Anadarko Petroleum Corp.

Weld County, CO (NAD 83)
Sec. 24-T3N-R66W
Miller 28C-24HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

Sperry Drilling Services

Proposal Report

22 January, 2013

Well Coordinates: 1,318,374.80 N, 3,215,804.13 E (40° 12' 17.12" N, 104° 43' 38.51" W)
Ground Level: 5,029.00 ft

Local Coordinate Origin:	Centered on Well Miller 28C-24HZ
Viewing Datum:	RKB=16 @ 5045.00ft (Drilling Rig)
TVDs to System:	N
North Reference:	True
Unit System:	API - US Survey Feet - Custom

Geodetic Scale Factor Applied
Version: 2003.16 Build: 43I

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 24-T3N-R66W
Well: Miller 28C-24HZ
Wellbore: Plan A Rev 0
Design: Plan A Rev 0 Permit

Anadarko Petroleum Corp.

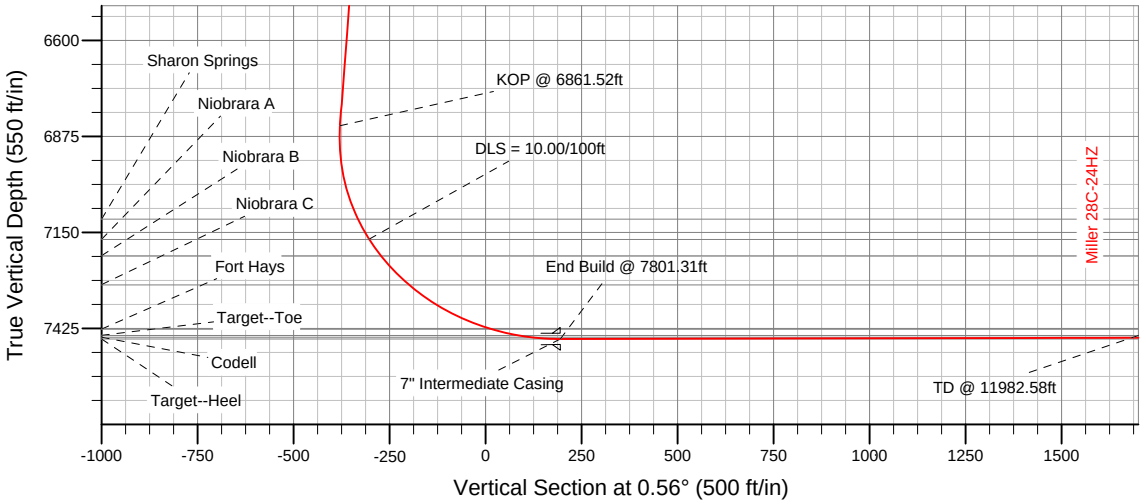
HALLIBURTON
Sperry Drilling

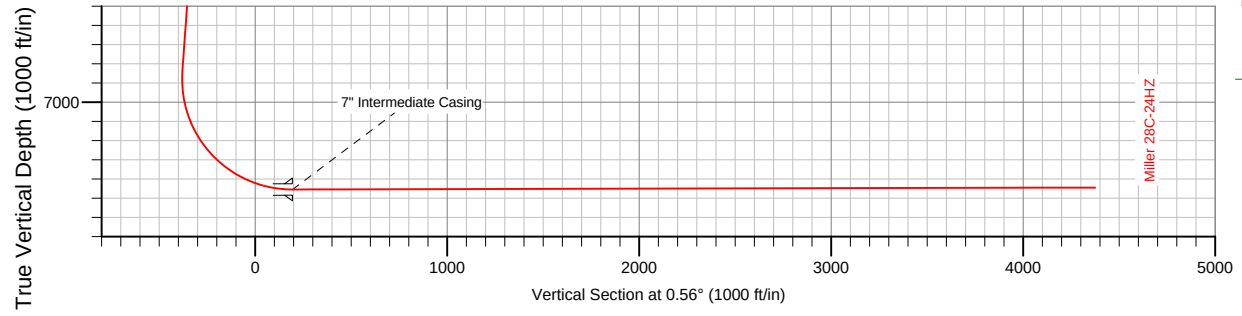
SECTION DETAILS

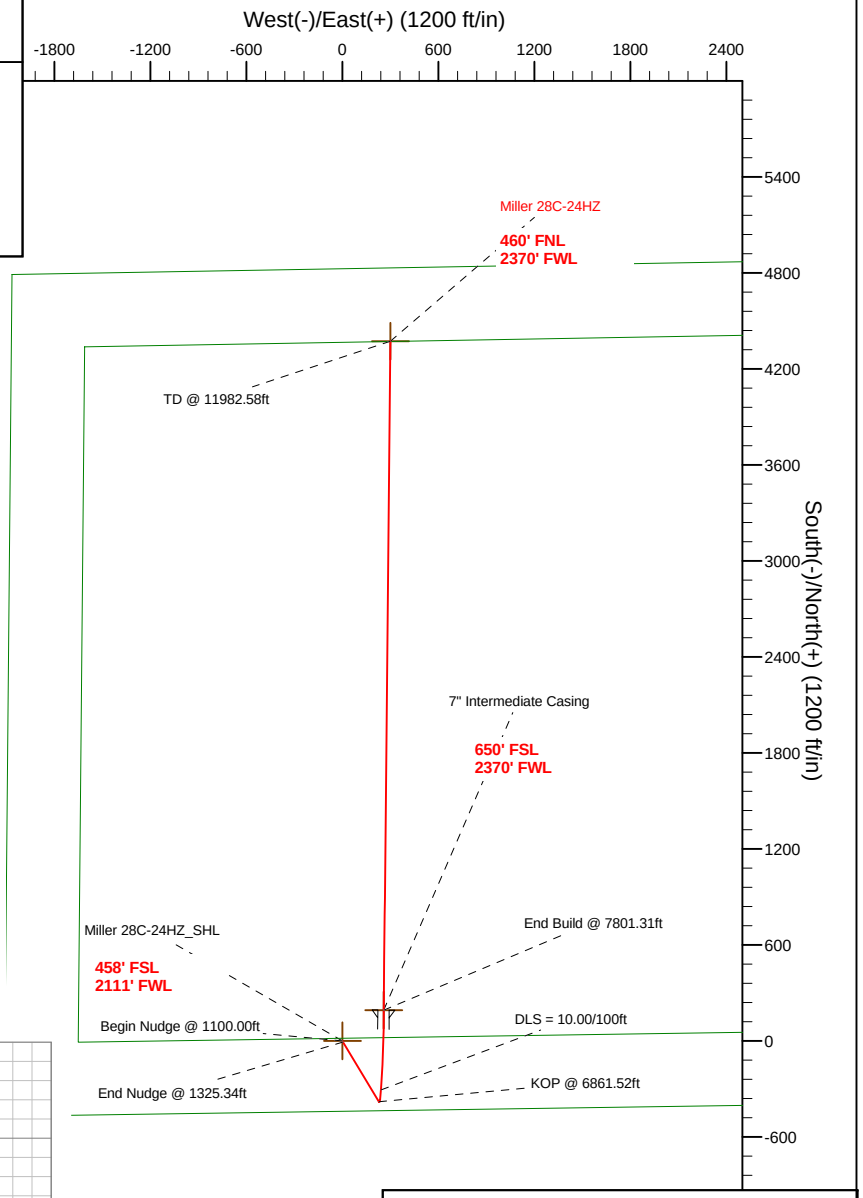
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	
3	1325.34	4.51	149.07	1325.11	-7.60	4.55	2.00	149.07	-7.55	
4	6861.52	4.51	149.07	6844.17	-380.76	228.14	0.00	0.00	-378.51	
5	7801.31	90.14	0.56	7455.00	192.00	259.00	10.00	-148.42	194.52	Miller 28C-24HZ_CP
6	11982.58	90.14	0.56	7445.00	4373.06	300.22	0.00	0.00	4375.78	Miller 28C-24HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Miller 28C-24HZ_SHL	0.00	0.00	0.00	40.204755	-104.727364	Point
Miller 28C-24HZ_BHL	7445.00	4373.06	300.22	40.216759	-104.726289	Point
Miller 28C-24HZ_CP	7455.00	192.00	259.00	40.205282	-104.726437	Point







WELL DETAILS: Miller 28C-24HZ

Ground Level: 5029.00
RKB=16 @ 5045.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Miller 28C-24HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 01/21/2013
Reviewed: _____ Date: _____

Plan Report for Miller 28C-24HZ - Plan A Rev 0 Permit

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
Begin Nudge @ 1100.00ft										
1,200.00	2.00	149.07	1,199.98	-1.50	0.90	-1.49	2.00	2.00	0.00	149.07
1,300.00	4.00	149.07	1,299.84	-5.99	3.59	-5.95	2.00	2.00	0.00	0.00
1,325.34	4.51	149.07	1,325.11	-7.60	4.55	-7.55	2.00	2.00	0.00	0.00
End Nudge @ 1325.34ft										
1,400.00	4.51	149.07	1,399.54	-12.63	7.57	-12.56	0.00	0.00	0.00	0.00
1,500.00	4.51	149.07	1,499.23	-19.37	11.61	-19.26	0.00	0.00	0.00	0.00
1,600.00	4.51	149.07	1,598.92	-26.11	15.65	-25.96	0.00	0.00	0.00	0.00
1,700.00	4.51	149.07	1,698.61	-32.85	19.68	-32.66	0.00	0.00	0.00	0.00
1,800.00	4.51	149.07	1,798.30	-39.59	23.72	-39.36	0.00	0.00	0.00	0.00
1,900.00	4.51	149.07	1,897.99	-46.33	27.76	-46.06	0.00	0.00	0.00	0.00
2,000.00	4.51	149.07	1,997.68	-53.07	31.80	-52.76	0.00	0.00	0.00	0.00
2,100.00	4.51	149.07	2,097.37	-59.81	35.84	-59.46	0.00	0.00	0.00	0.00
2,200.00	4.51	149.07	2,197.06	-66.55	39.88	-66.16	0.00	0.00	0.00	0.00
2,300.00	4.51	149.07	2,296.75	-73.29	43.92	-72.86	0.00	0.00	0.00	0.00
2,400.00	4.51	149.07	2,396.44	-80.04	47.95	-79.56	0.00	0.00	0.00	0.00
2,500.00	4.51	149.07	2,496.14	-86.78	51.99	-86.26	0.00	0.00	0.00	0.00
2,600.00	4.51	149.07	2,595.83	-93.52	56.03	-92.96	0.00	0.00	0.00	0.00
2,700.00	4.51	149.07	2,695.52	-100.26	60.07	-99.66	0.00	0.00	0.00	0.00
2,800.00	4.51	149.07	2,795.21	-107.00	64.11	-106.37	0.00	0.00	0.00	0.00
2,900.00	4.51	149.07	2,894.90	-113.74	68.15	-113.07	0.00	0.00	0.00	0.00
3,000.00	4.51	149.07	2,994.59	-120.48	72.19	-119.77	0.00	0.00	0.00	0.00
3,100.00	4.51	149.07	3,094.28	-127.22	76.23	-126.47	0.00	0.00	0.00	0.00
3,200.00	4.51	149.07	3,193.97	-133.96	80.26	-133.17	0.00	0.00	0.00	0.00
3,300.00	4.51	149.07	3,293.66	-140.70	84.30	-139.87	0.00	0.00	0.00	0.00
3,400.00	4.51	149.07	3,393.35	-147.44	88.34	-146.57	0.00	0.00	0.00	0.00
3,500.00	4.51	149.07	3,493.04	-154.18	92.38	-153.27	0.00	0.00	0.00	0.00
3,600.00	4.51	149.07	3,592.73	-160.92	96.42	-159.97	0.00	0.00	0.00	0.00
3,700.00	4.51	149.07	3,692.43	-167.66	100.46	-166.67	0.00	0.00	0.00	0.00
3,800.00	4.51	149.07	3,792.12	-174.40	104.50	-173.37	0.00	0.00	0.00	0.00
3,900.00	4.51	149.07	3,891.81	-181.14	108.53	-180.07	0.00	0.00	0.00	0.00
4,000.00	4.51	149.07	3,991.50	-187.88	112.57	-186.77	0.00	0.00	0.00	0.00
4,100.00	4.51	149.07	4,091.19	-194.62	116.61	-193.47	0.00	0.00	0.00	0.00
4,200.00	4.51	149.07	4,190.88	-201.36	120.65	-200.18	0.00	0.00	0.00	0.00
4,300.00	4.51	149.07	4,290.57	-208.10	124.69	-206.88	0.00	0.00	0.00	0.00
4,400.00	4.51	149.07	4,390.26	-214.84	128.73	-213.58	0.00	0.00	0.00	0.00
4,500.00	4.51	149.07	4,489.95	-221.59	132.77	-220.28	0.00	0.00	0.00	0.00
4,536.16	4.51	149.07	4,526.00	-224.02	134.23	-222.70	0.00	0.00	0.00	0.00
Sussex										
4,600.00	4.51	149.07	4,589.64	-228.33	136.80	-226.98	0.00	0.00	0.00	0.00
4,700.00	4.51	149.07	4,689.33	-235.07	140.84	-233.68	0.00	0.00	0.00	0.00
4,800.00	4.51	149.07	4,789.02	-241.81	144.88	-240.38	0.00	0.00	0.00	0.00
4,900.00	4.51	149.07	4,888.71	-248.55	148.92	-247.08	0.00	0.00	0.00	0.00
5,000.00	4.51	149.07	4,988.41	-255.29	152.96	-253.78	0.00	0.00	0.00	0.00
5,100.00	4.51	149.07	5,088.10	-262.03	157.00	-260.48	0.00	0.00	0.00	0.00
5,200.00	4.51	149.07	5,187.79	-268.77	161.04	-267.18	0.00	0.00	0.00	0.00

Plan Report for Miller 28C-24HZ - Plan A Rev 0 Permit

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 (°)
5,300.00	4.51	149.07	5,287.48	-275.51	165.08	-273.88	0.00	0.00	0.00	0.00
5,400.00	4.51	149.07	5,387.17	-282.25	169.11	-280.58	0.00	0.00	0.00	0.00
5,500.00	4.51	149.07	5,486.86	-288.99	173.15	-287.28	0.00	0.00	0.00	0.00
5,600.00	4.51	149.07	5,586.55	-295.73	177.19	-293.98	0.00	0.00	0.00	0.00
5,700.00	4.51	149.07	5,686.24	-302.47	181.23	-300.69	0.00	0.00	0.00	0.00
5,800.00	4.51	149.07	5,785.93	-309.21	185.27	-307.39	0.00	0.00	0.00	0.00
5,900.00	4.51	149.07	5,885.62	-315.95	189.31	-314.09	0.00	0.00	0.00	0.00
6,000.00	4.51	149.07	5,985.31	-322.69	193.35	-320.79	0.00	0.00	0.00	0.00
6,100.00	4.51	149.07	6,085.00	-329.43	197.38	-327.49	0.00	0.00	0.00	0.00
6,200.00	4.51	149.07	6,184.70	-336.17	201.42	-334.19	0.00	0.00	0.00	0.00
6,300.00	4.51	149.07	6,284.39	-342.91	205.46	-340.89	0.00	0.00	0.00	0.00
6,400.00	4.51	149.07	6,384.08	-349.65	209.50	-347.59	0.00	0.00	0.00	0.00
6,500.00	4.51	149.07	6,483.77	-356.39	213.54	-354.29	0.00	0.00	0.00	0.00
6,600.00	4.51	149.07	6,583.46	-363.14	217.58	-360.99	0.00	0.00	0.00	0.00
6,700.00	4.51	149.07	6,683.15	-369.88	221.62	-367.69	0.00	0.00	0.00	0.00
6,800.00	4.51	149.07	6,782.84	-376.62	225.66	-374.39	0.00	0.00	0.00	0.00
6,861.52	4.51	149.07	6,844.17	-380.76	228.14	-378.51	0.00	0.00	0.00	0.00
KOP @ 6861.52ft										
6,900.00	2.36	90.43	6,882.59	-382.07	229.71	-379.80	10.00	-5.58	-152.40	-148.42
7,000.00	10.28	13.70	6,982.00	-373.39	233.89	-371.09	10.00	7.92	-76.73	-89.86
7,100.00	20.14	7.02	7,078.38	-347.57	238.12	-345.23	10.00	9.86	-6.68	-13.33
7,136.25	23.74	5.94	7,112.00	-334.12	239.63	-331.76	10.00	9.94	-2.97	-6.86
Sharon Springs										
7,200.00	30.09	4.65	7,168.82	-305.40	242.26	-303.01	10.00	9.96	-2.03	-5.87
DLS = 10.00/100ft										
7,201.37	30.23	4.62	7,170.00	-304.71	242.32	-302.33	10.00	9.97	-1.63	-4.71
Niobrara A										
7,257.45	35.82	3.84	7,217.00	-274.25	244.56	-271.84	10.00	9.97	-1.39	-4.69
Niobrara B										
7,300.00	40.06	3.38	7,250.55	-248.14	246.20	-245.72	10.00	9.98	-1.09	-4.03
7,368.17	46.87	2.78	7,300.00	-201.34	248.70	-198.90	10.00	9.98	-0.87	-3.67
Niobrara C										
7,400.00	50.05	2.55	7,321.11	-177.54	249.81	-175.09	10.00	9.98	-0.74	-3.23
7,500.00	60.03	1.93	7,378.33	-95.75	252.98	-93.28	10.00	9.99	-0.62	-3.08
7,600.00	70.02	1.43	7,420.50	-5.25	255.61	-2.76	10.00	9.99	-0.50	-2.72
7,620.00	72.02	1.34	7,427.00	13.65	256.07	16.15	10.00	9.99	-0.46	-2.51
Fort Hays										
7,700.00	80.01	0.99	7,446.31	91.20	257.64	93.72	10.00	9.99	-0.44	-2.48
7,724.15	82.43	0.88	7,450.00	115.06	258.03	117.58	10.00	9.99	-0.42	-2.39
Codell										
7,798.57	89.86	0.58	7,455.00	189.26	258.97	191.78	10.00	9.99	-0.41	-2.38
Target--Heel										
7,800.00	90.01	0.57	7,455.00	190.69	258.99	193.21	10.00	9.99	-0.41	-2.36
7,801.31	90.14	0.56	7,455.00	192.00	259.00	194.52	9.98	9.98	-0.41	-2.36
End Build @ 7801.31ft - 7" Intermediate Casing - Miller 28C-24HZ_CP										
7,900.00	90.14	0.56	7,454.76	290.68	259.97	293.21	0.00	0.00	0.00	-2.36
8,000.00	90.14	0.56	7,454.52	390.68	260.96	393.21	0.00	0.00	0.00	0.00
8,100.00	90.14	0.56	7,454.29	490.67	261.94	493.21	0.00	0.00	0.00	0.00
8,200.00	90.14	0.56	7,454.05	590.67	262.93	593.21	0.00	0.00	0.00	0.00
8,300.00	90.14	0.56	7,453.81	690.66	263.92	693.21	0.00	0.00	0.00	0.00
8,400.00	90.14	0.56	7,453.57	790.66	264.90	793.21	0.00	0.00	0.00	0.00
8,500.00	90.14	0.56	7,453.33	890.65	265.89	893.21	0.00	0.00	0.00	0.00
8,600.00	90.14	0.56	7,453.09	990.65	266.87	993.21	0.00	0.00	0.00	0.00
8,700.00	90.14	0.56	7,452.85	1,090.64	267.86	1,093.21	0.00	0.00	0.00	0.00
8,800.00	90.14	0.56	7,452.61	1,190.64	268.85	1,193.21	0.00	0.00	0.00	0.00
8,900.00	90.14	0.56	7,452.37	1,290.63	269.83	1,293.21	0.00	0.00	0.00	0.00
9,000.00	90.14	0.56	7,452.13	1,390.63	270.82	1,393.21	0.00	0.00	0.00	0.00
9,100.00	90.14	0.56	7,451.89	1,490.62	271.80	1,493.21	0.00	0.00	0.00	0.00
9,200.00	90.14	0.56	7,451.65	1,590.62	272.79	1,593.21	0.00	0.00	0.00	0.00

Plan Report for Miller 28C-24HZ - Plan A Rev 0 Permit

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 (°)
9,300.00	90.14	0.56	7,451.42	1,690.61	273.77	1,693.21	0.00	0.00	0.00	0.00
9,400.00	90.14	0.56	7,451.18	1,790.61	274.76	1,793.21	0.00	0.00	0.00	0.00
9,500.00	90.14	0.56	7,450.94	1,890.60	275.75	1,893.21	0.00	0.00	0.00	0.00
9,600.00	90.14	0.56	7,450.70	1,990.60	276.73	1,993.20	0.00	0.00	0.00	0.00
9,700.00	90.14	0.56	7,450.46	2,090.59	277.72	2,093.20	0.00	0.00	0.00	0.00
9,800.00	90.14	0.56	7,450.22	2,190.59	278.70	2,193.20	0.00	0.00	0.00	0.00
9,900.00	90.14	0.56	7,449.98	2,290.58	279.69	2,293.20	0.00	0.00	0.00	0.00
10,000.00	90.14	0.56	7,449.74	2,390.57	280.68	2,393.20	0.00	0.00	0.00	0.00
10,100.00	90.14	0.56	7,449.50	2,490.57	281.66	2,493.20	0.00	0.00	0.00	0.00
10,200.00	90.14	0.56	7,449.26	2,590.56	282.65	2,593.20	0.00	0.00	0.00	0.00
10,300.00	90.14	0.56	7,449.02	2,690.56	283.63	2,693.20	0.00	0.00	0.00	0.00
10,400.00	90.14	0.56	7,448.78	2,790.55	284.62	2,793.20	0.00	0.00	0.00	0.00
10,500.00	90.14	0.56	7,448.55	2,890.55	285.60	2,893.20	0.00	0.00	0.00	0.00
10,600.00	90.14	0.56	7,448.31	2,990.54	286.59	2,993.20	0.00	0.00	0.00	0.00
10,700.00	90.14	0.56	7,448.07	3,090.54	287.58	3,093.20	0.00	0.00	0.00	0.00
10,800.00	90.14	0.56	7,447.83	3,190.53	288.56	3,193.20	0.00	0.00	0.00	0.00
10,900.00	90.14	0.56	7,447.59	3,290.53	289.55	3,293.20	0.00	0.00	0.00	0.00
11,000.00	90.14	0.56	7,447.35	3,390.52	290.53	3,393.20	0.00	0.00	0.00	0.00
11,100.00	90.14	0.56	7,447.11	3,490.52	291.52	3,493.20	0.00	0.00	0.00	0.00
11,200.00	90.14	0.56	7,446.87	3,590.51	292.51	3,593.20	0.00	0.00	0.00	0.00
11,300.00	90.14	0.56	7,446.63	3,690.51	293.49	3,693.20	0.00	0.00	0.00	0.00
11,400.00	90.14	0.56	7,446.39	3,790.50	294.48	3,793.20	0.00	0.00	0.00	0.00
11,500.00	90.14	0.56	7,446.15	3,890.50	295.46	3,893.20	0.00	0.00	0.00	0.00
11,600.00	90.14	0.56	7,445.91	3,990.49	296.45	3,993.20	0.00	0.00	0.00	0.00
11,700.00	90.14	0.56	7,445.68	4,090.49	297.43	4,093.20	0.00	0.00	0.00	0.00
11,800.00	90.14	0.56	7,445.44	4,190.48	298.42	4,193.20	0.00	0.00	0.00	0.00
11,900.00	90.14	0.56	7,445.20	4,290.48	299.41	4,293.20	0.00	0.00	0.00	0.00
11,982.57	90.14	0.56	7,445.00	4,373.04	300.22	4,375.77	0.00	0.00	0.00	0.00
Target--Toe										
11,982.58	90.14	0.56	7,445.00	4,373.05	300.22	4,375.78	0.00	0.00	0.00	0.00
TD @ 11982.58ft - Miller 28C-24HZ_BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
1,100.00	1,100.00	0.00	0.00	Begin Nudge @ 1100.00ft
1,325.34	1,325.11	-7.60	4.55	End Nudge @ 1325.34ft
6,861.52	6,844.17	-380.76	228.14	KOP @ 6861.52ft
7,200.00	7,168.82	-305.40	242.26	DLS = 10.00/100ft
7,801.31	7,455.00	192.00	259.00	End Build @ 7801.31ft
11,982.58	7,445.00	4,373.05	300.22	TD @ 11982.58ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	0.56	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	11,982.58	Plan A Rev 0 Permit	MWD

Plan Report for Miller 28C-24HZ - Plan A Rev 0 Permit

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
7,801.31	7,455.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,536.16	4,526.00	Sussex		0.00	
7,136.25	7,112.00	Sharon Springs		0.00	
7,201.37	7,170.00	Niobrara A		0.00	
7,257.45	7,217.00	Niobrara B		0.00	
7,368.17	7,300.00	Niobrara C		0.00	
7,620.00	7,427.00	Fort Hays		0.00	
7,724.15	7,450.00	Codell		0.00	
7,798.57	7,455.00	Target--Heel		0.00	
11,982.57	7,445.00	Target--Toe		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Miller 28C-24HZ_SHL	0.00	0.00	0.00	Point
Miller 28C-24HZ_BHL	7,445.00	4,373.06	300.22	Point
Miller 28C-24HZ_CP	7,455.00	192.00	259.00	Point

North Reference Sheet for Sec. 24-T3N-R66W - Miller 28C-24HZ - Plan A Rev 0

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
Vertical Depths are relative to RKB=16 @ 5045.00ft (Drilling Rig). Northing and Easting are relative to Miller 28C-24HZ
Coordinate System is US State Plane 1983, Colorado Northern 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:40.783333°
False Easting: 3,000,000.00ft, False Northing: 1,000,000.00ft, Scale Reduction: 0.99995717

Grid Coordinates of Well: 1,318,374.80 ft N, 3,215,804.13 ft E
Geographical Coordinates of Well: 40° 12' 17.12" N, 104° 43' 38.51" W
Grid Convergence at Surface is: 0.50°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,982.58ft
the Bottom Hole Displacement is 4,383.35ft in the Direction of 3.93° (True).

Magnetic Convergence at surface is: -8.16° (22 January 2013, , BGGM2012)