



30-015-40156

Chesapeake Operating Inc.

Eddy County, New Mexico (NAD 1983)

PLU Big Sinks 34-24-30 USA 1H

Job # 1210326

Rig: Patterson 62

Survey: Phoenix MWD Surveys

Chesapeake Operating Inc.

13 May, 2012



Company:	Chesapeake Operating Inc.	Local Co-ordinate Reference:	Well Job # 1210326
Project:	Eddy County, New Mexico (NAD 1983)	TVD Reference:	WELL @ 3376.00usft (Patterson 62)
Site:	PLU Big Sinks 34-24-30 USA 1H	MD Reference:	WELL @ 3376.00usft (Patterson 62)
Well:	Job # 1210326	North Reference:	Grid
Wellbore:	Rig: Patterson 62	Survey Calculation Method:	Minimum Curvature
Design:	Rig: Patterson 62	Database:	GCR DB v5000

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

Site	PLU Big Sinks 34-24-30 USA 1H				
Site Position:		Northing:	429,957.45 usft	Latitude:	32° 10' 52.218 N
From:	Map	Easting:	685,711.34 usft	Longitude:	103° 52' 0.0323 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.25 "

Well	Job # 1210326					
Well Position	+N-S	0.00 usft	Northing:	429,957.45 usft	Latitude:	32° 10' 52.218 N
	+E-W	0.00 usft	Easting:	685,711.34 usft	Longitude:	103° 52' 0.0323 W
Position Uncertainty		0.00 usft	Wellhead Elevation:	25.00 usft	Ground Level:	3,351.00 usft

Wellbore	Rig: Patterson 62				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010_14	04/17/12	(°)	(°)	(nT)
			7.62	60.08	48,474

Design	Rig: Patterson 62				
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	0.00	0.00	0.00	179.15	

Survey Program	Date	05/13/12			
From	To	Survey (Wellbore)	Tool Name	Description	
(usft)	(usft)				
8,543.00	13,772.00	Phoenix MWVD Surveys (Rig: Patterson 62)	MWD	MWD - Standard	

Company: Chesapeake Operating Inc.
Project: Eddy County, New Mexico (NAD 1983)
Site: PLU Big Sinks 34-24-30 USA 1H
Well: Job # 1210326
Wellbore: Rig: Patterson 62
Design: Rig: Patterson 62

Local Co-ordinate Reference: Well Job # 1210326
TVD Reference: WELL @ 3376.00usft (Patterson 62)
MD Reference: WELL @ 3376.00usft (Patterson 62)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature
Database: GCR DB v500C

Survey											
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	D Leg (°/100usft)	Northing (usft)	Easting (usft)	
8,500.00	1.00	300.86	5,122.95	8,498.95	-65.05	26.31	65.44	0.00	429,892.40	685,737.65	
8,543.00	1.30	341.90	5,165.95	8,541.95	-64.40	25.83	64.77	1.99	429,893.06	685,737.18	
First Phoenix MWD Survey											
8,574.00	1.20	271.80	5,196.94	8,572.94	-64.05	25.40	64.42	4.64	429,893.40	685,736.74	
8,606.00	6.20	198.30	5,228.87	8,604.87	-65.68	24.52	66.04	18.66	429,891.77	685,735.86	
8,638.00	10.60	190.80	5,260.52	8,636.52	-70.22	23.43	70.56	14.14	429,887.24	685,734.77	
8,670.00	14.70	186.10	5,291.74	8,667.74	-77.15	22.44	77.47	13.20	429,880.30	685,733.79	
8,701.00	19.80	181.70	5,321.34	8,697.34	-86.32	21.87	86.63	16.97	429,871.14	685,733.21	
8,733.00	24.10	176.60	5,351.01	8,727.01	-98.26	22.10	98.58	14.69	429,859.19	685,733.44	
8,765.00	28.10	173.20	5,379.75	8,755.75	-112.27	23.36	112.61	13.34	429,845.18	685,734.72	
8,797.00	32.10	169.40	5,407.43	8,783.43	-128.12	25.83	128.49	13.84	429,829.33	685,737.18	
8,828.00	35.80	169.80	5,433.14	8,809.14	-145.15	28.96	145.56	11.96	429,812.31	685,740.30	
8,860.00	40.40	171.50	5,458.31	8,834.31	-164.63	32.15	165.08	14.74	429,792.83	685,743.49	
8,892.00	45.20	172.20	5,481.79	8,857.79	-186.14	35.22	186.94	15.07	429,771.31	685,746.57	
8,924.00	48.00	171.00	5,503.77	8,879.77	-209.14	38.63	209.69	9.16	429,748.32	685,749.97	
8,955.00	51.40	170.60	5,523.82	8,899.82	-232.47	42.41	233.08	11.01	429,724.98	685,753.75	
8,987.00	54.80	172.70	5,543.03	8,919.03	-257.79	46.11	258.44	11.85	429,699.67	685,757.45	
9,019.00	58.50	175.20	5,560.62	8,936.62	-284.36	48.92	285.06	13.28	429,673.09	685,760.26	
9,051.00	61.40	178.00	5,576.65	8,952.65	-312.01	50.55	312.72	11.81	429,645.45	685,761.89	
9,082.00	65.60	179.30	5,590.48	8,966.48	-339.73	51.20	340.46	14.06	429,617.72	685,762.54	
9,114.00	67.80	180.20	5,603.13	8,979.13	-369.12	51.32	369.84	7.34	429,588.33	685,762.67	
9,146.00	70.40	181.60	5,614.55	8,990.55	-399.01	50.85	399.72	9.09	429,558.44	685,762.19	
9,178.00	72.80	181.00	5,624.65	9,000.65	-429.36	50.16	430.06	7.71	429,528.09	685,761.50	
9,209.00	74.90	180.90	5,633.27	9,009.27	-459.13	49.67	459.82	6.78	429,498.32	685,761.01	
9,241.00	75.90	180.50	5,641.34	9,017.34	-490.10	49.29	490.78	3.35	429,467.36	685,760.63	
9,273.00	75.40	180.30	5,649.27	9,025.27	-521.10	49.07	521.77	1.68	429,436.35	685,760.42	
9,305.00	78.10	180.10	5,656.60	9,032.60	-552.24	48.97	552.91	8.46	429,405.21	685,760.31	

Company: Chesapeake Operating Inc.
Project: Eddy County, New Mexico (NAD 1983)
Site: PLU Big Sinks 34-24-30 USA 1H
Well: Job # 1210326
Wellbore: Rig: Patterson 62
Design: Rig: Patterson 62

Local Co-ordinate Reference: Well Job # 1210326
TVD Reference: WELL @ 3376.00usft (Patterson 62)
MD Reference: WELL @ 3376.00usft (Patterson 62)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLag (°/100usft)	Northing (usft)	Easting (usft)
9,336.00	81.30	179.60	5,662.14	9,038.14	-582.74	49.05	583.40	10.44	429,374.71	685,760.39
9,368.00	84.00	179.60	5,666.24	9,042.24	-614.47	49.27	615.14	8.44	429,342.98	685,760.61
9,400.00	86.10	180.40	5,669.00	9,045.00	-646.35	49.27	647.01	7.02	429,311.10	685,760.61
9,432.00	89.10	181.00	5,670.34	9,046.34	-678.32	48.88	678.97	9.56	429,279.14	685,760.22
9,463.00	91.00	181.10	5,670.31	9,046.31	-709.31	48.31	709.95	6.14	429,248.14	685,759.65
9,495.00	91.60	181.00	5,669.58	9,045.58	-741.30	47.72	741.92	1.90	429,216.16	685,759.07
9,527.00	92.00	181.00	5,668.58	9,044.58	-773.28	47.16	773.89	1.25	429,184.18	685,758.51
9,622.00	89.40	181.80	5,667.42	9,043.42	-868.23	44.84	868.80	2.66	429,089.22	685,756.19
9,717.00	88.90	181.50	5,668.63	9,044.83	-963.18	42.11	963.70	0.61	428,994.27	685,753.45
9,813.00	86.60	181.30	5,672.60	9,048.60	-1,059.07	39.76	1,059.55	2.40	428,898.38	685,751.11
9,908.00	86.80	179.10	5,678.07	9,054.07	-1,153.91	39.43	1,154.37	2.32	428,803.54	685,750.78
10,003.00	89.60	179.10	5,681.05	9,057.05	-1,248.84	40.92	1,249.31	2.95	428,708.61	685,752.27
10,099.00	89.50	179.20	5,681.80	9,057.80	-1,344.83	42.35	1,345.31	0.15	428,612.63	685,753.69
10,194.00	89.10	177.70	5,682.96	9,058.96	-1,439.78	44.92	1,440.29	1.63	428,517.67	685,756.26
10,289.00	90.70	178.10	5,683.13	9,059.13	-1,534.72	48.40	1,535.26	1.74	428,422.74	685,759.74
10,384.00	90.80	180.10	5,681.89	9,057.89	-1,629.69	49.89	1,630.25	2.11	428,327.76	685,761.23
10,479.00	90.10	180.00	5,681.14	9,057.14	-1,724.69	49.81	1,725.24	0.74	428,232.77	685,761.15
10,574.00	91.40	180.30	5,679.90	9,055.90	-1,819.68	49.56	1,820.21	1.40	428,137.78	685,760.90
10,669.00	91.00	180.90	5,677.91	9,053.91	-1,914.65	48.57	1,915.16	0.76	428,042.80	685,759.91
10,765.00	89.80	181.00	5,677.24	9,053.24	-2,010.63	46.97	2,011.11	1.25	427,946.82	685,758.32
10,860.00	89.80	180.40	5,677.57	9,053.57	-2,105.62	45.81	2,106.07	0.63	427,851.83	685,757.16
10,955.00	89.10	180.00	5,678.48	9,054.48	-2,200.62	45.48	2,201.05	0.95	427,756.84	685,756.82
11,050.00	87.20	179.80	5,681.55	9,057.55	-2,295.56	45.65	2,295.99	2.31	427,661.89	685,756.99
11,146.00	89.50	179.00	5,684.31	9,060.31	-2,391.51	46.65	2,391.94	2.54	427,565.94	685,757.99
11,241.00	90.20	180.20	5,684.56	9,060.56	-2,486.51	47.32	2,486.94	1.46	427,470.95	685,758.66
11,336.00	90.90	180.90	5,683.65	9,059.65	-2,581.50	46.40	2,581.90	1.04	427,375.96	685,757.75
11,431.00	90.80	180.50	5,682.24	9,058.24	-2,676.48	45.24	2,676.86	0.43	427,280.97	685,756.59

Phoenix Technology Services
Chesapeake Operating Inc.



Company: Chesapeake Operating Inc
Project: Eddy County, New Mexico (NAD 1983)
Site: PLU Big Sinks 34-24-30 USA 1H
Well: Job # 1210326
Wellbore: Rig: Patterson 62
Design: Rig: Patterson 62

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Job # 1210326
WELL @ 3376.00usft (Patterson 62)
WELL @ 3376.00usft (Patterson 62)
Gnd
Minimum Curvature
GCR DB v5000

Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVDSS (usft)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Northing (usft)	Easting (usft)
11,526.00	91.10	181.20	5,680.66	9,056.66	-2,771.46	43.83	2,771.80	0.80	427,186.00	685,755.18
11,622.00	90.80	181.20	5,679.07	9,055.07	-2,867.42	41.82	2,867.73	0.31	427,090.33	685,753.17
11,717.00	90.30	180.40	5,678.16	9,054.16	-2,962.41	40.50	2,962.68	0.99	426,995.05	685,751.84
11,812.00	89.30	179.00	5,678.49	9,054.49	-3,057.40	40.99	3,057.67	1.81	426,900.05	685,752.34
11,907.00	92.20	178.80	5,677.25	9,053.25	-3,152.37	42.82	3,152.65	3.06	426,805.09	685,754.16
12,002.00	91.10	178.40	5,674.51	9,050.51	-3,247.30	45.14	3,247.61	1.23	426,710.16	685,756.48
12,098.00	89.70	178.50	5,673.84	9,049.84	-3,343.26	47.73	3,343.60	1.46	426,614.20	685,759.08
12,193.00	89.90	178.30	5,674.18	9,050.18	-3,438.22	50.39	3,438.59	0.30	426,519.24	685,761.73
12,288.00	91.30	179.00	5,673.18	9,049.18	-3,533.18	52.63	3,533.58	1.65	426,424.27	685,763.97
12,383.00	91.20	179.40	5,671.11	9,047.11	-3,628.15	53.95	3,628.55	0.43	426,329.30	685,765.29
12,478.00	91.30	179.00	5,669.04	9,045.04	-3,723.12	55.28	3,723.53	0.43	426,234.33	685,766.62
12,574.00	90.10	178.90	5,667.86	9,043.86	-3,819.09	57.04	3,819.52	1.25	426,138.36	685,768.38
12,669.00	90.50	179.10	5,667.37	9,043.37	-3,914.08	58.69	3,914.52	0.47	426,043.38	685,770.04
12,764.00	91.20	179.50	5,665.96	9,041.96	-4,009.06	59.88	4,009.51	0.85	425,948.39	685,771.20
12,859.00	91.70	179.70	5,663.55	9,039.55	-4,104.03	60.52	4,104.47	0.57	425,853.43	685,771.86
12,955.00	87.80	179.80	5,663.97	9,039.97	-4,200.01	60.94	4,200.45	4.06	425,757.45	685,772.28
13,050.00	87.30	178.80	5,662.03	9,044.03	-4,294.91	62.10	4,295.36	1.18	425,662.54	685,773.44
13,145.00	88.10	178.50	5,671.84	9,047.84	-4,389.81	64.33	4,390.28	0.90	425,567.65	685,775.68
13,240.00	88.60	178.60	5,674.58	9,050.58	-4,484.74	66.74	4,485.23	0.54	425,472.72	685,778.08
13,335.00	87.90	177.10	5,677.48	9,053.48	-4,579.62	70.30	4,580.16	1.74	425,377.83	685,781.64
13,430.00	87.20	176.60	5,681.54	9,057.54	-4,674.39	75.51	4,675.00	0.91	425,283.06	685,786.88
13,526.00	86.60	175.90	5,686.73	9,062.73	-4,770.05	81.78	4,770.73	0.96	425,187.41	685,793.13
13,621.00	87.00	176.30	5,692.04	9,068.04	-4,864.68	88.23	4,865.45	0.59	425,092.78	685,799.58
13,712.00	86.70	176.10	5,697.04	9,073.04	-4,955.34	94.26	4,956.19	0.40	425,002.11	685,805.60
Last Phoenix MWD Survey										
13,772.00	86.70	176.10	5,700.49	9,076.49	-5,015.10	98.23	5,016.01	0.00	424,942.35	685,809.67
Projection to TD										

Company: Chesapeake Operating Inc.
Project: Eddy County, New Mexico (NAD 1983)
Site: PLU Big Sinks 34-24-30 USA 1H
Well: Job # 1210326
Wellbore: Rig: Patterson 62
Design: Rig: Patterson 62

Local Co-ordinate Reference: Well Job # 1210326
TVD Reference: WELL @ 3376.00usft (Patterson 62)
MD Reference: WELL @ 3376.00usft (Patterson 62)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: GCR DB v5000

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
8,543.00	8,541.95	-54.40	25.83	First Phoenix MWD Survey
13,712.00	9,073.04	-4,855.34	94.26	Last Phoenix MWD Survey
13,772.00	9,076.49	-5,015.10	98.33	Projection to TD

Checked By: _____ Approved By: _____ Date: _____