

**Project:** Weld County, Colorado NAD27  
**Site:** Sec 24-T9N-R98W  
**Well:** Hediger 24-9-67 1H  
**Wellbore:** Original Hole  
**Plan:** Final Surveys  
**Rig:** Cyclone 11

**SECTION DETAILS**  
Plan 2

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6824.02	0.00	0.00	6824.02	0.00	0.00	0.00	0.00	0.00	
7719.02	89.50	359.56	7396.96	567.94	-4.33	10.00	359.56	567.96	
11487.02	89.50	359.56	7429.84	4335.69	-33.04	0.00	0.00	4335.82	<b>PBHL</b>

**Surface Location:**  
SHL 350' FSL & 600' FWL Sec 24-T9N-R67W

US State Plane 1927 (Exact solution)  
Colorado North 501  
**Elevation:** 5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)  
**Northing**    **Easting**    **Latitude**    **Longitude**  
 508200.17    2181241.46    40° 43' 35.713 N    104° 50' 46.046 W

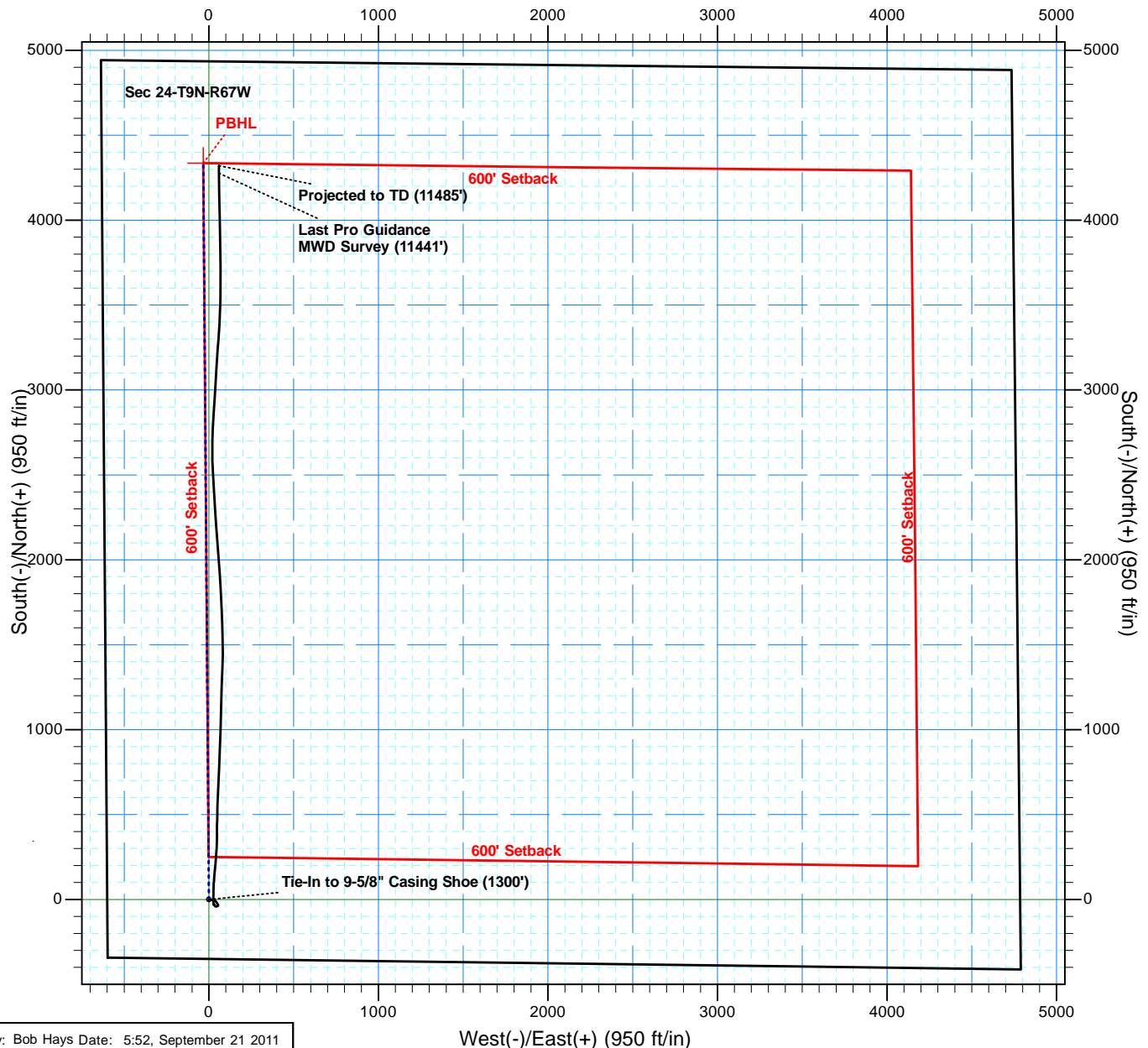
**WELLBORE TARGET DETAILS (LAT/LONG)**

Name	TVD	+N-S	+E-W	Latitude	Longitude
<b>PBHL</b>	7429.84	4335.69	-33.04	40° 44' 18.555 N	104° 50' 46.476 W



**To convert a Magnetic Direction to a Grid Direction, Add 8.45°**

Magnetic Model: IGRF200510    Date: 19-Aug-11  
**Azimuths & Coordinates to NAD27 Grid**



**Project: Weld County, Colorado NAD27**  
**Site: Sec 24-T9N-R98W**  
**Well: Hediger 24-9-67 1H**  
**Wellbore: Original Hole**  
**Plan: Final Surveys**  
**Rig: Cyclone 11**



**SECTION DETAILS**  
Plan 2

MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
6824.02	0.00	0.00	6824.02	0.00	0.00	0.00	0.00	0.00	
7719.02	89.50	359.56	7396.96	567.94	-4.33	10.00	359.56	567.96	
11487.02	89.50	359.56	7429.84	4335.69	-33.04	0.00	0.00	4335.82	<b>PBHL</b>

**Surface Location:**  
SHL 350' FSL & 600' FWL Sec 24-T9N-R67W

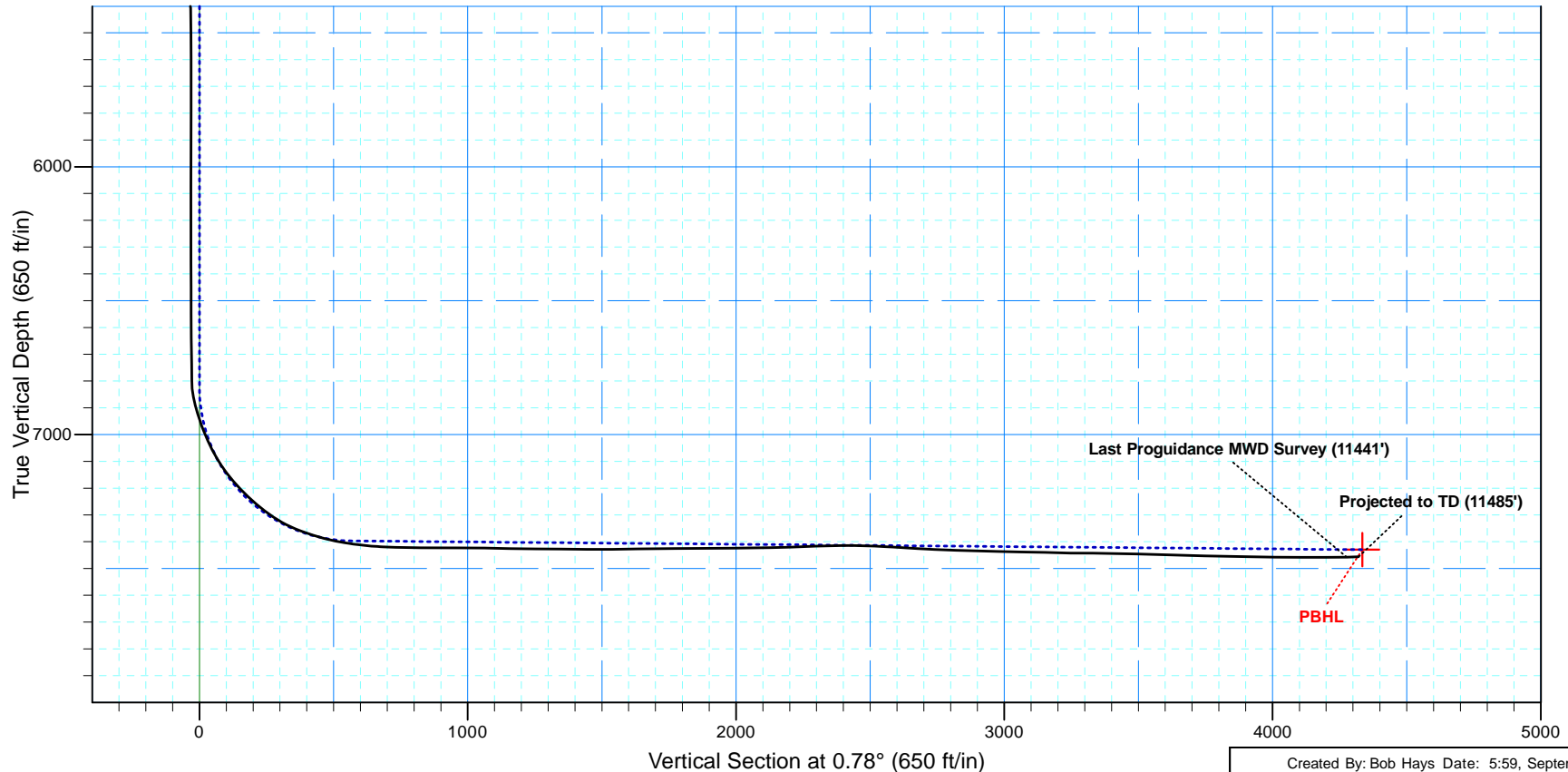
US State Plane 1927 (Exact solution)  
Colorado North 501

**Elevation: 5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)**

Northing	Easting	Latitude	Longitude
508200.17	2181241.46	40° 43' 35.713 N	104° 50' 46.046 W

**WELLBORE TARGET DETAILS (LAT/LONG)**

Name	TVD	+N-S	+E-W	Latitude	Longitude
<b>PBHL</b>	7429.84	4335.69	-33.04	40° 44' 18.555 N	104° 50' 46.476 W





## **Chesapeake Operating Inc.**

**Weld County, Colorado NAD27**

**Sec 24-T9N-R98W**

**Hediger 24-9-67 1H**

**Original Hole**

**Design: Final Surveys**

## **Standard Survey Report**

**21 September, 2011**





# Professional Directional LTD

## Survey Report



<b>Company:</b>	Chesapeake Operating Inc.	<b>Local Co-ordinate Reference:</b>	Well Hediger 24-9-67 1H
<b>Project:</b>	Weld County, Colorado NAD27	<b>TVD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Site:</b>	Sec 24-T9N-R98W	<b>MD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Well:</b>	Hediger 24-9-67 1H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

<b>Project</b> Weld County, Colorado NAD27			
<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 North 501		

<b>Site</b> Sec 24-T9N-R98W			
<b>Site Position:</b>		<b>Northing:</b>	508,200.17 ft
<b>From:</b>	Lat/Long	<b>Easting:</b>	2,181,241.46 ft
<b>Position Uncertainty:</b>	0.00 ft	<b>Slot Radius:</b>	1.10000 ft
		<b>Latitude:</b>	40° 43' 35.713 N
		<b>Longitude:</b>	104° 50' 46.046 W
		<b>Grid Convergence:</b>	0.42 °

<b>Well</b> Hediger 24-9-67 1H			
<b>Well Position</b>	+N/-S	0.00 ft	<b>Northing:</b>
	+E/-W	0.00 ft	508,200.17 ft
			<b>Latitude:</b>
			40° 43' 35.713 N
			<b>Longitude:</b>
			104° 50' 46.046 W
<b>Position Uncertainty</b>		0.00 ft	<b>Wellhead Elevation:</b>
			ft
			<b>Ground Level:</b>
			5,324.30 ft

<b>Wellbore</b> Original Hole					
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	08/19/11	8.87	67.30	53,293

<b>Design</b> Final Surveys				
<b>Audit Notes:</b>				
<b>Version:</b>	1.0	<b>Phase:</b>	ACTUAL	<b>Tie On Depth:</b> 0.00
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.00	0.00	0.00	0.78

<b>Survey Program</b>		Date	09/21/11		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
1,300.00	11,441.00	Proguidance MWD Surveys (Original Hole)	MWD	MWD	
11,485.00	11,485.00	Projected to TD (Original Hole)	Projection	Projection	

<b>Survey</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	
<b>Tie-In to 9-5/8" Casing Shoe (1300')</b>										
1,418.00	0.70	114.00	1,418.00	-0.29	0.66	-0.28	0.59	0.59	0.00	
1,511.00	2.20	95.20	1,510.97	-0.69	2.96	-0.65	1.67	1.61	-20.22	
1,606.00	2.30	94.30	1,605.89	-0.99	6.67	-0.90	0.11	0.11	-0.95	
1,700.00	2.40	95.90	1,699.81	-1.34	10.51	-1.19	0.13	0.11	1.70	
1,794.00	2.50	98.30	1,793.73	-1.84	14.50	-1.64	0.15	0.11	2.55	
1,890.00	2.30	100.20	1,889.64	-2.48	18.46	-2.23	0.22	-0.21	1.98	
1,985.00	2.40	100.80	1,984.56	-3.19	22.29	-2.89	0.11	0.11	0.63	



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## Survey Report



<b>Company:</b>	Chesapeake Operating Inc.	<b>Local Co-ordinate Reference:</b>	Well Hediger 24-9-67 1H
<b>Project:</b>	Weld County, Colorado NAD27	<b>TVD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Site:</b>	Sec 24-T9N-R98W	<b>MD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Well:</b>	Hediger 24-9-67 1H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
2,080.00	2.50	103.20	2,079.48	-4.04	26.27	-3.68	0.15	0.11	2.53	
2,176.00	2.50	103.10	2,175.38	-4.99	30.34	-4.58	0.00	0.00	-0.10	
2,271.00	2.40	111.70	2,270.30	-6.19	34.21	-5.73	0.40	-0.11	9.05	
2,366.00	2.60	129.40	2,365.21	-8.30	37.72	-7.78	0.84	0.21	18.63	
2,462.00	2.50	147.50	2,461.12	-11.44	40.53	-10.89	0.84	-0.10	18.85	
2,557.00	2.20	144.40	2,556.04	-14.67	42.71	-14.09	0.34	-0.32	-3.26	
2,652.00	1.60	138.60	2,650.98	-17.15	44.64	-16.54	0.66	-0.63	-6.11	
2,747.00	1.30	144.90	2,745.95	-19.03	46.14	-18.40	0.36	-0.32	6.63	
2,843.00	1.40	143.60	2,841.93	-20.86	47.46	-20.22	0.11	0.10	-1.35	
2,937.00	1.50	151.40	2,935.90	-22.87	48.73	-22.20	0.24	0.11	8.30	
3,033.00	1.60	151.80	3,031.86	-25.15	49.97	-24.47	0.10	0.10	0.42	
3,128.00	1.60	153.20	3,126.82	-27.51	51.19	-26.81	0.04	0.00	1.47	
3,223.00	1.10	148.60	3,221.80	-29.47	52.27	-28.75	0.54	-0.53	-4.84	
3,319.00	1.00	145.00	3,317.78	-30.94	53.23	-30.21	0.12	-0.10	-3.75	
3,414.00	0.80	155.70	3,412.77	-32.22	53.97	-31.49	0.27	-0.21	11.26	
3,510.00	0.70	167.70	3,508.76	-33.41	54.38	-32.66	0.19	-0.10	12.50	
3,604.00	0.60	196.70	3,602.76	-34.44	54.36	-33.70	0.36	-0.11	30.85	
3,700.00	0.60	225.20	3,698.75	-35.28	53.86	-34.54	0.31	0.00	29.69	
3,795.00	0.70	235.60	3,793.74	-35.95	53.02	-35.23	0.16	0.11	10.95	
3,890.00	0.90	225.20	3,888.73	-36.81	52.02	-36.10	0.26	0.21	-10.95	
3,985.00	0.60	225.20	3,983.73	-37.68	51.13	-36.98	0.32	-0.32	0.00	
4,079.00	0.40	218.90	4,077.72	-38.29	50.58	-37.59	0.22	-0.21	-6.70	
4,174.00	0.50	228.40	4,172.72	-38.82	50.06	-38.13	0.13	0.11	10.00	
4,270.00	0.60	224.60	4,268.72	-39.45	49.39	-38.78	0.11	0.10	-3.96	
4,365.00	0.80	236.70	4,363.71	-40.17	48.49	-39.51	0.26	0.21	12.74	
4,460.00	0.90	241.80	4,458.70	-40.89	47.28	-40.24	0.13	0.11	5.37	
4,554.00	0.80	260.70	4,552.69	-41.34	45.98	-40.72	0.31	-0.11	20.11	
4,650.00	0.90	265.30	4,648.68	-41.51	44.57	-40.90	0.13	0.10	4.79	
4,745.00	1.10	265.20	4,743.66	-41.65	42.91	-41.06	0.21	0.21	-0.11	
4,840.00	1.20	288.30	4,838.64	-41.42	41.06	-40.85	0.50	0.11	24.32	
4,935.00	1.40	300.50	4,933.62	-40.51	39.12	-39.98	0.36	0.21	12.84	
5,029.00	1.80	320.40	5,027.58	-38.79	37.19	-38.29	0.72	0.43	21.17	
5,125.00	1.10	319.10	5,123.55	-36.94	35.62	-36.45	0.73	-0.73	-1.35	
5,219.00	1.20	309.20	5,217.53	-35.63	34.27	-35.16	0.24	0.11	-10.53	
5,314.00	1.10	307.00	5,312.51	-34.45	32.77	-34.01	0.12	-0.11	-2.32	
5,409.00	1.20	309.80	5,407.50	-33.27	31.28	-32.84	0.12	0.11	2.95	
5,504.00	0.50	304.90	5,502.48	-32.40	30.17	-31.98	0.74	-0.74	-5.16	
5,599.00	0.60	310.90	5,597.48	-31.83	29.46	-31.43	0.12	0.11	6.32	
5,693.00	0.60	104.30	5,691.48	-31.63	29.56	-31.23	1.24	0.00	163.19	
5,787.00	0.60	92.80	5,785.47	-31.78	30.53	-31.36	0.13	0.00	-12.23	
5,882.00	0.40	113.60	5,880.47	-31.93	31.33	-31.51	0.28	-0.21	21.89	
5,977.00	0.30	119.60	5,975.47	-32.19	31.85	-31.75	0.11	-0.11	6.32	
6,072.00	0.20	93.90	6,070.47	-32.32	32.23	-31.88	0.16	-0.11	-27.05	



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## Survey Report



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<b>Project:</b>	Weld County, Colorado NAD27	<b>TVD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Site:</b>	Sec 24-T9N-R98W	<b>MD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Well:</b>	Hediger 24-9-67 1H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
6,168.00	0.10	316.00	6,166.47	-32.28	32.34	-31.83	0.29	-0.10	-143.65	
6,263.00	0.10	268.00	6,261.47	-32.22	32.20	-31.78	0.09	0.00	-50.53	
6,358.00	0.30	290.30	6,356.47	-32.14	31.88	-31.70	0.22	0.21	23.47	
6,452.00	0.60	300.80	6,450.46	-31.80	31.23	-31.37	0.33	0.32	11.17	
6,548.00	0.70	295.90	6,546.46	-31.28	30.27	-30.87	0.12	0.10	-5.10	
6,642.00	0.80	304.70	6,640.45	-30.66	29.22	-30.26	0.16	0.11	9.36	
6,738.00	1.10	302.50	6,736.44	-29.78	27.89	-29.40	0.31	0.31	-2.29	
6,799.00	1.40	321.10	6,797.42	-28.89	26.93	-28.52	0.82	0.49	30.49	
6,830.00	4.80	355.30	6,828.37	-27.30	26.58	-26.94	12.02	10.97	110.32	
6,862.00	10.20	356.90	6,860.09	-23.13	26.32	-22.77	16.89	16.88	5.00	
6,894.00	14.90	356.50	6,891.31	-16.19	25.91	-15.84	14.69	14.69	-1.25	
6,926.00	17.50	358.00	6,922.04	-7.28	25.49	-6.93	8.23	8.13	4.69	
6,957.00	19.40	0.70	6,951.45	2.53	25.40	2.87	6.72	6.13	8.71	
6,988.00	20.80	2.70	6,980.56	13.18	25.72	13.52	5.03	4.52	6.45	
7,020.00	22.90	2.60	7,010.26	25.07	26.27	25.43	6.56	6.56	-0.31	
7,052.00	25.80	2.10	7,039.41	38.25	26.81	38.61	9.09	9.06	-1.56	
7,084.00	28.80	0.50	7,067.84	52.92	27.13	53.29	9.65	9.38	-5.00	
7,115.00	31.20	1.10	7,094.69	68.42	27.35	68.79	7.80	7.74	1.94	
7,147.00	34.20	2.70	7,121.61	85.70	27.93	86.07	9.76	9.38	5.00	
7,178.00	36.90	4.70	7,146.83	103.68	29.10	104.06	9.48	8.71	6.45	
7,210.00	40.20	4.30	7,171.85	123.56	30.67	123.96	10.34	10.31	-1.25	
7,241.00	43.30	4.90	7,194.98	144.13	32.32	144.55	10.08	10.00	1.94	
7,273.00	45.70	5.10	7,217.80	166.47	34.28	166.92	7.51	7.50	0.63	
7,304.00	47.40	4.80	7,239.12	188.89	36.22	189.37	5.53	5.48	-0.97	
7,336.00	49.40	5.60	7,260.37	212.72	38.39	213.22	6.52	6.25	2.50	
7,368.00	51.70	5.80	7,280.70	237.31	40.85	237.84	7.20	7.19	0.63	
7,400.00	54.60	4.70	7,299.89	262.80	43.18	263.37	9.47	9.06	-3.44	
7,431.00	58.50	3.20	7,316.97	288.60	44.96	289.19	13.21	12.58	-4.84	
7,463.00	62.40	2.10	7,332.75	316.40	46.24	317.00	12.55	12.19	-3.44	
7,495.00	65.80	1.10	7,346.73	345.17	47.04	345.78	10.99	10.63	-3.13	
7,527.00	68.80	0.30	7,359.07	374.69	47.40	375.30	9.65	9.38	-2.50	
7,559.00	71.80	0.30	7,369.86	404.81	47.56	405.42	9.38	9.38	0.00	
7,590.00	73.20	0.80	7,379.18	434.37	47.84	434.99	4.77	4.52	1.61	
7,622.00	75.00	1.20	7,387.95	465.14	48.38	465.76	5.75	5.63	1.25	
7,654.00	77.50	1.40	7,395.55	496.22	49.08	496.84	7.84	7.81	0.63	
7,685.00	80.00	1.40	7,401.60	526.61	49.83	527.24	8.06	8.06	0.00	
7,716.00	81.80	1.80	7,406.50	557.21	50.68	557.84	5.94	5.81	1.29	
7,748.00	82.80	2.00	7,410.79	588.90	51.73	589.55	3.19	3.13	0.63	
7,779.00	84.00	2.30	7,414.35	619.67	52.89	620.33	3.99	3.87	0.97	
7,811.00	85.80	2.60	7,417.20	651.51	54.25	652.19	5.70	5.63	0.94	
7,843.00	88.00	3.00	7,418.93	683.43	55.81	684.12	6.99	6.88	1.25	
7,938.00	88.70	2.00	7,421.66	778.30	59.95	779.04	1.28	0.74	-1.05	
8,033.00	89.40	2.40	7,423.24	873.21	63.60	874.00	0.85	0.74	0.42	



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## Survey Report



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<b>Site:</b>	Sec 24-T9N-R98W	<b>MD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Well:</b>	Hediger 24-9-67 1H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
8,128.00	90.40	2.50	7,423.41	968.12	67.66	968.95	1.06	1.05	0.11	
8,222.00	88.80	0.90	7,424.06	1,062.07	70.45	1,062.93	2.41	-1.70	-1.70	
8,317.00	89.40	1.70	7,425.55	1,157.04	72.60	1,157.92	1.05	0.63	0.84	
8,412.00	89.20	1.80	7,426.71	1,251.99	75.50	1,252.90	0.24	-0.21	0.11	
8,506.00	89.60	2.30	7,427.70	1,345.92	78.87	1,346.87	0.68	0.43	0.53	
8,602.00	89.70	1.00	7,428.29	1,441.88	81.63	1,442.85	1.36	0.10	-1.35	
8,697.00	90.40	358.30	7,428.20	1,536.86	81.05	1,537.83	2.94	0.74	-2.84	
8,793.00	91.00	358.00	7,427.03	1,632.81	77.95	1,633.72	0.70	0.63	-0.31	
8,888.00	90.30	357.50	7,425.95	1,727.73	74.22	1,728.58	0.91	-0.74	-0.53	
8,983.00	90.10	356.70	7,425.62	1,822.60	69.42	1,823.38	0.87	-0.21	-0.84	
9,078.00	91.30	356.20	7,424.46	1,917.41	63.53	1,918.10	1.37	1.26	-0.53	
9,173.00	89.70	355.60	7,423.63	2,012.16	56.74	2,012.75	1.80	-1.68	-0.63	
9,269.00	90.90	355.60	7,423.13	2,107.88	49.38	2,108.35	1.25	1.25	0.00	
9,364.00	92.40	355.90	7,420.39	2,202.57	42.34	2,202.94	1.61	1.58	0.32	
9,459.00	92.00	356.40	7,416.75	2,297.29	35.97	2,297.56	0.67	-0.42	0.53	
9,554.00	90.60	356.80	7,414.59	2,392.09	30.33	2,392.29	1.53	-1.47	0.42	
9,650.00	88.30	356.10	7,415.51	2,487.90	24.39	2,488.00	2.50	-2.40	-0.73	
9,745.00	86.40	358.50	7,419.90	2,582.68	19.92	2,582.71	3.22	-2.00	2.53	
9,840.00	86.60	1.10	7,425.71	2,677.49	19.59	2,677.51	2.74	0.21	2.74	
9,935.00	87.60	3.20	7,430.51	2,772.30	23.15	2,772.36	2.45	1.05	2.21	
10,030.00	88.90	3.10	7,433.41	2,867.11	28.37	2,867.23	1.37	1.37	-0.11	
10,125.00	88.20	3.90	7,435.82	2,961.90	34.16	2,962.09	1.12	-0.74	0.84	
10,220.00	89.20	3.60	7,437.97	3,056.67	40.38	3,056.94	1.10	1.05	-0.32	
10,315.00	88.30	3.20	7,440.04	3,151.48	46.01	3,151.81	1.04	-0.95	-0.42	
10,411.00	88.80	4.00	7,442.47	3,247.26	52.03	3,247.67	0.98	0.52	0.83	
10,506.00	89.70	3.50	7,443.72	3,342.05	58.25	3,342.53	1.08	0.95	-0.53	
10,601.00	89.10	3.00	7,444.71	3,436.89	63.63	3,437.43	0.82	-0.63	-0.53	
10,697.00	88.60	1.90	7,446.64	3,532.78	67.74	3,533.37	1.26	-0.52	-1.15	
10,792.00	88.20	0.20	7,449.29	3,627.72	69.48	3,628.33	1.84	-0.42	-1.79	
10,888.00	88.30	359.00	7,452.22	3,723.67	68.81	3,724.26	1.25	0.10	-1.25	
10,983.00	88.70	358.70	7,454.71	3,818.62	66.90	3,819.18	0.53	0.42	-0.32	
11,078.00	89.20	359.00	7,456.45	3,913.59	64.99	3,914.11	0.61	0.53	0.32	
11,174.00	89.40	359.10	7,457.62	4,009.57	63.40	4,010.06	0.23	0.21	0.10	
11,269.00	89.60	359.00	7,458.45	4,104.55	61.83	4,105.01	0.24	0.21	-0.11	
11,364.00	90.30	359.10	7,458.54	4,199.53	60.25	4,199.97	0.74	0.74	0.11	
11,441.00	91.30	359.40	7,457.46	4,276.52	59.24	4,276.93	1.36	1.30	0.39	
<b>Last Proguidance MWD Survey (11441')</b>										
11,485.00	91.30	359.40	7,456.46	4,320.51	58.78	4,320.91	0.00	0.00	0.00	
<b>Projected to TD (11485')</b>										



**Professional Directional LTD**  
Survey Report



<b>Company:</b>	Chesapeake Operating Inc.	<b>Local Co-ordinate Reference:</b>	Well Hediger 24-9-67 1H
<b>Project:</b>	Weld County, Colorado NAD27	<b>TVD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Site:</b>	Sec 24-T9N-R98W	<b>MD Reference:</b>	5324.3' GL + 13.7' KB @ 5338.00ft (Cyclone 11)
<b>Well:</b>	Hediger 24-9-67 1H	<b>North Reference:</b>	True
<b>Wellbore:</b>	Original Hole	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Design:</b>	Final Surveys	<b>Database:</b>	EDM 5000.1 Single User Db

Design Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,300.00	1,300.00	0.00	0.00	Tie-In to 9-5/8" Casing Shoe (1300')
11,441.00	7,457.46	4,276.52	59.24	Last Proguidance MWD Survey (11441')
11,485.00	7,456.46	4,320.51	58.78	Projected to TD (11485')