

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

5N-R68W-12 Encore 41N-12HZ Pad

ENCORE 40N-12HZ

Plan A

Plan: Permit Rev-1

Sperry Drilling Services Proposal Report

15 December, 2014

Well Coordinates: 14,679,748.98 N, 1,650,689.99 E (40° 25' 12.68" N, 104° 57' 47.12" W)

Ground Level: 4,990.00 usft

Local Coordinate Origin:

Centered on Well ENCORE 40N-12HZ

Viewing Datum:

RKB = 17' @ 5007.00usft (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: 5N-R68W-12 Encore 41N-12HZ Pad
Well: ENCORE 40N-12HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

HALLIBURTON
Sperry Drilling

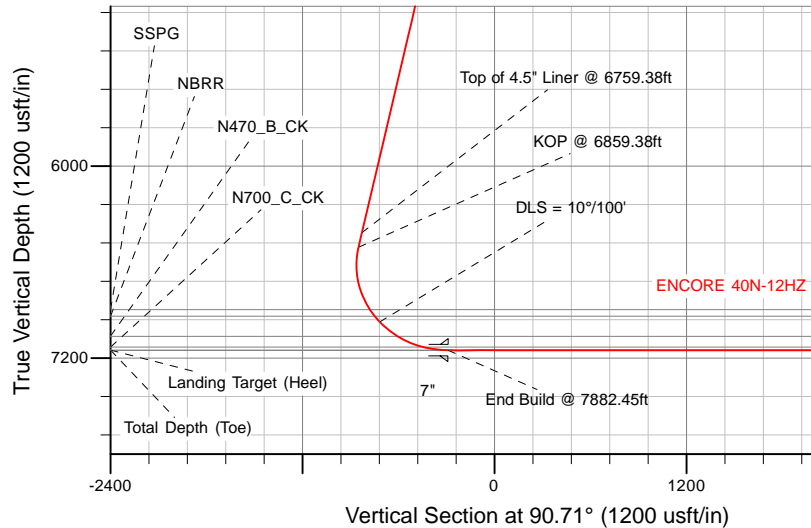
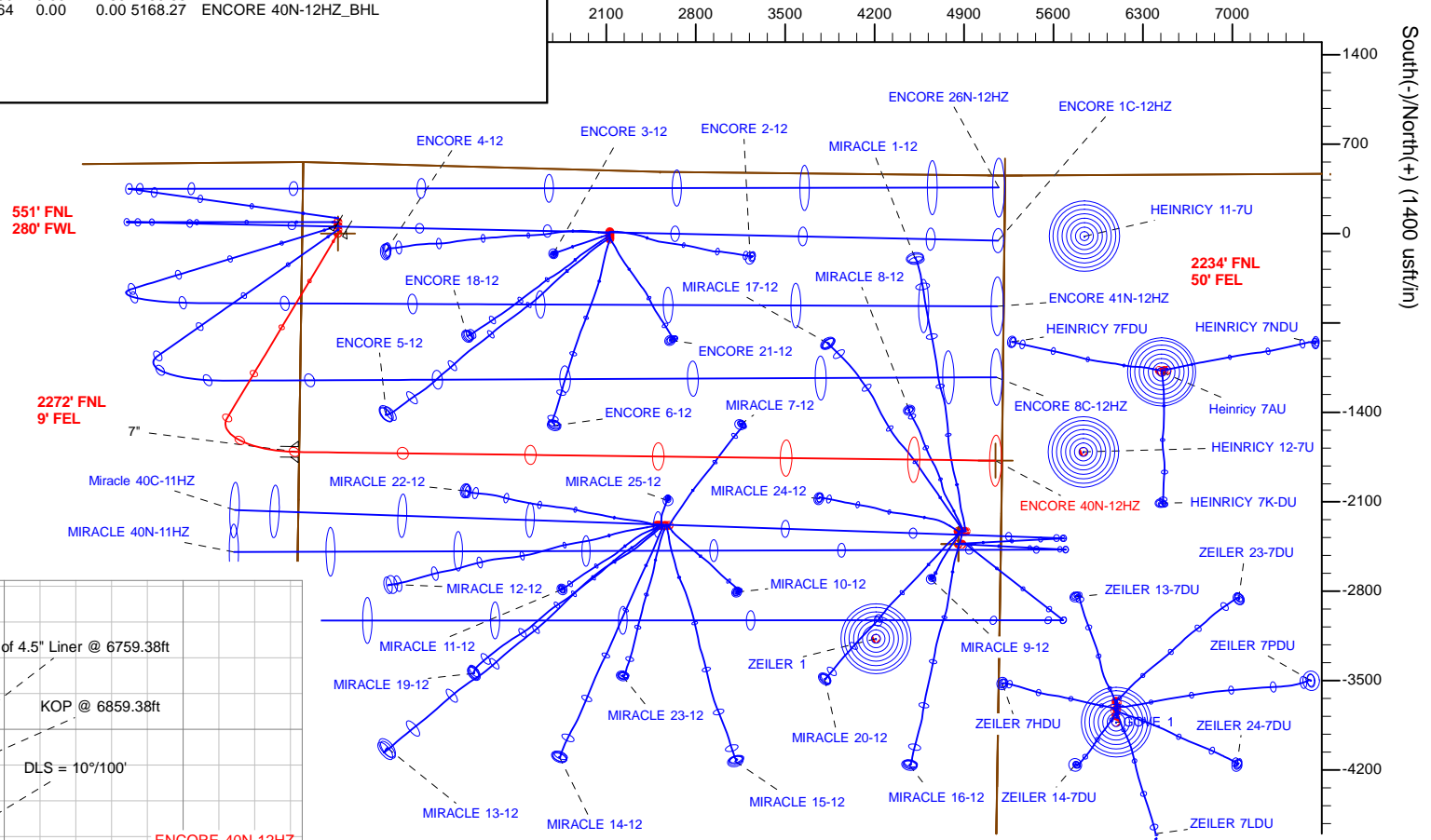
SECTION DETAILS

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	2259.38	0.00	0.00	2259.38	0.00	0.00	0.00	0.00	0.00	
3	3509.38	25.00	211.00	3470.09	-230.07	-138.24	2.00	211.00	-135.38	
4	6859.38	25.00	211.00	6506.22	-1443.62	-867.42	0.00	0.00	-849.46	
5	7882.45	90.00	90.71	7151.00	-1710.19	-310.90	10.00	-117.89	-289.68	
6	13340.40	90.00	90.71	7151.00	-1778.05	5146.64	0.00	0.00	5168.27	ENCORE 40N-12HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	
ENCORE 40N-12HZ_SHL	0.00	0.00	0.00	40.420189	-104.963089	
5N-R67W-Sec. 7_Section Lines	42.00	454.42	5221.16	40.421435	-104.944330	Polygon
5N-R68W-Sec. 11_Section Lines	42.00	-2431.79	4854.78	40.413510	-104.945648	Polygon
5N-R68W-Sec. 12_Section Lines	42.00	-2431.79	4854.78	40.413510	-104.945648	Polygon
ENCORE 40N-12HZ_BHL	7151.00	-1778.05	5146.64	40.415305	-104.944599	Polygon

West(-)/East(+) (1400 usft/in)



TVD MD

6415.59 6759.38 Top of 4.5" Liner @ 6759.38ft
6506.22 6859.38 KOP @ 6859.38ft

WELL DETAILS: ENCORE 40N-12HZ

Ground Level: 4990.00

RKB = 17' @ 5007.00usft (D Rig)

Plan: Permit Rev-1 (ENCORE 40N-12HZ/Plan A)

Created By: Clint Eshelman Date: 12/15/2014
Reviewed: _____ Date: _____

Plan Report for ENCORE 40N-12HZ - 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
ENCORE 40N-12HZ_SHL										
42.00	0.00	0.00	42.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5N-R68W-Sec. 12_Section Lines - 5N-R67W-Sec. 7_Section Lines - 5N-R68W-Sec. 11_Section Lines										
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
287.00	0.00	0.00	287.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Fox Hills										
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
746.00	0.00	0.00	746.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Csg Setting Depth - 9 5/8"										
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
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
1,600.00	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
2,259.38	0.00	0.00	2,259.38	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2259.38ft										
2,300.00	0.81	211.00	2,300.00	-0.25	-0.15	-0.15	2.00	2.00	0.00	211.00
2,400.00	2.81	211.00	2,399.94	-2.96	-1.78	-1.74	2.00	2.00	0.00	0.00
2,500.00	4.81	211.00	2,499.72	-8.66	-5.20	-5.09	2.00	2.00	0.00	0.00
2,600.00	6.81	211.00	2,599.20	-17.34	-10.42	-10.20	2.00	2.00	0.00	0.00
2,700.00	8.81	211.00	2,698.26	-28.99	-17.42	-17.06	2.00	2.00	0.00	0.00
2,800.00	10.81	211.00	2,796.80	-43.60	-26.19	-25.65	2.00	2.00	0.00	0.00
2,900.00	12.81	211.00	2,894.67	-61.14	-36.74	-35.98	2.00	2.00	0.00	0.00
3,000.00	14.81	211.00	2,991.78	-81.60	-49.03	-48.02	2.00	2.00	0.00	0.00
3,100.00	16.81	211.00	3,087.99	-104.96	-63.07	-61.76	2.00	2.00	0.00	0.00
3,200.00	18.81	211.00	3,183.19	-131.18	-78.82	-77.19	2.00	2.00	0.00	0.00
3,300.00	20.81	211.00	3,277.27	-160.23	-96.28	-94.28	2.00	2.00	0.00	0.00
3,400.00	22.81	211.00	3,370.10	-192.08	-115.41	-113.02	2.00	2.00	0.00	0.00
3,500.00	24.81	211.00	3,461.58	-226.68	-136.21	-133.39	2.00	2.00	0.00	0.00
3,509.38	25.00	211.00	3,470.09	-230.07	-138.24	-135.38	2.00	2.00	0.00	0.00
End Nudge @ 3509.38ft										
3,557.83	25.00	211.00	3,514.00	-247.62	-148.79	-145.71	0.00	0.00	0.00	0.00
Parkman										
3,600.00	25.00	211.00	3,552.22	-262.90	-157.97	-154.70	0.00	0.00	0.00	0.00
3,700.00	25.00	211.00	3,642.85	-299.12	-179.73	-176.01	0.00	0.00	0.00	0.00
3,800.00	25.00	211.00	3,733.48	-335.35	-201.50	-197.33	0.00	0.00	0.00	0.00
3,900.00	25.00	211.00	3,824.11	-371.57	-223.26	-218.64	0.00	0.00	0.00	0.00
4,000.00	25.00	211.00	3,914.74	-407.80	-245.03	-239.96	0.00	0.00	0.00	0.00
4,100.00	25.00	211.00	4,005.38	-444.03	-266.80	-261.27	0.00	0.00	0.00	0.00
4,200.00	25.00	211.00	4,096.01	-480.25	-288.56	-282.59	0.00	0.00	0.00	0.00
4,300.00	25.00	211.00	4,186.64	-516.48	-310.33	-303.91	0.00	0.00	0.00	0.00

Plan Report for ENCORE 40N-12HZ - 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 (°)
4,400.00	25.00	211.00	4,277.27	-552.70	-332.10	-325.22	0.00	0.00	0.00	0.00
4,500.00	25.00	211.00	4,367.90	-588.93	-353.86	-346.54	0.00	0.00	0.00	0.00
4,600.00	25.00	211.00	4,458.53	-625.15	-375.63	-367.85	0.00	0.00	0.00	0.00
4,700.00	25.00	211.00	4,549.16	-661.38	-397.40	-389.17	0.00	0.00	0.00	0.00
4,751.68	25.00	211.00	4,596.00	-680.10	-408.65	-400.19	0.00	0.00	0.00	0.00
Sussex										
4,800.00	25.00	211.00	4,639.79	-697.60	-419.16	-410.49	0.00	0.00	0.00	0.00
4,900.00	25.00	211.00	4,730.42	-733.83	-440.93	-431.80	0.00	0.00	0.00	0.00
5,000.00	25.00	211.00	4,821.05	-770.05	-462.70	-453.12	0.00	0.00	0.00	0.00
5,100.00	25.00	211.00	4,911.68	-806.28	-484.46	-474.43	0.00	0.00	0.00	0.00
5,200.00	25.00	211.00	5,002.31	-842.51	-506.23	-495.75	0.00	0.00	0.00	0.00
5,300.00	25.00	211.00	5,092.94	-878.73	-527.99	-517.07	0.00	0.00	0.00	0.00
5,400.00	25.00	211.00	5,183.58	-914.96	-549.76	-538.38	0.00	0.00	0.00	0.00
5,500.00	25.00	211.00	5,274.21	-951.18	-571.53	-559.70	0.00	0.00	0.00	0.00
5,600.00	25.00	211.00	5,364.84	-987.41	-593.29	-581.01	0.00	0.00	0.00	0.00
5,700.00	25.00	211.00	5,455.47	-1,023.63	-615.06	-602.33	0.00	0.00	0.00	0.00
5,800.00	25.00	211.00	5,546.10	-1,059.86	-636.83	-623.65	0.00	0.00	0.00	0.00
5,900.00	25.00	211.00	5,636.73	-1,096.08	-658.59	-644.96	0.00	0.00	0.00	0.00
6,000.00	25.00	211.00	5,727.36	-1,132.31	-680.36	-666.28	0.00	0.00	0.00	0.00
6,100.00	25.00	211.00	5,817.99	-1,168.53	-702.13	-687.59	0.00	0.00	0.00	0.00
6,200.00	25.00	211.00	5,908.62	-1,204.76	-723.89	-708.91	0.00	0.00	0.00	0.00
6,300.00	25.00	211.00	5,999.25	-1,240.99	-745.66	-730.22	0.00	0.00	0.00	0.00
6,400.00	25.00	211.00	6,089.88	-1,277.21	-767.43	-751.54	0.00	0.00	0.00	0.00
6,500.00	25.00	211.00	6,180.51	-1,313.44	-789.19	-772.86	0.00	0.00	0.00	0.00
6,600.00	25.00	211.00	6,271.15	-1,349.66	-810.96	-794.17	0.00	0.00	0.00	0.00
6,700.00	25.00	211.00	6,361.78	-1,385.89	-832.73	-815.49	0.00	0.00	0.00	0.00
6,759.38	25.00	211.00	6,415.59	-1,407.40	-845.65	-828.15	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6759.38ft										
6,800.00	25.00	211.00	6,452.41	-1,422.11	-854.49	-836.80	0.00	0.00	0.00	0.00
6,859.38	25.00	211.00	6,506.22	-1,443.62	-867.42	-849.46	0.00	0.00	0.00	0.00
KOP @ 6859.38ft										
6,900.00	23.36	201.92	6,543.29	-1,458.46	-874.85	-856.71	10.00	-4.04	-22.37	-117.89
7,000.00	22.00	176.02	6,635.79	-1,495.63	-880.96	-862.36	10.00	-1.36	-25.89	-109.60
7,100.00	24.75	151.59	6,727.79	-1,532.82	-869.67	-850.61	10.00	2.75	-24.43	-85.65
7,200.00	30.51	133.82	6,816.50	-1,568.89	-841.33	-821.82	10.00	5.76	-17.77	-63.16
7,297.18	37.71	122.10	6,897.00	-1,601.85	-798.25	-778.34	10.00	7.41	-12.06	-47.37
SSPG										
7,300.00	37.93	121.82	6,899.23	-1,602.76	-796.79	-776.86	10.00	7.93	-9.93	-37.64
7,349.26	41.93	117.34	6,937.00	-1,618.31	-769.28	-749.17	10.00	8.13	-9.09	-37.42
NBRR										
7,400.00	46.21	113.42	6,973.45	-1,633.39	-737.40	-717.10	10.00	8.43	-7.74	-33.98
DLS = 10°/100'										
7,500.00	54.96	107.12	7,036.93	-1,659.85	-664.97	-644.35	10.00	8.74	-6.30	-31.16
7,548.02	59.25	104.57	7,063.00	-1,670.83	-626.19	-605.44	10.00	8.95	-5.30	-27.14
N470_B_CK										
7,600.00	63.96	102.06	7,087.71	-1,681.34	-581.70	-560.82	10.00	9.05	-4.83	-25.76
7,700.00	73.12	97.73	7,124.28	-1,697.20	-490.13	-469.06	10.00	9.16	-4.33	-24.56
7,724.78	75.40	96.73	7,131.00	-1,700.20	-466.47	-445.36	10.00	9.22	-4.03	-22.98
N700_C_CK										
7,800.00	82.36	93.81	7,145.50	-1,706.95	-393.02	-371.84	10.00	9.25	-3.88	-22.70
7,882.45	90.00	90.71	7,151.00	-1,710.19	-310.89	-289.68	10.00	9.27	-3.76	-22.14
End Build @ 7882.45ft - Landing Target (Heel) - 7"										
7,900.00	90.00	90.71	7,151.00	-1,710.41	-293.34	-272.13	0.00	0.00	0.00	0.00
8,000.00	90.00	90.71	7,151.00	-1,711.65	-193.35	-172.13	0.00	0.00	0.00	0.00
8,100.00	90.00	90.71	7,151.00	-1,712.89	-93.36	-72.13	0.00	0.00	0.00	0.00
8,200.00	90.00	90.71	7,151.00	-1,714.14	6.63	27.87	0.00	0.00	0.00	0.00
8,300.00	90.00	90.71	7,151.00	-1,715.38	106.63	127.87	0.00	0.00	0.00	0.00
8,400.00	90.00	90.71	7,151.00	-1,716.62	206.62	227.87	0.00	0.00	0.00	0.00
8,500.00	90.00	90.71	7,151.00	-1,717.87	306.61	327.87	0.00	0.00	0.00	0.00

Plan Report for ENCORE 40N-12HZ - 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 (°)
8,600.00	90.00	90.71	7,151.00	-1,719.11	406.60	427.87	0.00	0.00	0.00	0.00
8,700.00	90.00	90.71	7,151.00	-1,720.35	506.59	527.87	0.00	0.00	0.00	0.00
8,800.00	90.00	90.71	7,151.00	-1,721.60	606.59	627.87	0.00	0.00	0.00	0.00
8,900.00	90.00	90.71	7,151.00	-1,722.84	706.58	727.87	0.00	0.00	0.00	0.00
9,000.00	90.00	90.71	7,151.00	-1,724.08	806.57	827.87	0.00	0.00	0.00	0.00
9,100.00	90.00	90.71	7,151.00	-1,725.33	906.56	927.87	0.00	0.00	0.00	0.00
9,200.00	90.00	90.71	7,151.00	-1,726.57	1,006.56	1,027.87	0.00	0.00	0.00	0.00
9,300.00	90.00	90.71	7,151.00	-1,727.81	1,106.55	1,127.87	0.00	0.00	0.00	0.00
9,400.00	90.00	90.71	7,151.00	-1,729.06	1,206.54	1,227.87	0.00	0.00	0.00	0.00
9,500.00	90.00	90.71	7,151.00	-1,730.30	1,306.53	1,327.87	0.00	0.00	0.00	0.00
9,600.00	90.00	90.71	7,151.00	-1,731.54	1,406.52	1,427.87	0.00	0.00	0.00	0.00
9,700.00	90.00	90.71	7,151.00	-1,732.79	1,506.52	1,527.87	0.00	0.00	0.00	0.00
9,800.00	90.00	90.71	7,151.00	-1,734.03	1,606.51	1,627.87	0.00	0.00	0.00	0.00
9,900.00	90.00	90.71	7,151.00	-1,735.27	1,706.50	1,727.87	0.00	0.00	0.00	0.00
10,000.00	90.00	90.71	7,151.00	-1,736.52	1,806.49	1,827.87	0.00	0.00	0.00	0.00
10,100.00	90.00	90.71	7,151.00	-1,737.76	1,906.49	1,927.87	0.00	0.00	0.00	0.00
10,200.00	90.00	90.71	7,151.00	-1,739.00	2,006.48	2,027.87	0.00	0.00	0.00	0.00
10,300.00	90.00	90.71	7,151.00	-1,740.25	2,106.47	2,127.87	0.00	0.00	0.00	0.00
10,400.00	90.00	90.71	7,151.00	-1,741.49	2,206.46	2,227.87	0.00	0.00	0.00	0.00
10,500.00	90.00	90.71	7,151.00	-1,742.73	2,306.46	2,327.87	0.00	0.00	0.00	0.00
10,600.00	90.00	90.71	7,151.00	-1,743.98	2,406.45	2,427.87	0.00	0.00	0.00	0.00
10,700.00	90.00	90.71	7,151.00	-1,745.22	2,506.44	2,527.87	0.00	0.00	0.00	0.00
10,800.00	90.00	90.71	7,151.00	-1,746.46	2,606.43	2,627.87	0.00	0.00	0.00	0.00
10,900.00	90.00	90.71	7,151.00	-1,747.71	2,706.42	2,727.87	0.00	0.00	0.00	0.00
11,000.00	90.00	90.71	7,151.00	-1,748.95	2,806.42	2,827.87	0.00	0.00	0.00	0.00
11,100.00	90.00	90.71	7,151.00	-1,750.20	2,906.41	2,927.87	0.00	0.00	0.00	0.00
11,200.00	90.00	90.71	7,151.00	-1,751.44	3,006.40	3,027.87	0.00	0.00	0.00	0.00
11,300.00	90.00	90.71	7,151.00	-1,752.68	3,106.39	3,127.87	0.00	0.00	0.00	0.00
11,400.00	90.00	90.71	7,151.00	-1,753.93	3,206.39	3,227.87	0.00	0.00	0.00	0.00
11,500.00	90.00	90.71	7,151.00	-1,755.17	3,306.38	3,327.87	0.00	0.00	0.00	0.00
11,600.00	90.00	90.71	7,151.00	-1,756.41	3,406.37	3,427.87	0.00	0.00	0.00	0.00
11,700.00	90.00	90.71	7,151.00	-1,757.66	3,506.36	3,527.87	0.00	0.00	0.00	0.00
11,800.00	90.00	90.71	7,151.00	-1,758.90	3,606.35	3,627.87	0.00	0.00	0.00	0.00
11,900.00	90.00	90.71	7,151.00	-1,760.14	3,706.35	3,727.87	0.00	0.00	0.00	0.00
12,000.00	90.00	90.71	7,151.00	-1,761.39	3,806.34	3,827.87	0.00	0.00	0.00	0.00
12,100.00	90.00	90.71	7,151.00	-1,762.63	3,906.33	3,927.87	0.00	0.00	0.00	0.00
12,200.00	90.00	90.71	7,151.00	-1,763.87	4,006.32	4,027.87	0.00	0.00	0.00	0.00
12,300.00	90.00	90.71	7,151.00	-1,765.12	4,106.32	4,127.87	0.00	0.00	0.00	0.00
12,400.00	90.00	90.71	7,151.00	-1,766.36	4,206.31	4,227.87	0.00	0.00	0.00	0.00
12,500.00	90.00	90.71	7,151.00	-1,767.60	4,306.30	4,327.87	0.00	0.00	0.00	0.00
12,600.00	90.00	90.71	7,151.00	-1,768.85	4,406.29	4,427.87	0.00	0.00	0.00	0.00
12,700.00	90.00	90.71	7,151.00	-1,770.09	4,506.29	4,527.87	0.00	0.00	0.00	0.00
12,800.00	90.00	90.71	7,151.00	-1,771.33	4,606.28	4,627.87	0.00	0.00	0.00	0.00
12,900.00	90.00	90.71	7,151.00	-1,772.58	4,706.27	4,727.87	0.00	0.00	0.00	0.00
13,000.00	90.00	90.71	7,151.00	-1,773.82	4,806.26	4,827.87	0.00	0.00	0.00	0.00
13,100.00	90.00	90.71	7,151.00	-1,775.06	4,906.25	4,927.87	0.00	0.00	0.00	0.00
13,200.00	90.00	90.71	7,151.00	-1,776.31	5,006.25	5,027.87	0.00	0.00	0.00	0.00
13,300.00	90.00	90.71	7,151.00	-1,777.55	5,106.24	5,127.87	0.00	0.00	0.00	0.00
13,340.40	90.00	90.71	7,151.00	-1,778.05	5,146.64	5,168.27	0.00	0.00	0.00	0.00

TD Well @ 13340.40ft - Total Depth (Toe) - ENCORE 40N-12HZ_BHL

Plan Report for ENCORE 40N-12HZ - Permit Rev-1

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,259.38	2,259.38	0.00	0.00	Begin Nudge @ 2259.38ft
3,509.38	3,470.09	-230.07	-138.24	End Nudge @ 3509.38ft
6,759.38	6,415.59	-1,407.40	-845.65	Top of 4.5" Liner @ 6759.38ft
6,859.38	6,506.22	-1,443.62	-867.42	KOP @ 6859.38ft
7,400.00	6,973.45	-1,633.39	-737.40	DLS = 10°/100'
7,882.45	7,151.00	-1,710.19	-310.89	End Build @ 7882.45ft
13,340.40	7,151.00	-1,778.05	5,146.64	TD Well @ 13340.40ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	90.71	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,882.45	Permit Rev-1	MWD+IFR1
7,882.45	13,340.40	Permit Rev-1	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
746.00	746.00	9 5/8"	9-5/8	13-1/2
7,882.45	7,151.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
287.00	287.00	Base Fox Hills		0.00	
746.00	746.00	Surface Csg Setting Depth		0.00	
3,557.83	3,514.00	Parkman		0.00	
4,751.68	4,596.00	Sussex		0.00	
7,297.18	6,897.00	SSPG		0.00	
7,349.26	6,937.00	NBRR		0.00	
7,548.02	7,063.00	N470_B_CK		0.00	
7,724.78	7,131.00	N700_C_CK		0.00	
7,882.45	7,151.00	Landing Target (Heel)		0.00	
13,340.40	7,151.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
ENCORE 40N-12HZ_SHL	0.00	0.00	0.00	Point
5N-R68W-Sec. 12_Section Lines	42.00	-2,431.79	4,854.78	Polygon
5N-R67W-Sec. 7_Section Lines	42.00	454.42	5,221.16	Polygon
ENCORE 40N-12HZ_BHL	7,151.00	-1,778.05	5,146.64	Point
5N-R68W-Sec. 11_Section Lines	42.00	-2,431.79	4,854.78	Polygon

North Reference Sheet for 5N-R68W-12 Encore 41N-12HZ Pad - ENCORE 40N-12HZ - 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' @ 5007.00usft (D Rig). Northing and Easting are relative to ENCORE 40N-12HZ

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: 0.99960012

Grid Coordinates of Well: 14,679,748.98 usft N, 1,650,689.99 usft E

Geographical Coordinates of Well: 40° 25' 12.68" N, 104° 57' 47.12" W

Grid Convergence at Surface is: 0.02°

Based upon Minimum Curvature type calculations, at a Measured Depth of 13,340.40usft
the Bottom Hole Displacement is 5,445.12usft in the Direction of 109.06° (True).

Magnetic Convergence at surface is: -8.48° (15 December 2014, , IGRF2010)

