

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

Joker Pad

JOKER 1N2-9HZ

Plan A

Plan: Permit Rev-1

Sperry Drilling Services Proposal Report

28 October, 2014

Well Coordinates: 14,548,921.83 N, 1,734,814.75 E (40° 03' 37.59" N, 104° 39' 45.46" W)

Ground Level: 4,969.00 usft

Local Coordinate Origin:

Centered on Well JOKER 1N2-9HZ

Viewing Datum:

RKB = 17' @ 4986.00usft (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: Joker Pad

Well: JOKER 1N2-9HZ

Wellbore: Plan A

Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

HALLIBURTON

Sperry Drilling

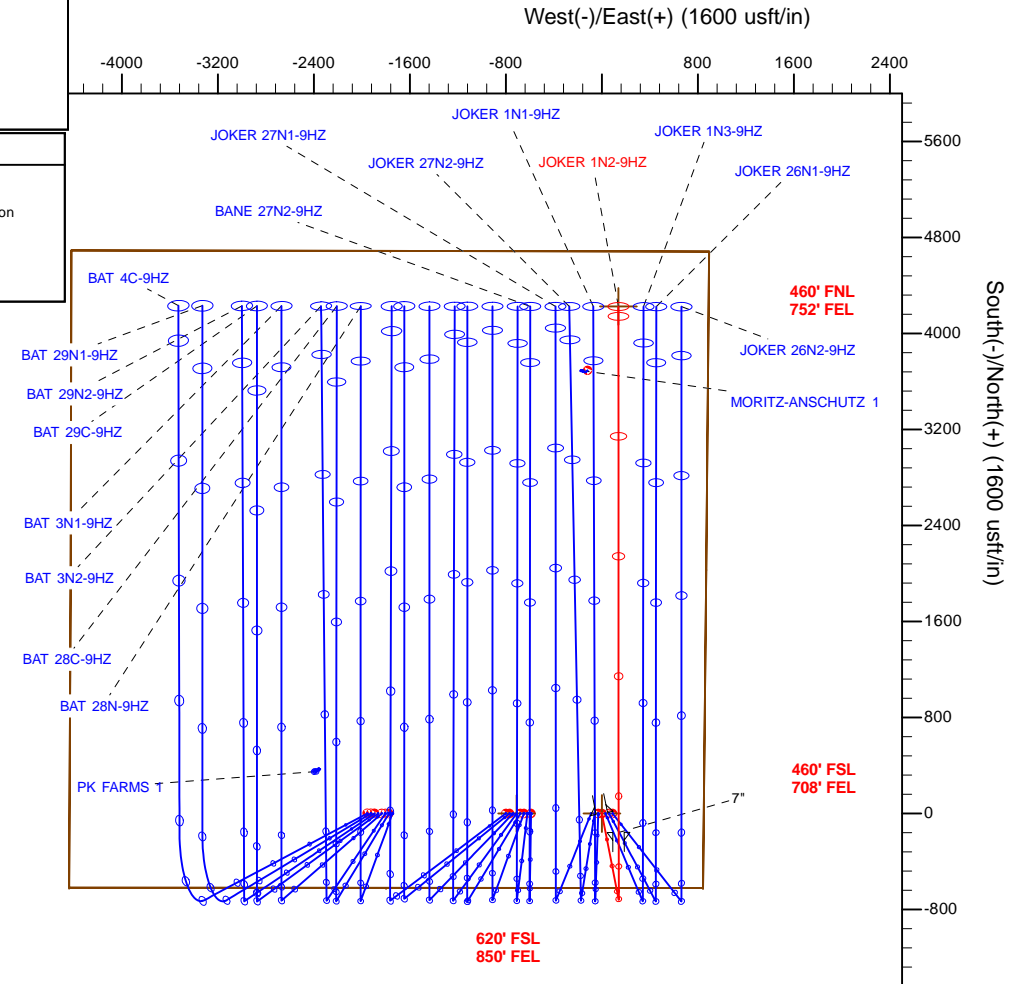
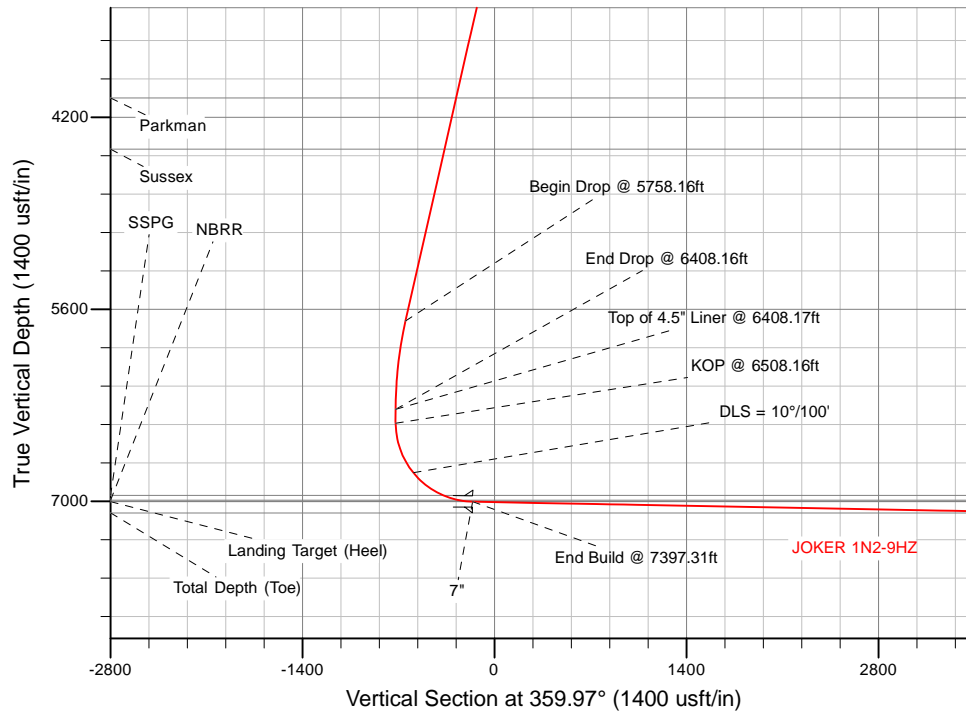
SECTION DETAILS

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	2498.16	0.00	0.00	2498.16	0.00	0.00	0.00	0.00	0.00	
3	3148.16	13.00	169.00	3142.60	-72.08	14.01	2.00	169.00	-72.08	
4	5758.16	13.00	169.00	5685.70	-648.41	126.04	0.00	0.00	-648.48	
5	6408.16	0.00	0.00	6330.14	-720.49	140.05	2.00	180.00	-720.56	
6	6508.16	0.00	0.00	6430.14	-720.49	140.05	0.00	0.00	-720.56	
7	7397.31	88.92	359.97	7003.00	-158.38	139.77	10.00	359.97	-158.45	
8	11781.32	88.92	359.97	7086.00	4224.85	137.64	0.00	0.00	4224.78	JOKER 1N2-9HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
JOKER 1N2-9HZ_SHL	0.00	0.00	0.00	40.060442	-104.662628
1N-R65W-Sec. 9 Section lines	5.00	0.37	-710.71	40.060443	-104.665168
JOKER 1N2-9HZ_BHL	7086.00	4224.85	137.64	40.072044	-104.662136

Polygon



TVD MD

6330.15 6408.17 Top of 4.5" Liner @ 6408.17ft
6430.14 6508.16 KOP @ 6508.16ft

WELL DETAILS: JOKER 1N2-9HZ

Ground Level: 4969.00

RKB = 17' @ 4986.00usft (D Rig)

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

Created By: Clint Eshelman

Reviewed:

Date: 10/28/2014

Date:

Plan Report for JOKER 1N2-9HZ - 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
JOKER 1N2-9HZ_SHL										
5.00	0.00	0.00	5.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1N-R65W-Sec. 9_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
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
982.00	0.00	0.00	982.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Fox Hills										
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
1,514.00	0.00	0.00	1,514.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Surface Csg Setting Depth - 9 5/8"										
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
2,400.00	0.00	0.00	2,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,498.16	0.00	0.00	2,498.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2498.16ft										
2,500.00	0.04	169.00	2,500.00	0.00	0.00	0.00	2.00	2.00	0.00	169.00
2,600.00	2.04	169.00	2,599.98	-1.78	0.35	-1.78	2.00	2.00	0.00	0.00
2,700.00	4.04	169.00	2,699.83	-6.98	1.36	-6.98	2.00	2.00	0.00	0.00
2,800.00	6.04	169.00	2,799.44	-15.59	3.03	-15.60	2.00	2.00	0.00	0.00
2,900.00	8.04	169.00	2,898.68	-27.62	5.37	-27.62	2.00	2.00	0.00	0.00
3,000.00	10.04	169.00	2,997.44	-43.04	8.37	-43.04	2.00	2.00	0.00	0.00
3,100.00	12.04	169.00	3,095.58	-61.83	12.02	-61.83	2.00	2.00	0.00	0.00
3,148.16	13.00	169.00	3,142.60	-72.08	14.01	-72.08	2.00	2.00	0.00	0.00
End Nudge @ 3148.16ft										
3,200.00	13.00	169.00	3,193.11	-83.52	16.24	-83.53	0.00	0.00	0.00	0.00
3,300.00	13.00	169.00	3,290.55	-105.60	20.53	-105.62	0.00	0.00	0.00	0.00
3,400.00	13.00	169.00	3,387.98	-127.69	24.82	-127.70	0.00	0.00	0.00	0.00
3,500.00	13.00	169.00	3,485.42	-149.77	29.11	-149.78	0.00	0.00	0.00	0.00
3,600.00	13.00	169.00	3,582.86	-171.85	33.40	-171.87	0.00	0.00	0.00	0.00
3,700.00	13.00	169.00	3,680.29	-193.93	37.70	-193.95	0.00	0.00	0.00	0.00
3,800.00	13.00	169.00	3,777.73	-216.01	41.99	-216.04	0.00	0.00	0.00	0.00
3,900.00	13.00	169.00	3,875.17	-238.10	46.28	-238.12	0.00	0.00	0.00	0.00
4,000.00	13.00	169.00	3,972.60	-260.18	50.57	-260.20	0.00	0.00	0.00	0.00
4,087.64	13.00	169.00	4,058.00	-279.53	54.34	-279.56	0.00	0.00	0.00	0.00
Parkman										
4,100.00	13.00	169.00	4,070.04	-282.26	54.87	-282.29	0.00	0.00	0.00	0.00
4,200.00	13.00	169.00	4,167.48	-304.34	59.16	-304.37	0.00	0.00	0.00	0.00
4,300.00	13.00	169.00	4,264.92	-326.42	63.45	-326.46	0.00	0.00	0.00	0.00

Plan Report for JOKER 1N2-9HZ - 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 (°)
4,400.00	13.00	169.00	4,362.35	-348.50	67.74	-348.54	0.00	0.00	0.00	0.00
4,472.51	13.00	169.00	4,433.00	-364.51	70.85	-364.55	0.00	0.00	0.00	0.00
Sussex										
4,500.00	13.00	169.00	4,459.79	-370.59	72.03	-370.62	0.00	0.00	0.00	0.00
4,600.00	13.00	169.00	4,557.23	-392.67	76.33	-392.71	0.00	0.00	0.00	0.00
4,700.00	13.00	169.00	4,654.66	-414.75	80.62	-414.79	0.00	0.00	0.00	0.00
4,800.00	13.00	169.00	4,752.10	-436.83	84.91	-436.88	0.00	0.00	0.00	0.00
4,900.00	13.00	169.00	4,849.54	-458.91	89.20	-458.96	0.00	0.00	0.00	0.00
5,000.00	13.00	169.00	4,946.97	-481.00	93.50	-481.04	0.00	0.00	0.00	0.00
5,100.00	13.00	169.00	5,044.41	-503.08	97.79	-503.13	0.00	0.00	0.00	0.00
5,200.00	13.00	169.00	5,141.85	-525.16	102.08	-525.21	0.00	0.00	0.00	0.00
5,300.00	13.00	169.00	5,239.29	-547.24	106.37	-547.30	0.00	0.00	0.00	0.00
5,400.00	13.00	169.00	5,336.72	-569.32	110.67	-569.38	0.00	0.00	0.00	0.00
5,500.00	13.00	169.00	5,434.16	-591.40	114.96	-591.46	0.00	0.00	0.00	0.00
5,600.00	13.00	169.00	5,531.60	-613.49	119.25	-613.55	0.00	0.00	0.00	0.00
5,700.00	13.00	169.00	5,629.03	-635.57	123.54	-635.63	0.00	0.00	0.00	0.00
5,758.16	13.00	169.00	5,685.70	-648.41	126.04	-648.48	0.00	0.00	0.00	0.00
Begin Drop @ 5758.16ft										
5,800.00	12.16	169.00	5,726.54	-657.36	127.78	-657.42	2.00	-2.00	0.00	180.00
5,900.00	10.16	169.00	5,824.64	-676.36	131.47	-676.43	2.00	-2.00	0.00	180.00
6,000.00	8.16	169.00	5,923.36	-691.99	134.51	-692.06	2.00	-2.00	0.00	180.00
6,100.00	6.16	169.00	6,022.57	-704.23	136.89	-704.30	2.00	-2.00	0.00	180.00
6,200.00	4.16	169.00	6,122.16	-713.07	138.61	-713.14	2.00	-2.00	0.00	180.00
6,300.00	2.16	169.00	6,222.01	-718.48	139.66	-718.55	2.00	-2.00	0.00	180.00
6,400.00	0.16	169.00	6,321.98	-720.47	140.05	-720.55	2.00	-2.00	0.00	180.00
6,408.16	0.00	0.00	6,330.14	-720.49	140.05	-720.56	2.00	-2.00	0.00	-180.00
End Drop @ 6408.16ft										
6,408.17	0.00	0.00	6,330.15	-720.49	140.05	-720.56	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6408.17ft										
6,500.00	0.00	0.00	6,421.98	-720.49	140.05	-720.56	0.00	0.00	0.00	0.00
6,508.16	0.00	0.00	6,430.14	-720.49	140.05	-720.56	0.00	0.00	0.00	0.00
KOP @ 6508.16ft										
6,600.00	9.18	359.97	6,521.59	-713.14	140.04	-713.21	10.00	10.00	0.00	359.97
6,700.00	19.18	359.97	6,618.42	-688.67	140.03	-688.74	10.00	10.00	0.00	0.00
6,800.00	29.18	359.97	6,709.52	-647.75	140.01	-647.83	10.00	10.00	0.00	0.00
6,900.00	39.18	359.97	6,792.14	-591.64	139.99	-591.71	10.00	10.00	0.00	0.00
DLS = 10°/100'										
7,000.00	49.18	359.97	6,863.76	-522.03	139.95	-522.10	10.00	10.00	0.00	0.00
7,100.00	59.18	359.97	6,922.21	-441.04	139.91	-441.12	10.00	10.00	0.00	0.00
7,176.75	66.86	359.97	6,957.00	-372.69	139.88	-372.77	10.00	10.00	0.00	0.00
SSPG										
7,200.00	69.18	359.97	6,965.70	-351.14	139.87	-351.21	10.00	10.00	0.00	0.00
7,290.21	78.20	359.97	6,991.00	-264.65	139.83	-264.72	10.00	10.00	0.00	0.00
NBRR										
7,300.00	79.18	359.97	6,992.92	-255.05	139.82	-255.12	10.00	10.00	0.00	0.00
7,397.31	88.91	359.97	7,003.00	-158.38	139.77	-158.45	10.00	10.00	0.00	0.00
End Build @ 7397.31ft - Landing Target (Heel) - 7"										
7,400.00	88.92	359.97	7,003.05	-155.69	139.77	-155.76	0.00	0.00	0.00	0.00
7,500.00	88.92	359.97	7,004.94	-55.71	139.72	-55.78	0.00	0.00	0.00	0.00
7,600.00	88.92	359.97	7,006.83	44.28	139.68	44.20	0.00	0.00	0.00	0.00
7,700.00	88.92	359.97	7,008.73	144.26	139.63	144.19	0.00	0.00	0.00	0.00
7,800.00	88.92	359.97	7,010.62	244.24	139.58	244.17	0.00	0.00	0.00	0.00
7,900.00	88.92	359.97	7,012.51	344.22	139.53	344.15	0.00	0.00	0.00	0.00
8,000.00	88.92	359.97	7,014.41	444.20	139.48	444.13	0.00	0.00	0.00	0.00
8,100.00	88.92	359.97	7,016.30	544.19	139.43	544.11	0.00	0.00	0.00	0.00
8,200.00	88.92	359.97	7,018.19	644.17	139.38	644.10	0.00	0.00	0.00	0.00
8,300.00	88.92	359.97	7,020.09	744.15	139.34	744.08	0.00	0.00	0.00	0.00
8,400.00	88.92	359.97	7,021.98	844.13	139.29	844.06	0.00	0.00	0.00	0.00
8,500.00	88.92	359.97	7,023.87	944.11	139.24	944.04	0.00	0.00	0.00	0.00

Plan Report for JOKER 1N2-9HZ - 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 (°)
8,600.00	88.92	359.97	7,025.77	1,044.10	139.19	1,044.02	0.00	0.00	0.00	0.00
8,700.00	88.92	359.97	7,027.66	1,144.08	139.14	1,144.01	0.00	0.00	0.00	0.00
8,800.00	88.92	359.97	7,029.55	1,244.06	139.09	1,243.99	0.00	0.00	0.00	0.00
8,900.00	88.92	359.97	7,031.45	1,344.04	139.04	1,343.97	0.00	0.00	0.00	0.00
9,000.00	88.92	359.97	7,033.34	1,444.03	138.99	1,443.95	0.00	0.00	0.00	0.00
9,100.00	88.92	359.97	7,035.23	1,544.01	138.95	1,543.93	0.00	0.00	0.00	0.00
9,200.00	88.92	359.97	7,037.13	1,643.99	138.90	1,643.92	0.00	0.00	0.00	0.00
9,300.00	88.92	359.97	7,039.02	1,743.97	138.85	1,743.90	0.00	0.00	0.00	0.00
9,400.00	88.92	359.97	7,040.91	1,843.95	138.80	1,843.88	0.00	0.00	0.00	0.00
9,500.00	88.92	359.97	7,042.81	1,943.94	138.75	1,943.86	0.00	0.00	0.00	0.00
9,600.00	88.92	359.97	7,044.70	2,043.92	138.70	2,043.84	0.00	0.00	0.00	0.00
9,700.00	88.92	359.97	7,046.59	2,143.90	138.65	2,143.83	0.00	0.00	0.00	0.00
9,800.00	88.92	359.97	7,048.49	2,243.88	138.61	2,243.81	0.00	0.00	0.00	0.00
9,900.00	88.92	359.97	7,050.38	2,343.86	138.56	2,343.79	0.00	0.00	0.00	0.00
10,000.00	88.92	359.97	7,052.27	2,443.85	138.51	2,443.77	0.00	0.00	0.00	0.00
10,100.00	88.92	359.97	7,054.17	2,543.83	138.46	2,543.75	0.00	0.00	0.00	0.00
10,200.00	88.92	359.97	7,056.06	2,643.81	138.41	2,643.74	0.00	0.00	0.00	0.00
10,300.00	88.92	359.97	7,057.95	2,743.79	138.36	2,743.72	0.00	0.00	0.00	0.00
10,400.00	88.92	359.97	7,059.85	2,843.77	138.31	2,843.70	0.00	0.00	0.00	0.00
10,500.00	88.92	359.97	7,061.74	2,943.76	138.26	2,943.68	0.00	0.00	0.00	0.00
10,600.00	88.92	359.97	7,063.63	3,043.74	138.22	3,043.67	0.00	0.00	0.00	0.00
10,700.00	88.92	359.97	7,065.53	3,143.72	138.17	3,143.65	0.00	0.00	0.00	0.00
10,800.00	88.92	359.97	7,067.42	3,243.70	138.12	3,243.63	0.00	0.00	0.00	0.00
10,900.00	88.92	359.97	7,069.31	3,343.68	138.07	3,343.61	0.00	0.00	0.00	0.00
11,000.00	88.92	359.97	7,071.21	3,443.67	138.02	3,443.59	0.00	0.00	0.00	0.00
11,100.00	88.92	359.97	7,073.10	3,543.65	137.97	3,543.58	0.00	0.00	0.00	0.00
11,200.00	88.92	359.97	7,074.99	3,643.63	137.92	3,643.56	0.00	0.00	0.00	0.00
11,300.00	88.92	359.97	7,076.89	3,743.61	137.87	3,743.54	0.00	0.00	0.00	0.00
11,400.00	88.92	359.97	7,078.78	3,843.59	137.83	3,843.52	0.00	0.00	0.00	0.00
11,500.00	88.92	359.97	7,080.67	3,943.58	137.78	3,943.50	0.00	0.00	0.00	0.00
11,600.00	88.92	359.97	7,082.57	4,043.56	137.73	4,043.49	0.00	0.00	0.00	0.00
11,700.00	88.92	359.97	7,084.46	4,143.54	137.68	4,143.47	0.00	0.00	0.00	0.00
11,781.32	88.92	359.97	7,086.00	4,224.85	137.64	4,224.77	0.00	0.00	0.00	0.00

TD Well @ 11781.32ft - Total Depth (Toe) - JOKER 1N2-9HZ_BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
2,498.16	2,498.16	0.00	0.00	Begin Nudge @ 2498.16ft
3,148.16	3,142.60	-72.08	14.01	End Nudge @ 3148.16ft
5,758.16	5,685.70	-648.41	126.04	Begin Drop @ 5758.16ft
6,408.16	6,330.14	-720.49	140.05	End Drop @ 6408.16ft
6,408.17	6,330.15	-720.49	140.05	Top of 4.5" Liner @ 6408.17ft
6,508.16	6,430.14	-720.49	140.05	KOP @ 6508.16ft
6,900.00	6,792.14	-591.64	139.99	DLS = 10°/100'
7,397.31	7,003.00	-158.38	139.77	End Build @ 7397.31ft
11,781.32	7,086.00	4,224.85	137.64	TD Well @ 11781.32ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	+E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	359.97	Slot	0.00	0.00	0.00

Plan Report for JOKER 1N2-9HZ - Permit Rev-1

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,397.31	Permit Rev-1	MWD+IFR1
7,397.31	11,781.32	Permit Rev-1	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,514.00	1,514.00	9 5/8"	9-5/8	13-1/2
7,397.31	7,003.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
982.00	982.00	Base Fox Hills		0.00	
1,514.00	1,514.00	Surface Csg Setting Depth		0.00	
4,087.64	4,058.00	Parkman		0.00	
4,472.51	4,433.00	Sussex		0.00	
7,176.75	6,957.00	SSPG		0.00	
7,290.21	6,991.00	NBRR		0.00	
7,397.31	7,003.00	Landing Target (Heel)		0.00	
11,781.32	7,086.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
JOKER 1N2-9HZ_SHL	0.00	0.00	0.00	Point
1N-R65W-Sec. 9_Section lines	5.00	0.37	-710.71	Polygon
JOKER 1N2-9HZ_BHL	7,086.00	4,224.85	137.64	Point

North Reference Sheet for Joker Pad - JOKER 1N2-9HZ - 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' @ 4986.00usft (D Rig). Northing and Easting are relative to JOKER 1N2-9HZ

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: 0.99961019

Grid Coordinates of Well: 14,548,921.83 usft N, 1,734,814.75 usft E

Geographical Coordinates of Well: 40° 03' 37.59" N, 104° 39' 45.46" W

Grid Convergence at Surface is: 0.22°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,781.32usft the Bottom Hole Displacement is 4,227.09usft in the Direction of 1.87° (True).

Magnetic Convergence at surface is: -8.11° (23 October 2014, , IGRF2010)

