

Conoco Phillips Company

Arapahoe County, Colorado

Sec. 36-T4S-R64W

Murphy Family 4-63-31-2H

Plan A

Plan: Plan A Rev 0

Sperry Drilling Services

Proposal Report

18 April, 2013

Well Coordinates: 1,665,176.18 N, 3,283,852.02 E (39° 39' 19.37" N, 104° 29' 30.64" W)

Ground Level: 5,913.00 ft

Local Coordinate Origin: Centered on Well Murphy Family 4-63-31-2H

Viewing Datum: RKB 24 ft @ 5937.00ft (H&P 280)

TVDs to System: N

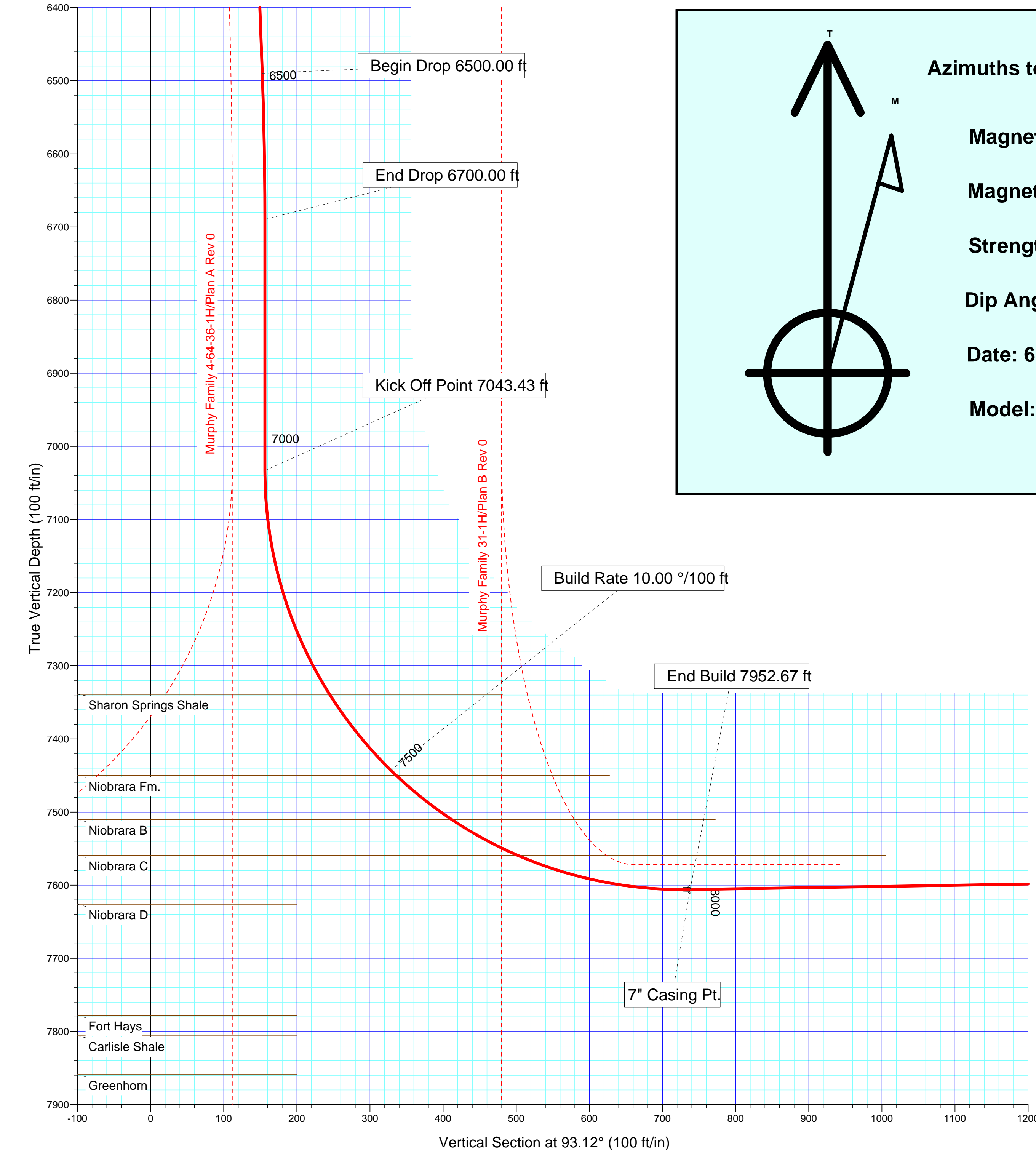
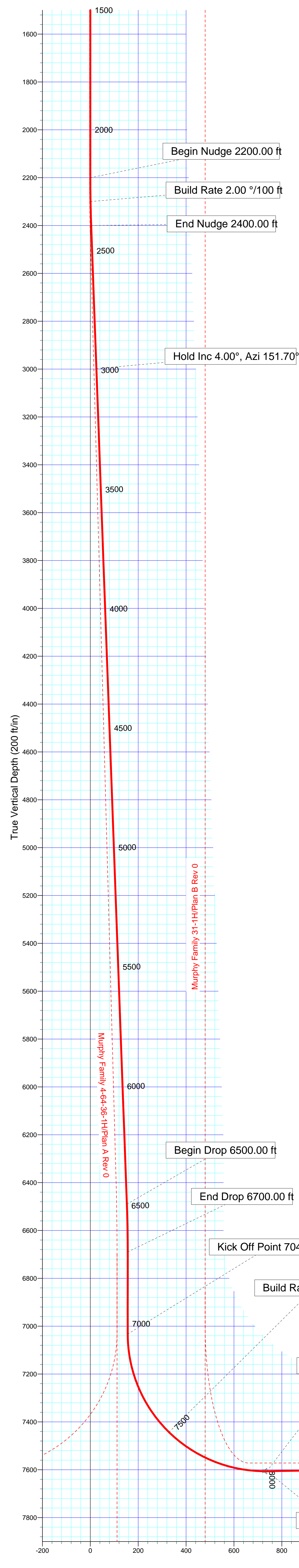
North Reference: True

Unit System: API - US Survey Feet - Custom

Version: 2003.16 Build: 431

HALLIBURTON

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2200.00	0.00	0.00	2200.00	0.00	0.00	0.00	0.00	0.00	
3	2400.00	4.00	151.70	2399.84	-6.14	3.31	2.00	151.70	3.64	
4	6500.00	4.00	151.70	6489.85	-257.96	138.90	0.00	0.00	152.74	
5	6700.00	0.00	0.00	6689.69	-264.11	142.21	2.00	180.00	156.38	
6	7043.43	0.00	0.00	7033.12	-264.11	142.21	0.00	0.00	156.38	
7	7952.67	90.92	90.10	7606.00	-265.14	724.41	10.00	90.10	737.77	
8	12229.70	90.92	90.10	7537.00	-272.70	5000.87	0.00	0.00	5008.30	Murphy Family 4-63-31-2H PARO BHL Tgt



Azimuths to True North

Magnetic Field

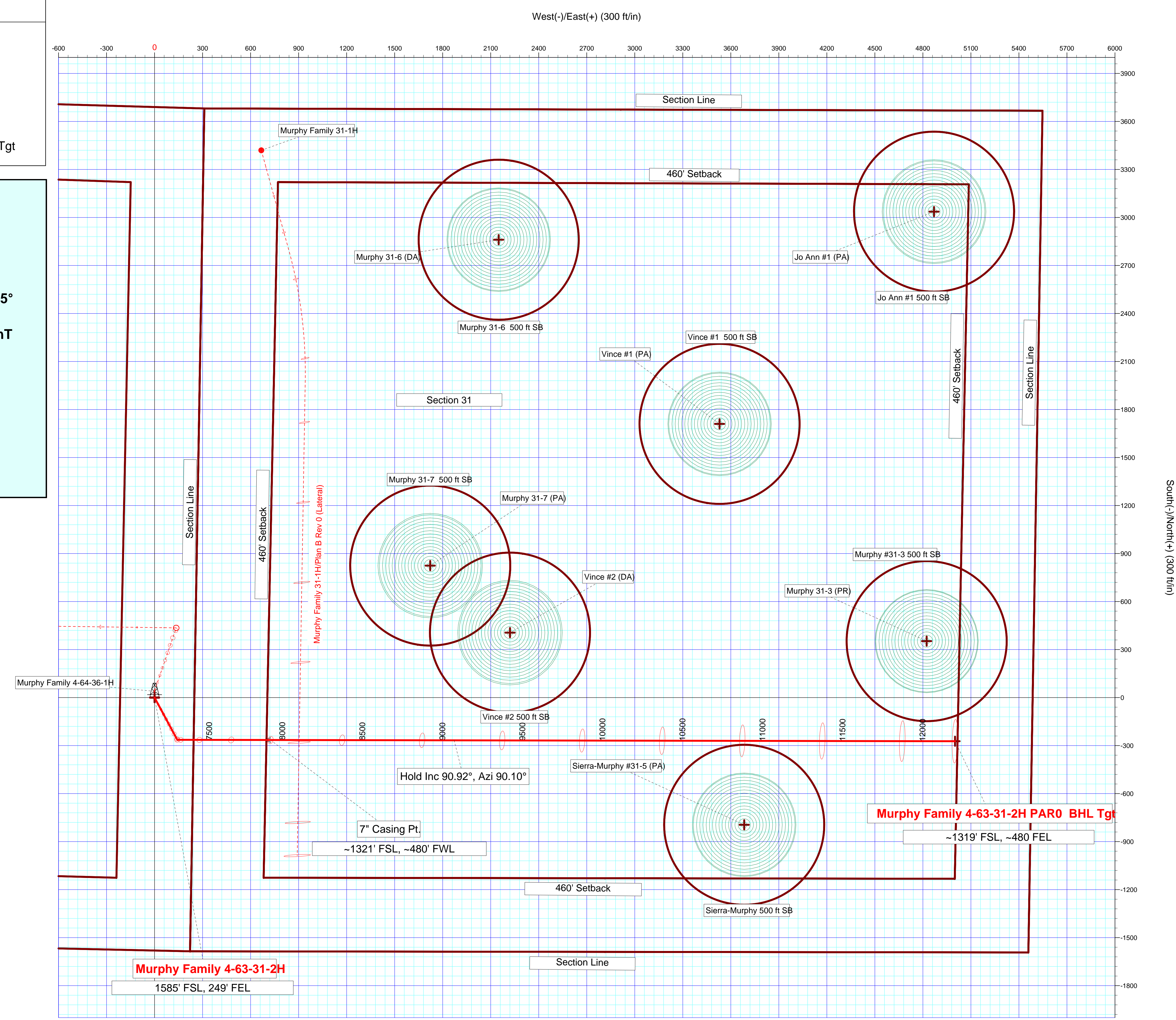
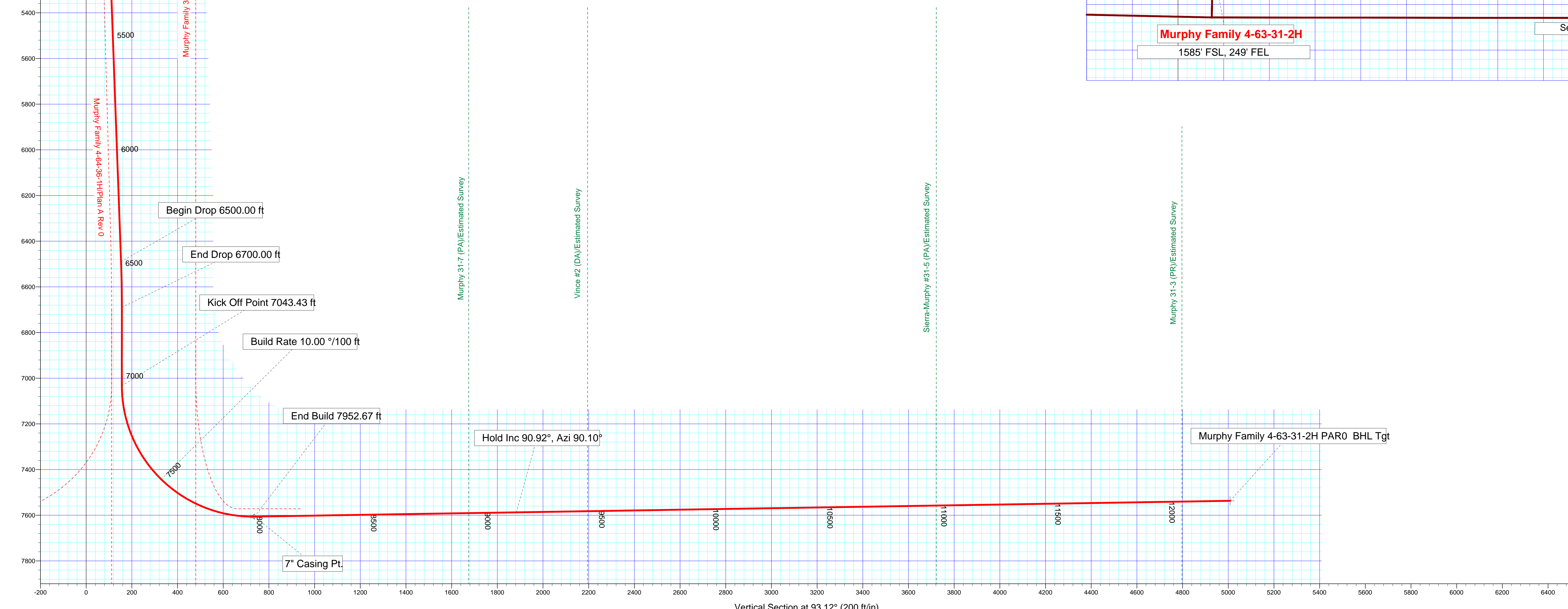
Magnetic North: 8.45°

Strength: 52439.9snT

Dip Angle: 66.40°

Date: 6-30-2013

Model: BGGM2012





Plan Report for Murphy Family 4-63-31-2H - Plan A Rev 0

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,500.00	0.00	0.00	1,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,600.00	0.00	0.00	1,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,700.00	0.00	0.00	1,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,766.00	0.00	0.00	1,766.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Aquifer										
1,800.00	0.00	0.00	1,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,900.00	0.00	0.00	1,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,922.00	0.00	0.00	1,922.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pierre Shale										
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge 2200.00 ft										
2,300.00	2.00	151.70	2,299.98	-1.54	0.83	0.91	2.00	2.00	0.00	151.70
Build Rate 2.00 °/100 ft										
2,400.00	4.00	151.70	2,399.84	-6.14	3.31	3.64	2.00	2.00	0.00	0.00
End Nudge 2400.00 ft										
2,500.00	4.00	151.70	2,499.59	-12.29	6.62	7.27	0.00	0.00	0.00	0.00
2,600.00	4.00	151.70	2,599.35	-18.43	9.92	10.91	0.00	0.00	0.00	0.00
2,700.00	4.00	151.70	2,699.11	-24.57	13.23	14.55	0.00	0.00	0.00	0.00
2,800.00	4.00	151.70	2,798.86	-30.71	16.54	18.18	0.00	0.00	0.00	0.00
2,900.00	4.00	151.70	2,898.62	-36.85	19.84	21.82	0.00	0.00	0.00	0.00
3,000.00	4.00	151.70	2,998.38	-43.00	23.15	25.46	0.00	0.00	0.00	0.00
Hold Inc 4.00°, Azi 151.70°										
3,100.00	4.00	151.70	3,098.13	-49.14	26.46	29.09	0.00	0.00	0.00	0.00
3,200.00	4.00	151.70	3,197.89	-55.28	29.76	32.73	0.00	0.00	0.00	0.00
3,300.00	4.00	151.70	3,297.65	-61.42	33.07	36.37	0.00	0.00	0.00	0.00
3,400.00	4.00	151.70	3,397.40	-67.56	36.38	40.00	0.00	0.00	0.00	0.00
3,500.00	4.00	151.70	3,497.16	-73.71	39.69	43.64	0.00	0.00	0.00	0.00
3,600.00	4.00	151.70	3,596.91	-79.85	42.99	47.28	0.00	0.00	0.00	0.00
3,700.00	4.00	151.70	3,696.67	-85.99	46.30	50.91	0.00	0.00	0.00	0.00
3,800.00	4.00	151.70	3,796.43	-92.13	49.61	54.55	0.00	0.00	0.00	0.00
3,900.00	4.00	151.70	3,896.18	-98.27	52.91	58.19	0.00	0.00	0.00	0.00
4,000.00	4.00	151.70	3,995.94	-104.41	56.22	61.82	0.00	0.00	0.00	0.00
4,100.00	4.00	151.70	4,095.70	-110.56	59.53	65.46	0.00	0.00	0.00	0.00
4,200.00	4.00	151.70	4,195.45	-116.70	62.84	69.10	0.00	0.00	0.00	0.00
4,300.00	4.00	151.70	4,295.21	-122.84	66.14	72.73	0.00	0.00	0.00	0.00
4,400.00	4.00	151.70	4,394.97	-128.98	69.45	76.37	0.00	0.00	0.00	0.00
4,500.00	4.00	151.70	4,494.72	-135.12	72.76	80.01	0.00	0.00	0.00	0.00
4,600.00	4.00	151.70	4,594.48	-141.27	76.06	83.64	0.00	0.00	0.00	0.00
4,700.00	4.00	151.70	4,694.23	-147.41	79.37	87.28	0.00	0.00	0.00	0.00
4,800.00	4.00	151.70	4,793.99	-153.55	82.68	90.92	0.00	0.00	0.00	0.00
4,900.00	4.00	151.70	4,893.75	-159.69	85.99	94.55	0.00	0.00	0.00	0.00



Plan Report for Murphy Family 4-63-31-2H - Plan A Rev 0

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
5,000.00	4.00	151.70	4,993.50	-165.83	89.29	98.19	0.00	0.00	0.00	0.00
5,100.00	4.00	151.70	5,093.26	-171.98	92.60	101.83	0.00	0.00	0.00	0.00
5,200.00	4.00	151.70	5,193.02	-178.12	95.91	105.46	0.00	0.00	0.00	0.00
5,300.00	4.00	151.70	5,292.77	-184.26	99.21	109.10	0.00	0.00	0.00	0.00
5,400.00	4.00	151.70	5,392.53	-190.40	102.52	112.74	0.00	0.00	0.00	0.00
5,500.00	4.00	151.70	5,492.29	-196.54	105.83	116.37	0.00	0.00	0.00	0.00
5,600.00	4.00	151.70	5,592.04	-202.69	109.13	120.01	0.00	0.00	0.00	0.00
5,700.00	4.00	151.70	5,691.80	-208.83	112.44	123.65	0.00	0.00	0.00	0.00
5,800.00	4.00	151.70	5,791.56	-214.97	115.75	127.28	0.00	0.00	0.00	0.00
5,900.00	4.00	151.70	5,891.31	-221.11	119.06	130.92	0.00	0.00	0.00	0.00
6,000.00	4.00	151.70	5,991.07	-227.25	122.36	134.56	0.00	0.00	0.00	0.00
6,100.00	4.00	151.70	6,090.82	-233.39	125.67	138.19	0.00	0.00	0.00	0.00
6,200.00	4.00	151.70	6,190.58	-239.54	128.98	141.83	0.00	0.00	0.00	0.00
6,300.00	4.00	151.70	6,290.34	-245.68	132.28	145.47	0.00	0.00	0.00	0.00
6,400.00	4.00	151.70	6,390.09	-251.82	135.59	149.10	0.00	0.00	0.00	0.00
6,500.00	4.00	151.70	6,489.85	-257.96	138.90	152.74	0.00	0.00	0.00	0.00
Begin Drop 6500.00 ft										
6,600.00	2.00	151.70	6,589.71	-262.57	141.38	155.47	2.00	-2.00	0.00	180.00
6,700.00	0.00	0.00	6,689.69	-264.11	142.21	156.38	2.00	-2.00	0.00	-180.00
End Drop 6700.00 ft										
6,800.00	0.00	0.00	6,789.69	-264.11	142.21	156.38	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,889.69	-264.11	142.21	156.38	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,989.69	-264.11	142.21	156.38	0.00	0.00	0.00	0.00
7,043.43	0.00	0.00	7,033.12	-264.11	142.21	156.38	0.00	0.00	0.00	0.00
Kick Off Point 7043.43 ft										
7,100.00	5.66	90.10	7,089.60	-264.11	145.00	159.16	10.00	10.00	0.00	90.10
7,200.00	15.66	90.10	7,187.75	-264.14	163.47	177.61	10.00	10.00	0.00	0.00
7,300.00	25.66	90.10	7,281.20	-264.21	198.70	212.79	10.00	10.00	0.00	0.00
7,366.10	32.27	90.10	7,339.00	-264.26	230.69	244.74	10.00	10.00	0.00	0.00
Sharon Springs Shale										
7,400.00	35.66	90.10	7,367.11	-264.30	249.62	263.64	10.00	10.00	0.00	0.00
7,500.00	45.66	90.10	7,442.88	-264.41	314.69	328.62	10.00	10.00	0.00	0.00
Build Rate 10.00 °/100 ft										
7,510.28	46.69	90.10	7,450.00	-264.43	322.11	336.03	10.00	10.00	0.00	0.00
Niobrara Fm.										
7,600.00	55.66	90.10	7,506.19	-264.55	391.93	405.76	10.00	10.00	0.00	0.00
7,606.80	56.34	90.10	7,510.00	-264.56	397.57	411.39	10.00	10.00	0.00	0.00
Niobrara B										
7,700.00	65.66	90.10	7,555.14	-264.70	478.99	492.69	10.00	10.00	0.00	0.00
7,709.55	66.61	90.10	7,559.00	-264.72	487.73	501.42	10.00	10.00	0.00	0.00
Niobrara C										
7,800.00	75.66	90.10	7,588.22	-264.87	573.23	586.80	10.00	10.00	0.00	0.00
7,900.00	85.66	90.10	7,604.43	-265.04	671.78	685.21	10.00	10.00	0.00	0.00
7,952.67	90.92	90.10	7,606.00	-265.14	724.40	737.77	10.00	10.00	0.00	0.00
End Build 7952.67 ft - 7" Casing Pt.										
8,000.00	90.92	90.10	7,605.24	-265.22	771.73	785.02	0.00	0.00	0.00	0.00
8,100.00	90.92	90.10	7,603.62	-265.40	871.71	884.87	0.00	0.00	0.00	0.00
8,200.00	90.92	90.10	7,602.01	-265.57	971.70	984.72	0.00	0.00	0.00	0.00
8,300.00	90.92	90.10	7,600.40	-265.75	1,071.69	1,084.57	0.00	0.00	0.00	0.00
8,400.00	90.92	90.10	7,598.78	-265.93	1,171.67	1,184.42	0.00	0.00	0.00	0.00
8,500.00	90.92	90.10	7,597.17	-266.11	1,271.66	1,284.26	0.00	0.00	0.00	0.00
8,600.00	90.92	90.10	7,595.56	-266.28	1,371.65	1,384.11	0.00	0.00	0.00	0.00
8,700.00	90.92	90.10	7,593.94	-266.46	1,471.63	1,483.96	0.00	0.00	0.00	0.00
8,800.00	90.92	90.10	7,592.33	-266.64	1,571.62	1,583.81	0.00	0.00	0.00	0.00
8,900.00	90.92	90.10	7,590.72	-266.81	1,671.61	1,683.66	0.00	0.00	0.00	0.00
9,000.00	90.92	90.10	7,589.10	-266.99	1,771.60	1,783.50	0.00	0.00	0.00	0.00
9,100.00	90.92	90.10	7,587.49	-267.17	1,871.58	1,883.35	0.00	0.00	0.00	0.00
Hold Inc 90.92°, Azi 90.10°										

Plan Report for Murphy Family 4-63-31-2H - Plan A Rev 0

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	Toolface Azimuth (°)
9,200.00	90.92	90.10	7,585.88	-267.34	1,971.57	1,983.20	0.00	0.00	0.00	0.00
9,300.00	90.92	90.10	7,584.26	-267.52	2,071.56	2,083.05	0.00	0.00	0.00	0.00
9,400.00	90.92	90.10	7,582.65	-267.70	2,171.54	2,182.90	0.00	0.00	0.00	0.00
9,500.00	90.92	90.10	7,581.04	-267.87	2,271.53	2,282.75	0.00	0.00	0.00	0.00
9,600.00	90.92	90.10	7,579.42	-268.05	2,371.52	2,382.59	0.00	0.00	0.00	0.00
9,700.00	90.92	90.10	7,577.81	-268.23	2,471.50	2,482.44	0.00	0.00	0.00	0.00
9,800.00	90.92	90.10	7,576.20	-268.41	2,571.49	2,582.29	0.00	0.00	0.00	0.00
9,900.00	90.92	90.10	7,574.58	-268.58	2,671.48	2,682.14	0.00	0.00	0.00	0.00
10,000.00	90.92	90.10	7,572.97	-268.76	2,771.46	2,781.99	0.00	0.00	0.00	0.00
10,100.00	90.92	90.10	7,571.36	-268.94	2,871.45	2,881.83	0.00	0.00	0.00	0.00
10,200.00	90.92	90.10	7,569.74	-269.11	2,971.44	2,981.68	0.00	0.00	0.00	0.00
10,300.00	90.92	90.10	7,568.13	-269.29	3,071.42	3,081.53	0.00	0.00	0.00	0.00
10,400.00	90.92	90.10	7,566.52	-269.47	3,171.41	3,181.38	0.00	0.00	0.00	0.00
10,500.00	90.92	90.10	7,564.91	-269.64	3,271.40	3,281.23	0.00	0.00	0.00	0.00
10,600.00	90.92	90.10	7,563.29	-269.82	3,371.38	3,381.07	0.00	0.00	0.00	0.00
10,700.00	90.92	90.10	7,561.68	-270.00	3,471.37	3,480.92	0.00	0.00	0.00	0.00
10,800.00	90.92	90.10	7,560.07	-270.17	3,571.36	3,580.77	0.00	0.00	0.00	0.00
10,900.00	90.92	90.10	7,558.45	-270.35	3,671.35	3,680.62	0.00	0.00	0.00	0.00
11,000.00	90.92	90.10	7,556.84	-270.53	3,771.33	3,780.47	0.00	0.00	0.00	0.00
11,100.00	90.92	90.10	7,555.23	-270.71	3,871.32	3,880.32	0.00	0.00	0.00	0.00
11,200.00	90.92	90.10	7,553.61	-270.88	3,971.31	3,980.16	0.00	0.00	0.00	0.00
11,300.00	90.92	90.10	7,552.00	-271.06	4,071.29	4,080.01	0.00	0.00	0.00	0.00
11,400.00	90.92	90.10	7,550.39	-271.24	4,171.28	4,179.86	0.00	0.00	0.00	0.00
11,500.00	90.92	90.10	7,548.77	-271.41	4,271.27	4,279.71	0.00	0.00	0.00	0.00
11,600.00	90.92	90.10	7,547.16	-271.59	4,371.25	4,379.56	0.00	0.00	0.00	0.00
11,700.00	90.92	90.10	7,545.55	-271.77	4,471.24	4,479.40	0.00	0.00	0.00	0.00
11,800.00	90.92	90.10	7,543.93	-271.94	4,571.23	4,579.25	0.00	0.00	0.00	0.00
11,900.00	90.92	90.10	7,542.32	-272.12	4,671.21	4,679.10	0.00	0.00	0.00	0.00
12,000.00	90.92	90.10	7,540.71	-272.30	4,771.20	4,778.95	0.00	0.00	0.00	0.00
12,100.00	90.92	90.10	7,539.09	-272.48	4,871.19	4,878.80	0.00	0.00	0.00	0.00
12,200.00	90.92	90.10	7,537.48	-272.65	4,971.17	4,978.65	0.00	0.00	0.00	0.00
12,229.70	90.92	90.10	7,537.00	-272.70	5,000.87	5,008.30	0.00	0.00	0.00	0.00

Total Depth 12229.70 ft - Murphy Family 4-63-31-2H PAR0 BHL Tgt

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
2,200.00	2,200.00	0.00	0.00	Begin Nudge 2200.00 ft
2,300.00	2,299.98	-1.54	0.83	Build Rate 2.00 °/100 ft
2,400.00	2,399.84	-6.14	3.31	End Nudge 2400.00 ft
3,000.00	2,998.38	-43.00	23.15	Hold Inc 4.00°, Azi 151.70°
6,500.00	6,489.85	-257.96	138.90	Begin Drop 6500.00 ft
6,700.00	6,689.69	-264.11	142.21	End Drop 6700.00 ft
7,043.43	7,033.12	-264.11	142.21	Kick Off Point 7043.43 ft
7,500.00	7,442.88	-264.41	314.69	Build Rate 10.00 °/100 ft
7,952.67	7,606.00	-265.14	724.41	End Build 7952.67 ft
9,100.00	7,587.49	-267.17	1,871.58	Hold Inc 90.92°, Azi 90.10°
12,229.70	7,537.00	-272.70	5,000.87	Total Depth 12229.70 ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (ft)
				+N/_S (ft)	+E/-W (ft)	
Target	Murphy Family 4-63-31-2H PAR0 BHL Tgt	93.12	Slot	0.00	0.00	0.00

Plan Report for Murphy Family 4-63-31-2H - Plan A Rev 0

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,229.26	Plan A Rev 0	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,952.67	7,606.00	7" Casing Pt.	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	7,626.00	Niobrara D			
	7,778.00	Fort Hays			
	7,806.00	Carlisle Shale			
	7,859.00	Greenhorn			
1,766.00	1,766.00	Fox Hills Aquifer			
1,922.00	1,922.00	Pierre Shale			
7,366.10	7,339.00	Sharon Springs Shale			
7,510.28	7,450.00	Niobrara Fm.			
7,606.80	7,510.00	Niobrara B			
7,709.55	7,559.00	Niobrara C			

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Murphy 31-6 500 ft SB	0.00	2,860.98	2,150.04	Circle
Vince #1 500 ft SB	0.00	1,710.07	3,529.98	Circle
Sierra-Murphy 500 ft SB	0.00	-794.91	3,683.78	Circle
Murphy 31-7 500 ft SB	0.00	824.74	1,722.26	Circle
Vince #2 500 ft SB	0.00	405.88	2,220.64	Circle
Sec.36-T4S-R64W SB	0.00	0.00	0.00	Polygon
Sec.31-T4S-R63W SB	0.00	0.00	0.00	Polygon
Murphy #31-3 500 ft SB	0.00	352.69	4,823.64	Circle
Sec.36-T4S-R64W SL	0.00	0.00	0.00	Polygon
Sec.31-T4S-R63W SL	0.00	0.00	0.00	Polygon
Jo Ann #1 500 ft SB	0.00	3,036.19	4,869.87	Circle
Murphy Family 4-63-31-2H PAR0 BHL Tgt	7,537.00	-272.70	5,000.87	Point

North Reference Sheet for Sec. 36-T4S-R64W - Murphy Family 4-63-31-2H - Plan A

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
 Vertical Depths are relative to RKB 24 ft @ 5937.00ft (H&P 280). Northing and Easting are relative to Murphy Family 4-63-31-2H
 Coordinate System is US State Plane 1983, Colorado Central Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)
 Central Meridian is -105.50°, Longitude Origin:0.000000°, Latitude Origin:39.750000°
 False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99998265

Grid Coordinates of Well: 1,665,176.18 ft N, 3,283,852.02 ft E
 Geographical Coordinates of Well: 39° 39' 19.37" N, 104° 29' 30.64" W
 Grid Convergence at Surface is: 0.64°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,229.70ft
 the Bottom Hole Displacement is 5,008.30ft in the Direction of 93.12° (True).

Magnetic Convergence at surface is: -7.81° (30 June 2013, , BGGM2012)

