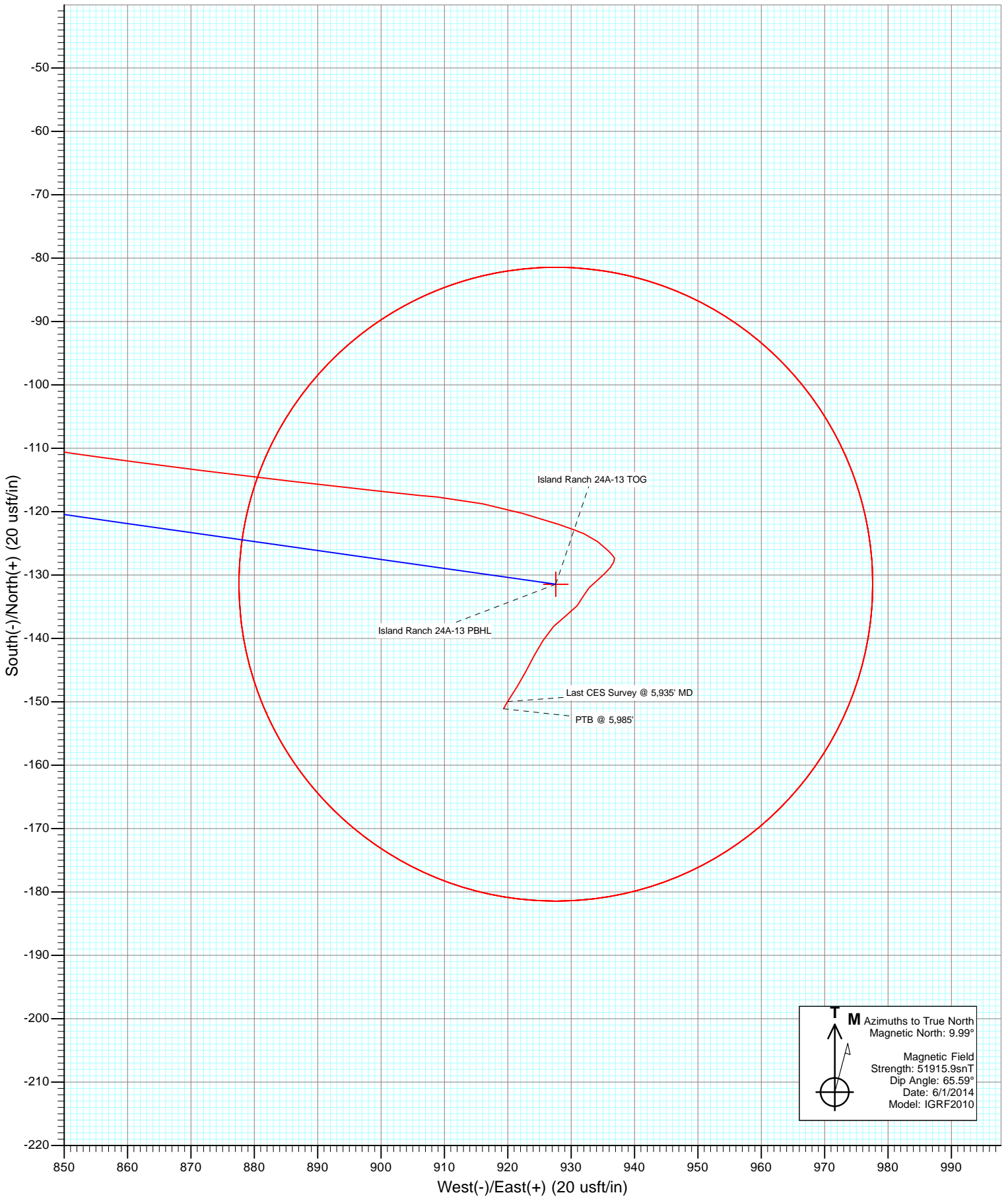




Project: Garfield County, CO  
Site: S13-T7S-R96W (Island Ranch)  
Well: Island Ranch 24A-13  
Wellbore: DD  
Design: SURVEYS



# Cathedral Energy Services

## Survey Report

<b>Company:</b> Caerus Oil & Gas (NAD 27)	<b>Local Co-ordinate Reference:</b> Well Island Ranch 24A-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 24A-13	<b>North Reference:</b> True
<b>Wellbore:</b> DD	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> SURVEYS	<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		

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

<b>Well</b> Island Ranch 24A-13				
<b>Well Position</b>	<b>+N/-S</b>	0.0 usft	<b>Northing:</b>	593,135.14 usft
	<b>+E/-W</b>	0.0 usft	<b>Easting:</b>	1,275,981.25 usft
<b>Position Uncertainty</b>		0.0 usft	<b>Wellhead Elevation:</b>	usft
			<b>Latitude:</b>	39.433908
			<b>Longitude:</b>	-108.063631
			<b>Ground Level:</b>	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	6/1/2014	9.99	65.59	51,916

<b>Design</b> SURVEYS				
<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	98.06

<b>Survey Program</b>		<b>Date</b> 6/5/2014
<b>From (usft)</b>	<b>To (usft)</b>	<b>Survey (Wellbore)</b>
145.0	5,985.0	Survey #1 (DD)
		<b>Tool Name</b> ISCWSA MWD
		<b>Description</b> MWD - Standard

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
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
145.0	0.20	348.30	145.0	0.2	-0.1	-0.1	0.14	0.14	
205.0	0.80	90.20	205.0	0.3	0.3	0.3	1.44	1.00	
267.0	1.50	87.30	267.0	0.4	1.6	1.5	1.13	1.13	
328.0	2.20	97.20	328.0	0.3	3.5	3.5	1.26	1.15	
420.0	5.10	91.90	419.8	-0.1	9.4	9.3	3.17	3.15	
512.0	9.40	101.20	511.0	-1.7	20.9	20.9	4.83	4.67	
604.0	12.40	95.80	601.3	-4.1	38.1	38.3	3.44	3.26	
695.0	12.90	96.00	690.1	-6.2	57.9	58.2	0.55	0.55	
786.0	14.80	96.00	778.5	-8.5	79.5	79.9	2.09	2.09	
875.0	18.20	98.00	863.8	-11.6	104.6	105.2	3.87	3.82	
953.0	18.40	98.40	937.9	-15.1	128.9	129.7	0.30	0.26	
1,073.0	19.20	98.70	1,051.5	-20.8	167.1	168.4	0.67	0.67	

# Cathedral Energy Services

## Survey Report

<b>Company:</b>	Caerus Oil & Gas (NAD 27)	<b>Local Co-ordinate Reference:</b>	Well Island Ranch 24A-13
<b>Project:</b>	Garfield County, CO	<b>TD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Site:</b>	S13-T7S-R96W (Island Ranch)	<b>MVD Reference:</b>	KB=20' @ 5100.0usft (Patterson #303)
<b>Well:</b>	Island Ranch 24A-13	<b>North Reference:</b>	True
<b>Wellbore:</b>	DD	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	SURVEYS	<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	18.10	98.80	1,141.5	-25.4	197.1	198.7	1.16	-1.16	
1,264.0	17.40	98.70	1,232.9	-29.9	226.0	228.0	0.73	-0.73	
1,359.0	17.00	99.40	1,323.6	-34.3	253.8	256.1	0.47	-0.42	
1,454.0	16.10	94.90	1,414.7	-37.7	280.6	283.1	1.65	-0.95	
1,549.0	17.40	98.60	1,505.7	-41.0	307.8	310.5	1.77	1.37	
1,644.0	16.70	97.00	1,596.5	-44.7	335.4	338.3	0.89	-0.74	
1,739.0	18.00	97.70	1,687.2	-48.4	363.5	366.7	1.39	1.37	
1,834.0	17.60	97.40	1,777.6	-52.2	392.3	395.7	0.43	-0.42	
1,929.0	18.00	98.50	1,868.1	-56.2	421.0	424.8	0.55	0.42	
2,024.0	17.60	97.90	1,958.5	-60.4	449.8	453.8	0.46	-0.42	
2,119.0	17.40	98.70	2,049.1	-64.5	478.0	482.4	0.33	-0.21	
2,214.0	16.70	99.00	2,140.0	-68.8	505.6	510.2	0.74	-0.74	
2,310.0	19.50	99.80	2,231.2	-73.7	535.0	540.0	2.93	2.92	
2,404.0	19.10	101.10	2,319.9	-79.3	565.5	571.1	0.62	-0.43	
2,499.0	18.60	102.40	2,409.8	-85.5	595.6	601.7	0.69	-0.53	
2,595.0	18.40	98.20	2,500.9	-91.0	625.5	632.1	1.40	-0.21	
2,690.0	17.60	99.00	2,591.2	-95.4	654.6	661.5	0.88	-0.84	
2,785.0	17.30	93.10	2,681.9	-98.4	682.9	689.9	1.89	-0.32	
2,880.0	16.50	93.10	2,772.8	-99.9	710.4	717.4	0.84	-0.84	
2,975.0	15.70	93.60	2,864.0	-101.4	736.7	743.7	0.85	-0.84	
3,070.0	14.70	94.60	2,955.7	-103.2	761.6	768.5	1.09	-1.05	
3,165.0	13.30	94.90	3,047.9	-105.1	784.5	791.5	1.48	-1.47	
3,260.0	12.30	93.30	3,140.5	-106.6	805.5	812.5	1.12	-1.05	
3,355.0	11.20	93.30	3,233.5	-107.7	824.8	831.7	1.16	-1.16	
3,450.0	10.50	98.50	3,326.8	-109.5	842.5	849.6	1.27	-0.74	
3,545.0	9.50	97.40	3,420.4	-111.8	858.9	866.1	1.07	-1.05	
3,641.0	8.60	97.50	3,515.2	-113.8	873.9	881.2	0.94	-0.94	
3,736.0	7.70	96.00	3,609.2	-115.4	887.2	894.6	0.97	-0.95	
3,831.0	7.00	96.60	3,703.4	-116.7	899.3	906.8	0.74	-0.74	
3,926.0	4.60	94.90	3,798.0	-117.7	908.9	916.4	2.53	-2.53	
4,021.0	4.20	102.50	3,892.7	-118.8	916.0	923.7	0.74	-0.42	
4,116.0	3.70	104.80	3,987.4	-120.3	922.4	930.2	0.55	-0.53	
4,211.0	3.50	108.80	4,082.3	-122.0	928.1	936.1	0.34	-0.21	
4,306.0	1.60	114.70	4,177.2	-123.5	932.1	940.2	2.02	-2.00	
4,401.0	1.40	126.10	4,272.1	-124.7	934.2	942.5	0.38	-0.21	
4,496.0	1.40	135.10	4,367.1	-126.2	936.0	944.4	0.23	0.00	
4,591.0	0.30	166.50	4,462.1	-127.3	936.8	945.4	1.22	-1.16	
4,686.0	0.50	204.90	4,557.1	-127.9	936.7	945.4	0.34	0.21	
4,781.0	0.70	216.50	4,652.1	-128.8	936.2	945.0	0.25	0.21	
4,876.0	0.90	228.80	4,747.1	-129.7	935.3	944.3	0.28	0.21	
4,971.0	1.20	226.30	4,842.1	-130.9	934.0	943.1	0.32	0.32	
5,066.0	0.70	228.90	4,937.0	-132.0	932.9	942.2	0.53	-0.53	
5,161.0	1.10	206.40	5,032.0	-133.2	932.0	941.5	0.55	0.42	
5,256.0	1.30	218.50	5,127.0	-134.8	930.9	940.7	0.34	0.21	
5,351.0	1.50	236.40	5,222.0	-136.4	929.2	939.2	0.50	0.21	
5,446.0	1.70	222.40	5,316.9	-138.1	927.3	937.5	0.46	0.21	
5,541.0	1.70	211.40	5,411.9	-140.3	925.6	936.1	0.34	0.00	
5,636.0	1.60	209.60	5,506.9	-142.7	924.2	935.1	0.12	-0.11	
5,731.0	1.80	206.10	5,601.8	-145.2	922.9	934.1	0.24	0.21	
5,826.0	1.50	214.70	5,696.8	-147.5	921.5	933.1	0.41	-0.32	
5,935.0	1.50	209.70	5,805.7	-150.0	920.0	931.9	0.12	0.00	Last CES Survey @ 5,935' MD
5,985.0	1.50	209.70	5,855.7	-151.1	919.3	931.4	0.00	0.00	PTB @ 5,985'

# Cathedral Energy Services

## Survey Report

<b>Company:</b> Caerus Oil & Gas (NAD 27)	<b>Local Co-ordinate Reference:</b> Well Island Ranch 24A-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 24A-13	<b>North Reference:</b> True
<b>Wellbore:</b> DD	<b>Survey Calculation Method:</b> Minimum Curvature
<b>Design:</b> SURVEYS	<b>Database:</b> USA EDM 5000 Multi Users DB

Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
Island Ranch 24A-13 TC	0.00	0.00	3,885.0	-131.4	927.6	592,977.59	1,276,904.76	39.433547	-108.060347
- actual wellpath misses target center by 17.6usft at 4014.4usft MD (3886.1 TVD, -118.7 N, 915.6 E)									
- Circle (radius 50.0)									
Island Ranch 24A-13 PE	0.00	0.00	5,779.0	-131.4	927.6	592,977.59	1,276,904.76	39.433547	-108.060347
- actual wellpath misses target center by 19.3usft at 5907.7usft MD (5778.5 TVD, -149.3 N, 920.3 E)									
- Circle (radius 50.0)									

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
5,935.0	5,805.7	-150.0	920.0	Last CES Survey @ 5,935' MD	
5,985.0	5,855.7	-151.1	919.3	PTB @ 5,985'	

Checked By: _____	Approved By: _____	Date: _____
-------------------	--------------------	-------------