

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T2N-R67W

Sater 24C-5HZ

API: 05-123-38327:: Job# 900823970

Plan A

Plan: Rev A0

Sperry Drilling Services

Proposal Report

02 December, 2013

Well Coordinates: 1,299,358.38 N, 3,166,137.75 E (40° 09' 12.98" N, 104° 54' 20.28" W)

Ground Level: 4,946.00 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 Sater 24C-5HZ

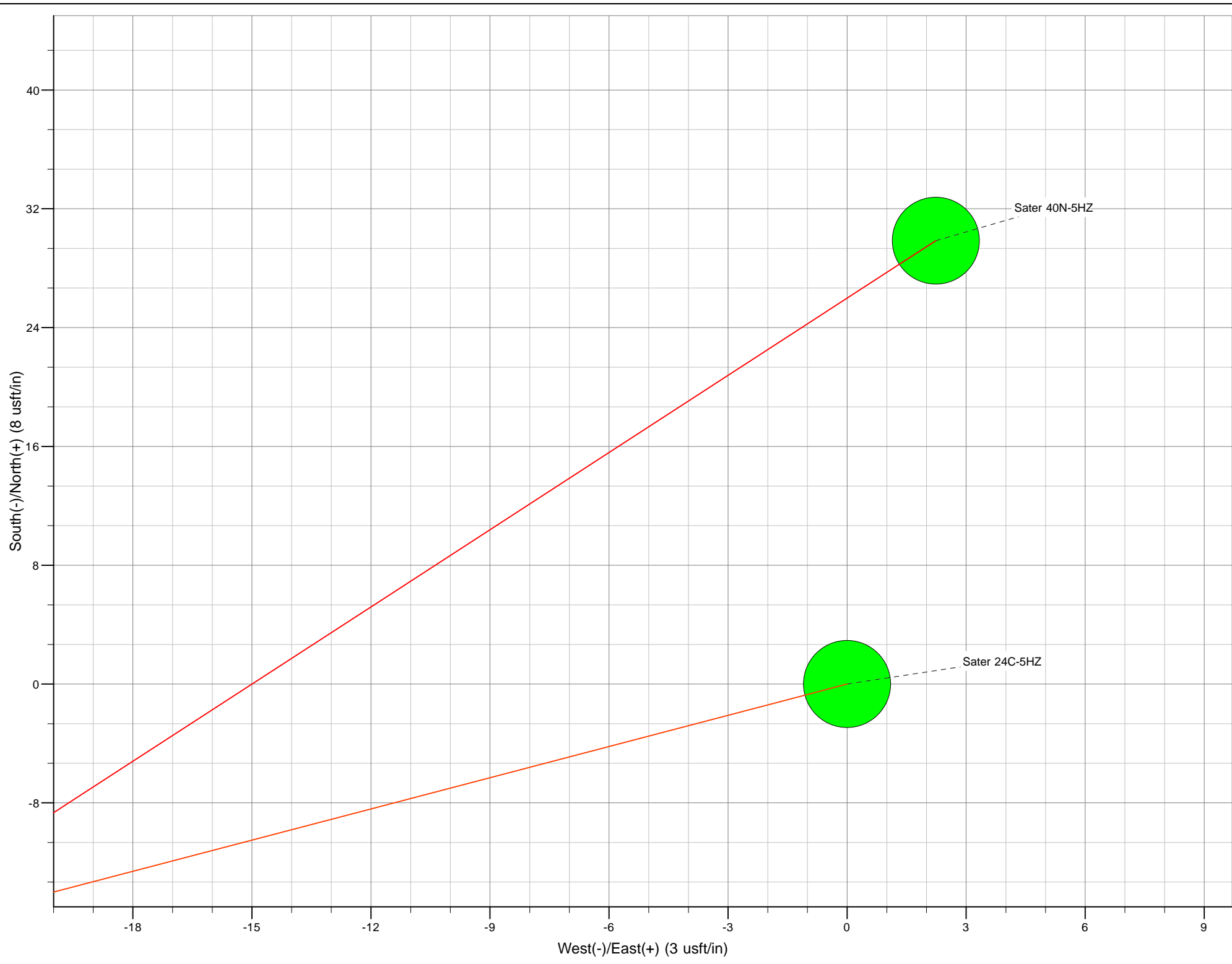
RKB = 25' @ 4971.00usft (H&P 308)

N

True

API - US Survey Feet - Custom

HALLIBURTON



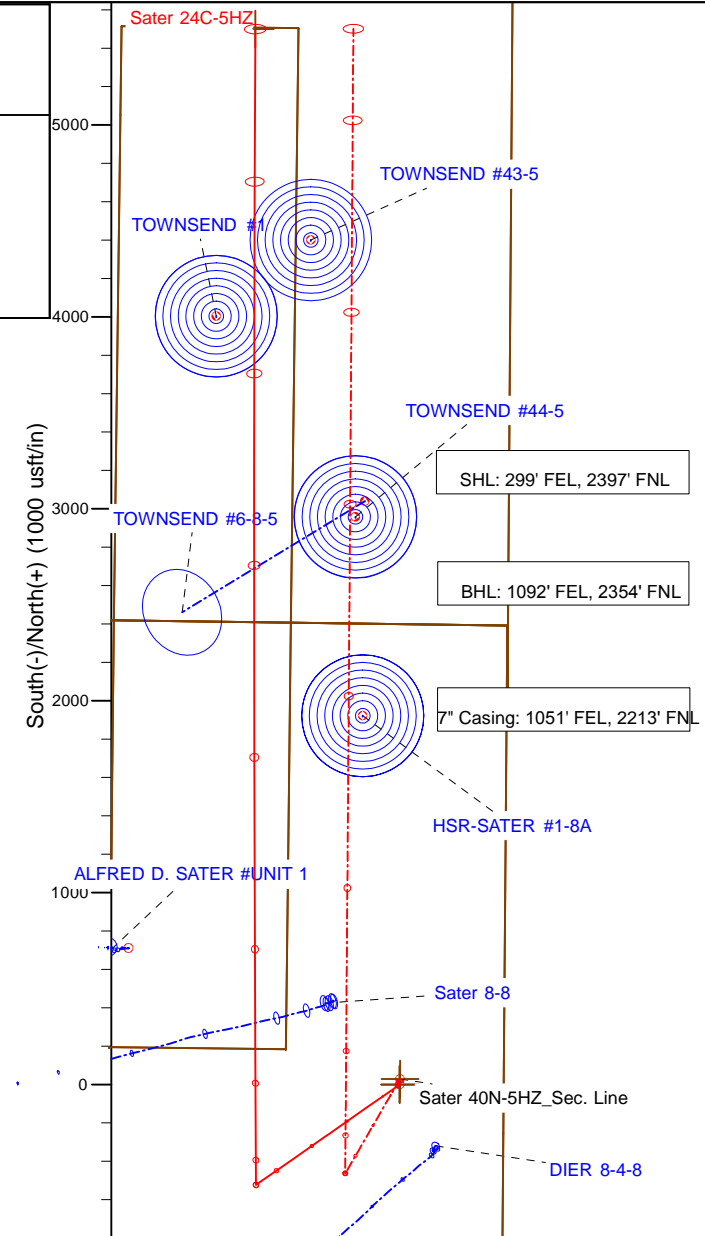
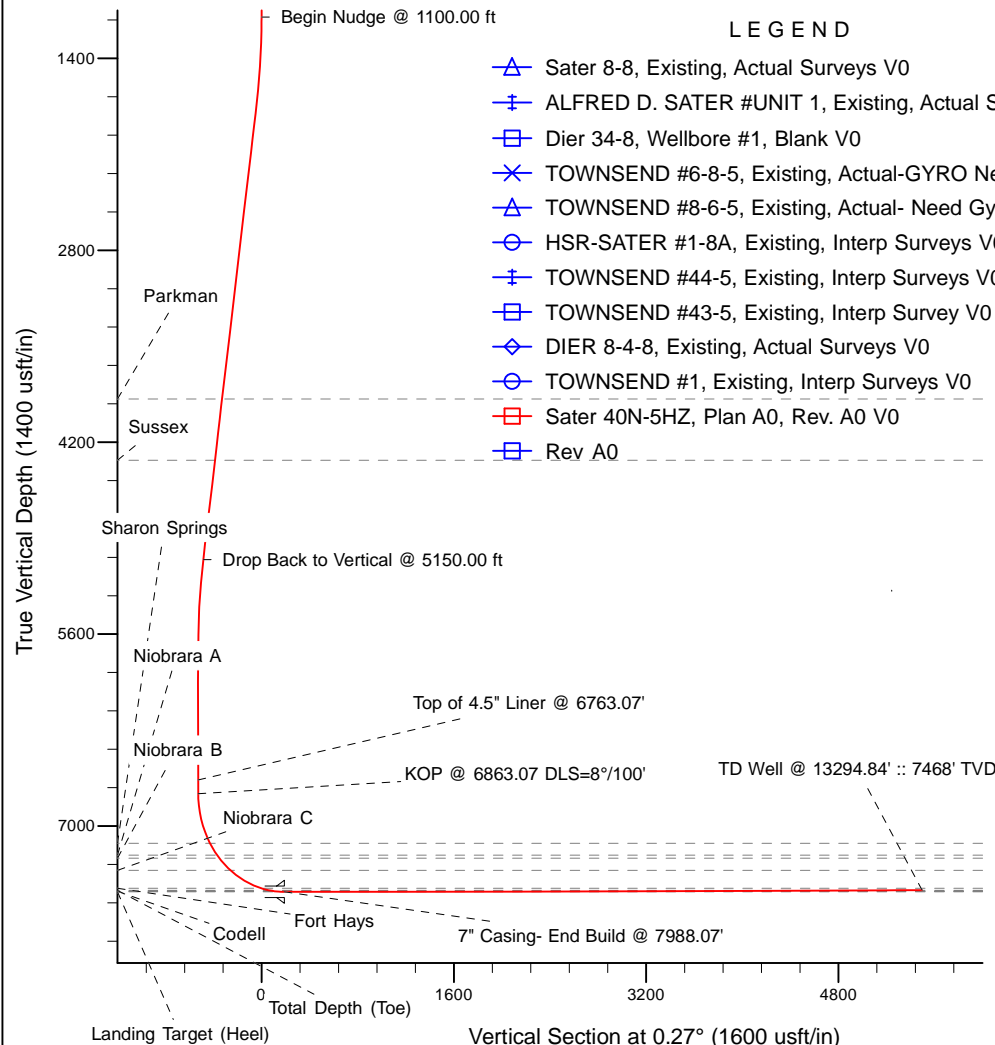
Project: Weld County, CO (NAD 83)
 Site: Sec. 8-T2N-R67W
 Well: Sater 24C-5HZ
 Wellbore: Plan A
 Design: Rev A0

Anadarko Petroleum Corp.

HALLIBURTON
 Sperry Drilling

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Sater 24C-5HZ_LD	0.00	0.00	0.00	1299358.38	3166137.75	40° 9' 12.978 N	104° 54' 20.279 W
Sater 24C-5HZ_SHL	0.00	0.00	0.00	1299358.38	3166137.75	40° 9' 12.978 N	104° 54' 20.279 W
Sater 40N-5HZ_Sec. Line	0.00	29.86	2.24	1299388.24	3166139.79	40° 9' 13.273 N	104° 54' 20.250 W
Sater 24C-5HZ BHL	7468.00	5500.00	-750.11	1304853.00	3165350.83	40° 10' 7.329 N	104° 54' 29.941 W

MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	Vsect
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00
1750.00	13.00	235.00	1744.44	-42.11	-60.15	2.00	-42.40
5150.00	13.00	235.00	5057.30	-480.81	-686.66	0.00	-484.04
5800.00	0.00	0.00	5701.73	-522.92	-746.81	2.00	-526.43
6863.07	0.00	0.00	6764.80	-522.92	-746.81	0.00	-526.43
7988.07	90.00	359.73	7481.00	193.27	-750.18	8.00	189.73
13294.84	90.28	0.27	7468.00	5500.00	-750.11	0.01	5496.41



WELL DETAILS: Sater 24C-5HZ	
Ground Level:	4946.00
RKB = 25' @ 4971.00usft (H&P 308)	
Plan: Rev A0 (Sater 24C-5HZ/Plan A)	
Created By: Pari Amanlou	Date: 11/24/2013

Plan Report for Sater 24C-5HZ - Rev A0

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
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
908.00	0.00	0.00	908.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Base										
958.00	0.00	0.00	958.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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 @ 1100.00 ft										
1,200.00	2.00	235.00	1,199.98	-1.00	-1.43	-1.01	2.00	2.00	0.00	235.00
1,300.00	4.00	235.00	1,299.84	-4.00	-5.72	-4.03	2.00	2.00	0.00	0.00
1,400.00	6.00	235.00	1,399.45	-9.00	-12.86	-9.06	2.00	2.00	0.00	0.00
1,500.00	8.00	235.00	1,498.70	-15.99	-22.84	-16.10	2.00	2.00	0.00	0.00
1,600.00	10.00	235.00	1,597.47	-24.96	-35.65	-25.13	2.00	2.00	0.00	0.00
1,700.00	12.00	235.00	1,695.62	-35.91	-51.28	-36.15	2.00	2.00	0.00	0.00
1,750.00	13.00	235.00	1,744.44	-42.11	-60.15	-42.40	2.00	2.00	0.00	0.00
1,800.00	13.00	235.00	1,793.16	-48.57	-69.36	-48.89	0.00	0.00	0.00	0.00
1,900.00	13.00	235.00	1,890.59	-61.47	-87.79	-61.88	0.00	0.00	0.00	0.00
2,000.00	13.00	235.00	1,988.03	-74.37	-106.21	-74.87	0.00	0.00	0.00	0.00
2,100.00	13.00	235.00	2,085.47	-87.27	-124.64	-87.86	0.00	0.00	0.00	0.00
2,200.00	13.00	235.00	2,182.90	-100.18	-143.07	-100.85	0.00	0.00	0.00	0.00
2,300.00	13.00	235.00	2,280.34	-113.08	-161.49	-113.84	0.00	0.00	0.00	0.00
2,400.00	13.00	235.00	2,377.78	-125.98	-179.92	-126.83	0.00	0.00	0.00	0.00
2,500.00	13.00	235.00	2,475.21	-138.88	-198.35	-139.82	0.00	0.00	0.00	0.00
2,600.00	13.00	235.00	2,572.65	-151.79	-216.77	-152.81	0.00	0.00	0.00	0.00
2,700.00	13.00	235.00	2,670.09	-164.69	-235.20	-165.80	0.00	0.00	0.00	0.00
2,800.00	13.00	235.00	2,767.53	-177.59	-253.63	-178.79	0.00	0.00	0.00	0.00
2,900.00	13.00	235.00	2,864.96	-190.50	-272.06	-191.78	0.00	0.00	0.00	0.00
3,000.00	13.00	235.00	2,962.40	-203.40	-290.48	-204.76	0.00	0.00	0.00	0.00
3,100.00	13.00	235.00	3,059.84	-216.30	-308.91	-217.75	0.00	0.00	0.00	0.00
3,200.00	13.00	235.00	3,157.27	-229.20	-327.34	-230.74	0.00	0.00	0.00	0.00
3,300.00	13.00	235.00	3,254.71	-242.11	-345.76	-243.73	0.00	0.00	0.00	0.00
3,400.00	13.00	235.00	3,352.15	-255.01	-364.19	-256.72	0.00	0.00	0.00	0.00
3,500.00	13.00	235.00	3,449.58	-267.91	-382.62	-269.71	0.00	0.00	0.00	0.00
3,600.00	13.00	235.00	3,547.02	-280.81	-401.04	-282.70	0.00	0.00	0.00	0.00
3,700.00	13.00	235.00	3,644.46	-293.72	-419.47	-295.69	0.00	0.00	0.00	0.00
3,800.00	13.00	235.00	3,741.90	-306.62	-437.90	-308.68	0.00	0.00	0.00	0.00
3,900.00	13.00	235.00	3,839.33	-319.52	-456.32	-321.67	0.00	0.00	0.00	0.00
3,947.89	13.00	235.00	3,886.00	-325.70	-465.15	-327.89	0.00	0.00	0.00	0.00
Parkman										
4,000.00	13.00	235.00	3,936.77	-332.42	-474.75	-334.66	0.00	0.00	0.00	0.00
4,100.00	13.00	235.00	4,034.21	-345.33	-493.18	-347.65	0.00	0.00	0.00	0.00
4,200.00	13.00	235.00	4,131.64	-358.23	-511.61	-360.64	0.00	0.00	0.00	0.00
4,300.00	13.00	235.00	4,229.08	-371.13	-530.03	-373.63	0.00	0.00	0.00	0.00
4,400.00	13.00	235.00	4,326.52	-384.04	-548.46	-386.62	0.00	0.00	0.00	0.00
4,405.63	13.00	235.00	4,332.00	-384.76	-549.50	-387.35	0.00	0.00	0.00	0.00
Sussex										
4,500.00	13.00	235.00	4,423.95	-396.94	-566.89	-399.60	0.00	0.00	0.00	0.00
4,600.00	13.00	235.00	4,521.39	-409.84	-585.31	-412.59	0.00	0.00	0.00	0.00
4,700.00	13.00	235.00	4,618.83	-422.74	-603.74	-425.58	0.00	0.00	0.00	0.00

Plan Report for Sater 24C-5HZ - Rev A0

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 (°)
4,800.00	13.00	235.00	4,716.27	-435.65	-622.17	-438.57	0.00	0.00	0.00	0.00
4,900.00	13.00	235.00	4,813.70	-448.55	-640.59	-451.56	0.00	0.00	0.00	0.00
5,000.00	13.00	235.00	4,911.14	-461.45	-659.02	-464.55	0.00	0.00	0.00	0.00
5,100.00	13.00	235.00	5,008.58	-474.35	-677.45	-477.54	0.00	0.00	0.00	0.00
5,150.00	13.00	235.00	5,057.30	-480.81	-686.66	-484.04	0.00	0.00	0.00	0.00
Drop Back to Vertical @ 5150.00 ft										
5,200.00	12.00	235.00	5,106.11	-487.01	-695.53	-490.28	2.00	-2.00	0.00	180.00
5,300.00	10.00	235.00	5,204.27	-497.96	-711.15	-501.30	2.00	-2.00	0.00	180.00
5,400.00	8.00	235.00	5,303.03	-506.93	-723.97	-510.33	2.00	-2.00	0.00	180.00
5,500.00	6.00	235.00	5,402.28	-513.92	-733.95	-517.37	2.00	-2.00	0.00	180.00
5,600.00	4.00	235.00	5,501.90	-518.92	-741.09	-522.40	2.00	-2.00	0.00	180.00
5,700.00	2.00	235.00	5,601.75	-521.92	-745.38	-525.43	2.00	-2.00	0.00	180.00
5,800.00	0.00	0.00	5,701.73	-522.92	-746.81	-526.43	2.00	-2.00	0.00	180.00
5,900.00	0.00	0.00	5,801.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,901.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,001.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,101.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,201.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,301.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,401.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,501.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,601.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,763.07	0.00	0.00	6,664.80	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6763.07'										
6,800.00	0.00	0.00	6,701.73	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
6,863.07	0.00	0.00	6,764.80	-522.92	-746.81	-526.43	0.00	0.00	0.00	0.00
KOP @ 6863.07 DLS=8°/100'										
6,900.00	2.95	359.73	6,801.72	-521.97	-746.81	-525.48	8.00	8.00	0.00	359.73
7,000.00	10.95	359.73	6,900.90	-509.87	-746.87	-513.38	8.00	8.00	0.00	0.00
7,100.00	18.95	359.73	6,997.43	-484.08	-746.99	-487.60	8.00	8.00	0.00	0.00
7,200.00	26.95	359.73	7,089.44	-445.12	-747.17	-448.63	8.00	8.00	0.00	0.00
7,242.81	30.38	359.73	7,127.00	-424.58	-747.27	-428.10	8.00	8.00	0.00	0.00
Sharon Springs										
7,300.00	34.95	359.73	7,175.13	-393.72	-747.42	-397.24	8.00	8.00	0.00	0.00
7,347.33	38.74	359.73	7,213.00	-365.34	-747.55	-368.86	8.00	8.00	0.00	0.00
Niobrara A										
7,377.33	41.14	359.73	7,236.00	-346.08	-747.64	-349.60	8.00	8.00	0.00	0.00
Niobrara B										
7,400.00	42.95	359.73	7,252.83	-330.90	-747.71	-334.42	8.00	8.00	0.00	0.00
7,500.00	50.95	359.73	7,321.03	-257.88	-748.06	-261.41	8.00	8.00	0.00	0.00
7,504.73	51.33	359.73	7,324.00	-254.20	-748.07	-257.72	8.00	8.00	0.00	0.00
Niobrara C										
7,600.00	58.95	359.73	7,378.41	-176.08	-748.44	-179.61	8.00	8.00	0.00	0.00
7,700.00	66.95	359.73	7,423.84	-87.09	-748.86	-90.62	8.00	8.00	0.00	0.00
7,790.80	74.22	359.73	7,454.00	-1.51	-749.26	-5.05	8.00	8.00	0.00	0.00
Fort Hays										
7,800.00	74.95	359.73	7,456.45	7.36	-749.31	3.83	8.00	8.00	0.00	0.00
7,900.00	82.95	359.73	7,475.59	105.43	-749.77	101.89	8.00	8.00	0.00	0.00
7,903.41	83.23	359.73	7,476.00	108.81	-749.78	105.28	8.00	8.00	0.00	0.00
Codell										
7,988.07	90.00	359.73	7,481.00	193.27	-750.18	189.74	8.00	8.00	0.00	0.00
7" Casing- End Build @ 7988.07' - Landing Target (Heel) - 7"										
8,000.00	90.00	359.73	7,481.00	205.20	-750.24	201.66	0.01	0.01	0.01	62.60
8,100.00	90.01	359.74	7,480.99	305.20	-750.70	301.66	0.01	0.01	0.01	62.60
8,200.00	90.01	359.75	7,480.98	405.20	-751.14	401.66	0.01	0.01	0.01	62.60
8,300.00	90.02	359.76	7,480.95	505.20	-751.56	501.65	0.01	0.01	0.01	62.60
8,400.00	90.02	359.77	7,480.92	605.20	-751.97	601.65	0.01	0.01	0.01	62.60
8,500.00	90.03	359.78	7,480.88	705.20	-752.36	701.64	0.01	0.01	0.01	62.60

Plan Report for Sater 24C-5HZ - Rev A0

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	90.03	359.79	7,480.82	805.20	-752.73	801.64	0.01	0.01	0.01	62.60
8,700.00	90.04	359.80	7,480.76	905.20	-753.08	901.64	0.01	0.01	0.01	62.60
8,800.00	90.04	359.81	7,480.69	1,005.20	-753.42	1,001.63	0.01	0.01	0.01	62.60
8,900.00	90.05	359.82	7,480.61	1,105.20	-753.74	1,101.63	0.01	0.01	0.01	62.60
9,000.00	90.05	359.83	7,480.52	1,205.19	-754.04	1,201.63	0.01	0.01	0.01	62.60
9,100.00	90.06	359.84	7,480.43	1,305.19	-754.32	1,301.63	0.01	0.01	0.01	62.60
9,200.00	90.06	359.85	7,480.32	1,405.19	-754.58	1,401.62	0.01	0.01	0.01	62.60
9,300.00	90.07	359.86	7,480.20	1,505.19	-754.83	1,501.62	0.01	0.01	0.01	62.60
9,400.00	90.07	359.87	7,480.08	1,605.19	-755.06	1,601.62	0.01	0.01	0.01	62.60
9,500.00	90.08	359.88	7,479.94	1,705.19	-755.27	1,701.62	0.01	0.01	0.01	62.60
9,600.00	90.09	359.89	7,479.80	1,805.19	-755.46	1,801.61	0.01	0.01	0.01	62.60
9,700.00	90.09	359.90	7,479.64	1,905.19	-755.64	1,901.61	0.01	0.01	0.01	62.60
9,800.00	90.10	359.91	7,479.48	2,005.19	-755.80	2,001.61	0.01	0.01	0.01	62.60
9,900.00	90.10	359.93	7,479.31	2,105.19	-755.94	2,101.61	0.01	0.01	0.01	62.60
10,000.00	90.11	359.94	7,479.13	2,205.19	-756.06	2,201.60	0.01	0.01	0.01	62.60
10,100.00	90.11	359.95	7,478.94	2,305.19	-756.16	2,301.60	0.01	0.01	0.01	62.60
10,200.00	90.12	359.96	7,478.74	2,405.19	-756.25	2,401.60	0.01	0.01	0.01	62.60
10,300.00	90.12	359.97	7,478.53	2,505.19	-756.32	2,501.60	0.01	0.01	0.01	62.60
10,400.00	90.13	359.98	7,478.31	2,605.19	-756.37	2,601.60	0.01	0.01	0.01	62.60
10,500.00	90.13	359.99	7,478.09	2,705.19	-756.40	2,701.60	0.01	0.01	0.01	62.60
10,600.00	90.14	360.00	7,477.85	2,805.19	-756.41	2,801.59	0.01	0.01	0.01	62.60
10,700.00	90.14	0.01	7,477.60	2,905.19	-756.41	2,901.59	0.01	0.01	0.01	62.60
10,800.00	90.15	0.02	7,477.35	3,005.19	-756.39	3,001.59	0.01	0.01	0.01	62.60
10,900.00	90.15	0.03	7,477.08	3,105.19	-756.35	3,101.59	0.01	0.01	0.01	62.60
11,000.00	90.16	0.04	7,476.81	3,205.19	-756.30	3,201.59	0.01	0.01	0.01	62.60
11,100.00	90.16	0.05	7,476.53	3,305.19	-756.22	3,301.59	0.01	0.01	0.01	62.60
11,200.00	90.17	0.06	7,476.24	3,405.19	-756.13	3,401.59	0.01	0.01	0.01	62.60
11,300.00	90.18	0.07	7,475.93	3,505.19	-756.02	3,501.59	0.01	0.01	0.01	62.60
11,400.00	90.18	0.08	7,475.62	3,605.19	-755.89	3,601.58	0.01	0.01	0.01	62.60
11,500.00	90.19	0.09	7,475.30	3,705.19	-755.75	3,701.58	0.01	0.01	0.01	62.60
11,600.00	90.19	0.10	7,474.98	3,805.19	-755.59	3,801.58	0.01	0.01	0.01	62.60
11,700.00	90.20	0.11	7,474.64	3,905.18	-755.40	3,901.58	0.01	0.01	0.01	62.60
11,800.00	90.20	0.12	7,474.29	4,005.18	-755.21	4,001.58	0.01	0.01	0.01	62.60
11,900.00	90.21	0.13	7,473.93	4,105.18	-754.99	4,101.58	0.01	0.01	0.01	62.60
12,000.00	90.21	0.14	7,473.57	4,205.18	-754.75	4,201.58	0.01	0.01	0.01	62.60
12,100.00	90.22	0.15	7,473.19	4,305.18	-754.50	4,301.58	0.01	0.01	0.01	62.60
12,200.00	90.22	0.16	7,472.81	4,405.18	-754.23	4,401.58	0.01	0.01	0.01	62.60
12,300.00	90.23	0.17	7,472.42	4,505.18	-753.94	4,501.58	0.01	0.01	0.01	62.60
12,400.00	90.23	0.18	7,472.01	4,605.18	-753.64	4,601.58	0.01	0.01	0.01	62.60
12,500.00	90.24	0.19	7,471.60	4,705.18	-753.32	4,701.57	0.01	0.01	0.01	62.60
12,600.00	90.24	0.20	7,471.18	4,805.17	-752.97	4,801.57	0.01	0.01	0.01	62.60
12,700.00	90.25	0.21	7,470.75	4,905.17	-752.62	4,901.57	0.01	0.01	0.01	62.60
12,800.00	90.25	0.22	7,470.31	5,005.17	-752.24	5,001.57	0.01	0.01	0.01	62.60
12,900.00	90.26	0.23	7,469.86	5,105.17	-751.84	5,101.57	0.01	0.01	0.01	62.60
13,000.00	90.27	0.24	7,469.40	5,205.17	-751.43	5,201.57	0.01	0.01	0.01	62.60
13,009.76	90.27	0.24	7,469.36	5,214.93	-751.39	5,211.33	0.00	0.00	0.00	0.00
Total Depth (Toe)										
13,100.00	90.27	0.25	7,468.94	5,305.17	-751.00	5,301.57	0.01	0.01	0.01	62.60
13,200.00	90.28	0.26	7,468.46	5,405.16	-750.55	5,401.57	0.01	0.01	0.01	62.60
13,294.84	90.28	0.27	7,468.00	5,500.00	-750.11	5,496.40	0.01	0.01	0.01	62.60
TD Well @ 13294.84' :: 7468' TVD										

Plan Report for Sater 24C-5HZ - Rev A0

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,100.00	1,100.00	0.00	0.00	Begin Nudge @ 1100.00 ft
5,150.00	5,057.30	-480.81	-686.66	Drop Back to Vertical @ 5150.00 ft
6,763.07	6,664.80	-522.92	-746.81	Top of 4.5" Liner @ 6763.07'
6,863.07	6,764.80	-522.92	-746.81	KOP @ 6863.07 DLS=8"/100'
7,988.07	7,481.00	193.27	-750.18	7" Casing- End Build @ 7988.07'
13,294.84	7,468.00	5,500.00	-750.11	TD Well @ 13294.84' :: 7468' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.27	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	958.00	Rev A0	NS-GYRO-MS
958.00	7,988.07	Rev A0	MWD+IFR1+SC
7,988.07	13,294.84	Rev A0	MWD+IFR1+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
958.00	958.00	9 5/8"	9-5/8	13-3/4
7,988.07	7,481.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
908.00	908.00	Fox Hills Base		0.00	
3,947.89	3,886.00	Parkman		0.00	
4,405.63	4,332.00	Sussex		0.00	
7,242.81	7,127.00	Sharon Springs		0.00	
7,347.33	7,213.00	Niobrara A		0.00	
7,377.33	7,236.00	Niobrara B		0.00	
7,504.73	7,324.00	Niobrara C		0.00	
7,790.80	7,454.00	Fort Hays		0.00	
7,903.41	7,476.00	Codell		0.00	
7,988.07	7,481.00	Landing Target (Heel)		0.00	
13,009.76	7,469.36	Total Depth (Toe)		0.00	

Plan Report for Sater 24C-5HZ - Rev A0

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Sater 24C-5HZ_LD	0.00	0.00	0.00	Polygon
Sater 24C-5HZ_Sec. Line	0.00	0.00	0.00	Polygon
Sater 24C-5HZ_SHL	0.00	0.00	0.00	Point
Sater 24C-5HZ BHL	7,468.00	5,500.00	-750.11	Point

Directional Difficulty Index

Average Dogleg over Survey:	0.90 °/100usft	Maximum Dogleg over Survey:	8.00 °/100usft at 7,988.07 usft
Net Tortousity applicable to Plans:	0.90 °/100usft	Directional Difficulty Index:	6.250

Audit Info

North Reference Sheet for Sec. 8-T2N-R67W - Sater 24C-5HZ - 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 = 25' @ 4971.00usft (H&P 308). Northing and Easting are relative to Sater 24C-5HZ
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° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°
False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99995828

Grid Coordinates of Well: 1,299,358.38 usft N, 3,166,137.75 usft E
Geographical Coordinates of Well: 40° 09' 12.98" N, 104° 54' 20.28" W
Grid Convergence at Surface is: 0.38°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,294.84usft
the Bottom Hole Displacement is 5,550.92usft in the Direction of 352.23° (True).
Magnetic Convergence at surface is: -8.24° (8 December 2013, , BGGM2013)

