



Chesapeake Energy

Weld County, CO

Sec 14-T9N-R67W 1H / Cyclone 26

Wellbore #1

Sperry Drilling Services Definitive Survey Report

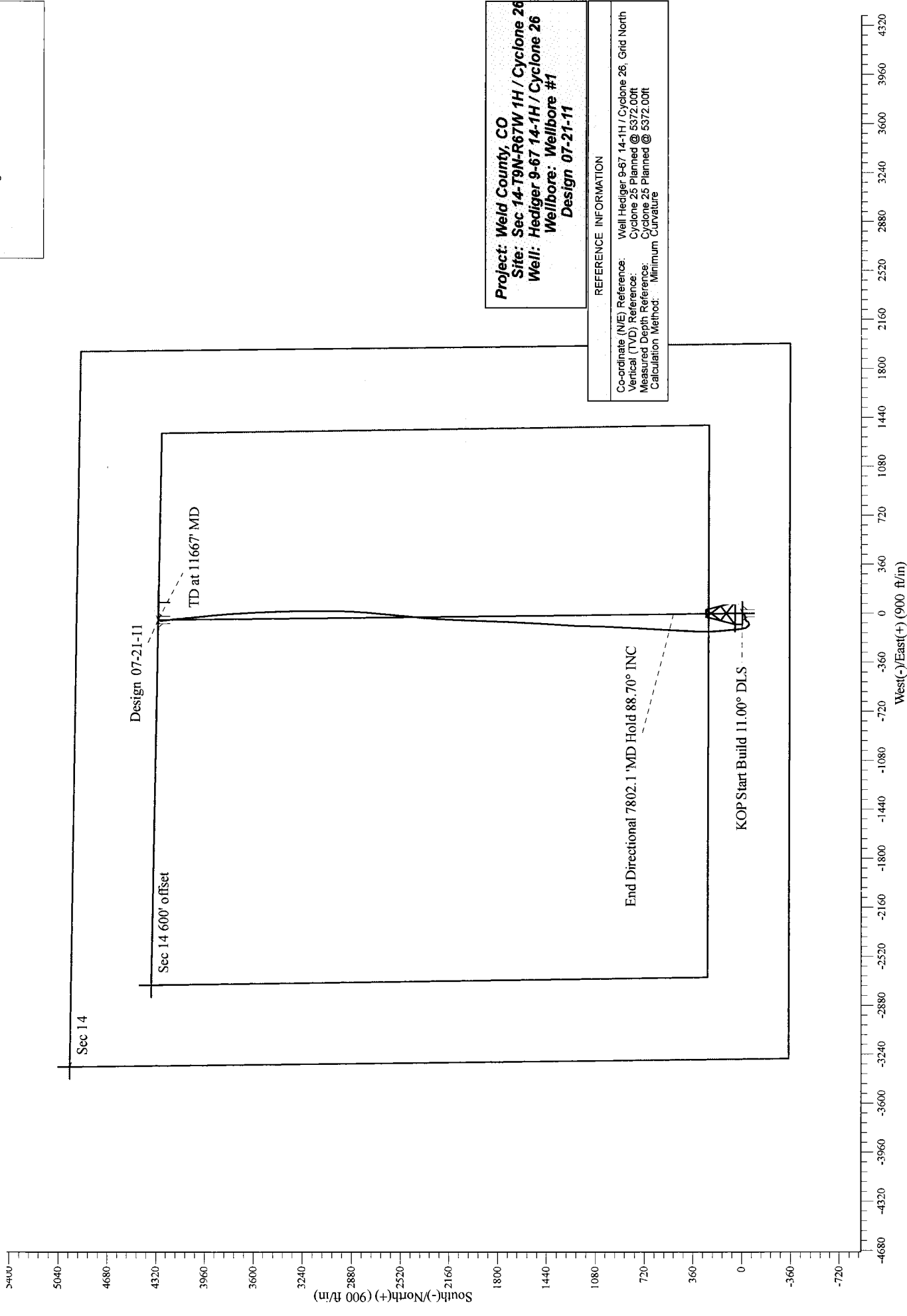
24 August, 2011



HALLIBURTON

Sperry Drilling Services

COMPANY DETAILS: Chesapeake Energy	
Calculation Method:	Minimum Curvature
Error System:	ISCWSA
Scan Method:	Trav. Cylinder North
Error Surface:	Elliptical Conic
Warning Method:	Rules Based





Project: Weld County, CO
Site: Sec 14-T9N-R67W 1H / Cyclone 26
Well: Hediger 9-67 14-1H / Cyclone 26
Wellbore: Wellbore #1
Design: 07-21-11

HALLIBURTON

Sperry Drilling

WELL DETAILS: Hediger 9-67 14-1H / Cyclone 26

+N/-S	+E/-W	Northing	Ground Level	Latitude	Longitude	Slot
0.00	0.00	513495.28	2178615.740	44° 28' 23.41"N	51° 19' 59.2" W	

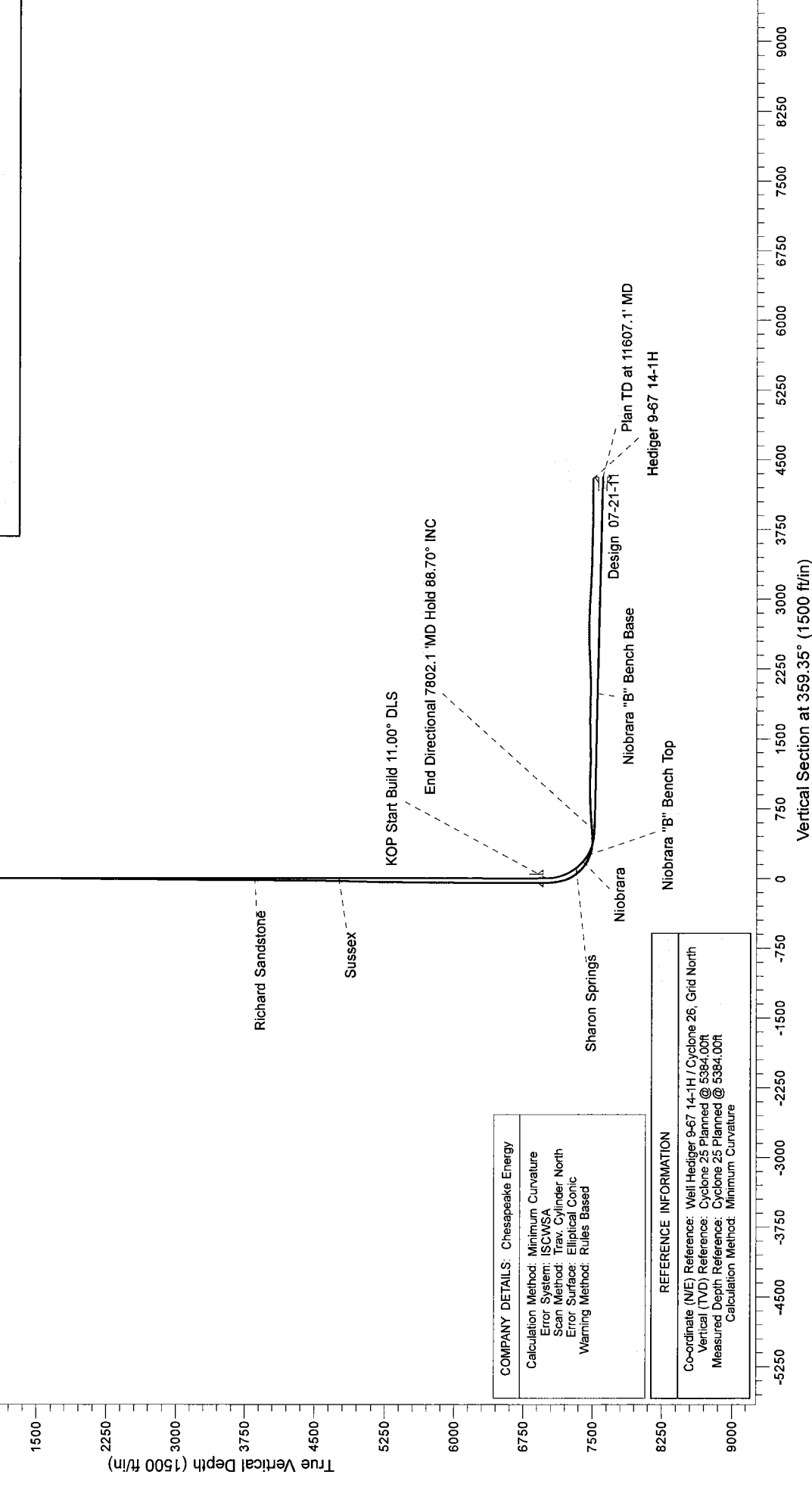
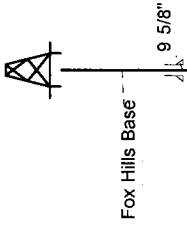
SURVEY PROGRAM

Date: 2011-08-25T00:00:00 Validated: Yes Version:

Depth From: Depth To Survey/Plan Tool
20.00 11607.07 Design 07-21-11 (Wellbore #1) MWD+SC

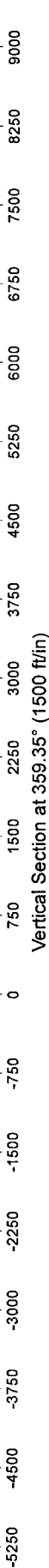
PLAN SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	8.00	0.00	0.00	8.00	0.00	0.00	0.00	0.00	0.00	
2	6995.76	0.00	0.00	6995.76	0.00	0.00	0.00	0.00	0.00	
3	7802.12	88.70	359.35	7516.50	509.02	-5.76	11.00	359.35	509.05	Hediger BHL
4	11607.07	88.70	359.35	7602.82	4312.75	-48.72	0.00	0.00	4313.02	



COMPANY DETAILS:	Chesapeake Energy
Calculation Method:	Minimum Curvature
Error System:	ISCWISA
Scan Method:	Trax. Cylinder North
Error Surface:	Elliptical Conic
Warning Method:	Rules Based

REFERENCE INFORMATION	
Co-ordinate (N/E) Reference:	Well Hediger 9-67 14-1H / Cyclone 26, Grid North
Vertical (TVD) Reference:	Cyclone 25 Planned @ 5384.00ft
Measured Depth Reference:	Cyclone 25 Planned @ 5384.00ft
Calculation Method:	Minimum Curvature



Halliburton Company

Definitive Survey Report

Company: Chesapeake Energy
Project: Weld County, CO
Site: Sec 14-T9N-R67W 1H / Cyclone 26
Well: Hediger 9-67 14-1H / Cyclone 26
Wellbore: Wellbore #1
Design: Hediger 9-67 14-1H

Local Co-ordinate Reference: Well Hediger 9-67 14-1H / Cyclone 26
TVD Reference: New Cyclone 25 @ 5384.00ft
MD Reference: New Cyclone 25 @ 5384.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: Sperry EDM .16 PRD

Project	Weld County, CO		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		Using Well Reference Point
Map Zone:	Colorado North 501		Using geodetic scale factor

Well	Hediger 9-67 14-1H / Cyclone 26			
Well Position	+N/-S	0.00 ft	Northing:	513,495.28 ft
	+E/-W	0.00 ft	Easting:	2,178,615.72 ft
Position Uncertainty		0.00 ft	Wellhead Elevation:	5,364.00 ft
			Latitude:	40° 44' 28.234 N
			Longitude:	104° 51' 19.592 W
			Ground Level:	5,364.00 ft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2010	7/20/2011	8.88	67.32	53,263

Design	Hediger 9-67 14-1H			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 20.00
Vertical Section:	Depth From (TVD)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	20.00	0.00	0.00	247.15

Survey Program	Date 8/24/2011				
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	Survey Start Date
284.00	1,226.00	MWD+SC (Wellbore #1)	INC	Inclinometer (Totco/Teledrift)	07/29/2011
1,441.76	11,610.89	MWD+SC Sperry Surveys (Wellbore #1)	MWD+SC	Fixed:v2:standard dec & axial correction	07/30/2011

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS (°/100')	Vertical Section (ft)	Survey Tool Name
20.00	0.00	0.00	20.00	-5,364.00	0.00	0.00	513,495.28	2,178,615.72	0.00	0.00	UNDEFINED
284.00	1.00	0.00	283.99	-5,100.01	0.00	0.00	513,495.28	2,178,615.72	0.38	0.00	INC (1)
748.00	1.00	0.00	747.92	-4,636.08	0.00	0.00	513,495.28	2,178,615.72	0.00	0.00	INC (1)
1,040.00	1.00	0.00	1,039.87	-4,344.13	0.00	0.00	513,495.28	2,178,615.72	0.00	0.00	INC (1)
1,226.00	0.70	204.70	1,225.86	-4,158.14	0.00	0.00	513,495.28	2,178,615.72	0.89	0.00	INC (1)
1,441.76	0.50	185.04	1,441.61	-3,942.39	-2.14	-0.63	513,493.14	2,178,615.09	0.13	1.41	MWD+SC (2)
1,728.76	0.44	257.97	1,728.60	-3,655.40	-3.61	-1.82	513,491.67	2,178,613.90	0.20	3.08	MWD+SC (2)
2,014.76	0.09	325.08	2,014.60	-3,369.40	-3.66	-3.02	513,491.62	2,178,612.70	0.14	4.21	MWD+SC (2)
2,299.85	0.53	204.02	2,299.69	-3,084.31	-4.68	-3.69	513,490.60	2,178,612.03	0.20	5.22	MWD+SC (2)
2,587.06	0.83	207.72	2,586.88	-2,797.12	-7.73	-5.20	513,487.55	2,178,610.52	0.11	7.79	MWD+SC (2)
2,872.46	1.20	201.99	2,872.23	-2,511.77	-12.33	-7.28	513,482.95	2,178,608.44	0.13	11.50	MWD+SC (2)
3,157.16	0.81	219.64	3,156.89	-2,227.11	-16.65	-9.68	513,478.63	2,178,606.04	0.17	15.38	MWD+SC (2)
3,443.44	1.37	245.00	3,443.12	-1,940.88	-19.65	-14.07	513,475.63	2,178,601.65	0.25	20.60	MWD+SC (2)

Halliburton Company

Definitive Survey Report

Company: Chesapeake Energy
Project: Weld County, CO
Site: Sec 14-T9N-R67W 1H / Cyclone 26
Well: Hediger 9-67 14-1H / Cyclone 26
Wellbore: Wellbore #1
Design: Hediger 9-67 14-1H

Local Co-ordinate Reference: Well Hediger 9-67 14-1H / Cyclone 26
TVD Reference: New Cyclone 25 @ 5384.00ft
MD Reference: New Cyclone 25 @ 5384.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: .Sperry EDM .16 PRD

Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS (°/100')	Vertical Section (ft)	Survey Tool Name
3,728.58	1.51	264.40	3,728.17	-1,655.83	-21.46	-20.90	513,473.82	2,178,594.82	0.18	27.59	MWD+SC (2)
4,015.14	1.58	277.19	4,014.62	-1,369.38	-21.33	-28.58	513,473.95	2,178,587.14	0.12	34.62	MWD+SC (2)
4,301.69	1.59	267.99	4,301.07	-1,082.93	-20.98	-36.47	513,474.30	2,178,579.25	0.09	41.75	MWD+SC (2)
4,588.54	2.03	236.90	4,587.78	-796.22	-23.89	-44.70	513,471.39	2,178,571.02	0.37	50.47	MWD+SC (2)
4,873.94	2.29	234.19	4,872.98	-511.02	-29.99	-53.56	513,465.29	2,178,562.16	0.10	61.00	MWD+SC (2)
5,158.20	1.71	197.06	5,157.07	-226.93	-37.37	-59.41	513,457.91	2,178,556.31	0.49	69.26	MWD+SC (2)
5,444.54	0.97	222.55	5,443.33	59.33	-43.24	-62.30	513,452.04	2,178,553.42	0.33	74.20	MWD+SC (2)
5,824.98	0.68	249.12	5,823.74	439.74	-46.41	-66.59	513,448.87	2,178,549.13	0.12	79.39	MWD+SC (2)
6,015.57	0.74	259.25	6,014.31	630.31	-47.05	-68.86	513,448.23	2,178,546.86	0.07	81.72	MWD+SC (2)
6,301.57	0.82	260.54	6,300.29	916.29	-47.73	-72.69	513,447.55	2,178,543.03	0.03	85.52	MWD+SC (2)
6,584.06	0.97	256.81	6,582.74	1,198.74	-48.61	-77.01	513,446.68	2,178,538.71	0.06	89.84	MWD+SC (2)
6,772.85	1.01	252.14	6,771.50	1,387.50	-49.48	-80.15	513,445.80	2,178,535.57	0.05	93.07	MWD+SC (2)
6,934.79	1.10	254.27	6,933.41	1,549.41	-50.34	-83.01	513,444.94	2,178,532.72	0.06	96.04	MWD+SC (2)
6,957.95	0.96	253.08	6,956.57	1,572.57	-50.46	-83.40	513,444.82	2,178,532.32	0.61	96.45	MWD+SC (2)
6,987.56	1.26	276.52	6,986.18	1,602.18	-50.49	-83.97	513,444.79	2,178,531.76	1.82	96.98	MWD+SC (2)
7,022.24	4.60	315.07	7,020.81	1,636.81	-49.46	-85.33	513,445.82	2,178,530.39	10.67	97.84	MWD+SC (2)
7,048.99	7.12	316.77	7,047.42	1,663.42	-47.50	-87.22	513,447.78	2,178,528.50	9.44	98.82	MWD+SC (2)
7,082.69	9.52	313.01	7,080.76	1,696.76	-44.07	-90.69	513,451.21	2,178,525.03	7.30	100.69	MWD+SC (2)
7,116.62	11.56	312.17	7,114.11	1,730.11	-39.88	-95.26	513,455.40	2,178,520.46	6.03	103.27	MWD+SC (2)
7,150.31	13.83	323.10	7,146.98	1,762.98	-34.39	-100.18	513,460.89	2,178,515.54	9.78	105.67	MWD+SC (2)
7,179.19	15.60	332.24	7,174.92	1,790.92	-28.19	-104.06	513,467.09	2,178,511.66	10.09	106.84	MWD+SC (2)
7,212.36	18.41	340.24	7,206.64	1,822.64	-19.31	-107.91	513,475.97	2,178,507.81	11.01	106.94	MWD+SC (2)
7,240.53	22.10	346.33	7,233.07	1,849.07	-9.97	-110.67	513,485.31	2,178,505.05	15.07	105.86	MWD+SC (2)
7,271.21	26.49	351.09	7,261.03	1,877.03	2.40	-113.10	513,497.68	2,178,502.62	15.66	103.29	MWD+SC (2)
7,303.55	31.29	353.65	7,289.33	1,905.33	17.89	-115.14	513,513.17	2,178,500.58	15.32	99.16	MWD+SC (2)
7,332.79	35.80	354.93	7,313.70	1,929.70	33.96	-116.74	513,529.24	2,178,498.98	15.61	94.39	MWD+SC (2)
7,366.21	39.70	355.31	7,340.12	1,956.12	54.34	-118.48	513,549.62	2,178,497.24	11.69	88.08	MWD+SC (2)
7,398.19	42.86	354.75	7,364.15	1,980.15	75.36	-120.31	513,570.64	2,178,495.41	9.95	81.61	MWD+SC (2)
7,428.64	46.53	354.54	7,385.79	2,001.79	96.68	-122.31	513,591.96	2,178,493.41	12.06	75.17	MWD+SC (2)
7,461.14	50.81	354.75	7,407.25	2,023.25	120.97	-124.58	513,616.25	2,178,491.14	13.18	67.84	MWD+SC (2)
7,492.49	55.09	354.29	7,426.13	2,042.13	145.87	-126.97	513,641.15	2,178,488.75	13.70	60.37	MWD+SC (2)
7,523.69	59.29	354.95	7,443.03	2,059.03	171.97	-129.43	513,667.25	2,178,486.29	13.58	52.50	MWD+SC (2)
7,555.49	64.24	356.07	7,458.07	2,074.07	199.89	-131.62	513,695.17	2,178,484.11	15.87	43.67	MWD+SC (2)
7,588.79	68.33	357.20	7,471.46	2,087.46	230.32	-133.40	513,725.60	2,178,482.32	12.67	33.50	MWD+SC (2)
7,618.50	71.26	358.79	7,481.72	2,097.72	258.18	-134.37	513,753.46	2,178,481.35	11.07	23.58	MWD+SC (2)
7,651.79	74.96	0.63	7,491.40	2,107.40	290.03	-134.53	513,785.31	2,178,481.19	12.31	11.36	MWD+SC (2)
7,682.79	79.62	2.30	7,498.21	2,114.21	320.25	-133.75	513,815.53	2,178,481.97	15.92	-1.09	MWD+SC (2)
7,710.04	84.51	3.10	7,501.98	2,117.98	347.20	-132.48	513,842.48	2,178,483.24	18.18	-12.73	MWD+SC (2)
7,805.99	93.83	3.37	7,503.36	2,119.36	442.88	-127.07	513,938.16	2,178,488.65	9.72	-54.86	MWD+SC (2)
7,897.80	95.43	2.40	7,495.95	2,111.95	534.27	-122.46	514,029.55	2,178,493.26	2.04	-94.59	MWD+SC (2)

Halliburton Company

Definitive Survey Report

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Project: Weld County, CO
Site: Sec 14-T9N-R67W 1H / Cyclone 26
Well: Hediger 9-67 14-1H / Cyclone 26
Wellbore: Wellbore #1
Design: Hediger 9-67 14-1H

Local Co-ordinate Reference: Well Hediger 9-67 14-1H / Cyclone 26
TVD Reference: New Cyclone 25 @ 5384.00ft
MD Reference: New Cyclone 25 @ 5384.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: .Sperry EDM .16 PRD

Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS (°/100')	Vertical Section (ft)	Survey Tool Name
7,993.30	93.05	3.74	7,488.89	2,104.89	629.36	-117.36	514,124.64	2,178,498.36	2.86	-136.22	MWD+SC (2)
8,087.87	93.33	3.57	7,483.63	2,099.63	723.60	-111.34	514,218.87	2,178,504.38	0.35	-178.35	MWD+SC (2)
8,180.41	92.93	3.58	7,478.58	2,094.58	815.82	-105.58	514,311.09	2,178,510.14	0.43	-219.47	MWD+SC (2)
8,274.61	90.46	2.77	7,475.79	2,091.79	909.82	-100.37	514,405.10	2,178,515.35	2.76	-260.78	MWD+SC (2)
8,368.09	89.17	2.08	7,476.09	2,092.09	1,003.22	-96.41	514,498.49	2,178,519.31	1.56	-300.68	MWD+SC (2)
8,462.15	87.99	1.53	7,478.42	2,094.42	1,097.20	-93.45	514,592.47	2,178,522.27	1.38	-339.91	MWD+SC (2)
8,557.93	87.75	0.56	7,481.98	2,097.98	1,192.90	-91.70	514,688.17	2,178,524.02	1.04	-378.67	MWD+SC (2)
8,655.01	89.48	3.29	7,484.33	2,100.33	1,289.88	-88.44	514,785.15	2,178,527.28	3.33	-419.33	MWD+SC (2)
8,748.69	90.37	4.52	7,484.45	2,100.45	1,383.34	-82.06	514,878.61	2,178,533.66	1.62	-461.50	MWD+SC (2)
8,841.01	91.45	4.02	7,482.99	2,098.99	1,475.39	-75.19	514,970.66	2,178,540.53	1.29	-503.58	MWD+SC (2)
8,934.48	92.28	2.95	7,479.94	2,095.94	1,568.64	-69.51	515,063.91	2,178,546.21	1.45	-545.01	MWD+SC (2)
9,031.96	89.26	3.12	7,478.63	2,094.63	1,665.96	-64.35	515,161.23	2,178,551.37	3.10	-587.56	MWD+SC (2)
9,127.85	89.97	2.68	7,479.28	2,095.28	1,761.72	-59.50	515,256.99	2,178,556.22	0.87	-629.21	MWD+SC (2)
9,219.63	89.29	1.31	7,479.87	2,095.87	1,853.44	-56.31	515,348.71	2,178,559.41	1.67	-667.77	MWD+SC (2)
9,314.47	88.83	2.16	7,481.43	2,097.43	1,948.23	-53.43	515,443.49	2,178,562.29	1.02	-707.22	MWD+SC (2)
9,406.59	89.60	1.77	7,482.69	2,098.69	2,040.28	-50.28	515,535.55	2,178,565.44	0.94	-745.87	MWD+SC (2)
9,500.60	89.69	1.60	7,483.27	2,099.27	2,134.25	-47.51	515,629.52	2,178,568.21	0.20	-784.91	MWD+SC (2)
9,594.59	91.94	4.95	7,481.94	2,097.94	2,228.06	-42.15	515,723.32	2,178,573.58	4.29	-826.28	MWD+SC (2)
9,691.61	92.87	4.75	7,477.86	2,093.86	2,324.64	-33.95	515,819.91	2,178,581.77	0.98	-871.33	MWD+SC (2)
9,783.99	93.79	4.54	7,472.50	2,088.50	2,416.56	-26.48	515,911.83	2,178,589.24	1.02	-913.90	MWD+SC (2)
9,879.16	92.19	5.80	7,467.53	2,083.53	2,511.21	-17.92	516,006.48	2,178,597.80	2.14	-958.55	MWD+SC (2)
9,970.64	91.23	5.25	7,464.80	2,080.80	2,602.23	-9.11	516,097.49	2,178,606.61	1.21	-1,002.00	MWD+SC (2)
10,066.38	87.69	5.68	7,465.71	2,081.71	2,697.51	0.00	516,192.77	2,178,615.72	3.72	-1,047.40	MWD+SC (2)
10,162.35	88.24	4.16	7,469.11	2,085.11	2,793.06	8.23	516,288.33	2,178,623.95	1.68	-1,092.08	MWD+SC (2)
10,255.23	87.87	2.68	7,472.27	2,088.27	2,885.72	13.77	516,380.98	2,178,629.49	1.64	-1,133.16	MWD+SC (2)
10,348.69	86.70	1.36	7,476.69	2,092.69	2,979.02	17.06	516,474.28	2,178,632.78	1.89	-1,172.42	MWD+SC (2)
10,442.49	86.08	0.78	7,482.60	2,098.60	3,072.61	18.80	516,567.87	2,178,634.52	0.90	-1,210.37	MWD+SC (2)
10,538.59	86.88	359.73	7,488.50	2,104.50	3,168.53	19.23	516,663.79	2,178,634.95	1.37	-1,248.00	MWD+SC (2)
10,630.89	87.28	358.95	7,493.20	2,109.20	3,260.70	18.17	516,755.96	2,178,633.89	0.95	-1,282.81	MWD+SC (2)
10,725.68	88.02	358.44	7,497.09	2,113.09	3,355.39	16.01	516,850.64	2,178,631.73	0.95	-1,317.59	MWD+SC (2)
10,821.09	87.90	357.95	7,500.49	2,116.49	3,450.69	13.01	516,945.94	2,178,628.73	0.53	-1,351.83	MWD+SC (2)
10,912.08	87.69	357.59	7,503.99	2,119.99	3,541.54	9.47	517,036.80	2,178,625.19	0.46	-1,383.84	MWD+SC (2)
10,998.85	88.95	357.25	7,506.53	2,122.53	3,628.18	5.57	517,123.44	2,178,621.29	1.50	-1,413.89	MWD+SC (2)
11,100.29	89.23	356.43	7,508.14	2,124.14	3,729.46	-0.02	517,224.71	2,178,615.70	0.85	-1,448.06	MWD+SC (2)
11,195.00	89.94	354.99	7,508.83	2,124.83	3,823.90	-7.11	517,319.15	2,178,608.61	1.70	-1,478.20	MWD+SC (2)
11,293.56	88.98	354.19	7,509.76	2,125.76	3,922.01	-16.40	517,417.26	2,178,599.32	1.27	-1,507.73	MWD+SC (2)
11,388.29	90.00	354.76	7,510.60	2,126.60	4,016.29	-25.52	517,511.55	2,178,590.20	1.23	-1,535.94	MWD+SC (2)
11,481.09	90.53	354.08	7,510.17	2,126.17	4,108.65	-34.54	517,603.91	2,178,581.18	0.93	-1,563.48	MWD+SC (2)
11,575.86	91.51	353.93	7,508.48	2,124.48	4,202.89	-44.44	517,698.14	2,178,571.28	1.05	-1,590.95	MWD+SC (2)
11,610.89	92.04	353.58	7,507.40	2,123.40	4,237.69	-48.25	517,732.95	2,178,567.47	1.81	-1,600.96	MWD+SC (2)

Halliburton Company

Definitive Survey Report

Company: Chesapeake Energy
Project: Weld County, CO
Site: Sec 14-T9N-R67W 1H / Cyclone 26
Well: Hediger 9-67 14-1H / Cyclone 26
Wellbore: Wellbore #1
Design: Hediger 9-67 14-1H

Local Co-ordinate Reference: Well Hediger 9-67 14-1H / Cyclone 26
TVD Reference: New Cyclone 25 @ 5384.00ft
MD Reference: New Cyclone 25 @ 5384.00ft
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: .Sperry EDM .16 PRD

Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	+N/-S (ft)	+E/-W (ft)	Map Northing (ft)	Map Easting (ft)	DLS (°/100')	Vertical Section (ft)	Survey Tool Name
11,667.00	92.04	353.58	7,505.40	2,121.40	4,293.42	-54.52	517,788.67	2,178,561.20	0.00	-1,616.81	PROJECTED to TD