

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 23-T3N-R68W

Benson Farms 13N-23HZ

Plan B

Plan: Rev B0 Permit

Sperry Drilling Services

Proposal Report

17 February, 2014

Well Coordinates: 1,318,396.13 N, 3,150,573.35 E (40° 12' 22.10" N, 104° 57' 39.24" W)

Ground Level: 4,961.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well Benson Farms 13N-23HZ

GL+RKB @ 4978.00usft (Drilling Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 23-T3N-R68W
Well: Benson Farms 13N-23HZ
Wellbore: Plan B
Design: Rev B0 Permit

Anadarko Petroleum Corp.

HALLIBURTON
Sperry Drilling

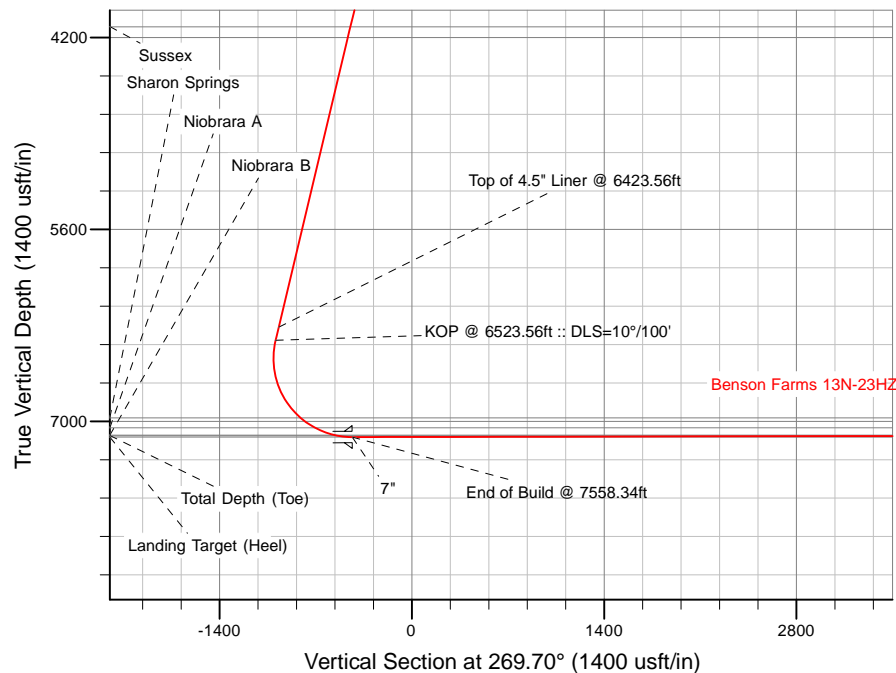
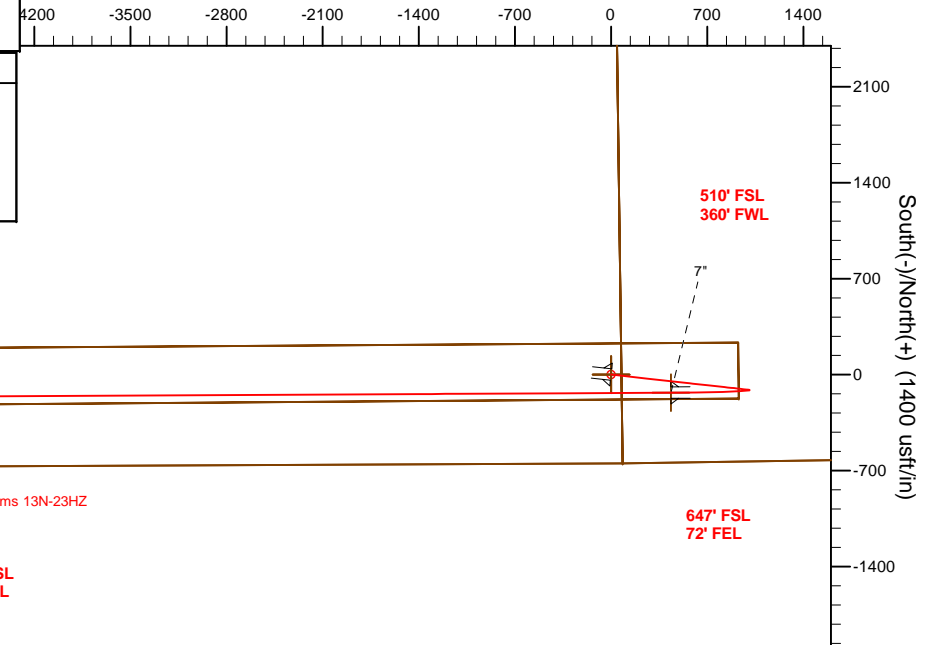
SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1900.00	0.00	0.00	1900.00	0.00	0.00	0.00	0.00	0.00	
3	2573.33	13.47	96.29	2567.15	-8.63	78.29	2.00	96.29	-78.24	
4	6523.56	13.47	96.29	6408.76	-109.46	992.67	0.00	0.00	-992.09	
5	7558.34	90.10	269.70	7114.00	-131.86	434.34	10.00	173.22	-433.65	Benson Farms 13N-23HZ Heel
6	13147.91	90.10	269.70	7104.00	-161.56	-5155.14	0.00	0.00	5155.92	Benson Farms 13N-23HZ BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
Benson Farms 13N-23HZ_LD	0.00	0.00	0.00	40° 12' 22.097 N	104° 57' 39.240 W	Polygon
Benson Farms 13N-23HZ_SEC	0.00	0.00	0.00	40° 12' 22.097 N	104° 57' 39.240 W	Polygon
Benson Farms 13N-23HZ_SHL	0.00	0.00	0.00	40° 12' 22.097 N	104° 57' 39.240 W	Polygon
Benson Farms 13N-23HZ_BHL	7104.00	-161.56	-5155.14	40° 12' 20.495 N	104° 58' 45.682 W	Point
Benson Farms 13N-23HZ Heel	7114.00	-131.86	434.34	40° 12' 20.794 N	104° 57' 33.642 W	Point

West(-)/East(+) (1400 usft/in)



TVD

MD

6311.52
6408.77

6423.56
6523.56

Top of 4.5" Liner @ 6423.56ft
KOP @ 6523.56ft :: DLS=10°/100'

WELL DETAILS: Benson Farms 13N-23HZ

Ground Level: 4961.00
GL+RKB @ 4978.00usft (Drilling Rig)

Plan: Rev B0 Permit (Benson Farms 13N-23HZ/Plan B)

Created By: Clint Eshelman Date: 2/18/2014
Reviewed: _____ Date: _____

Plan Report for Benson Farms 13N-23HZ - Rev B0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benson Farms 13N-23HZ_LD - Benson Farms 13N-23HZ_SHL - Benson Farms 13N-23HZ_SEC										
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
1,060.00	0.00	0.00	1,060.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Marker										
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,110.00	0.00	0.00	1,110.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
1,800.00	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
Begin Nudge @ 1900.00 ft										
2,000.00	2.00	96.29	1,999.98	-0.19	1.73	-1.73	2.00	2.00	0.00	96.29
2,100.00	4.00	96.29	2,099.84	-0.76	6.94	-6.93	2.00	2.00	0.00	0.00
2,200.00	6.00	96.29	2,199.45	-1.72	15.60	-15.59	2.00	2.00	0.00	0.00
2,300.00	8.00	96.29	2,298.70	-3.06	27.71	-27.70	2.00	2.00	0.00	0.00
2,400.00	10.00	96.29	2,397.47	-4.77	43.26	-43.23	2.00	2.00	0.00	0.00
2,500.00	12.00	96.29	2,495.62	-6.86	62.23	-62.19	2.00	2.00	0.00	0.00
2,573.33	13.47	96.29	2,567.15	-8.63	78.29	-78.24	2.00	2.00	0.00	0.00
End Nudge @ 2573.33ft										
2,600.00	13.47	96.29	2,593.08	-9.31	84.46	-84.41	0.00	0.00	0.00	0.00
2,700.00	13.47	96.29	2,690.34	-11.87	107.61	-107.55	0.00	0.00	0.00	0.00
2,800.00	13.47	96.29	2,787.59	-14.42	130.76	-130.68	0.00	0.00	0.00	0.00
2,900.00	13.47	96.29	2,884.84	-16.97	153.91	-153.82	0.00	0.00	0.00	0.00
3,000.00	13.47	96.29	2,982.09	-19.52	177.05	-176.95	0.00	0.00	0.00	0.00
3,100.00	13.47	96.29	3,079.34	-22.08	200.20	-200.08	0.00	0.00	0.00	0.00
3,200.00	13.47	96.29	3,176.59	-24.63	223.35	-223.22	0.00	0.00	0.00	0.00
3,300.00	13.47	96.29	3,273.84	-27.18	246.50	-246.35	0.00	0.00	0.00	0.00
3,400.00	13.47	96.29	3,371.09	-29.73	269.64	-269.49	0.00	0.00	0.00	0.00
3,500.00	13.47	96.29	3,468.34	-32.28	292.79	-292.62	0.00	0.00	0.00	0.00
3,600.00	13.47	96.29	3,565.59	-34.84	315.94	-315.75	0.00	0.00	0.00	0.00
3,698.11	13.47	96.29	3,661.00	-37.34	338.65	-338.45	0.00	0.00	0.00	0.00
Parkman										
3,700.00	13.47	96.29	3,662.84	-37.39	339.09	-338.89	0.00	0.00	0.00	0.00
3,800.00	13.47	96.29	3,760.09	-39.94	362.23	-362.02	0.00	0.00	0.00	0.00
3,900.00	13.47	96.29	3,857.34	-42.49	385.38	-385.15	0.00	0.00	0.00	0.00
4,000.00	13.47	96.29	3,954.59	-45.05	408.53	-408.29	0.00	0.00	0.00	0.00
4,100.00	13.47	96.29	4,051.84	-47.60	431.68	-431.42	0.00	0.00	0.00	0.00
4,171.11	13.47	96.29	4,121.00	-49.41	448.14	-447.87	0.00	0.00	0.00	0.00
Sussex										
4,200.00	13.47	96.29	4,149.09	-50.15	454.83	-454.56	0.00	0.00	0.00	0.00
4,300.00	13.47	96.29	4,246.34	-52.70	477.97	-477.69	0.00	0.00	0.00	0.00
4,400.00	13.47	96.29	4,343.59	-55.26	501.12	-500.82	0.00	0.00	0.00	0.00

Plan Report for Benson Farms 13N-23HZ - Rev B0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
4,500.00	13.47	96.29	4,440.85	-57.81	524.27	-523.96	0.00	0.00	0.00	0.00
4,600.00	13.47	96.29	4,538.10	-60.36	547.42	-547.09	0.00	0.00	0.00	0.00
4,700.00	13.47	96.29	4,635.35	-62.91	570.56	-570.23	0.00	0.00	0.00	0.00
4,800.00	13.47	96.29	4,732.60	-65.47	593.71	-593.36	0.00	0.00	0.00	0.00
4,900.00	13.47	96.29	4,829.85	-68.02	616.86	-616.49	0.00	0.00	0.00	0.00
5,000.00	13.47	96.29	4,927.10	-70.57	640.01	-639.63	0.00	0.00	0.00	0.00
5,100.00	13.47	96.29	5,024.35	-73.12	663.15	-662.76	0.00	0.00	0.00	0.00
5,200.00	13.47	96.29	5,121.60	-75.67	686.30	-685.90	0.00	0.00	0.00	0.00
5,300.00	13.47	96.29	5,218.85	-78.23	709.45	-709.03	0.00	0.00	0.00	0.00
5,400.00	13.47	96.29	5,316.10	-80.78	732.60	-732.16	0.00	0.00	0.00	0.00
5,500.00	13.47	96.29	5,413.35	-83.33	755.74	-755.30	0.00	0.00	0.00	0.00
5,600.00	13.47	96.29	5,510.60	-85.88	778.89	-778.43	0.00	0.00	0.00	0.00
5,700.00	13.47	96.29	5,607.85	-88.44	802.04	-801.56	0.00	0.00	0.00	0.00
5,800.00	13.47	96.29	5,705.10	-90.99	825.19	-824.70	0.00	0.00	0.00	0.00
5,900.00	13.47	96.29	5,802.35	-93.54	848.33	-847.83	0.00	0.00	0.00	0.00
6,000.00	13.47	96.29	5,899.60	-96.09	871.48	-870.97	0.00	0.00	0.00	0.00
6,100.00	13.47	96.29	5,996.85	-98.65	894.63	-894.10	0.00	0.00	0.00	0.00
6,200.00	13.47	96.29	6,094.11	-101.20	917.78	-917.23	0.00	0.00	0.00	0.00
6,300.00	13.47	96.29	6,191.36	-103.75	940.92	-940.37	0.00	0.00	0.00	0.00
6,400.00	13.47	96.29	6,288.61	-106.30	964.07	-963.50	0.00	0.00	0.00	0.00
6,423.56	13.47	96.29	6,311.52	-106.90	969.53	-968.95	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6423.56ft										
6,500.00	13.47	96.29	6,385.86	-108.85	987.22	-986.64	0.00	0.00	0.00	0.00
6,523.56	13.47	96.29	6,408.77	-109.46	992.67	-992.09	0.00	0.00	0.00	0.00
KOP @ 6523.56ft :: DLS=10°/100'										
6,600.00	5.94	105.02	6,484.06	-111.46	1,005.36	-1,004.76	10.00	-9.84	11.42	173.22
6,700.00	4.55	249.46	6,583.89	-114.20	1,006.65	-1,006.04	10.00	-1.39	144.44	164.59
6,800.00	14.35	263.52	6,682.42	-117.00	990.58	-989.95	10.00	9.80	14.06	20.29
6,900.00	24.32	266.20	6,776.67	-119.77	957.64	-956.99	10.00	9.96	2.68	6.37
7,000.00	34.30	267.38	6,863.76	-122.43	908.82	-908.17	10.00	9.98	1.18	3.83
7,100.00	44.29	268.08	6,941.05	-124.89	845.62	-844.95	10.00	9.99	0.70	2.80
7,148.06	49.09	268.33	6,974.00	-125.99	810.68	-810.00	10.00	9.99	0.52	2.26
Sharon Springs										
7,200.00	54.28	268.56	7,006.19	-127.09	769.95	-769.27	10.00	9.99	0.45	2.09
7,277.40	62.02	268.85	7,047.00	-128.57	704.27	-703.58	10.00	9.99	0.38	1.94
Niobrara A										
7,300.00	64.28	268.93	7,057.21	-128.96	684.11	-683.42	10.00	10.00	0.35	1.79
7,400.00	74.27	269.25	7,092.55	-130.43	590.71	-590.02	10.00	10.00	0.32	1.75
7,430.36	77.31	269.34	7,100.00	-130.79	561.28	-560.58	10.00	10.00	0.29	1.64
Niobrara B										
7,500.00	84.27	269.53	7,111.14	-131.47	492.58	-491.89	10.00	10.00	0.28	1.62
7,558.34	90.10	269.70	7,114.00	-131.86	434.34	-433.65	10.00	10.00	0.28	1.58
End of Build @ 7558.34ft - Landing Target (Heel) - 7" - Benson Farms 13N-23HZ Heel										
7,600.00	90.10	269.70	7,113.93	-132.08	392.68	-391.98	0.00	0.00	0.00	1.58
7,700.00	90.10	269.70	7,113.75	-132.61	292.68	-291.98	0.00	0.00	0.00	0.00
7,800.00	90.10	269.70	7,113.57	-133.14	192.68	-191.98	0.00	0.00	0.00	0.00
7,900.00	90.10	269.70	7,113.39	-133.68	92.69	-91.98	0.00	0.00	0.00	0.00
8,000.00	90.10	269.70	7,113.21	-134.21	-7.31	8.01	0.00	0.00	0.00	0.00
8,100.00	90.10	269.70	7,113.03	-134.74	-107.31	108.01	0.00	0.00	0.00	0.00
8,200.00	90.10	269.70	7,112.85	-135.27	-207.31	208.01	0.00	0.00	0.00	0.00
8,300.00	90.10	269.70	7,112.67	-135.80	-307.31	308.01	0.00	0.00	0.00	0.00
8,400.00	90.10	269.70	7,112.49	-136.33	-407.31	408.01	0.00	0.00	0.00	0.00
8,500.00	90.10	269.70	7,112.32	-136.86	-507.30	508.01	0.00	0.00	0.00	0.00
8,600.00	90.10	269.70	7,112.14	-137.40	-607.30	608.01	0.00	0.00	0.00	0.00
8,700.00	90.10	269.70	7,111.96	-137.93	-707.30	708.01	0.00	0.00	0.00	0.00
8,800.00	90.10	269.70	7,111.78	-138.46	-807.30	808.01	0.00	0.00	0.00	0.00
8,900.00	90.10	269.70	7,111.60	-138.99	-907.30	908.01	0.00	0.00	0.00	0.00
9,000.00	90.10	269.70	7,111.42	-139.52	-1,007.30	1,008.01	0.00	0.00	0.00	0.00
9,100.00	90.10	269.70	7,111.24	-140.05	-1,107.29	1,108.01	0.00	0.00	0.00	0.00

Plan Report for Benson Farms 13N-23HZ - Rev B0 Permit

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	Toolface Azimuth (°)
9,200.00	90.10	269.70	7,111.06	-140.58	-1,207.29	1,208.01	0.00	0.00	0.00	0.00
9,300.00	90.10	269.70	7,110.88	-141.12	-1,307.29	1,308.01	0.00	0.00	0.00	0.00
9,400.00	90.10	269.70	7,110.71	-141.65	-1,407.29	1,408.01	0.00	0.00	0.00	0.00
9,500.00	90.10	269.70	7,110.53	-142.18	-1,507.29	1,508.01	0.00	0.00	0.00	0.00
9,600.00	90.10	269.70	7,110.35	-142.71	-1,607.29	1,608.01	0.00	0.00	0.00	0.00
9,700.00	90.10	269.70	7,110.17	-143.24	-1,707.29	1,708.01	0.00	0.00	0.00	0.00
9,800.00	90.10	269.70	7,109.99	-143.77	-1,807.28	1,808.01	0.00	0.00	0.00	0.00
9,900.00	90.10	269.70	7,109.81	-144.30	-1,907.28	1,908.01	0.00	0.00	0.00	0.00
10,000.00	90.10	269.70	7,109.63	-144.84	-2,007.28	2,008.01	0.00	0.00	0.00	0.00
10,100.00	90.10	269.70	7,109.45	-145.37	-2,107.28	2,108.01	0.00	0.00	0.00	0.00
10,200.00	90.10	269.70	7,109.27	-145.90	-2,207.28	2,208.01	0.00	0.00	0.00	0.00
10,300.00	90.10	269.70	7,109.10	-146.43	-2,307.28	2,308.01	0.00	0.00	0.00	0.00
10,400.00	90.10	269.70	7,108.92	-146.96	-2,407.27	2,408.01	0.00	0.00	0.00	0.00
10,500.00	90.10	269.70	7,108.74	-147.49	-2,507.27	2,508.01	0.00	0.00	0.00	0.00
10,600.00	90.10	269.70	7,108.56	-148.02	-2,607.27	2,608.01	0.00	0.00	0.00	0.00
10,700.00	90.10	269.70	7,108.38	-148.56	-2,707.27	2,708.01	0.00	0.00	0.00	0.00
10,800.00	90.10	269.70	7,108.20	-149.09	-2,807.27	2,808.01	0.00	0.00	0.00	0.00
10,900.00	90.10	269.70	7,108.02	-149.62	-2,907.27	2,908.01	0.00	0.00	0.00	0.00
11,000.00	90.10	269.70	7,107.84	-150.15	-3,007.27	3,008.01	0.00	0.00	0.00	0.00
11,100.00	90.10	269.70	7,107.66	-150.68	-3,107.26	3,108.01	0.00	0.00	0.00	0.00
11,200.00	90.10	269.70	7,107.48	-151.21	-3,207.26	3,208.01	0.00	0.00	0.00	0.00
11,300.00	90.10	269.70	7,107.31	-151.74	-3,307.26	3,308.01	0.00	0.00	0.00	0.00
11,400.00	90.10	269.70	7,107.13	-152.28	-3,407.26	3,408.01	0.00	0.00	0.00	0.00
11,500.00	90.10	269.70	7,106.95	-152.81	-3,507.26	3,508.01	0.00	0.00	0.00	0.00
11,600.00	90.10	269.70	7,106.77	-153.34	-3,607.26	3,608.01	0.00	0.00	0.00	0.00
11,700.00	90.10	269.70	7,106.59	-153.87	-3,707.25	3,708.01	0.00	0.00	0.00	0.00
11,800.00	90.10	269.70	7,106.41	-154.40	-3,807.25	3,808.01	0.00	0.00	0.00	0.00
11,900.00	90.10	269.70	7,106.23	-154.93	-3,907.25	3,908.01	0.00	0.00	0.00	0.00
12,000.00	90.10	269.70	7,106.05	-155.46	-4,007.25	4,008.01	0.00	0.00	0.00	0.00
12,100.00	90.10	269.70	7,105.87	-156.00	-4,107.25	4,108.01	0.00	0.00	0.00	0.00
12,200.00	90.10	269.70	7,105.70	-156.53	-4,207.25	4,208.01	0.00	0.00	0.00	0.00
12,300.00	90.10	269.70	7,105.52	-157.06	-4,307.24	4,308.01	0.00	0.00	0.00	0.00
12,400.00	90.10	269.70	7,105.34	-157.59	-4,407.24	4,408.01	0.00	0.00	0.00	0.00
12,500.00	90.10	269.70	7,105.16	-158.12	-4,507.24	4,508.01	0.00	0.00	0.00	0.00
12,600.00	90.10	269.70	7,104.98	-158.65	-4,607.24	4,608.01	0.00	0.00	0.00	0.00
12,700.00	90.10	269.70	7,104.80	-159.18	-4,707.24	4,708.01	0.00	0.00	0.00	0.00
12,800.00	90.10	269.70	7,104.62	-159.72	-4,807.24	4,808.01	0.00	0.00	0.00	0.00
12,900.00	90.10	269.70	7,104.44	-160.25	-4,907.24	4,908.01	0.00	0.00	0.00	0.00
13,000.00	90.10	269.70	7,104.26	-160.78	-5,007.23	5,008.01	0.00	0.00	0.00	0.00
13,100.00	90.10	269.70	7,104.09	-161.31	-5,107.23	5,108.01	0.00	0.00	0.00	0.00
13,147.90	90.10	269.70	7,104.00	-161.56	-5,155.13	5,155.91	0.00	0.00	0.00	0.00
Total Depth (Toe)										
13,147.91	90.10	269.70	7,104.00	-161.56	-5,155.14	5,155.92	0.00	0.00	0.00	0.00
TD Well @ 13147.91ft - Benson Farms 13N-23HZ BHL										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,900.00	1,900.00	0.00	0.00	Begin Nudge @ 1900.00 ft
2,573.33	2,567.15	-8.63	78.29	End Nudge @ 2573.33ft
6,423.56	6,311.52	-106.90	969.53	Top of 4.5" Liner @ 6423.56ft
6,523.56	6,408.77	-109.46	992.67	KOP @ 6523.56ft :: DLS=10°/100'
7,558.34	7,114.00	-131.86	434.34	End of Build @ 7558.34ft
13,147.91	7,104.00	-161.56	-5,155.14	TD Well @ 13147.91ft

Plan Report for Benson Farms 13N-23HZ - Rev B0 Permit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	269.70	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,558.34	Rev B0 Permit	MWD
7,558.34	13,147.91	Rev B0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,110.00	1,110.00	9 5/8"	9-5/8	12-1/4
7,558.34	7,114.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,060.00	1,060.00	Fox Hills Marker		0.00	
3,698.11	3,661.00	Parkman		0.00	
4,171.11	4,121.00	Sussex		0.00	
7,148.06	6,974.00	Sharon Springs		0.00	
7,277.40	7,047.00	Niobrara A		0.00	
7,430.36	7,100.00	Niobrara B		0.00	
7,558.34	7,114.00	Landing Target (Heel)		0.00	
13,147.90	7,104.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Benson Farms 13N-23HZ_LD	0.00	0.00	0.00	Polygon
Benson Farms 13N-23HZ_SHL	0.00	0.00	0.00	Point
Benson Farms 13N-23HZ_SEC	0.00	0.00	0.00	Point
Benson Farms 13N-23HZ BHL	7,104.00	-161.56	-5,155.14	Point
Benson Farms 13N-23HZ Heel	7,114.00	-131.86	434.34	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.83 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,482.38 usft
Net Tortosity applicable to Plans:	0.83 °/100usft	Directional Difficulty Index:	6.364

Plan Report for Benson Farms 13N-23HZ - Rev B0 Permit

Audit Info

North Reference Sheet for Sec. 23-T3N-R68W - Benson Farms 13N-23HZ - Plan B

All data is in US Feet unless otherwise stated. Directions and Coordinates are relative to True North Reference.
 Vertical Depths are relative to GL+RKB @ 4978.00usft (Drilling Rig). Northing and Easting are relative to Benson Farms 13N-23HZ
 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: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995715

Grid Coordinates of Well: 1,318,396.13 usft N, 3,150,573.35 usft E
 Geographical Coordinates of Well: 40° 12' 22.10" N, 104° 57' 39.24" W
 Grid Convergence at Surface is: 0.35°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,147.91usft
 the Bottom Hole Displacement is 5,157.67usft in the Direction of 268.20° (True).
 Magnetic Convergence at surface is: -8.29° (17 February 2014, , BGGM2013)

