



30-015-38357

Ryan Energy Directional Drilling Report

Field: Eddy Co, NM NAD 83
Site: PLU Ross Ranch 20 Federal 1H
Well: 20 Federal 1H
Wellpath: OH

Prepared For:

RECEIVED

SEP 02 2011

NMOCD ARTESIA

Chesapeake Operating, Inc.



Ryan Energy Technology

19510 Oil Center Blvd
Houston, TX 77073
Ph 281-443-1414
Fx 281-443-1676

www.ryanenergy.com



Chesapeake Operating, Inc.
Field: Eddy Co, NM NAD 83
Site: PLU Ross Ranch 20 Federal 1H
Well: 20 Federal 1H
Wellpath: OH



Azimuths to Grid North
 True North -0 22°
 Magnetic North 7 55°

Magnetic Field
 Strength 48572nT
 Dip Angle 60 04°
 Date 2/28/2011
 Model IGRF2010

FIELD DETAILS

Eddy Co, NM NAD 83
 USA

Geodetic System US State Plane Coordinate System 1983
 Ellipsoid GRS 1980
 Zone New Mexico, Eastern Zone
 Magnetic Model IGRF2010
 System Datum Mean Sea Level
 Local North Grid North

WELLPATH DETAILS

OH

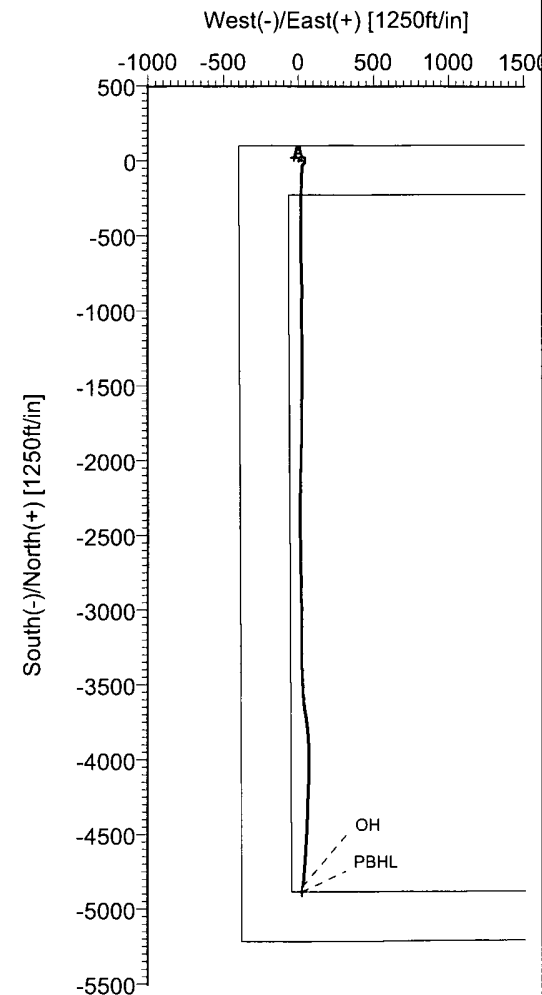
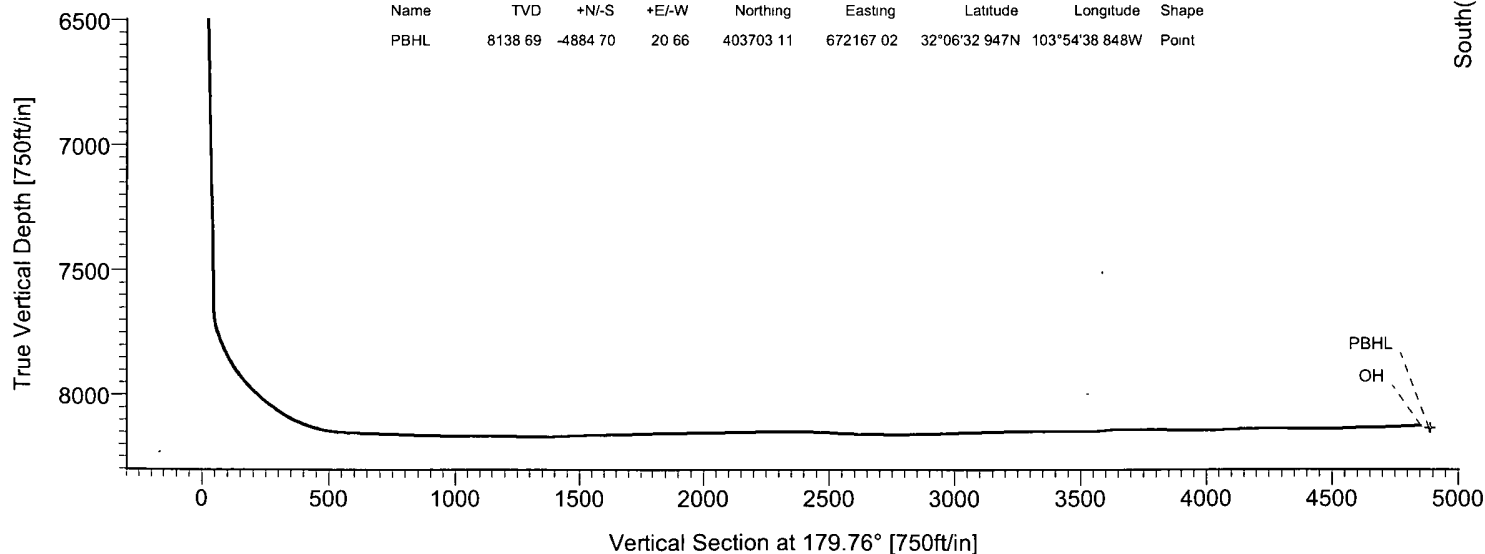
Rig Patterson 62
 Ref SITE 3219 00ft
 V Section
 Angle
 179 76°
 Origin
 +N/-S
 0 00
 Origin
 +E/-W
 0 00
 Starting
 From TVD
 0 00

SITE DETAILS

PLU Ross Ranch 20 Federal 1H
 Eddy, NM
 Site Centre Northing 408587 82
 Easting 672146 36
 Ground Level 3199 00
 Positional Uncertainty 0 00
 Convergence 0 22

TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL	8138 69	-4884 70	20 66	403703 11	672167 02	32°06'32 947N	103°54'38 848W	Point



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Wellpath (20 Federal 1H/0H)
 Created By: Erik Alberto De La Fe Date: 3/22/2011
 Checked: _____ Date: _____
 Reviewed: _____ Date: _____
 Approved: _____ Date: _____



Ryan Energy Technologies

Survey Report



Company: Chesapeake Operating, Inc.		Date: 3/22/2011	Time: 13:44:41	Page: 1
Field: Eddy Co, NM NAD 83		Co-ordinate(NE) Reference: Site: PLU, Ross Ranch, 20 Federal 1H		
Site: PLU, Ross Ranch 20 Federal 1H		Vertical (TVD) Reference: SITE 3219.0		
Well: 20 Federal 1H		Section (VS) Reference: Well (0.00N, 0.00E, 179.76Azi)		
Wellpath: OH		Survey Calculation Method: Minimum Curvature Db: Sybase		

Field: Eddy Co, NM NAD 83	
USA	
Map System: US State Plane Coordinate System 1983	Map Zone: New Mexico, Eastern Zone
Geo Datum: GRS 1980	Coordinate System: Site Centre
Sys Datum: Mean Sea Level	Geomagnetic Model: IGRF2010

Site: PLU, Ross Ranch 20 Federal 1H	
Eddy, NM	
Site Position:	Northing: 408587.82 ft
From: Map	Easting: 672146.36 ft
Position Uncertainty: 0.00 ft	Latitude: 32 7 21.287 N
Ground Level: 3199.00 ft	Longitude: 103 54 38.865 W
	North Reference: Grid
	Grid Convergence: 0.22 deg

Well: 20 Federal 1H		Slot Name:	
Well Position: +N/-S 0.00 ft	Northing: 408587.82 ft	Latitude: 32 7 21.287 N	
+E/-W 0.00 ft	Easting: 672146.36 ft	Longitude: 103 54 38.865 W	
Position Uncertainty: 0.00 ft			

Wellpath: OH		Drilled From: Surface	
Current Datum: SITE	Height: 3219.00 ft	Tie-on Depth: 0.00 ft	
Magnetic Data: 2/28/2011		Above System Datum: Mean Sea Level	
Field Strength: 48572 nT		Declination: 7.77 deg	
Vertical Section: Depth From (TVD)	+N/-S	Mag Dip Angle: 60.04 deg	
ft	ft	+E/-W	Direction
		ft	deg
0.00	0.00	0.00	179.76

Survey Program for Definitive Wellpath			
Date: 3/16/2011	Validated: No	Version: 0	
Actual From ft	To ft	Survey	Tool Name
200.00	7589.30	Survey #1 (200.00-7589.30)	Gyro
7637.00	12683.00	Survey #2 (7637.00-12683.00)	Ryan MWD
12740.00	12740.00	Survey #3 (12740.00-12740.00)	Projection

Survey										
MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
200.00	0.82	160.54	199.99	-1.35	0.48	1.35	0.41	0.41	0.00	Gyro
400.00	0.55	55.44	399.98	-2.15	1.74	2.16	0.55	-0.13	-52.55	Gyro
800.00	1.63	32.19	799.91	3.75	6.36	-3.72	0.29	0.27	-5.81	Gyro
1100.10	1.44	35.57	1099.90	10.43	10.82	-10.38	0.07	-0.06	1.13	Gyro
1290.90	1.48	35.42	1290.64	14.39	13.65	-14.33	0.02	0.02	-0.08	Gyro
1481.80	0.88	27.44	1481.50	17.70	15.75	-17.63	0.33	-0.31	-4.18	Gyro
1672.60	0.95	342.49	1672.27	20.51	15.95	-20.44	0.37	0.04	-23.56	Gyro
1863.50	1.49	309.12	1863.13	23.58	13.55	-23.52	0.46	0.28	-17.48	Gyro
2054.40	1.83	308.34	2053.95	27.04	9.23	-27.00	0.18	0.18	-0.41	Gyro
2245.20	1.43	310.10	2244.68	30.46	5.02	-30.44	0.21	-0.21	0.92	Gyro
2436.10	0.89	317.20	2435.54	33.08	2.19	-33.07	0.29	-0.28	3.72	Gyro
2626.90	0.88	331.31	2626.31	35.46	0.48	-35.45	0.11	-0.01	7.40	Gyro
2817.80	0.68	349.34	2817.20	37.86	-0.43	-37.86	0.16	-0.10	9.44	Gyro
3008.70	1.47	103.58	3008.07	38.39	1.74	-38.39	0.97	0.41	59.84	Gyro
3199.50	2.28	105.08	3198.77	36.83	7.78	-36.80	0.43	0.42	0.79	Gyro
3390.40	3.90	121.24	3389.39	32.48	17.00	-32.40	0.96	0.85	8.47	Gyro
3581.20	3.25	124.20	3579.82	26.07	27.02	-25.96	0.35	-0.34	1.55	Gyro
3772.10	2.13	130.94	3770.50	20.70	34.18	-20.56	0.61	-0.59	3.53	Gyro
3963.00	1.59	131.64	3961.30	16.62	38.84	-16.46	0.28	-0.28	0.37	Gyro
4153.80	1.10	145.69	4152.05	13.35	41.85	-13.17	0.31	-0.26	7.36	Gyro



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Survey Report



Company: Chesapeake Operating, Inc.	Date: 3/22/2011	Time: 13:44:41	Page: 2
Field: Eddy Co, NM NAD 83	Co-ordinate(NE) Reference:	Site: PLU Ross Ranch 20 Federal 1H	
Site: PLU Ross Ranch 20 Federal 1H	Vertical (TVD) Reference:	SITE: 3219.0	
Well: 20 Federal 1H	Section (VS) Reference:	Well: (0.00N,0.00E,179.76Azi)	
Wellpath: OH	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
4344.70	0.75	165.02	4342.93	10.63	43.20	-10.45	0.24	-0.18	10.13	Gyro
4535.50	0.60	181.80	4533.71	8.42	43.49	-8.24	0.13	-0.08	8.79	Gyro
4726.40	0.44	216.46	4724.61	6.83	43.03	-6.65	0.18	-0.08	18.16	Gyro
4917.30	0.31	223.92	4915.50	5.87	42.23	-5.70	0.07	-0.07	3.91	Gyro
5108.10	0.21	214.49	5106.30	5.21	41.68	-5.04	0.06	-0.05	-4.94	Gyro
5299.00	0.53	181.56	5297.20	4.04	41.46	-3.87	0.19	0.17	-17.25	Gyro
5489.80	1.00	172.98	5487.98	1.51	41.63	-1.33	0.25	0.25	-4.50	Gyro
5680.70	1.32	173.36	5678.84	-2.33	42.09	2.51	0.17	0.17	0.20	Gyro
5871.60	1.47	179.54	5869.68	-6.96	42.37	7.14	0.11	0.08	3.24	Gyro
6062.40	1.56	204.29	6060.42	-11.78	41.32	11.95	0.34	0.05	12.97	Gyro
6253.30	1.60	223.12	6251.25	-16.09	38.43	16.25	0.27	0.02	9.86	Gyro
6444.10	1.31	216.53	6441.98	-19.79	35.31	19.94	0.18	-0.15	-3.45	Gyro
6635.00	1.15	209.42	6632.84	-23.21	33.07	23.35	0.12	-0.08	-3.72	Gyro
6825.90	1.42	209.88	6823.69	-26.93	30.95	27.06	0.14	0.14	0.24	Gyro
7016.70	1.20	210.24	7014.44	-30.71	28.76	30.83	0.12	-0.12	0.19	Gyro
7207.60	1.44	200.80	7205.29	-34.67	26.91	34.79	0.17	0.13	-4.94	Gyro
7398.40	1.51	211.33	7396.03	-39.06	24.75	39.17	0.15	0.04	5.52	Gyro
7589.30	0.84	137.14	7586.90	-42.24	24.39	42.34	0.79	-0.35	-38.86	Gyro
7637.00	1.30	131.60	7634.59	-42.85	25.03	42.96	0.99	0.96	-11.61	Ryan MWD
7669.00	1.50	152.50	7666.58	-43.47	25.50	43.57	1.70	0.62	65.31	Ryan MWD
7701.00	7.10	178.80	7698.48	-45.82	25.73	45.92	18.10	17.50	82.19	Ryan MWD
7733.00	13.50	185.60	7729.95	-51.52	25.41	51.62	20.32	20.00	21.25	Ryan MWD
7764.00	18.30	185.20	7759.75	-59.97	24.62	60.07	15.49	15.48	-1.29	Ryan MWD
7796.00	21.50	184.80	7789.84	-70.82	23.67	70.92	10.01	10.00	-1.25	Ryan MWD
7828.00	24.30	184.90	7819.31	-83.23	22.62	83.32	8.75	8.75	0.31	Ryan MWD
7859.00	26.10	184.30	7847.36	-96.38	21.56	96.47	5.86	5.81	-1.94	Ryan MWD
7891.00	30.00	181.50	7875.60	-111.40	20.82	111.49	12.86	12.19	-8.75	Ryan MWD
7923.00	33.40	182.40	7902.82	-128.21	20.24	128.29	10.73	10.62	2.81	Ryan MWD
7955.00	37.40	181.90	7928.90	-146.73	19.55	146.81	12.53	12.50	-1.56	Ryan MWD
7987.00	40.30	181.80	7953.82	-166.79	18.91	166.87	9.06	9.06	-0.31	Ryan MWD
8018.00	43.70	181.60	7976.85	-187.52	18.29	187.59	10.98	10.97	-0.65	Ryan MWD
8050.00	45.90	182.00	7999.56	-210.05	17.58	210.13	6.93	6.87	1.25	Ryan MWD
8082.00	48.40	182.40	8021.32	-233.50	16.68	233.56	7.87	7.81	1.25	Ryan MWD
8114.00	51.00	180.60	8042.01	-257.89	16.05	257.95	9.19	8.12	-5.62	Ryan MWD
8145.00	53.90	179.70	8060.91	-282.46	15.99	282.53	9.63	9.35	-2.90	Ryan MWD
8177.00	57.80	179.40	8078.87	-308.94	16.20	309.00	12.21	12.19	-0.94	Ryan MWD
8208.00	61.00	179.30	8094.64	-335.62	16.50	335.68	10.33	10.32	-0.32	Ryan MWD
8240.00	64.70	179.40	8109.24	-364.08	16.82	364.15	11.57	11.56	0.31	Ryan MWD
8272.00	68.20	180.30	8122.03	-393.41	16.90	393.48	11.24	10.94	2.81	Ryan MWD
8304.00	72.00	181.00	8132.92	-423.50	16.55	423.56	12.05	11.87	2.19	Ryan MWD
8335.00	75.70	181.10	8141.54	-453.26	16.01	453.32	11.94	11.94	0.32	Ryan MWD
8367.00	79.80	181.20	8148.33	-484.52	15.38	484.58	12.82	12.81	0.31	Ryan MWD
8399.00	83.70	180.30	8152.92	-516.18	14.97	516.24	12.50	12.19	-2.81	Ryan MWD
8431.00	86.50	179.60	8155.65	-548.06	14.99	548.12	9.02	8.75	-2.19	Ryan MWD
8462.00	87.20	178.90	8157.35	-579.01	15.40	579.07	3.19	2.26	-2.26	Ryan MWD
8493.00	88.00	178.30	8158.65	-609.97	16.16	610.04	3.22	2.58	-1.94	Ryan MWD
8525.00	88.30	178.30	8159.69	-641.94	17.11	642.01	0.94	0.94	0.00	Ryan MWD
8620.00	88.10	177.50	8162.67	-736.83	20.58	736.91	0.87	-0.21	-0.84	Ryan MWD
8715.00	87.40	179.60	8166.40	-831.72	22.99	831.81	2.33	-0.74	2.21	Ryan MWD
8811.00	89.80	180.60	8168.74	-927.68	22.82	927.77	2.71	2.50	1.04	Ryan MWD
8906.00	89.90	180.00	8168.99	-1022.68	22.32	1022.77	0.64	0.11	-0.63	Ryan MWD
9001.00	89.30	179.40	8169.66	-1117.68	22.82	1117.76	0.89	-0.63	-0.63	Ryan MWD
9097.00	89.30	179.30	8170.83	-1213.66	23.91	1213.75	0.10	0.00	-0.10	Ryan MWD
9192.00	88.90	179.20	8172.32	-1308.64	25.15	1308.74	0.43	-0.42	-0.11	Ryan MWD



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Survey Report



Company: Chesapeake Operating, Inc. Date: 3/22/2011 Time: 13:44:41 Page: 3
Field: Eddy Co, NM NAD 83 Co-ordinate(NE) Reference: Site: PLU Ross Ranch 20 Federal 1H
Site: PLU Ross Ranch 20 Federal 1H Vertical (TVD) Reference: SITE 3219.0
Well: 20 Federal 1H Section (VS) Reference: Well (0.00N,0.00E,179.76Azi)
Wellpath: OH Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	+N/-S ft	+E/-W ft	VS ft	DLS deg/100ft	Build deg/100ft	Turn deg/100ft	Tool/Comment
9287.00	92.80	181.00	8170.91	-1403.61	24.99	1403.70	4.52	4.11	1.89	Ryan MWD
9382.00	92.00	180.20	8166.93	-1498.52	23.99	1498.61	1.19	-0.84	-0.84	Ryan MWD
9477.00	91.40	181.10	8164.12	-1593.47	22.92	1593.55	1.14	-0.63	0.95	Ryan MWD
9573.00	91.30	180.30	8161.85	-1689.44	21.74	1689.51	0.84	-0.10	-0.83	Ryan MWD
9668.00	92.20	180.50	8158.95	-1784.39	21.08	1784.46	0.97	0.95	0.21	Ryan MWD
9763.00	90.70	181.80	8156.55	-1879.34	19.17	1879.40	2.09	-1.58	1.37	Ryan MWD
9859.00	90.70	181.50	8155.38	-1975.29	16.41	1975.34	0.31	0.00	-0.31	Ryan MWD
9954.00	91.00	181.40	8153.97	-2070.25	14.01	2070.29	0.33	0.32	-0.11	Ryan MWD
10049.00	91.40	181.50	8151.98	-2165.20	11.60	2165.23	0.43	0.42	0.11	Ryan MWD
10144.00	90.10	180.60	8150.73	-2260.17	9.86	2260.19	1.66	-1.37	-0.95	Ryan MWD
10240.00	90.60	181.30	8150.15	-2356.15	8.27	2356.17	0.90	0.52	0.73	Ryan MWD
10335.00	87.10	178.70	8152.05	-2451.11	8.27	2451.12	4.59	-3.68	-2.74	Ryan MWD
10430.00	87.20	178.50	8156.78	-2545.96	10.59	2545.99	0.24	0.11	-0.21	Ryan MWD
10526.00	88.80	179.50	8160.13	-2641.89	12.26	2641.92	1.97	1.67	1.04	Ryan MWD
10621.00	89.60	178.40	8161.45	-2736.86	14.00	2736.89	1.43	0.84	-1.16	Ryan MWD
10716.00	90.90	178.80	8161.04	-2831.83	16.32	2831.87	1.43	1.37	0.42	Ryan MWD
10812.00	91.80	179.00	8158.78	-2927.78	18.17	2927.83	0.96	0.94	0.21	Ryan MWD
10907.00	91.40	178.90	8156.13	-3022.73	19.91	3022.79	0.43	-0.42	-0.11	Ryan MWD
11002.00	92.00	179.80	8153.31	-3117.68	20.98	3117.74	1.14	0.63	0.95	Ryan MWD
11098.00	90.90	180.10	8150.88	-3213.65	21.07	3213.71	1.19	-1.15	0.31	Ryan MWD
11193.00	90.80	179.60	8149.47	-3308.64	21.32	3308.70	0.54	-0.11	-0.53	Ryan MWD
11288.00	89.10	178.20	8149.55	-3403.61	23.14	3403.68	2.32	-1.79	-1.47	Ryan MWD
11383.00	89.20	177.40	8150.96	-3498.53	26.79	3498.61	0.85	0.11	-0.84	Ryan MWD
11478.00	96.40	176.50	8146.32	-3593.22	31.83	3593.32	7.64	7.58	-0.95	Ryan MWD
11574.00	89.40	170.30	8141.46	-3688.36	42.85	3688.50	9.73	-7.29	-6.46	Ryan MWD
11669.00	89.10	173.60	8142.71	-3782.40	56.15	3782.60	3.49	-0.32	3.47	Ryan MWD
11765.00	88.50	176.90	8144.72	-3878.03	64.10	3878.27	3.49	-0.62	3.44	Ryan MWD
11860.00	90.20	179.60	8145.80	-3972.97	67.00	3973.22	3.36	1.79	2.84	Ryan MWD
11955.00	92.50	180.30	8143.56	-4067.94	67.08	4068.18	2.53	2.42	0.74	Ryan MWD
12050.00	92.00	182.30	8139.83	-4162.83	64.93	4163.07	2.17	-0.53	2.11	Ryan MWD
12144.00	90.00	182.80	8138.19	-4256.72	60.75	4256.94	2.19	-2.13	0.53	Ryan MWD
12239.00	88.70	181.10	8139.27	-4351.66	57.52	4351.86	2.25	-1.37	-1.79	Ryan MWD
12334.00	90.30	182.50	8140.10	-4446.60	54.53	4446.79	2.24	1.68	1.47	Ryan MWD
12430.00	91.50	183.40	8138.59	-4542.46	49.59	4542.63	1.56	1.25	0.94	Ryan MWD
12525.00	91.50	183.20	8136.10	-4637.27	44.13	4637.41	0.21	0.00	-0.21	Ryan MWD
12620.00	92.40	184.90	8132.87	-4731.97	37.42	4732.09	2.02	0.95	1.79	Ryan MWD
12683.00	92.90	185.20	8129.96	-4794.66	31.88	4794.75	0.93	0.79	0.48	Ryan MWD
12740.00	92.90	185.20	8127.07	-4851.35	26.72	4851.42	0.00	0.00	0.00	Projection



Ryan Energy Technologies

COMPLETION REPORT



Company: Chesapeake Operating, Inc.
Field: Eddy Co, NM NAD 83
Site: PLU Ross Ranch 20 Federal 1H
Well: 20 Federal 1H
Wellpath: OH

Date: 3/22/2011
Co-ordinate(NE) Reference: Site: PLU Ross Ranch 20 Federal 1H
Vertical (TVD) Reference: SITE 3219.0
Section (VS) Reference: Well (0.00N,0.00E,179.76Azi)
Survey Calculation Method: Minimum Curvature **Db:** Sybase

Field: Eddy Co, NM NAD 83

USA

Map System: US State Plane Coordinate System 1983

Geo Datum: GRS 1980

Sys Datum: Mean Sea Level

Map Zone:

New Mexico, Eastern Zone

Coordinate System:

Site Centre

Geomagnetic Model:

IGRF2010

Site: PLU Ross Ranch 20 Federal 1H

Eddy, NM

Site Position: Northing: 408587.82 ft Latitude: 32 7 21.287 N
From: Map Easting: 672146.36 ft Longitude: 103 54 38.865 W
Position Uncertainty: 0.00 ft North Reference: Grid
Ground Level: 3199.00 ft Grid Convergence: 0.22 deg

Well: 20 Federal 1H

Slot Name:

Well Position: +N/-S 0.00 ft Northing: 408587.82 ft Latitude: 32 7 21.287 N
 +E/-W 0.00 ft Easting: 672146.36 ft Longitude: 103 54 38.865 W
Position Uncertainty: 0.00 ft

Wellpath: OH

Drilled From: Surface
Tie-on Depth: 0.00 ft
Above System Datum: Mean Sea Level
Declination: 7.77 deg
Mag Dip Angle: 60.04 deg
+E/-W Direction deg

Current Datum: SITE Height 3219.00 ft
Magnetic Data: 2/28/2011
Field Strength: 48572 nT
Vertical Section: Depth From (TVD) +N/-S ft
 0.00 0.00 0.00 179.76

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	Clsr Dist. ft	Clsr Azi deg	DLS deg/100ft	Tool
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	TIE LINE
200.00	0.82	199.99	1.35	160.54	-1.35	0.48	1.43	160.54	0.41	Gyro
400.00	0.55	399.98	2.16	55.44	-2.15	1.74	2.77	141.01	0.55	Gyro
800.00	1.63	799.91	-3.72	32.19	3.75	6.36	7.38	59.46	0.29	Gyro
1100.10	1.44	1099.90	-10.38	35.57	10.43	10.82	15.03	46.06	0.07	Gyro
1290.90	1.48	1290.64	-14.33	35.42	14.39	13.65	19.83	43.49	0.02	Gyro
1481.80	0.88	1481.50	-17.63	27.44	17.70	15.75	23.69	41.67	0.33	Gyro
1672.60	0.95	1672.27	-20.44	342.49	20.51	15.95	25.98	37.88	0.37	Gyro
1863.50	1.49	1863.13	-23.52	309.12	23.58	13.55	27.20	29.88	0.46	Gyro
2054.40	1.83	2053.95	-27.00	308.34	27.04	9.23	28.57	18.85	0.18	Gyro
2245.20	1.43	2244.68	-30.44	310.10	30.46	5.02	30.87	9.36	0.21	Gyro
2436.10	0.89	2435.54	-33.07	317.20	33.08	2.19	33.16	3.79	0.29	Gyro
2626.90	0.88	2626.31	-35.45	331.31	35.46	0.48	35.46	0.78	0.11	Gyro
2817.80	0.68	2817.20	-37.86	349.34	37.86	-0.43	37.86	359.35	0.16	Gyro
3008.70	1.47	3008.07	-38.39	103.58	38.39	1.74	38.43	2.59	0.97	Gyro
3199.50	2.28	3198.77	-36.80	105.08	36.83	7.78	37.64	11.93	0.43	Gyro
3390.40	3.90	3389.39	-32.40	121.24	32.48	17.00	36.66	27.63	0.96	Gyro
3581.20	3.25	3579.82	-25.96	124.20	26.07	27.02	37.55	46.03	0.35	Gyro
3772.10	2.13	3770.50	-20.56	130.94	20.70	34.18	39.96	58.79	0.61	Gyro
3963.00	1.59	3961.30	-16.46	131.64	16.62	38.84	42.24	66.83	0.28	Gyro
4153.80	1.10	4152.05	-13.17	145.69	13.35	41.85	43.92	72.31	0.31	Gyro
4344.70	0.75	4342.93	-10.45	165.02	10.63	43.20	44.49	76.18	0.24	Gyro
4535.50	0.60	4533.71	-8.24	181.80	8.42	43.49	44.30	79.04	0.13	Gyro
4726.40	0.44	4724.61	-6.65	216.46	6.83	43.03	43.57	80.97	0.18	Gyro
4917.30	0.31	4915.50	-5.70	223.92	5.87	42.23	42.64	82.08	0.07	Gyro
5108.10	0.21	5106.30	-5.04	214.49	5.21	41.68	42.00	82.87	0.06	Gyro
5299.00	0.53	5297.20	-3.87	181.56	4.04	41.46	41.65	84.43	0.19	Gyro
5489.80	1.00	5487.98	-1.33	172.98	1.51	41.63	41.66	87.93	0.25	Gyro



Ryan Energy Technologies

COMPLETION REPORT



Company: Chesapeake Operating, Inc.
Field: Eddy Co, NM NAD 83
Site: PLU Ross Ranch 20 Federal 1H
Well: 20 Federal 1H
Wellpath: OH

Date: 3/22/2011 Time: 13:51:58 Page: 2
Co-ordinate(NE) Reference: Site: PLU Ross Ranch 20 Federal 1H
Vertical (TVD) Reference: SITE 3219.0
Section (VS) Reference: Well (0.00N,0.00E,179.76Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	Clsr Dist ft	Clsr Azi deg	DLS deg/100ft	Tool
5680.70	1.32	5678.84	2.51	173.36	-2.33	42.09	42.16	93.17	0.17	Gyro
5871.60	1.47	5869.68	7.14	179.54	-6.96	42.37	42.93	99.33	0.11	Gyro
6062.40	1.56	6060.42	11.95	204.29	-11.78	41.32	42.96	105.91	0.34	Gyro
6253.30	1.60	6251.25	16.25	223.12	-16.09	38.43	41.66	112.72	0.27	Gyro
6444.10	1.31	6441.98	19.94	216.53	-19.79	35.31	40.48	119.27	0.18	Gyro
6635.00	1.15	6632.84	23.35	209.42	-23.21	33.07	40.40	125.06	0.12	Gyro
6825.90	1.42	6823.69	27.06	209.88	-26.93	30.95	41.02	131.03	0.14	Gyro
7016.70	1.20	7014.44	30.83	210.24	-30.71	28.76	42.07	136.87	0.12	Gyro
7207.60	1.44	7205.29	34.79	200.80	-34.67	26.91	43.89	142.19	0.17	Gyro
7398.40	1.51	7396.03	39.17	211.33	-39.06	24.75	46.24	147.64	0.15	Gyro
7589.30	0.84	7586.90	42.34	137.14	-42.24	24.39	48.77	149.99	0.79	Gyro
7637.00	1.30	7634.59	42.96	131.60	-42.85	25.03	49.63	149.71	0.99	Ryan MWD
7669.00	1.50	7666.58	43.57	152.50	-43.47	25.50	50.39	149.60	1.70	Ryan MWD
7701.00	7.10	7698.48	45.92	178.80	-45.82	25.73	52.55	150.68	18.10	Ryan MWD
7733.00	13.50	7729.95	51.62	185.60	-51.52	25.41	57.44	153.75	20.32	Ryan MWD
7764.00	18.30	7759.75	60.07	185.20	-59.97	24.62	64.83	157.68	15.49	Ryan MWD
7796.00	21.50	7789.84	70.92	184.80	-70.82	23.67	74.67	161.52	10.01	Ryan MWD
7828.00	24.30	7819.31	83.32	184.90	-83.23	22.62	86.24	164.80	8.75	Ryan MWD
7859.00	26.10	7847.36	96.47	184.30	-96.38	21.56	98.76	167.39	5.86	Ryan MWD
7891.00	30.00	7875.60	111.49	181.50	-111.40	20.82	113.33	169.41	12.86	Ryan MWD
7923.00	33.40	7902.82	128.29	182.40	-128.21	20.24	129.80	171.03	10.73	Ryan MWD
7955.00	37.40	7928.90	146.81	181.90	-146.73	19.55	148.02	172.41	12.53	Ryan MWD
7987.00	40.30	7953.82	166.87	181.80	-166.79	18.91	167.86	173.53	9.06	Ryan MWD
8018.00	43.70	7976.85	187.59	181.60	-187.52	18.29	188.41	174.43	10.98	Ryan MWD
8050.00	45.90	7999.56	210.13	182.00	-210.05	17.58	210.79	175.22	6.93	Ryan MWD
8082.00	48.40	8021.32	233.56	182.40	-233.50	16.68	234.09	175.91	7.87	Ryan MWD
8114.00	51.00	8042.01	257.95	180.60	-257.89	16.05	258.39	176.44	9.19	Ryan MWD
8145.00	53.90	8060.91	282.53	179.70	-282.46	15.99	282.91	176.76	9.63	Ryan MWD
8177.00	57.80	8078.87	309.00	179.40	-308.94	16.20	309.36	177.00	12.21	Ryan MWD
8208.00	61.00	8094.64	335.68	179.30	-335.62	16.50	336.02	177.19	10.33	Ryan MWD
8240.00	64.70	8109.24	364.15	179.40	-364.08	16.82	364.47	177.35	11.57	Ryan MWD
8272.00	68.20	8122.03	393.48	180.30	-393.41	16.90	393.78	177.54	11.24	Ryan MWD
8304.00	72.00	8132.92	423.56	181.00	-423.50	16.55	423.82	177.76	12.05	Ryan MWD
8335.00	75.70	8141.54	453.32	181.10	-453.26	16.01	453.54	177.98	11.94	Ryan MWD
8367.00	79.80	8148.33	484.58	181.20	-484.52	15.38	484.76	178.18	12.82	Ryan MWD
8399.00	83.70	8152.92	516.24	180.30	-516.18	14.97	516.40	178.34	12.50	Ryan MWD
8431.00	86.50	8155.65	548.12	179.60	-548.06	14.99	548.26	178.43	9.02	Ryan MWD
8462.00	87.20	8157.35	579.07	178.90	-579.01	15.40	579.21	178.48	3.19	Ryan MWD
8493.00	88.00	8158.65	610.04	178.30	-609.97	16.16	610.19	178.48	3.22	Ryan MWD
8525.00	88.30	8159.69	642.01	178.30	-641.94	17.11	642.17	178.47	0.94	Ryan MWD
8620.00	88.10	8162.67	736.91	177.50	-736.83	20.58	737.12	178.40	0.87	Ryan MWD
8715.00	87.40	8166.40	831.81	179.60	-831.72	22.99	832.04	178.42	2.33	Ryan MWD
8811.00	89.80	8168.74	927.77	180.60	-927.68	22.82	927.96	178.59	2.71	Ryan MWD
8906.00	89.90	8168.99	1022.77	180.00	-1022.68	22.32	1022.93	178.75	0.64	Ryan MWD
9001.00	89.30	8169.66	1117.76	179.40	-1117.68	22.82	1117.91	178.83	0.89	Ryan MWD
9097.00	89.30	8170.83	1213.75	179.30	-1213.66	23.91	1213.90	178.87	0.10	Ryan MWD
9192.00	88.90	8172.32	1308.74	179.20	-1308.64	25.15	1308.89	178.90	0.43	Ryan MWD
9287.00	92.80	8170.91	1403.70	181.00	-1403.61	24.99	1403.83	178.98	4.52	Ryan MWD
9382.00	92.00	8166.93	1498.61	180.20	-1498.52	23.99	1498.71	179.08	1.19	Ryan MWD
9477.00	91.40	8164.12	1593.55	181.10	-1593.47	22.92	1593.64	179.18	1.14	Ryan MWD
9573.00	91.30	8161.85	1689.51	180.30	-1689.44	21.74	1689.58	179.26	0.84	Ryan MWD
9668.00	92.20	8158.95	1784.46	180.50	-1784.39	21.08	1784.51	179.32	0.97	Ryan MWD



Ryan Energy Technologies

COMPLETION REPORT



Company: Chesapeake Operating, Inc.	Date: 3/22/2011	Time: 13:51:58	Page: 3
Field: Eddy Co, NM NAD 83	Co-ordinate(NE) Reference:	Site: PLU Ross Ranch 20 Federal 1H	
Site: PLU Ross Ranch 20 Federal 1H	Vertical (TVD) Reference:	SITE: 3219.0	
Well: 20 Federal 1H	Section (VS) Reference:	Well: (0.00N,0.00E,179.76Azi)	
Wellpath: OH	Survey Calculation Method:	Minimum Curvature	Db: Sybase

Survey

MD ft	Incl deg	TVD ft	VS ft	Azim deg	N/S ft	E/W ft	Clsr Dist. ft	Clsr Azi. deg	DLS deg/100ft	Tool
9763.00	90.70	8156.55	1879.40	181.80	-1879.34	19.17	1879.43	179.42	2.09	Ryan MWD
9859.00	90.70	8155.38	1975.34	181.50	-1975.29	16.41	1975.36	179.52	0.31	Ryan MWD
9954.00	91.00	8153.97	2070.29	181.40	-2070.25	14.01	2070.29	179.61	0.33	Ryan MWD
10049.00	91.40	8151.98	2165.23	181.50	-2165.20	11.60	2165.23	179.69	0.43	Ryan MWD
10144.00	90.10	8150.73	2260.19	180.60	-2260.17	9.86	2260.19	179.75	1.66	Ryan MWD
10240.00	90.60	8150.15	2356.17	181.30	-2356.15	8.27	2356.17	179.80	0.90	Ryan MWD
10335.00	87.10	8152.05	2451.12	178.70	-2451.11	8.27	2451.12	179.81	4.59	Ryan MWD
10430.00	87.20	8156.78	2545.99	178.50	-2545.96	10.59	2545.99	179.76	0.24	Ryan MWD
10526.00	88.80	8160.13	2641.92	179.50	-2641.89	12.26	2641.92	179.73	1.97	Ryan MWD
10621.00	89.60	8161.45	2736.89	178.40	-2736.86	14.00	2736.90	179.71	1.43	Ryan MWD
10716.00	90.90	8161.04	2831.87	178.80	-2831.83	16.32	2831.88	179.67	1.43	Ryan MWD
10812.00	91.80	8158.78	2927.83	179.00	-2927.78	18.17	2927.84	179.64	0.96	Ryan MWD
10907.00	91.40	8156.13	3022.79	178.90	-3022.73	19.91	3022.80	179.62	0.43	Ryan MWD
11002.00	92.00	8153.31	3117.74	179.80	-3117.68	20.98	3117.75	179.61	1.14	Ryan MWD
11098.00	90.90	8150.88	3213.71	180.10	-3213.65	21.07	3213.72	179.62	1.19	Ryan MWD
11193.00	90.80	8149.47	3308.70	179.60	-3308.64	21.32	3308.71	179.63	0.54	Ryan MWD
11288.00	89.10	8149.55	3403.68	178.20	-3403.61	23.14	3403.69	179.61	2.32	Ryan MWD
11383.00	89.20	8150.96	3498.61	177.40	-3498.53	26.79	3498.64	179.56	0.85	Ryan MWD
11478.00	96.40	8146.32	3593.32	176.50	-3593.22	31.83	3593.36	179.49	7.64	Ryan MWD
11574.00	89.40	8141.46	3688.50	170.30	-3688.36	42.85	3688.60	179.33	9.73	Ryan MWD
11669.00	89.10	8142.71	3782.60	173.60	-3782.40	56.15	3782.81	179.15	3.49	Ryan MWD
11765.00	88.50	8144.72	3878.27	176.90	-3878.03	64.10	3878.56	179.05	3.49	Ryan MWD
11860.00	90.20	8145.80	3973.22	179.60	-3972.97	67.00	3973.54	179.03	3.36	Ryan MWD
11955.00	92.50	8143.56	4068.18	180.30	-4067.94	67.08	4068.49	179.06	2.53	Ryan MWD
12050.00	92.00	8139.83	4163.07	182.30	-4162.83	64.93	4163.34	179.11	2.17	Ryan MWD
12144.00	90.00	8138.19	4256.94	182.80	-4256.72	60.75	4257.16	179.18	2.19	Ryan MWD
12239.00	88.70	8139.27	4351.86	181.10	-4351.66	57.52	4352.04	179.24	2.25	Ryan MWD
12334.00	90.30	8140.10	4446.79	182.50	-4446.60	54.53	4446.93	179.30	2.24	Ryan MWD
12430.00	91.50	8138.59	4542.63	183.40	-4542.46	49.59	4542.73	179.37	1.56	Ryan MWD
12525.00	91.50	8136.10	4637.41	183.20	-4637.27	44.13	4637.48	179.45	0.21	Ryan MWD
12620.00	92.40	8132.87	4732.09	184.90	-4731.97	37.42	4732.12	179.55	2.02	Ryan MWD
12683.00	92.90	8129.96	4794.75	185.20	-4794.66	31.88	4794.77	179.62	0.93	Ryan MWD
12740.00	92.90	8127.07	4851.42	185.20	-4851.35	26.72	4851.43	179.68	0.00	Projection