

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N  
2N-65W-08 Sunflower Pad  
SUNFLOWER 8N-17HZ

Plan A

Plan: Permit Rev-1

## Sperry Drilling Services Proposal Report

18 March, 2015

Well Coordinates: 14,582,858.86 N, 1,729,014.21 E (40° 09' 13.30" N, 104° 40' 58.53" W)

Ground Level: 4,901.00 usft

Local Coordinate Origin:	Centered on Well SUNFLOWER 8N-17HZ
Viewing Datum:	RKB = 17' @ 4918.00usft (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-08 Sunflower Pad  
Well: SUNFLOWER 8N-17HZ  
Wellbore: Plan A  
Design: Permit Rev-1

# US ROCKIES WATTENBERG PLANNING

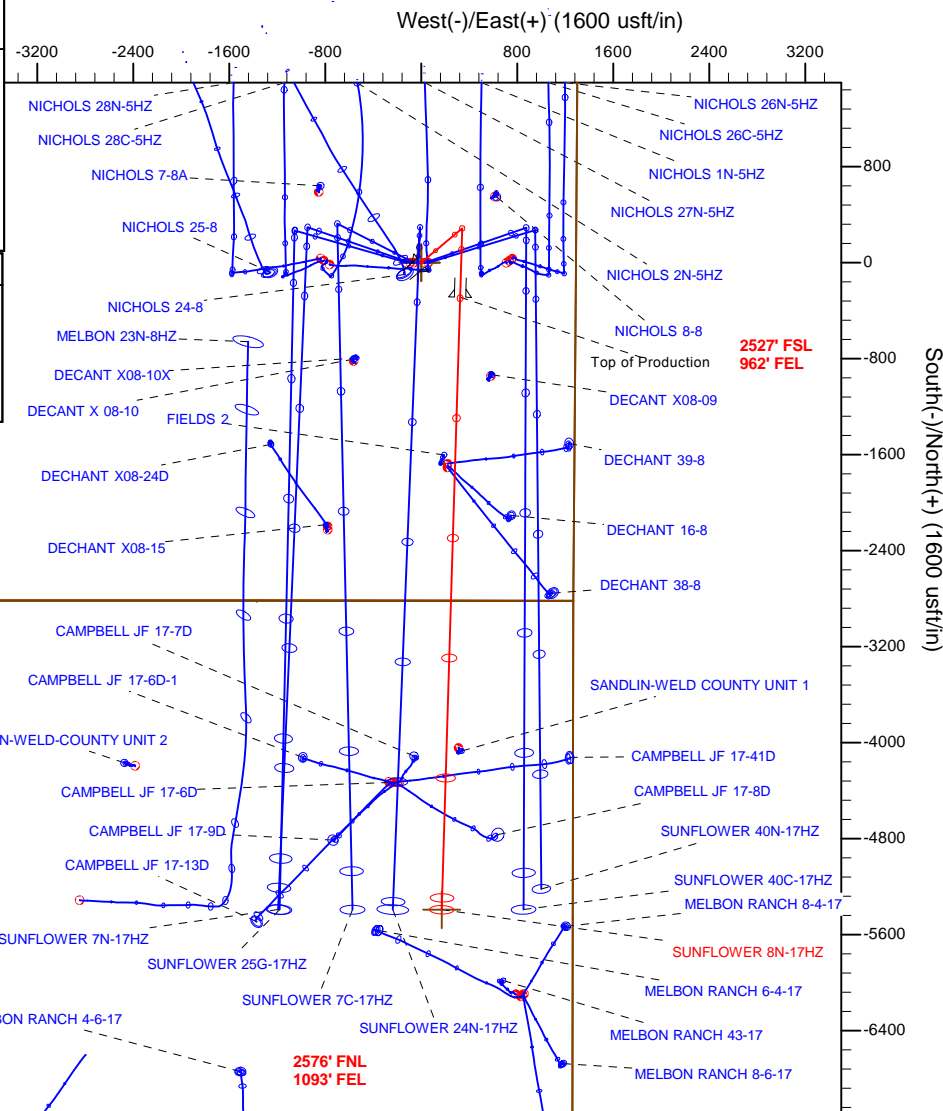
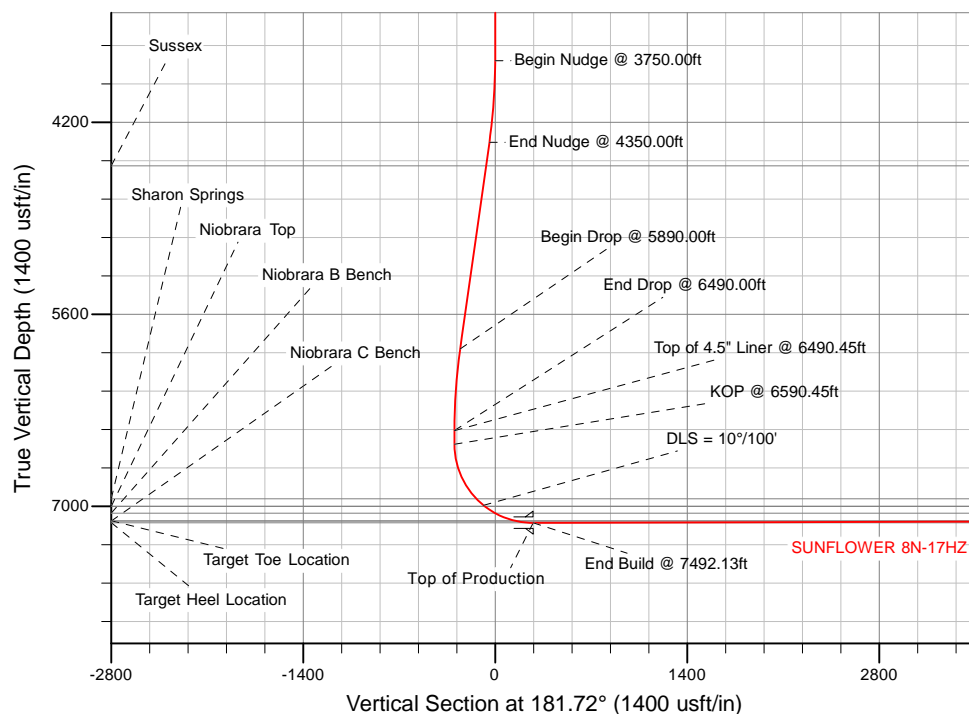
**HALLIBURTON**  
Sperry Drilling

## 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	3750.00	0.00	0.00	3750.00	0.00	0.00	0.00	0.00	0.00	
3	4350.00	12.00	50.00	4345.62	40.24	47.96	2.00	50.00	-41.66	
4	5890.00	12.00	50.00	5851.97	246.05	293.23	0.00	0.00	-254.74	
5	6490.00	0.00	0.00	6447.59	286.29	341.19	2.00	180.00	-296.40	
6	6590.45	0.00	0.00	6548.04	286.29	341.19	0.00	0.00	-296.40	
7	7492.13	90.17	181.72	7121.00	-288.09	323.92	10.00	181.72	278.24	
8	12598.38	90.17	181.72	7106.00	-5392.01	170.51	0.00	0.00	5384.46	SUNFLOWER 8N-17HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
SUNFLOWER 8N-17HZ_SHL	0.00	0.00	0.00	40.153695	-104.682926	Point
SUNFLOWER 8N-17HZ_BHL	7106.00	-5392.01	170.51	40.138888	-104.682316	Point



WELL DETAILS: SUNFLOWER 8N-17HZ		
Ground Level: 4901.00		
RKB = 17' @ 4918.00usft (D Rig)		
Plan: Permit Rev-1 (SUNFLOWER 8N-17HZ/Plan A)		
Created By: Clint Eshelman		Date: 2/25/2015
Reviewed:		Date:

TVD	MD	
6448.04	6490.45	Top of 4.5" Liner @ 6490.45ft
6548.04	6590.45	KOP @ 6590.45ft

## Plan Report for SUNFLOWER 8N-17HZ - 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>2N-R65W-Sec. 17_Section lines - SUNFLOWER 8N-17HZ_SHL - 2N-R65W-Sec. 8_Section lines</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
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
1,315.00	0.00	0.00	1,315.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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
2,300.00	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
2,500.00	0.00	0.00	2,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,800.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,900.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	3,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,200.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,300.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,500.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,600.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,700.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3,750.00	0.00	0.00	3,750.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 3750.00ft</b>										
3,800.00	1.00	50.00	3,800.00	0.28	0.33	-0.29	2.00	2.00	0.00	50.00
3,900.00	3.00	50.00	3,899.93	2.52	3.01	-2.61	2.00	2.00	0.00	0.00
4,000.00	5.00	50.00	3,999.68	7.01	8.35	-7.25	2.00	2.00	0.00	0.00
4,100.00	7.00	50.00	4,099.13	13.73	16.36	-14.21	2.00	2.00	0.00	0.00
4,200.00	9.00	50.00	4,198.15	22.67	27.02	-23.47	2.00	2.00	0.00	0.00
4,300.00	11.00	50.00	4,296.63	33.83	40.32	-35.03	2.00	2.00	0.00	0.00
4,350.00	12.00	50.00	4,345.62	40.24	47.96	-41.66	2.00	2.00	0.00	0.00
<b>End Nudge @ 4350.00ft</b>										
4,400.00	12.00	50.00	4,394.53	46.92	55.92	-48.58	0.00	0.00	0.00	0.00
4,500.00	12.00	50.00	4,492.35	60.29	71.85	-62.42	0.00	0.00	0.00	0.00
4,526.23	12.00	50.00	4,518.00	63.79	76.02	-66.04	0.00	0.00	0.00	0.00
<b>Sussex</b>										
4,600.00	12.00	50.00	4,590.16	73.65	87.77	-76.25	0.00	0.00	0.00	0.00
4,700.00	12.00	50.00	4,687.97	87.02	103.70	-90.09	0.00	0.00	0.00	0.00
4,800.00	12.00	50.00	4,785.79	100.38	119.63	-103.92	0.00	0.00	0.00	0.00

## Plan Report for SUNFLOWER 8N-17HZ - 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	12.00	50.00	4,883.60	113.74	135.55	-117.76	0.00	0.00	0.00	0.00
5,000.00	12.00	50.00	4,981.42	127.11	151.48	-131.60	0.00	0.00	0.00	0.00
5,100.00	12.00	50.00	5,079.23	140.47	167.41	-145.43	0.00	0.00	0.00	0.00
5,200.00	12.00	50.00	5,177.05	153.84	183.34	-159.27	0.00	0.00	0.00	0.00
5,300.00	12.00	50.00	5,274.86	167.20	199.26	-173.11	0.00	0.00	0.00	0.00
5,400.00	12.00	50.00	5,372.68	180.57	215.19	-186.94	0.00	0.00	0.00	0.00
5,500.00	12.00	50.00	5,470.49	193.93	231.12	-200.78	0.00	0.00	0.00	0.00
5,600.00	12.00	50.00	5,568.31	207.29	247.04	-214.62	0.00	0.00	0.00	0.00
5,700.00	12.00	50.00	5,666.12	220.66	262.97	-228.45	0.00	0.00	0.00	0.00
5,800.00	12.00	50.00	5,763.94	234.02	278.90	-242.29	0.00	0.00	0.00	0.00
5,890.00	12.00	50.00	5,851.97	246.05	293.23	-254.74	0.00	0.00	0.00	0.00
<b>Begin Drop @ 5890.00ft</b>										
5,900.00	11.80	50.00	5,861.76	247.38	294.81	-256.11	2.00	-2.00	0.00	-180.00
6,000.00	9.80	50.00	5,959.98	259.42	309.16	-268.58	2.00	-2.00	0.00	180.00
6,100.00	7.80	50.00	6,058.80	269.25	320.88	-278.76	2.00	-2.00	0.00	180.00
6,200.00	5.80	50.00	6,158.09	276.86	329.95	-286.64	2.00	-2.00	0.00	180.00
6,300.00	3.80	50.00	6,257.73	282.24	336.36	-292.21	2.00	-2.00	0.00	-180.00
6,400.00	1.80	50.00	6,357.61	285.38	340.10	-295.46	2.00	-2.00	0.00	180.00
6,490.00	0.00	0.00	6,447.59	286.29	341.19	-296.40	2.00	-2.00	-55.56	-180.00
<b>End Drop @ 6490.00ft</b>										
6,490.45	0.00	0.00	6,448.04	286.29	341.19	-296.40	0.00	0.00	0.00	180.00
<b>Top of 4.5" Liner @ 6490.45ft</b>										
6,500.00	0.00	0.00	6,457.59	286.29	341.19	-296.40	0.00	0.00	0.00	0.00
6,590.45	0.00	0.00	6,548.04	286.29	341.19	-296.40	0.00	0.00	0.00	0.00
<b>KOP @ 6590.45ft</b>										
6,600.00	0.95	181.72	6,557.59	286.21	341.19	-296.32	10.00	10.00	0.00	181.72
6,700.00	10.95	181.72	6,656.93	275.85	340.87	-285.96	10.00	10.00	0.00	0.00
6,800.00	20.95	181.72	6,752.95	248.41	340.05	-258.51	10.00	10.00	0.00	0.00
6,900.00	30.95	181.72	6,842.75	204.72	338.74	-214.80	10.00	10.00	0.00	0.00
7,000.00	40.95	181.72	6,923.60	146.11	336.97	-156.16	10.00	10.00	0.00	0.00
7,029.72	43.93	181.72	6,945.53	126.06	336.37	-136.10	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,100.00	50.95	181.72	6,993.03	74.35	334.82	-84.37	10.00	10.00	0.00	0.00
<b>DLS = 10°/100'</b>										
7,112.06	52.16	181.72	7,000.53	64.91	334.53	-74.92	10.00	10.00	0.00	0.00
<b>Niobrara Top</b>										
7,200.00	60.95	181.72	7,048.95	-8.37	332.33	-1.61	10.00	10.00	0.00	0.00
7,201.77	61.13	181.72	7,049.80	-9.91	332.28	-0.07	10.00	10.00	0.00	0.00
<b>Niobrara B Bench</b>										
7,300.00	70.95	181.72	7,089.64	-99.53	329.59	89.59	10.00	10.00	0.00	0.00
7,370.45	78.00	181.72	7,108.48	-167.33	327.55	157.43	10.00	10.00	0.00	0.00
<b>Niobrara C Bench</b>										
7,400.00	80.95	181.72	7,113.88	-196.37	326.68	186.48	10.00	10.00	0.00	0.00
7,492.13	90.17	181.72	7,121.00	-288.09	323.92	278.24	10.00	10.00	0.00	0.00
<b>End Build @ 7492.13ft - Target Heel Location - Top of Production</b>										
7,500.00	90.17	181.72	7,120.98	-295.95	323.69	286.11	0.00	0.00	0.00	0.00
7,600.00	90.17	181.72	7,120.68	-395.91	320.68	386.10	0.00	0.00	0.00	0.00
7,700.00	90.17	181.72	7,120.39	-495.86	317.68	486.10	0.00	0.00	0.00	0.00
7,800.00	90.17	181.72	7,120.09	-595.82	314.67	586.10	0.00	0.00	0.00	0.00
7,900.00	90.17	181.72	7,119.80	-695.77	311.67	686.10	0.00	0.00	0.00	0.00
8,000.00	90.17	181.72	7,119.51	-795.73	308.66	786.10	0.00	0.00	0.00	0.00
8,100.00	90.17	181.72	7,119.21	-895.68	305.66	886.10	0.00	0.00	0.00	0.00
8,200.00	90.17	181.72	7,118.92	-995.64	302.66	986.10	0.00	0.00	0.00	0.00
8,300.00	90.17	181.72	7,118.63	-1,095.59	299.65	1,086.10	0.00	0.00	0.00	0.00
8,400.00	90.17	181.72	7,118.33	-1,195.54	296.65	1,186.10	0.00	0.00	0.00	0.00
8,500.00	90.17	181.72	7,118.04	-1,295.50	293.64	1,286.10	0.00	0.00	0.00	0.00
8,600.00	90.17	181.72	7,117.74	-1,395.45	290.64	1,386.10	0.00	0.00	0.00	0.00
8,700.00	90.17	181.72	7,117.45	-1,495.41	287.63	1,486.10	0.00	0.00	0.00	0.00

## Plan Report for SUNFLOWER 8N-17HZ - 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 (°)
8,800.00	90.17	181.72	7,117.16	-1,595.36	284.63	1,586.10	0.00	0.00	0.00	0.00
8,900.00	90.17	181.72	7,116.86	-1,695.32	281.62	1,686.10	0.00	0.00	0.00	0.00
9,000.00	90.17	181.72	7,116.57	-1,795.27	278.62	1,786.10	0.00	0.00	0.00	0.00
9,100.00	90.17	181.72	7,116.28	-1,895.23	275.62	1,886.10	0.00	0.00	0.00	0.00
9,200.00	90.17	181.72	7,115.98	-1,995.18	272.61	1,986.10	0.00	0.00	0.00	0.00
9,300.00	90.17	181.72	7,115.69	-2,095.13	269.61	2,086.10	0.00	0.00	0.00	0.00
9,400.00	90.17	181.72	7,115.39	-2,195.09	266.60	2,186.10	0.00	0.00	0.00	0.00
9,500.00	90.17	181.72	7,115.10	-2,295.04	263.60	2,286.10	0.00	0.00	0.00	0.00
9,600.00	90.17	181.72	7,114.81	-2,395.00	260.59	2,386.10	0.00	0.00	0.00	0.00
9,700.00	90.17	181.72	7,114.51	-2,494.95	257.59	2,486.10	0.00	0.00	0.00	0.00
9,800.00	90.17	181.72	7,114.22	-2,594.91	254.59	2,586.10	0.00	0.00	0.00	0.00
9,900.00	90.17	181.72	7,113.93	-2,694.86	251.58	2,686.10	0.00	0.00	0.00	0.00
10,000.00	90.17	181.72	7,113.63	-2,794.81	248.58	2,786.09	0.00	0.00	0.00	0.00
10,100.00	90.17	181.72	7,113.34	-2,894.77	245.57	2,886.09	0.00	0.00	0.00	0.00
10,200.00	90.17	181.72	7,113.04	-2,994.72	242.57	2,986.09	0.00	0.00	0.00	0.00
10,300.00	90.17	181.72	7,112.75	-3,094.68	239.56	3,086.09	0.00	0.00	0.00	0.00
10,400.00	90.17	181.72	7,112.46	-3,194.63	236.56	3,186.09	0.00	0.00	0.00	0.00
10,500.00	90.17	181.72	7,112.16	-3,294.59	233.55	3,286.09	0.00	0.00	0.00	0.00
10,600.00	90.17	181.72	7,111.87	-3,394.54	230.55	3,386.09	0.00	0.00	0.00	0.00
10,700.00	90.17	181.72	7,111.58	-3,494.50	227.55	3,486.09	0.00	0.00	0.00	0.00
10,800.00	90.17	181.72	7,111.28	-3,594.45	224.54	3,586.09	0.00	0.00	0.00	0.00
10,900.00	90.17	181.72	7,110.99	-3,694.40	221.54	3,686.09	0.00	0.00	0.00	0.00
11,000.00	90.17	181.72	7,110.70	-3,794.36	218.53	3,786.09	0.00	0.00	0.00	0.00
11,100.00	90.17	181.72	7,110.40	-3,894.31	215.53	3,886.09	0.00	0.00	0.00	0.00
11,200.00	90.17	181.72	7,110.11	-3,994.27	212.52	3,986.09	0.00	0.00	0.00	0.00
11,300.00	90.17	181.72	7,109.81	-4,094.22	209.52	4,086.09	0.00	0.00	0.00	0.00
11,400.00	90.17	181.72	7,109.52	-4,194.18	206.51	4,186.09	0.00	0.00	0.00	0.00
11,500.00	90.17	181.72	7,109.23	-4,294.13	203.51	4,286.09	0.00	0.00	0.00	0.00
11,600.00	90.17	181.72	7,108.93	-4,394.09	200.51	4,386.09	0.00	0.00	0.00	0.00
11,700.00	90.17	181.72	7,108.64	-4,494.04	197.50	4,486.09	0.00	0.00	0.00	0.00
11,800.00	90.17	181.72	7,108.35	-4,593.99	194.50	4,586.09	0.00	0.00	0.00	0.00
11,900.00	90.17	181.72	7,108.05	-4,693.95	191.49	4,686.09	0.00	0.00	0.00	0.00
12,000.00	90.17	181.72	7,107.76	-4,793.90	188.49	4,786.09	0.00	0.00	0.00	0.00
12,100.00	90.17	181.72	7,107.46	-4,893.86	185.48	4,886.09	0.00	0.00	0.00	0.00
12,200.00	90.17	181.72	7,107.17	-4,993.81	182.48	4,986.09	0.00	0.00	0.00	0.00
12,300.00	90.17	181.72	7,106.88	-5,093.77	179.47	5,086.08	0.00	0.00	0.00	0.00
12,400.00	90.17	181.72	7,106.58	-5,193.72	176.47	5,186.08	0.00	0.00	0.00	0.00
12,500.00	90.17	181.72	7,106.29	-5,293.68	173.47	5,286.08	0.00	0.00	0.00	0.00
12,598.38	90.17	181.72	7,106.00	-5,392.01	170.51	5,384.46	0.00	0.00	0.00	0.00

TD Well @ 12598.38ft - Target Toe Location - SUNFLOWER 8N-17HZ\_BHL

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
3,750.00	3,750.00	0.00	0.00	Begin Nudge @ 3750.00ft
4,350.00	4,345.62	40.24	47.96	End Nudge @ 4350.00ft
5,890.00	5,851.97	246.05	293.23	Begin Drop @ 5890.00ft
6,490.00	6,447.59	286.29	341.19	End Drop @ 6490.00ft
6,490.45	6,448.04	286.29	341.19	Top of 4.5" Liner @ 6490.45ft
6,590.45	6,548.04	286.29	341.19	KOP @ 6590.45ft
7,100.00	6,993.03	74.35	334.82	DLS = 10°/100'
7,492.13	7,121.00	-288.09	323.92	End Build @ 7492.13ft
12,598.38	7,106.00	-5,392.01	170.51	TD Well @ 12598.38ft

## Plan Report for SUNFLOWER 8N-17HZ - 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)	181.72	Slot	0.00	0.00	0.00

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,492.13	Permit Rev-1	APC_ISCWSA REV 2 MWD+IFR1
7,492.13	12,598.38	Permit Rev-1	APC_ISCWSA REV 2 MWD+IFR1

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,315.00	1,315.00	9 5/8"	9-5/8	13-1/2
7,492.13	7,121.00	Top of Production	5-1/2	7-7/8

**Formation Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,526.23	4,518.00	Sussex		0.00	
7,029.72	6,945.53	Sharon Springs		0.00	
7,112.06	7,000.53	Niobrara Top		0.00	
7,201.77	7,049.80	Niobrara B Bench		0.00	
7,370.45	7,108.48	Niobrara C Bench		0.00	
7,492.13	7,121.00	Target Heel Location		0.00	
12,598.38	7,106.00	Target Toe Location		0.00	

**Targets associated with this wellbore**

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
2N-R65W-Sec. 17_Section lines	0.00	0.00	0.00	Polygon
SUNFLOWER 8N-17HZ_SHL	0.00	0.00	0.00	Point
2N-R65W-Sec. 8_Section lines	0.00	0.00	-30.18	Polygon
SUNFLOWER 8N-17HZ_BHL	7,106.00	-5,392.01	170.51	Point

## North Reference Sheet for 2N-65W-08 Sunflower Pad - SUNFLOWER 8N-17HZ - 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' @ 4918.00usft (D Rig). Northing and Easting are relative to SUNFLOWER 8N-17HZ

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: 0.99960898

Grid Coordinates of Well: 14,582,858.86 usft N, 1,729,014.21 usft E

Geographical Coordinates of Well: 40° 09' 13.30" N, 104° 40' 58.53" W

Grid Convergence at Surface is: 0.20°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,598.38usft  
the Bottom Hole Displacement is 5,394.71usft in the Direction of 178.19° (True).

Magnetic Convergence at surface is: -8.10° (17 February 2015, , IGRF2010)

