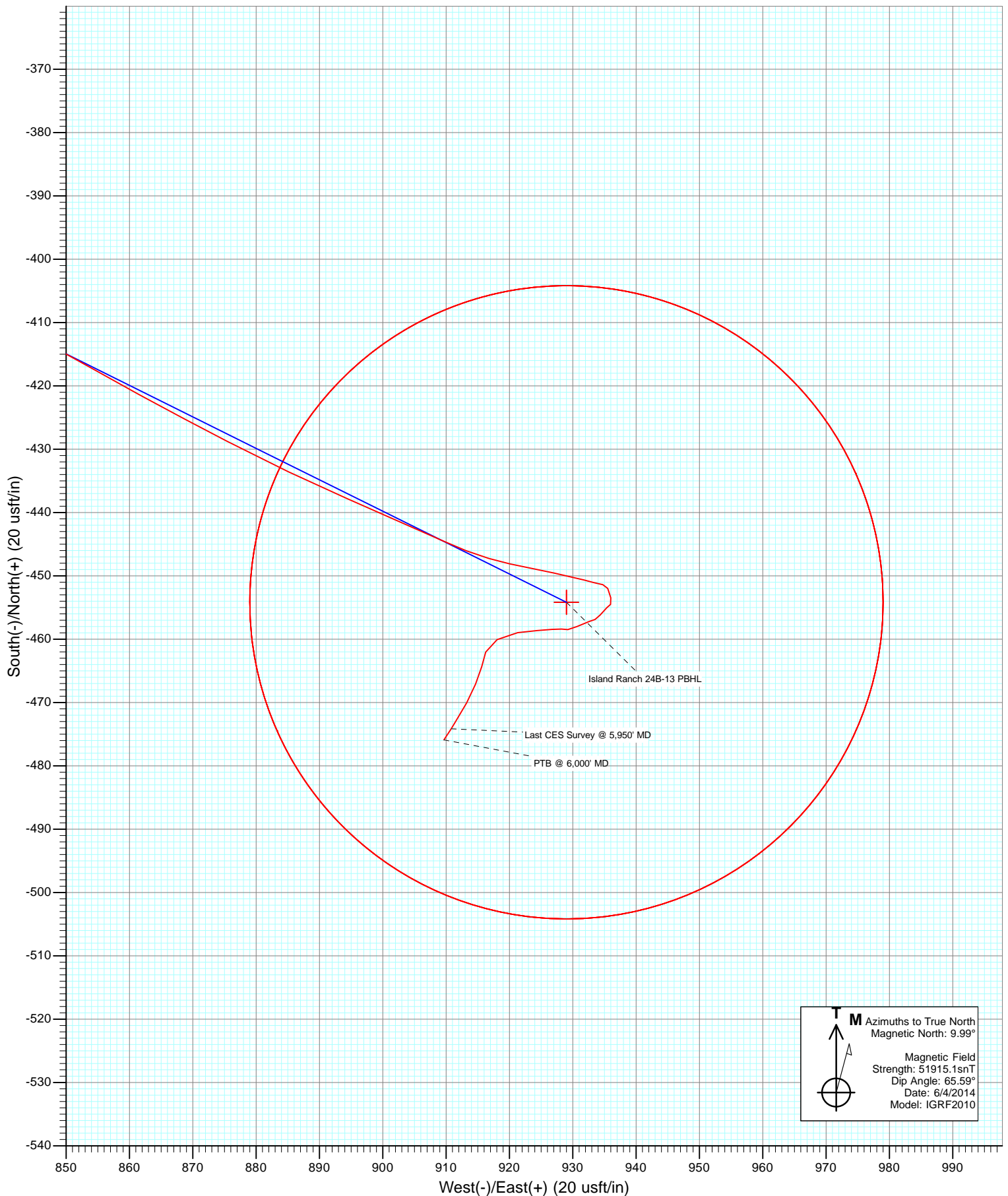
Project: Garfield County, CO  
 Site: S13-T7S-R96W (Island Ranch)  
 Well: Island Ranch 24B-13  
 Wellbore: DD  
 Design: FINAL



#### DESIGN TARGET DETAILS

Name	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Island Ranch 24B-13 TOG	-454.2	929.0	592648.01	1276898.58	39.432642	-108.060336
Island Ranch 24B-13 PBHL	-454.2	929.0	592648.01	1276898.58	39.432642	-108.060336





# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas (NAD 27)	<b>Local Co-ordinate Reference:</b>	Well Island Ranch 24B-13
<b>Project:</b>	Garfield County, CO	<b>TVD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Site:</b>	S13-T7S-R96W (Island Ranch)	<b>MD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Well:</b>	Island Ranch 24B-13	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	USA EDM 5000 Multi Users DB

<b>Project</b>	Garfield County, CO		
<b>Map System:</b>	US State Plane 1927 (Exact solution)	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	NAD 1927 (NADCON CONUS)		
<b>Map Zone:</b>	Colorado Central 502		

Site		S13-T7S-R96W (Island Ranch)			
Site Position:		Northing:	593,103.71 usft	Latitude:	39.433822
From:	Lat/Long	Easting:	1,275,986.01 usft	Longitude:	-108.063611
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.62 °

Well	Island Ranch 24B-13					
Well Position	+N/-S	0.0 usft	Northing:	593,128.20 usft	Latitude:	39.433889
	+E/-W	0.0 usft	Easting:	1,275,982.75 usft	Longitude:	-108.063625
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	5,080.0 usft

<b>Wellbore</b>	DD				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	6/4/2014	9.99	65.59	51,915

<b>Design</b>	FINAL				
<b>Audit Notes:</b>					
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Direction (°)</b>	
	0.0	0.0	0.0	116.05	

<b>Survey Program</b>	<b>Date</b>	6/9/2014			
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>	
145.0	6,000.0	Survey #1 (DD)	ISCWSA MWD	MWD - Standard	

<b>Survey</b>										
<b>Measured Depth (usft)</b>	<b>Inclination (°)</b>	<b>Azimuth (°)</b>	<b>Vertical Depth (usft)</b>	<b>+N/-S (usft)</b>	<b>+E/-W (usft)</b>	<b>Vertical Section (usft)</b>	<b>Dogleg Rate (°/100usf)</b>	<b>Build Rate (°/100u)</b>	<b>Formations / Comments</b>	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00		
145.0	0.40	358.10	145.0	0.5	0.0	-0.2	0.28	0.28		
205.0	2.30	124.70	205.0	0.0	1.0	0.9	4.26	3.17		
267.0	5.10	119.70	266.8	-2.0	4.4	4.8	4.54	4.52		
329.0	6.40	117.80	328.5	-5.0	9.8	11.0	2.12	2.10		
420.0	7.40	111.30	418.9	-9.5	19.8	22.0	1.39	1.10		
512.0	9.90	115.30	509.8	-15.0	32.5	35.8	2.79	2.72		
604.0	13.10	115.00	600.0	-22.8	49.1	54.1	3.48	3.48		
695.0	16.10	114.80	688.0	-32.5	69.9	77.0	3.30	3.30		
787.0	18.40	115.00	775.9	-44.0	94.6	104.3	2.50	2.50		
875.0	20.00	114.30	859.0	-56.0	120.9	133.2	1.84	1.82		
970.0	20.60	113.80	948.1	-69.5	151.0	166.2	0.66	0.63		
1,073.0	21.10	115.90	1,044.3	-84.9	184.3	202.8	0.87	0.49		

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas (NAD 27)	<b>Local Co-ordinate Reference:</b>	Well Island Ranch 24B-13
<b>Project:</b>	Garfield County, CO	<b>TVD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Site:</b>	S13-T7S-R96W (Island Ranch)	<b>MD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Well:</b>	Island Ranch 24B-13	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
1,168.0	20.50	114.20	1,133.1	-99.2	214.8	236.5	0.90	-0.63	
1,264.0	20.30	113.50	1,223.1	-112.7	245.4	270.0	0.33	-0.21	
1,359.0	18.20	114.00	1,312.8	-125.3	274.1	301.3	2.22	-2.21	
1,454.0	18.20	113.40	1,403.0	-137.2	301.3	330.9	0.20	0.00	
1,549.0	16.50	115.40	1,493.7	-148.9	327.1	359.2	1.90	-1.79	
1,644.0	17.60	115.40	1,584.5	-160.9	352.2	387.1	1.16	1.16	
1,739.0	18.80	118.60	1,674.8	-174.4	378.6	416.7	1.64	1.26	
1,834.0	18.80	117.60	1,764.7	-188.8	405.7	447.3	0.34	0.00	
1,929.0	18.70	116.70	1,854.7	-202.7	432.8	477.9	0.32	-0.11	
2,024.0	19.00	117.00	1,944.6	-216.6	460.2	508.6	0.33	0.32	
2,119.0	19.10	116.40	2,034.4	-230.5	487.9	539.6	0.23	0.11	
2,214.0	18.40	117.40	2,124.3	-244.3	515.1	570.1	0.81	-0.74	
2,310.0	18.10	118.20	2,215.5	-258.3	541.7	600.1	0.41	-0.31	
2,404.0	17.50	117.90	2,305.0	-271.8	567.1	628.9	0.65	-0.64	
2,499.0	17.20	119.00	2,395.7	-285.3	592.0	657.2	0.47	-0.32	
2,595.0	19.20	116.00	2,486.9	-299.1	618.6	687.1	2.30	2.08	
2,690.0	18.50	115.30	2,576.8	-312.4	646.3	717.8	0.77	-0.74	
2,785.0	17.90	115.80	2,667.0	-325.2	673.0	747.5	0.65	-0.63	
2,880.0	17.10	115.70	2,757.6	-337.6	698.8	776.1	0.84	-0.84	
2,975.0	19.30	116.00	2,847.9	-350.6	725.5	805.7	2.32	2.32	
3,070.0	19.40	116.60	2,937.5	-364.5	753.7	837.2	0.23	0.11	
3,165.0	18.20	117.30	3,027.4	-378.4	781.0	867.8	1.29	-1.26	
3,260.0	17.40	117.30	3,117.9	-391.7	806.8	896.9	0.84	-0.84	
3,355.0	16.50	118.50	3,208.8	-404.7	831.3	924.5	1.02	-0.95	
3,450.0	15.70	119.20	3,300.0	-417.4	854.3	950.8	0.87	-0.84	
3,545.0	13.50	117.30	3,392.0	-428.7	875.4	974.8	2.37	-2.32	
3,641.0	11.80	113.50	3,485.6	-437.8	894.4	995.8	1.97	-1.77	
3,736.0	8.00	114.30	3,579.2	-444.4	909.3	1,012.1	4.00	-4.00	
3,831.0	5.80	101.80	3,673.5	-448.1	920.0	1,023.4	2.79	-2.32	
3,926.0	2.80	101.40	3,768.2	-449.5	927.0	1,030.3	3.16	-3.16	
4,021.0	3.10	104.60	3,863.1	-450.6	931.8	1,035.0	0.36	0.32	
4,116.0	0.60	100.00	3,958.1	-451.4	934.8	1,038.0	2.63	-2.63	
4,211.0	0.70	151.20	4,053.1	-452.0	935.5	1,039.0	0.60	0.11	
4,306.0	1.20	167.90	4,148.0	-453.4	936.0	1,040.1	0.60	0.53	
4,401.0	0.30	252.70	4,243.0	-454.5	936.0	1,040.5	1.27	-0.95	
4,496.0	0.70	218.50	4,338.0	-455.0	935.4	1,040.2	0.51	0.42	
4,591.0	1.20	225.00	4,433.0	-456.2	934.3	1,039.7	0.54	0.53	
4,686.0	0.10	277.80	4,528.0	-456.9	933.5	1,039.3	1.20	-1.16	
4,781.0	1.10	249.00	4,623.0	-457.2	932.6	1,038.6	1.07	1.05	
4,876.0	1.40	245.60	4,718.0	-458.0	930.7	1,037.3	0.33	0.32	
4,971.0	0.50	270.90	4,813.0	-458.5	929.2	1,036.2	1.02	-0.95	
5,066.0	0.70	275.80	4,908.0	-458.4	928.2	1,035.2	0.22	0.21	
5,161.0	1.10	263.70	5,003.0	-458.4	926.7	1,033.9	0.46	0.42	
5,256.0	1.70	266.90	5,097.9	-458.6	924.4	1,031.9	0.64	0.63	
5,351.0	2.10	261.20	5,192.9	-459.0	921.3	1,029.3	0.47	0.42	
5,446.0	2.10	241.40	5,287.8	-460.1	918.1	1,026.8	0.76	0.00	
5,541.0	1.40	193.30	5,382.8	-462.0	916.3	1,026.1	1.65	-0.74	
5,636.0	1.50	196.80	5,477.7	-464.3	915.6	1,026.5	0.14	0.11	
5,731.0	2.00	201.40	5,572.7	-467.1	914.7	1,026.9	0.55	0.53	
5,826.0	2.00	210.00	5,667.6	-470.1	913.2	1,026.9	0.32	0.00	
5,921.0	2.30	211.10	5,762.6	-473.1	911.4	1,026.6	0.32	0.32	
5,950.0	2.40	212.50	5,791.5	-474.1	910.8	1,026.5	0.40	0.34	Last CES Survey @ 5,950' MD
6,000.0	2.40	212.50	5,841.5	-475.9	909.7	1,026.3	0.00	0.00	PTB @ 6,000' MD

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas (NAD 27)	<b>Local Co-ordinate Reference:</b>	Well Island Ranch 24B-13
<b>Project:</b>	Garfield County, CO	<b>TVD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Site:</b>	S13-T7S-R96W (Island Ranch)	<b>MD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Well:</b>	Island Ranch 24B-13	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	FINAL	<b>Database:</b>	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
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### 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
Island Ranch 24B-13 PE - actual wellpath misses target center by 25.7usft at 5917.5usft MD (5759.1 TVD, -473.0 N, 911.5 E) - Circle (radius 50.0)	0.00	0.00	5,760.0	-454.2	929.0	592,648.01	1,276,898.58	39.432642	-108.060336
Island Ranch 24B-13 TC - actual wellpath misses target center by 4.5usft at 4022.8usft MD (3864.9 TVD, -450.7 N, 931.9 E) - Circle (radius 50.0)	0.00	0.00	3,865.0	-454.2	929.0	592,648.01	1,276,898.58	39.432642	-108.060336

### Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
5,950.0	5,791.5	-474.1	910.8	Last CES Survey @ 5,950' MD
6,000.0	5,841.5	-475.9	909.7	PTB @ 6,000' MD

Checked By: \_\_\_\_\_ Approved By: \_\_\_\_\_ Date: \_\_\_\_\_