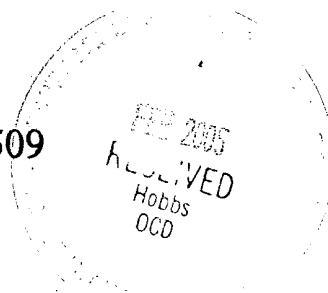


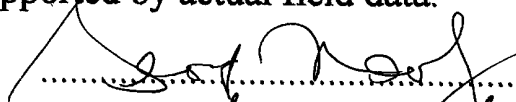
Scientific Drilling

CHESAPEAKE OPERATING, INC.

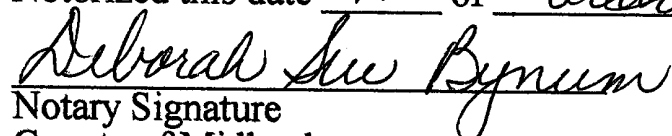
Field: Williams
Site: Lea County, NM
Well: Williams Fed. 14 #1
Wellpath: VH - Job #32K0804509
Survey: 08/23/04

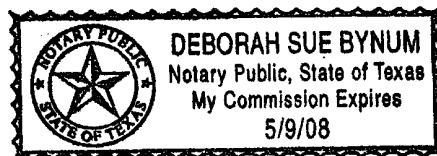


This survey is correct to the best of my knowledge
and is supported by actual field data.


..... Company Representative

Notorized this date 17th of October, 2004.


Notary Signature
County of Midland
State of Texas





Scientific Drilling International

Survey Report

Company: CHESAPEAKE OPERATING, INC.
 Field: Williams
 Site: Lea County, NM
 Well: Williams Fed. 14 #1
 Wellpath: VH - Job #32K0804509

Date: 10/17/2004 Time: 08:41:42 Page: 1
 Co-ordinate(NE) Reference: Site: Lea County, NM, Grid North
 Vertical (TVD) Reference: SITE 0.0
 Section (VS) Reference: Well (0.00N,0.00E,21.78Azi)
 Survey Calculation Method: Minimum Curvature Db: Sybase

Survey: 08/23/04
 KSRG 0'-6393'

Start Date: 8/23/2004

Company: Scientific Drilling Internatio
 Tool: Keeper;Keeper Gyro

Engineer: Guebara/Gonzales
 Tied-to: From Surface

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.0	0.00
100.0	0.05	226.26	100.0	0.0	0.0	0.0	0.05	0.0	226.26
200.0	0.16	115.53	200.0	-0.1	-0.1	0.1	0.18	0.1	152.42
300.0	0.31	103.39	300.0	-0.1	-0.2	0.5	0.16	0.5	118.29
400.0	0.50	94.73	400.0	0.1	-0.3	1.2	0.20	1.2	106.56
500.0	0.54	113.96	500.0	0.2	-0.6	2.0	0.18	2.1	105.77
600.0	0.48	124.04	600.0	0.1	-1.0	2.8	0.11	3.0	109.61
700.0	0.50	124.59	700.0	-0.1	-1.5	3.5	0.02	3.8	112.89
800.0	0.49	105.03	800.0	-0.1	-1.8	4.3	0.17	4.6	113.26
900.0	0.47	89.39	900.0	0.1	-1.9	5.1	0.13	5.5	110.87
1000.0	0.54	116.08	1000.0	0.2	-2.1	5.9	0.24	6.3	109.89
1100.0	0.60	101.25	1100.0	0.3	-2.5	6.9	0.16	7.3	109.67
1200.0	0.61	106.36	1200.0	0.4	-2.7	7.9	0.05	8.3	108.94
1300.0	0.54	113.17	1300.0	0.5	-3.0	8.8	0.10	9.3	109.00
1400.0	0.51	98.98	1400.0	0.5	-3.3	9.7	0.13	10.3	108.76
1500.0	0.55	111.49	1500.0	0.6	-3.5	10.6	0.12	11.2	108.49
1600.0	0.49	88.82	1599.9	0.8	-3.7	11.5	0.21	12.1	107.93
1700.0	0.35	95.51	1699.9	1.1	-3.7	12.2	0.15	12.8	107.00
1800.0	0.49	92.12	1799.9	1.3	-3.8	12.9	0.14	13.5	106.28
1900.0	0.24	58.83	1899.9	1.6	-3.7	13.5	0.32	14.0	105.22
2000.0	0.34	54.67	1999.9	2.0	-3.4	14.0	0.10	14.4	103.70
2100.0	0.31	0.57	2099.9	2.5	-3.0	14.2	0.30	14.5	101.77
2200.0	0.37	40.12	2199.9	3.1	-2.4	14.4	0.24	14.6	99.62
2300.0	0.24	10.69	2299.9	3.6	-2.0	14.7	0.20	14.8	97.73
2400.0	0.45	26.40	2399.9	4.2	-1.4	14.9	0.23	14.9	95.50
2500.0	0.30	23.65	2499.9	4.8	-0.8	15.2	0.15	15.2	93.18
2600.0	0.66	42.87	2599.9	5.6	-0.2	15.6	0.39	15.7	90.66
2700.0	0.79	46.82	2699.9	6.8	0.7	16.5	0.14	16.6	87.53
2800.0	0.84	55.16	2799.9	8.0	1.6	17.6	0.13	17.7	84.80
2900.0	0.91	59.22	2899.9	9.3	2.4	18.9	0.09	19.1	82.68
3000.0	0.98	63.69	2999.9	10.5	3.2	20.4	0.10	20.6	81.03
3100.0	1.05	70.32	3099.9	11.8	3.9	22.0	0.14	22.4	79.94
3200.0	0.95	67.58	3199.9	13.0	4.5	23.6	0.11	24.1	79.16
3300.0	0.88	68.08	3299.8	14.1	5.1	25.1	0.07	25.6	78.45
3400.0	1.18	64.03	3399.8	15.4	5.9	26.8	0.31	27.4	77.63
3500.0	1.05	67.67	3499.8	16.8	6.7	28.5	0.15	29.3	76.85
3600.0	1.15	53.98	3599.8	18.3	7.6	30.2	0.28	31.1	75.86
3700.0	1.02	57.39	3699.8	19.8	8.7	31.7	0.15	32.9	74.72
3800.0	1.26	48.17	3799.7	21.5	9.9	33.3	0.30	34.8	73.47
3900.0	1.22	39.60	3899.7	23.5	11.4	34.8	0.19	36.6	71.81
4000.0	1.36	36.47	3999.7	25.7	13.2	36.2	0.16	38.5	69.94
4100.0	1.48	31.50	4099.7	28.1	15.3	37.6	0.17	40.6	67.88
4200.0	1.34	28.21	4199.6	30.6	17.4	38.8	0.16	42.5	65.85
4300.0	1.25	30.50	4299.6	32.8	19.4	39.9	0.10	44.4	64.11
4400.0	1.40	30.24	4399.6	35.1	21.4	41.1	0.15	46.3	62.52
4500.0	1.47	27.89	4499.6	37.6	23.6	42.3	0.09	48.4	60.88
4600.0	1.64	16.87	4599.5	40.3	26.1	43.3	0.34	50.5	58.97
4700.0	1.91	9.45	4699.5	43.3	29.1	44.0	0.35	52.7	56.55
4800.0	2.05	7.84	4799.4	46.7	32.5	44.5	0.15	55.1	53.88



Scientific Drilling International

Survey Report

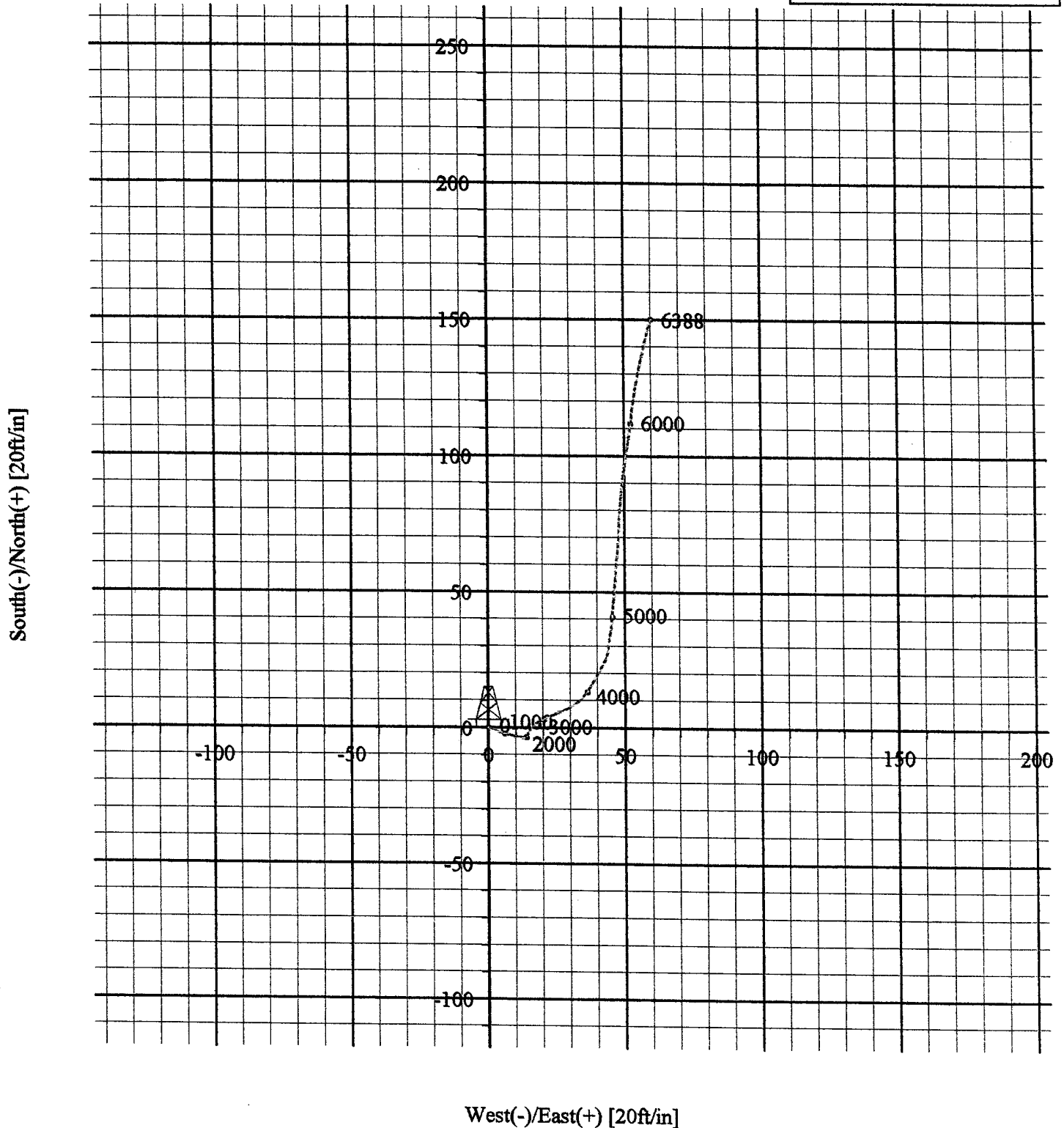
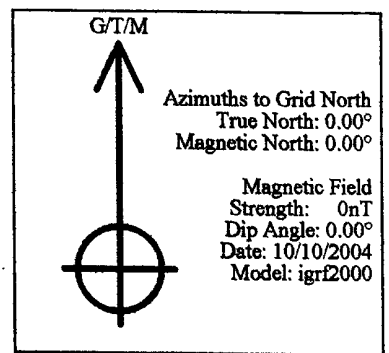
Company: CHESAPEAKE OPERATING, INC.
Field: Williams
Site: Lea County, NM
Well: Williams Fed. 14 #1
Wellpath: VH - Job #32K0804509

Date: 10/17/2004 Time: 08:41:42 Page: 2
Co-ordinate(NE) Reference: Site: Lea County, NM, Grid North
Vertical (TVD) Reference: SITE 0.0
Section (VS) Reference: Well (0.00N,0.00E,21.78Azi)
Survey Calculation Method: Minimum Curvature Db: Sybase

Survey

MD ft	Incl deg	Azim deg	TVD ft	VS ft	N/S ft	E/W ft	DLS deg/100ft	ClsD ft	ClsA deg
4900.0	2.43	7.17	4899.3	50.5	36.4	45.0	0.38	57.9	51.08
5000.0	2.63	4.68	4999.2	54.7	40.8	45.5	0.23	61.1	48.14
5100.0	2.99	6.10	5099.1	59.4	45.6	45.9	0.37	64.8	45.19
5200.0	3.58	4.00	5199.0	64.9	51.3	46.4	0.60	69.2	42.13
5300.0	3.57	3.75	5298.8	70.8	57.6	46.9	0.02	74.2	39.15
5400.0	3.94	5.69	5398.5	77.1	64.1	47.4	0.39	79.7	36.49
5500.0	4.23	2.14	5498.3	83.9	71.2	47.9	0.38	85.8	33.92
5600.0	4.40	4.03	5598.0	91.0	78.7	48.3	0.22	92.3	31.53
5700.0	4.56	5.52	5697.7	98.5	86.5	48.9	0.20	99.4	29.51
5800.0	4.67	7.65	5797.4	106.2	94.5	49.9	0.20	106.8	27.83
5900.0	4.92	8.99	5897.0	114.4	102.8	51.1	0.27	114.7	26.43
6000.0	5.25	7.50	5996.6	123.0	111.5	52.3	0.36	123.2	25.14
6100.0	5.56	8.59	6096.2	132.1	120.8	53.7	0.33	132.2	23.95
6200.0	5.86	11.26	6195.7	141.9	130.6	55.4	0.40	141.9	22.97
6300.0	6.10	13.66	6295.1	152.1	140.8	57.6	0.35	152.2	22.26
6393.0	5.77	14.72	6387.6	161.7	150.1	60.0	0.37	161.7	21.78

Field: Williams
Site: Lea County, NM
Well: Williams Fed. 14 #1
Wellpath: VH - Job #32K0804509
Survey: 08/23/04



Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
** Tieln	0.0	0.00	0.0	0.0					
INC	247.0	0.50							
INC	400.0	0.75							
INC	641.0	0.25							
INC	894.0	0.25							
INC	1115.0	0.50							
INC	1336.0	0.75							
INC	1588.0	0.50							
INC	2063.0	0.75							
INC	2537.0	0.75							
INC	3010.0	1.00							
INC	3516.0	0.75							
INC	4012.0	0.75							
INC	4486.0	1.00							
INC	4675.0	1.25							
INC	5124.0	2.75							
INC	5377.0	3.50							
INC	5515.0	3.75							
INC	5630.0	3.50							
INC	5894.0	3.25							

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates N-S	E-W	Closure	Vertical Section	Dog Leg Severity
INC	6167.0	5.00							
INC	6304.0	5.50							
** Tieln	6393.0	5.77	14.7	6387.6	N 150.1	E 60.0	321.6	150.1	
MWD	6416.0	6.20	14.7	6410.5	N 152.5	E 60.6	164.1	152.5	1.870
MWD	6431.0	6.20	13.4	6425.4	N 154.0	E 61.0	165.7	154.0	0.936
MWD	6462.0	5.70	13.1	6456.3	N 157.2	E 61.7	168.8	157.2	1.616
MWD	6494.0	4.70	16.8	6488.1	N 160.0	E 62.5	171.7	160.0	3.294
MWD	6525.0	3.60	17.5	6519.0	N 162.1	E 63.1	174.0	162.1	3.552
MWD	6557.0	2.50	19.4	6551.0	N 163.7	E 63.7	175.7	163.7	3.452
MWD	6588.0	1.40	18.7	6582.0	N 164.7	E 64.0	176.7	164.7	3.549
MWD	6620.0	0.90	7.5	6614.0	N 165.3	E 64.2	177.4	165.3	1.706
MWD	6652.0	0.40	341.3	6646.0	N 165.7	E 64.2	177.7	165.7	1.779
MWD	6683.0	0.20	238.4	6677.0	N 165.8	E 64.1	177.7	165.8	1.566
MWD	6715.0	1.20	212.4	6709.0	N 165.5	E 63.9	177.3	165.5	3.200
MWD	6746.0	1.60	207.0	6740.0	N 164.8	E 63.5	176.6	164.8	1.357
MWD	6777.0	2.40	205.2	6770.9	N 163.8	E 63.0	175.5	163.8	2.588
MWD	6810.0	2.40	200.7	6803.9	N 162.6	E 62.5	174.1	162.6	0.571
MWD	6841.0	2.40	203.8	6834.9	N 161.3	E 62.0	172.8	161.3	0.419
MWD	6872.0	2.40	202.9	6865.9	N 160.2	E 61.5	171.5	160.2	0.122
MWD	6904.0	2.10	201.3	6897.8	N 159.0	E 61.0	170.3	159.0	0.958

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MWD	6935.0	2.10	203.1	6928.8	N 157.9	E 60.6	169.2	157.9	0.213
MWD	6967.0	2.10	196.5	6960.8	N 156.8	E 60.2	168.0	156.8	0.755
MWD	6998.0	2.00	195.3	6991.8	N 155.8	E 59.9	166.9	155.8	0.351
MWD	7029.0	2.00	196.3	7022.8	N 154.7	E 59.6	165.8	154.7	0.113
MWD	7060.0	1.90	201.1	7053.7	N 153.7	E 59.2	164.8	153.7	0.618
MWD	7091.0	2.10	191.8	7084.7	N 152.7	E 58.9	163.7	152.7	1.228
MWD	7123.0	2.70	193.2	7116.7	N 151.4	E 58.6	162.4	151.4	1.884
MWD	7154.0	2.80	195.8	7147.7	N 150.0	E 58.3	160.9	150.0	0.516
MWD	7185.0	2.80	196.3	7178.6	N 148.5	E 57.8	159.4	148.5	0.079
MWD	7219.0	2.90	195.5	7212.6	N 146.9	E 57.4	157.7	146.9	0.317
MWD	7251.0	3.30	197.5	7244.5	N 145.2	E 56.9	156.0	145.2	1.295
MWD	7282.0	4.30	199.6	7275.5	N 143.3	E 56.2	153.9	143.3	3.256
MWD	7314.0	5.20	202.6	7307.3	N 140.8	E 55.3	151.3	140.8	2.917
MWD	7346.0	5.30	201.8	7339.2	N 138.1	E 54.2	148.3	138.1	0.387
MWD	7378.0	5.00	198.9	7371.1	N 135.4	E 53.2	145.5	135.4	1.241
MWD	7409.0	5.00	199.6	7402.0	N 132.8	E 52.3	142.8	132.8	0.197
MWD	7441.0	4.80	198.3	7433.8	N 130.3	E 51.4	140.0	130.3	0.715
MWD	7472.0	4.70	198.9	7464.7	N 127.8	E 50.6	137.5	127.8	0.360
MWD	7503.0	5.20	200.4	7495.6	N 125.3	E 49.7	134.8	125.3	1.666
MWD	7535.0	5.30	202.7	7527.5	N 122.6	E 48.6	131.9	122.6	0.728

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates N-S	E-W	Closure	Vertical Section	Dog Leg Severity
MWD	7566.0	5.00	199.6	7558.4	N 120.0	E 47.6	129.1	120.0	1.320
MWD	7598.0	4.90	198.8	7590.2	N 117.4	E 46.7	126.3	117.4	0.380
MWD	7629.0	4.80	198.5	7621.1	N 114.9	E 45.8	123.7	114.9	0.333
MWD	7661.0	4.80	200.4	7653.0	N 112.4	E 44.9	121.0	112.4	0.497
MWD	7692.0	4.60	197.2	7683.9	N 110.0	E 44.1	118.5	110.0	1.064
MWD	7724.0	4.60	200.4	7715.8	N 107.5	E 43.3	115.9	107.5	0.802
MWD	7756.0	5.20	198.9	7747.7	N 105.0	E 42.4	113.2	105.0	1.917
MWD	7787.0	5.40	199.2	7778.6	N 102.3	E 41.5	110.3	102.3	0.651
MWD	7819.0	5.30	200.0	7810.4	N 99.5	E 40.5	107.4	99.5	0.390
MWD	7850.0	5.00	198.5	7841.3	N 96.8	E 39.5	104.6	96.8	1.061
MWD	7881.0	4.90	199.6	7872.2	N 94.3	E 38.7	101.9	94.3	0.445
MWD	7913.0	4.80	197.4	7904.1	N 91.7	E 37.8	99.2	91.7	0.660
MWD	7945.0	4.80	197.0	7936.0	N 89.2	E 37.0	96.6	89.2	0.105
MWD	7976.0	4.70	198.4	7966.9	N 86.7	E 36.2	94.0	86.7	0.494
MWD	8008.0	4.80	196.5	7998.7	N 84.2	E 35.4	91.4	84.2	0.583
MWD	8039.0	5.50	199.3	8029.6	N 81.6	E 34.6	88.6	81.6	2.399
MWD	8071.0	5.20	199.5	8061.5	N 78.7	E 33.6	85.6	78.7	0.939
MWD	8103.0	5.40	199.9	8093.3	N 76.0	E 32.6	82.7	76.0	0.636
MWD	8134.0	5.20	199.4	8124.2	N 73.3	E 31.6	79.8	73.3	0.662
MWD	8166.0	5.10	193.8	8156.1	N 70.5	E 30.8	76.9	70.5	1.601

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MWD	8197.0	4.70	191.8	8187.0	N 67.9	E 30.2	74.3	67.9	1.403
MWD	8228.0	5.10	193.1	8217.9	N 65.3	E 29.6	71.8	65.3	1.339
MWD	8259.0	5.40	196.1	8248.7	N 62.6	E 28.9	69.0	62.6	1.311
MWD	8289.0	5.30	196.7	8278.6	N 59.9	E 28.1	66.2	59.9	0.382
MWD	8320.0	5.40	197.6	8309.5	N 57.2	E 27.3	63.3	57.2	0.421
MWD	8351.0	5.30	193.5	8340.3	N 54.4	E 26.5	60.5	54.4	1.274
MWD	8382.0	5.20	195.9	8371.2	N 51.6	E 25.8	57.7	51.6	0.778
MWD	8414.0	5.10	196.7	8403.1	N 48.9	E 25.0	54.9	48.9	0.385
MWD	8445.0	4.70	190.2	8434.0	N 46.3	E 24.4	52.3	46.3	2.205
MWD	8477.0	4.80	194.4	8465.8	N 43.7	E 23.8	49.8	43.7	1.131
MWD	8508.0	4.80	187.8	8496.7	N 41.2	E 23.3	47.3	41.2	1.781
MWD	8540.0	4.90	192.4	8528.6	N 38.5	E 22.8	44.8	38.5	1.255
MWD	8571.0	4.80	187.4	8559.5	N 35.9	E 22.4	42.3	35.9	1.401
MWD	8603.0	4.90	188.3	8591.4	N 33.3	E 22.0	39.9	33.3	0.393
MWD	8634.0	4.60	188.5	8622.3	N 30.7	E 21.6	37.6	30.7	0.969
MWD	8665.0	4.60	200.6	8653.2	N 28.3	E 21.0	35.3	28.3	3.125
MWD	8696.0	4.80	197.5	8684.1	N 25.9	E 20.2	32.9	25.9	1.043
MWD	8728.0	4.80	198.4	8716.0	N 23.4	E 19.4	30.3	23.4	0.235
MWD	8760.0	4.60	208.6	8747.9	N 21.0	E 18.3	27.9	21.0	2.682
MWD	8791.0	4.70	210.6	8778.8	N 18.8	E 17.1	25.4	18.8	0.614

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates N-S	E-W	Closure	Vertical Section	Dog Leg Severity
MWD	8823.0	4.90	207.3	8810.6	N 16.5	E 15.8	22.8	16.5	1.065
MWD	8854.0	4.60	211.3	8841.5	N 14.2	E 14.5	20.3	14.2	1.441
MWD	8885.0	4.70	213.8	8872.4	N 12.1	E 13.2	17.9	12.1	0.729
MWD	8916.0	4.10	212.0	8903.3	N 10.1	E 11.9	15.6	10.1	1.986
MWD	8947.0	3.50	218.9	8934.3	N 8.4	E 10.7	13.6	8.4	2.430
MWD	8979.0	3.00	223.0	8966.2	N 7.1	E 9.5	11.8	7.1	1.722
MWD	9010.0	2.60	215.7	8997.2	N 5.9	E 8.6	10.4	5.9	1.726
MWD	9042.0	3.00	211.2	9029.2	N 4.6	E 7.7	9.0	4.6	1.425
MWD	9073.0	2.40	220.3	9060.1	N 3.4	E 6.9	7.6	3.4	2.373
MWD	9105.0	2.10	214.7	9092.1	N 2.4	E 6.1	6.5	2.4	1.161
MWD	9137.0	1.90	230.3	9124.1	N 1.6	E 5.3	5.6	1.6	1.806
MWD	9168.0	1.50	239.1	9155.1	N 1.0	E 4.6	4.7	1.0	1.537
MWD	9200.0	1.40	220.8	9187.1	N 0.5	E 4.0	4.0	0.5	1.474
MWD	9263.0	1.50	208.3	9250.0	S 0.8	E 3.1	3.2	-0.8	0.525
MWD	9325.0	1.40	210.3	9312.0	S 2.1	E 2.3	3.2	-2.1	0.181
MWD	9387.0	1.10	206.7	9374.0	S 3.3	E 1.7	3.7	-3.3	0.500
MWD	9450.0	0.90	219.8	9437.0	S 4.3	E 1.1	4.4	-4.3	0.480
MWD	9513.0	1.20	197.4	9500.0	S 5.3	E 0.6	5.3	-5.3	0.798
MWD	9544.0	1.00	185.8	9531.0	S 5.8	E 0.5	5.9	-5.8	0.962
MWD	9607.0	0.60	189.3	9594.0	S 6.7	E 0.3	6.7	-6.7	0.639

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MWD	9670.0	0.90	195.0	9657.0	S 7.5	E 0.2	7.5	-7.5	0.490
MWD	9763.0	1.00	193.3	9749.9	S 9.0	W 0.2	9.0	-9.0	0.112
MWD	9858.0	1.00	193.6	9844.9	S 10.6	W 0.6	10.6	-10.6	0.006
MWD	9890.0	0.70	180.3	9876.9	S 11.1	W 0.7	11.1	-11.1	1.116
MWD	10047.0	0.30	20.3	10033.9	S 11.7	W 0.5	11.7	-11.7	0.629
MWD	10111.0	0.00	152.4	10097.9	S 11.5	W 0.5	11.5	-11.5	0.469
MWD	10205.0	0.30	304.5	10191.9	S 11.4	W 0.7	11.4	-11.4	0.319
MSS	10299.0	0.80	15.9	10285.9	S 10.6	W 0.7	10.6	-10.6	0.808
MSS	10369.0	0.06	309.8	10355.9	S 10.1	W 0.6	10.1	-10.1	1.111
MSS	10495.0	0.50	309.9	10481.9	S 9.7	W 1.1	9.8	-9.7	0.349
MSS	10746.0	2.00	35.3	10732.9	S 5.4	E 0.6	5.5	-5.4	0.806
MSS	10842.0	3.00	36.2	10828.8	S 2.0	E 3.1	3.7	-2.0	1.042
MSS	10936.0	4.30	42.7	10922.6	N 2.5	E 6.9	7.4	2.5	1.449
MSS	11061.0	4.70	50.0	11047.2	N 9.3	E 14.0	16.8	9.3	0.558
MSS	11154.0	5.00	50.0	11139.9	N 14.3	E 20.0	24.6	14.3	0.323
MSS	11220.0	4.60	54.5	11205.6	N 17.7	E 24.4	30.2	17.7	0.823
MSS	11347.0	4.60	58.0	11332.2	N 23.4	E 32.9	40.3	23.4	0.221
MWD	11389.0	4.60	58.8	11374.1	N 25.2	E 35.7	43.7	25.2	0.162
MWD	11451.0	4.60	61.3	11435.9	N 27.6	E 40.0	48.6	27.6	0.323
MWD	11518.0	3.30	63.3	11502.7	N 29.8	E 44.1	53.2	29.8	1.951

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MWD	11581.0	2.20	75.9	11565.7	N 30.9	E 46.9	56.2	30.9	1.982
MWD	11643.0	1.50	121.6	11627.6	N 30.8	E 48.7	57.6	30.8	2.540
MWD	11705.0	2.00	161.3	11689.6	N 29.3	E 49.8	57.8	29.3	2.061
MWD	11768.0	2.60	178.6	11752.5	N 26.8	E 50.2	56.9	26.8	1.446
MWD	11829.0	3.00	210.0	11813.5	N 24.1	E 49.4	55.0	24.1	2.562
MWD	11893.0	2.10	203.5	11877.4	N 21.6	E 48.1	52.7	21.6	1.475
MWD	11956.0	2.30	226.0	11940.4	N 19.6	E 46.7	50.7	19.6	1.397
MWD	12019.0	3.40	245.9	12003.3	N 18.0	E 44.1	47.6	18.0	2.324
MWD	12081.0	3.40	242.5	12065.2	N 16.4	E 40.8	44.0	16.4	0.325
MWD	12144.0	3.80	249.4	12128.1	N 14.8	E 37.2	40.0	14.8	0.935
MWD	12206.0	3.20	260.6	12189.9	N 13.8	E 33.6	36.3	13.8	1.463
MWD	12268.0	2.80	260.6	12251.9	N 13.2	E 30.4	33.1	13.2	0.645
MWD	12335.0	3.20	251.3	12318.8	N 12.4	E 27.0	29.7	12.4	0.938
MWD	12398.0	3.50	241.8	12381.7	N 10.9	E 23.6	26.0	10.9	1.000
MWD	12462.0	4.20	240.3	12445.5	N 8.8	E 19.9	21.7	8.8	1.105
MWD	12524.0	5.10	241.7	12507.3	N 6.4	E 15.5	16.7	6.4	1.463
MWD	12586.0	4.00	250.3	12569.1	N 4.4	E 11.0	11.8	4.4	2.083
MWD	12648.0	2.90	259.2	12631.0	N 3.3	E 7.4	8.1	3.3	1.968
MWD	12712.0	2.90	231.3	12694.9	N 2.0	E 4.6	5.0	2.0	2.184
MWD	12774.0	2.20	226.0	12756.9	N 0.2	E 2.5	2.5	0.2	1.190

Directional Survey Report

Chesapeake Operating Company

Well ID: 819459

Well Name: William 14 Federal 1

Well Bore: Original Well Bore

Plane of Vertical Section: 0.0 degrees

Survey Type	Meas. Depth	Inc.	Azimuth	TVD	Coordinates		Closure	Vertical Section	Dog Leg Severity
					N-S	E-W			
MWD	12838.0	1.10	275.8	12820.8	S 0.6	E 1.0	1.2	-0.6	2.673
MWD	12933.0	1.10	71.5	12915.8	S 0.2	E 1.0	1.0	-0.2	2.264
MWD	13026.0	1.50	66.5	13008.8	N 0.6	E 2.9	3.0	0.6	0.447
MWD	13121.0	1.90	65.3	13103.8	N 1.7	E 5.5	5.8	1.7	0.423
MWD	13216.0	0.90	74.3	13198.7	N 2.6	E 7.6	8.1	2.6	1.075
MWD	13310.0	0.30	105.8	13292.7	N 2.7	E 8.6	9.0	2.7	0.705
MWD	13405.0	0.40	240.0	13387.7	N 2.5	E 8.5	8.9	2.5	0.680
MWD	13500.0	0.60	102.1	13482.7	N 2.2	E 8.7	9.0	2.2	0.985
MWD	13593.0	1.30	77.8	13575.7	N 2.3	E 10.2	10.5	2.3	0.852
MWD	13687.0	1.90	69.9	13669.7	N 3.1	E 12.7	13.1	3.1	0.679
MWD	13753.0	2.40	66.6	13735.6	N 4.0	E 15.0	15.6	4.0	0.780
MSS	13920.0	2.20	67.8	13902.5	N 6.6	E 21.2	22.2	6.6	0.123

Calculations using Minimum Curvature Method