

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

Bane Pad

BANE 28N2-9HZ

Plan A

Plan: Permit Rev-1

## Sperry Drilling Services Proposal Report

28 October, 2014

Well Coordinates: 14,548,919.29 N, 1,734,045.01 E (40° 03' 37.59" N, 104° 39' 55.36" W)

Ground Level: 4,964.00 usft

Local Coordinate Origin:

Centered on Well BANE 28N2-9HZ

Viewing Datum:

RKB = 17' @ 4981.00usft (D Rig)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Version: 5000.1 Build: 70

**HALLIBURTON**

Project: WELD-NAD83-UTMFT13N

Site: Bane Pad

Well: BANE 28N2-9HZ

Wellbore: Plan A

Design: Permit Rev-1

# US ROCKIES WATTENBERG PLANNING

HALLIBURTON

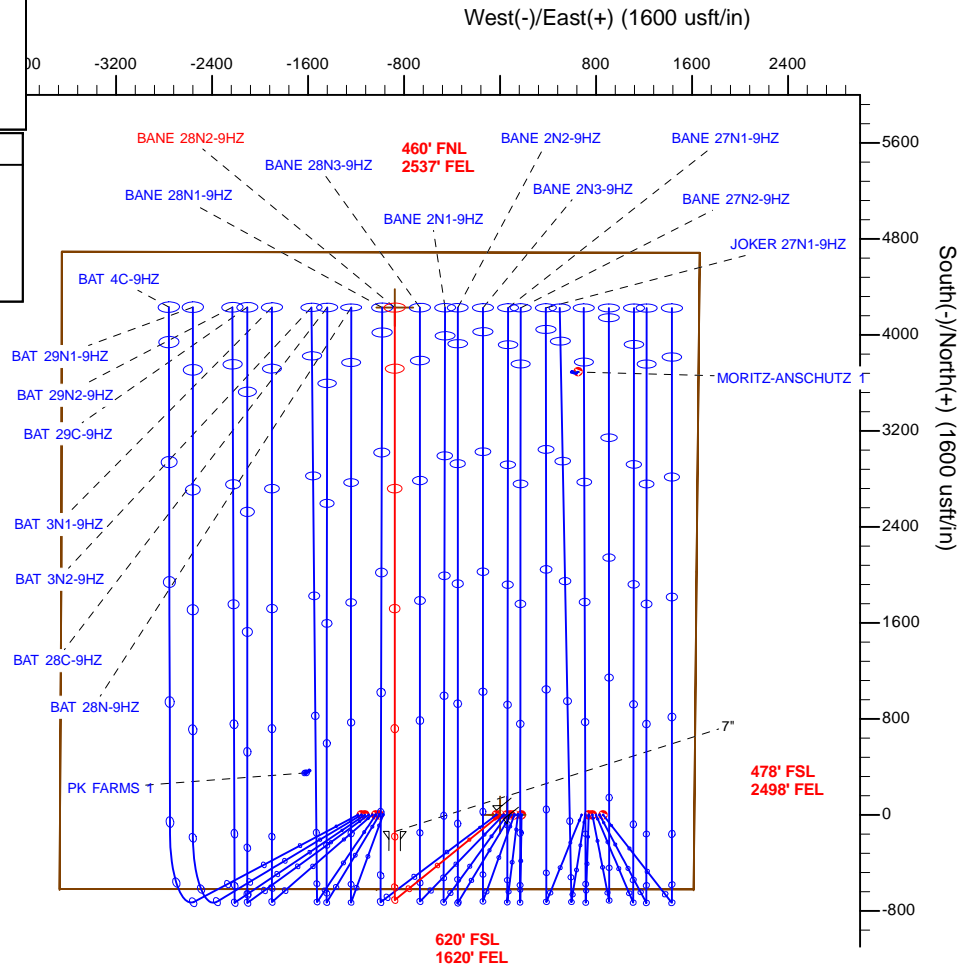
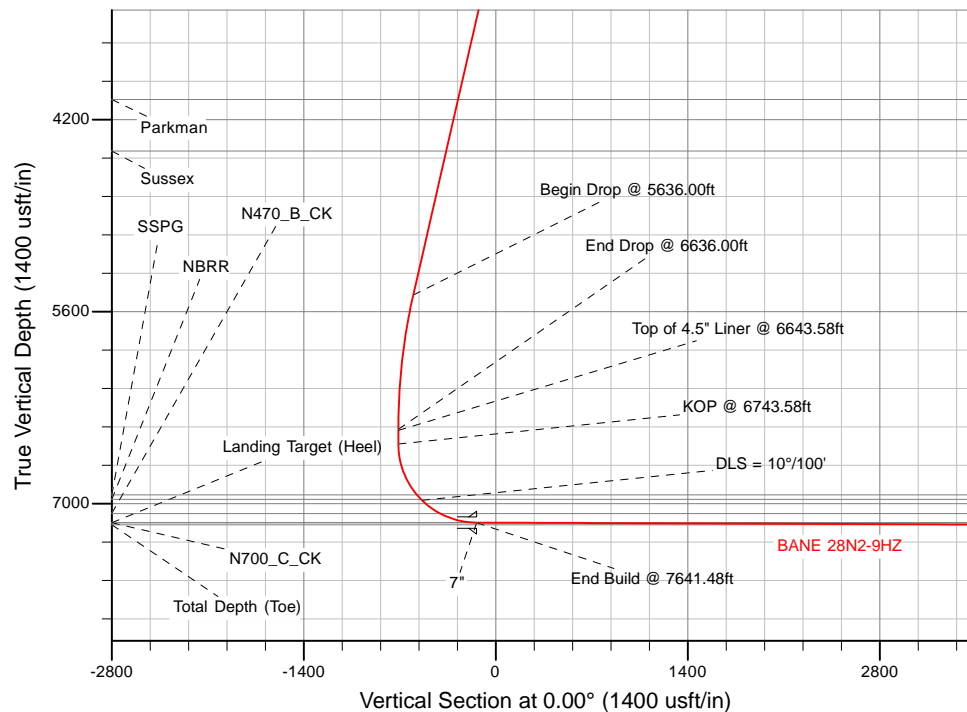
Sperry Drilling

## 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	2345.00	0.00	0.00	2345.00	0.00	0.00	0.00	0.00	0.00	
3	3345.00	20.00	231.00	3324.82	-108.73	-134.27	2.00	231.00	-108.73	
4	5636.00	20.00	231.00	5477.65	-601.84	-743.21	0.00	0.00	-601.84	
5	6636.00	0.00	0.00	6457.47	-710.57	-877.48	2.00	180.00	-710.57	
6	6743.58	0.00	0.00	6565.05	-710.57	-877.48	0.00	0.00	-710.57	
7	7641.48	89.79	0.00	7138.00	-139.71	-877.46	10.00	0.00	-139.71	
8	12008.63	89.79	0.00	7154.00	4227.41	-877.33	0.00	0.00	4227.41	BANE 28N2-9HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
1N-R65W-Sec. 9 Section lines	0.00	0.00	59.04	40.060443	-104.665168	Polygon
BANE 28N2-9HZ_SHL	0.00	0.00	0.00	40.060443	-104.665379	
BANE 28N2-9HZ_BHL	7154.00	4227.41	-877.33	40.072052	-104.668515	



TVD MD

6465.05 6643.58 Top of 4.5" Liner @ 6643.58ft  
6565.05 6743.58 KOP @ 6743.58ft

WELL DETAILS: BANE 28N2-9HZ

Ground Level: 4964.00

RKB = 17' @ 4981.00usft (D Rig)

Plan: Permit Rev-1 (BANE 28N2-9HZ/Plan A)

Created By: Clint Eshelman

Date: 10/28/2014

Reviewed:

Date:

## Plan Report for BANE 28N2-9HZ - Permit Rev-1

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
<b>1N-R65W-Sec. 9_Section lines - BANE 28N2-9HZ_SHL</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
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
977.00	0.00	0.00	977.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Base Fox Hills</b>										
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
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
1,509.00	0.00	0.00	1,509.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Surface Csg Setting Depth - 9 5/8"</b>										
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
2,000.00	0.00	0.00	2,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,100.00	0.00	0.00	2,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,200.00	0.00	0.00	2,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,345.00	0.00	0.00	2,345.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 2345.00ft</b>										
2,400.00	1.10	231.00	2,400.00	-0.33	-0.41	-0.33	2.00	2.00	0.00	231.00
2,500.00	3.10	231.00	2,499.92	-2.64	-3.26	-2.64	2.00	2.00	0.00	0.00
2,600.00	5.10	231.00	2,599.66	-7.14	-8.81	-7.14	2.00	2.00	0.00	0.00
2,700.00	7.10	231.00	2,699.09	-13.82	-17.07	-13.82	2.00	2.00	0.00	0.00
2,800.00	9.10	231.00	2,798.09	-22.69	-28.02	-22.69	2.00	2.00	0.00	0.00
2,900.00	11.10	231.00	2,896.53	-33.73	-41.65	-33.73	2.00	2.00	0.00	0.00
3,000.00	13.10	231.00	2,994.31	-46.92	-57.94	-46.92	2.00	2.00	0.00	0.00
3,100.00	15.10	231.00	3,091.29	-62.25	-76.87	-62.25	2.00	2.00	0.00	0.00
3,200.00	17.10	231.00	3,187.36	-79.70	-98.42	-79.70	2.00	2.00	0.00	0.00
3,300.00	19.10	231.00	3,282.41	-99.25	-122.56	-99.25	2.00	2.00	0.00	0.00
3,345.00	20.00	231.00	3,324.82	-108.73	-134.27	-108.73	2.00	2.00	0.00	0.00
<b>End Nudge @ 3345.00ft</b>										
3,400.00	20.00	231.00	3,376.50	-120.56	-148.88	-120.56	0.00	0.00	0.00	0.00
3,500.00	20.00	231.00	3,470.47	-142.09	-175.46	-142.09	0.00	0.00	0.00	0.00
3,600.00	20.00	231.00	3,564.44	-163.61	-202.04	-163.61	0.00	0.00	0.00	0.00
3,700.00	20.00	231.00	3,658.41	-185.14	-228.62	-185.14	0.00	0.00	0.00	0.00
3,800.00	20.00	231.00	3,752.38	-206.66	-255.20	-206.66	0.00	0.00	0.00	0.00
3,900.00	20.00	231.00	3,846.34	-228.18	-281.78	-228.18	0.00	0.00	0.00	0.00
4,000.00	20.00	231.00	3,940.31	-249.71	-308.36	-249.71	0.00	0.00	0.00	0.00
4,100.00	20.00	231.00	4,034.28	-271.23	-334.94	-271.23	0.00	0.00	0.00	0.00
4,119.92	20.00	231.00	4,053.00	-275.52	-340.24	-275.52	0.00	0.00	0.00	0.00
<b>Parkman</b>										
4,200.00	20.00	231.00	4,128.25	-292.76	-361.52	-292.76	0.00	0.00	0.00	0.00
4,300.00	20.00	231.00	4,222.22	-314.28	-388.10	-314.28	0.00	0.00	0.00	0.00
4,400.00	20.00	231.00	4,316.19	-335.80	-414.68	-335.80	0.00	0.00	0.00	0.00
4,500.00	20.00	231.00	4,410.16	-357.33	-441.26	-357.33	0.00	0.00	0.00	0.00
4,518.98	20.00	231.00	4,428.00	-361.42	-446.31	-361.42	0.00	0.00	0.00	0.00

## Plan Report for BANE 28N2-9HZ - Permit Rev-1

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 (°)
<b>Sussex</b>										
4,600.00	20.00	231.00	4,504.13	-378.85	-467.84	-378.85	0.00	0.00	0.00	0.00
4,700.00	20.00	231.00	4,598.10	-400.38	-494.42	-400.38	0.00	0.00	0.00	0.00
4,800.00	20.00	231.00	4,692.07	-421.90	-521.00	-421.90	0.00	0.00	0.00	0.00
4,900.00	20.00	231.00	4,786.04	-443.42	-547.58	-443.42	0.00	0.00	0.00	0.00
5,000.00	20.00	231.00	4,880.01	-464.95	-574.16	-464.95	0.00	0.00	0.00	0.00
5,100.00	20.00	231.00	4,973.98	-486.47	-600.74	-486.47	0.00	0.00	0.00	0.00
5,200.00	20.00	231.00	5,067.95	-508.00	-627.32	-508.00	0.00	0.00	0.00	0.00
5,300.00	20.00	231.00	5,161.91	-529.52	-653.90	-529.52	0.00	0.00	0.00	0.00
5,400.00	20.00	231.00	5,255.88	-551.05	-680.48	-551.05	0.00	0.00	0.00	0.00
5,500.00	20.00	231.00	5,349.85	-572.57	-707.06	-572.57	0.00	0.00	0.00	0.00
5,600.00	20.00	231.00	5,443.82	-594.09	-733.64	-594.09	0.00	0.00	0.00	0.00
5,636.00	20.00	231.00	5,477.65	-601.84	-743.21	-601.84	0.00	0.00	0.00	0.00
<b>Begin Drop @ 5636.00ft</b>										
5,700.00	18.72	231.00	5,538.03	-615.19	-759.70	-615.19	2.00	-2.00	0.00	180.00
5,800.00	16.72	231.00	5,633.28	-634.35	-783.35	-634.35	2.00	-2.00	0.00	180.00
5,900.00	14.72	231.00	5,729.54	-651.40	-804.41	-651.40	2.00	-2.00	0.00	180.00
6,000.00	12.72	231.00	5,826.68	-666.32	-822.84	-666.32	2.00	-2.00	0.00	180.00
6,100.00	10.72	231.00	5,924.59	-679.10	-838.62	-679.10	2.00	-2.00	0.00	180.00
6,200.00	8.72	231.00	6,023.15	-689.73	-851.74	-689.73	2.00	-2.00	0.00	180.00
6,300.00	6.72	231.00	6,122.24	-698.18	-862.18	-698.18	2.00	-2.00	0.00	180.00
6,400.00	4.72	231.00	6,221.73	-704.45	-869.93	-704.45	2.00	-2.00	0.00	180.00
6,500.00	2.72	231.00	6,321.52	-708.54	-874.97	-708.54	2.00	-2.00	0.00	180.00
6,600.00	0.72	231.00	6,421.47	-710.43	-877.30	-710.43	2.00	-2.00	0.00	180.00
6,636.00	0.00	0.00	6,457.47	-710.57	-877.48	-710.57	2.00	-2.00	358.33	180.00
<b>End Drop @ 6636.00ft</b>										
6,643.58	0.00	0.00	6,465.05	-710.57	-877.48	-710.57	0.00	0.00	0.00	180.00
<b>Top of 4.5" Liner @ 6643.58ft</b>										
6,700.00	0.00	0.00	6,521.47	-710.57	-877.48	-710.57	0.00	0.00	0.00	0.00
6,743.58	0.00	0.00	6,565.05	-710.57	-877.48	-710.57	0.00	0.00	0.00	0.00
<b>KOP @ 6743.58ft</b>										
6,800.00	5.64	0.00	6,621.38	-707.79	-877.48	-707.79	10.00	10.00	0.00	0.00
6,900.00	15.64	0.00	6,719.53	-689.35	-877.48	-689.35	10.00	10.00	0.00	0.00
7,000.00	25.64	0.00	6,812.99	-654.14	-877.48	-654.14	10.00	10.00	0.00	0.00
7,100.00	35.64	0.00	6,898.92	-603.24	-877.48	-603.24	10.00	10.00	0.00	0.00
7,147.07	40.35	0.00	6,936.00	-574.27	-877.47	-574.27	10.00	10.00	0.00	0.00
<b>SSPG</b>										
7,190.49	44.69	0.00	6,968.00	-544.93	-877.47	-544.93	10.00	10.00	0.00	0.00
<b>NBRR</b>										
7,200.00	45.64	0.00	6,974.70	-538.19	-877.47	-538.19	10.00	10.00	0.00	0.00
<b>DLS = 10°/100'</b>										
7,300.00	55.64	0.00	7,038.04	-460.97	-877.47	-460.97	10.00	10.00	0.00	0.00
7,365.85	62.23	0.00	7,072.00	-404.59	-877.47	-404.59	10.00	10.00	0.00	0.00
<b>N470_B_CK</b>										
7,400.00	65.64	0.00	7,087.00	-373.92	-877.47	-373.92	10.00	10.00	0.00	0.00
7,500.00	75.64	0.00	7,120.11	-279.69	-877.47	-279.69	10.00	10.00	0.00	0.00
7,600.00	85.64	0.00	7,136.35	-181.15	-877.46	-181.15	10.00	10.00	0.00	0.00
7,641.48	89.79	0.00	7,138.00	-139.71	-877.46	-139.71	10.00	10.00	0.00	0.00
<b>End Build @ 7641.48ft - Landing Target (Heel) - 7"</b>										
7,700.00	89.79	0.00	7,138.22	-81.19	-877.46	-81.19	0.00	0.00	0.00	0.00
7,800.00	89.79	0.00	7,138.58	18.81	-877.46	18.81	0.00	0.00	0.00	0.00
7,900.00	89.79	0.00	7,138.95	118.81	-877.45	118.81	0.00	0.00	0.00	0.00
7,914.21	89.79	0.00	7,139.00	133.01	-877.45	133.01	0.00	0.00	0.00	0.00
<b>N700_C_CK</b>										
8,000.00	89.79	0.00	7,139.31	218.81	-877.45	218.81	0.00	0.00	0.00	0.00
8,100.00	89.79	0.00	7,139.68	318.81	-877.45	318.81	0.00	0.00	0.00	0.00
8,200.00	89.79	0.00	7,140.05	418.81	-877.44	418.81	0.00	0.00	0.00	0.00
8,300.00	89.79	0.00	7,140.41	518.81	-877.44	518.81	0.00	0.00	0.00	0.00

## Plan Report for BANE 28N2-9HZ - Permit Rev-1

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 (°)
8,400.00	89.79	0.00	7,140.78	618.80	-877.44	618.80	0.00	0.00	0.00	0.00
8,500.00	89.79	0.00	7,141.15	718.80	-877.43	718.80	0.00	0.00	0.00	0.00
8,600.00	89.79	0.00	7,141.51	818.80	-877.43	818.80	0.00	0.00	0.00	0.00
8,700.00	89.79	0.00	7,141.88	918.80	-877.43	918.80	0.00	0.00	0.00	0.00
8,800.00	89.79	0.00	7,142.25	1,018.80	-877.43	1,018.80	0.00	0.00	0.00	0.00
8,900.00	89.79	0.00	7,142.61	1,118.80	-877.42	1,118.80	0.00	0.00	0.00	0.00
9,000.00	89.79	0.00	7,142.98	1,218.80	-877.42	1,218.80	0.00	0.00	0.00	0.00
9,100.00	89.79	0.00	7,143.34	1,318.80	-877.42	1,318.80	0.00	0.00	0.00	0.00
9,200.00	89.79	0.00	7,143.71	1,418.80	-877.41	1,418.80	0.00	0.00	0.00	0.00
9,300.00	89.79	0.00	7,144.08	1,518.80	-877.41	1,518.80	0.00	0.00	0.00	0.00
9,400.00	89.79	0.00	7,144.44	1,618.80	-877.41	1,618.80	0.00	0.00	0.00	0.00
9,500.00	89.79	0.00	7,144.81	1,718.80	-877.40	1,718.80	0.00	0.00	0.00	0.00
9,600.00	89.79	0.00	7,145.18	1,818.80	-877.40	1,818.80	0.00	0.00	0.00	0.00
9,700.00	89.79	0.00	7,145.54	1,918.80	-877.40	1,918.80	0.00	0.00	0.00	0.00
9,800.00	89.79	0.00	7,145.91	2,018.80	-877.39	2,018.80	0.00	0.00	0.00	0.00
9,900.00	89.79	0.00	7,146.27	2,118.79	-877.39	2,118.79	0.00	0.00	0.00	0.00
10,000.00	89.79	0.00	7,146.64	2,218.79	-877.39	2,218.79	0.00	0.00	0.00	0.00
10,100.00	89.79	0.00	7,147.01	2,318.79	-877.38	2,318.79	0.00	0.00	0.00	0.00
10,200.00	89.79	0.00	7,147.37	2,418.79	-877.38	2,418.79	0.00	0.00	0.00	0.00
10,300.00	89.79	0.00	7,147.74	2,518.79	-877.38	2,518.79	0.00	0.00	0.00	0.00
10,400.00	89.79	0.00	7,148.11	2,618.79	-877.38	2,618.79	0.00	0.00	0.00	0.00
10,500.00	89.79	0.00	7,148.47	2,718.79	-877.37	2,718.79	0.00	0.00	0.00	0.00
10,600.00	89.79	0.00	7,148.84	2,818.79	-877.37	2,818.79	0.00	0.00	0.00	0.00
10,700.00	89.79	0.00	7,149.21	2,918.79	-877.37	2,918.79	0.00	0.00	0.00	0.00
10,800.00	89.79	0.00	7,149.57	3,018.79	-877.36	3,018.79	0.00	0.00	0.00	0.00
10,900.00	89.79	0.00	7,149.94	3,118.79	-877.36	3,118.79	0.00	0.00	0.00	0.00
11,000.00	89.79	0.00	7,150.30	3,218.79	-877.36	3,218.79	0.00	0.00	0.00	0.00
11,100.00	89.79	0.00	7,150.67	3,318.79	-877.35	3,318.79	0.00	0.00	0.00	0.00
11,200.00	89.79	0.00	7,151.04	3,418.79	-877.35	3,418.79	0.00	0.00	0.00	0.00
11,300.00	89.79	0.00	7,151.40	3,518.79	-877.35	3,518.79	0.00	0.00	0.00	0.00
11,400.00	89.79	0.00	7,151.77	3,618.78	-877.34	3,618.78	0.00	0.00	0.00	0.00
11,500.00	89.79	0.00	7,152.14	3,718.78	-877.34	3,718.78	0.00	0.00	0.00	0.00
11,600.00	89.79	0.00	7,152.50	3,818.78	-877.34	3,818.78	0.00	0.00	0.00	0.00
11,700.00	89.79	0.00	7,152.87	3,918.78	-877.34	3,918.78	0.00	0.00	0.00	0.00
11,800.00	89.79	0.00	7,153.24	4,018.78	-877.33	4,018.78	0.00	0.00	0.00	0.00
11,900.00	89.79	0.00	7,153.60	4,118.78	-877.33	4,118.78	0.00	0.00	0.00	0.00
12,000.00	89.79	0.00	7,153.97	4,218.78	-877.33	4,218.78	0.00	0.00	0.00	0.00
12,008.63	89.79	0.00	7,154.00	4,227.41	-877.33	4,227.41	0.00	0.00	0.00	0.00

TD Well @ 12008.63ft - BANE 28N2-9HZ\_BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,345.00	2,345.00	0.00	0.00	Begin Nudge @ 2345.00ft
3,345.00	3,324.82	-108.73	-134.27	End Nudge @ 3345.00ft
5,636.00	5,477.65	-601.84	-743.21	Begin Drop @ 5636.00ft
6,636.00	6,457.47	-710.57	-877.48	End Drop @ 6636.00ft
6,643.58	6,465.05	-710.57	-877.48	Top of 4.5" Liner @ 6643.58ft
6,743.58	6,565.05	-710.57	-877.48	KOP @ 6743.58ft
7,200.00	6,974.70	-538.19	-877.47	DLS = 10°/100'
7,641.48	7,138.00	-139.71	-877.46	End Build @ 7641.48ft
12,008.63	7,154.00	4,227.41	-877.33	TD Well @ 12008.63ft

## Plan Report for BANE 28N2-9HZ - Permit Rev-1

**Vertical Section Information**

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

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,641.48	Permit Rev-1	MWD+IFR1
7,641.48	12,008.63	Permit Rev-1	MWD+IFR1

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,509.00	1,509.00	9 5/8"	9-5/8	13-1/2
7,641.48	7,138.00	7"	7	8-3/4

**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
977.00	977.00	Base Fox Hills		0.00	
1,509.00	1,509.00	Surface Csg Setting Depth		0.00	
4,119.92	4,053.00	Parkman		0.00	
4,518.98	4,428.00	Sussex		0.00	
7,147.07	6,936.00	SSPG		0.00	
7,190.49	6,968.00	NBRR		0.00	
7,365.85	7,072.00	N470_B_CK		0.00	
7,641.48	7,138.00	Landing Target (Heel)		0.00	
7,914.22	7,139.00	N700_C_CK		0.00	
12,008.63	7,154.00	Total Depth (Toe)		0.00	

**Targets associated with this wellbore**

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
1N-R65W-Sec. 9_Section lines	0.00	0.00	59.04	Polygon
BANE 28N2-9HZ_BHL	7,154.00	4,227.41	-877.33	Point
BANE 28N2-9HZ_SHL	0.00	0.00	0.00	Point

**North Reference Sheet for Bane Pad - BANE 28N2-9HZ - 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' @ 4981.00usft (D Rig). Northing and Easting are relative to BANE 28N2-9HZ

Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N (108 W to 102 W) using datum North American Datum 1983, ellipsoid

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -105.00°, Longitude Origin:0.000000°, Latitude Origin:0.000000°

False Easting: 1,640,416.67usft, False Northing: 0.00usft, Scale Reduction: 0.99961003

Grid Coordinates of Well: 14,548,919.29 usft N, 1,734,045.01 usft E

Geographical Coordinates of Well: 40° 03' 37.59" N, 104° 39' 55.36" W

Grid Convergence at Surface is: 0.22°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,008.63usft  
the Bottom Hole Displacement is 4,317.49usft in the Direction of 348.28° ( True).

Magnetic Convergence at surface is: -8.12° (20 October 2014, , IGRF2010)

