

# Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 19-T1N-R67W

Ralph 13C-19HZ

Plan A Rev 0

Plan: Plan A Rev 0 Permit

## Sperry Drilling Services

## Proposal Report

27 August, 2012

Well Coordinates: 1,259,078.13 N, 3,157,293.48 E (40° 02' 35.48" N, 104° 56' 17.47" W)

Ground Level: 5,118.00 ft

Local Coordinate Origin:

Centered on Well Ralph 13C-19HZ

Viewing Datum:

RKB=17 @ 5135.00ft (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**

Project: Weld County, CO (NAD 83)  
 Site: Sec. 19-T1N-R67W  
 Well: Ralph 13C-19HZ  
 Wellbore: Plan A Rev 0  
 Design: Plan A Rev 0 Permit

# Anadarko Petroleum Corp.

**HALLIBURTON**  
 Sperry Drilling

## SECTION DETAILS

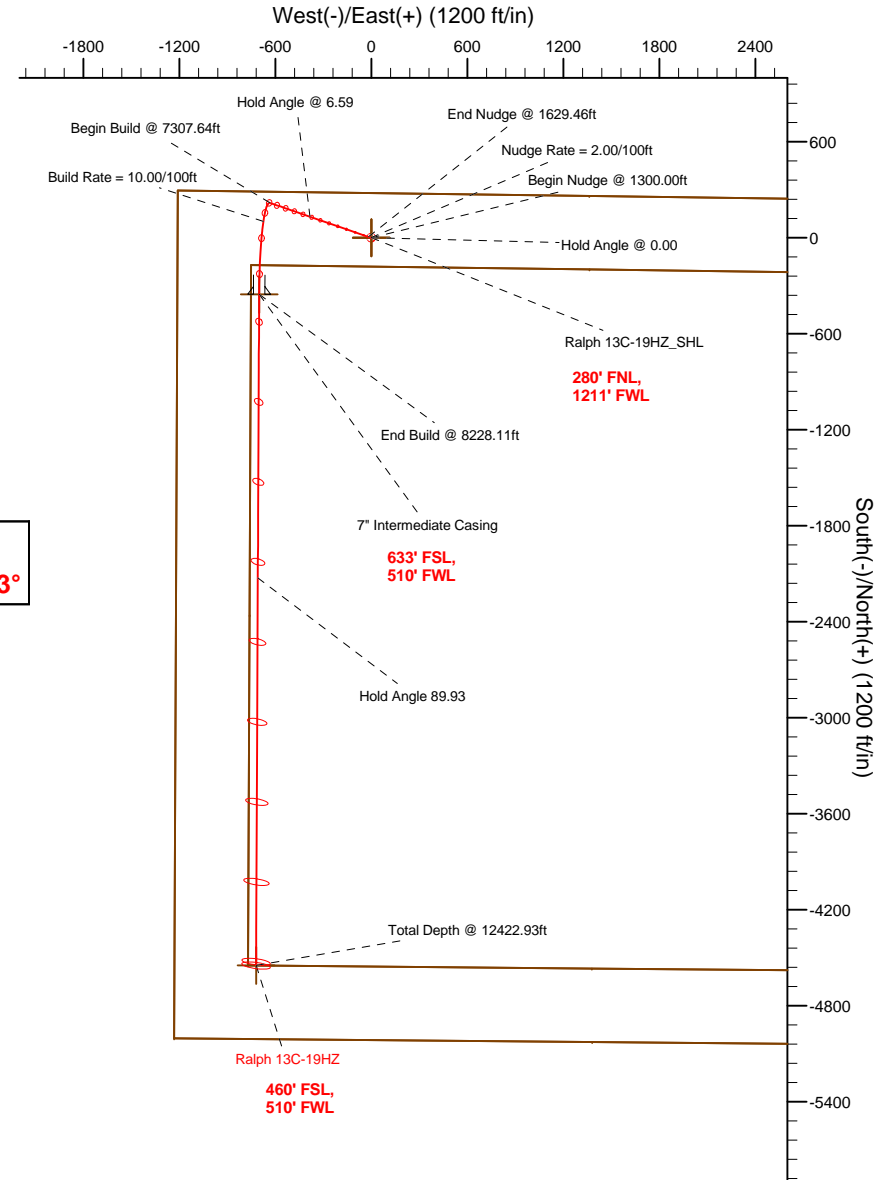
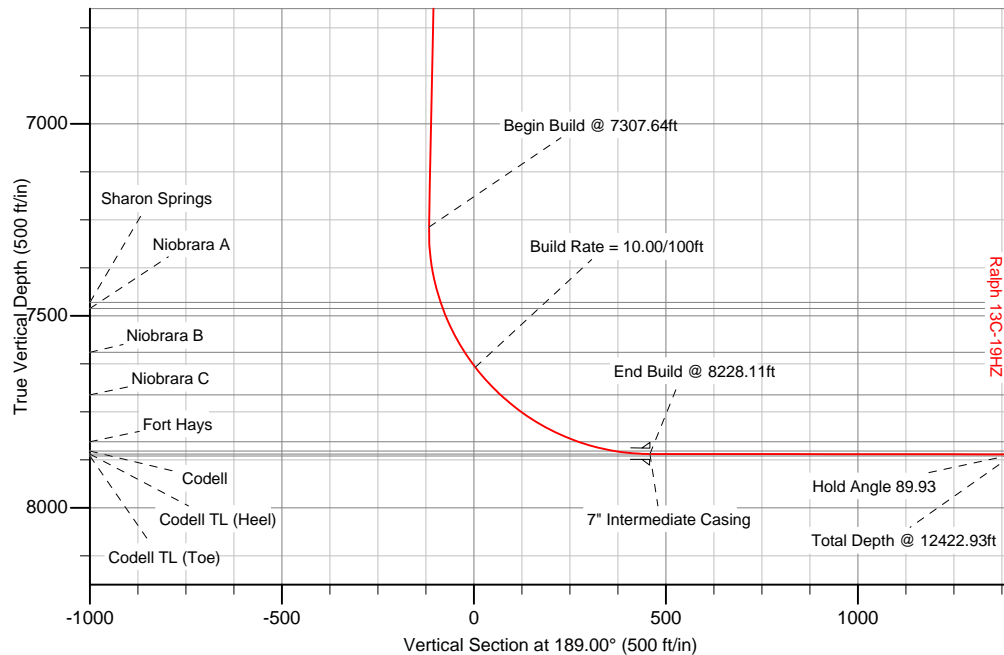
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1300.00	0.00	0.00	1300.00	0.00	0.00	0.00	0.00	0.00	
3	1629.46	6.59	289.03	1628.73	6.17	-17.89	2.00	289.03	-3.29	
4	7307.64	6.59	289.03	7269.41	218.59	-633.86	0.00	0.00	-116.74	
5	8228.11	89.93	180.26	7860.00	-353.00	-701.00	10.00	-108.66	458.31	Ralph 13C-19HZ_Casing Point
6	12422.93	89.93	180.26	7865.00	-4547.77	-720.26	0.00	0.00	4604.45	Ralph 13C-19HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
Ralph 13C-19HZ_Section Lines	0.00	0.00	0.00	40.043190	-104.938186	Polygon
Ralph 13C-19HZ_Setback Lines	0.00	0.00	0.00	40.043190	-104.938186	Polygon
Ralph 13C-19HZ_SHL	0.00	0.00	0.00	40.043190	-104.938186	Point
Ralph 13C-19HZ_Casing Point	7860.00	-353.00	-701.00	40.042221	-104.940690	Point
Ralph 13C-19HZ_BHL	7865.00	-4547.77	-720.26	40.030706	-104.940758	Point

**Target Line:**

**7859.37' TVDkb @ 0° VS Drilling 89.93°**



## WELL DETAILS: Ralph 13C-19HZ

Ground Level: 5118.00 RKB=17 @ 5135.00ft (Drilling Rig)

Plan: Plan A Rev 0 Permit (Ralph 13C-19HZ/Plan A Rev 0)

Created By: Fred Hartmann Date: 08/24/2012  
 Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

**Plan Report for Ralph 13C-19HZ - Plan A Rev 0 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
<b>Ralph 13C-19HZ_SHL - Ralph 13C-19HZ_Section Lines - Ralph 13C-19HZ_Setback Lines</b>										
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
<b>Hold Angle @ 0.00</b>										
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
1,200.00	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
<b>Begin Nudge @ 1300.00ft</b>										
1,400.00	2.00	289.03	1,399.98	0.57	-1.65	-0.30	2.00	2.00	0.00	289.03
<b>Nudge Rate = 2.00/100ft</b>										
1,500.00	4.00	289.03	1,499.84	2.28	-6.60	-1.22	2.00	2.00	0.00	0.00
1,600.00	6.00	289.03	1,599.45	5.12	-14.84	-2.73	2.00	2.00	0.00	0.00
1,629.46	6.59	289.03	1,628.73	6.17	-17.89	-3.29	2.00	2.00	0.00	0.00
<b>End Nudge @ 1629.46ft</b>										
1,700.00	6.59	289.03	1,698.81	8.81	-25.54	-4.70	0.00	0.00	0.00	0.00
1,800.00	6.59	289.03	1,798.15	12.55	-36.39	-6.70	0.00	0.00	0.00	0.00
1,900.00	6.59	289.03	1,897.49	16.29	-47.24	-8.70	0.00	0.00	0.00	0.00
2,000.00	6.59	289.03	1,996.83	20.03	-58.09	-10.70	0.00	0.00	0.00	0.00
2,100.00	6.59	289.03	2,096.17	23.77	-68.93	-12.70	0.00	0.00	0.00	0.00
2,200.00	6.59	289.03	2,195.51	27.51	-79.78	-14.69	0.00	0.00	0.00	0.00
2,300.00	6.59	289.03	2,294.85	31.25	-90.63	-16.69	0.00	0.00	0.00	0.00
2,400.00	6.59	289.03	2,394.18	34.99	-101.48	-18.69	0.00	0.00	0.00	0.00
2,500.00	6.59	289.03	2,493.52	38.74	-112.33	-20.69	0.00	0.00	0.00	0.00
2,600.00	6.59	289.03	2,592.86	42.48	-123.17	-22.69	0.00	0.00	0.00	0.00
2,700.00	6.59	289.03	2,692.20	46.22	-134.02	-24.68	0.00	0.00	0.00	0.00
2,800.00	6.59	289.03	2,791.54	49.96	-144.87	-26.68	0.00	0.00	0.00	0.00
2,900.00	6.59	289.03	2,890.88	53.70	-155.72	-28.68	0.00	0.00	0.00	0.00
3,000.00	6.59	289.03	2,990.22	57.44	-166.57	-30.68	0.00	0.00	0.00	0.00
3,100.00	6.59	289.03	3,089.56	61.18	-177.41	-32.68	0.00	0.00	0.00	0.00
3,200.00	6.59	289.03	3,188.90	64.92	-188.26	-34.67	0.00	0.00	0.00	0.00
3,300.00	6.59	289.03	3,288.24	68.66	-199.11	-36.67	0.00	0.00	0.00	0.00
3,400.00	6.59	289.03	3,387.58	72.40	-209.96	-38.67	0.00	0.00	0.00	0.00
3,500.00	6.59	289.03	3,486.92	76.14	-220.81	-40.67	0.00	0.00	0.00	0.00
3,600.00	6.59	289.03	3,586.26	79.89	-231.65	-42.67	0.00	0.00	0.00	0.00
3,700.00	6.59	289.03	3,685.60	83.63	-242.50	-44.66	0.00	0.00	0.00	0.00
3,800.00	6.59	289.03	3,784.94	87.37	-253.35	-46.66	0.00	0.00	0.00	0.00
3,900.00	6.59	289.03	3,884.28	91.11	-264.20	-48.66	0.00	0.00	0.00	0.00
4,000.00	6.59	289.03	3,983.62	94.85	-275.05	-50.66	0.00	0.00	0.00	0.00
4,100.00	6.59	289.03	4,082.96	98.59	-285.89	-52.66	0.00	0.00	0.00	0.00
4,200.00	6.59	289.03	4,182.29	102.33	-296.74	-54.65	0.00	0.00	0.00	0.00
4,300.00	6.59	289.03	4,281.63	106.07	-307.59	-56.65	0.00	0.00	0.00	0.00
4,400.00	6.59	289.03	4,380.97	109.81	-318.44	-58.65	0.00	0.00	0.00	0.00
4,500.00	6.59	289.03	4,480.31	113.55	-329.29	-60.65	0.00	0.00	0.00	0.00
4,600.00	6.59	289.03	4,579.65	117.30	-340.13	-62.65	0.00	0.00	0.00	0.00
4,700.00	6.59	289.03	4,678.99	121.04	-350.98	-64.64	0.00	0.00	0.00	0.00
4,800.00	6.59	289.03	4,778.33	124.78	-361.83	-66.64	0.00	0.00	0.00	0.00
4,900.00	6.59	289.03	4,877.67	128.52	-372.68	-68.64	0.00	0.00	0.00	0.00
4,907.38	6.59	289.03	4,885.00	128.79	-373.48	-68.79	0.00	0.00	0.00	0.00
<b>Sussex</b>										

**Plan Report for Ralph 13C-19HZ - Plan A Rev 0 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 (°)
5,000.00	6.59	289.03	4,977.01	132.26	-383.53	-70.64	0.00	0.00	0.00	0.00
<b>Hold Angle @ 6.59</b>										
5,100.00	6.59	289.03	5,076.35	136.00	-394.37	-72.64	0.00	0.00	0.00	0.00
5,200.00	6.59	289.03	5,175.69	139.74	-405.22	-74.63	0.00	0.00	0.00	0.00
5,300.00	6.59	289.03	5,275.03	143.48	-416.07	-76.63	0.00	0.00	0.00	0.00
5,400.00	6.59	289.03	5,374.37	147.22	-426.92	-78.63	0.00	0.00	0.00	0.00
5,500.00	6.59	289.03	5,473.71	150.96	-437.77	-80.63	0.00	0.00	0.00	0.00
5,600.00	6.59	289.03	5,573.05	154.70	-448.61	-82.63	0.00	0.00	0.00	0.00
5,700.00	6.59	289.03	5,672.39	158.45	-459.46	-84.62	0.00	0.00	0.00	0.00
5,800.00	6.59	289.03	5,771.73	162.19	-470.31	-86.62	0.00	0.00	0.00	0.00
5,900.00	6.59	289.03	5,871.07	165.93	-481.16	-88.62	0.00	0.00	0.00	0.00
6,000.00	6.59	289.03	5,970.40	169.67	-492.01	-90.62	0.00	0.00	0.00	0.00
6,100.00	6.59	289.03	6,069.74	173.41	-502.85	-92.62	0.00	0.00	0.00	0.00
6,200.00	6.59	289.03	6,169.08	177.15	-513.70	-94.61	0.00	0.00	0.00	0.00
6,300.00	6.59	289.03	6,268.42	180.89	-524.55	-96.61	0.00	0.00	0.00	0.00
6,400.00	6.59	289.03	6,367.76	184.63	-535.40	-98.61	0.00	0.00	0.00	0.00
6,500.00	6.59	289.03	6,467.10	188.37	-546.25	-100.61	0.00	0.00	0.00	0.00
6,600.00	6.59	289.03	6,566.44	192.11	-557.09	-102.60	0.00	0.00	0.00	0.00
6,700.00	6.59	289.03	6,665.78	195.85	-567.94	-104.60	0.00	0.00	0.00	0.00
6,800.00	6.59	289.03	6,765.12	199.60	-578.79	-106.60	0.00	0.00	0.00	0.00
6,900.00	6.59	289.03	6,864.46	203.34	-589.64	-108.60	0.00	0.00	0.00	0.00
7,000.00	6.59	289.03	6,963.80	207.08	-600.49	-110.60	0.00	0.00	0.00	0.00
7,100.00	6.59	289.03	7,063.14	210.82	-611.33	-112.59	0.00	0.00	0.00	0.00
7,200.00	6.59	289.03	7,162.48	214.56	-622.18	-114.59	0.00	0.00	0.00	0.00
7,300.00	6.59	289.03	7,261.82	218.30	-633.03	-116.59	0.00	0.00	0.00	0.00
7,307.64	6.59	289.03	7,269.41	218.59	-633.86	-116.74	0.00	0.00	0.00	0.00
<b>Begin Build @ 7307.64ft</b>										
7,400.00	9.46	221.29	7,361.03	214.60	-643.90	-111.24	10.00	3.11	-73.34	-108.66
7,500.00	18.19	199.70	7,458.10	193.68	-654.61	-88.90	10.00	8.73	-21.60	-41.43
7,507.28	18.87	198.91	7,465.00	191.50	-655.37	-86.63	10.00	9.40	-10.77	-20.38
<b>Sharon Springs</b>										
7,524.27	20.48	197.28	7,481.00	186.06	-657.14	-80.98	10.00	9.46	-9.60	-19.64
<b>Niobrara A</b>										
7,600.00	27.78	192.24	7,550.07	156.12	-664.83	-50.20	10.00	9.63	-6.66	-18.10
7,652.06	32.86	190.00	7,595.00	130.34	-669.86	-23.95	10.00	9.76	-4.30	-13.49
<b>Niobrara B</b>										
7,700.00	37.57	188.43	7,634.16	103.06	-674.27	3.68	10.00	9.82	-3.28	-11.56
<b>Build Rate = 10.00/100ft</b>										
7,797.34	47.17	186.07	7,706.00	38.06	-682.41	69.16	10.00	9.87	-2.42	-10.27
<b>Niobrara C</b>										
7,800.00	47.43	186.02	7,707.80	36.11	-682.62	71.11	10.00	9.89	-2.01	-8.53
7,900.00	57.34	184.28	7,768.76	-42.68	-689.64	150.04	10.00	9.90	-1.74	-8.49
8,000.00	67.26	182.88	7,815.19	-130.94	-695.11	238.06	10.00	9.92	-1.39	-7.42
8,035.83	70.82	182.44	7,828.00	-164.36	-696.66	271.31	10.00	9.93	-1.25	-6.77
<b>Fort Hays</b>										
8,100.00	77.20	181.68	7,845.67	-225.98	-698.87	332.51	10.00	9.94	-1.18	-6.61
8,132.66	80.44	181.31	7,852.00	-258.00	-699.70	364.27	10.00	9.94	-1.13	-6.40
<b>Codell</b>										
8,200.00	87.14	180.57	7,859.28	-324.90	-700.80	430.52	10.00	9.94	-1.10	-6.33
8,228.11	89.93	180.26	7,860.00	-353.00	-701.00	458.31	10.00	9.94	-1.09	-6.25
<b>End Build @ 8228.11ft - Codell TL (Heel) - 7" Intermediate Casing - Ralph 13C-19HZ_Casing Point</b>										
8,300.00	89.93	180.26	7,860.09	-424.88	-701.33	529.36	0.00	0.00	0.00	-6.24
8,400.00	89.93	180.26	7,860.20	-524.88	-701.79	628.20	0.00	0.00	0.00	0.00
8,500.00	89.93	180.26	7,860.32	-624.88	-702.25	727.04	0.00	0.00	0.00	0.00
8,600.00	89.93	180.26	7,860.44	-724.88	-702.71	825.88	0.00	0.00	0.00	0.00
8,700.00	89.93	180.26	7,860.56	-824.88	-703.17	924.72	0.00	0.00	0.00	0.00
8,800.00	89.93	180.26	7,860.68	-924.88	-703.63	1,023.56	0.00	0.00	0.00	0.00
8,900.00	89.93	180.26	7,860.80	-1,024.88	-704.08	1,122.40	0.00	0.00	0.00	0.00

**Plan Report for Ralph 13C-19HZ - Plan A Rev 0 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 (°)
9,000.00	89.93	180.26	7,860.92	-1,124.88	-704.54	1,221.24	0.00	0.00	0.00	0.00
9,100.00	89.93	180.26	7,861.04	-1,224.88	-705.00	1,320.08	0.00	0.00	0.00	0.00
9,200.00	89.93	180.26	7,861.16	-1,324.87	-705.46	1,418.92	0.00	0.00	0.00	0.00
9,300.00	89.93	180.26	7,861.28	-1,424.87	-705.92	1,517.76	0.00	0.00	0.00	0.00
9,400.00	89.93	180.26	7,861.40	-1,524.87	-706.38	1,616.60	0.00	0.00	0.00	0.00
9,500.00	89.93	180.26	7,861.52	-1,624.87	-706.84	1,715.44	0.00	0.00	0.00	0.00
9,600.00	89.93	180.26	7,861.64	-1,724.87	-707.30	1,814.28	0.00	0.00	0.00	0.00
9,700.00	89.93	180.26	7,861.75	-1,824.87	-707.76	1,913.12	0.00	0.00	0.00	0.00
9,800.00	89.93	180.26	7,861.87	-1,924.87	-708.22	2,011.96	0.00	0.00	0.00	0.00
9,900.00	89.93	180.26	7,861.99	-2,024.87	-708.68	2,110.79	0.00	0.00	0.00	0.00
10,000.00	89.93	180.26	7,862.11	-2,124.87	-709.13	2,209.63	0.00	0.00	0.00	0.00
<b>Hold Angle 89.93</b>										
10,100.00	89.93	180.26	7,862.23	-2,224.86	-709.59	2,308.47	0.00	0.00	0.00	0.00
10,200.00	89.93	180.26	7,862.35	-2,324.86	-710.05	2,407.31	0.00	0.00	0.00	0.00
10,300.00	89.93	180.26	7,862.47	-2,424.86	-710.51	2,506.15	0.00	0.00	0.00	0.00
10,400.00	89.93	180.26	7,862.59	-2,524.86	-710.97	2,604.99	0.00	0.00	0.00	0.00
10,500.00	89.93	180.26	7,862.71	-2,624.86	-711.43	2,703.83	0.00	0.00	0.00	0.00
10,600.00	89.93	180.26	7,862.83	-2,724.86	-711.89	2,802.67	0.00	0.00	0.00	0.00
10,700.00	89.93	180.26	7,862.95	-2,824.86	-712.35	2,901.51	0.00	0.00	0.00	0.00
10,800.00	89.93	180.26	7,863.07	-2,924.86	-712.81	3,000.35	0.00	0.00	0.00	0.00
10,900.00	89.93	180.26	7,863.18	-3,024.85	-713.27	3,099.19	0.00	0.00	0.00	0.00
11,000.00	89.93	180.26	7,863.30	-3,124.85	-713.72	3,198.03	0.00	0.00	0.00	0.00
11,100.00	89.93	180.26	7,863.42	-3,224.85	-714.18	3,296.87	0.00	0.00	0.00	0.00
11,200.00	89.93	180.26	7,863.54	-3,324.85	-714.64	3,395.71	0.00	0.00	0.00	0.00
11,300.00	89.93	180.26	7,863.66	-3,424.85	-715.10	3,494.55	0.00	0.00	0.00	0.00
11,400.00	89.93	180.26	7,863.78	-3,524.85	-715.56	3,593.39	0.00	0.00	0.00	0.00
11,500.00	89.93	180.26	7,863.90	-3,624.85	-716.02	3,692.23	0.00	0.00	0.00	0.00
11,600.00	89.93	180.26	7,864.02	-3,724.85	-716.48	3,791.07	0.00	0.00	0.00	0.00
11,700.00	89.93	180.26	7,864.14	-3,824.85	-716.94	3,889.91	0.00	0.00	0.00	0.00
11,800.00	89.93	180.26	7,864.26	-3,924.84	-717.40	3,988.75	0.00	0.00	0.00	0.00
11,900.00	89.93	180.26	7,864.38	-4,024.84	-717.86	4,087.59	0.00	0.00	0.00	0.00
12,000.00	89.93	180.26	7,864.50	-4,124.84	-718.32	4,186.43	0.00	0.00	0.00	0.00
12,100.00	89.93	180.26	7,864.62	-4,224.84	-718.77	4,285.27	0.00	0.00	0.00	0.00
12,200.00	89.93	180.26	7,864.73	-4,324.84	-719.23	4,384.11	0.00	0.00	0.00	0.00
12,300.00	89.93	180.26	7,864.85	-4,424.84	-719.69	4,482.95	0.00	0.00	0.00	0.00
12,400.00	89.93	180.26	7,864.97	-4,524.84	-720.15	4,581.79	0.00	0.00	0.00	0.00
12,422.93	89.93	180.26	7,865.00	-4,547.77	-720.26	4,604.45	0.00	0.00	0.00	0.00
<b>Total Depth @ 12422.93ft - Ralph 13C-19HZ_BHL</b>										

**Plan Annotations**

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
600.00	600.00	0.00	0.00	Hold Angle @ 0.00
1,300.00	1,300.00	0.00	0.00	Begin Nudge @ 1300.00ft
1,400.00	1,399.98	0.57	-1.65	Nudge Rate = 2.00/100ft
1,629.46	1,628.73	6.17	-17.89	End Nudge @ 1629.46ft
5,000.00	4,977.01	132.26	-383.53	Hold Angle @ 6.59
7,307.64	7,269.41	218.59	-633.86	Begin Build @ 7307.64ft
7,700.00	7,634.16	103.06	-674.27	Build Rate = 10.00/100ft
8,228.11	7,860.00	-353.00	-701.00	End Build @ 8228.11ft
10,000.00	7,862.11	-2,124.87	-709.13	Hold Angle 89.93
12,422.93	7,865.00	-4,547.77	-720.26	Total Depth @ 12422.93ft

## Plan Report for Ralph 13C-19HZ - Plan A Rev 0 Permit

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (ft)	Origin +E/-W (ft)	Start TVD (ft)
Target	Ralph 13C-19HZ_BHL	189.00	Slot	0.00	0.00	7,865.00

Survey tool program

From (ft)	To (ft)	Survey/Plan	Survey Tool
0.00	12,422.93	Plan A Rev 0 Permit	MWD

Casing Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
8,228.11	7,860.00	7" Intermediate Casing	7	8-3/4

Formation Details

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,907.38	4,885.00	Sussex		0.00	
7,507.28	7,465.00	Sharon Springs		0.00	
7,524.27	7,481.00	Niobrara A		0.00	
7,652.06	7,595.00	Niobrara B		0.00	
7,797.34	7,706.00	Niobrara C		0.00	
8,035.83	7,828.00	Fort Hays		0.00	
8,132.66	7,852.00	Codell		0.00	
8,228.11	7,860.00	Codell TL (Heel)		0.00	
12,422.93	7,865.00	Codell TL (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Shape
Ralph 13C-19HZ_Casing Point	7,860.00	-353.00	-701.00	Point
Ralph 13C-19HZ_Section Lines	0.00	0.00	0.00	Polygon
Ralph 13C-19HZ_Setback Lines	0.00	0.00	0.00	Polygon
Ralph 13C-19HZ_BHL	7,865.00	-4,547.77	-720.26	Point
Ralph 13C-19HZ_SHL	0.00	0.00	0.00	Point

## North Reference Sheet for Sec. 19-T1N-R67W - Ralph 13C-19HZ - Plan A Rev 0

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 @ 5135.00ft (Drilling Rig). Northing and Easting are relative to Ralph 13C-19HZ  
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: 3,000,000.000644ft, False Northing: 1,000,000.001308ft, Scale Reduction: 0.99996337

Grid Coordinates of Well: 1,259,078.134975 ft N, 3,157,293.478453 ft E  
Geographical Coordinates of Well: 40° 02' 35.48" N, 104° 56' 17.47" W  
Grid Convergence at Surface is: 0.36°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,422.93ft  
the Bottom Hole Displacement is 4,604.45ft in the Direction of 189.00° (True).

Magnetic Convergence at surface is: -8.40° (24 August 2012, , BGGM2011)

