

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 14-T3N-R66W

FERGE 4C-14HZ

Plan A

Plan: Rev A0 Permit

Sperry Drilling Services

Proposal Report

18 November, 2013

Well Coordinates: 1,323,360.52 N, 3,209,434.75 E (40° 13' 06.93" N, 104° 45' 00.06" W)

Ground Level: 4,913.00 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 FERGE 4C-14HZ

RKB = 17' @ 4930.00usft (Drilling Rig)

N

True

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Project: Weld County, CO (NAD 83)
Site: Sec. 14-T3N-R66W
Well: FERGE 4C-14HZ
Wellbore: Plan A
Design: Rev A0 Permit

Anadarko Petroleum Corp.

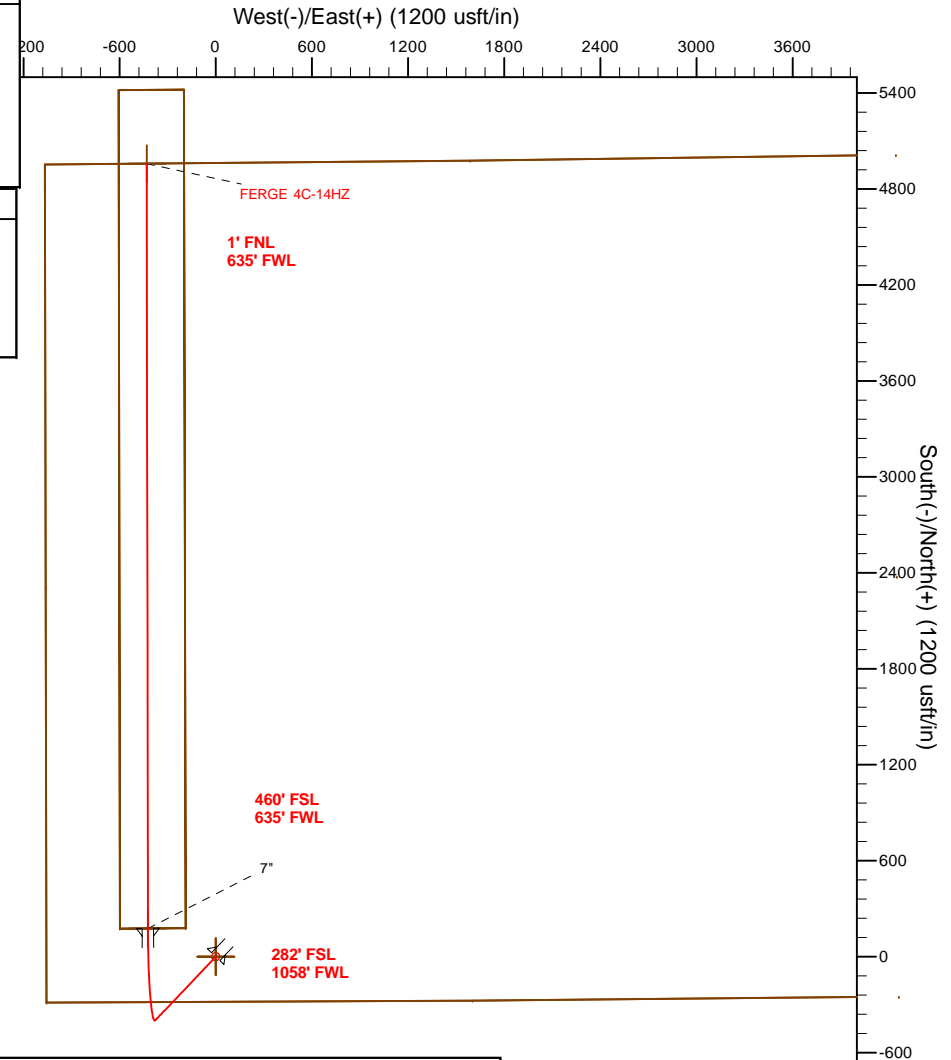
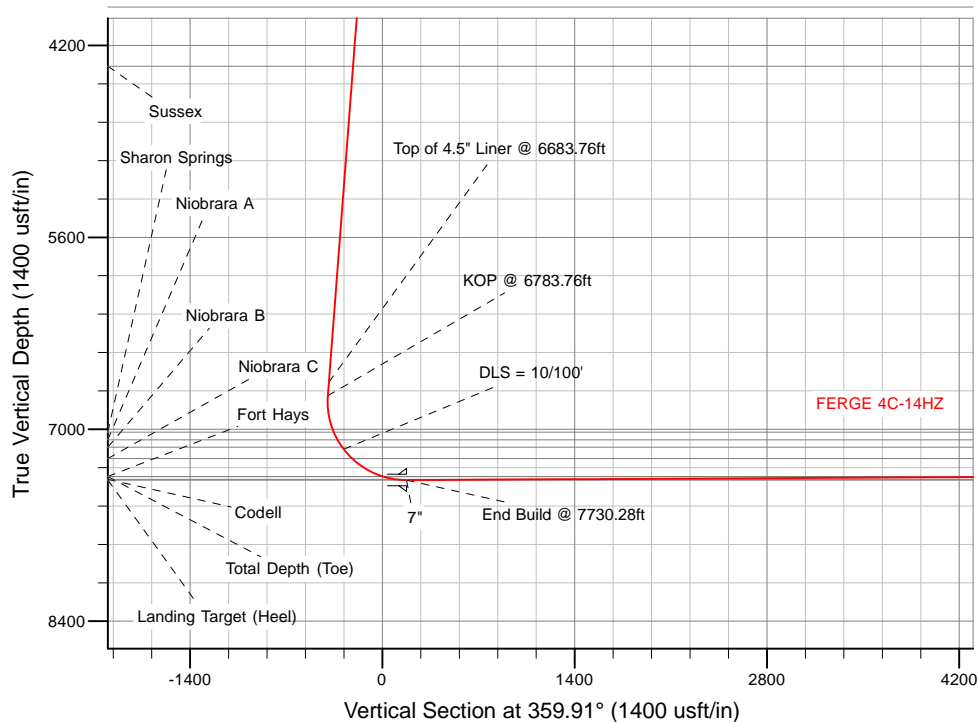
HALLIBURTON
Sperry Drilling

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	1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00	0.00	
3	1700.89	6.02	223.52	1700.34	-11.45	-10.87	2.00	223.52	-11.43	
4	6783.76	6.02	223.52	6755.20	-397.89	-377.78	0.00	0.00	-397.29	
5	7730.28	90.30	359.91	7370.00	176.33	-423.65	10.00	136.21	177.00	FERGE 4C-14HZ_CP
6	12512.52	90.30	359.91	7345.00	4958.50	-431.38	0.00	0.00	4959.18	FERGE 4C-14HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
FERGE 4C-14HZ_LD	0.00	0.00	0.00	40° 13' 6.927 N	104° 45' 0.058 W	Polygon
FERGE 4C-14HZ_SEC	0.00	0.00	0.00	40° 13' 6.927 N	104° 45' 0.058 W	Polygon
FERGE 4C-14HZ_SHL	0.00	0.00	0.00	40° 13' 6.927 N	104° 45' 0.058 W	
FERGE 4C-14HZ_BHL	7345.00	4958.50	-431.38	40° 13' 55.927 N	104° 45' 5.620 W	Point
FERGE 4C-14HZ_CP	7370.00	176.33	-423.65	40° 13' 8.670 N	104° 45' 5.519 W	



TVD

MD

6655.75 6683.76 Top of 4.5" Liner @ 6683.76ft
6755.20 6783.76 KOP @ 6783.76ft

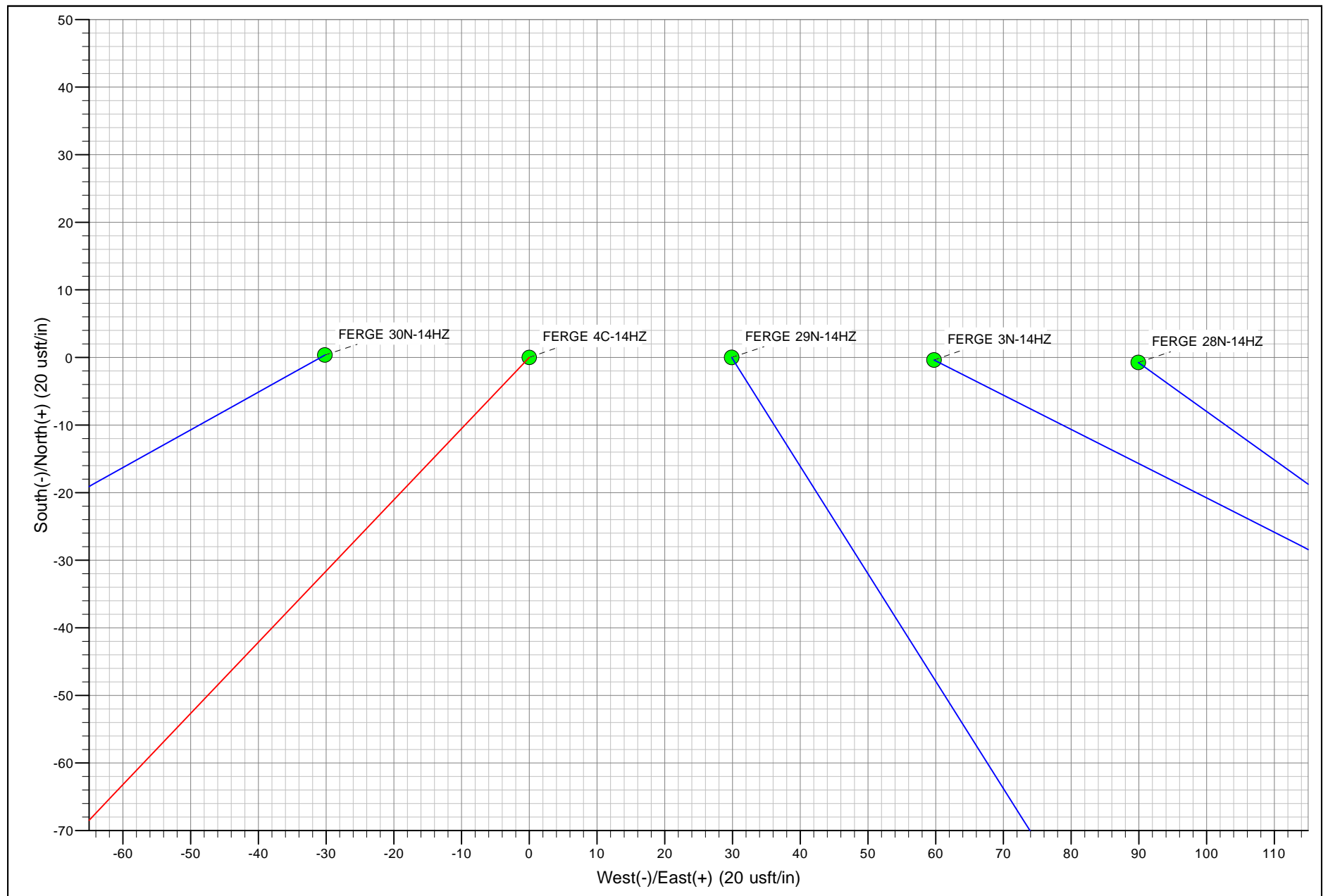
WELL DETAILS: FERGE 4C-14HZ

Ground Level: 4913.00

RKB = 17' @ 4930.00usft (Drilling Rig)

Plan: Rev A0 Permit (FERGE 4C-14HZ/Plan A)

Created By: Clint Eshelman Date: 11/18/2013
Reviewed: _____ Date: _____



Plan Report for FERGE 4C-14HZ - Rev A0 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
FERGE 4C-14HZ_SHL - FERGE 4C-14HZ_LD - FERGE 4C-14HZ_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
1,095.00	0.00	0.00	1,095.00	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
1,145.00	0.00	0.00	1,145.00	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
Begin Nudge @ 1400.00ft										
1,500.00	2.00	223.52	1,499.98	-1.27	-1.20	-1.26	2.00	2.00	0.00	223.52
1,600.00	4.00	223.52	1,599.84	-5.06	-4.81	-5.05	2.00	2.00	0.00	0.00
1,700.00	6.00	223.52	1,699.45	-11.38	-10.81	-11.36	2.00	2.00	0.00	0.00
1,700.89	6.02	223.52	1,700.34	-11.45	-10.87	-11.43	2.00	2.00	0.00	0.00
End Nudge @ 1700.89ft										
1,800.00	6.02	223.52	1,798.90	-18.98	-18.02	-18.96	0.00	0.00	0.00	0.00
1,900.00	6.02	223.52	1,898.35	-26.59	-25.24	-26.55	0.00	0.00	0.00	0.00
2,000.00	6.02	223.52	1,997.80	-34.19	-32.46	-34.14	0.00	0.00	0.00	0.00
2,100.00	6.02	223.52	2,097.25	-41.79	-39.68	-41.73	0.00	0.00	0.00	0.00
2,200.00	6.02	223.52	2,196.70	-49.39	-46.90	-49.32	0.00	0.00	0.00	0.00
2,300.00	6.02	223.52	2,296.15	-57.00	-54.12	-56.91	0.00	0.00	0.00	0.00
2,400.00	6.02	223.52	2,395.59	-64.60	-61.34	-64.50	0.00	0.00	0.00	0.00
2,500.00	6.02	223.52	2,495.04	-72.20	-68.55	-72.09	0.00	0.00	0.00	0.00
2,600.00	6.02	223.52	2,594.49	-79.81	-75.77	-79.69	0.00	0.00	0.00	0.00
2,700.00	6.02	223.52	2,693.94	-87.41	-82.99	-87.28	0.00	0.00	0.00	0.00
2,800.00	6.02	223.52	2,793.39	-95.01	-90.21	-94.87	0.00	0.00	0.00	0.00
2,900.00	6.02	223.52	2,892.84	-102.61	-97.43	-102.46	0.00	0.00	0.00	0.00
3,000.00	6.02	223.52	2,992.29	-110.22	-104.65	-110.05	0.00	0.00	0.00	0.00
3,100.00	6.02	223.52	3,091.74	-117.82	-111.87	-117.64	0.00	0.00	0.00	0.00
3,200.00	6.02	223.52	3,191.19	-125.42	-119.08	-125.23	0.00	0.00	0.00	0.00
3,300.00	6.02	223.52	3,290.63	-133.02	-126.30	-132.83	0.00	0.00	0.00	0.00
3,400.00	6.02	223.52	3,390.08	-140.63	-133.52	-140.42	0.00	0.00	0.00	0.00
3,500.00	6.02	223.52	3,489.53	-148.23	-140.74	-148.01	0.00	0.00	0.00	0.00
3,600.00	6.02	223.52	3,588.98	-155.83	-147.96	-155.60	0.00	0.00	0.00	0.00
3,700.00	6.02	223.52	3,688.43	-163.44	-155.18	-163.19	0.00	0.00	0.00	0.00
3,800.00	6.02	223.52	3,787.88	-171.04	-162.40	-170.78	0.00	0.00	0.00	0.00
3,900.00	6.02	223.52	3,887.33	-178.64	-169.61	-178.37	0.00	0.00	0.00	0.00
3,930.84	6.02	223.52	3,918.00	-180.99	-171.84	-180.72	0.00	0.00	0.00	0.00
Parkman										
4,000.00	6.02	223.52	3,986.78	-186.24	-176.83	-185.97	0.00	0.00	0.00	0.00
4,100.00	6.02	223.52	4,086.23	-193.85	-184.05	-193.56	0.00	0.00	0.00	0.00
4,200.00	6.02	223.52	4,185.68	-201.45	-191.27	-201.15	0.00	0.00	0.00	0.00
4,300.00	6.02	223.52	4,285.12	-209.05	-198.49	-208.74	0.00	0.00	0.00	0.00
4,365.24	6.02	223.52	4,350.00	-214.01	-203.20	-213.69	0.00	0.00	0.00	0.00
Sussex										
4,400.00	6.02	223.52	4,384.57	-216.65	-205.71	-216.33	0.00	0.00	0.00	0.00

Plan Report for FERGE 4C-14HZ - Rev A0 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	6.02	223.52	4,484.02	-224.26	-212.92	-223.92	0.00	0.00	0.00	0.00
4,600.00	6.02	223.52	4,583.47	-231.86	-220.14	-231.51	0.00	0.00	0.00	0.00
4,700.00	6.02	223.52	4,682.92	-239.46	-227.36	-239.11	0.00	0.00	0.00	0.00
4,800.00	6.02	223.52	4,782.37	-247.07	-234.58	-246.70	0.00	0.00	0.00	0.00
4,900.00	6.02	223.52	4,881.82	-254.67	-241.80	-254.29	0.00	0.00	0.00	0.00
5,000.00	6.02	223.52	4,981.27	-262.27	-249.02	-261.88	0.00	0.00	0.00	0.00
5,100.00	6.02	223.52	5,080.72	-269.87	-256.24	-269.47	0.00	0.00	0.00	0.00
5,200.00	6.02	223.52	5,180.16	-277.48	-263.45	-277.06	0.00	0.00	0.00	0.00
5,300.00	6.02	223.52	5,279.61	-285.08	-270.67	-284.65	0.00	0.00	0.00	0.00
5,400.00	6.02	223.52	5,379.06	-292.68	-277.89	-292.24	0.00	0.00	0.00	0.00
5,500.00	6.02	223.52	5,478.51	-300.28	-285.11	-299.84	0.00	0.00	0.00	0.00
5,600.00	6.02	223.52	5,577.96	-307.89	-292.33	-307.43	0.00	0.00	0.00	0.00
5,700.00	6.02	223.52	5,677.41	-315.49	-299.55	-315.02	0.00	0.00	0.00	0.00
5,800.00	6.02	223.52	5,776.86	-323.09	-306.77	-322.61	0.00	0.00	0.00	0.00
5,900.00	6.02	223.52	5,876.31	-330.70	-313.98	-330.20	0.00	0.00	0.00	0.00
6,000.00	6.02	223.52	5,975.76	-338.30	-321.20	-337.79	0.00	0.00	0.00	0.00
6,100.00	6.02	223.52	6,075.21	-345.90	-328.42	-345.38	0.00	0.00	0.00	0.00
6,200.00	6.02	223.52	6,174.65	-353.50	-335.64	-352.98	0.00	0.00	0.00	0.00
6,300.00	6.02	223.52	6,274.10	-361.11	-342.86	-360.57	0.00	0.00	0.00	0.00
6,400.00	6.02	223.52	6,373.55	-368.71	-350.08	-368.16	0.00	0.00	0.00	0.00
6,500.00	6.02	223.52	6,473.00	-376.31	-357.30	-375.75	0.00	0.00	0.00	0.00
6,600.00	6.02	223.52	6,572.45	-383.91	-364.51	-383.34	0.00	0.00	0.00	0.00
6,683.76	6.02	223.52	6,655.75	-390.28	-370.56	-389.70	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6683.76ft										
6,700.00	6.02	223.52	6,671.90	-391.52	-371.73	-390.93	0.00	0.00	0.00	0.00
6,783.76	6.02	223.52	6,755.20	-397.89	-377.78	-397.29	0.00	0.00	0.00	0.00
KOP @ 6783.76ft										
6,800.00	4.97	236.59	6,771.36	-398.89	-378.95	-398.29	10.00	-6.43	80.51	136.21
6,900.00	8.37	330.27	6,870.89	-394.95	-386.20	-394.34	10.00	3.40	93.68	123.20
7,000.00	17.75	346.75	6,968.23	-373.73	-393.32	-373.11	10.00	9.38	16.49	29.88
7,055.27	23.16	350.09	7,020.00	-354.81	-397.13	-354.18	10.00	9.78	6.05	13.77
Sharon Springs										
7,100.00	27.56	351.88	7,060.41	-335.89	-400.10	-335.26	10.00	9.85	3.98	10.63
7,118.88	29.43	352.48	7,077.00	-326.97	-401.33	-326.34	10.00	9.88	3.19	9.02
Niobrara A										
7,180.55	35.54	354.04	7,129.00	-294.09	-405.18	-293.45	10.00	9.91	2.54	8.49
Niobrara B										
7,200.00	37.47	354.44	7,144.63	-282.58	-406.34	-281.94	10.00	9.93	2.05	7.17
DLS = 10/100'										
7,292.17	46.63	355.95	7,213.00	-221.12	-411.43	-220.48	10.00	9.94	1.63	6.85
Niobrara C										
7,300.00	47.41	356.05	7,218.34	-215.41	-411.83	-214.76	10.00	9.95	1.36	5.73
7,400.00	57.37	357.22	7,279.29	-136.43	-416.42	-135.77	10.00	9.96	1.16	5.65
7,500.00	67.34	358.14	7,325.63	-48.03	-419.97	-47.37	10.00	9.97	0.93	4.94
7,553.75	72.69	358.59	7,344.00	2.45	-421.41	3.11	10.00	9.97	0.82	4.51
Fort Hays										
7,600.00	77.31	358.95	7,355.97	47.10	-422.37	47.76	10.00	9.97	0.78	4.36
7,651.37	82.43	359.33	7,365.00	97.64	-423.13	98.31	10.00	9.97	0.75	4.26
Codell										
7,700.00	87.28	359.69	7,369.36	146.06	-423.54	146.73	10.00	9.97	0.73	4.20
7,730.28	90.30	359.91	7,370.00	176.33	-423.65	177.00	10.00	9.97	0.73	4.16
End Build @ 7730.28ft - Landing Target (Heel) - 7" - FERGE 4C-14HZ_CP										
7,800.00	90.30	359.91	7,369.64	246.05	-423.76	246.72	0.00	0.00	0.00	4.16
7,900.00	90.30	359.91	7,369.11	346.05	-423.92	346.71	0.00	0.00	0.00	0.00
8,000.00	90.30	359.91	7,368.59	446.05	-424.08	446.71	0.00	0.00	0.00	0.00
8,100.00	90.30	359.91	7,368.07	546.05	-424.24	546.71	0.00	0.00	0.00	0.00
8,200.00	90.30	359.91	7,367.54	646.04	-424.41	646.71	0.00	0.00	0.00	0.00
8,300.00	90.30	359.91	7,367.02	746.04	-424.57	746.71	0.00	0.00	0.00	0.00
8,400.00	90.30	359.91	7,366.50	846.04	-424.73	846.71	0.00	0.00	0.00	0.00

Plan Report for FERGE 4C-14HZ - Rev A0 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 (°)
8,500.00	90.30	359.91	7,365.98	946.04	-424.89	946.71	0.00	0.00	0.00	0.00
8,600.00	90.30	359.91	7,365.45	1,046.04	-425.05	1,046.70	0.00	0.00	0.00	0.00
8,700.00	90.30	359.91	7,364.93	1,146.04	-425.21	1,146.70	0.00	0.00	0.00	0.00
8,800.00	90.30	359.91	7,364.41	1,246.03	-425.38	1,246.70	0.00	0.00	0.00	0.00
8,900.00	90.30	359.91	7,363.89	1,346.03	-425.54	1,346.70	0.00	0.00	0.00	0.00
9,000.00	90.30	359.91	7,363.36	1,446.03	-425.70	1,446.70	0.00	0.00	0.00	0.00
9,100.00	90.30	359.91	7,362.84	1,546.03	-425.86	1,546.70	0.00	0.00	0.00	0.00
9,200.00	90.30	359.91	7,362.32	1,646.03	-426.02	1,646.70	0.00	0.00	0.00	0.00
9,300.00	90.30	359.91	7,361.79	1,746.03	-426.19	1,746.69	0.00	0.00	0.00	0.00
9,400.00	90.30	359.91	7,361.27	1,846.03	-426.35	1,846.69	0.00	0.00	0.00	0.00
9,500.00	90.30	359.91	7,360.75	1,946.02	-426.51	1,946.69	0.00	0.00	0.00	0.00
9,600.00	90.30	359.91	7,360.23	2,046.02	-426.67	2,046.69	0.00	0.00	0.00	0.00
9,700.00	90.30	359.91	7,359.70	2,146.02	-426.83	2,146.69	0.00	0.00	0.00	0.00
9,800.00	90.30	359.91	7,359.18	2,246.02	-426.99	2,246.69	0.00	0.00	0.00	0.00
9,900.00	90.30	359.91	7,358.66	2,346.02	-427.16	2,346.69	0.00	0.00	0.00	0.00
10,000.00	90.30	359.91	7,358.13	2,446.02	-427.32	2,446.69	0.00	0.00	0.00	0.00
10,100.00	90.30	359.91	7,357.61	2,546.02	-427.48	2,546.68	0.00	0.00	0.00	0.00
10,200.00	90.30	359.91	7,357.09	2,646.01	-427.64	2,646.68	0.00	0.00	0.00	0.00
10,300.00	90.30	359.91	7,356.57	2,746.01	-427.80	2,746.68	0.00	0.00	0.00	0.00
10,400.00	90.30	359.91	7,356.04	2,846.01	-427.96	2,846.68	0.00	0.00	0.00	0.00
10,500.00	90.30	359.91	7,355.52	2,946.01	-428.13	2,946.68	0.00	0.00	0.00	0.00
10,600.00	90.30	359.91	7,355.00	3,046.01	-428.29	3,046.68	0.00	0.00	0.00	0.00
10,700.00	90.30	359.91	7,354.48	3,146.01	-428.45	3,146.68	0.00	0.00	0.00	0.00
10,800.00	90.30	359.91	7,353.95	3,246.01	-428.61	3,246.67	0.00	0.00	0.00	0.00
10,900.00	90.30	359.91	7,353.43	3,346.00	-428.77	3,346.67	0.00	0.00	0.00	0.00
11,000.00	90.30	359.91	7,352.91	3,446.00	-428.94	3,446.67	0.00	0.00	0.00	0.00
11,100.00	90.30	359.91	7,352.38	3,546.00	-429.10	3,546.67	0.00	0.00	0.00	0.00
11,200.00	90.30	359.91	7,351.86	3,646.00	-429.26	3,646.67	0.00	0.00	0.00	0.00
11,300.00	90.30	359.91	7,351.34	3,746.00	-429.42	3,746.67	0.00	0.00	0.00	0.00
11,400.00	90.30	359.91	7,350.82	3,846.00	-429.58	3,846.67	0.00	0.00	0.00	0.00
11,500.00	90.30	359.91	7,350.29	3,945.99	-429.74	3,946.66	0.00	0.00	0.00	0.00
11,600.00	90.30	359.91	7,349.77	4,045.99	-429.91	4,046.66	0.00	0.00	0.00	0.00
11,700.00	90.30	359.91	7,349.25	4,145.99	-430.07	4,146.66	0.00	0.00	0.00	0.00
11,800.00	90.30	359.91	7,348.72	4,245.99	-430.23	4,246.66	0.00	0.00	0.00	0.00
11,900.00	90.30	359.91	7,348.20	4,345.99	-430.39	4,346.66	0.00	0.00	0.00	0.00
12,000.00	90.30	359.91	7,347.68	4,445.99	-430.55	4,446.66	0.00	0.00	0.00	0.00
12,100.00	90.30	359.91	7,347.16	4,545.99	-430.71	4,546.66	0.00	0.00	0.00	0.00
12,200.00	90.30	359.91	7,346.63	4,645.98	-430.88	4,646.66	0.00	0.00	0.00	0.00
12,300.00	90.30	359.91	7,346.11	4,745.98	-431.04	4,746.65	0.00	0.00	0.00	0.00
12,400.00	90.30	359.91	7,345.59	4,845.98	-431.20	4,846.65	0.00	0.00	0.00	0.00
12,500.00	90.30	359.91	7,345.07	4,945.98	-431.36	4,946.65	0.00	0.00	0.00	0.00
12,512.52	90.30	359.91	7,345.00	4,958.50	-431.38	4,959.17	0.00	0.00	0.00	0.00

TD Well @ 12512.52ft - Total Depth (Toe) - FERGE 4C-14HZ_BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,400.00	1,400.00	0.00	0.00	Begin Nudge @ 1400.00ft
1,700.89	1,700.34	-11.45	-10.87	End Nudge @ 1700.89ft
6,683.76	6,655.75	-390.28	-370.56	Top of 4.5" Liner @ 6683.76ft
6,783.76	6,755.20	-397.89	-377.78	KOP @ 6783.76ft
7,200.00	7,144.63	-282.58	-406.34	DLS = 10'/100'
7,730.28	7,370.00	176.33	-423.65	End Build @ 7730.28ft
12,512.52	7,345.00	4,958.50	-431.38	TD Well @ 12512.52ft

Plan Report for FERGE 4C-14HZ - Rev A0 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)	359.91	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,730.28	Rev A0 Permit	MWD
7,730.28	12,512.52	Rev A0 Permit	MWD

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,145.00	1,145.00	9 5/8"	9-5/8	13-1/2
7,730.28	7,370.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,095.00	1,095.00	Fox Hills Marker		0.00	
3,930.84	3,918.00	Parkman		0.00	
4,365.24	4,350.00	Sussex		0.00	
7,055.27	7,020.00	Sharon Springs		0.00	
7,118.88	7,077.00	Niobrara A		0.00	
7,180.55	7,129.00	Niobrara B		0.00	
7,292.17	7,213.00	Niobrara C		0.00	
7,553.75	7,344.00	Fort Hays		0.00	
7,651.37	7,365.00	Codell		0.00	
7,730.28	7,370.00	Landing Target (Heel)		0.00	
12,512.52	7,345.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
FERGE 4C-14HZ_SHL	0.00	0.00	0.00	Point
FERGE 4C-14HZ_LD	0.00	0.00	0.00	Polygon
FERGE 4C-14HZ_SEC	0.00	0.00	0.00	Polygon
FERGE 4C-14HZ_BHL	7,345.00	4,958.50	-431.38	Point
FERGE 4C-14HZ_CP	7,370.00	176.33	-423.65	Point

Plan Report for FERGE 4C-14HZ - Rev A0 Permit

Directional Difficulty Index

Average Dogleg over Survey:	0.00 °/100usft	Maximum Dogleg over Survey:	0.00 °/100usft at 0.00 usft
Net Tortosity applicable to Plans:	0.00 °/100usft	Directional Difficulty Index:	6.198

Audit Info

North Reference Sheet for Sec. 14-T3N-R66W - FERGE 4C-14HZ - 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 = 17' @ 4930.00usft (Drilling Rig). Northing and Easting are relative to FERGE 4C-14HZ
 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: 0.99995700

Grid Coordinates of Well: 1,323,360.52 usft N, 3,209,434.75 usft E
 Geographical Coordinates of Well: 40° 13' 06.93" N, 104° 45' 00.06" W
 Grid Convergence at Surface is: 0.48°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,512.52usft
 the Bottom Hole Displacement is 4,977.23usft in the Direction of 355.03° (True).
 Magnetic Convergence at surface is: -8.07° (14 November 2013, , BGGM2013)

