



5125 Carroll Court, Suite 200
Evansville, WY 82636
307-233-8550

Survey Certification Sheet

Date Submitted:	December 15, 2011
Operator Name:	Chesapeake Operating Inc.
Well Name:	Heiby 18-8-66 1H
API Number	05-123-34627
Location:	Section 18-T8N-R66W
County/State:	Weld County, CO
Surveyed From a Depth of:	1,048' MD to 10,756' MD
Type of Survey:	Magnetic MWD
Name(s) of MWD Supervisor(s):	Ralph Nicholson / Kyle Sampson

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by Professional Directional Ltd. This report represents a true and correct Directional Survey of this well based on the original data obtained at the well site. The survey was calculated using the minimum curvature method.

Robert Hays / Well Planner

Chesapeake Operating Inc.



Project: Weld County, Colorado NAD83 (Central)
Site: Sec 18-T8N-R66W
Well: Heiby 18-8-66 1H
Wellbore: Original Hole
Plan: Final Surveys
Rig: SST 53



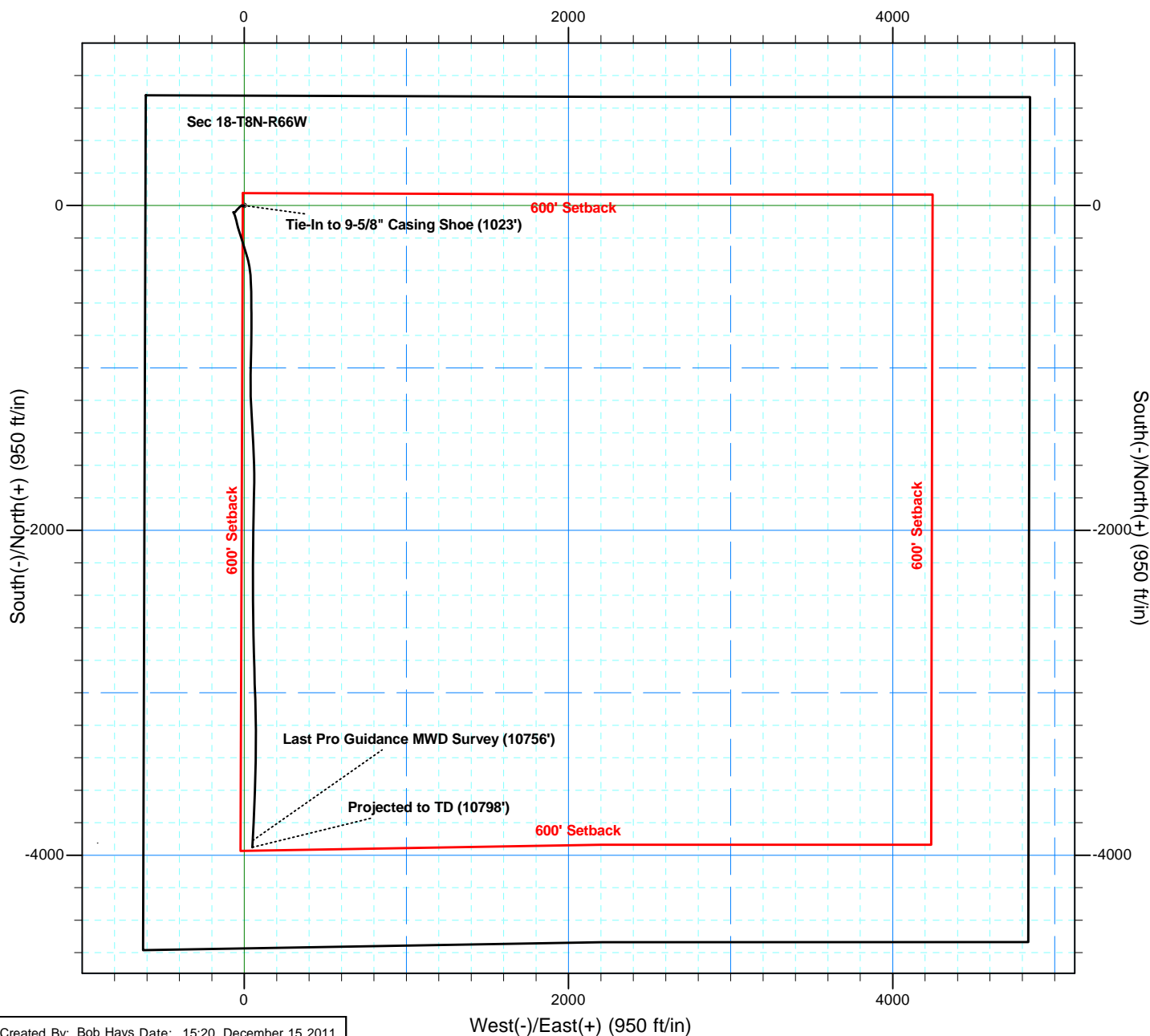
Surface Location:
SHL 676' FNL & 609' FWL Sec 18-T8N-R66W

US State Plane 1983
Colorado Central Zone
Elevation: 5246' GL + 22' KB @ 5268.00ft (SST 53)

Northing	Easting	Latitude	Longitude
2032807.91	3186341.77	40° 40' 0.613 N	104° 49' 42.697 W

To convert a Magnetic Direction to a Grid Direction, Add 8.39°

Magnetic Model: IGRF200510 Date: 15-Dec-11
Azimuths & Coordinates to NAD83 Grid



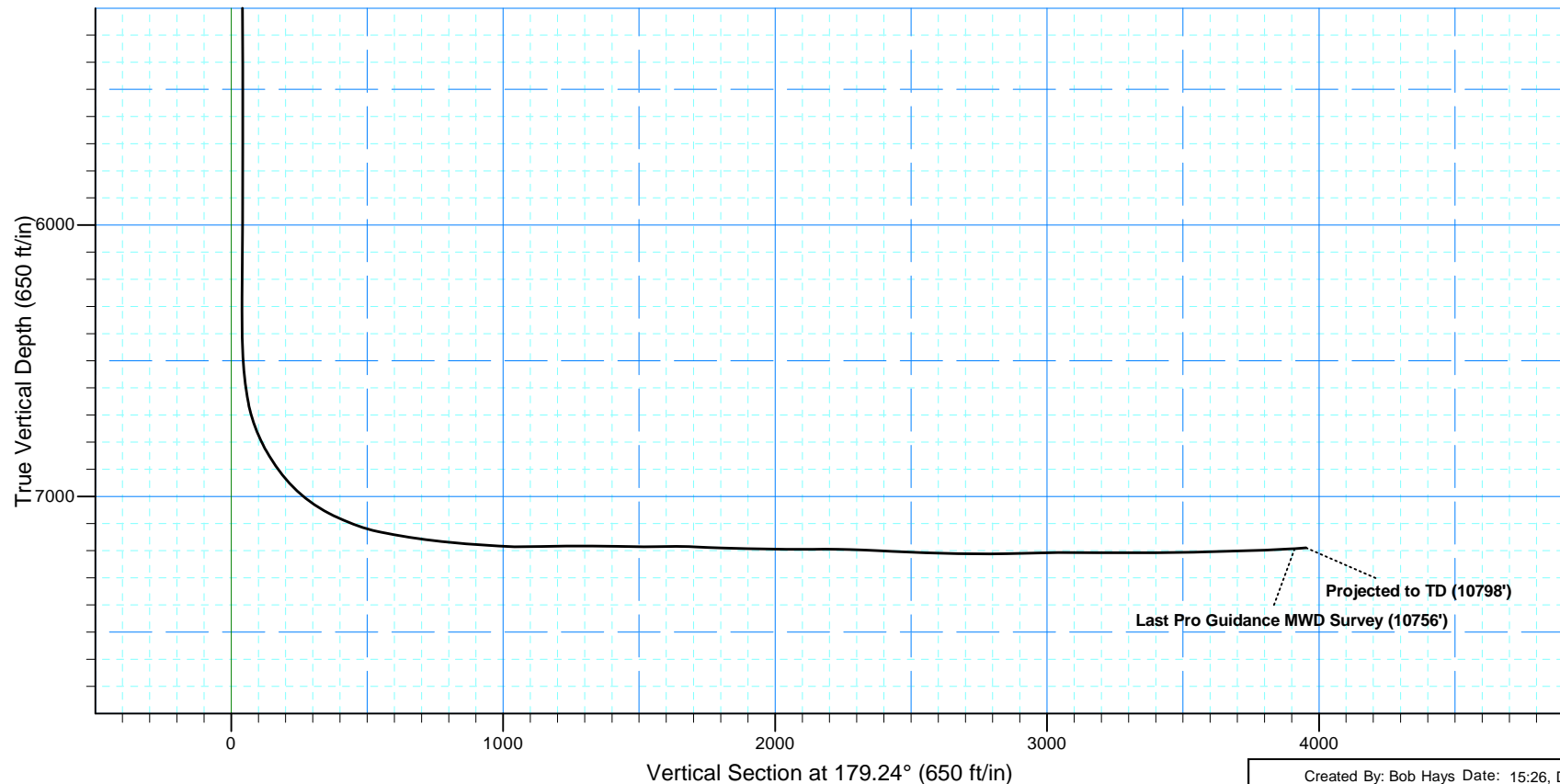
Chesapeake Operating Inc.



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Northing 2032807.91 Easting 3186341.77 Latitude 40° 40' 0.613 N Longitude 104° 49' 42.697 W



Created By: Bob Hays Date: 15:26, December 15 2011



Chesapeake Operating Inc.

Weld County, Colorado NAD83 (Central)

Sec 18-T8N-R66W

Heiby 18-8-66 1H

Original Hole

Design: Final Surveys

Standard Survey Report

15 December, 2011



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Site Sec 18-T8N-R66W
Project:	Weld County, Colorado NAD83 (Central)	TVD Reference:	5246' GL + 22' KB @ 5268.00ft (SST 53)
Site:	Sec 18-T8N-R66W	MD Reference:	5246' GL + 22' KB @ 5268.00ft (SST 53)
Well:	Heiby 18-8-66 1H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	EDM 5000.1 Single User Db

Project	Weld County, Colorado NAD83 (Central)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		Sec 18-T8N-R66W			
Site Position:		Northing:	2,032,807.90 ft	Latitude:	40° 40' 0.613 N
From:	Lat/Long	Easting:	3,186,341.77 ft	Longitude:	104° 49' 42.697 W
Position Uncertainty:	0.00 ft	Slot Radius:	1.10000 ft	Grid Convergence:	0.42 °

Well	Heiby 18-8-66 1H					
Well Position	+N/-S	0.00 ft	Northing:	2,032,807.90 ft	Latitude:	40° 40' 0.613 N
	+E/-W	0.00 ft	Easting:	3,186,341.77 ft	Longitude:	104° 49' 42.697 W
Position Uncertainty		0.00 ft	Wellhead Elevation:	ft	Ground Level:	5,246.00 ft

Wellbore	Original Hole				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	12/15/11	8.81	67.25	53,231

Survey Program	Date	12/15/11			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
1,023.00	10,756.00	Pro Guidance MWD Surveys (Original Hol	MWD	MWD	
10,798.00	10,798.00	Projected to TD (Original Hole)	Projection	Projection	

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)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,023.00	0.50	270.00	1,022.99	0.00	-4.46	-0.06	0.05	0.05	0.00
Tie-In to 9-5/8" Casing Shoe (1023')									
1,048.00	0.40	167.90	1,047.99	-0.09	-4.55	0.02	2.81	-0.40	-408.40
1,334.00	0.50	165.90	1,333.98	-2.27	-4.04	2.22	0.04	0.03	-0.70
1,620.00	0.50	215.50	1,619.97	-4.50	-4.46	4.44	0.15	0.00	17.34
1,904.00	0.30	153.70	1,903.96	-6.17	-4.85	6.11	0.16	-0.07	-21.76
2,189.00	0.90	305.10	2,188.95	-5.56	-6.35	5.47	0.41	0.21	53.12
2,475.00	0.90	319.60	2,474.92	-2.55	-9.65	2.42	0.08	0.00	5.07
2,758.00	0.60	327.20	2,757.89	0.38	-11.89	-0.54	0.11	-0.11	2.69
3,043.00	0.70	264.10	3,042.88	1.46	-14.43	-1.65	0.24	0.04	-22.14
3,328.00	0.80	220.00	3,327.86	-0.24	-17.44	0.01	0.20	0.04	-15.47
3,611.00	1.20	229.90	3,610.81	-3.66	-20.98	3.38	0.15	0.14	3.50
3,896.00	1.90	225.70	3,895.71	-8.89	-26.64	8.53	0.25	0.25	-1.47
4,181.00	2.20	230.10	4,180.52	-15.70	-34.22	15.24	0.12	0.11	1.54
4,465.00	2.20	219.10	4,464.32	-23.42	-41.84	22.86	0.15	0.00	-3.87



Professional Directional LTD

Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Site Sec 18-T8N-R66W
Project:	Weld County, Colorado NAD83 (Central)	TVD Reference:	5246' GL + 22' KB @ 5268.00ft (SST 53)
Site:	Sec 18-T8N-R66W	MD Reference:	5246' GL + 22' KB @ 5268.00ft (SST 53)
Well:	Heiby 18-8-66 1H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	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)
4,751.00	2.40	222.00	4,750.09	-32.13	-49.31	31.47	0.08	0.07	1.01
5,035.00	2.00	221.70	5,033.88	-40.25	-56.58	39.49	0.14	-0.14	-0.11
5,130.00	0.90	235.40	5,128.84	-41.91	-58.30	41.13	1.21	-1.16	14.42
5,415.00	0.50	254.20	5,413.82	-43.52	-61.34	42.70	0.16	-0.14	6.60
5,700.00	0.60	289.40	5,698.81	-43.37	-63.94	42.51	0.12	0.04	12.35
5,985.00	0.30	291.80	5,983.80	-42.59	-66.04	41.71	0.11	-0.11	0.84
6,269.00	0.60	337.40	6,267.79	-40.94	-67.31	40.04	0.16	0.11	16.06
6,333.00	0.30	352.30	6,331.79	-40.47	-67.46	39.57	0.50	-0.47	23.28
6,364.00	0.50	121.00	6,362.79	-40.46	-67.35	39.56	2.34	0.65	415.16
6,396.00	1.50	135.70	6,394.79	-40.83	-66.94	39.93	3.20	3.13	45.94
6,427.00	2.30	149.00	6,425.77	-41.65	-66.34	40.76	2.93	2.58	42.90
6,459.00	3.20	157.50	6,457.73	-43.03	-65.66	42.15	3.08	2.81	26.56
6,491.00	4.00	156.40	6,489.67	-44.88	-64.87	44.01	2.51	2.50	-3.44
6,522.00	4.70	156.40	6,520.58	-47.03	-63.93	46.17	2.26	2.26	0.00
6,554.00	5.30	158.20	6,552.46	-49.61	-62.86	48.76	1.94	1.88	5.63
6,586.00	6.20	158.90	6,584.29	-52.59	-61.69	51.76	2.82	2.81	2.19
6,617.00	8.80	158.80	6,615.03	-56.36	-60.23	55.55	8.39	8.39	-0.32
6,649.00	11.50	158.40	6,646.52	-61.61	-58.17	60.83	8.44	8.44	-1.25
6,681.00	14.40	161.30	6,677.71	-68.35	-55.72	67.60	9.28	9.06	9.06
6,712.00	17.40	164.60	6,707.52	-76.47	-53.25	75.75	10.10	9.68	10.65
6,744.00	20.10	166.40	6,737.82	-86.43	-50.69	85.75	8.63	8.44	5.63
6,776.00	23.20	166.70	6,767.56	-97.91	-47.94	97.26	9.69	9.69	0.94
6,807.00	26.30	166.20	6,795.70	-110.53	-44.90	109.92	10.02	10.00	-1.61
6,839.00	29.30	166.60	6,824.01	-125.03	-41.39	124.47	9.39	9.38	1.25
6,870.00	32.10	165.40	6,850.66	-140.38	-37.56	139.87	9.25	9.03	-3.87
6,902.00	34.50	162.50	6,877.41	-157.26	-32.69	156.81	9.00	7.50	-9.06
6,934.00	37.50	161.20	6,903.29	-175.13	-26.82	174.75	9.67	9.38	-4.06
6,965.00	40.40	161.10	6,927.40	-193.57	-20.53	193.27	9.36	9.35	-0.32
6,997.00	43.80	162.10	6,951.14	-213.92	-13.76	213.72	10.83	10.63	3.13
7,029.00	47.30	162.50	6,973.54	-235.68	-6.82	235.57	10.97	10.94	1.25
7,060.00	50.70	163.20	6,993.88	-258.03	0.07	258.01	11.10	10.97	2.26
7,092.00	54.00	162.40	7,013.42	-282.23	7.57	282.31	10.50	10.31	-2.50
7,124.00	56.60	164.00	7,031.64	-307.42	15.17	307.59	9.11	8.13	5.00
7,156.00	60.00	165.80	7,048.45	-333.70	22.25	333.97	11.65	10.63	5.63
7,187.00	63.30	168.20	7,063.17	-360.28	28.38	360.62	12.64	10.65	7.74
7,219.00	65.80	170.80	7,076.93	-388.68	33.63	389.10	10.72	7.81	8.13
7,251.00	67.30	174.10	7,089.66	-417.78	37.49	418.24	10.56	4.69	10.31
7,283.00	68.50	176.50	7,101.70	-447.33	39.91	447.82	7.90	3.75	7.50
7,314.00	71.30	178.00	7,112.36	-476.40	41.31	476.91	10.11	9.03	4.84
7,346.00	75.00	178.80	7,121.63	-507.01	42.16	507.53	11.81	11.56	2.50
7,378.00	77.50	179.10	7,129.24	-538.08	42.73	538.61	7.87	7.81	0.94
7,409.00	78.60	179.30	7,135.65	-568.41	43.15	568.93	3.60	3.55	0.65
7,441.00	79.90	179.30	7,141.62	-599.85	43.54	600.37	4.06	4.06	0.00
7,473.00	80.80	179.40	7,146.99	-631.39	43.89	631.92	2.83	2.81	0.31

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Site:	Sec 18-T8N-R66W	MD Reference:	5246' GL + 22' KB @ 5268.00ft (SST 53)
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Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	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)
7,505.00	81.40	179.50	7,151.94	-663.00	44.20	663.53	1.90	1.88	0.31
7,536.00	82.10	179.60	7,156.39	-693.68	44.44	694.21	2.28	2.26	0.32
7,568.00	83.00	179.80	7,160.54	-725.41	44.60	725.94	2.88	2.81	0.63
7,600.00	83.40	180.60	7,164.32	-757.18	44.49	757.71	2.78	1.25	2.50
7,631.00	84.20	180.10	7,167.67	-788.00	44.30	788.52	3.04	2.58	-1.61
7,663.00	84.70	181.10	7,170.77	-819.85	43.97	820.36	3.48	1.56	3.13
7,695.00	85.10	181.40	7,173.61	-851.72	43.28	852.22	1.56	1.25	0.94
7,726.00	85.50	181.40	7,176.15	-882.60	42.52	883.09	1.29	1.29	0.00
7,758.00	85.80	181.40	7,178.58	-914.50	41.74	914.98	0.94	0.94	0.00
7,790.00	86.30	180.60	7,180.78	-946.42	41.18	946.88	2.94	1.56	-2.50
7,822.00	86.60	181.00	7,182.76	-978.35	40.74	978.81	1.56	0.94	1.25
7,853.00	87.30	180.60	7,184.41	-1,009.31	40.31	1,009.76	2.60	2.26	-1.29
7,885.00	89.20	180.60	7,185.39	-1,041.29	39.97	1,041.73	5.94	5.94	0.00
7,981.00	91.80	180.20	7,184.55	-1,137.27	39.30	1,137.70	2.74	2.71	-0.42
8,076.00	90.50	176.40	7,182.65	-1,232.19	42.12	1,232.65	4.23	-1.37	-4.00
8,171.00	89.40	176.40	7,182.73	-1,327.01	48.08	1,327.53	1.16	-1.16	0.00
8,266.00	88.80	177.70	7,184.22	-1,421.87	52.97	1,422.45	1.51	-0.63	1.37
8,361.00	89.80	177.60	7,185.38	-1,516.78	56.87	1,517.40	1.06	1.05	-0.11
8,457.00	91.20	178.30	7,184.54	-1,612.71	60.30	1,613.37	1.63	1.46	0.73
8,552.00	86.90	180.40	7,186.12	-1,707.66	61.38	1,708.33	5.04	-4.53	2.21
8,647.00	88.10	181.40	7,190.26	-1,802.56	59.89	1,803.20	1.64	1.26	1.05
8,742.00	89.30	181.20	7,192.42	-1,897.51	57.73	1,898.11	1.28	1.26	-0.21
8,838.00	88.30	181.00	7,194.43	-1,993.47	55.89	1,994.03	1.06	-1.04	-0.21
8,933.00	90.50	180.80	7,195.42	-2,088.44	54.40	2,088.98	2.33	2.32	-0.21
9,028.00	90.20	179.70	7,194.84	-2,183.44	53.98	2,183.97	1.20	-0.32	-1.16
9,123.00	88.50	179.70	7,195.92	-2,278.43	54.48	2,278.95	1.79	-1.79	0.00
9,219.00	86.90	179.70	7,199.77	-2,374.35	54.98	2,374.87	1.67	-1.67	0.00
9,314.00	87.30	180.40	7,204.58	-2,469.22	54.90	2,469.74	0.85	0.42	0.74
9,409.00	88.30	179.30	7,208.23	-2,564.15	55.15	2,564.66	1.56	1.05	-1.16
9,505.00	88.70	178.60	7,210.74	-2,660.10	56.91	2,660.62	0.84	0.42	-0.73
9,600.00	89.80	178.00	7,211.98	-2,755.05	59.73	2,755.60	1.32	1.16	-0.63
9,695.00	90.90	178.60	7,211.40	-2,850.00	62.55	2,850.58	1.32	1.16	0.63
9,790.00	91.90	178.50	7,209.08	-2,944.94	64.95	2,945.55	1.06	1.05	-0.11
9,885.00	90.50	178.60	7,207.09	-3,039.89	67.35	3,040.52	1.48	-1.47	0.11
9,980.00	89.30	177.90	7,207.26	-3,134.84	70.25	3,135.50	1.46	-1.26	-0.74
10,076.00	89.80	180.30	7,208.01	-3,230.82	71.76	3,231.49	2.55	0.52	2.50
10,171.00	90.60	179.90	7,207.68	-3,325.82	71.59	3,326.48	0.94	0.84	-0.42
10,266.00	89.80	181.40	7,207.35	-3,420.81	70.52	3,421.45	1.79	-0.84	1.58
10,361.00	91.20	181.70	7,206.52	-3,515.77	67.95	3,516.36	1.51	1.47	0.32
10,456.00	92.10	181.70	7,203.78	-3,610.69	65.13	3,611.23	0.95	0.95	0.00
10,551.00	91.20	182.40	7,201.05	-3,705.59	61.73	3,706.08	1.20	-0.95	0.74
10,646.00	92.30	182.50	7,198.15	-3,800.45	57.67	3,800.88	1.16	1.16	0.11
10,741.00	93.40	183.20	7,193.42	-3,895.22	52.96	3,895.58	1.37	1.16	0.74



Professional Directional LTD

Survey Report



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Site Sec 18-T8N-R66W
Project:	Weld County, Colorado NAD83 (Central)	TVD Reference:	5246' GL + 22' KB @ 5268.00ft (SST 53)
Site:	Sec 18-T8N-R66W	MD Reference:	5246' GL + 22' KB @ 5268.00ft (SST 53)
Well:	Heiby 18-8-66 1H	North Reference:	Grid
Wellbore:	Original Hole	Survey Calculation Method:	Minimum Curvature
Design:	Final Surveys	Database:	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)	
10,756.00	93.70	182.80	7,192.50	-3,910.17	52.17	3,910.51	3.33	2.00	-2.67	
Last Pro Guidance MWD Survey (10756')										
10,798.00	94.50	181.70	7,189.49	-3,952.03	50.53	3,952.35	3.23	1.90	-2.62	
Projected to TD (10798')										

Design Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment	
		+N/-S (ft)	+E/-W (ft)		
1,023.00	1,022.99	0.00	-4.46	Tie-In to 9-5/8" Casing Shoe (1023')	
10,756.00	7,192.50	-3,910.17	52.17	Last Pro Guidance MWD Survey (10756')	
10,798.00	7,189.49	-3,952.03	50.53	Projected to TD (10798')	