

A Gyrodata Directional Survey

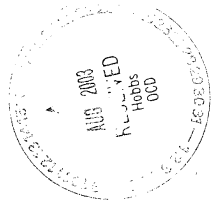
for

CHESAPEAKE OPERATING, INC.

Location: NABORS #311, LEA COUNTY, N.M.
~~Well E-15-16s-37e - 4 1/2" DRILL PIPE~~

BILLY STATE 1-15

SUR: E-15-16s-37e, 1992/N & 817/W
BHL: E-15-16s-37e, 2297/N & 981/W
API # 30-025-31063



Job Number: MD0603GW207

Run Date: 6/11/2003 11:38 25 AM

Surveyor: Lee Adams

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 32.928490 deg N Longitude: 103.243270 deg W

Azimuth Correction:

Gyro: -0.59000 deg West to Grid North

Proposed Well Direction: 151.480 deg

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Well Head Location

Chesapeake Operating, Inc.
Well: ~~H-H WEST B-9~~ 4 1/2" DRILLPIPE *BILLY STATE 1-15*
Location: NABORS #311, LEA COUNTY, N.M.
Job Number: MD0603GW207



MEASURED INCL DEPTH feet	AZIMUTH deg.	VERTICAL SECTION deg.	DOGLEG SEVERITY feet deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
0.00	0.00	0.00	0.0	0.00	0.0 0.0	0.00 N 0.00 E
9 TO 8335 RATE GYRO-SCOPIC MULTISHOT SURVEY RUN INSIDE 4 1/2" DRILLPIPE ALL MEASURED DEPTH REFERENCED TO NABORS #311 R.K.B.						
200.00	0.14	88.26	0.1	0.07	200.00 0.2 88.3	0.01 N 0.25 E
400.00	0.81	105.44	1.2	0.34	399.99 1.9 101.0	0.36 S 1.86 E
600.00	0.56	112.33	2.9	0.13	599.98 4.3 105.0	1.10 S 4.11 E
800.00	0.94	139.18	5.3	0.25	799.96 6.7 114.0	2.71 S 6.08 E
1000.00	0.89	128.52	8.3	0.09	999.94 9.7 120.4	4.91 S 8.36 E
1200.00	0.94	159.45	11.3	0.24	1199.91 12.6 126.1	7.40 S 10.14 E
1400.00	1.26	155.46	15.2	0.17	1399.87 16.0 133.2	10.93 S 11.63 E
1600.00	0.80	175.97	18.6	0.29	1599.84 19.1 138.6	14.33 S 12.64 E
1800.00	1.00	181.68	21.4	0.11	1799.82 21.6 144.0	17.48 S 12.69 E
2000.00	0.75	151.31	24.2	0.26	1999.80 24.3 146.9	20.37 S 13.26 E
2200.00	0.79	164.01	26.9	0.09	2199.78 26.9 148.0	22.83 S 14.26 E
2400.00	0.50	222.81	28.5	0.34	2399.77 28.5 150.4	24.78 S 14.05 E
2600.00	0.74	238.55	28.8	0.15	2599.75 28.9 154.7	26.09 S 12.36 E
2800.00	0.39	195.47	29.4	0.26	2799.75 29.6 158.0	27.42 S 11.08 E
3000.00	0.06	333.89	29.8	0.22	2999.74 30.0 158.8	27.98 S 10.85 E
3200.00	0.48	71.77	29.8	0.25	3199.74 30.0 157.2	27.63 S 11.60 E
3400.00	0.21	95.42	30.2	0.15	3399.74 30.2 155.0	27.40 S 12.75 E

06/11/03 (WED) 13:09 [TX/RX NO 5549]

A Gyrodata Directional Survey

Chesapeake Operating, Inc.
Well: ~~411 WEST B-9~~ 4 1/2" DRILLPIPE *BILLY STATE 1-15*
Location: NABORS #311, LEA COUNTY, N.M.
Job Number: MD0603GW207



MEASURED INCL DEPTH	INCL deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
3600.00	0.73	90.50	31.0	0.26	3599.73	31.0 152.4	27.45 S 14.38 E
3800.00	0.67	70.89	31.8	0.12	3799.72	31.8 148.3	27.03 S 16.75 E
4000.00	0.30	49.54	31.9	0.20	3999.71	32.1 145.3	26.35 S 18.25 E
4200.00	0.68	16.65	30.9	0.23	4199.70	31.3 142.6	24.88 S 18.99 E
4400.00	0.39	339.39	29.4	0.22	4399.69	30.0 140.4	23.11 S 19.09 E
4600.00	0.33	319.28	28.2	0.07	4599.69	28.7 140.0	22.02 S 18.46 E
4800.00	0.35	328.26	27.0	0.03	4799.69	27.5 139.9	21.06 S 17.76 E
5000.00	0.64	308.91	25.3	0.17	4999.68	25.8 140.1	19.83 S 16.56 E
5200.00	0.39	270.81	24.0	0.21	5199.67	24.3 141.9	19.12 S 15.01 E
5400.00	0.42	339.81	22.9	0.23	5399.67	23.2 142.6	18.42 S 14.08 E
5600.00	0.59	331.80	21.2	0.09	5599.66	21.5 141.6	16.83 S 13.35 E
5800.00	0.28	297.09	19.7	0.19	5799.65	20.0 141.7	15.71 S 12.43 E
6000.00	0.30	353.42	18.8	0.14	5999.65	19.1 141.5	14.97 S 11.93 E
6200.00	0.24	23.89	18.1	0.08	6199.65	18.5 139.4	14.07 S 12.04 E
6400.00	0.14	146.77	18.1	0.17	6399.65	18.6 138.4	13.89 S 12.35 E
6600.00	0.50	250.30	18.2	0.27	6599.65	18.5 141.0	14.39 S 11.67 E
6800.00	0.28	214.87	18.3	0.16	6799.64	18.4 145.0	15.09 S 10.57 E
7000.00	0.13	186.69	18.7	0.09	6999.64	18.8 146.8	15.71 S 10.27 E
7200.00	0.03	256.02	18.9	0.06	7199.64	18.9 147.4	15.95 S 10.19 E
7400.00	0.53	316.91	18.0	0.26	7399.64	18.0 148.1	15.29 S 9.51 E
7600.00	0.24	234.74	17.1	0.28	7599.63	17.1 150.1	14.85 S 8.54 E
7800.00	0.14	200.23	17.3	0.07	7799.63	17.3 152.1	15.32 S 8.11 E

A Gyrodata Directional Survey

Chesapeake Operating, Inc.
Well: ~~4 H. WEST B-9~~ 4 1/2" DRILLPIPE *BILLY STATE 1-15*
Location: NABORS #311, LEA COUNTY, N.M.
Job Number: MD0603GW207

MEASURED INCL DEPTH feet	deg.	AZIMUTH deg.	VERTICAL SECTION feet	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
8090.00	0.68	223.61	17.9	0.28	7999.63	17.9 156.3	16.42 S 7.20 E
8200.00	0.59	227.10	18.5	0.05	8199.61	18.8 162.6	17.99 S 5.63 E
8335.00	0.77	223.10	18.9	0.14	8334.60	19.6 166.8	19.12 S 4.50 E

Final Station Closure: Distance: 19.64 ft Az: 166.76 deg

