

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

2N-65W-29 Alvin 16-29HZ Pad

ALVIN 26C-29HZ

Plan A

Plan: Permit Rev-2

## Sperry Drilling Services Proposal Report

30 January, 2015

Well Coordinates: 14,564,503.15 N, 1,730,086.08 E (40° 06' 11.80" N, 104° 40' 45.58" W)

Ground Level: 4,908.00 usft

Local Coordinate Origin:

Centered on Well ALVIN 26C-29HZ

Viewing Datum:

RKB = 17' @ 4925.00usft (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-29 Alvin 16-29HZ Pad

Well: ALVIN 26C-29HZ

Wellbore: Plan A

Design: Permit Rev-2

# US ROCKIES WATTENBERG PLANNING

HALLIBURTON

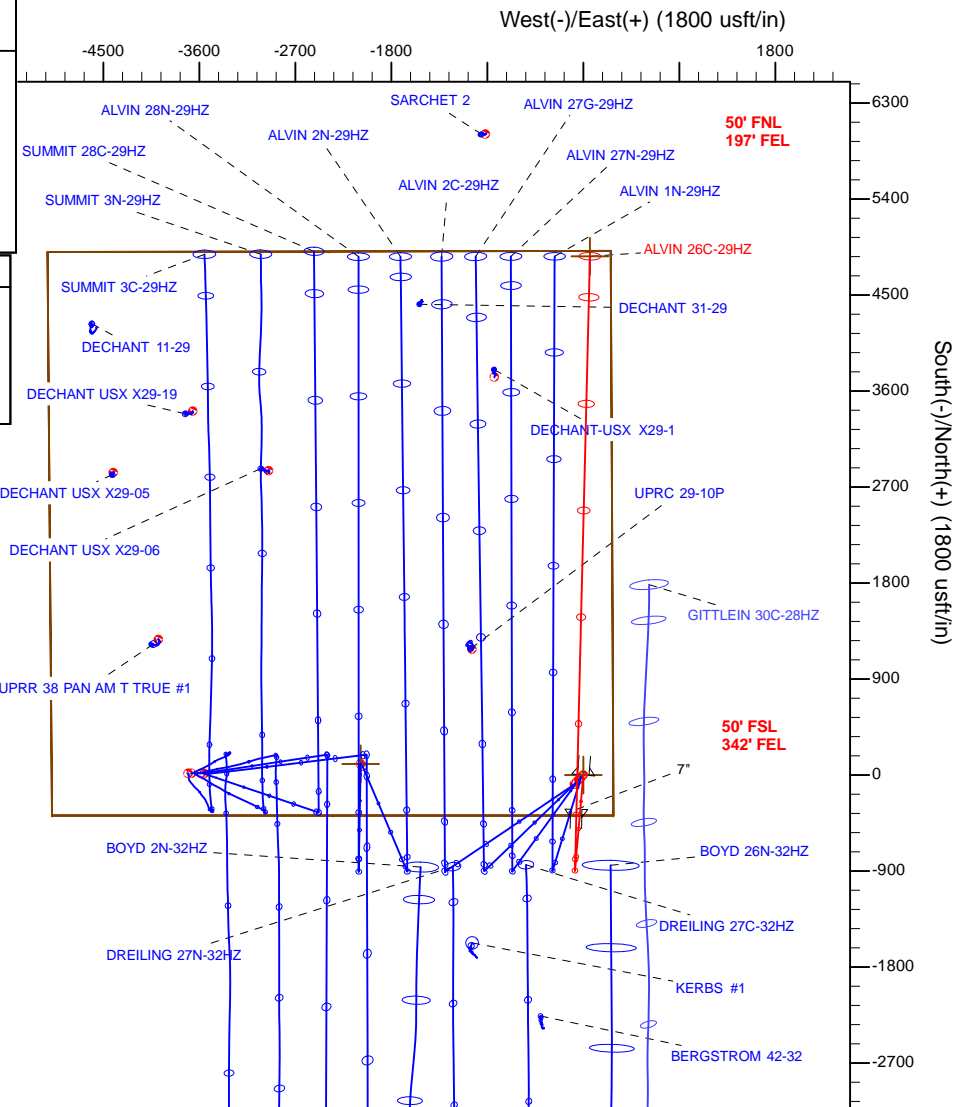
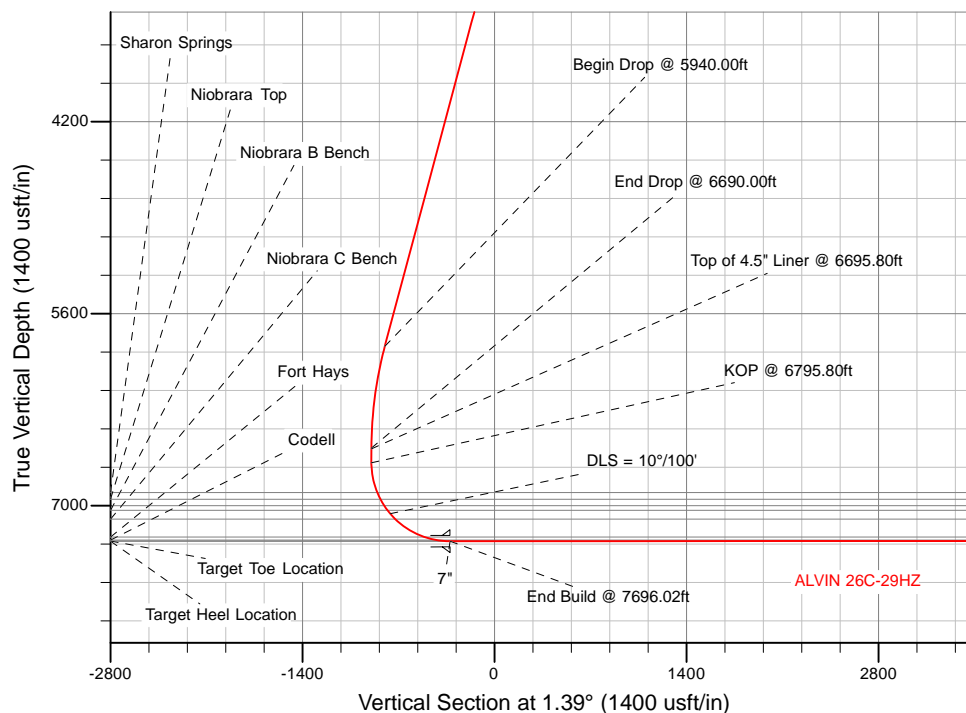
Sperry Drilling

## 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	2470.00	0.00	0.00	2470.00	0.00	0.00	0.00	0.00	0.00	
3	3220.00	15.00	185.00	3211.46	-97.24	-8.51	2.00	185.00	-97.42	
4	5940.00	15.00	185.00	5838.78	-798.55	-69.86	0.00	0.00	-800.01	
5	6690.00	0.00	0.00	6580.24	-895.80	-78.37	2.00	180.00	-897.43	
6	6795.80	0.00	0.00	6686.04	-895.80	-78.37	0.00	0.00	-897.43	
7	7696.02	90.02	1.39	7259.00	-322.79	-64.43	10.00	1.39	-324.26	
8	12884.31	90.02	1.39	7257.00	4863.96	61.79	0.00	0.00	4864.03	ALVIN 26C-29HZ_BHL

## WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude
ALVIN 26C-29HZ_SHL	0.00	0.00	0.00	40.103278	-104.679327
ALVIN 26C-29HZ_BHL	7257.00	4863.96	61.79	40.116635	-104.679106



## WELL DETAILS: ALVIN 26C-29HZ

Ground Level: 4908.00

RKB = 17' @ 4925.00usft (D Rig)

Plan: Permit Rev-2 (ALVIN 26C-29HZ/Plan A)

Created By: Clint Eshelman

Date: 1/30/2015

Reviewed:

Date:

TVD MD

6586.04 6695.80 Top of 4.5" Liner @ 6695.80ft  
6686.04 6795.80 KOP @ 6795.80ft

## Plan Report for ALVIN 26C-29HZ - 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
<b>ALVIN 26C-29HZ_SHL - 2N-R65W-Sec. 29_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
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1,440.00	0.00	0.00	1,440.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>9 5/8"</b>										
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
2,470.00	0.00	0.00	2,470.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Begin Nudge @ 2470.00ft</b>										
2,500.00	0.60	185.00	2,500.00	-0.16	-0.01	-0.16	2.00	2.00	0.00	185.00
2,600.00	2.60	185.00	2,599.96	-2.94	-0.26	-2.94	2.00	2.00	0.00	0.00
2,700.00	4.60	185.00	2,699.75	-9.19	-0.80	-9.21	2.00	2.00	0.00	0.00
2,800.00	6.60	185.00	2,799.27	-18.91	-1.65	-18.95	2.00	2.00	0.00	0.00
2,900.00	8.60	185.00	2,898.39	-32.09	-2.81	-32.15	2.00	2.00	0.00	0.00
3,000.00	10.60	185.00	2,996.98	-48.70	-4.26	-48.79	2.00	2.00	0.00	0.00
3,100.00	12.60	185.00	3,094.93	-68.73	-6.01	-68.86	2.00	2.00	0.00	0.00
3,200.00	14.60	185.00	3,192.13	-92.15	-8.06	-92.32	2.00	2.00	0.00	0.00
3,220.00	15.00	185.00	3,211.46	-97.24	-8.51	-97.42	2.00	2.00	0.00	0.00
<b>End Nudge @ 3220.00ft</b>										
3,300.00	15.00	185.00	3,288.74	-117.87	-10.31	-118.09	0.00	0.00	0.00	0.00
3,400.00	15.00	185.00	3,385.33	-143.65	-12.57	-143.92	0.00	0.00	0.00	0.00
3,500.00	15.00	185.00	3,481.92	-169.44	-14.82	-169.75	0.00	0.00	0.00	0.00
3,600.00	15.00	185.00	3,578.51	-195.22	-17.08	-195.58	0.00	0.00	0.00	0.00
3,700.00	15.00	185.00	3,675.11	-221.00	-19.34	-221.41	0.00	0.00	0.00	0.00
3,800.00	15.00	185.00	3,771.70	-246.79	-21.59	-247.24	0.00	0.00	0.00	0.00
3,900.00	15.00	185.00	3,868.29	-272.57	-23.85	-273.07	0.00	0.00	0.00	0.00
4,000.00	15.00	185.00	3,964.88	-298.35	-26.10	-298.90	0.00	0.00	0.00	0.00
4,100.00	15.00	185.00	4,061.48	-324.14	-28.36	-324.73	0.00	0.00	0.00	0.00
4,200.00	15.00	185.00	4,158.07	-349.92	-30.61	-350.56	0.00	0.00	0.00	0.00
4,300.00	15.00	185.00	4,254.66	-375.70	-32.87	-376.39	0.00	0.00	0.00	0.00
4,400.00	15.00	185.00	4,351.25	-401.49	-35.13	-402.22	0.00	0.00	0.00	0.00
4,500.00	15.00	185.00	4,447.85	-427.27	-37.38	-428.05	0.00	0.00	0.00	0.00
4,600.00	15.00	185.00	4,544.44	-453.06	-39.64	-453.88	0.00	0.00	0.00	0.00
4,700.00	15.00	185.00	4,641.03	-478.84	-41.89	-479.71	0.00	0.00	0.00	0.00
4,800.00	15.00	185.00	4,737.62	-504.62	-44.15	-505.54	0.00	0.00	0.00	0.00
4,900.00	15.00	185.00	4,834.22	-530.41	-46.40	-531.37	0.00	0.00	0.00	0.00
5,000.00	15.00	185.00	4,930.81	-556.19	-48.66	-557.21	0.00	0.00	0.00	0.00

## Plan Report for ALVIN 26C-29HZ - 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 (°)
5,100.00	15.00	185.00	5,027.40	-581.97	-50.92	-583.04	0.00	0.00	0.00	0.00
5,200.00	15.00	185.00	5,124.00	-607.76	-53.17	-608.87	0.00	0.00	0.00	0.00
5,300.00	15.00	185.00	5,220.59	-633.54	-55.43	-634.70	0.00	0.00	0.00	0.00
5,400.00	15.00	185.00	5,317.18	-659.32	-57.68	-660.53	0.00	0.00	0.00	0.00
5,500.00	15.00	185.00	5,413.77	-685.11	-59.94	-686.36	0.00	0.00	0.00	0.00
5,600.00	15.00	185.00	5,510.37	-710.89	-62.19	-712.19	0.00	0.00	0.00	0.00
5,700.00	15.00	185.00	5,606.96	-736.67	-64.45	-738.02	0.00	0.00	0.00	0.00
5,800.00	15.00	185.00	5,703.55	-762.46	-66.71	-763.85	0.00	0.00	0.00	0.00
5,900.00	15.00	185.00	5,800.14	-788.24	-68.96	-789.68	0.00	0.00	0.00	0.00
5,940.00	15.00	185.00	5,838.78	-798.55	-69.86	-800.01	0.00	0.00	0.00	0.00
<b>Begin Drop @ 5940.00ft</b>										
6,000.00	13.80	185.00	5,896.89	-813.42	-71.16	-814.90	2.00	-2.00	0.00	-180.00
6,100.00	11.80	185.00	5,994.40	-835.49	-73.10	-837.01	2.00	-2.00	0.00	180.00
6,200.00	9.80	185.00	6,092.63	-854.15	-74.73	-855.71	2.00	-2.00	0.00	180.00
6,300.00	7.80	185.00	6,191.45	-869.39	-76.06	-870.98	2.00	-2.00	0.00	180.00
6,400.00	5.80	185.00	6,290.74	-881.19	-77.09	-882.80	2.00	-2.00	0.00	180.00
6,500.00	3.80	185.00	6,390.38	-889.52	-77.82	-891.15	2.00	-2.00	0.00	180.00
6,600.00	1.80	185.00	6,490.26	-894.39	-78.25	-896.02	2.00	-2.00	0.00	180.00
6,690.00	0.00	0.00	6,580.24	-895.80	-78.37	-897.43	2.00	-2.00	194.44	180.00
<b>End Drop @ 6690.00ft</b>										
6,695.80	0.00	0.00	6,586.04	-895.80	-78.37	-897.43	0.00	0.00	0.00	180.00
<b>Top of 4.5" Liner @ 6695.80ft</b>										
6,700.00	0.00	0.00	6,590.24	-895.80	-78.37	-897.43	0.00	0.00	0.00	0.00
6,795.80	0.00	0.00	6,686.04	-895.80	-78.37	-897.43	0.00	0.00	0.00	0.00
<b>KOP @ 6795.80ft</b>										
6,800.00	0.42	1.39	6,690.24	-895.78	-78.37	-897.42	10.00	10.00	0.00	1.39
6,900.00	10.42	1.39	6,789.67	-886.35	-78.14	-887.99	10.00	10.00	0.00	0.00
7,000.00	20.42	1.39	6,885.95	-859.80	-77.50	-861.43	10.00	10.00	0.00	0.00
7,019.39	22.36	1.39	6,904.00	-852.73	-77.32	-854.36	10.00	10.00	0.00	0.00
<b>Sharon Springs</b>										
7,073.50	27.77	1.39	6,953.00	-829.82	-76.77	-831.44	10.00	10.00	0.00	0.00
<b>Niobrara Top</b>										
7,100.00	30.42	1.39	6,976.15	-816.94	-76.45	-818.56	10.00	10.00	0.00	0.00
7,169.75	37.39	1.39	7,034.00	-778.07	-75.51	-779.68	10.00	10.00	0.00	0.00
<b>Niobrara B Bench</b>										
7,200.00	40.42	1.39	7,057.54	-759.08	-75.05	-760.68	10.00	10.00	0.00	0.00
<b>DLS = 10°/100'</b>										
7,255.52	45.97	1.39	7,098.00	-721.10	-74.12	-722.69	10.00	10.00	0.00	0.00
<b>Niobrara C Bench</b>										
7,300.00	50.42	1.39	7,127.64	-687.96	-73.31	-689.54	10.00	10.00	0.00	0.00
7,400.00	60.42	1.39	7,184.32	-605.76	-71.31	-607.31	10.00	10.00	0.00	0.00
7,500.00	70.42	1.39	7,225.87	-514.96	-69.10	-516.49	10.00	10.00	0.00	0.00
7,506.46	71.07	1.39	7,228.00	-508.86	-68.96	-510.39	10.00	10.00	0.00	0.00
<b>Fort Hays</b>										
7,599.94	80.41	1.39	7,251.00	-418.39	-66.75	-419.89	10.00	10.00	0.00	0.00
<b>Codell</b>										
7,600.00	80.42	1.39	7,251.01	-418.33	-66.75	-419.83	10.00	10.00	0.00	0.00
7,696.02	90.02	1.39	7,259.00	-322.79	-64.43	-324.26	10.00	10.00	0.00	0.00
<b>End Build @ 7696.02ft - Target Heel Location - 7"</b>										
7,700.00	90.02	1.39	7,259.00	-318.81	-64.33	-320.28	0.00	0.00	0.00	0.00
7,800.00	90.02	1.39	7,258.96	-218.84	-61.90	-220.28	0.00	0.00	0.00	0.00
7,900.00	90.02	1.39	7,258.92	-118.87	-59.47	-120.28	0.00	0.00	0.00	0.00
8,000.00	90.02	1.39	7,258.88	-18.90	-57.03	-20.28	0.00	0.00	0.00	0.00
8,100.00	90.02	1.39	7,258.84	81.07	-54.60	79.72	0.00	0.00	0.00	0.00
8,200.00	90.02	1.39	7,258.81	181.04	-52.17	179.72	0.00	0.00	0.00	0.00
8,300.00	90.02	1.39	7,258.77	281.01	-49.74	279.72	0.00	0.00	0.00	0.00
8,400.00	90.02	1.39	7,258.73	380.98	-47.30	379.72	0.00	0.00	0.00	0.00
8,500.00	90.02	1.39	7,258.69	480.95	-44.87	479.72	0.00	0.00	0.00	0.00

## Plan Report for ALVIN 26C-29HZ - 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 (°)
8,600.00	90.02	1.39	7,258.65	580.92	-42.44	579.72	0.00	0.00	0.00	0.00
8,700.00	90.02	1.39	7,258.61	680.89	-40.01	679.72	0.00	0.00	0.00	0.00
8,800.00	90.02	1.39	7,258.57	780.86	-37.57	779.72	0.00	0.00	0.00	0.00
8,900.00	90.02	1.39	7,258.54	880.84	-35.14	879.72	0.00	0.00	0.00	0.00
9,000.00	90.02	1.39	7,258.50	980.81	-32.71	979.72	0.00	0.00	0.00	0.00
9,100.00	90.02	1.39	7,258.46	1,080.78	-30.27	1,079.72	0.00	0.00	0.00	0.00
9,200.00	90.02	1.39	7,258.42	1,180.75	-27.84	1,179.72	0.00	0.00	0.00	0.00
9,300.00	90.02	1.39	7,258.38	1,280.72	-25.41	1,279.72	0.00	0.00	0.00	0.00
9,400.00	90.02	1.39	7,258.34	1,380.69	-22.98	1,379.72	0.00	0.00	0.00	0.00
9,500.00	90.02	1.39	7,258.30	1,480.66	-20.54	1,479.72	0.00	0.00	0.00	0.00
9,600.00	90.02	1.39	7,258.27	1,580.63	-18.11	1,579.72	0.00	0.00	0.00	0.00
9,700.00	90.02	1.39	7,258.23	1,680.60	-15.68	1,679.72	0.00	0.00	0.00	0.00
9,800.00	90.02	1.39	7,258.19	1,780.57	-13.25	1,779.72	0.00	0.00	0.00	0.00
9,900.00	90.02	1.39	7,258.15	1,880.54	-10.81	1,879.72	0.00	0.00	0.00	0.00
10,000.00	90.02	1.39	7,258.11	1,980.51	-8.38	1,979.72	0.00	0.00	0.00	0.00
10,100.00	90.02	1.39	7,258.07	2,080.48	-5.95	2,079.72	0.00	0.00	0.00	0.00
10,200.00	90.02	1.39	7,258.03	2,180.45	-3.52	2,179.72	0.00	0.00	0.00	0.00
10,300.00	90.02	1.39	7,258.00	2,280.42	-1.08	2,279.72	0.00	0.00	0.00	0.00
10,400.00	90.02	1.39	7,257.96	2,380.39	1.35	2,379.72	0.00	0.00	0.00	0.00
10,500.00	90.02	1.39	7,257.92	2,480.36	3.78	2,479.72	0.00	0.00	0.00	0.00
10,600.00	90.02	1.39	7,257.88	2,580.33	6.22	2,579.72	0.00	0.00	0.00	0.00
10,700.00	90.02	1.39	7,257.84	2,680.30	8.65	2,679.72	0.00	0.00	0.00	0.00
10,800.00	90.02	1.39	7,257.80	2,780.27	11.08	2,779.72	0.00	0.00	0.00	0.00
10,900.00	90.02	1.39	7,257.76	2,880.24	13.51	2,879.72	0.00	0.00	0.00	0.00
11,000.00	90.02	1.39	7,257.73	2,980.21	15.95	2,979.72	0.00	0.00	0.00	0.00
11,100.00	90.02	1.39	7,257.69	3,080.18	18.38	3,079.72	0.00	0.00	0.00	0.00
11,200.00	90.02	1.39	7,257.65	3,180.15	20.81	3,179.72	0.00	0.00	0.00	0.00
11,300.00	90.02	1.39	7,257.61	3,280.12	23.24	3,279.72	0.00	0.00	0.00	0.00
11,400.00	90.02	1.39	7,257.57	3,380.10	25.68	3,379.72	0.00	0.00	0.00	0.00
11,500.00	90.02	1.39	7,257.53	3,480.07	28.11	3,479.72	0.00	0.00	0.00	0.00
11,600.00	90.02	1.39	7,257.50	3,580.04	30.54	3,579.72	0.00	0.00	0.00	0.00
11,700.00	90.02	1.39	7,257.46	3,680.01	32.97	3,679.72	0.00	0.00	0.00	0.00
11,800.00	90.02	1.39	7,257.42	3,779.98	35.41	3,779.72	0.00	0.00	0.00	0.00
11,900.00	90.02	1.39	7,257.38	3,879.95	37.84	3,879.72	0.00	0.00	0.00	0.00
12,000.00	90.02	1.39	7,257.34	3,979.92	40.27	3,979.72	0.00	0.00	0.00	0.00
12,100.00	90.02	1.39	7,257.30	4,079.89	42.71	4,079.72	0.00	0.00	0.00	0.00
12,200.00	90.02	1.39	7,257.26	4,179.86	45.14	4,179.72	0.00	0.00	0.00	0.00
12,300.00	90.02	1.39	7,257.23	4,279.83	47.57	4,279.72	0.00	0.00	0.00	0.00
12,400.00	90.02	1.39	7,257.19	4,379.80	50.00	4,379.72	0.00	0.00	0.00	0.00
12,500.00	90.02	1.39	7,257.15	4,479.77	52.44	4,479.72	0.00	0.00	0.00	0.00
12,600.00	90.02	1.39	7,257.11	4,579.74	54.87	4,579.72	0.00	0.00	0.00	0.00
12,700.00	90.02	1.39	7,257.07	4,679.71	57.30	4,679.72	0.00	0.00	0.00	0.00
12,800.00	90.02	1.39	7,257.03	4,779.68	59.73	4,779.72	0.00	0.00	0.00	0.00
12,884.30	90.02	1.39	7,257.00	4,863.96	61.78	4,864.02	0.00	0.00	0.00	0.00
Target Toe Location										
12,884.31	90.02	1.39	7,257.00	4,863.96	61.79	4,864.03	0.00	0.00	0.00	0.00
TD Well @ 12884.31ft - ALVIN 26C-29HZ_BHL										

## Plan Report for ALVIN 26C-29HZ - Permit Rev-2

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,470.00	2,470.00	0.00	0.00	Begin Nudge @ 2470.00ft
3,220.00	3,211.46	-97.24	-8.51	End Nudge @ 3220.00ft
5,940.00	5,838.78	-798.55	-69.86	Begin Drop @ 5940.00ft
6,690.00	6,580.24	-895.80	-78.37	End Drop @ 6690.00ft
6,695.80	6,586.04	-895.80	-78.37	Top of 4.5" Liner @ 6695.80ft
6,795.80	6,686.04	-895.80	-78.37	KOP @ 6795.80ft
7,200.00	7,057.54	-759.08	-75.05	DLS = 10°/100'
7,696.02	7,259.00	-322.79	-64.43	End Build @ 7696.02ft
12,884.31	7,257.00	4,863.96	61.79	TD Well @ 12884.31ft

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/_S (usft)	+E/-W (usft)	
User	No Target (Freehand)	1.39	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,696.02	Permit Rev-2	MWD+IFR1
7,696.02	12,884.31	Permit Rev-2	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,440.00	1,440.00	9 5/8"	9-5/8	13-1/2
7,696.02	7,259.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,019.39	6,904.00	Sharon Springs		0.00	
7,073.50	6,953.00	Niobrara Top		0.00	
7,169.75	7,034.00	Niobrara B Bench		0.00	
7,255.52	7,098.00	Niobrara C Bench		0.00	
7,506.46	7,228.00	Fort Hays		0.00	
7,599.94	7,251.00	Codell		0.00	
7,696.02	7,259.00	Target Heel Location		0.00	
12,884.30	7,257.00	Target Toe Location		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
ALVIN 26C-29HZ_SHL	0.00	0.00	0.00	Point
2N-R65W-Sec. 29_Section Lines	-18.00	104.60	-2,087.72	Polygon
ALVIN 26C-29HZ_BHL	7,257.00	4,863.96	61.79	Point

**North Reference Sheet for 2N-65W-29 Alvin 16-29HZ Pad - ALVIN 26C-29HZ - 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' @ 4925.00usft (D Rig). Northing and Easting are relative to ALVIN 26C-29HZ

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: 0.99960920

Grid Coordinates of Well: 14,564,503.15 usft N, 1,730,086.08 usft E

Geographical Coordinates of Well: 40° 06' 11.80" N, 104° 40' 45.58" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,884.31usft  
the Bottom Hole Displacement is 4,864.35usft in the Direction of 0.73° ( True).

Magnetic Convergence at surface is: -8.10° (28 January 2015, , IGRF2010)

