

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 23-T3N-R68W

Benson Farms 13C-23HZ

Plan B

Plan: Rev B0 Permit

Sperry Drilling Services

Proposal Report

17 February, 2014

Well Coordinates: 1,318,456.23 N, 3,150,572.15 E (40° 12' 22.69" N, 104° 57' 39.25" W)

Ground Level: 4,961.00 usft

Local Coordinate Origin:

Centered on Well Benson Farms 13C-23HZ

Viewing Datum:

GL+RKB @ 4978.00usft (Drilling Rig)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

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

Anadarko Petroleum Corp.



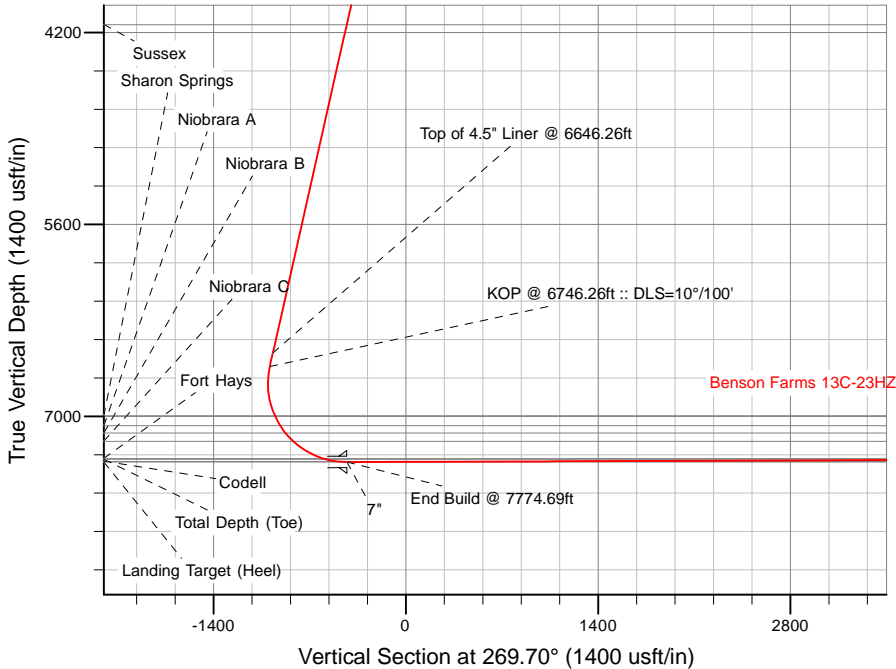
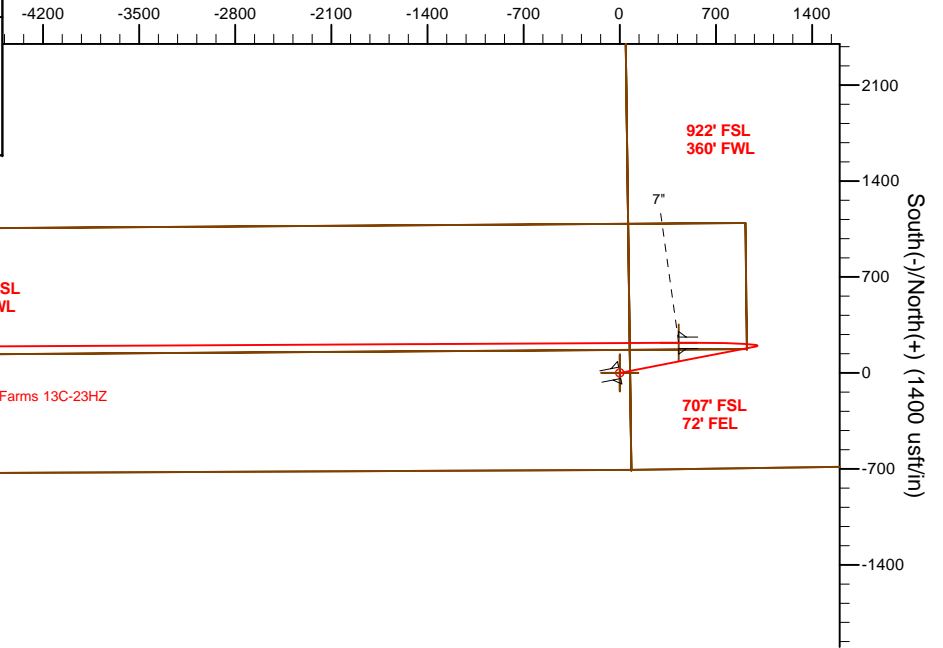
SECTION DETAILS

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	1900.00	0.00	0.00	1900.00	0.00	0.00	0.00	0.00	0.00	
3	2543.35	12.87	78.95	2537.96	13.79	70.60	2.00	78.95	-70.67	
4	6746.26	12.87	78.95	6635.33	193.21	989.19	0.00	0.00	-990.19	
5	7774.69	90.21	269.70	7333.00	220.05	427.91	10.00	-168.97	-429.06	Benson Farms 13C-23HZ Heel
6	13358.89	90.21	269.70	7313.00	190.35	-5156.17	0.00	0.00	5155.10	Benson Farms 13C-23HZ BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Point
Benson Farms 13C-23HZ_LD	0.00	0.00	0.00	40° 12' 22.691 N	104° 57' 39.251 W	Polygon
Benson Farms 13C-23HZ_SEC	0.00	0.00	0.00	40° 12' 22.691 N	104° 57' 39.251 W	Polygon
Benson Farms 13C-23HZ_SHL	0.00	0.00	0.00	40° 12' 22.691 N	104° 57' 39.251 W	Polygon
Benson Farms 13C-23HZ_BHL	7313.00	190.35	-5156.17	40° 12' 24.566 N	104° 58' 45.707 W	Point
Benson Farms 13C-23HZ_Heel	7333.00	220.05	427.91	40° 12' 24.865 N	104° 57' 33.736 W	Point

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



TVD	MD	
6537.84	6646.26	Top of 4.5" Liner @ 6646.26ft
6635.33	6746.26	KOP @ 6746.26ft :: DLS=10°/100'

WELL DETAILS: Benson Farms 13C-23HZ	
Ground Level:	4961.00
GL+RKB @ 4978.00usft (Drilling Rig)	
Plan: Rev B0 Permit (Benson Farms 13C-23HZ/Plan B)	
Created By: Clint Eshelman	Date: 2/18/2014
Reviewed: _____	Date: _____

Plan Report for Benson Farms 13C-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 13C-23HZ_SHL - Benson Farms 13C-23HZ_SEC - Benson Farms 13C-23HZ_LD										
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	78.95	1,999.98	0.33	1.71	-1.71	2.00	2.00	0.00	78.95
2,100.00	4.00	78.95	2,099.84	1.34	6.85	-6.86	2.00	2.00	0.00	0.00
2,200.00	6.00	78.95	2,199.45	3.01	15.40	-15.42	2.00	2.00	0.00	0.00
2,300.00	8.00	78.95	2,298.70	5.34	27.36	-27.39	2.00	2.00	0.00	0.00
2,400.00	10.00	78.95	2,397.47	8.34	42.72	-42.76	2.00	2.00	0.00	0.00
2,500.00	12.00	78.95	2,495.62	12.00	61.44	-61.50	2.00	2.00	0.00	0.00
2,543.35	12.87	78.95	2,537.96	13.79	70.60	-70.67	2.00	2.00	0.00	0.00
End Nudge @ 2543.35ft										
2,600.00	12.87	78.95	2,593.18	16.21	82.98	-83.07	0.00	0.00	0.00	0.00
2,700.00	12.87	78.95	2,690.67	20.48	104.84	-104.94	0.00	0.00	0.00	0.00
2,800.00	12.87	78.95	2,788.16	24.75	126.70	-126.82	0.00	0.00	0.00	0.00
2,900.00	12.87	78.95	2,885.65	29.02	148.55	-148.70	0.00	0.00	0.00	0.00
3,000.00	12.87	78.95	2,983.14	33.28	170.41	-170.58	0.00	0.00	0.00	0.00
3,100.00	12.87	78.95	3,080.63	37.55	192.26	-192.46	0.00	0.00	0.00	0.00
3,200.00	12.87	78.95	3,178.12	41.82	214.12	-214.34	0.00	0.00	0.00	0.00
3,300.00	12.87	78.95	3,275.61	46.09	235.98	-236.21	0.00	0.00	0.00	0.00
3,400.00	12.87	78.95	3,373.09	50.36	257.83	-258.09	0.00	0.00	0.00	0.00
3,500.00	12.87	78.95	3,470.58	54.63	279.69	-279.97	0.00	0.00	0.00	0.00
3,600.00	12.87	78.95	3,568.07	58.90	301.54	-301.85	0.00	0.00	0.00	0.00
3,700.00	12.87	78.95	3,665.56	63.17	323.40	-323.73	0.00	0.00	0.00	0.00
3,716.86	12.87	78.95	3,682.00	63.89	327.08	-327.41	0.00	0.00	0.00	0.00
Parkman										
3,800.00	12.87	78.95	3,763.05	67.44	345.26	-345.60	0.00	0.00	0.00	0.00
3,900.00	12.87	78.95	3,860.54	71.70	367.11	-367.48	0.00	0.00	0.00	0.00
4,000.00	12.87	78.95	3,958.03	75.97	388.97	-389.36	0.00	0.00	0.00	0.00
4,100.00	12.87	78.95	4,055.52	80.24	410.82	-411.24	0.00	0.00	0.00	0.00
4,188.71	12.87	78.95	4,142.00	84.03	430.21	-430.65	0.00	0.00	0.00	0.00
Sussex										
4,200.00	12.87	78.95	4,153.01	84.51	432.68	-433.12	0.00	0.00	0.00	0.00
4,300.00	12.87	78.95	4,250.50	88.78	454.53	-454.99	0.00	0.00	0.00	0.00
4,400.00	12.87	78.95	4,347.98	93.05	476.39	-476.87	0.00	0.00	0.00	0.00

Plan Report for Benson Farms 13C-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	12.87	78.95	4,445.47	97.32	498.25	-498.75	0.00	0.00	0.00	0.00
4,600.00	12.87	78.95	4,542.96	101.59	520.10	-520.63	0.00	0.00	0.00	0.00
4,700.00	12.87	78.95	4,640.45	105.86	541.96	-542.51	0.00	0.00	0.00	0.00
4,800.00	12.87	78.95	4,737.94	110.13	563.81	-564.38	0.00	0.00	0.00	0.00
4,900.00	12.87	78.95	4,835.43	114.39	585.67	-586.26	0.00	0.00	0.00	0.00
5,000.00	12.87	78.95	4,932.92	118.66	607.53	-608.14	0.00	0.00	0.00	0.00
5,100.00	12.87	78.95	5,030.41	122.93	629.38	-630.02	0.00	0.00	0.00	0.00
5,200.00	12.87	78.95	5,127.90	127.20	651.24	-651.90	0.00	0.00	0.00	0.00
5,300.00	12.87	78.95	5,225.38	131.47	673.09	-673.77	0.00	0.00	0.00	0.00
5,400.00	12.87	78.95	5,322.87	135.74	694.95	-695.65	0.00	0.00	0.00	0.00
5,500.00	12.87	78.95	5,420.36	140.01	716.81	-717.53	0.00	0.00	0.00	0.00
5,600.00	12.87	78.95	5,517.85	144.28	738.66	-739.41	0.00	0.00	0.00	0.00
5,700.00	12.87	78.95	5,615.34	148.55	760.52	-761.29	0.00	0.00	0.00	0.00
5,800.00	12.87	78.95	5,712.83	152.82	782.37	-783.16	0.00	0.00	0.00	0.00
5,900.00	12.87	78.95	5,810.32	157.08	804.23	-805.04	0.00	0.00	0.00	0.00
6,000.00	12.87	78.95	5,907.81	161.35	826.09	-826.92	0.00	0.00	0.00	0.00
6,100.00	12.87	78.95	6,005.30	165.62	847.94	-848.80	0.00	0.00	0.00	0.00
6,200.00	12.87	78.95	6,102.79	169.89	869.80	-870.68	0.00	0.00	0.00	0.00
6,300.00	12.87	78.95	6,200.27	174.16	891.65	-892.55	0.00	0.00	0.00	0.00
6,400.00	12.87	78.95	6,297.76	178.43	913.51	-914.43	0.00	0.00	0.00	0.00
6,500.00	12.87	78.95	6,395.25	182.70	935.37	-936.31	0.00	0.00	0.00	0.00
6,600.00	12.87	78.95	6,492.74	186.97	957.22	-958.19	0.00	0.00	0.00	0.00
6,646.26	12.87	78.95	6,537.84	188.94	967.33	-968.31	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6646.26ft										
6,700.00	12.87	78.95	6,590.23	191.24	979.08	-980.07	0.00	0.00	0.00	0.00
6,746.26	12.87	78.95	6,635.33	193.21	989.19	-990.19	0.00	0.00	0.00	0.00
KOP @ 6746.26ft :: DLS=10°/100'										
6,800.00	7.66	71.23	6,688.19	195.51	998.46	-999.47	10.00	-9.69	-14.37	-168.97
6,900.00	3.67	311.41	6,787.90	199.78	1,002.38	-1,003.41	10.00	-3.99	-119.82	-161.37
7,000.00	12.96	280.38	6,886.77	203.93	988.92	-989.97	10.00	9.30	-31.03	-41.76
7,100.00	22.86	275.51	6,981.81	207.82	958.47	-959.54	10.00	9.90	-4.87	-10.94
7,114.39	24.29	275.12	6,995.00	208.36	952.74	-953.82	10.00	9.94	-2.66	-6.29
Sharon Springs										
7,197.47	32.57	273.53	7,068.00	211.26	913.33	-914.43	10.00	9.96	-1.92	-5.94
Niobrara A										
7,200.00	32.82	273.49	7,070.13	211.35	911.97	-913.06	10.00	9.97	-1.46	-4.54
7,262.87	39.09	272.71	7,121.00	213.33	875.13	-876.23	10.00	9.97	-1.24	-4.51
Niobrara B										
7,300.00	42.79	272.34	7,149.04	214.40	850.83	-851.94	10.00	9.98	-0.99	-3.87
7,345.25	47.31	271.96	7,181.00	215.59	818.83	-819.95	10.00	9.98	-0.85	-3.59
Niobrara C										
7,400.00	52.78	271.56	7,216.15	216.87	776.90	-778.03	10.00	9.98	-0.73	-3.32
7,500.00	62.76	270.96	7,269.41	218.71	692.44	-693.57	10.00	9.99	-0.60	-3.07
7,600.00	72.75	270.46	7,307.22	219.84	600.00	-601.15	10.00	9.99	-0.50	-2.75
7,602.66	73.02	270.45	7,308.00	219.86	597.46	-598.60	10.00	9.99	-0.47	-2.56
Fort Hays										
7,696.82	82.43	270.03	7,328.00	220.24	505.56	-506.70	10.00	9.99	-0.45	-2.55
Codell										
7,700.00	82.74	270.01	7,328.41	220.24	502.40	-503.55	10.00	9.99	-0.43	-2.46
7,774.69	90.20	269.70	7,333.00	220.05	427.91	-429.06	10.00	9.99	-0.43	-2.46
End Build @ 7774.69ft - Landing Target (Heel) - 7" - Benson Farms 13C-23HZ Heel										
7,800.00	90.21	269.70	7,332.91	219.92	402.60	-403.75	0.00	0.00	0.00	-2.44
7,900.00	90.21	269.70	7,332.55	219.39	302.60	-303.75	0.00	0.00	0.00	0.00
8,000.00	90.21	269.70	7,332.19	218.85	202.60	-203.75	0.00	0.00	0.00	0.00
8,100.00	90.21	269.70	7,331.83	218.32	102.61	-103.75	0.00	0.00	0.00	0.00
8,200.00	90.21	269.70	7,331.48	217.79	2.61	-3.75	0.00	0.00	0.00	0.00
8,300.00	90.21	269.70	7,331.12	217.26	-97.39	96.25	0.00	0.00	0.00	0.00
8,400.00	90.21	269.70	7,330.76	216.73	-197.39	196.25	0.00	0.00	0.00	0.00
8,500.00	90.21	269.70	7,330.40	216.19	-297.39	296.25	0.00	0.00	0.00	0.00

Plan Report for Benson Farms 13C-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 (°)
8,600.00	90.21	269.70	7,330.04	215.66	-397.38	396.25	0.00	0.00	0.00	0.00
8,700.00	90.21	269.70	7,329.69	215.13	-497.38	496.25	0.00	0.00	0.00	0.00
8,800.00	90.21	269.70	7,329.33	214.60	-597.38	596.25	0.00	0.00	0.00	0.00
8,900.00	90.21	269.70	7,328.97	214.07	-697.38	696.25	0.00	0.00	0.00	0.00
9,000.00	90.21	269.70	7,328.61	213.54	-797.38	796.25	0.00	0.00	0.00	0.00
9,100.00	90.21	269.70	7,328.25	213.00	-897.37	896.25	0.00	0.00	0.00	0.00
9,200.00	90.21	269.70	7,327.90	212.47	-997.37	996.25	0.00	0.00	0.00	0.00
9,300.00	90.21	269.70	7,327.54	211.94	-1,097.37	1,096.24	0.00	0.00	0.00	0.00
9,400.00	90.21	269.70	7,327.18	211.41	-1,197.37	1,196.24	0.00	0.00	0.00	0.00
9,500.00	90.21	269.70	7,326.82	210.88	-1,297.37	1,296.24	0.00	0.00	0.00	0.00
9,600.00	90.21	269.70	7,326.46	210.34	-1,397.36	1,396.24	0.00	0.00	0.00	0.00
9,700.00	90.21	269.70	7,326.10	209.81	-1,497.36	1,496.24	0.00	0.00	0.00	0.00
9,800.00	90.21	269.70	7,325.75	209.28	-1,597.36	1,596.24	0.00	0.00	0.00	0.00
9,900.00	90.21	269.70	7,325.39	208.75	-1,697.36	1,696.24	0.00	0.00	0.00	0.00
10,000.00	90.21	269.70	7,325.03	208.22	-1,797.36	1,796.24	0.00	0.00	0.00	0.00
10,100.00	90.21	269.70	7,324.67	207.68	-1,897.35	1,896.24	0.00	0.00	0.00	0.00
10,200.00	90.21	269.70	7,324.31	207.15	-1,997.35	1,996.24	0.00	0.00	0.00	0.00
10,300.00	90.21	269.70	7,323.96	206.62	-2,097.35	2,096.24	0.00	0.00	0.00	0.00
10,400.00	90.21	269.70	7,323.60	206.09	-2,197.35	2,196.24	0.00	0.00	0.00	0.00
10,500.00	90.21	269.70	7,323.24	205.56	-2,297.34	2,296.24	0.00	0.00	0.00	0.00
10,600.00	90.21	269.70	7,322.88	205.02	-2,397.34	2,396.24	0.00	0.00	0.00	0.00
10,700.00	90.21	269.70	7,322.52	204.49	-2,497.34	2,496.24	0.00	0.00	0.00	0.00
10,800.00	90.21	269.70	7,322.16	203.96	-2,597.34	2,596.24	0.00	0.00	0.00	0.00
10,900.00	90.21	269.70	7,321.81	203.43	-2,697.34	2,696.23	0.00	0.00	0.00	0.00
11,000.00	90.21	269.70	7,321.45	202.90	-2,797.33	2,796.23	0.00	0.00	0.00	0.00
11,100.00	90.21	269.70	7,321.09	202.36	-2,897.33	2,896.23	0.00	0.00	0.00	0.00
11,200.00	90.21	269.70	7,320.73	201.83	-2,997.33	2,996.23	0.00	0.00	0.00	0.00
11,300.00	90.21	269.70	7,320.37	201.30	-3,097.33	3,096.23	0.00	0.00	0.00	0.00
11,400.00	90.21	269.70	7,320.02	200.77	-3,197.33	3,196.23	0.00	0.00	0.00	0.00
11,500.00	90.21	269.70	7,319.66	200.24	-3,297.32	3,296.23	0.00	0.00	0.00	0.00
11,600.00	90.21	269.70	7,319.30	199.70	-3,397.32	3,396.23	0.00	0.00	0.00	0.00
11,700.00	90.21	269.70	7,318.94	199.17	-3,497.32	3,496.23	0.00	0.00	0.00	0.00
11,800.00	90.21	269.70	7,318.58	198.64	-3,597.32	3,596.23	0.00	0.00	0.00	0.00
11,900.00	90.21	269.70	7,318.23	198.11	-3,697.32	3,696.23	0.00	0.00	0.00	0.00
12,000.00	90.21	269.70	7,317.87	197.58	-3,797.31	3,796.23	0.00	0.00	0.00	0.00
12,100.00	90.21	269.70	7,317.51	197.05	-3,897.31	3,896.23	0.00	0.00	0.00	0.00
12,200.00	90.21	269.70	7,317.15	196.51	-3,997.31	3,996.23	0.00	0.00	0.00	0.00
12,300.00	90.21	269.70	7,316.79	195.98	-4,097.31	4,096.23	0.00	0.00	0.00	0.00
12,400.00	90.21	269.70	7,316.43	195.45	-4,197.31	4,196.22	0.00	0.00	0.00	0.00
12,500.00	90.21	269.70	7,316.08	194.92	-4,297.30	4,296.22	0.00	0.00	0.00	0.00
12,600.00	90.21	269.70	7,315.72	194.39	-4,397.30	4,396.22	0.00	0.00	0.00	0.00
12,700.00	90.21	269.70	7,315.36	193.85	-4,497.30	4,496.22	0.00	0.00	0.00	0.00
12,800.00	90.21	269.70	7,315.00	193.32	-4,597.30	4,596.22	0.00	0.00	0.00	0.00
12,900.00	90.21	269.70	7,314.64	192.79	-4,697.30	4,696.22	0.00	0.00	0.00	0.00
13,000.00	90.21	269.70	7,314.29	192.26	-4,797.29	4,796.22	0.00	0.00	0.00	0.00
13,100.00	90.21	269.70	7,313.93	191.73	-4,897.29	4,896.22	0.00	0.00	0.00	0.00
13,200.00	90.21	269.70	7,313.57	191.19	-4,997.29	4,996.22	0.00	0.00	0.00	0.00
13,300.00	90.21	269.70	7,313.21	190.66	-5,097.29	5,096.22	0.00	0.00	0.00	0.00
13,358.88	90.21	269.70	7,313.00	190.35	-5,156.17	5,155.10	0.00	0.00	0.00	0.00
Total Depth (Toe)										
13,358.89	90.21	269.70	7,313.00	190.35	-5,156.17	5,155.10	0.00	0.00	0.00	0.00
TD Well @ 13358.89ft - Benson Farms 13C-23HZ BHL										

Plan Report for Benson Farms 13C-23HZ - Rev B0 Permit**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
2,543.35	2,537.96	13.79	70.60	End Nudge @ 2543.35ft
6,646.26	6,537.84	188.94	967.33	Top of 4.5" Liner @ 6646.26ft
6,746.26	6,635.33	193.21	989.19	KOP @ 6746.26ft :: DLS=10°/100'
7,774.69	7,333.00	220.05	427.91	End Build @ 7774.69ft
13,358.89	7,313.00	190.35	-5,156.17	TD Well @ 13358.89ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (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	7,774.69	Rev B0 Permit	MWD
7,774.69	13,358.89	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	13-1/2
7,774.69	7,333.00	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	
3,716.86	3,682.00	Parkman		0.00	
4,188.71	4,142.00	Sussex		0.00	
7,114.39	6,995.00	Sharon Springs		0.00	
7,197.47	7,068.00	Niobrara A		0.00	
7,262.87	7,121.00	Niobrara B		0.00	
7,345.25	7,181.00	Niobrara C		0.00	
7,602.66	7,308.00	Fort Hays		0.00	
7,696.82	7,328.00	Codell		0.00	
7,774.69	7,333.00	Landing Target (Heel)		0.00	
13,358.88	7,313.00	Total Depth (Toe)		0.00	

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

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Benson Farms 13C-23HZ_SHL	0.00	0.00	0.00	Point
Benson Farms 13C-23HZ_SEC	0.00	0.00	0.00	Point
Benson Farms 13C-23HZ_LD	0.00	0.00	0.00	Polygon
Benson Farms 13C-23HZ BHL	7,313.00	190.35	-5,156.17	Point
Benson Farms 13C-23HZ Heel	7,333.00	220.05	427.91	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.87 °/100usft	Maximum Dogleg over Survey:	10.00 °/100usft at 7,774.69 usft
Net Tortosity applicable to Plans:	0.87 °/100usft	Directional Difficulty Index:	6.358

Audit Info

North Reference Sheet for Sec. 23-T3N-R68W - Benson Farms 13C-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 13C-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: 1,318,456.23 usft N, 3,150,572.15 usft E

Geographical Coordinates of Well: 40° 12' 22.69" N, 104° 57' 39.25" W

Grid Convergence at Surface is: 0.35°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,358.89usft

the Bottom Hole Displacement is 5,159.68usft in the Direction of 272.11° (True).

Magnetic Convergence at surface is: -8.29° (17 February 2014, , BGGM2013)

Magnetic Model: BGGM2013
 Date: 17-Feb-14
 Declination: 8.63°
 Inclination/Dip: 66.76°
 Field Strength: 52647

Grid North is 0.35° East of True North (Grid Convergence)
 Magnetic North is 8.63° East of True North (Magnetic Declination)
 Magnetic North is 8.29° East of Grid North (Magnetic Convergence)

To convert a True Direction to a Grid Direction, Subtract 0.35°
 To convert a Magnetic Direction to a True Direction, Add 8.63° East
 To convert a Magnetic Direction to a Grid Direction, Add 8.29°