



PHOENIX TECHNOLOGY SERVICES

Job Number: 1010711
Company: Chesapeake Operating
Lease/Well: PLU Big Sinks 22 Federal 1H
Location: Eddy County, NM
Rig Name: Patterson 62
RKB: 3417'
G.L. or M.S.L.: 3400' SL: X - 687258.14 Y - 435577.99 (NAD83)

State/Country: NM
Declination: 7.77736
Grid: -0.24
File name: C:\711PLU-1\PLUB.SVY
Date/Time: 26-Dec-10 / 07:03
Curve Name: PLU Big Sinks 22 Federal

SUR: P-22-24s-30e, 100/S & 400/E
BHL: A-22-24s-30e, 358/N & 393/E
API # 30-015-37838

PLU Big Sinks 22 Federal

WINSERVE SURVEY CALCULATIONS
Minimum Curvature Method
Vertical Section Plane 359.83
Vertical Section Referenced to Wellhead
Rectangular Coordinates Referenced to Wellhead

RECEIVED
JUN 15 2011
NMOCD ARTESIA

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
Gyro Tie In									
7700.00	.91	115.50	7698.62	-18.12	25.23	-18.19	31.06	125.69	.00
First Phoenix MWD Surveys									
7811.00	7.00	359.80	7809.35	-11.73	26.00	-11.80	28.53	114.27	6.70
7828.00	8.30	7.90	7826.20	-9.48	26.17	-9.55	27.83	109.91	9.92
7860.00	10.60	4.00	7857.77	-4.25	26.69	-4.33	27.03	99.05	7.46
7892.00	14.50	358.40	7889.00	2.69	26.78	2.61	26.92	84.26	12.75
7923.00	17.30	357.70	7918.81	11.18	26.49	11.10	28.75	67.12	9.05
7955.00	21.90	358.40	7948.95	21.90	26.13	21.83	34.10	50.03	14.39
7987.00	26.10	358.40	7978.17	34.91	25.77	34.84	43.39	36.43	13.12
8019.00	29.90	358.40	8006.42	49.93	25.35	49.85	55.99	26.92	11.87
8050.00	33.20	359.10	8032.84	66.14	25.00	66.07	70.71	20.71	10.71
8082.00	36.60	.20	8059.08	84.45	24.90	84.37	88.04	16.43	10.81
8114.00	39.70	1.20	8084.24	104.21	25.14	104.13	107.20	13.57	9.88
8146.00	41.90	357.70	8108.47	125.11	24.93	125.03	127.57	11.27	9.91
8177.00	46.10	355.20	8130.76	146.59	23.58	146.52	148.48	9.14	14.66
Hard Line Crossing//Interpolated Point									
8188.00	47.51	354.84	8138.29	154.58	22.88	154.51	156.27	8.42	13.02
8209.00	50.20	354.20	8152.11	170.32	21.37	170.26	171.66	7.15	13.02
8241.00	54.20	356.30	8171.72	195.51	19.29	195.45	196.46	5.63	13.53
8272.00	58.70	357.00	8188.85	221.30	17.79	221.24	222.01	4.59	14.64
8304.00	62.60	357.70	8204.53	249.15	16.50	249.10	249.70	3.79	12.34
8336.00	67.30	358.80	8218.07	278.12	15.62	278.07	278.56	3.21	15.01

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
8368.00	72.00	358.80	8229.20	308.11	14.99	308.06	308.47	2.79	14.69
8399.00	77.10	358.40	8237.45	337.97	14.26	337.93	338.27	2.42	16.50
8430.00	82.10	358.40	8243.05	368.44	13.41	368.40	368.68	2.08	16.13
8462.00	87.10	358.80	8246.06	400.28	12.63	400.24	400.48	1.81	15.67
8494.00	92.90	359.80	8246.06	432.26	12.24	432.22	432.44	1.62	18.39
8526.00	93.30	359.10	8244.33	464.21	11.93	464.18	464.37	1.47	2.52
8558.00	93.60	359.50	8242.40	496.15	11.54	496.12	496.29	1.33	1.56
8590.00	93.60	359.10	8240.39	528.09	11.15	528.05	528.21	1.21	1.25
8622.00	95.30	359.50	8237.91	559.99	10.76	559.95	560.09	1.10	5.46
8653.00	95.60	359.50	8234.97	590.85	10.49	590.81	590.94	1.02	.97
8685.00	95.60	359.10	8231.84	622.69	10.11	622.66	622.77	.93	1.24
8780.00	94.20	.20	8223.73	717.34	9.53	717.31	717.40	.76	1.87
8812.00	93.70	359.80	8221.53	749.26	9.53	749.23	749.32	.73	2.00
8907.00	90.90	357.70	8217.71	844.15	7.46	844.12	844.18	.51	3.68
9002.00	92.20	356.60	8215.14	938.99	2.73	938.98	939.00	.17	1.79
9097.00	91.70	356.60	8211.91	1033.77	-2.90	1033.77	1033.77	359.84	.53
9193.00	91.50	356.60	8209.23	1129.56	-8.59	1129.58	1129.60	359.56	.21
9287.00	92.00	357.00	8206.36	1223.37	-13.83	1223.41	1223.45	359.35	.68
9382.00	91.50	357.30	8203.46	1318.21	-18.55	1318.26	1318.34	359.19	.61
9477.00	90.30	358.40	8201.97	1413.13	-22.12	1413.19	1413.30	359.10	1.71
9573.00	87.90	357.00	8203.47	1509.03	-25.97	1509.10	1509.25	359.01	2.89
9668.00	89.30	357.00	8205.79	1603.87	-30.94	1603.95	1604.17	358.89	1.47
9763.00	91.10	.20	8205.46	1698.82	-33.26	1698.92	1699.15	358.88	3.86
9859.00	90.50	.50	8204.12	1794.81	-32.67	1794.90	1795.11	358.96	.70
9954.00	89.90	3.00	8203.79	1889.76	-29.77	1889.84	1889.99	359.10	2.71
10049.00	90.70	3.30	8203.29	1984.61	-24.55	1984.68	1984.77	359.29	.90
10144.00	89.80	1.60	8202.88	2079.52	-20.49	2079.57	2079.62	359.44	2.02
10240.00	91.40	2.30	8201.87	2175.46	-17.22	2175.50	2175.53	359.55	1.82
10335.00	92.10	3.00	8198.97	2270.31	-12.83	2270.34	2270.35	359.68	1.04
10430.00	91.50	2.30	8195.99	2365.16	-8.44	2365.18	2365.18	359.80	.97
10525.00	90.00	1.90	8194.74	2460.09	-4.96	2460.09	2460.09	359.88	1.63
10620.00	90.10	2.30	8194.66	2555.02	-1.48	2555.01	2555.02	359.97	.43
10715.00	88.90	1.90	8195.49	2649.95	2.00	2649.93	2649.95	.04	1.33
10812.00	89.40	1.20	8196.93	2746.91	4.62	2746.88	2746.91	.10	.89
10907.00	89.50	.20	8197.84	2841.89	5.78	2841.86	2841.90	.12	1.06
11003.00	89.20	.20	8198.93	2937.89	6.12	2937.85	2937.89	.12	.31
11098.00	89.00	359.80	8200.42	3032.87	6.12	3032.84	3032.88	.12	.47
11194.00	90.30	359.10	8201.01	3128.86	5.20	3128.84	3128.87	.10	1.54
11289.00	90.50	358.80	8200.35	3223.85	3.45	3223.82	3223.85	.06	.38
11384.00	91.50	358.40	8198.69	3318.80	1.13	3318.78	3318.80	.02	1.13
11479.00	89.50	359.10	8197.86	3413.77	-.94	3413.76	3413.77	359.98	2.23
11574.00	90.70	359.80	8197.69	3508.76	-1.85	3508.75	3508.76	359.97	1.46
11670.00	90.70	359.50	8196.52	3604.75	-2.44	3604.75	3604.76	359.96	.31
11765.00	90.80	359.50	8195.28	3699.74	-3.27	3699.74	3699.74	359.95	.11
11860.00	90.10	358.00	8194.53	3794.71	-5.34	3794.71	3794.72	359.92	1.74

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	C L O S U R E		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
11955.00	89.20	357.30	8195.11	3889.63	-9.23	3889.64	3889.64	359.86	1.20
12051.00	87.10	359.10	8198.21	3985.52	-12.25	3985.54	3985.54	359.82	2.88
12146.00	88.30	359.80	8202.02	4080.44	-13.16	4080.46	4080.46	359.82	1.46
12241.00	89.30	.90	8204.01	4175.42	-12.58	4175.43	4175.43	359.83	1.56
12336.00	91.40	.90	8203.43	4270.40	-11.09	4270.41	4270.41	359.85	2.21
12432.00	91.60	1.20	8200.92	4366.35	-9.33	4366.36	4366.36	359.88	.38
12527.00	91.20	1.20	8198.60	4461.30	-7.34	4461.30	4461.30	359.91	.42
12622.00	90.70	.90	8197.02	4556.27	-5.60	4556.27	4556.27	359.93	.61
12717.00	90.20	359.50	8196.28	4651.26	-5.27	4651.26	4651.27	359.94	1.56
Last Phoenix MWD Surveys									
12754.00	89.90	358.40	8196.25	4688.26	-5.94	4688.25	4688.26	359.93	3.08
Projection to TD									
12800.00	89.90	358.40	8196.33	4734.24	-7.23	4734.24	4734.24	359.91	.00