

A Gyrodata Directional Survey

for

EOG RESOURCES

Lease: Longhorn Well: B3-36H, 9-5/8" Casing

Location: SST #56, Weld County, Colorado

Job Number: RM0610GMSW408

Run Date: 20 Jun 2010

Surveyor: Joseph Turner

Calculation Method: MINIMUM CURVATURE

Survey surface coordinates obtained from: Company Man

Survey Latitude: 40.960481 deg. N Longitude: 104.381569 deg. W

Azimuth Correction:

Gyro: Bearings are Relative to True North

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Well Head Location

A Gyrodata Directional Survey

EOG Resources

Lease: Longhorn Well: B3-36H, 9-5/8" Casing

Location: SST #56, Weld County, Colorado

Job Number: RM0610GMSW408

MEASURED DEPTH feet	I N C L deg.	A Z I M U T H deg.	B O R E H O L E B E A R I N G deg. min.	D O G L E G S E V E R I T Y deg./ 100 ft.	V E R T I C A L D E P T H feet	C L O S U R E D I S T. A Z I M U T H feet deg.	H O R I Z O N T A L C O O R D I N A T E S feet
0.00	0.00	0.00	N 0 0 E	0.00	0.00	0.0 0.0	0.00 N 0.00 E
0 - 1400 FT. RATE GYROSCOPIC MULTISHOT SURVEY RUN INSIDE 9-5/8" CASING ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO SST #56 R.K.B. OF 24 FT.							
100.00	0.14	264.04	S 84 2 W	0.14	100.00	0.1 264.0	0.01 S 0.12 W
200.00	0.22	2.71	N 2 43 E	0.28	200.00	0.3 305.4	0.17 N 0.23 W
300.00	0.04	148.17	S 31 50 E	0.25	300.00	0.4 327.9	0.33 N 0.21 W
400.00	0.07	118.26	S 61 44 E	0.04	400.00	0.3 333.6	0.27 N 0.13 W
500.00	0.17	213.96	S 33 58 W	0.19	500.00	0.2 305.8	0.12 N 0.16 W
600.00	0.20	304.63	N 55 22 W	0.26	600.00	0.4 283.6	0.09 N 0.39 W
700.00	0.28	276.46	N 83 32 W	0.14	700.00	0.8 285.9	0.22 N 0.78 W
800.00	0.43	280.93	N 79 4 W	0.15	800.00	1.4 283.0	0.32 N 1.39 W
900.00	0.56	319.59	N 40 25 W	0.35	899.99	2.2 290.2	0.76 N 2.07 W
1000.00	0.26	305.70	N 54 18 W	0.31	999.99	2.9 296.2	1.27 N 2.57 W
1100.00	0.32	0.81	N 0 49 E	0.27	1099.99	3.2 301.4	1.68 N 2.75 W
1200.00	0.31	353.02	N 6 59 W	0.04	1199.99	3.6 308.7	2.23 N 2.78 W
1300.00	0.41	356.59	N 3 25 W	0.10	1299.99	4.0 315.2	2.85 N 2.84 W
1400.00	0.28	6.29	N 6 17 E	0.14	1399.98	4.5 320.6	3.45 N 2.83 W

Final Station Closure: Distance: 4.46 ft Az: 320.64 deg.

EOG Resources, Inc.

Weld County, CO
Sec. 36-T12N-R63W
Longhorn B3-36H - A2

Plan #2

Design: Gyrodata Gyro and Sperry MWD Survey

Sperry Drilling Services Standard Report

14 July, 2010

Well Coordinates: 594,703.55 N, 2,309,060.45 E (40° 57' 37.79" N, 104° 22' 51.81" W)
Ground Level: 5,343.00 ft

Local Coordinate Origin:	Centered on Well Longhorn B3-36H - Slot A2
Viewing Datum:	RKB 22' @ 5365.00ft (SST 56 (modified))
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom
Geodetic Scale Factor Applied	
Version: 2003.16 Build: 43I	

HALLIBURTON

Design Report for Longhorn B3-36H - Gyrodata Gyro and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.14	264.04	100.00	-0.01	-0.12	0.04	0.14
Surveys from 100.00ft to 1400.00ft are Gyrodata Gyro Surveys							
200.00	0.22	2.71	200.00	0.17	-0.23	0.25	0.28
300.00	0.04	148.17	300.00	0.33	-0.21	0.39	0.25
400.00	0.07	118.26	400.00	0.27	-0.13	0.30	0.04
500.00	0.17	213.96	500.00	0.12	-0.16	0.18	0.19
600.00	0.20	304.63	600.00	0.09	-0.39	0.25	0.26
700.00	0.28	276.46	700.00	0.22	-0.78	0.53	0.14
800.00	0.43	280.93	800.00	0.32	-1.39	0.88	0.15
900.00	0.56	319.59	899.99	0.76	-2.07	1.57	0.35
1,000.00	0.26	305.70	999.99	1.27	-2.57	2.24	0.31
1,100.00	0.32	0.81	1,099.99	1.68	-2.75	2.69	0.27
1,200.00	0.31	353.02	1,199.99	2.23	-2.78	3.20	0.04
1,300.00	0.41	356.59	1,299.99	2.85	-2.84	3.79	0.10
1,400.00	0.28	6.29	1,399.98	3.45	-2.83	4.33	0.14
Tie-On to Gyrodata Gyro Survey							
1,483.00	0.18	37.18	1,482.98	3.76	-2.73	4.56	0.19
First Sperry MWD Survey							
1,578.00	0.31	306.69	1,577.98	4.03	-2.85	4.86	0.38
1,673.00	0.11	178.59	1,672.98	4.09	-3.05	5.00	0.41
1,864.00	0.50	272.69	1,863.98	3.95	-3.88	5.22	0.27
1,959.00	0.38	257.31	1,958.98	3.90	-4.60	5.48	0.18
2,054.00	0.22	253.34	2,053.98	3.78	-5.08	5.57	0.17
2,149.00	0.47	295.89	2,148.97	3.89	-5.61	5.90	0.36
2,276.00	0.35	286.16	2,275.97	4.23	-6.45	6.56	0.11
2,403.00	0.39	252.13	2,402.97	4.21	-7.23	6.87	0.17
2,529.00	0.34	250.00	2,528.97	3.95	-7.99	6.96	0.04
2,656.00	0.23	129.42	2,655.96	3.66	-8.15	6.76	0.39
2,783.00	0.22	273.43	2,782.96	3.51	-8.20	6.65	0.34
2,910.00	0.21	311.69	2,909.96	3.68	-8.61	6.98	0.11
3,036.00	0.27	304.47	3,035.96	4.00	-9.03	7.45	0.05
3,163.00	0.35	261.27	3,162.96	4.11	-9.66	7.81	0.19
3,290.00	0.41	275.53	3,289.96	4.09	-10.50	8.15	0.09
3,417.00	0.26	67.06	3,416.96	4.25	-10.68	8.37	0.51
3,543.00	0.33	3.26	3,542.96	4.72	-10.40	8.68	0.25
3,670.00	0.37	29.39	3,669.95	5.45	-10.18	9.24	0.13
3,796.00	0.67	14.08	3,795.95	6.52	-9.80	10.05	0.26
3,923.00	0.80	6.61	3,922.94	8.12	-9.51	11.38	0.13
4,050.00	0.97	1.58	4,049.92	10.07	-9.38	13.10	0.15
4,176.00	1.13	356.57	4,175.90	12.38	-9.43	15.21	0.15
4,303.00	1.58	349.87	4,302.87	15.35	-9.81	18.06	0.38
4,430.00	1.33	1.61	4,429.82	18.55	-10.08	21.07	0.31
4,557.00	1.84	332.20	4,556.78	21.83	-10.99	24.42	0.74
4,684.00	1.92	337.88	4,683.71	25.60	-12.74	28.59	0.16
4,811.00	1.92	336.74	4,810.64	29.53	-14.38	32.84	0.03
4,937.00	2.08	329.89	4,936.56	33.44	-16.36	37.22	0.23
5,063.00	2.22	324.73	5,062.47	37.41	-18.92	41.90	0.19
5,190.00	2.16	306.31	5,189.38	40.84	-22.27	46.43	0.55
5,317.00	2.20	306.85	5,316.29	43.72	-26.15	50.68	0.04

Design Report for Longhorn B3-36H - Gyrodata Gyro and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
5,443.00	1.97	317.86	5,442.21	46.77	-29.53	54.88	0.37
5,570.00	1.20	339.17	5,569.16	49.64	-31.47	58.29	0.75
5,697.00	1.03	348.81	5,696.13	52.00	-32.17	60.73	0.20
5,824.00	0.94	345.49	5,823.12	54.13	-32.65	62.86	0.08
5,950.00	1.36	324.88	5,949.09	56.35	-33.77	65.35	0.46
6,078.00	1.82	332.70	6,077.04	59.40	-35.57	68.87	0.40
6,204.00	1.32	332.81	6,202.99	62.47	-37.15	72.32	0.40
6,332.00	0.68	338.10	6,330.97	64.48	-38.11	74.56	0.50
6,458.00	0.72	353.25	6,456.96	65.96	-38.48	76.05	0.15
6,584.00	0.96	347.91	6,582.95	67.78	-38.80	77.83	0.20
6,711.00	0.90	348.01	6,709.93	69.80	-39.23	79.84	0.05
6,805.00	0.91	7.69	6,803.92	71.26	-39.28	81.19	0.33
6,837.00	0.76	330.16	6,835.92	71.70	-39.35	81.61	1.74
6,869.00	3.25	327.07	6,867.90	72.64	-39.95	82.73	7.79
6,901.00	8.66	337.09	6,899.71	75.62	-41.38	86.03	17.15
6,932.00	13.02	340.30	6,930.15	81.06	-43.47	91.85	14.19
6,964.00	15.00	341.49	6,961.20	88.39	-46.00	99.55	6.25
6,995.00	18.73	342.30	6,990.86	96.93	-48.79	108.47	12.06
7,027.00	22.59	341.12	7,020.80	107.65	-52.34	119.68	12.13
7,059.00	27.69	340.96	7,049.76	120.50	-56.76	133.20	15.94
7,091.00	32.17	341.08	7,077.48	135.60	-61.95	149.07	14.00
7,122.00	36.97	341.67	7,103.00	152.26	-67.56	166.54	15.52
7,154.00	41.67	341.11	7,127.75	171.47	-74.03	186.69	14.73
7,185.00	45.01	341.26	7,150.29	191.61	-80.89	207.83	10.78
7,217.00	47.75	341.21	7,172.37	213.54	-88.34	230.86	8.56
7,248.00	51.02	340.76	7,192.54	235.78	-96.01	254.26	10.61
7,280.00	55.50	339.61	7,211.68	259.90	-104.71	279.79	14.29
7,312.00	59.72	338.56	7,228.82	285.13	-114.36	306.73	13.48
7,343.00	61.04	337.01	7,244.14	310.08	-124.55	333.65	6.08
7,375.00	62.47	335.26	7,259.29	335.85	-135.96	361.83	6.57
7,407.00	63.28	334.67	7,273.88	361.66	-148.01	390.31	3.02
7,439.00	63.42	334.67	7,288.23	387.51	-160.24	418.91	0.44
7,470.00	63.30	334.40	7,302.13	412.53	-172.16	446.62	0.87
7,502.00	65.18	333.82	7,316.04	438.45	-184.74	475.43	6.10
7,534.00	70.91	332.17	7,328.00	464.88	-198.22	505.08	18.53
7,565.00	77.06	331.62	7,336.54	491.15	-212.25	534.82	19.91
7,597.00	82.08	331.85	7,342.33	518.86	-227.15	566.23	15.70
7,629.00	84.00	331.35	7,346.21	546.80	-242.26	597.94	6.20
7,660.00	84.41	331.23	7,349.34	573.85	-257.07	628.72	1.38
7,692.00	84.75	331.46	7,352.37	601.80	-272.35	660.51	1.28
7,724.00	85.00	331.51	7,355.22	629.81	-287.57	692.33	0.80
7,744.00	85.19	331.05	7,356.93	647.28	-297.14	712.21	2.48
7,807.00	87.47	334.52	7,360.97	703.18	-325.88	775.02	6.58
7,839.00	87.29	332.55	7,362.43	731.80	-340.13	806.98	6.18
7,870.00	87.34	331.88	7,363.88	759.20	-354.57	837.91	2.16
7,902.00	87.22	331.25	7,365.40	787.30	-369.78	869.82	2.00
7,934.00	87.29	330.76	7,366.93	815.26	-385.28	901.71	1.55
7,966.00	86.96	330.58	7,368.54	843.12	-400.93	933.58	1.17
7,998.00	87.32	330.49	7,370.14	870.95	-416.65	965.44	1.16
8,029.00	87.22	330.05	7,371.61	897.84	-432.01	996.30	1.45
8,061.00	88.98	330.19	7,372.67	925.57	-447.94	1,028.17	5.52

Design Report for Longhorn B3-36H - Gyrodata Gyro and Sperry MWD Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
8,093.00	89.81	330.36	7,373.01	953.36	-463.81	1,060.06	2.65
8,124.00	90.25	329.70	7,372.99	980.21	-479.29	1,090.95	2.56
8,155.00	90.28	329.28	7,372.85	1,006.92	-495.03	1,121.81	1.36
8,187.00	90.80	329.23	7,372.55	1,034.42	-511.39	1,153.65	1.63
8,219.00	90.77	329.66	7,372.11	1,061.97	-527.66	1,185.50	1.35
8,250.00	91.08	330.21	7,371.61	1,088.80	-543.19	1,216.37	2.04
8,282.00	90.83	330.48	7,371.08	1,116.60	-559.02	1,248.27	1.15
8,314.00	91.17	330.31	7,370.52	1,144.42	-574.82	1,280.16	1.19
8,346.00	91.64	331.47	7,369.73	1,172.37	-590.38	1,312.07	3.91
8,378.00	91.87	332.78	7,368.75	1,200.64	-605.34	1,344.02	4.15
8,409.00	91.66	334.26	7,367.80	1,228.38	-619.15	1,374.99	4.82
8,441.00	91.24	333.79	7,366.99	1,257.13	-633.17	1,406.98	1.97
8,473.00	90.71	333.28	7,366.44	1,285.78	-647.42	1,438.96	2.30
8,504.00	90.09	333.80	7,366.23	1,313.53	-661.24	1,469.95	2.61
8,536.00	90.15	334.74	7,366.16	1,342.36	-675.13	1,501.95	2.94
8,567.00	89.69	334.11	7,366.20	1,370.32	-688.51	1,532.95	2.52
8,599.00	89.66	334.02	7,366.39	1,399.09	-702.51	1,564.94	0.30
8,631.00	89.60	336.05	7,366.59	1,428.10	-716.01	1,596.94	6.35
8,694.00	89.66	335.86	7,367.00	1,485.63	-741.68	1,659.93	0.32
8,757.00	90.00	336.33	7,367.19	1,543.23	-767.21	1,722.92	0.92
8,821.00	89.69	335.99	7,367.36	1,601.77	-793.08	1,786.90	0.72
8,884.00	89.94	336.98	7,367.56	1,659.54	-818.21	1,849.88	1.62
8,947.00	89.97	337.49	7,367.61	1,717.63	-842.59	1,912.83	0.81
9,010.00	90.22	336.43	7,367.51	1,775.60	-867.25	1,975.79	1.73
9,074.00	89.66	335.35	7,367.58	1,834.02	-893.39	2,039.78	1.90
9,138.00	89.88	335.36	7,367.83	1,892.19	-920.08	2,103.77	0.34
9,201.00	89.94	335.08	7,367.93	1,949.39	-946.48	2,166.77	0.45
9,233.00	90.09	335.61	7,367.92	1,978.47	-959.83	2,198.77	1.72
9,296.00	88.30	335.32	7,368.81	2,035.77	-985.99	2,261.76	2.88
9,359.00	88.64	335.10	7,370.49	2,092.95	-1,012.39	2,324.74	0.64
9,422.00	88.98	334.45	7,371.80	2,149.93	-1,039.24	2,387.72	1.16
9,485.00	89.97	334.91	7,372.38	2,206.87	-1,066.18	2,450.72	1.73
9,547.00	90.31	334.48	7,372.22	2,262.92	-1,092.68	2,512.72	0.88
9,610.00	90.71	334.41	7,371.66	2,319.76	-1,119.85	2,575.71	0.64
9,674.00	89.08	334.06	7,371.78	2,377.39	-1,147.67	2,639.71	2.60
9,737.00	89.63	337.07	7,372.49	2,434.74	-1,173.73	2,702.69	4.86
9,801.00	89.82	337.88	7,372.80	2,493.85	-1,198.25	2,766.63	1.30
9,864.00	89.26	335.27	7,373.30	2,551.65	-1,223.29	2,829.59	4.24
9,928.00	90.28	336.14	7,373.56	2,609.99	-1,249.62	2,893.59	2.09
9,992.00	90.18	333.85	7,373.30	2,667.98	-1,276.67	2,957.58	3.58
10,055.00	89.51	333.06	7,373.47	2,724.34	-1,304.82	3,020.56	1.64
10,118.00	89.44	333.93	7,374.05	2,780.72	-1,332.94	3,083.54	1.39
10,182.00	89.20	333.93	7,374.81	2,838.20	-1,361.06	3,147.52	0.37
10,245.00	89.35	335.71	7,375.61	2,895.21	-1,387.86	3,210.51	2.84
10,309.00	88.93	336.94	7,376.57	2,953.81	-1,413.56	3,274.49	2.03
10,372.00	90.77	336.43	7,376.73	3,011.66	-1,438.49	3,337.45	3.03
10,435.00	89.23	335.99	7,376.73	3,069.31	-1,463.90	3,400.44	2.54
10,499.00	89.91	336.78	7,377.21	3,127.95	-1,489.54	3,464.41	1.63
10,562.00	90.09	337.19	7,377.21	3,185.93	-1,514.17	3,527.37	0.71
10,626.00	89.66	337.51	7,377.35	3,245.00	-1,538.82	3,591.32	0.84
10,689.00	89.81	339.32	7,377.64	3,303.58	-1,561.99	3,654.20	2.88

HALLIBURTON**Design Report for Longhorn B3-36H - Gyrodata Gyro and Sperry MWD Survey**

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
10,752.00	89.91	341.26	7,377.80	3,362.88	-1,583.24	3,716.92	3.08
10,816.00	90.28	342.17	7,377.69	3,423.65	-1,603.32	3,780.48	1.53
10,847.00	89.63	339.86	7,377.72	3,452.96	-1,613.40	3,811.30	7.74
10,910.00	90.25	339.16	7,377.78	3,511.97	-1,635.46	3,874.10	1.48
10,973.00	90.00	337.98	7,377.64	3,570.62	-1,658.47	3,936.97	1.91
11,037.00	89.72	338.19	7,377.80	3,629.99	-1,682.36	4,000.88	0.55
11,100.00	89.97	340.23	7,377.97	3,688.89	-1,704.72	4,063.70	3.26
11,163.00	89.88	341.42	7,378.05	3,748.39	-1,725.41	4,126.37	1.89
11,226.00	90.00	342.10	7,378.12	3,808.22	-1,745.13	4,188.92	1.10
11,289.00	89.78	342.01	7,378.24	3,868.16	-1,764.54	4,251.44	0.38
11,353.00	89.91	343.57	7,378.41	3,929.29	-1,783.48	4,314.84	2.45
11,427.00	89.94	345.66	7,378.51	4,000.64	-1,803.11	4,387.78	2.82
Final Sperry MWD Survey							
11,480.00	89.94	345.66	7,378.57	4,051.99	-1,816.24	4,439.86	0.00
Survey Projection to TD							

Design Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
100.00	100.00	-0.01	-0.12	Surveys from 100.00ft to 1400.00ft are Gyrodata Gyro Surveys
1,400.00	1,399.98	3.45	-2.83	Tie-On to Gyrodata Gyro Survey
1,483.00	1,482.98	3.76	-2.73	First Sperry MWD Survey
11,427.00	7,378.51	4,000.64	-1,803.11	Final Sperry MWD Survey
11,480.00	7,378.57	4,051.99	-1,816.24	Survey Projection to TD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	+N/-S (ft)	+E/-W (ft)	Start TVD (ft)
Target	Longhorn B3-36H Plan #2 BH Tgt	334.95	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
100.00	1,400.00	Gyrodata Gyro Surveys	NS-GYRO-MS
1,483.00	11,480.00	Sperry MWD Surveys	MWD

Design Report for Longhorn B3-36H - Gyrodata Gyro and Sperry MWD Survey**Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Longhorn B3-36H S.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			-2,554.00	-654.00		594,017.35	2,306,514.82		
Point 2			2,682.00	-654.00		594,083.42	2,311,750.58		
Longhorn B3-36H W.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			-2,554.00	4,712.00		599,383.11	2,306,447.11		
Point 2			-2,554.00	-654.00		594,017.35	2,306,514.82		
Longhorn B3-36H W.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			-1,954.00	4,112.00		598,790.70	2,307,054.65		
Point 2			-1,954.00	-54.00		594,624.90	2,307,107.22		
Longhorn B3-36H E.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			2,082.00	4,112.00		598,841.63	2,311,090.47		
Point 2			2,082.00	-54.00		594,675.83	2,311,143.04		
Longhorn B3-36H N.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			-2,554.00	4,712.00		599,383.11	2,306,447.11		
Point 2			2,682.00	4,712.00		599,449.18	2,311,682.87		
Bevo 4-36M	0.00	0.00	2.00	2,697.91	-738.91	597,392.01	2,308,287.53	40° 58' 4.451 N	104° 23' 1.439 W
- actual wellpath misses target center by 2797.27ft at 2.56ft MD (2.56 TVD, 0.00 N, 0.00 E)									
- Circle (radius 100.00)									
Longhorn B3-36H N.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			-1,954.00	4,112.00		598,790.70	2,307,054.65		
Point 2			2,082.00	4,112.00		598,841.63	2,311,090.47		
Longhorn B3-36H	0.00	0.00	7,359.00	4,051.49	-1,893.63	598,730.96	2,307,115.78	40° 58' 17.825 N	104° 23' 16.492 W
- actual wellpath misses target center by 79.83ft at 11480.00ft MD (7378.57 TVD, 4051.99 N, -1816.24 E)									
- Point									
Longhorn B3-36H E.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			2,682.00	4,712.00		599,449.18	2,311,682.87		
Point 2			2,682.00	-654.00		594,083.42	2,311,750.58		
Longhorn B3-36H S.	0.00	0.00	2.00	0.00	0.00	594,703.55	2,309,060.45	40° 57' 37.793 N	104° 22' 51.807 W
- actual wellpath hits target center									
- Polygon									
Point 1			-1,954.00	-54.00		594,624.90	2,307,107.22		
Point 2			2,082.00	-54.00		594,675.83	2,311,143.04		

North Reference Sheet for Sec. 36-T12N-R63W - Longhorn B3-36H - Plan #2

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.

Vertical Depths are relative to RKB 22' @ 5365.00ft (SST 56 (modified)). Northing and Easting are relative to Longhorn B3-36H - Slot A2

Coordinate System is US State Plane 1927 (Exact solution), Colorado North 501 using datum NAD 1927 (NADCON CONUS), ellipsoid Clarke 1866

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin: 0° 0' 0.000 E°, Latitude Origin: 40° 47' 0.000 N°

False Easting: 2,000,000.00ft, False Northing: 0.00ft, Scale Reduction: 1.00003355

Grid Coordinates of Well: 594,703.55 ft N, 2,309,060.45 ft E

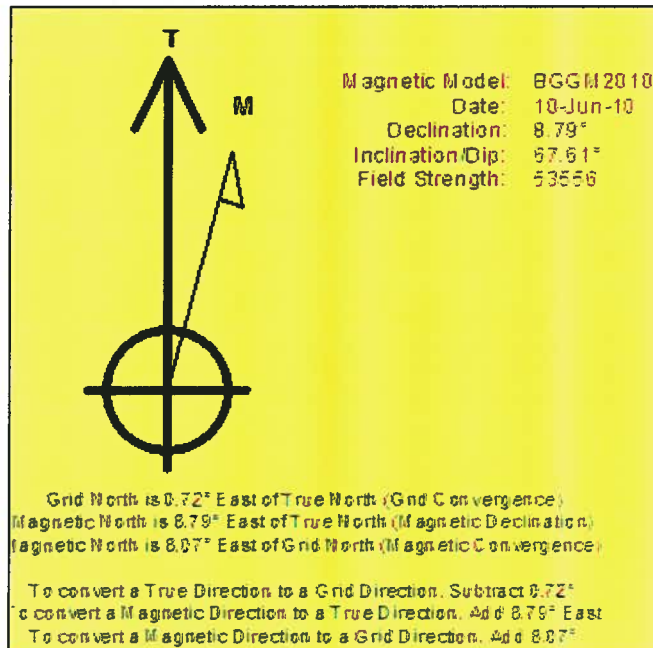
Geographical Coordinates of Well: 40° 57' 37.79" N, 104° 22' 51.81" W

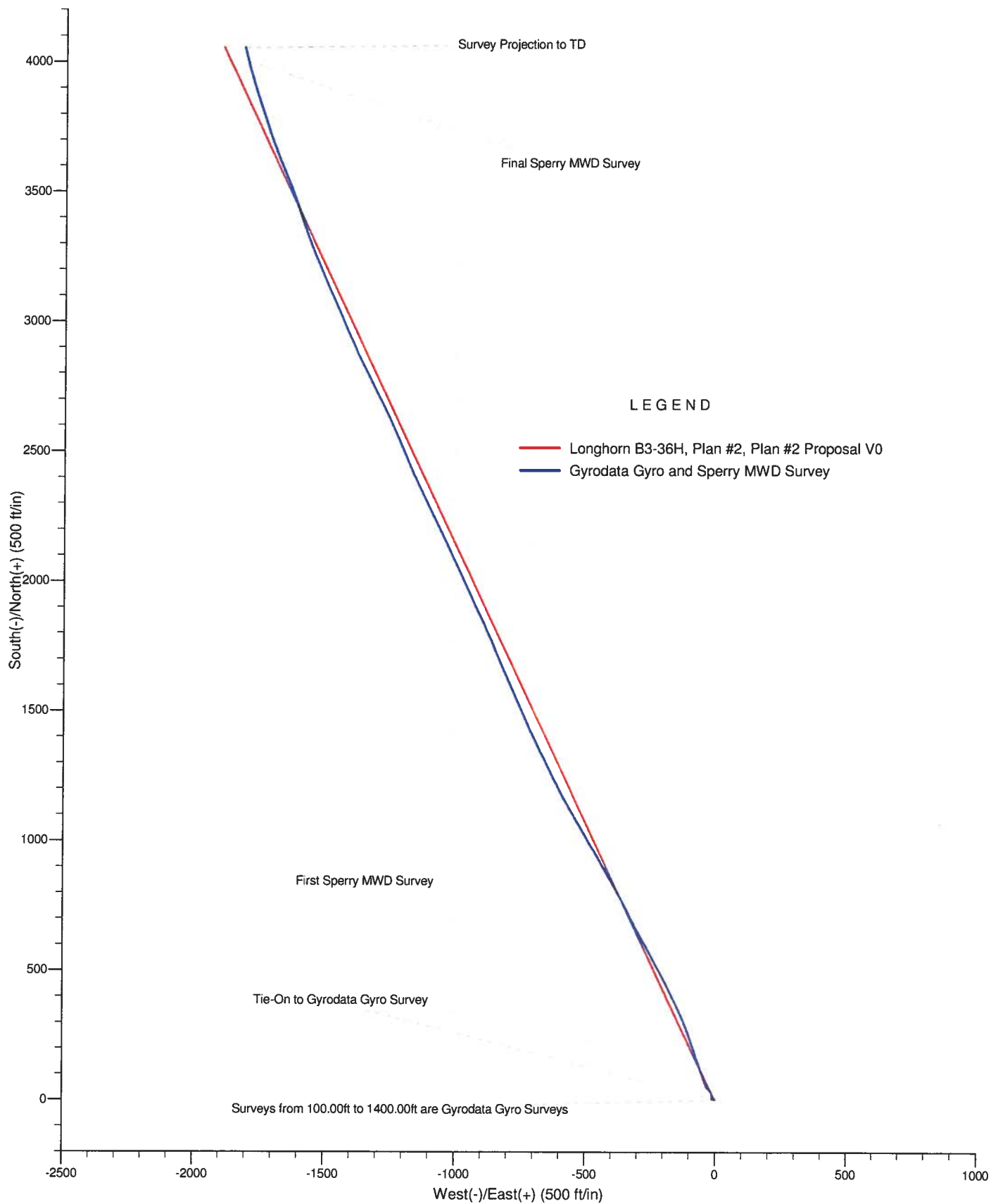
Grid Convergence at Surface is: 0.72°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,480.00ft

the Bottom Hole Displacement is 4,440.42ft in the Direction of 335.86° (True).

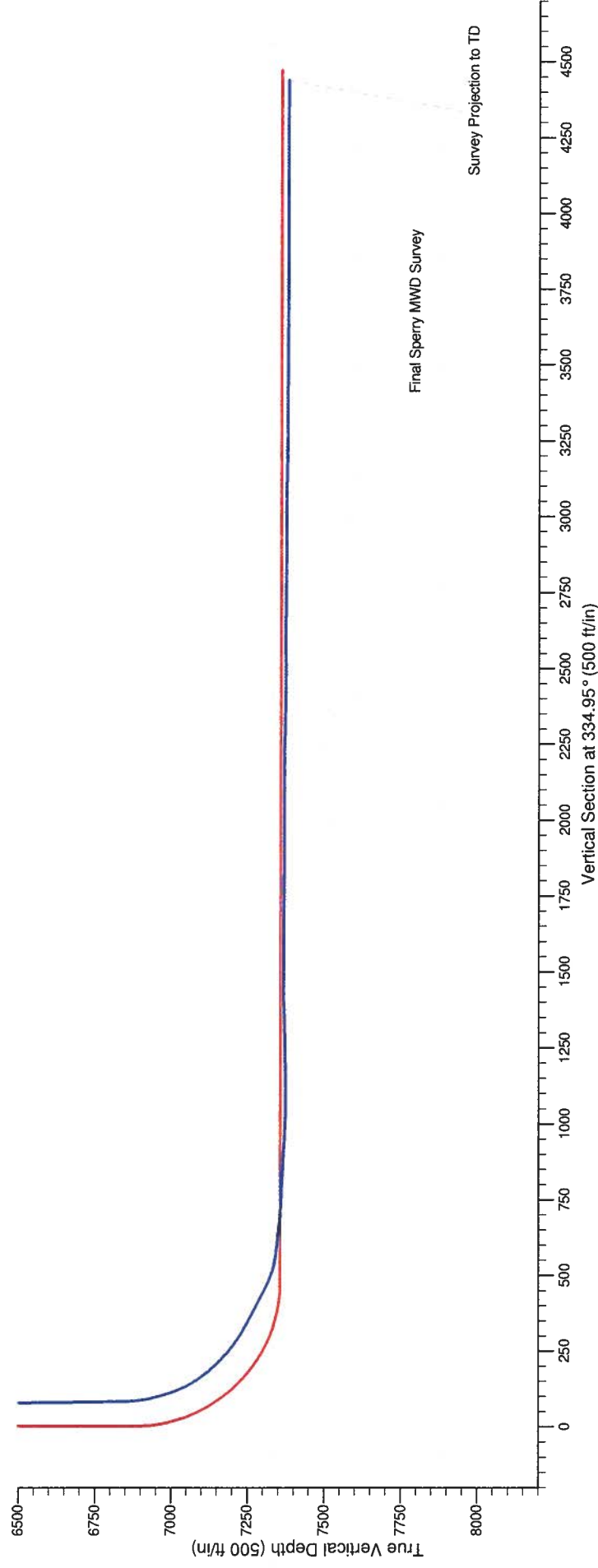
Magnetic Convergence at surface is: -8.07° (10 June 2010, , BGGM2010)





Project: Weld County, CO
Site: Sec. 36-T12N-R63W
Well: Longhorn B3-36H

EOG Resources, Inc.



LEGEND

- Longhorn B3-36H, Plan #2, Plan #2 Proposal V0
- Gyrodata Gyro and Sperry MWD Survey

CEMENT JOB REPORT 3



CUSTOMER EOG Resources Inc.		DATE 29-JUN-10	F.R. # 1001642190	SERV. SUPV. JEFFREY A ANDERSON						
LEASE & WELL NAME Longhorn B 3-36H - API 05123305860000		LOCATION sec 36 T12N R63W		COUNTY-PARISH-BLOCK Weld Colorado						
DISTRICT Brighton		DRILLING CONTRACTOR RIG # SST-56		TYPE OF JOB Intermediate						
SIZE & TYPE OF PLUGS		LIST-CSG-HARDWARE		PHYSICAL SLURRY PROPERTIES						
Cement Plug, Rubber, Top 7 in		Float Shoe 7 - 8rd		SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT ³	WATER GPS	PUMP TIME HR:MIN	Bbl SLURRY	Bbl MIX WATER
		Float Collar, Auto Fill, 7 - 8rd								
MATERIALS FURNISHED BY BJ										
Premium Lite Cement + additives				690	12.5	1.89	10.37	00:02	220	161.42
50:50:3 + 0.4% FL-52+0.1% SMS+20%S-8				172	13.5	1.71	8.30	04:59	51	33.04
Fresh Water				0	8.34	0	0	00:00	305	
Mud Clean I + Alpha-125				0	8.34	0	0	00:00	20	
Claytreat Water + Alpha-125				0	8.34	0	0	00:00	20	
Claytreat Water + Alpha-125				0	8.34	0	0	00:00	20	
Available Mix Water 500 Bbl. Available Displ. Fluid 400 Bbl.				TOTAL				636		194.47
HOLE		TBG-CSG-D.P.				COLLAR DEPTHS				
SIZE	% EXCESS	DEPTH	SIZE	WGT.	TYPE	DEPTH	GRADE	SHOE	FLOAT	STAGE
8.75	0	7795	7	23	CSG	7791	P-110	7791	7746	0
LAST CASING		PKR-CMT RET-BR PL-LINER		PERF. DEPTH		TOP CONN		WELL FLUID		
SIZE	WGT.	TYPE	DEPTH	BRAND & TYPE	DEPTH	TOP	BTM	SIZE	THREAD	TYPE
9.625	36	CSG	1425	No Packer	0	0	0	7	8RD	WATER BASED MU
DISPL. VOLUME		DISPL. FLUID		CAL. PSI	CAL. MAX PSI	OP. MAX	MAX TBG PSI		MAX CSG PSI	
VOLUME	UOM	TYPE	WGT.	BUMP PLUG	TO REV.	SQ. PSI	RATED	Operator	RATED	Operator
305	BBLs	Fresh Water	8.34	2500	0	0	0	0	5960	4000
										Frac Tank
Circulation Prior to Job										
Circulated Well: Rig <input checked="" type="checkbox"/> BJ <input type="checkbox"/>				Circulation Time: 2		Circulation Rate: 6 BPM				
Mud Density In: 9.9 LBS/GAL Mud Density Out: 9.9 LBS/GAL				PV & YP Mud In: 0		PV & YP Mud Out: 0				
Gas Present: NO <input type="checkbox"/> YES <input checked="" type="checkbox"/> Units: 0				Solids Present at End of Circulation: NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>						
Displacement And Mud Removal										
Displaced By: Rig <input type="checkbox"/> BJ <input checked="" type="checkbox"/>				Amount Bled Back After Job: 3 BBLs						
Returns During Job: <input type="checkbox"/> NONE <input type="checkbox"/> PARTIAL <input checked="" type="checkbox"/> FULL				Method Used to Verify Returns: Visual						
Cement Returns at Surface: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				Were Returns Planned at Surface: <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES						
Pipe Movement: <input type="checkbox"/> ROTATION <input type="checkbox"/> RECIPROCATION <input checked="" type="checkbox"/> NONE <input type="checkbox"/> UNABLE DUE TO STUCK PIPE										
Centralizers: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES				Quantity:		Type: <input type="checkbox"/> BOW <input type="checkbox"/> RIGID				
Job Pumped Through: <input type="checkbox"/> CHOKE MANIFOLD <input type="checkbox"/> SQUEEZE MANIFOLD <input checked="" type="checkbox"/> MANIFOLD <input type="checkbox"/> NO MANIFOLD										
Plugs										
Number of Attempts by BJ: 0				Competition: 0		Wiper Balls Used: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES Quantity:				
Plug Catcher Used: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES						Parabow Used: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES				
Was There a Bottom: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES						Top of Plug: 0 FT Bottom of Plug: 0 FT				
Squeezes (Update Original Treatment Report for Primary Job)										
BLOCK SQUEEZE <input type="checkbox"/>		SHOE SQUEEZE <input type="checkbox"/>		TOP OF LINER SQUEEZE <input type="checkbox"/>		PLANNED <input type="checkbox"/>		UNPLANNED <input type="checkbox"/>		
Liner Packer: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES				Bond Log: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES		PSI Applied: 0		Fluid Weight: 0 LBS/GAL		
Casing Test (Update Original Treatment Report for Primary Job)										
Casing Test Pressure: 0 PSI				With 0 LBS/GAL Mud		Time Held: 00 Hours 00 Minutes				
EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING: None										
PRESSURE/RATE DETAIL						EXPLANATION				

CEMENT JOB REPORT



Shoe Test (Update Original Treatment Report for Primary Job)

Depth Drilled out of Shoe: 0 FT Target EMW: 0 LBS/GAL Actual EMW: 0 LBS/GAL
 Number of Times Tests Conducted: 0 Mud Weight When Test was Conducted: 0 LBS/GAL

Problems Before Job (I.E. Running Casing, Circulating Well, ETC)
 N/A

Problems During Job (I.E. Lost Returns, Equipment Failure, Bulk Delivery, Foaming, ETC)
 N/A

Problems After Job (I.E. Gas at Surface, Float Equipment Failed, ETC)
 N/A

PRESSURE/RATE DETAIL

EXPLANATION

TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW <input checked="" type="checkbox"/> CO. REP. <input checked="" type="checkbox"/>			
	PIPE	ANNULUS				TEST LINES	5000 PSI		
						CIRCULATING WELL - RIG	<input checked="" type="checkbox"/>	BJ	<input type="checkbox"/>
04:15	0	0	0	0	N/A	Rig Up Meeting			
05:45	0	0	0	0	N/A	Safety Meeting			
06:40	5014	0	0	0	WATER	Pressure Test			
06:55	846	0	7.2	20	WATER	Claytreat			
08:58	806	0	7.2	20	WATER	Mud Clean I			
07:01	841	0	7.2	20	WATER	Claytreat			
07:05	1074	0	7.4	220	CEMENT	Batch up and pump Lead Slurry 690 sks @ 12.5 PPG of PLC + 0.25 lbs/sk Cello Flake + 0.4% FL-52 + 3% Bentonite + 99.4% Fresh Water			
07:43	355	0	6.4	51	CEMENT	Batch up and pump Tail Slurry 172 sks @ 13.5 PPG of POZ G + 0.4% FL-52 + 3% Bentonite + 0.1% Sodium Metasilicate + 20% Silica Flour + 82.4% Fresh Water			
07:55	0	0	0	0	N/A	Drop Plug			
08:20	152	0	7.2	146	MUD	Displacement			
08:40	435	0	8	114	MUD	Caught Cement			
08:56	1358	0	5.8	20	MUD	Drop Rate			
09:00	1403	0	4.1	15	WATER	Drop Rate			
09:04	1373	0	2.6	10	WATER	Drop Rate			
09:09	2526	0	0	0	N/A	Plug Down Pumped 305 Bbls			
09:24	1546	0	0	0	WATER	Casing Test			
09:54	0	0	0	0	N/A	Job Done			
10:00	0	0	0	0	N/A	Rig Down Meeting			

BUMPED
PLUG

PSI TO
BUMP
PLUG

TEST
FLOAT
EQUIP.

BBL CMT
RETURNS/
REVERSED

TOTAL
BBL
PUMPED

PSI
LEFT ON
CSG

SPOT
TOP OUT
CEMENT

Service Supervisor Signature:

☒ Y ☐ N

2500

☒ Y ☐ N

5

636

0

☒ Y ☐ N

Jeff Anderson

Mayh

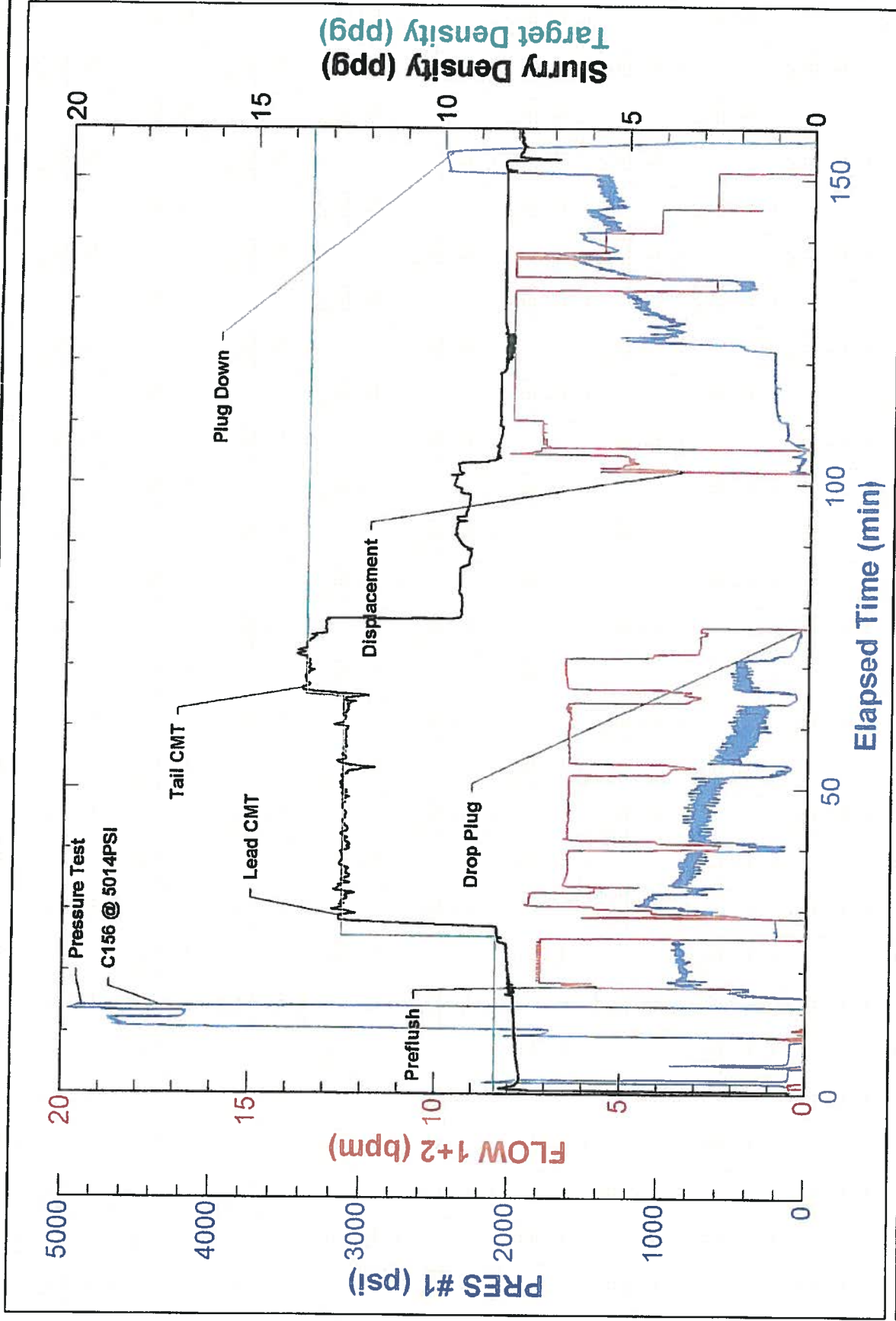


BJ Services JobMaster Program Version 3.20

Job Number: 1001642190

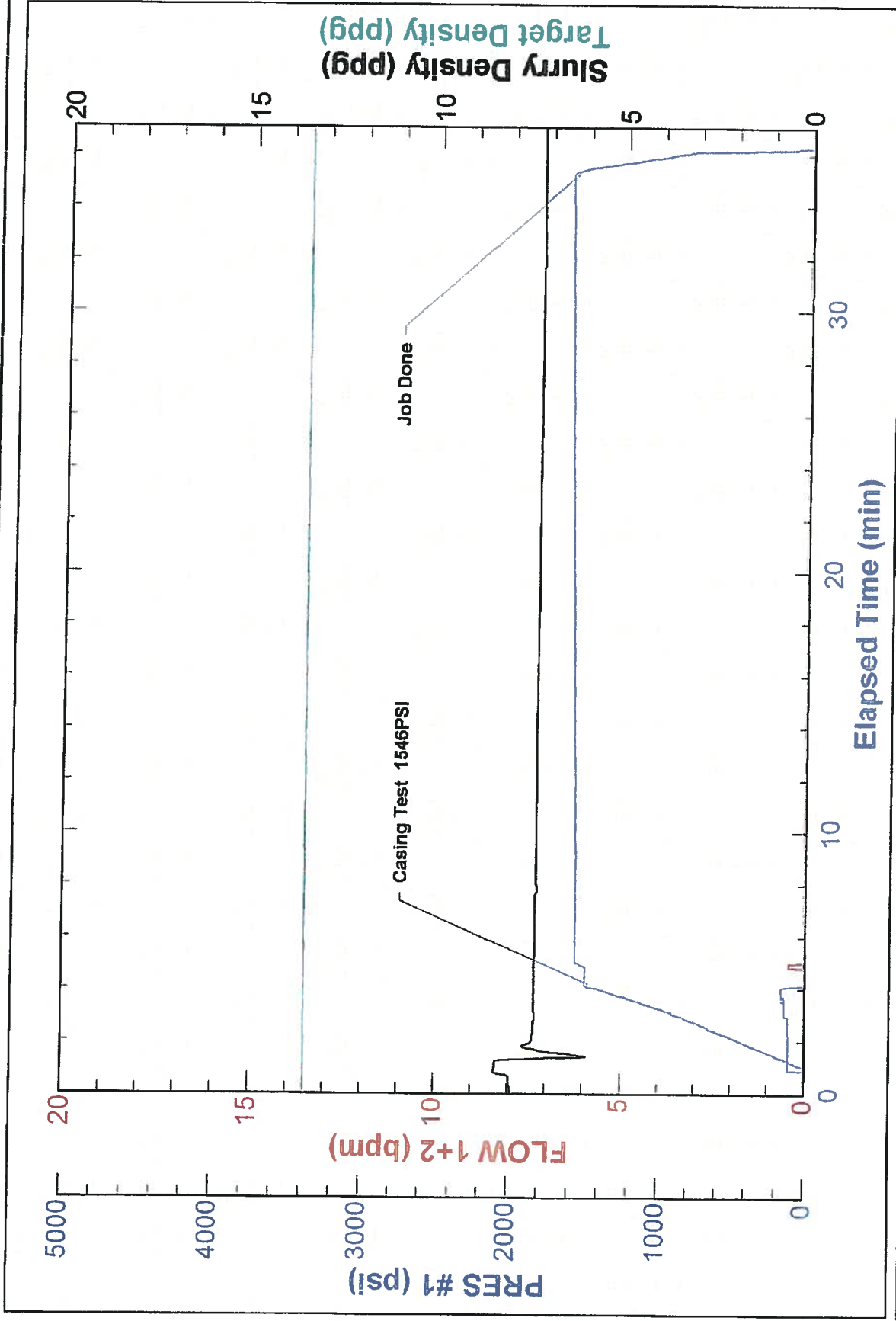
Customer: EOG

Well Name: Longhorn B 3-36H





BJ Services JobMaster Program Version 3.20
Job Number: 1001642190
Customer: EOG
Well Name: Longhorn B 3-36H



CEMENT JOB REPORT



CUSTOMER EOG Resources Inc.		DATE 20-JUN-10		F.R. # 1001637332		SERV. SUPV. RYAN SULLIVAN	
LEASE & WELL NAME LONGHORN #3-36H - API 05123305860000		LOCATION 36-12N-63W		COUNTY-PARISH-BLOCK Weld Colorado			
DISTRICT Brighton		DRILLING CONTRACTOR RIG # SST-56		TYPE OF JOB Surface			
SIZE & TYPE OF PLUGS		LIST-CSG-HARDWARE		PHYSICAL SLURRY PROPERTIES			
Cement Plug, Rubber, Top 9-5/8 in		Float Collar, Auto Fill, 9-5/8 - 8rd		SACKS OF CEMENT	SLURRY WGT PPG	SLURRY YLD FT³	WATER GPS
		Float Shoe 9-5/8 - 8rd					
MATERIALS FURNISHED BY BJ							
Fresh water				0	8.34	0	00:00
Type III + additives				500	14.5	1.40	01:30
15 Bbls fresh water then drilling mud				0	8.34	0	00:00
Type III + 2% CaCl on side if needed				200	14.5	1.39	00:00
Available Mix Water 200 Bbl. Available Displ. Fluid 200 Bbl.				TOTAL		298.2	113.17
HOLE		TBG-CSG-D.P.			COLLAR DEPTHS		
SIZE	% EXCESS	DEPTH	SIZE	WGT.	TYPE	DEPTH	GRADE
13.5	0	1470	9.625	36	CSG	1480	J-55
						1460	1416
LAST CASING		PKR-CMT RET-BR PL-LINER		PERF. DEPTH		TOP CONN	
SIZE	WGT	TYPE	DEPTH	BRAND & TYPE	DEPTH	TOP	BTM
16	84		60	No packer	0	0	0
						9.625	8RD
						WATER BASED ML	
						8.8	
DISPL. VOLUME		DISPL. FLUID		CAL. PSI	CAL. MAX PSI	OP. MAX	MAX TBG PSI
VOLUME	UOM	TYPE	WGT.	BUMP PLUG	TO REV.	SQ. PSI	RATED
109.5	BBLS	15 Bbls fresh water th	8.34	454	0	0	0
						0	0
						2816	2816
						Rig Tank	
Circulation Prior to Job							
Circulated Well: Rig <input checked="" type="checkbox"/> BJ <input type="checkbox"/>				Circulation Time: .5		Circulation Rate: 5 BPM	
Mud Density In: 8.8 LBS/GAL Mud Density Out: 8.8 LBS/GAL				PV & YP Mud In: 10		PV & YP Mud Out: 10	
Gas Present: NO <input checked="" type="checkbox"/> YES <input type="checkbox"/> Units:				Solids Present at End of Circulation: NO <input checked="" type="checkbox"/> YES <input type="checkbox"/>			
Displacement And Mud Removal							
Displaced By: Rig <input type="checkbox"/> BJ <input checked="" type="checkbox"/>				Amount Bled Back After Job: .7 BBLS			
Returns During Job: <input type="checkbox"/> NONE <input type="checkbox"/> PARTIAL <input checked="" type="checkbox"/> FULL				Method Used to Verify Returns: Visually			
Cement Returns at Surface: <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO				Were Returns Planned at Surface: <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES			
Pipe Movement: <input type="checkbox"/> ROTATION <input type="checkbox"/> RECIPROCATION <input checked="" type="checkbox"/> NONE <input type="checkbox"/> UNABLE DUE TO STUCK PIPE							
Centralizers: <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES				Quantity: 7		Type: <input checked="" type="checkbox"/> BOW <input type="checkbox"/> RIGID	
Job Pumped Through: <input type="checkbox"/> CHOKE MANIFOLD <input type="checkbox"/> SQUEEZE MANIFOLD <input checked="" type="checkbox"/> MANIFOLD <input type="checkbox"/> NO MANIFOLD							
Plugs							
Number of Attempts by BJ: 0 Competition: 0				Wiper Balls Used: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES Quantity:			
Plug Catcher Used: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES				Parabow Used: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES			
Was There a Bottom: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES				Top of Plug: 0 FT		Bottom of Plug: 0 FT	
Squeezes (Update Original Treatment Report for Primary Job)							
BLOCK SQUEEZE <input type="checkbox"/>		SHOE SQUEEZE <input type="checkbox"/>		TOP OF LINER SQUEEZE <input type="checkbox"/>		PLANNED <input type="checkbox"/> UNPLANNED <input checked="" type="checkbox"/>	
Liner Packer: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES		Bond Log: <input checked="" type="checkbox"/> NO <input type="checkbox"/> YES		PSI Applied: 0		Fluid Weight: 0 LBS/GAL	
Casing Test (Update Original Treatment Report for Primary Job)							
Casing Test Pressure: 0 PSI With 0 LBS/GAL Mud				Time Held: 00 Hours 00 Minutes			
Shoe Test (Update Original Treatment Report for Primary Job)							
Depth Drilled out of Shoe: 0 FT				Target EMW: 0 LBS/GAL		Actual EMW: 0 LBS/GAL	
Number of Times Tests Conducted: 0				Mud Weight When Test was Conducted: 0 LBS/GAL			
EXPLANATION: TROUBLE SETTING TOOL, RUNNING CSG, ETC. PRIOR TO CEMENTING: None							

CEMENT JOB REPORT



Problems Before Job (I.E. Running Casing, Circulating Well, ETC)

N/A

Problems During Job (I.E. Lost Returns, Equipment Failure, Bulk Delivery, Foaming, ETC)

N/A

Problems After Job (I.E. Gas at Surface, Float Equipment Failed, ETC)

N/A

PRESSURE/RATE DETAIL

EXPLANATION

TIME HR:MIN.	PRESSURE - PSI		RATE BPM	Bbl. FLUID PUMPED	FLUID TYPE	SAFETY MEETING: BJ CREW <input checked="" type="checkbox"/> CO. REP. <input checked="" type="checkbox"/>	
	PIPE	ANNULUS				TEST LINES	4200 PSI
						CIRCULATING WELL - RIG	<input checked="" type="checkbox"/> BJ <input type="checkbox"/>
23:45	0	0	0	0	N/A	Pre-rig up safety meeting	
05:00	0	0	0	0	N/A	Pre-job safety meeting	
05:38	1400	0	0	0	WATER	Low pressure test	
05:39	4200	0	0	0	WATER	High pressure test	
05:47	140	0	5.6	15	WATER	Pre-flush	
05:57	360	0	5.7	142	CEMENT	Batch-up and pump 500 sx of Type III + 1% CaCl + 0.25 lbs/sk Cello Flake @ 14.5 ppg	
06:30	0	0	0	0	N/A	Drop plug	
06:33	0	0	5.6	40	WATER	Displace	
06:41	155	0	5.6	61	WATER	Caught cement	
06:52	500	0	4.1	5	WATER	Rate change	
06:53	575	0	4.1	2	WATER	Bump plug	
06:53	1278	0	0	108	N/A	Plug down	
07:00	0	0	0	0	N/A	Pre-rig down safety meeting	

BUMPED PLUG	PSI TO BUMP PLUG	TEST FLOAT EQUIP.	BBL.CMT RETURNS/ REVERSED	TOTAL BBL. PUMPED	PSI LEFT ON CSG	SPOT TOP OUT CEMENT	Service Supervisor Signature:
<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	575	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	18	265	0	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	



BJ Services JobMaster Program Version 3.20

Job Number: 1001637332

Customer: EOG

Well Name: Longhorn #3-36H

