



30-015-3703D

Chesapeake Operating Inc.

Eddy County, NM (Nad 83)

PLU Phantom Banks "1" Federal #1H

PLU Phantom Banks "1" Federal #1H

Lateral #1

Survey: MWD Survey #1

Standard Survey Report

03 May, 2010



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Site PLU Phantom Banks "1" Federal #1H
Project:	Eddy County, NM (Nad 83)	TVD Reference:	KB @ 3242.00ft
Site:	PLU Phantom Banks "1" Federal #1H	MD Reference:	KB @ 3242.00ft
Well:	PLU Phantom Banks "1" Federal #1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM-5000.1 Black Viper

Project	Eddy County, NM (Nad 83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	PLU Phantom Banks "1" Federal #1H - Sec 1, T-26S, R-30-E		
Site Position:		Northing:	388,011.28 ft
From:	Map	Easting:	696,463.91 ft
Position Uncertainty:	0.00 ft	Slot Radius:	0 "
		Latitude:	32° 3' 56.633 N
		Longitude:	103° 49' 57.202 W
		Grid Convergence:	0.27 °

Well	PLU Phantom Banks "1" Federal #1H		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	3,242.00 ft
		Ground Level:	3,222.00 ft
		Latitude:	32° 3' 56.633 N
		Longitude:	103° 49' 57.202 W

Wellbore	Lateral #1		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF200510	3/9/2010	7.83
			Dip Angle
			(°)
			60.04
			Field Strength
			(nT)
			48,652

Design	Lateral #1		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	8,003.84
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			(°)
			75.07

Survey Program:	Date - 5/3/2010		
From	To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
100.00	8,003.84	Gyro Survey #1a (OH)	GM
8,003.84	12,886.00	MWD Survey #1 (Lateral #1)	MWD
			Description
			Gyro MultiShot
			Standard MWD

Survey	Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn
	Depth	(°)	(°)	Depth	(ft)	(ft)	Section	Rate	Rate	Rate
	(ft)			(ft)			(ft)	(°/100ft)	(°/100ft)	(°/100ft)
	8,003.84	1.44	142.70	8,001.53	-84.81	90.69	65.77	0.00	0.00	0.00
	HL[PLUPB1FED#1H] - LL[PLUPB1FED#1H]									
	8,026.00	4.20	0.40	8,023.67	-84.22	90.86	66.09	24.42	12.45	-642.15
	First MWD Survey									
	8,057.00	9.50	356.60	8,054.44	-80.53	90.72	66.91	17.15	17.10	-12.26
	8,088.00	14.50	356.60	8,084.75	-74.10	90.34	68.19	16.13	16.13	0.00
	8,120.00	18.40	358.30	8,115.44	-65.05	89.95	70.15	12.28	12.19	5.31
	8,151.00	22.00	358.70	8,144.53	-54.35	89.67	72.64	11.62	11.61	1.29
	8,182.00	25.20	359.40	8,172.93	-41.94	89.47	75.64	10.36	10.32	2.26

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Well:	PLU Phantom Banks "1" Federal #1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM-5000.1 Black Viper

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)
8,214.00	28.70	0.50	8,201.45	-27.44	89.47	79.38	11.05	10.94	3.44
8,245.00	31.90	1.20	8,228.21	-11.80	89.71	83.63	10.39	10.32	2.26
8,276.00	35.60	1.70	8,253.98	5.41	90.14	88.49	11.97	11.94	1.61
8,307.00	39.20	1.90	8,278.61	24.23	90.74	93.92	11.62	11.61	0.65
8,339.00	42.90	1.60	8,302.74	45.23	91.38	99.95	11.58	11.56	-0.94
8,370.00	45.80	1.70	8,324.90	66.89	92.00	106.13	9.36	9.35	0.32
8,402.00	48.10	1.60	8,346.74	90.26	92.67	112.80	7.19	7.19	-0.31
8,433.00	50.60	1.50	8,366.94	113.77	93.31	119.48	8.07	8.06	-0.32
8,464.00	52.80	1.80	8,386.15	138.09	94.01	126.42	7.14	7.10	0.97
8,496.00	56.10	1.50	8,404.75	164.11	94.76	133.85	10.34	10.31	-0.94
8,527.00	59.00	1.10	8,421.38	190.26	95.35	141.16	9.42	9.35	-1.29
8,558.00	61.30	1.00	8,436.81	217.14	95.84	148.56	7.42	7.42	-0.32
8,590.00	63.20	1.10	8,451.71	245.45	96.36	156.36	5.94	5.94	0.31
8,621.00	64.00	0.30	8,465.49	273.22	96.70	163.84	3.46	2.58	-2.58
8,652.00	66.30	359.90	8,478.52	301.34	96.75	171.14	7.51	7.42	-1.29
8,684.00	68.30	0.00	8,490.87	330.86	96.72	178.72	6.26	6.25	0.31
8,715.00	69.90	359.70	8,501.93	359.82	96.65	186.11	5.24	5.16	-0.97
8,746.00	72.30	359.00	8,511.97	389.15	96.31	193.34	8.03	7.74	-2.26
8,778.00	74.60	357.20	8,521.08	419.80	95.29	200.25	8.98	7.19	-5.63
8,809.00	77.80	356.80	8,528.48	449.86	93.72	206.48	10.40	10.32	-1.29
8,841.00	81.10	357.00	8,534.34	481.27	92.02	212.93	10.33	10.31	0.63
8,872.00	80.10	356.10	8,539.40	511.80	90.18	219.02	4.31	-3.23	-2.90
8,903.00	78.50	357.30	8,545.15	542.21	88.42	225.16	6.41	-5.16	3.87
8,935.00	80.80	357.00	8,550.90	573.64	86.86	231.75	7.25	7.19	-0.94
8,966.00	83.30	356.40	8,555.19	604.29	85.09	237.94	8.29	8.06	-1.94
8,997.00	86.00	356.00	8,558.08	635.09	83.04	243.89	8.80	8.71	-1.29
9,029.00	88.90	355.30	8,559.50	666.96	80.62	249.77	9.32	9.06	-2.19
9,060.00	91.30	355.00	8,559.45	697.85	78.00	255.19	7.80	7.74	-0.97
9,092.00	91.60	354.90	8,558.64	729.71	75.18	260.68	0.99	0.94	-0.31
9,186.00	92.00	355.80	8,555.69	823.36	67.57	277.45	1.05	0.43	0.96
9,280.00	90.10	355.70	8,553.97	917.08	60.60	294.88	2.02	-2.02	-0.11
9,374.00	91.40	356.60	8,552.74	1,010.85	54.29	312.94	1.68	1.38	0.96
9,468.00	91.90	358.30	8,550.03	1,104.72	50.11	333.09	1.88	0.53	1.81
9,563.00	91.50	359.70	8,547.21	1,199.66	48.45	355.96	1.53	-0.42	1.47
9,657.00	91.30	0.60	8,544.91	1,293.63	48.70	380.41	0.98	-0.21	0.96
9,751.00	91.80	1.50	8,542.37	1,387.58	50.42	406.28	1.09	0.53	0.96
9,845.00	91.60	2.10	8,539.58	1,481.49	53.37	433.33	0.67	-0.21	0.64
9,938.00	90.30	0.60	8,538.04	1,574.45	55.56	459.40	2.13	-1.40	-1.61
10,033.00	89.90	0.00	8,537.87	1,669.44	56.06	484.36	0.76	-0.42	-0.63
10,126.00	90.70	0.00	8,537.39	1,762.44	56.06	508.33	0.86	0.86	0.00
10,220.00	90.80	359.70	8,536.16	1,856.43	55.81	532.31	0.34	0.11	-0.32
10,314.00	90.70	359.60	8,534.93	1,950.42	55.24	555.98	0.15	-0.11	-0.11
10,408.00	88.80	359.00	8,535.34	2,044.41	54.09	579.09	2.12	-2.02	-0.64

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Well:	PLU Phantom Banks "1" Federal #1H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Lateral #1	Database:	EDM 5000.1 Black Viper

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)
10,503.00	88.80	358.30	8,537.33	2,139.36	51.85	601.39	0.74	0.00	-0.74
10,597.00	90.20	358.70	8,538.15	2,233.33	49.39	623.23	1.55	1.49	0.43
10,691.00	90.90	359.00	8,537.24	2,327.30	47.51	645.62	0.81	0.74	0.32
10,785.00	91.20	359.00	8,535.52	2,421.27	45.87	668.25	0.32	0.32	0.00
10,879.00	91.30	358.30	8,533.47	2,515.22	43.65	690.32	0.75	0.11	-0.74
10,973.00	89.80	358.60	8,532.57	2,609.18	41.11	712.08	1.63	-1.60	0.32
11,067.00	89.40	357.90	8,533.22	2,703.13	38.24	733.52	0.86	-0.43	-0.74
11,161.00	89.80	357.60	8,533.88	2,797.06	34.55	754.15	0.53	0.43	-0.32
11,255.00	89.60	357.80	8,534.37	2,890.98	30.78	774.71	0.30	-0.21	0.21
11,349.00	90.30	357.00	8,534.46	2,984.88	26.51	794.79	1.13	0.74	-0.85
11,443.00	91.40	357.50	8,533.06	3,078.76	22.00	814.62	1.29	1.17	0.53
11,536.00	91.10	357.40	8,531.03	3,171.65	17.87	834.56	0.34	-0.32	-0.11
11,630.00	89.30	355.80	8,530.70	3,265.48	12.29	853.35	2.56	-1.91	-1.70
11,724.00	89.90	356.20	8,531.36	3,359.24	5.74	871.18	0.77	0.64	0.43
11,818.00	91.10	355.40	8,530.54	3,452.99	-1.15	888.69	1.53	1.28	-0.85
11,912.00	91.50	356.10	8,528.41	3,546.70	-8.11	906.11	0.86	0.43	0.74
12,006.00	91.50	358.00	8,525.95	3,640.54	-12.95	925.61	2.02	0.00	2.02
12,100.00	90.90	358.10	8,523.98	3,734.47	-16.15	946.73	0.65	-0.64	0.11
12,194.00	90.90	358.60	8,522.50	3,828.42	-18.85	968.32	0.53	0.00	0.53
12,288.00	91.00	359.00	8,520.94	3,922.38	-20.82	990.63	0.44	0.11	0.43
12,382.00	90.40	359.30	8,519.79	4,016.36	-22.22	1,013.51	0.71	-0.64	0.32
12,476.00	91.10	359.60	8,518.56	4,110.35	-23.12	1,036.85	0.81	0.74	0.32
12,571.00	90.20	359.50	8,517.49	4,205.34	-23.86	1,060.61	0.95	-0.95	-0.11
12,665.00	89.20	358.50	8,517.98	4,299.32	-25.50	1,083.24	1.50	-1.06	-1.06
12,759.00	88.30	356.40	8,520.03	4,393.20	-29.68	1,103.40	2.43	-0.96	-2.23
12,839.00	88.40	355.70	8,522.33	4,472.98	-35.19	1,118.63	0.88	0.13	-0.88
Last MWD Survey									
12,866.00	88.40	355.70	8,523.65	4,519.83	-38.72	1,127.30	0.00	0.00	0.00
Projection to Bit - PBHL#1a[PLUPB1FED#1H] - PBHL#1b[PLUPB1FED#1H] - PBHL#1[PLUPB1FED#1H]									

Survey Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
8,026.00	8,023.67	-84.22	90.86	First MWD Survey
12,839.00	8,522.33	4,472.98	-35.19	Last MWD Survey
12,866.00	8,523.65	4,519.83	-38.72	Projection to Bit

Checked By: _____ Approved By: _____ Date: _____