

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

Skim 35-21HZ Pad

Skim State 4N-21HZ

Plan B

Plan: Permit Rev 2

Sperry Drilling Services Proposal Report

22 October, 2014

Well Coordinates: 14,601,715.54 N, 1,731,593.28 E (40° 12' 19.62" N, 104° 40' 24.41" W)

Ground Level: 4,847.00 usft

Local Coordinate Origin:

Centered on Well Skim State 4N-21HZ

Viewing Datum:

RKB = 17' @ 4864.00usft (D Rig)

TVDs to System:

N

North Reference:

True

Unit System:

API - US Survey Feet - Custom

Version: 5000.1 Build: 70

HALLIBURTON

Project: WELD-NAD83-UTMFT13N
Site: Skim 35-21HZ Pad
Well: Skim State 4N-21HZ
Wellbore: Plan B
Design: Permit Rev 2

US ROCKIES WATTENBERG PLANNING

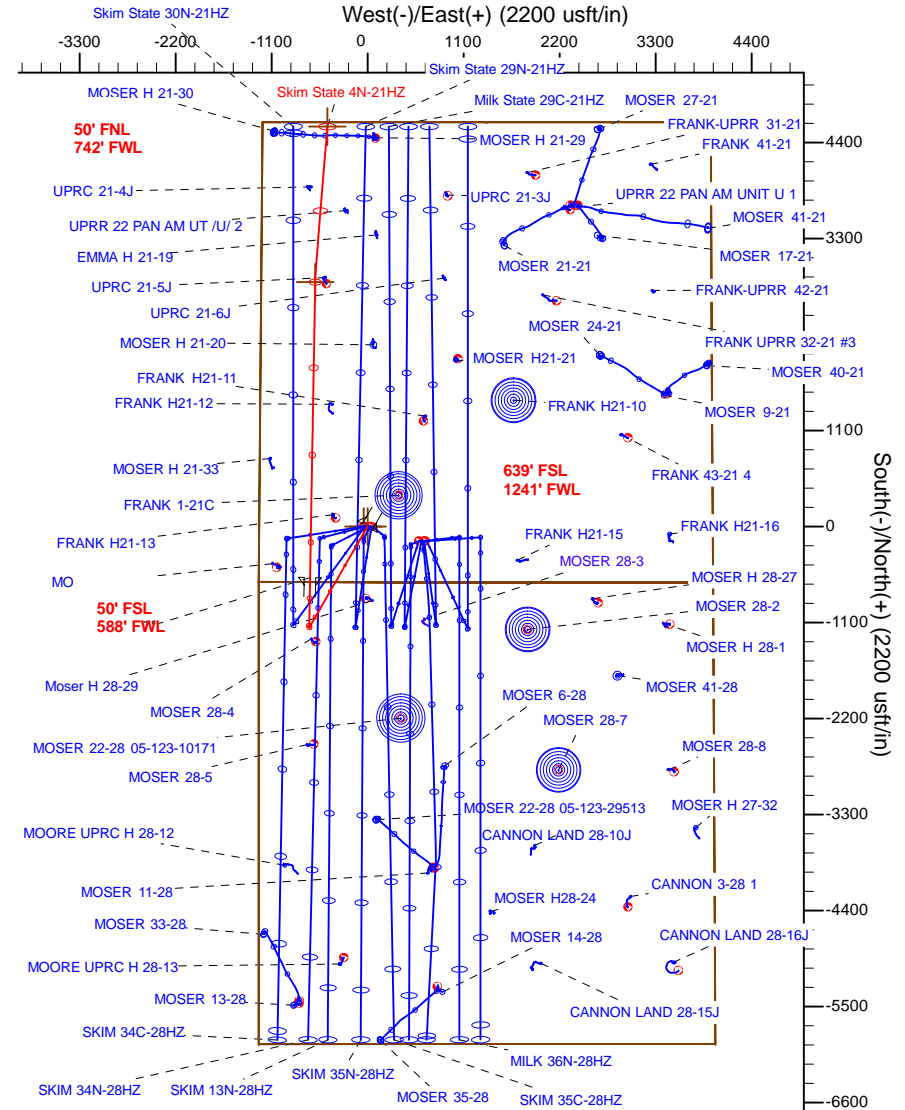
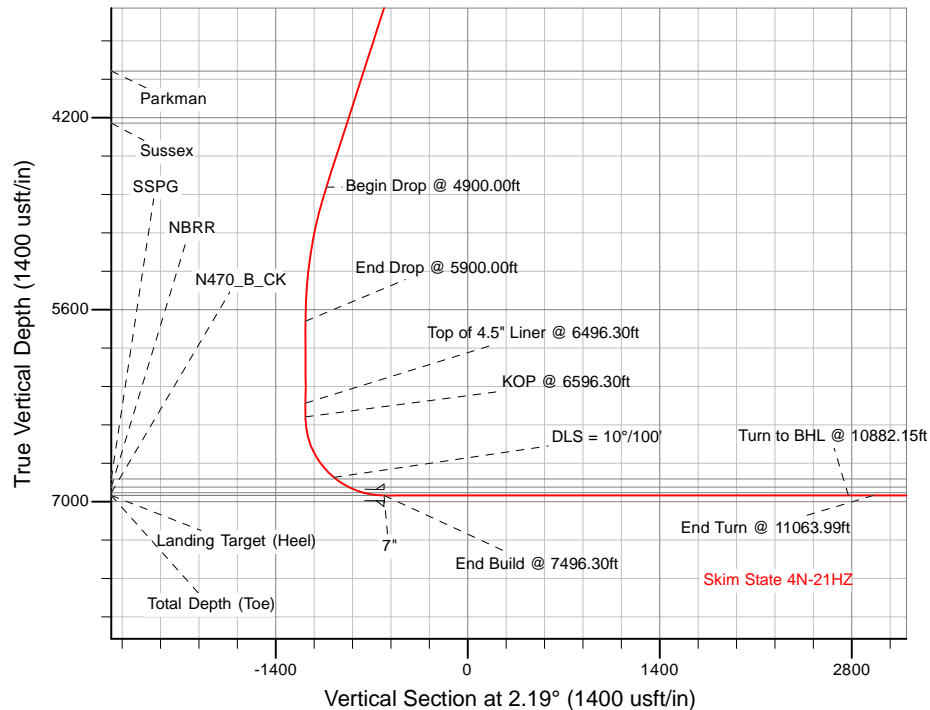
HALLIBURTON
Sperry Drilling

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	1000.00	0.00	0.00	1000.00	0.00	0.00	0.00	0.00	0.00	
3	2000.00	20.00	210.00	1979.81	-149.62	-86.38	2.00	210.00	-152.81	
4	4900.00	20.00	210.00	4704.92	-1008.60	-582.31	0.00	0.00	0.00	
5	5900.00	0.00	0.00	5684.74	-1158.22	-668.70	2.00	180.00	-1182.92	
6	6596.30	0.00	0.00	6381.04	-1158.22	-668.70	0.00	0.00	0.00	
7	7496.30	90.00	0.99	6954.00	-585.35	-658.75	10.00	0.99	-610.09	
8	10882.15	90.00	0.99	6954.00	2800.00	-600.00	0.00	0.00	2775.03	Skim State 4N-21HZ_Lateral Target
9	11063.99	90.00	4.63	6954.00	2981.59	-591.08	2.00	90.00	2956.82	
10	12669.47	90.00	4.63	6954.00	4581.83	-461.45	0.00	0.00	4560.85	Skim State 4N-21HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
Sec. 28 and 21-T3N-R65W	0.00	0.36	-44.95	40.205452	-104.673609	Polygon
Skim State 4N-21HZ_SHL	0.00	0.00	0.00	40.205451	-104.673448	
Skim State 4N-21HZ_BHL	6954.00	4581.83	-461.45	40.218033	-104.675101	Point
Skim State 4N-21HZ_Lateral Target	6954.00	2800.00	-600.00	40.213140	-104.675597	



TVD MD

6281.04 6496.30 Top of 4.5" Liner @ 6496.30ft
6381.04 6596.30 KOP @ 6596.30ft

WELL DETAILS: Skim State 4N-21HZ

Ground Level: 4847.00

RKB = 17" @ 4864.00usft (D Rig)

Plan: Permit Rev 2 (Skim State 4N-21HZ/Plan B)

Created By: Clint Eshelman

Date: 10/22/2014

Reviewed:

Date:

Plan Report for Skim State 4N-21HZ - Permit Rev 2

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
Skim State 4N-21HZ_SHL - Sec. 28 and 21-T3N-R65W										
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
623.00	0.00	0.00	623.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Fox Hills										
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
Begin Nudge @ 1000.00ft										
1,100.00	2.00	210.00	1,099.98	-1.51	-0.87	-1.54	2.00	2.00	0.00	210.00
1,136.00	2.72	210.00	1,135.95	-2.80	-1.61	-2.85	2.00	2.00	0.00	0.00
9 5/8"										
1,136.05	2.72	210.00	1,136.00	-2.80	-1.61	-2.86	2.00	2.00	0.00	0.00
Surface Csg Setting Depth										
1,200.00	4.00	210.00	1,199.84	-6.04	-3.49	-6.17	2.00	2.00	0.00	0.00
1,300.00	6.00	210.00	1,299.45	-13.59	-7.85	-13.88	2.00	2.00	0.00	0.00
1,400.00	8.00	210.00	1,398.70	-24.14	-13.94	-24.66	2.00	2.00	0.00	0.00
1,500.00	10.00	210.00	1,497.47	-37.69	-21.76	-38.50	2.00	2.00	0.00	0.00
1,600.00	12.00	210.00	1,595.62	-54.22	-31.30	-55.37	2.00	2.00	0.00	0.00
1,700.00	14.00	210.00	1,693.06	-73.70	-42.55	-75.27	2.00	2.00	0.00	0.00
1,800.00	16.00	210.00	1,789.64	-96.11	-55.49	-98.16	2.00	2.00	0.00	0.00
1,900.00	18.00	210.00	1,885.27	-121.43	-70.11	-124.02	2.00	2.00	0.00	0.00
2,000.00	20.00	210.00	1,979.82	-149.62	-86.38	-152.81	2.00	2.00	0.00	0.00
End Nudge @ 2000.00ft										
2,100.00	20.00	210.00	2,073.78	-179.24	-103.49	-183.07	0.00	0.00	0.00	0.00
2,200.00	20.00	210.00	2,167.75	-208.86	-120.59	-213.32	0.00	0.00	0.00	0.00
2,300.00	20.00	210.00	2,261.72	-238.48	-137.69	-243.57	0.00	0.00	0.00	0.00
2,400.00	20.00	210.00	2,355.69	-268.10	-154.79	-273.82	0.00	0.00	0.00	0.00
2,500.00	20.00	210.00	2,449.66	-297.72	-171.89	-304.07	0.00	0.00	0.00	0.00
2,600.00	20.00	210.00	2,543.63	-327.34	-188.99	-334.32	0.00	0.00	0.00	0.00
2,700.00	20.00	210.00	2,637.60	-356.96	-206.09	-364.58	0.00	0.00	0.00	0.00
2,800.00	20.00	210.00	2,731.57	-386.58	-223.19	-394.83	0.00	0.00	0.00	0.00
2,900.00	20.00	210.00	2,825.54	-416.20	-240.29	-425.08	0.00	0.00	0.00	0.00
3,000.00	20.00	210.00	2,919.51	-445.82	-257.39	-455.33	0.00	0.00	0.00	0.00
3,100.00	20.00	210.00	3,013.48	-475.44	-274.50	-485.58	0.00	0.00	0.00	0.00
3,200.00	20.00	210.00	3,107.45	-505.06	-291.60	-515.83	0.00	0.00	0.00	0.00
3,300.00	20.00	210.00	3,201.42	-534.68	-308.70	-546.09	0.00	0.00	0.00	0.00
3,400.00	20.00	210.00	3,295.39	-564.30	-325.80	-576.34	0.00	0.00	0.00	0.00
3,500.00	20.00	210.00	3,389.35	-593.92	-342.90	-606.59	0.00	0.00	0.00	0.00
3,600.00	20.00	210.00	3,483.32	-623.54	-360.00	-636.84	0.00	0.00	0.00	0.00
3,700.00	20.00	210.00	3,577.29	-653.16	-377.10	-667.09	0.00	0.00	0.00	0.00
3,800.00	20.00	210.00	3,671.26	-682.78	-394.20	-697.34	0.00	0.00	0.00	0.00
3,900.00	20.00	210.00	3,765.23	-712.40	-411.30	-727.60	0.00	0.00	0.00	0.00
4,000.00	20.00	210.00	3,859.20	-742.02	-428.40	-757.85	0.00	0.00	0.00	0.00
4,000.84	20.00	210.00	3,859.99	-742.27	-428.55	-758.10	0.00	0.00	0.00	0.00
Parkman										
4,100.00	20.00	210.00	3,953.17	-771.64	-445.51	-788.10	0.00	0.00	0.00	0.00
4,200.00	20.00	210.00	4,047.14	-801.26	-462.61	-818.35	0.00	0.00	0.00	0.00
4,300.00	20.00	210.00	4,141.11	-830.88	-479.71	-848.60	0.00	0.00	0.00	0.00
4,400.00	20.00	210.00	4,235.08	-860.50	-496.81	-878.85	0.00	0.00	0.00	0.00
4,405.23	20.00	210.00	4,239.99	-862.05	-497.70	-880.44	0.00	0.00	0.00	0.00
Sussex										

Plan Report for Skim State 4N-21HZ - Permit Rev 2

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 (°)
4,500.00	20.00	210.00	4,329.05	-890.12	-513.91	-909.11	0.00	0.00	0.00	0.00
4,600.00	20.00	210.00	4,423.02	-919.74	-531.01	-939.36	0.00	0.00	0.00	0.00
4,700.00	20.00	210.00	4,516.99	-949.36	-548.11	-969.61	0.00	0.00	0.00	0.00
4,800.00	20.00	210.00	4,610.95	-978.98	-565.21	-999.86	0.00	0.00	0.00	0.00
4,900.00	20.00	210.00	4,704.92	-1,008.60	-582.31	-1,030.11	0.00	0.00	0.00	0.00
Begin Drop @ 4900.00ft										
5,000.00	18.00	210.00	4,799.47	-1,036.79	-598.59	-1,058.91	2.00	-2.00	0.00	180.00
5,100.00	16.00	210.00	4,895.10	-1,062.11	-613.21	-1,084.77	2.00	-2.00	0.00	180.00
5,200.00	14.00	210.00	4,991.68	-1,084.52	-626.15	-1,107.66	2.00	-2.00	0.00	180.00
5,300.00	12.00	210.00	5,089.12	-1,104.00	-637.40	-1,127.55	2.00	-2.00	0.00	180.00
5,400.00	10.00	210.00	5,187.27	-1,120.53	-646.94	-1,144.43	2.00	-2.00	0.00	180.00
5,500.00	8.00	210.00	5,286.04	-1,134.07	-654.76	-1,158.27	2.00	-2.00	0.00	180.00
5,600.00	6.00	210.00	5,385.29	-1,144.63	-660.85	-1,169.04	2.00	-2.00	0.00	180.00
5,700.00	4.00	210.00	5,484.90	-1,152.17	-665.21	-1,176.75	2.00	-2.00	0.00	180.00
5,800.00	2.00	210.00	5,584.76	-1,156.71	-667.82	-1,181.38	2.00	-2.00	0.00	180.00
5,900.00	0.00	0.00	5,684.74	-1,158.22	-668.70	-1,182.92	2.00	-2.00	150.00	180.00
End Drop @ 5900.00ft										
6,000.00	0.00	0.00	5,784.74	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	5,884.74	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	5,984.74	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,084.74	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,184.74	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
6,496.30	0.00	0.00	6,281.04	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6496.30ft										
6,500.00	0.00	0.00	6,284.74	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
6,596.30	0.00	0.00	6,381.04	-1,158.22	-668.70	-1,182.92	0.00	0.00	0.00	0.00
KOP @ 6596.30ft										
6,600.00	0.37	0.99	6,384.74	-1,158.21	-668.70	-1,182.91	10.01	10.01	26.87	0.99
6,700.00	10.37	0.99	6,484.17	-1,148.86	-668.53	-1,173.57	10.00	10.00	0.00	0.00
6,800.00	20.37	0.99	6,580.48	-1,122.39	-668.08	-1,147.10	10.00	10.00	0.00	0.00
6,900.00	30.37	0.99	6,670.72	-1,079.61	-667.33	-1,104.32	10.00	10.00	0.00	0.00
7,000.00	40.37	0.99	6,752.16	-1,021.80	-666.33	-1,046.52	10.00	10.00	0.00	0.00
7,100.00	50.37	0.99	6,822.32	-950.74	-665.10	-975.46	10.00	10.00	0.00	0.00
DLS = 10°/100'										
7,118.66	52.24	0.99	6,833.99	-936.18	-664.84	-960.90	10.00	10.00	0.00	0.00
SSPG										
7,200.00	60.37	0.99	6,879.07	-868.57	-663.67	-893.30	10.00	10.00	0.00	0.00
7,231.72	63.54	0.99	6,893.99	-840.58	-663.18	-865.31	10.00	10.00	0.00	0.00
NBRR										
7,300.00	70.37	0.99	6,920.70	-777.80	-662.09	-802.53	10.00	10.00	0.00	0.00
7,344.43	74.81	0.99	6,933.99	-735.42	-661.36	-760.15	10.00	10.00	0.00	0.00
N470_B_CK										
7,400.00	80.37	0.99	6,945.92	-681.18	-660.42	-705.92	10.00	10.00	0.00	0.00
7,496.30	90.00	0.99	6,954.00	-585.34	-658.75	-610.09	10.00	10.00	0.00	0.00
End Build @ 7496.30ft - Landing Target (Heel) - 7"										
7,500.00	90.00	0.99	6,954.00	-581.64	-658.69	-606.39	0.00	0.00	0.00	0.00
7,600.00	90.00	0.99	6,954.00	-481.66	-656.96	-506.41	0.00	0.00	0.00	0.00
7,700.00	90.00	0.99	6,954.00	-381.67	-655.22	-406.43	0.00	0.00	0.00	0.00
7,800.00	90.00	0.99	6,954.00	-281.69	-653.48	-306.46	0.00	0.00	0.00	0.00
7,900.00	90.00	0.99	6,954.00	-181.70	-651.75	-206.48	0.00	0.00	0.00	0.00
8,000.00	90.00	0.99	6,954.00	-81.72	-650.01	-106.50	0.00	0.00	0.00	0.00
8,100.00	90.00	0.99	6,954.00	18.27	-648.28	-6.52	0.00	0.00	0.00	0.00
8,200.00	90.00	0.99	6,954.00	118.25	-646.54	93.46	0.00	0.00	0.00	0.00
8,300.00	90.00	0.99	6,954.00	218.24	-644.81	193.44	0.00	0.00	0.00	0.00
8,400.00	90.00	0.99	6,954.00	318.22	-643.07	293.41	0.00	0.00	0.00	0.00
8,500.00	90.00	0.99	6,954.00	418.20	-641.34	393.39	0.00	0.00	0.00	0.00
8,600.00	90.00	0.99	6,954.00	518.19	-639.60	493.37	0.00	0.00	0.00	0.00
8,700.00	90.00	0.99	6,954.00	618.17	-637.87	593.35	0.00	0.00	0.00	0.00

Plan Report for Skim State 4N-21HZ - Permit Rev 2

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 (°)
8,800.00	90.00	0.99	6,954.00	718.16	-636.13	693.33	0.00	0.00	0.00	0.00
8,900.00	90.00	0.99	6,954.00	818.14	-634.40	793.30	0.00	0.00	0.00	0.00
9,000.00	90.00	0.99	6,954.00	918.13	-632.66	893.28	0.00	0.00	0.00	0.00
9,100.00	90.00	0.99	6,954.00	1,018.11	-630.93	993.26	0.00	0.00	0.00	0.00
9,200.00	90.00	0.99	6,954.00	1,118.10	-629.19	1,093.24	0.00	0.00	0.00	0.00
9,300.00	90.00	0.99	6,954.00	1,218.08	-627.46	1,193.22	0.00	0.00	0.00	0.00
9,400.00	90.00	0.99	6,954.00	1,318.07	-625.72	1,293.20	0.00	0.00	0.00	0.00
9,500.00	90.00	0.99	6,954.00	1,418.05	-623.98	1,393.17	0.00	0.00	0.00	0.00
9,600.00	90.00	0.99	6,954.00	1,518.04	-622.25	1,493.15	0.00	0.00	0.00	0.00
9,700.00	90.00	0.99	6,954.00	1,618.02	-620.51	1,593.13	0.00	0.00	0.00	0.00
9,800.00	90.00	0.99	6,954.00	1,718.01	-618.78	1,693.11	0.00	0.00	0.00	0.00
9,900.00	90.00	0.99	6,954.00	1,817.99	-617.04	1,793.09	0.00	0.00	0.00	0.00
10,000.00	90.00	0.99	6,954.00	1,917.98	-615.31	1,893.07	0.00	0.00	0.00	0.00
10,100.00	90.00	0.99	6,954.00	2,017.96	-613.57	1,993.04	0.00	0.00	0.00	0.00
10,200.00	90.00	0.99	6,954.00	2,117.95	-611.84	2,093.02	0.00	0.00	0.00	0.00
10,300.00	90.00	0.99	6,954.00	2,217.93	-610.10	2,193.00	0.00	0.00	0.00	0.00
10,400.00	90.00	0.99	6,954.00	2,317.92	-608.37	2,292.98	0.00	0.00	0.00	0.00
10,500.00	90.00	0.99	6,954.00	2,417.90	-606.63	2,392.96	0.00	0.00	0.00	0.00
10,600.00	90.00	0.99	6,954.00	2,517.89	-604.90	2,492.93	0.00	0.00	0.00	0.00
10,700.00	90.00	0.99	6,954.00	2,617.87	-603.16	2,592.91	0.00	0.00	0.00	0.00
10,800.00	90.00	0.99	6,954.00	2,717.86	-601.43	2,692.89	0.00	0.00	0.00	0.00
10,882.15	90.00	0.99	6,954.00	2,800.00	-600.00	2,775.03	0.00	0.00	0.00	0.00
Turn to BHL @ 10882.15ft - Skim State 4N-21HZ_Lateral Target										
10,900.00	90.00	1.35	6,954.00	2,817.84	-599.63	2,792.87	2.00	0.00	2.00	90.00
11,000.00	90.00	3.35	6,954.00	2,917.75	-595.53	2,892.86	2.00	0.00	2.00	90.00
11,063.99	90.00	4.63	6,954.00	2,981.59	-591.08	2,956.82	2.00	0.00	2.00	90.00
End Turn @ 11063.99ft										
11,100.00	90.00	4.63	6,954.00	3,017.48	-588.17	2,992.80	0.00	0.00	0.00	0.00
11,200.00	90.00	4.63	6,954.00	3,117.15	-580.10	3,092.71	0.00	0.00	0.00	0.00
11,300.00	90.00	4.63	6,954.00	3,216.83	-572.02	3,192.62	0.00	0.00	0.00	0.00
11,400.00	90.00	4.63	6,954.00	3,316.50	-563.95	3,292.53	0.00	0.00	0.00	0.00
11,500.00	90.00	4.63	6,954.00	3,416.17	-555.88	3,392.44	0.00	0.00	0.00	0.00
11,600.00	90.00	4.63	6,954.00	3,515.85	-547.80	3,492.35	0.00	0.00	0.00	0.00
11,700.00	90.00	4.63	6,954.00	3,615.52	-539.73	3,592.25	0.00	0.00	0.00	0.00
11,800.00	90.00	4.63	6,954.00	3,715.19	-531.65	3,692.16	0.00	0.00	0.00	0.00
11,900.00	90.00	4.63	6,954.00	3,814.87	-523.58	3,792.07	0.00	0.00	0.00	0.00
12,000.00	90.00	4.63	6,954.00	3,914.54	-515.51	3,891.98	0.00	0.00	0.00	0.00
12,100.00	90.00	4.63	6,954.00	4,014.21	-507.43	3,991.89	0.00	0.00	0.00	0.00
12,200.00	90.00	4.63	6,954.00	4,113.89	-499.36	4,091.80	0.00	0.00	0.00	0.00
12,300.00	90.00	4.63	6,954.00	4,213.56	-491.28	4,191.71	0.00	0.00	0.00	0.00
12,400.00	90.00	4.63	6,954.00	4,313.24	-483.21	4,291.62	0.00	0.00	0.00	0.00
12,500.00	90.00	4.63	6,954.00	4,412.91	-475.14	4,391.53	0.00	0.00	0.00	0.00
12,600.00	90.00	4.63	6,954.00	4,512.58	-467.06	4,491.44	0.00	0.00	0.00	0.00
12,669.47	90.00	4.63	6,954.00	4,581.83	-461.45	4,560.84	0.00	0.00	0.00	0.00
TD Well @ 12669.47ft - Total Depth (Toe) - Skim State 4N-21HZ_BHL										

Plan Report for Skim State 4N-21HZ - Permit Rev 2

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,000.00	1,000.00	0.00	0.00	Begin Nudge @ 1000.00ft
2,000.00	1,979.82	-149.62	-86.38	End Nudge @ 2000.00ft
4,900.00	4,704.92	-1,008.60	-582.31	Begin Drop @ 4900.00ft
5,900.00	5,684.74	-1,158.22	-668.70	End Drop @ 5900.00ft
6,496.30	6,281.04	-1,158.22	-668.70	Top of 4.5" Liner @ 6496.30ft
6,596.30	6,381.04	-1,158.22	-668.70	KOP @ 6596.30ft
7,100.00	6,822.32	-950.74	-665.10	DLS = 10°/100'
7,496.30	6,954.00	-585.34	-658.75	End Build @ 7496.30ft
10,882.15	6,954.00	2,800.00	-600.00	Turn to BHL @ 10882.15ft
11,063.99	6,954.00	2,981.59	-591.08	End Turn @ 11063.99ft
12,669.47	6,954.00	4,581.83	-461.45	TD Well @ 12669.47ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	2.19	Slot	0.00	0.00	6,954.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,496.30	Permit Rev 2	MWD+IFR1
7,496.30	12,669.47	Permit Rev 2	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,136.00	1,135.95	9 5/8"	9-5/8	13-1/2
7,496.30	6,954.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
623.00	623.00	Base Fox Hills		0.00	
1,136.05	1,136.00	Surface Csg Setting Depth		0.00	
4,000.84	3,859.99	Parkman		0.00	
4,405.23	4,239.99	Sussex		0.00	
7,118.66	6,833.99	SSPG		0.00	
7,231.72	6,893.99	NBRR		0.00	
7,344.43	6,933.99	N470_B_CK		0.00	
7,496.30	6,954.00	Landing Target (Heel)		0.00	
12,669.47	6,954.00	Total Depth (Toe)		0.00	

Plan Report for Skim State 4N-21HZ - Permit Rev 2

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
Skim State 4N-21HZ_SHL	0.00	0.00	0.00	Point
Skim State 4N-21HZ_Lateral Target	6,954.00	2,800.00	-600.00	Point
Skim State 4N-21HZ_BHL	6,954.00	4,581.83	-461.45	Point
Sec. 28 and 21-T3N-R65W	0.00	0.36	-44.95	Polygon

North Reference Sheet for Skim 35-21HZ Pad - Skim State 4N-21HZ - Plan B

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' @ 4864.00usft (D Rig). Northing and Easting are relative to Skim State 4N-21HZ

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: 0.99960951

Grid Coordinates of Well: 14,601,715.54 usft N, 1,731,593.28 usft E

Geographical Coordinates of Well: 40° 12' 19.62" N, 104° 40' 24.41" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,669.47usft the Bottom Hole Displacement is 4,605.00usft in the Direction of 354.25° (True).

Magnetic Convergence at surface is: -8.14° (10 October 2014, , IGRF2010)

