

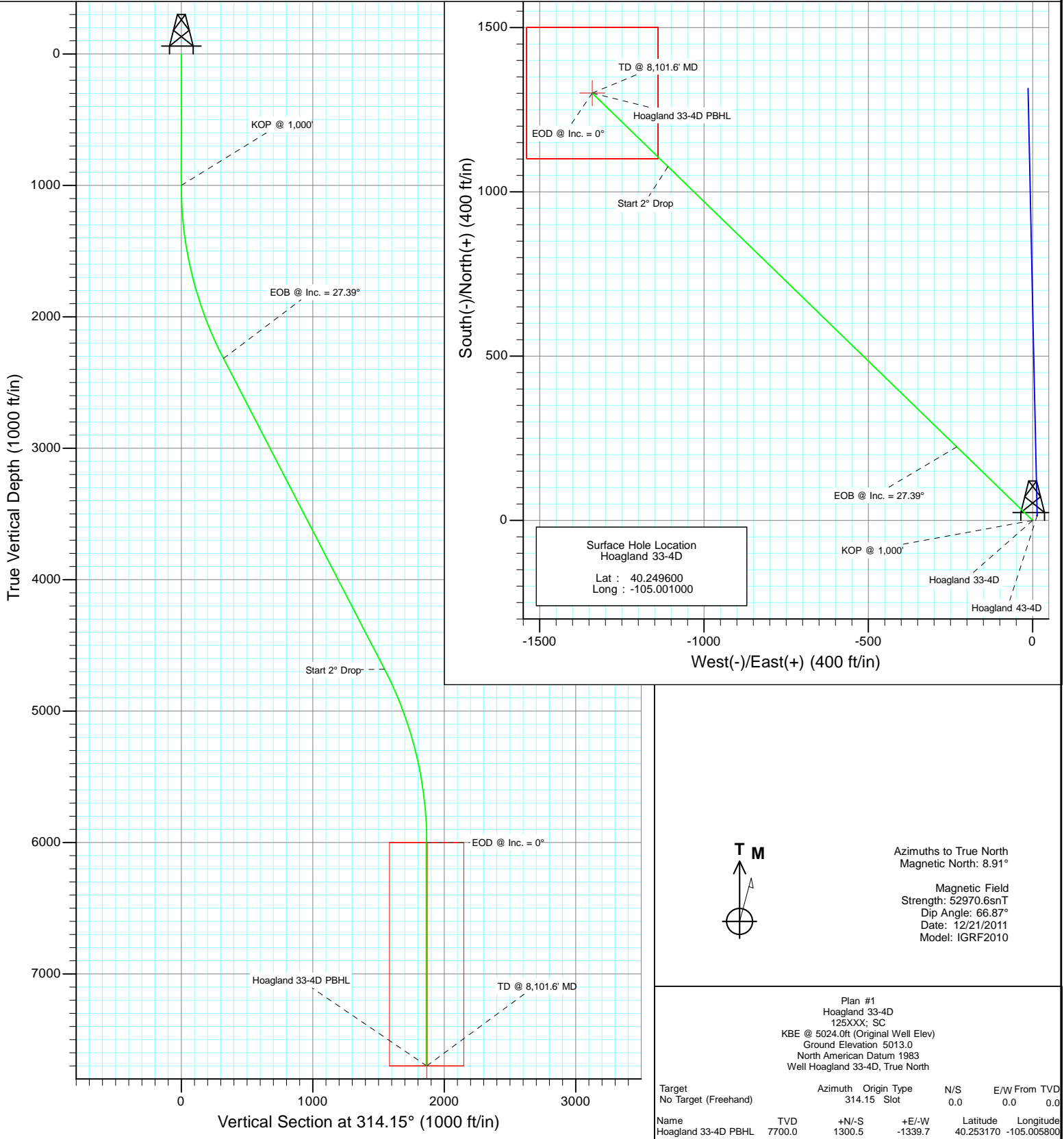


Project: Weld County, CO  
Site: Sec 4-T3N-R68W (Hoagland)  
Well: Hoagland 33-4D  
Wellbore: OH  
Design: Plan #1



#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1000.0	0.00	0.00	1000.0	0.0	0.0	0.00	0.00	0.0	
3	2369.4	27.39	314.15	2317.9	223.7	-230.4	2.00	314.15	321.1	
4	5032.2	27.39	314.15	4682.1	1076.9	-1109.3	0.00	0.00	1546.0	
5	6401.6	0.00	0.00	6000.0	1300.5	-1339.7	2.00	180.00	1867.2	
6	8101.6	0.00	0.00	7700.0	1300.5	-1339.7	0.00	0.00	1867.2	Hoagland 33-4D PBHL



# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Hoagland 33-4D
<b>Company:</b>	Apollo Operating, LLC	<b>TVD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Site:</b>	Sec 4-T3N-R68W (Hoagland)	<b>North Reference:</b>	True
<b>Well:</b>	Hoagland 33-4D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

<b>Project</b>	Weld County, CO		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		
<b>Map Zone:</b>	Colorado Northern Zone		

Site		Sec 4-T3N-R68W (Hoagland)			
Site Position:		Northing:	1,334,180.19 ft	Latitude:	40.249640
From:	Lat/Long	Easting:	3,139,304.40 ft	Longitude:	-105.000950
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.32 °

Well	Hoagland 33-4D					
Well Position	+N/-S	0.0 ft	Northing:	1,334,165.54 ft	Latitude:	40.249600
	+E/-W	0.0 ft	Easting:	3,139,290.53 ft	Longitude:	-105.001000
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,013.0 ft

<b>Wellbore</b>	OH				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	12/21/2011	8.91	66.87	52,971

<b>Design</b>	Plan #1			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PLAN	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	314.15

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,369.4	27.39	314.15	2,317.9	223.7	-230.4	2.00	2.00	0.00	314.15	
5,032.2	27.39	314.15	4,682.1	1,076.9	-1,109.3	0.00	0.00	0.00	0.00	
6,401.6	0.00	0.00	6,000.0	1,300.5	-1,339.7	2.00	-2.00	0.00	180.00	
8,101.6	0.00	0.00	7,700.0	1,300.5	-1,339.7	0.00	0.00	0.00	0.00	Hoagland 33-4D PBH

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Hoagland 33-4D
<b>Company:</b>	Apollo Operating, LLC	<b>TVD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Site:</b>	Sec 4-T3N-R68W (Hoagland)	<b>North Reference:</b>	True
<b>Well:</b>	Hoagland 33-4D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1,000'
1,100.0	2.00	314.15	1,100.0	1.2	-1.3	1.7	2.00	2.00	
1,200.0	4.00	314.15	1,199.8	4.9	-5.0	7.0	2.00	2.00	
1,300.0	6.00	314.15	1,299.5	10.9	-11.3	15.7	2.00	2.00	
1,400.0	8.00	314.15	1,398.7	19.4	-20.0	27.9	2.00	2.00	
1,500.0	10.00	314.15	1,497.5	30.3	-31.2	43.5	2.00	2.00	
1,600.0	12.00	314.15	1,595.6	43.6	-44.9	62.6	2.00	2.00	
1,700.0	14.00	314.15	1,693.1	59.3	-61.1	85.1	2.00	2.00	
1,800.0	16.00	314.15	1,789.6	77.3	-79.6	111.0	2.00	2.00	
1,900.0	18.00	314.15	1,885.3	97.7	-100.6	140.2	2.00	2.00	
2,000.0	20.00	314.15	1,979.8	120.3	-124.0	172.8	2.00	2.00	
2,100.0	22.00	314.15	2,073.2	145.3	-149.7	208.6	2.00	2.00	
2,200.0	24.00	314.15	2,165.2	172.5	-177.7	247.7	2.00	2.00	
2,300.0	26.00	314.15	2,255.8	201.9	-208.0	289.9	2.00	2.00	
2,369.4	27.39	314.15	2,317.9	223.7	-230.4	321.1	2.00	2.00	EOB @ Inc. = 27.39°
2,400.0	27.39	314.15	2,345.0	233.5	-240.5	335.2	0.00	0.00	
2,500.0	27.39	314.15	2,433.8	265.5	-273.5	381.2	0.00	0.00	
2,600.0	27.39	314.15	2,522.6	297.6	-306.5	427.2	0.00	0.00	
2,700.0	27.39	314.15	2,611.4	329.6	-339.5	473.2	0.00	0.00	
2,800.0	27.39	314.15	2,700.2	361.6	-372.5	519.2	0.00	0.00	
2,900.0	27.39	314.15	2,789.0	393.7	-405.5	565.2	0.00	0.00	
3,000.0	27.39	314.15	2,877.8	425.7	-438.6	611.2	0.00	0.00	
3,100.0	27.39	314.15	2,966.5	457.8	-471.6	657.2	0.00	0.00	
3,200.0	27.39	314.15	3,055.3	489.8	-504.6	703.2	0.00	0.00	
3,300.0	27.39	314.15	3,144.1	521.8	-537.6	749.2	0.00	0.00	
3,400.0	27.39	314.15	3,232.9	553.9	-570.6	795.2	0.00	0.00	
3,500.0	27.39	314.15	3,321.7	585.9	-603.6	841.2	0.00	0.00	
3,600.0	27.39	314.15	3,410.5	618.0	-636.6	887.2	0.00	0.00	
3,700.0	27.39	314.15	3,499.3	650.0	-669.6	933.2	0.00	0.00	
3,800.0	27.39	314.15	3,588.1	682.1	-702.6	979.2	0.00	0.00	
3,900.0	27.39	314.15	3,676.9	714.1	-735.6	1,025.2	0.00	0.00	
4,000.0	27.39	314.15	3,765.7	746.1	-768.6	1,071.2	0.00	0.00	
4,100.0	27.39	314.15	3,854.5	778.2	-801.6	1,117.2	0.00	0.00	
4,200.0	27.39	314.15	3,943.2	810.2	-834.7	1,163.2	0.00	0.00	
4,300.0	27.39	314.15	4,032.0	842.3	-867.7	1,209.2	0.00	0.00	
4,400.0	27.39	314.15	4,120.8	874.3	-900.7	1,255.2	0.00	0.00	
4,500.0	27.39	314.15	4,209.6	906.4	-933.7	1,301.2	0.00	0.00	
4,600.0	27.39	314.15	4,298.4	938.4	-966.7	1,347.2	0.00	0.00	
4,700.0	27.39	314.15	4,387.2	970.4	-999.7	1,393.2	0.00	0.00	
4,800.0	27.39	314.15	4,476.0	1,002.5	-1,032.7	1,439.2	0.00	0.00	
4,900.0	27.39	314.15	4,564.8	1,034.5	-1,065.7	1,485.3	0.00	0.00	
5,000.0	27.39	314.15	4,653.6	1,066.6	-1,098.7	1,531.3	0.00	0.00	

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Hoagland 33-4D
<b>Company:</b>	Apollo Operating, LLC	<b>TVD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Site:</b>	Sec 4-T3N-R68W (Hoagland)	<b>North Reference:</b>	True
<b>Well:</b>	Hoagland 33-4D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

### Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Comments / Formations
5,032.2	27.39	314.15	4,682.1	1,076.9	-1,109.3	1,546.0	0.00	0.00	Start 2° Drop
5,100.0	26.03	314.15	4,742.7	1,098.1	-1,131.2	1,576.5	2.00	-2.00	
5,200.0	24.03	314.15	4,833.3	1,127.6	-1,161.6	1,618.9	2.00	-2.00	
5,300.0	22.03	314.15	4,925.3	1,154.8	-1,189.6	1,658.0	2.00	-2.00	
5,400.0	20.03	314.15	5,018.7	1,179.8	-1,215.4	1,693.9	2.00	-2.00	
5,500.0	18.03	314.15	5,113.2	1,202.5	-1,238.8	1,726.5	2.00	-2.00	
5,600.0	16.03	314.15	5,208.8	1,222.9	-1,259.8	1,755.8	2.00	-2.00	
5,700.0	14.03	314.15	5,305.4	1,241.0	-1,278.4	1,781.7	2.00	-2.00	
5,800.0	12.03	314.15	5,402.8	1,256.7	-1,294.6	1,804.2	2.00	-2.00	
5,900.0	10.03	314.15	5,501.0	1,270.0	-1,308.3	1,823.4	2.00	-2.00	
6,000.0	8.03	314.15	5,599.7	1,281.0	-1,319.6	1,839.1	2.00	-2.00	
6,100.0	6.03	314.15	5,699.0	1,289.5	-1,328.4	1,851.3	2.00	-2.00	
6,200.0	4.03	314.15	5,798.6	1,295.6	-1,334.7	1,860.1	2.00	-2.00	
6,300.0	2.03	314.15	5,898.4	1,299.3	-1,338.5	1,865.4	2.00	-2.00	
6,401.6	0.00	0.00	6,000.0	1,300.5	-1,339.7	1,867.2	2.00	-2.00	EOD @ Inc. = 0°
6,500.0	0.00	0.00	6,098.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
6,600.0	0.00	0.00	6,198.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
6,700.0	0.00	0.00	6,298.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
6,800.0	0.00	0.00	6,398.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
6,900.0	0.00	0.00	6,498.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,000.0	0.00	0.00	6,598.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,100.0	0.00	0.00	6,698.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,200.0	0.00	0.00	6,798.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,300.0	0.00	0.00	6,898.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,400.0	0.00	0.00	6,998.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,500.0	0.00	0.00	7,098.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,600.0	0.00	0.00	7,198.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,700.0	0.00	0.00	7,298.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,800.0	0.00	0.00	7,398.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
7,900.0	0.00	0.00	7,498.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
8,000.0	0.00	0.00	7,598.4	1,300.5	-1,339.7	1,867.2	0.00	0.00	
8,101.6	0.00	0.00	7,700.0	1,300.5	-1,339.7	1,867.2	0.00	0.00	TD @ 8,101.6' MD

### Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
Hoagland 33-4D PBHL	0.00	0.00	7,700.0	1,300.5	-1,339.7	1,335,458.53	3,137,943.48	40.253170	-105.005800
- plan hits target center									
- Rectangle (sides W400.0 H400.0 D0.0)									

# Cathedral Energy Services

## Planning Report

<b>Database:</b>	USA EDM 5000 Multi Users DB	<b>Local Co-ordinate Reference:</b>	Well Hoagland 33-4D
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<b>Project:</b>	Weld County, CO	<b>MD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Site:</b>	Sec 4-T3N-R68W (Hoagland)	<b>North Reference:</b>	True
<b>Well:</b>	Hoagland 33-4D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	OH		
<b>Design:</b>	Plan #1		

### Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP @ 1,000'
2,369.4	2,317.9	223.7	-230.4	EOB @ Inc. = 27.39°
5,032.2	4,682.1	1,076.9	-1,109.3	Start 2° Drop
6,401.6	6,000.0	1,300.5	-1,339.7	EOD @ Inc. = 0°
8,101.6	7,700.0	1,300.5	-1,339.7	TD @ 8,101.6' MD

# **Apollo Operating, LLC**

**Weld County, CO**

**Sec 4-T3N-R68W (Hoagland)**

**Hoagland 33-4D**

**OH**

**Plan #1**

## **Anticollision Report**

**21 December, 2011**

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Apollo Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Hoagland 33-4D
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 4-T3N-R68W (Hoagland)	<b>MD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hoagland 33-4D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference	Plan #1		
Filter type:	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
Interpolation Method:	MD Interval 100.0ft	Error Model:	ISCWSA
Depth Range:	Unlimited	Scan Method:	Closest Approach 3D
Results Limited by:	Maximum center-center distance of 500.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	12/21/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	8,101.6	Plan #1 (OH)	MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Sec 4-T3N-R68W (Hoagland)						
Hoagland 43-4D - OH - Plan #1	1,000.0	1,000.0	20.2	16.7	5.845	CC, ES
Hoagland 43-4D - OH - Plan #1	1,100.0	1,099.5	21.4	17.6	5.629	SF

# Cathedral Energy Services

## Anticollision Report

<b>Company:</b>	Apollo Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Hoagland 33-4D
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 4-T3N-R68W (Hoagland)	<b>MD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hoagland 33-4D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design      Sec 4-T3N-R68W (Hoagland) - Hoagland 43-4D - OH - Plan #1												Offset Site Error:      0.0 ft	
Survey Program:      0-MWD												Offset Well Error:      0.0 ft	
Reference		Offset		Semi Major Axis			Distance						Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre		Between Centres	Between Ellipses	Total Uncertainty	Separation	
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)	Axis	Factor	
0.0	0.0	0.0	0.0	0.0	0.0	43.76	14.6	14.0	20.2				
100.0	100.0	100.0	100.0	0.2	0.2	43.76	14.6	14.0	20.2	19.9	0.31	64.947	
200.0	200.0	200.0	200.0	0.3	0.3	43.76	14.6	14.0	20.2	19.5	0.66	30.583	
300.0	300.0	300.0	300.0	0.5	0.5	43.76	14.6	14.0	20.2	19.2	1.01	20.001	
400.0	400.0	400.0	400.0	0.7	0.7	43.76	14.6	14.0	20.2	18.8	1.36	14.859	
500.0	500.0	500.0	500.0	0.9	0.9	43.76	14.6	14.0	20.2	18.5	1.71	11.821	
600.0	600.0	600.0	600.0	1.0	1.0	43.76	14.6	14.0	20.2	18.1	2.06	9.814	
700.0	700.0	700.0	700.0	1.2	1.2	43.76	14.6	14.0	20.2	17.8	2.41	8.389	
800.0	800.0	800.0	800.0	1.4	1.4	43.76	14.6	14.0	20.2	17.4	2.75	7.326	
900.0	900.0	900.0	900.0	1.6	1.6	43.76	14.6	14.0	20.2	17.1	3.10	6.502	
1,000.0	1,000.0	1,000.0	1,000.0	1.7	1.7	43.76	14.6	14.0	20.2	16.7	3.45	5.845 CC, ES	
1,100.0	1,100.0	1,099.5	1,099.5	1.9	1.9	90.97	16.3	13.9	21.4	17.6	3.80	5.629 SF	
1,200.0	1,199.8	1,198.9	1,198.7	2.1	2.1	94.23	21.5	13.8	25.1	21.0	4.16	6.038	
1,300.0	1,299.5	1,298.0	1,297.5	2.3	2.3	97.89	30.1	13.6	31.4	26.9	4.54	6.921	
1,400.0	1,398.7	1,396.9	1,395.7	2.5	2.5	101.04	42.0	13.4	40.4	35.5	4.97	8.140	
1,500.0	1,497.5	1,495.4	1,492.9	2.8	2.7	103.44	57.3	13.0	52.0	46.6	5.45	9.556	
1,600.0	1,595.6	1,593.4	1,589.1	3.1	3.0	105.16	75.8	12.6	66.3	60.3	6.00	11.049	
1,700.0	1,693.1	1,690.7	1,684.1	3.4	3.4	106.37	97.4	12.2	83.1	76.4	6.64	12.519	
1,800.0	1,789.6	1,787.4	1,777.6	3.8	3.8	107.21	122.1	11.6	102.4	95.0	7.37	13.898	
1,900.0	1,885.3	1,883.5	1,869.6	4.3	4.2	107.77	149.7	11.1	124.2	116.0	8.19	15.158	
2,000.0	1,979.8	1,980.7	1,962.2	4.8	4.6	108.81	179.0	10.4	147.7	138.6	9.10	16.223	
2,100.0	2,073.2	2,077.4	2,054.4	5.4	5.1	110.54	208.1	9.8	172.4	162.3	10.08	17.109	
2,200.0	2,165.2	2,173.5	2,146.1	6.1	5.6	112.65	237.1	9.2	198.6	187.5	11.10	17.890	
2,300.0	2,255.8	2,269.0	2,237.1	6.9	6.1	114.95	265.8	8.6	226.6	214.4	12.17	18.624	
2,400.0	2,345.0	2,363.7	2,327.5	7.6	6.6	117.44	294.4	8.0	256.4	243.2	13.24	19.360	
2,500.0	2,433.8	2,458.2	2,417.6	8.5	7.1	119.88	322.8	7.3	287.1	272.8	14.32	20.049	
2,600.0	2,522.6	2,552.8	2,507.7	9.3	7.6	121.84	351.3	6.7	318.2	302.8	15.39	20.673	
2,700.0	2,611.4	2,647.3	2,597.9	10.1	8.1	123.46	379.8	6.1	349.5	333.1	16.46	21.236	
2,800.0	2,700.2	2,741.8	2,688.0	10.9	8.6	124.82	408.3	5.5	381.1	363.6	17.53	21.745	
2,900.0	2,789.0	2,836.4	2,778.1	11.8	9.1	125.97	436.8	4.9	412.8	394.2	18.59	22.205	
3,000.0	2,877.8	2,930.9	2,868.3	12.6	9.6	126.95	465.2	4.3	444.7	425.0	19.66	22.623	
3,100.0	2,966.5	3,025.4	2,958.4	13.4	10.1	127.80	493.7	3.7	476.7	455.9	20.72	23.004	



# Cathedral Energy Services

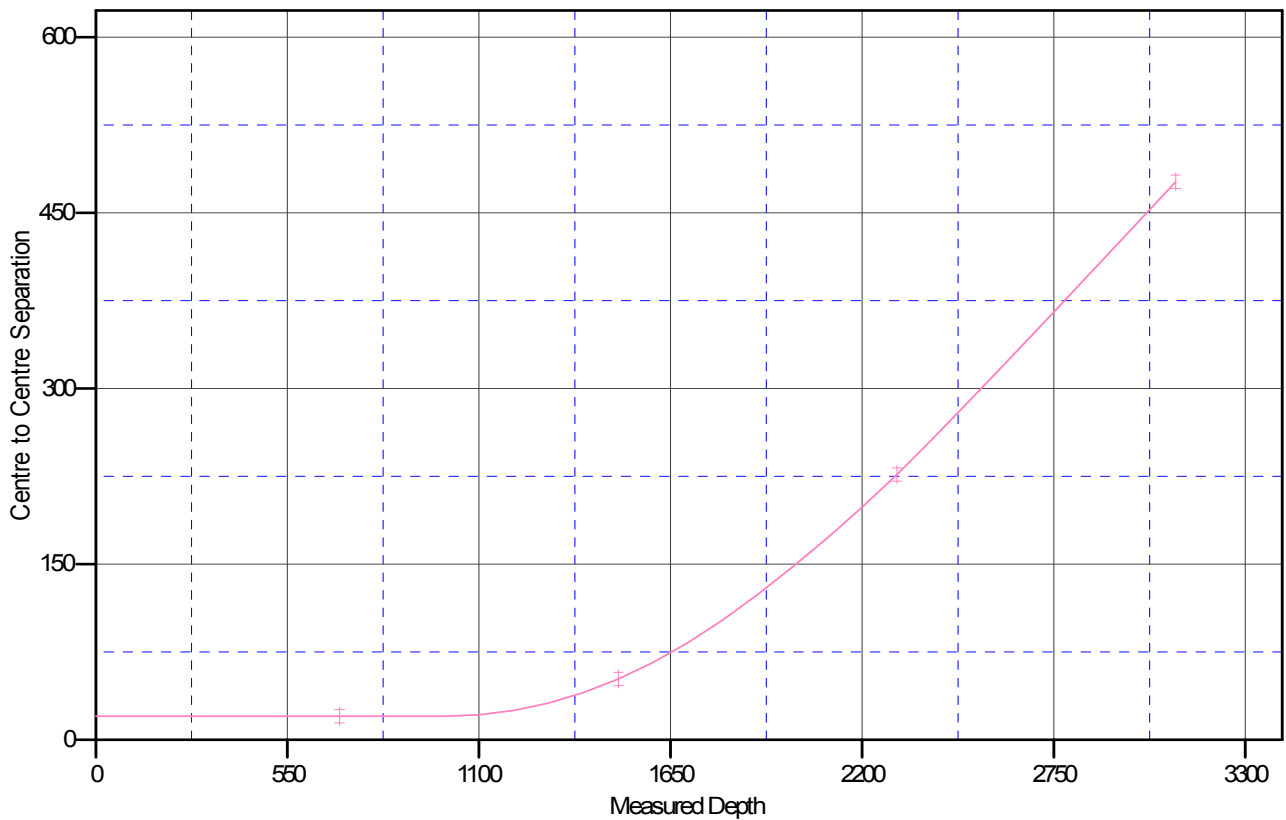
## Anticollision Report

<b>Company:</b>	Apollo Operating, LLC	<b>Local Co-ordinate Reference:</b>	Well Hoagland 33-4D
<b>Project:</b>	Weld County, CO	<b>TVD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Reference Site:</b>	Sec 4-T3N-R68W (Hoagland)	<b>MD Reference:</b>	KBE @ 5024.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Hoagland 33-4D	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	OH	<b>Database:</b>	USA EDM 5000 Multi Users DB
<b>Reference Design:</b>	Plan #1	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to KBE @ 5024.0ft (Original Well Elev)  
Offset Depths are relative to Offset Datum  
Central Meridian is -105.500000 °

Coordinates are relative to: Hoagland 33-4D  
Coordinate System is US State Plane 1983, Colorado Northern Zone  
Grid Convergence at Surface is: 0.32°

### Ladder Plot



### LEGEND

— Hoagland 43-4D, OH, Plan #1 V0