

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

2N-65W-16 Cook #2 Pad

COOK 1C-16HZ

Plan A

Plan: Permit Rev-1

Sperry Drilling Services Proposal Report

19 March, 2015

Well Coordinates: 14,575,297.74 N, 1,734,798.13 E (40° 07' 58.34" N, 104° 39' 44.39" W)

Ground Level: 4,878.00 usft

Local Coordinate Origin:

Centered on Well COOK 1C-16HZ

Viewing Datum:

RKB = 17' @ 4895.00usft (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: 2N-65W-16 Cook #2 Pad
Well: COOK 1C-16HZ
Wellbore: Plan A
Design: Permit Rev-1

US ROCKIES WATTENBERG PLANNING

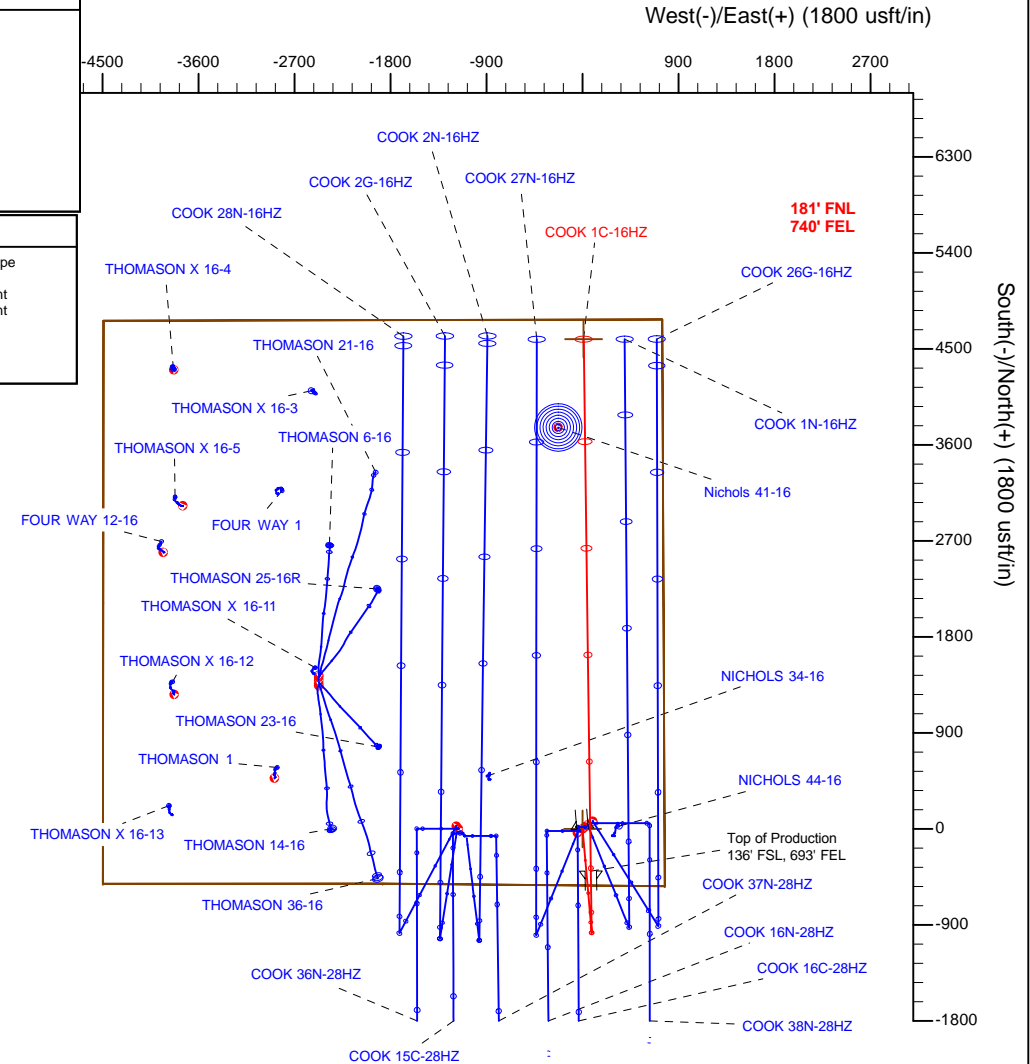
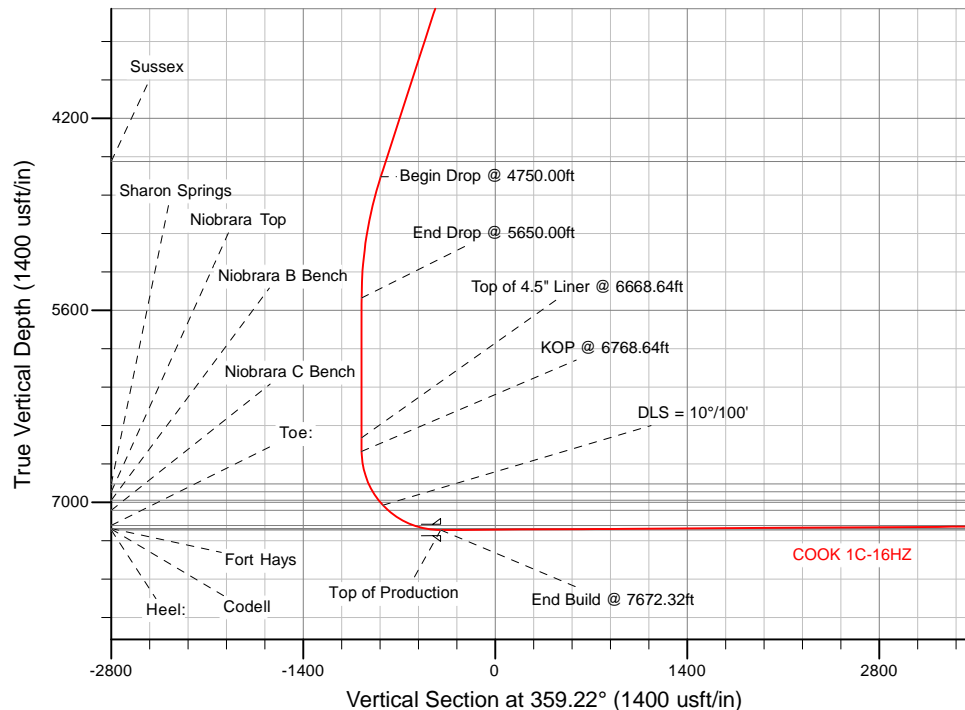
HALLIBURTON
Sperry Drilling

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	1600.00	0.00	0.00	1600.00	0.00	0.00	0.00	0.00	0.00	
3	2500.00	18.00	175.00	2485.27	-139.68	12.22	2.00	175.00	-139.83	
4	4750.00	18.00	175.00	4625.15	-832.32	72.82	0.00	0.00	-833.24	
5	5650.00	0.00	0.00	5510.41	-972.00	85.04	2.00	180.00	-973.07	
6	6768.64	0.00	0.00	6629.05	-972.00	85.04	0.00	0.00	-973.07	
7	7672.32	90.37	359.22	7202.00	-395.42	77.19	10.00	359.22	-396.43	
8	12660.36	90.37	359.22	7170.00	4592.06	9.30	0.00	0.00	4591.50	COOK 1C-16HZ_BHL

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
COOK 1C-16HZ_SHL	0.00	0.00	0.00	40.132873	-104.662330	Point
COOK 1C-16HZ_BHL	7170.00	4592.66	9.30	40.145483	-104.662296	Point



WELL DETAILS: COOK 1C-16HZ

Ground Level: 4878.00

RKB = 17' @ 4895.00usft (D Rig)

Plan: Permit Rev-1 (COOK 1C-16HZ/Plan A)

Created By: Clint Eshelman

Date: 3/10/2015

Reviewed:

Date:

Plan Report for COOK 1C-16HZ - 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
2N-R65W-Sec. 16_Section Lines - COOK 1C-16HZ_SHL										
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
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
1,350.00	0.00	0.00	1,350.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
Begin Nudge @ 1600.00ft										
1,700.00	2.00	175.00	1,699.98	-1.74	0.15	-1.74	2.00	2.00	0.00	175.00
1,800.00	4.00	175.00	1,799.84	-6.95	0.61	-6.96	2.00	2.00	0.00	0.00
1,900.00	6.00	175.00	1,899.45	-15.63	1.37	-15.65	2.00	2.00	0.00	0.00
2,000.00	8.00	175.00	1,998.70	-27.77	2.43	-27.80	2.00	2.00	0.00	0.00
2,100.00	10.00	175.00	2,097.47	-43.36	3.79	-43.40	2.00	2.00	0.00	0.00
2,200.00	12.00	175.00	2,195.62	-62.36	5.46	-62.43	2.00	2.00	0.00	0.00
2,300.00	14.00	175.00	2,293.06	-84.77	7.42	-84.87	2.00	2.00	0.00	0.00
2,400.00	16.00	175.00	2,389.64	-110.55	9.67	-110.68	2.00	2.00	0.00	0.00
2,500.00	18.00	175.00	2,485.27	-139.68	12.22	-139.83	2.00	2.00	0.00	0.00
End Nudge @ 2500.00ft										
2,600.00	18.00	175.00	2,580.37	-170.46	14.91	-170.65	0.00	0.00	0.00	0.00
2,700.00	18.00	175.00	2,675.48	-201.25	17.61	-201.47	0.00	0.00	0.00	0.00
2,800.00	18.00	175.00	2,770.59	-232.03	20.30	-232.29	0.00	0.00	0.00	0.00
2,900.00	18.00	175.00	2,865.69	-262.82	22.99	-263.10	0.00	0.00	0.00	0.00
3,000.00	18.00	175.00	2,960.80	-293.60	25.69	-293.92	0.00	0.00	0.00	0.00
3,100.00	18.00	175.00	3,055.90	-324.38	28.38	-324.74	0.00	0.00	0.00	0.00
3,200.00	18.00	175.00	3,151.01	-355.17	31.07	-355.56	0.00	0.00	0.00	0.00
3,300.00	18.00	175.00	3,246.11	-385.95	33.77	-386.38	0.00	0.00	0.00	0.00
3,400.00	18.00	175.00	3,341.22	-416.74	36.46	-417.19	0.00	0.00	0.00	0.00
3,500.00	18.00	175.00	3,436.32	-447.52	39.15	-448.01	0.00	0.00	0.00	0.00
3,600.00	18.00	175.00	3,531.43	-478.30	41.85	-478.83	0.00	0.00	0.00	0.00
3,700.00	18.00	175.00	3,626.54	-509.09	44.54	-509.65	0.00	0.00	0.00	0.00
3,800.00	18.00	175.00	3,721.64	-539.87	47.23	-540.47	0.00	0.00	0.00	0.00
3,900.00	18.00	175.00	3,816.75	-570.66	49.93	-571.28	0.00	0.00	0.00	0.00
4,000.00	18.00	175.00	3,911.85	-601.44	52.62	-602.10	0.00	0.00	0.00	0.00
4,100.00	18.00	175.00	4,006.96	-632.22	55.31	-632.92	0.00	0.00	0.00	0.00
4,200.00	18.00	175.00	4,102.06	-663.01	58.01	-663.74	0.00	0.00	0.00	0.00
4,300.00	18.00	175.00	4,197.17	-693.79	60.70	-694.56	0.00	0.00	0.00	0.00
4,400.00	18.00	175.00	4,292.28	-724.58	63.39	-725.37	0.00	0.00	0.00	0.00
4,500.00	18.00	175.00	4,387.38	-755.36	66.09	-756.19	0.00	0.00	0.00	0.00
4,600.00	18.00	175.00	4,482.49	-786.15	68.78	-787.01	0.00	0.00	0.00	0.00
4,634.19	18.00	175.00	4,515.00	-796.67	69.70	-797.54	0.00	0.00	0.00	0.00
Sussex										
4,700.00	18.00	175.00	4,577.59	-816.93	71.47	-817.83	0.00	0.00	0.00	0.00
4,750.00	18.00	175.00	4,625.15	-832.32	72.82	-833.24	0.00	0.00	0.00	0.00
Begin Drop @ 4750.00ft										
4,800.00	17.00	175.00	4,672.83	-847.30	74.13	-848.23	2.00	-2.00	0.00	180.00

Plan Report for COOK 1C-16HZ - 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 (°)
4,900.00	15.00	175.00	4,768.95	-874.76	76.53	-875.72	2.00	-2.00	0.00	180.00
5,000.00	13.00	175.00	4,865.98	-898.86	78.64	-899.84	2.00	-2.00	0.00	180.00
5,100.00	11.00	175.00	4,963.79	-919.57	80.45	-920.58	2.00	-2.00	0.00	180.00
5,200.00	9.00	175.00	5,062.26	-936.86	81.97	-937.89	2.00	-2.00	0.00	180.00
5,300.00	7.00	175.00	5,161.28	-950.73	83.18	-951.77	2.00	-2.00	0.00	180.00
5,400.00	5.00	175.00	5,260.73	-961.14	84.09	-962.20	2.00	-2.00	0.00	180.00
5,500.00	3.00	175.00	5,360.48	-968.09	84.70	-969.15	2.00	-2.00	0.00	180.00
5,600.00	1.00	175.00	5,460.42	-971.57	85.00	-972.63	2.00	-2.00	0.00	180.00
5,650.00	0.00	0.00	5,510.41	-972.00	85.04	-973.07	2.00	-2.00	-350.00	-180.00
End Drop @ 5650.00ft										
5,700.00	0.00	0.00	5,560.41	-972.00	85.04	-973.07	0.00	0.00	0.00	180.00
5,800.00	0.00	0.00	5,660.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,760.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,860.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	5,960.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,060.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,160.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,260.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,360.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,460.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,668.64	0.00	0.00	6,529.05	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6668.64ft										
6,700.00	0.00	0.00	6,560.41	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
6,768.64	0.00	0.00	6,629.05	-972.00	85.04	-973.07	0.00	0.00	0.00	0.00
KOP @ 6768.64ft										
6,800.00	3.14	359.22	6,660.40	-971.14	85.03	-972.21	10.00	10.00	0.00	359.22
6,900.00	13.14	359.22	6,759.27	-957.01	84.84	-958.08	10.00	10.00	0.00	0.00
7,000.00	23.14	359.22	6,854.18	-925.92	84.41	-926.99	10.00	10.00	0.00	0.00
7,012.42	24.38	359.22	6,865.55	-920.92	84.34	-921.98	10.00	10.00	0.00	0.00
Sharon Springs										
7,077.94	30.93	359.22	6,923.55	-890.53	83.93	-891.59	10.00	10.00	0.00	0.00
Niobrara Top										
7,100.00	33.14	359.22	6,942.25	-878.83	83.77	-879.89	10.00	10.00	0.00	0.00
7,151.84	38.32	359.22	6,984.32	-848.57	83.36	-849.63	10.00	10.00	0.00	0.00
Niobrara B Bench										
7,200.00	43.14	359.22	7,020.80	-817.16	82.93	-818.22	10.00	10.00	0.00	0.00
DLS = 10°/100'										
7,255.68	48.70	359.22	7,059.53	-777.18	82.39	-778.23	10.00	10.00	0.00	0.00
Niobrara C Bench										
7,300.00	53.14	359.22	7,087.46	-742.79	81.92	-743.84	10.00	10.00	0.00	0.00
7,400.00	63.14	359.22	7,140.18	-657.98	80.76	-659.02	10.00	10.00	0.00	0.00
7,500.00	73.14	359.22	7,177.37	-565.30	79.50	-566.33	10.00	10.00	0.00	0.00
7,564.23	79.56	359.22	7,192.53	-502.92	78.65	-503.94	10.00	10.00	0.00	0.00
Fort Hays										
7,574.47	80.58	359.22	7,194.29	-492.83	78.52	-493.86	10.00	10.00	0.00	0.00
Codell										
7,600.00	83.14	359.22	7,197.91	-467.57	78.17	-468.59	10.00	10.00	0.00	0.00
7,672.32	90.37	359.22	7,202.00	-395.42	77.19	-396.43	10.00	10.00	0.00	0.00
End Build @ 7672.32ft - Heel: - Top of Production										
7,700.00	90.37	359.22	7,201.82	-367.74	76.81	-368.75	0.00	0.00	0.00	0.00
7,800.00	90.37	359.22	7,201.18	-267.75	75.45	-268.75	0.00	0.00	0.00	0.00
7,900.00	90.37	359.22	7,200.54	-167.76	74.09	-168.76	0.00	0.00	0.00	0.00
8,000.00	90.37	359.22	7,199.90	-67.77	72.73	-68.76	0.00	0.00	0.00	0.00
8,100.00	90.37	359.22	7,199.26	32.22	71.37	31.24	0.00	0.00	0.00	0.00
8,200.00	90.37	359.22	7,198.61	132.20	70.01	131.24	0.00	0.00	0.00	0.00
8,300.00	90.37	359.22	7,197.97	232.19	68.65	231.24	0.00	0.00	0.00	0.00
8,400.00	90.37	359.22	7,197.33	332.18	67.29	331.23	0.00	0.00	0.00	0.00
8,500.00	90.37	359.22	7,196.69	432.17	65.93	431.23	0.00	0.00	0.00	0.00

Plan Report for COOK 1C-16HZ - 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	90.37	359.22	7,196.05	532.16	64.56	531.23	0.00	0.00	0.00	0.00
8,700.00	90.37	359.22	7,195.41	632.15	63.20	631.23	0.00	0.00	0.00	0.00
8,800.00	90.37	359.22	7,194.77	732.14	61.84	731.23	0.00	0.00	0.00	0.00
8,900.00	90.37	359.22	7,194.12	832.12	60.48	831.22	0.00	0.00	0.00	0.00
9,000.00	90.37	359.22	7,193.48	932.11	59.12	931.22	0.00	0.00	0.00	0.00
9,100.00	90.37	359.22	7,192.84	1,032.10	57.76	1,031.22	0.00	0.00	0.00	0.00
9,200.00	90.37	359.22	7,192.20	1,132.09	56.40	1,131.22	0.00	0.00	0.00	0.00
9,300.00	90.37	359.22	7,191.56	1,232.08	55.04	1,231.22	0.00	0.00	0.00	0.00
9,400.00	90.37	359.22	7,190.92	1,332.07	53.68	1,331.21	0.00	0.00	0.00	0.00
9,500.00	90.37	359.22	7,190.27	1,432.06	52.32	1,431.21	0.00	0.00	0.00	0.00
9,600.00	90.37	359.22	7,189.63	1,532.05	50.95	1,531.21	0.00	0.00	0.00	0.00
9,700.00	90.37	359.22	7,188.99	1,632.03	49.59	1,631.21	0.00	0.00	0.00	0.00
9,800.00	90.37	359.22	7,188.35	1,732.02	48.23	1,731.21	0.00	0.00	0.00	0.00
9,900.00	90.37	359.22	7,187.71	1,832.01	46.87	1,831.20	0.00	0.00	0.00	0.00
10,000.00	90.37	359.22	7,187.07	1,932.00	45.51	1,931.20	0.00	0.00	0.00	0.00
10,100.00	90.37	359.22	7,186.43	2,031.99	44.15	2,031.20	0.00	0.00	0.00	0.00
10,200.00	90.37	359.22	7,185.78	2,131.98	42.79	2,131.20	0.00	0.00	0.00	0.00
10,300.00	90.37	359.22	7,185.14	2,231.97	41.43	2,231.20	0.00	0.00	0.00	0.00
10,400.00	90.37	359.22	7,184.50	2,331.95	40.07	2,331.19	0.00	0.00	0.00	0.00
10,500.00	90.37	359.22	7,183.86	2,431.94	38.71	2,431.19	0.00	0.00	0.00	0.00
10,600.00	90.37	359.22	7,183.22	2,531.93	37.34	2,531.19	0.00	0.00	0.00	0.00
10,700.00	90.37	359.22	7,182.58	2,631.92	35.98	2,631.19	0.00	0.00	0.00	0.00
10,800.00	90.37	359.22	7,181.93	2,731.91	34.62	2,731.18	0.00	0.00	0.00	0.00
10,900.00	90.37	359.22	7,181.29	2,831.90	33.26	2,831.18	0.00	0.00	0.00	0.00
11,000.00	90.37	359.22	7,180.65	2,931.89	31.90	2,931.18	0.00	0.00	0.00	0.00
11,100.00	90.37	359.22	7,180.01	3,031.88	30.54	3,031.18	0.00	0.00	0.00	0.00
11,200.00	90.37	359.22	7,179.37	3,131.86	29.18	3,131.18	0.00	0.00	0.00	0.00
11,300.00	90.37	359.22	7,178.73	3,231.85	27.82	3,231.17	0.00	0.00	0.00	0.00
11,400.00	90.37	359.22	7,178.09	3,331.84	26.46	3,331.17	0.00	0.00	0.00	0.00
11,500.00	90.37	359.22	7,177.44	3,431.83	25.09	3,431.17	0.00	0.00	0.00	0.00
11,600.00	90.37	359.22	7,176.80	3,531.82	23.73	3,531.17	0.00	0.00	0.00	0.00
11,700.00	90.37	359.22	7,176.16	3,631.81	22.37	3,631.17	0.00	0.00	0.00	0.00
11,800.00	90.37	359.22	7,175.52	3,731.80	21.01	3,731.16	0.00	0.00	0.00	0.00
11,900.00	90.37	359.22	7,174.88	3,831.78	19.65	3,831.16	0.00	0.00	0.00	0.00
12,000.00	90.37	359.22	7,174.24	3,931.77	18.29	3,931.16	0.00	0.00	0.00	0.00
12,100.00	90.37	359.22	7,173.59	4,031.76	16.93	4,031.16	0.00	0.00	0.00	0.00
12,200.00	90.37	359.22	7,172.95	4,131.75	15.57	4,131.16	0.00	0.00	0.00	0.00
12,300.00	90.37	359.22	7,172.31	4,231.74	14.21	4,231.15	0.00	0.00	0.00	0.00
12,400.00	90.37	359.22	7,171.67	4,331.73	12.85	4,331.15	0.00	0.00	0.00	0.00
12,500.00	90.37	359.22	7,171.03	4,431.72	11.48	4,431.15	0.00	0.00	0.00	0.00
12,600.00	90.37	359.22	7,170.39	4,531.71	10.12	4,531.15	0.00	0.00	0.00	0.00
12,660.35	90.37	359.22	7,170.00	4,592.05	9.30	4,591.50	0.00	0.00	0.00	0.00
Toe:										
12,660.36	90.37	359.22	7,170.00	4,592.06	9.30	4,591.50	0.00	0.00	0.00	0.00
TD Well @ 12660.36ft - COOK 1C-16HZ_BHL										

Plan Report for COOK 1C-16HZ - Permit Rev-1**Plan Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,600.00	1,600.00	0.00	0.00	Begin Nudge @ 1600.00ft
2,500.00	2,485.27	-139.68	12.22	End Nudge @ 2500.00ft
4,750.00	4,625.15	-832.32	72.82	Begin Drop @ 4750.00ft
5,650.00	5,510.41	-972.00	85.04	End Drop @ 5650.00ft
6,668.64	6,529.05	-972.00	85.04	Top of 4.5" Liner @ 6668.64ft
6,768.64	6,629.05	-972.00	85.04	KOP @ 6768.64ft
7,200.00	7,020.80	-817.16	82.93	DLS = 10°/100'
7,672.32	7,202.00	-395.42	77.19	End Build @ 7672.32ft
12,660.36	7,170.00	4,592.06	9.30	TD Well @ 12660.36ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	359.22	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,672.32	Permit Rev-1	APC_ISCWSA REV 2 MWD+IFR1
7,672.32	12,660.36	Permit Rev-1	APC_ISCWSA REV 2 MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,350.00	1,350.00	9 5/8"	9-5/8	13-1/2
7,672.32	7,202.00	Top of Production	5-1/2	7-7/8

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,634.19	4,515.00	Sussex		0.00	
7,012.42	6,865.55	Sharon Springs		0.00	
7,077.94	6,923.55	Niobrara Top		0.00	
7,151.84	6,984.32	Niobrara B Bench		0.00	
7,255.68	7,059.53	Niobrara C Bench		0.00	
7,564.23	7,192.53	Fort Hays		0.00	
7,574.47	7,194.29	Codell		0.00	
7,672.32	7,202.00	Heel:		0.00	
12,660.35	7,170.00	Toe:		0.00	

Plan Report for COOK 1C-16HZ - Permit Rev-1

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
2N-R65W-Sec. 16_Section Lines	-18.00	-2,913.61	-4,164.19	Polygon
COOK 1C-16HZ_SHL	0.00	0.00	0.00	Point
COOK 1C-16HZ_BHL	7,170.00	4,592.06	9.30	Point

North Reference Sheet for 2N-65W-16 Cook #2 Pad - COOK 1C-16HZ - 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' @ 4895.00usft (D Rig). Northing and Easting are relative to COOK 1C-16HZ

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: 14,575,297.74 usft N, 1,734,798.13 usft E

Geographical Coordinates of Well: 40° 07' 58.34" N, 104° 39' 44.39" W

Grid Convergence at Surface is: 0.22°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,660.36usft
the Bottom Hole Displacement is 4,592.06usft in the Direction of 0.12° (True).

Magnetic Convergence at surface is: -8.07° (6 March 2015, , IGRF2010)

