

Project: Weld County, CO (NAD 83)
 Site: Sec. 18-T1N-R65W
 Well: PETTINGER 30C-18HZ
 Wellbore: Plan A0
 Design: Plan A0 - PERMIT



SECTION DETAILS

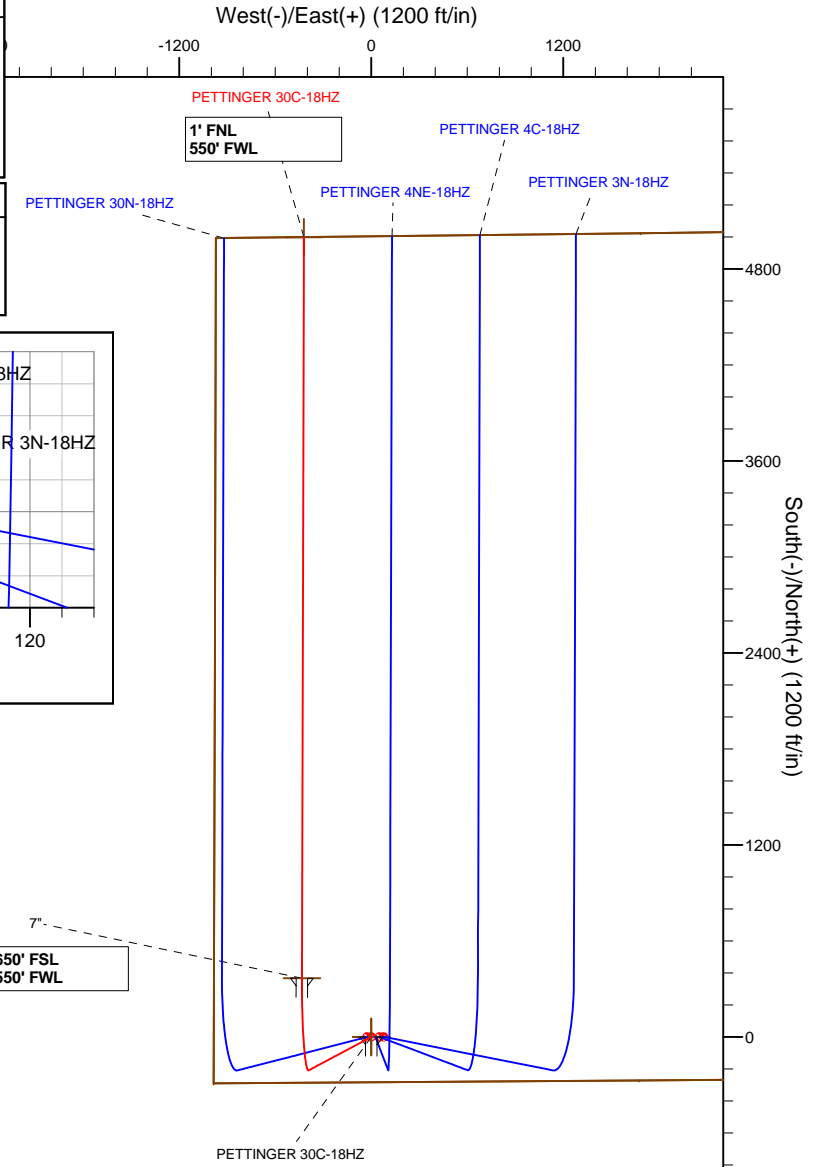
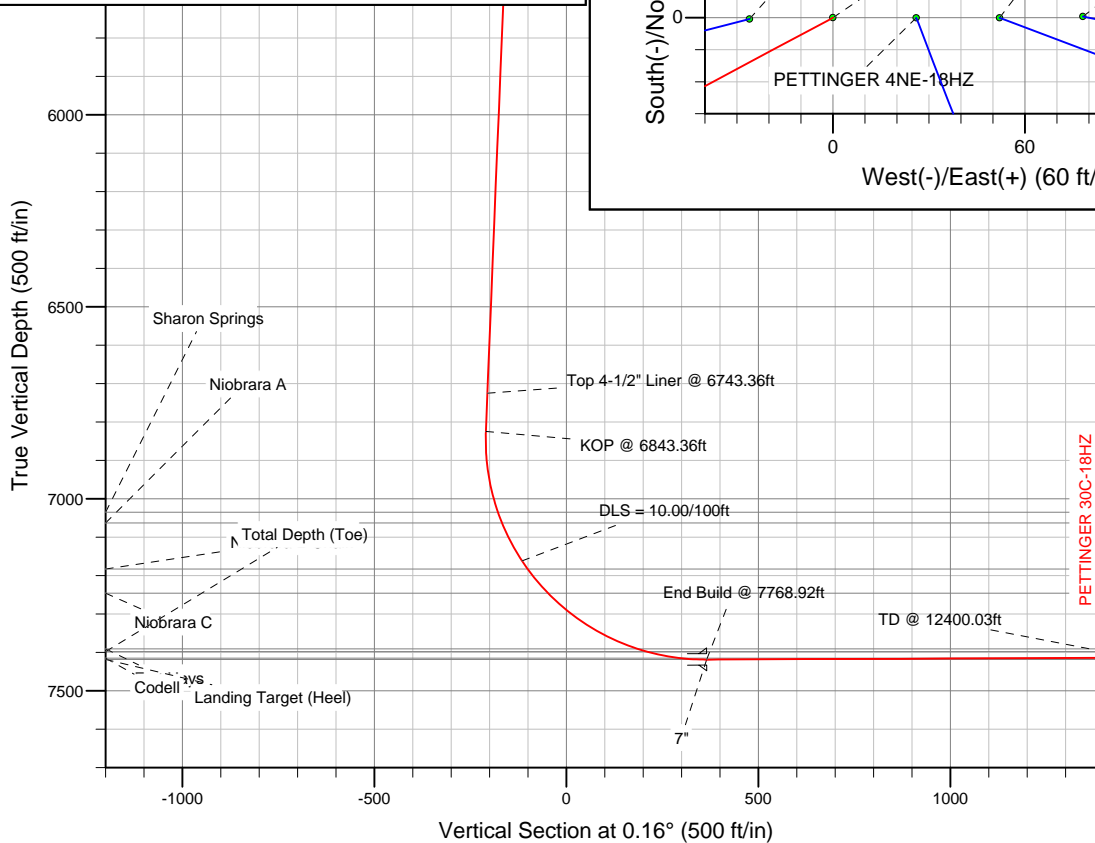
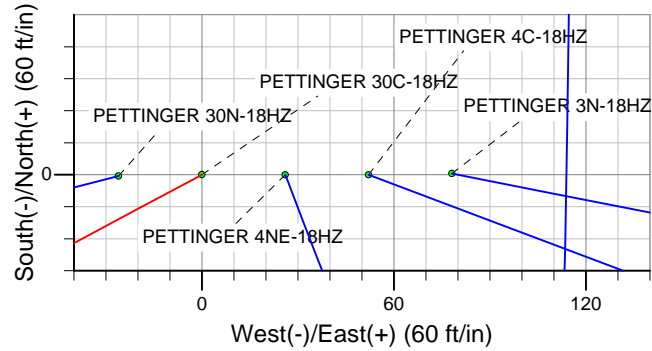
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1500.00	0.00	0.00	1500.00	0.00	0.00	0.00	0.00	0.00	
3	1742.77	4.86	241.90	1742.48	-4.84	-9.07	2.00	241.90	-4.87	
4	6843.36	4.86	241.90	6824.76	-208.21	-389.89	0.00	0.00	-209.30	
5	7768.92	90.26	0.16	7419.00	367.00	-433.00	10.00	118.15	365.79	PETTINGER 30C-18HZ_tgt
6	12400.03	90.26	0.16	7398.00	4998.05	-420.44	0.00	0.00	4996.86	PETTINGER 30C-18HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
PETTINGER 30C-18HZ_Sec	0.00	0.00	0.00	40.044890	-104.712527	Polygon
PETTINGER 30C-18HZ_SHL	0.00	0.00	0.00	40.044890	-104.712527	Point
PETTINGER 30C-18HZ_BHL	7398.00	4998.05	-420.44	40.058610	-104.714029	Point
PETTINGER 30C-18HZ_tgt	7419.00	367.00	-433.00	40.045897	-104.714074	Point

MD TVD

6743.36 6725.12 Top 4-1/2" Liner @ 6743.36ft
 6843.36 6824.77 KOP @ 6843.36ft



WELL DETAILS: PETTINGER 30C-18HZ	
Ground Level:	5007.00
RKB = 17 @ 5024.00ft (Drilling Rig)	
Plan:	Plan A0 - PERMIT (PETTINGER 30C-18HZ/Plan A0)
Created By:	Fred Hartmann Date: 07/22/2013

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 18-T1N-R65W

PETTINGER 30C-18HZ

Plan A0

Plan: Plan A0 - PERMIT

Sperry Drilling Services

Proposal Report

22 July, 2013

Well Coordinates: 1,260,178.04 N, 3,220,465.28 E (40° 02' 41.60" N, 104° 42' 45.10" W)

Ground Level: 5,007.00 ft

Local Coordinate Origin: Centered on Well PETTINGER 30C-18HZ

Viewing Datum: RKB = 17 @ 5024.00ft (Drilling Rig)

TVDs to System: N

North Reference: True

Unit System: API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 2003.16 Build: 431

HALLIBURTON

Plan Report for PETTINGER 30C-18HZ - Plan A0 - 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
1,180.00	0.00	0.00	1,180.00	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
Begin Nudge @ 1500.00ft										
1,600.00	2.00	241.90	1,599.98	-0.82	-1.54	-0.83	2.00	2.00	0.00	241.90
1,700.00	4.00	241.90	1,699.84	-3.29	-6.16	-3.30	2.00	2.00	0.00	0.00
1,742.77	4.86	241.90	1,742.48	-4.84	-9.07	-4.87	2.00	2.00	0.00	0.00
End Nudge @ 1742.77ft										
1,800.00	4.86	241.90	1,799.50	-7.12	-13.34	-7.16	0.00	0.00	0.00	0.00
1,900.00	4.86	241.90	1,899.15	-11.11	-20.81	-11.17	0.00	0.00	0.00	0.00
2,000.00	4.86	241.90	1,998.79	-15.10	-28.27	-15.18	0.00	0.00	0.00	0.00
2,100.00	4.86	241.90	2,098.43	-19.09	-35.74	-19.19	0.00	0.00	0.00	0.00
2,200.00	4.86	241.90	2,198.07	-23.07	-43.21	-23.19	0.00	0.00	0.00	0.00
2,300.00	4.86	241.90	2,297.71	-27.06	-50.67	-27.20	0.00	0.00	0.00	0.00
2,400.00	4.86	241.90	2,397.35	-31.05	-58.14	-31.21	0.00	0.00	0.00	0.00
2,500.00	4.86	241.90	2,496.99	-35.03	-65.61	-35.22	0.00	0.00	0.00	0.00
2,600.00	4.86	241.90	2,596.63	-39.02	-73.07	-39.22	0.00	0.00	0.00	0.00
2,700.00	4.86	241.90	2,696.27	-43.01	-80.54	-43.23	0.00	0.00	0.00	0.00
2,800.00	4.86	241.90	2,795.92	-47.00	-88.00	-47.24	0.00	0.00	0.00	0.00
2,900.00	4.86	241.90	2,895.56	-50.98	-95.47	-51.25	0.00	0.00	0.00	0.00
3,000.00	4.86	241.90	2,995.20	-54.97	-102.94	-55.26	0.00	0.00	0.00	0.00
3,100.00	4.86	241.90	3,094.84	-58.96	-110.40	-59.26	0.00	0.00	0.00	0.00
3,200.00	4.86	241.90	3,194.48	-62.94	-117.87	-63.27	0.00	0.00	0.00	0.00
3,300.00	4.86	241.90	3,294.12	-66.93	-125.34	-67.28	0.00	0.00	0.00	0.00
3,400.00	4.86	241.90	3,393.76	-70.92	-132.80	-71.29	0.00	0.00	0.00	0.00
3,500.00	4.86	241.90	3,493.40	-74.90	-140.27	-75.30	0.00	0.00	0.00	0.00
3,600.00	4.86	241.90	3,593.04	-78.89	-147.73	-79.30	0.00	0.00	0.00	0.00
3,700.00	4.86	241.90	3,692.69	-82.88	-155.20	-83.31	0.00	0.00	0.00	0.00
3,800.00	4.86	241.90	3,792.33	-86.87	-162.67	-87.32	0.00	0.00	0.00	0.00
3,900.00	4.86	241.90	3,891.97	-90.85	-170.13	-91.33	0.00	0.00	0.00	0.00
4,000.00	4.86	241.90	3,991.61	-94.84	-177.60	-95.34	0.00	0.00	0.00	0.00
4,100.00	4.86	241.90	4,091.25	-98.83	-185.07	-99.34	0.00	0.00	0.00	0.00
4,190.07	4.86	241.90	4,181.00	-102.42	-191.79	-102.95	0.00	0.00	0.00	0.00
Parkman										
4,200.00	4.86	241.90	4,190.89	-102.81	-192.53	-103.35	0.00	0.00	0.00	0.00
4,300.00	4.86	241.90	4,290.53	-106.80	-200.00	-107.36	0.00	0.00	0.00	0.00
4,400.00	4.86	241.90	4,390.17	-110.79	-207.47	-111.37	0.00	0.00	0.00	0.00
4,500.00	4.86	241.90	4,489.82	-114.78	-214.93	-115.38	0.00	0.00	0.00	0.00
4,569.43	4.86	241.90	4,559.00	-117.54	-220.12	-118.16	0.00	0.00	0.00	0.00
Sussex										
4,600.00	4.86	241.90	4,589.46	-118.76	-222.40	-119.38	0.00	0.00	0.00	0.00
4,700.00	4.86	241.90	4,689.10	-122.75	-229.86	-123.39	0.00	0.00	0.00	0.00
4,800.00	4.86	241.90	4,788.74	-126.74	-237.33	-127.40	0.00	0.00	0.00	0.00

Plan Report for PETTINGER 30C-18HZ - Plan A0 - 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)	Tooface Azimuth (°)
4,900.00	4.86	241.90	4,888.38	-130.72	-244.80	-131.41	0.00	0.00	0.00	0.00
5,000.00	4.86	241.90	4,988.02	-134.71	-252.26	-135.42	0.00	0.00	0.00	0.00
5,100.00	4.86	241.90	5,087.66	-138.70	-259.73	-139.42	0.00	0.00	0.00	0.00
5,200.00	4.86	241.90	5,187.30	-142.69	-267.20	-143.43	0.00	0.00	0.00	0.00
5,300.00	4.86	241.90	5,286.94	-146.67	-274.66	-147.44	0.00	0.00	0.00	0.00
5,400.00	4.86	241.90	5,386.59	-150.66	-282.13	-151.45	0.00	0.00	0.00	0.00
5,500.00	4.86	241.90	5,486.23	-154.65	-289.59	-155.45	0.00	0.00	0.00	0.00
5,600.00	4.86	241.90	5,585.87	-158.63	-297.06	-159.46	0.00	0.00	0.00	0.00
5,700.00	4.86	241.90	5,685.51	-162.62	-304.53	-163.47	0.00	0.00	0.00	0.00
5,800.00	4.86	241.90	5,785.15	-166.61	-311.99	-167.48	0.00	0.00	0.00	0.00
5,900.00	4.86	241.90	5,884.79	-170.59	-319.46	-171.49	0.00	0.00	0.00	0.00
6,000.00	4.86	241.90	5,984.43	-174.58	-326.93	-175.49	0.00	0.00	0.00	0.00
6,100.00	4.86	241.90	6,084.07	-178.57	-334.39	-179.50	0.00	0.00	0.00	0.00
6,200.00	4.86	241.90	6,183.71	-182.56	-341.86	-183.51	0.00	0.00	0.00	0.00
6,300.00	4.86	241.90	6,283.36	-186.54	-349.32	-187.52	0.00	0.00	0.00	0.00
6,400.00	4.86	241.90	6,383.00	-190.53	-356.79	-191.53	0.00	0.00	0.00	0.00
6,500.00	4.86	241.90	6,482.64	-194.52	-364.26	-195.53	0.00	0.00	0.00	0.00
6,600.00	4.86	241.90	6,582.28	-198.50	-371.72	-199.54	0.00	0.00	0.00	0.00
6,700.00	4.86	241.90	6,681.92	-202.49	-379.19	-203.55	0.00	0.00	0.00	0.00
6,743.36	4.86	241.90	6,725.12	-204.22	-382.43	-205.29	0.00	0.00	0.00	0.00
Top 4-1/2" Liner @ 6743.36ft										
6,800.00	4.86	241.90	6,781.56	-206.48	-386.66	-207.56	0.00	0.00	0.00	0.00
6,843.36	4.86	241.90	6,824.77	-208.21	-389.89	-209.30	0.00	0.00	0.00	0.00
KOP @ 6843.36ft										
6,900.00	5.44	308.40	6,881.22	-207.67	-394.12	-208.77	10.00	1.04	117.42	118.15
7,000.00	14.03	342.70	6,979.76	-193.11	-401.46	-194.23	10.00	8.58	34.30	51.86
7,057.73	19.60	348.00	7,035.00	-176.95	-405.55	-178.08	10.00	9.65	9.18	17.93
Sharon Springs										
7,087.74	22.53	349.74	7,063.00	-166.37	-407.62	-167.51	10.00	9.78	5.80	12.86
Niobrara A										
7,100.00	23.74	350.34	7,074.28	-161.62	-408.46	-162.76	10.00	9.82	4.84	11.23
7,200.00	33.61	353.67	7,161.91	-114.15	-414.90	-115.31	10.00	9.87	3.33	10.68
DLS = 10.00/100ft										
7,225.71	36.16	354.26	7,183.00	-99.53	-416.44	-100.69	10.00	9.91	2.28	7.75
Niobrara B Chalk										
7,300.00	43.54	355.62	7,240.00	-52.15	-420.60	-53.32	10.00	9.93	1.83	7.27
7,308.34	44.37	355.75	7,246.00	-46.37	-421.03	-47.55	10.00	9.94	1.55	6.22
Niobrara C										
7,400.00	53.49	356.96	7,306.16	22.51	-425.37	21.33	10.00	9.95	1.32	6.13
7,500.00	63.45	357.99	7,358.39	107.56	-429.08	106.36	10.00	9.96	1.03	5.33
7,586.18	72.04	358.75	7,391.00	187.21	-431.33	186.00	10.00	9.97	0.87	4.79
Fort Hays										
7,600.00	73.42	358.86	7,395.10	200.41	-431.61	199.20	10.00	9.97	0.82	4.50
7,698.42	83.23	359.63	7,415.00	296.67	-432.87	295.46	10.00	9.97	0.78	4.47
Codell										
7,700.00	83.39	359.64	7,415.18	298.23	-432.88	297.02	10.00	9.97	0.76	4.31
7,768.92	90.26	0.16	7,419.00	367.00	-433.00	365.79	10.00	9.97	0.75	4.31
End Build @ 7768.92ft - Landing Target (Heel) - 7" - PETTINGER 30C-18HZ_tgt										
7,800.00	90.26	0.16	7,418.86	398.08	-432.92	396.87	0.00	0.00	0.00	4.28
7,900.00	90.26	0.16	7,418.41	498.08	-432.64	496.87	0.00	0.00	0.00	0.00
8,000.00	90.26	0.16	7,417.95	598.08	-432.37	596.87	0.00	0.00	0.00	0.00
8,100.00	90.26	0.16	7,417.50	698.08	-432.10	696.87	0.00	0.00	0.00	0.00
8,200.00	90.26	0.16	7,417.05	798.08	-431.83	796.87	0.00	0.00	0.00	0.00
8,300.00	90.26	0.16	7,416.59	898.08	-431.56	896.87	0.00	0.00	0.00	0.00
8,400.00	90.26	0.16	7,416.14	998.08	-431.29	996.87	0.00	0.00	0.00	0.00
8,500.00	90.26	0.16	7,415.68	1,098.07	-431.02	1,096.87	0.00	0.00	0.00	0.00
8,600.00	90.26	0.16	7,415.23	1,198.07	-430.75	1,196.87	0.00	0.00	0.00	0.00
8,700.00	90.26	0.16	7,414.78	1,298.07	-430.48	1,296.86	0.00	0.00	0.00	0.00

Plan Report for PETTINGER 30C-18HZ - Plan A0 - 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 (°)
8,800.00	90.26	0.16	7,414.32	1,398.07	-430.20	1,396.86	0.00	0.00	0.00	0.00
8,900.00	90.26	0.16	7,413.87	1,498.07	-429.93	1,496.86	0.00	0.00	0.00	0.00
9,000.00	90.26	0.16	7,413.42	1,598.07	-429.66	1,596.86	0.00	0.00	0.00	0.00
9,100.00	90.26	0.16	7,412.96	1,698.07	-429.39	1,696.86	0.00	0.00	0.00	0.00
9,200.00	90.26	0.16	7,412.51	1,798.06	-429.12	1,796.86	0.00	0.00	0.00	0.00
9,300.00	90.26	0.16	7,412.06	1,898.06	-428.85	1,896.86	0.00	0.00	0.00	0.00
9,400.00	90.26	0.16	7,411.60	1,998.06	-428.58	1,996.86	0.00	0.00	0.00	0.00
9,500.00	90.26	0.16	7,411.15	2,098.06	-428.31	2,096.86	0.00	0.00	0.00	0.00
9,600.00	90.26	0.16	7,410.70	2,198.06	-428.04	2,196.85	0.00	0.00	0.00	0.00
9,700.00	90.26	0.16	7,410.24	2,298.06	-427.76	2,296.85	0.00	0.00	0.00	0.00
9,800.00	90.26	0.16	7,409.79	2,398.06	-427.49	2,396.85	0.00	0.00	0.00	0.00
9,900.00	90.26	0.16	7,409.34	2,498.05	-427.22	2,496.85	0.00	0.00	0.00	0.00
10,000.00	90.26	0.16	7,408.88	2,598.05	-426.95	2,596.85	0.00	0.00	0.00	0.00
10,100.00	90.26	0.16	7,408.43	2,698.05	-426.68	2,696.85	0.00	0.00	0.00	0.00
10,200.00	90.26	0.16	7,407.98	2,798.05	-426.41	2,796.85	0.00	0.00	0.00	0.00
10,300.00	90.26	0.16	7,407.52	2,898.05	-426.14	2,896.85	0.00	0.00	0.00	0.00
10,400.00	90.26	0.16	7,407.07	2,998.05	-425.87	2,996.85	0.00	0.00	0.00	0.00
10,500.00	90.26	0.16	7,406.62	3,098.05	-425.60	3,096.85	0.00	0.00	0.00	0.00
10,600.00	90.26	0.16	7,406.16	3,198.04	-425.32	3,196.84	0.00	0.00	0.00	0.00
10,700.00	90.26	0.16	7,405.71	3,298.04	-425.05	3,296.84	0.00	0.00	0.00	0.00
10,800.00	90.26	0.16	7,405.26	3,398.04	-424.78	3,396.84	0.00	0.00	0.00	0.00
10,900.00	90.26	0.16	7,404.80	3,498.04	-424.51	3,496.84	0.00	0.00	0.00	0.00
11,000.00	90.26	0.16	7,404.35	3,598.04	-424.24	3,596.84	0.00	0.00	0.00	0.00
11,100.00	90.26	0.16	7,403.90	3,698.04	-423.97	3,696.84	0.00	0.00	0.00	0.00
11,200.00	90.26	0.16	7,403.44	3,798.04	-423.70	3,796.84	0.00	0.00	0.00	0.00
11,300.00	90.26	0.16	7,402.99	3,898.04	-423.43	3,896.84	0.00	0.00	0.00	0.00
11,400.00	90.26	0.16	7,402.53	3,998.03	-423.16	3,996.84	0.00	0.00	0.00	0.00
11,500.00	90.26	0.16	7,402.08	4,098.03	-422.88	4,096.84	0.00	0.00	0.00	0.00
11,600.00	90.26	0.16	7,401.63	4,198.03	-422.61	4,196.83	0.00	0.00	0.00	0.00
11,700.00	90.26	0.16	7,401.17	4,298.03	-422.34	4,296.83	0.00	0.00	0.00	0.00
11,800.00	90.26	0.16	7,400.72	4,398.03	-422.07	4,396.83	0.00	0.00	0.00	0.00
11,900.00	90.26	0.16	7,400.27	4,498.03	-421.80	4,496.83	0.00	0.00	0.00	0.00
12,000.00	90.26	0.16	7,399.81	4,598.03	-421.53	4,596.83	0.00	0.00	0.00	0.00
12,100.00	90.26	0.16	7,399.36	4,698.02	-421.26	4,696.83	0.00	0.00	0.00	0.00
12,200.00	90.26	0.16	7,398.91	4,798.02	-420.99	4,796.83	0.00	0.00	0.00	0.00
12,300.00	90.26	0.16	7,398.45	4,898.02	-420.72	4,896.83	0.00	0.00	0.00	0.00
12,400.00	90.26	0.16	7,398.00	4,998.02	-420.44	4,996.83	0.00	0.00	0.00	0.00
12,400.02	90.26	0.16	7,398.00	4,998.04	-420.44	4,996.85	0.00	0.00	0.00	0.00
Total Depth (Toe)										
12,400.03	90.26	0.16	7,398.00	4,998.05	-420.44	4,996.86	0.00	0.00	0.00	0.00
TD @ 12400.03ft - PETTINGER 30C-18HZ_BHL										

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N-S (ft)	+E-W (ft)	
1,500.00	1,500.00	0.00	0.00	Begin Nudge @ 1500.00ft
1,742.77	1,742.48	-4.84	-9.07	End Nudge @ 1742.77ft
6,743.36	6,725.12	-204.22	-382.43	Top 4-1/2" Liner @ 6743.36ft
6,843.36	6,824.77	-208.21	-389.89	KOP @ 6843.36ft
7,200.00	7,161.91	-114.15	-414.90	DLS = 10.00/100ft
7,768.92	7,419.00	367.00	-433.00	End Build @ 7768.92ft
12,400.03	7,398.00	4,998.05	-420.44	TD @ 12400.03ft

Plan Report for PETTINGER 30C-18HZ - Plan A0 - PERMIT**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
User	No Target (Freehand)	0.16	Slot	0.00	0.00	0.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,400.03	Plan A0 - PERMIT	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
1,180.00	1,180.00	9 5/8"	9-5/8	12-1/4
7,768.92	7,419.00	7"	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,190.07	4,181.00	Parkman		0.00	
4,569.43	4,559.00	Sussex		0.00	
7,057.73	7,035.00	Sharon Springs		0.00	
7,087.74	7,063.00	Niobrara A		0.00	
7,225.71	7,183.00	Niobrara B Chalk		0.00	
7,308.34	7,246.00	Niobrara C		0.00	
7,586.18	7,391.00	Fort Hays		0.00	
7,698.42	7,415.00	Codell		0.00	
7,768.92	7,419.00	Landing Target (Heel)		0.00	
12,400.02	7,398.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
PETTINGER 30C-18HZ_SHL	0.00	0.00	0.00	Point
PETTINGER 30C-18HZ_Sec	0.00	0.00	0.00	Polygon
PETTINGER 30C-18HZ_BHL	7,398.00	4,998.05	-420.44	Point
PETTINGER 30C-18HZ_tgt	7,419.00	367.00	-433.00	Point

North Reference Sheet for Sec. 18-T1N-R65W - PETTINGER 30C-18HZ - Plan A0

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 @ 5024.00ft (Drilling Rig). Northing and Easting are relative to PETTINGER 30C-18HZ
 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: 0.99996327

Grid Coordinates of Well: 1,260,178.04 ft N, 3,220,465.28 ft E
 Geographical Coordinates of Well: 40° 02' 41.60" N, 104° 42' 45.10" W
 Grid Convergence at Surface is: 0.51°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,400.03ft
 the Bottom Hole Displacement is 5,015.70ft in the Direction of 355.19° (True).

Magnetic Convergence at surface is: -8.04° (22 July 2013, , BGGM2013)

