

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N
4N-67W-31 Frank 16-31HZ Pad
Frank 12C-31HZ

Plan B

Plan: Permit Rev-2

Sperry Drilling Services Proposal Report

18 December, 2014

Well Coordinates: 14,622,811.72 N, 1,661,388.81 E (40° 15' 49.75" N, 104° 55' 29.36" W)
Ground Level: 4,931.00 usft

Local Coordinate Origin:	Centered on Well Frank 12C-31HZ
Viewing Datum:	RKB = 17' @ 4948.00usft (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: 4N-67W-31 Frank 16-31HZ Pad

Well: Frank 12C-31HZ

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	2563.88	0.00	0.00	2563.88	0.00	0.00	0.00	0.00	0.00	
3	3713.88	23.00	12.00	3683.24	222.76	47.35	2.00	12.00	-44.74	
4	7013.88	23.00	12.00	6720.91	1484.00	315.43	0.00	0.00	-298.06	
5	7960.68	90.30	270.67	7290.00	1728.90	-255.79	10.00	-100.33	275.99	
6	11958.94	90.30	270.67	7269.00	1775.63	-4253.71	0.00	0.00	4274.18	Frank 12C-31HZ_Toe

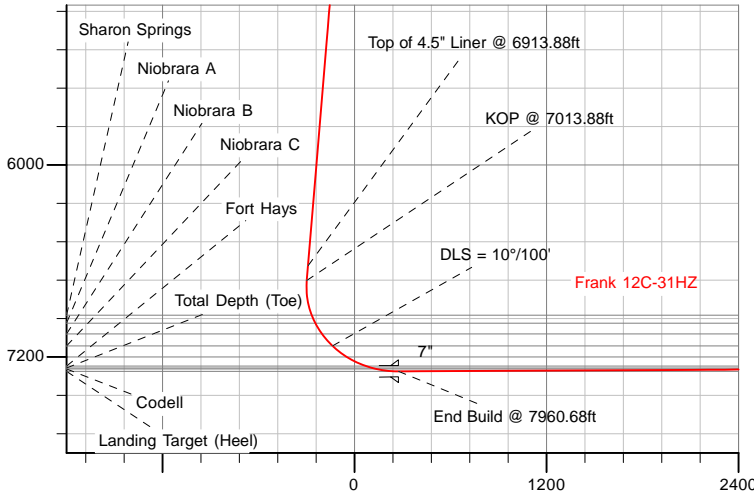
WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Polygon
4N-R67W-Sec. 31_Section Lines	0.00	48.43	61.09	40.263952	-104.924604	
Frank 12C-31HZ_SHL	0.00	0.00	0.00	40.263819	-104.924823	
Frank 12C-31HZ_Toe	7269.00	1775.63	-4253.71	40.268694	-104.940072	

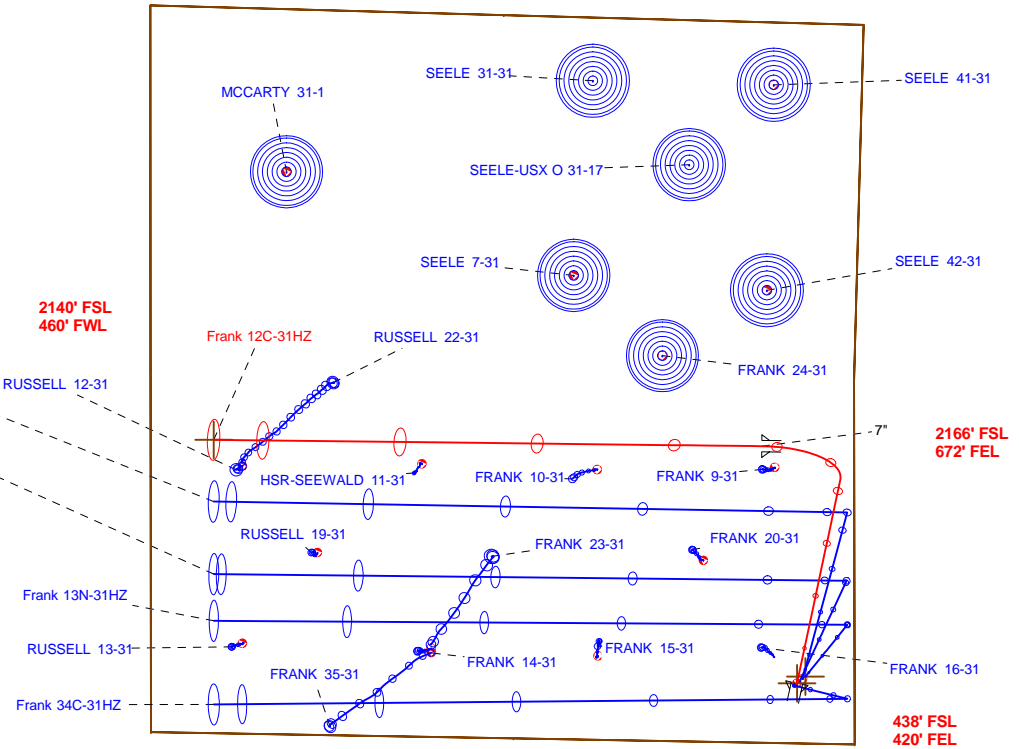
West(-)/East(+) (1400 usft/in)

-3500 -2800 -2100 -1400 -700 0 700 1400

True Vertical Depth (1200 usft/in)



Vertical Section at 270.67° (1200 usft/in)



TVD MD

6628.86 6913.88 Top of 4.5" Liner @ 6913.88ft
6720.91 7013.88 KOP @ 7013.88ft

WELL DETAILS: Frank 12C-31HZ

Ground Level: 4931.00

RKB = 17' @ 4948.00usft (D Rig)

Plan: Permit Rev-2 (Frank 12C-31HZ/Plan B)

Created By: Clint Eshelman

Reviewed:

Date: 12/18/2014

Date:

Plan Report for Frank 12C-31HZ - 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
4N-R67W-Sec. 31_Section Lines - Frank 12C-31HZ_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
1,217.00	0.00	0.00	1,217.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fox Hills Marker										
1,267.00	0.00	0.00	1,267.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"										
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
1,600.00	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
2,563.88	0.00	0.00	2,563.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Begin Nudge @ 2563.88ft										
2,600.00	0.72	12.00	2,600.00	0.22	0.05	-0.04	2.00	2.00	0.00	12.00
2,700.00	2.72	12.00	2,699.95	3.16	0.67	-0.64	2.00	2.00	0.00	0.00
2,800.00	4.72	12.00	2,799.73	9.51	2.02	-1.91	2.00	2.00	0.00	0.00
2,900.00	6.72	12.00	2,899.23	19.27	4.09	-3.87	2.00	2.00	0.00	0.00
3,000.00	8.72	12.00	2,998.32	32.41	6.89	-6.51	2.00	2.00	0.00	0.00
3,100.00	10.72	12.00	3,096.88	48.93	10.40	-9.83	2.00	2.00	0.00	0.00
3,200.00	12.72	12.00	3,194.79	68.80	14.62	-13.82	2.00	2.00	0.00	0.00
3,300.00	14.72	12.00	3,291.93	92.00	19.56	-18.48	2.00	2.00	0.00	0.00
3,400.00	16.72	12.00	3,388.18	118.50	25.19	-23.80	2.00	2.00	0.00	0.00
3,500.00	18.72	12.00	3,483.43	148.28	31.52	-29.78	2.00	2.00	0.00	0.00
3,600.00	20.72	12.00	3,577.56	181.29	38.53	-36.41	2.00	2.00	0.00	0.00
3,700.00	22.72	12.00	3,670.45	217.49	46.23	-43.68	2.00	2.00	0.00	0.00
3,713.88	23.00	12.00	3,683.24	222.76	47.35	-44.74	2.00	2.00	0.00	0.00
End Nudge @ 3713.88ft										
3,800.00	23.00	12.00	3,762.52	255.67	54.35	-51.35	0.00	0.00	0.00	0.00
3,900.00	23.00	12.00	3,854.57	293.89	62.47	-59.03	0.00	0.00	0.00	0.00
4,000.00	23.00	12.00	3,946.62	332.11	70.59	-66.70	0.00	0.00	0.00	0.00
4,100.00	23.00	12.00	4,038.67	370.33	78.72	-74.38	0.00	0.00	0.00	0.00
4,192.70	23.00	12.00	4,124.00	405.76	86.25	-81.50	0.00	0.00	0.00	0.00
Sussex										
4,200.00	23.00	12.00	4,130.72	408.55	86.84	-82.06	0.00	0.00	0.00	0.00
4,300.00	23.00	12.00	4,222.77	446.77	94.96	-89.73	0.00	0.00	0.00	0.00
4,400.00	23.00	12.00	4,314.82	484.99	103.09	-97.41	0.00	0.00	0.00	0.00
4,500.00	23.00	12.00	4,406.87	523.21	111.21	-105.09	0.00	0.00	0.00	0.00
4,600.00	23.00	12.00	4,498.92	561.43	119.34	-112.76	0.00	0.00	0.00	0.00

Plan Report for Frank 12C-31HZ - 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 (°)
4,700.00	23.00	12.00	4,590.97	599.65	127.46	-120.44	0.00	0.00	0.00	0.00
4,745.66	23.00	12.00	4,633.00	617.10	131.17	-123.94	0.00	0.00	0.00	0.00
Shannon										
4,800.00	23.00	12.00	4,683.02	637.87	135.58	-128.11	0.00	0.00	0.00	0.00
4,900.00	23.00	12.00	4,775.07	676.09	143.71	-135.79	0.00	0.00	0.00	0.00
5,000.00	23.00	12.00	4,867.12	714.31	151.83	-143.47	0.00	0.00	0.00	0.00
5,100.00	23.00	12.00	4,959.17	752.53	159.95	-151.14	0.00	0.00	0.00	0.00
5,200.00	23.00	12.00	5,051.22	790.74	168.08	-158.82	0.00	0.00	0.00	0.00
5,300.00	23.00	12.00	5,143.27	828.96	176.20	-166.50	0.00	0.00	0.00	0.00
5,400.00	23.00	12.00	5,235.32	867.18	184.33	-174.17	0.00	0.00	0.00	0.00
5,500.00	23.00	12.00	5,327.37	905.40	192.45	-181.85	0.00	0.00	0.00	0.00
5,600.00	23.00	12.00	5,419.42	943.62	200.57	-189.53	0.00	0.00	0.00	0.00
5,700.00	23.00	12.00	5,511.48	981.84	208.70	-197.20	0.00	0.00	0.00	0.00
5,800.00	23.00	12.00	5,603.53	1,020.06	216.82	-204.88	0.00	0.00	0.00	0.00
5,900.00	23.00	12.00	5,695.58	1,058.28	224.94	-212.55	0.00	0.00	0.00	0.00
6,000.00	23.00	12.00	5,787.63	1,096.50	233.07	-220.23	0.00	0.00	0.00	0.00
6,100.00	23.00	12.00	5,879.68	1,134.72	241.19	-227.91	0.00	0.00	0.00	0.00
6,200.00	23.00	12.00	5,971.73	1,172.94	249.32	-235.58	0.00	0.00	0.00	0.00
6,300.00	23.00	12.00	6,063.78	1,211.16	257.44	-243.26	0.00	0.00	0.00	0.00
6,400.00	23.00	12.00	6,155.83	1,249.38	265.56	-250.94	0.00	0.00	0.00	0.00
6,500.00	23.00	12.00	6,247.88	1,287.59	273.69	-258.61	0.00	0.00	0.00	0.00
6,600.00	23.00	12.00	6,339.93	1,325.81	281.81	-266.29	0.00	0.00	0.00	0.00
6,700.00	23.00	12.00	6,431.98	1,364.03	289.93	-273.96	0.00	0.00	0.00	0.00
6,800.00	23.00	12.00	6,524.03	1,402.25	298.06	-281.64	0.00	0.00	0.00	0.00
6,900.00	23.00	12.00	6,616.08	1,440.47	306.18	-289.32	0.00	0.00	0.00	0.00
6,913.88	23.00	12.00	6,628.86	1,445.78	307.31	-290.38	0.00	0.00	0.00	0.00
Top of 4.5" Liner @ 6913.88ft										
7,000.00	23.00	12.00	6,708.13	1,478.69	314.31	-296.99	0.00	0.00	0.00	0.00
7,013.88	23.00	12.00	6,720.91	1,484.00	315.43	-298.06	0.00	0.00	0.00	0.00
KOP @ 7013.88ft										
7,100.00	22.98	349.83	6,800.34	1,517.06	315.96	-298.20	10.00	-0.02	-25.74	-100.33
7,200.00	26.53	327.33	6,891.34	1,555.17	300.43	-282.22	10.00	3.54	-22.51	-79.89
7,252.85	29.54	318.08	6,938.00	1,574.82	285.34	-266.90	10.00	5.71	-17.51	-59.40
Sharon Springs										
7,300.00	32.68	311.26	6,978.38	1,591.87	267.99	-249.36	10.00	6.66	-14.45	-51.22
7,312.69	33.59	309.63	6,989.00	1,596.37	262.71	-244.03	10.00	7.11	-12.87	-45.38
Niobrara A										
7,396.32	39.97	300.58	7,056.00	1,624.84	221.70	-202.68	10.00	7.64	-10.82	-44.02
Niobrara B										
7,400.00	40.27	300.24	7,058.81	1,626.04	219.65	-200.62	10.00	8.03	-9.26	-36.75
7,499.69	48.58	292.34	7,130.00	1,656.55	157.08	-137.70	10.00	8.34	-7.92	-36.49
Niobrara C										
7,500.00	48.61	292.32	7,130.21	1,656.64	156.87	-137.49	10.00	8.59	-6.83	-30.84
DLS = 10°/100'										
7,600.00	57.37	286.26	7,190.38	1,682.74	81.55	-61.87	10.00	8.76	-6.06	-30.82
7,700.00	66.36	281.30	7,237.51	1,703.55	-4.00	23.92	10.00	9.00	-4.96	-27.16
7,753.95	71.28	278.91	7,257.00	1,712.36	-53.51	73.53	10.00	9.11	-4.43	-24.81
Fort Hays										
7,800.00	75.49	276.98	7,270.17	1,718.45	-97.21	117.29	10.00	9.16	-4.19	-23.95
7,820.62	77.39	276.14	7,275.00	1,720.73	-117.12	137.23	10.00	9.18	-4.07	-23.39
Codell										
7,900.00	84.70	273.01	7,287.35	1,726.96	-195.22	215.40	10.00	9.21	-3.95	-23.20
7,960.68	90.30	270.67	7,290.00	1,728.90	-255.78	275.98	10.00	9.23	-3.85	-22.71
End Build @ 7960.68ft - Landing Target (Heel) - 7"										
8,000.00	90.30	270.67	7,289.79	1,729.36	-295.10	315.30	0.00	0.00	0.00	-22.61
8,100.00	90.30	270.67	7,289.27	1,730.53	-395.09	415.30	0.00	0.00	0.00	0.00
8,200.00	90.30	270.67	7,288.74	1,731.70	-495.08	515.30	0.00	0.00	0.00	0.00
8,300.00	90.30	270.67	7,288.22	1,732.87	-595.07	615.30	0.00	0.00	0.00	0.00

Plan Report for Frank 12C-31HZ - 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 (°)
8,400.00	90.30	270.67	7,287.69	1,734.04	-695.07	715.30	0.00	0.00	0.00	0.00
8,500.00	90.30	270.67	7,287.17	1,735.21	-795.06	815.29	0.00	0.00	0.00	0.00
8,600.00	90.30	270.67	7,286.64	1,736.38	-895.05	915.29	0.00	0.00	0.00	0.00
8,700.00	90.30	270.67	7,286.12	1,737.54	-995.04	1,015.29	0.00	0.00	0.00	0.00
8,800.00	90.30	270.67	7,285.59	1,738.71	-1,095.03	1,115.29	0.00	0.00	0.00	0.00
8,900.00	90.30	270.67	7,285.06	1,739.88	-1,195.03	1,215.29	0.00	0.00	0.00	0.00
9,000.00	90.30	270.67	7,284.54	1,741.05	-1,295.02	1,315.29	0.00	0.00	0.00	0.00
9,100.00	90.30	270.67	7,284.01	1,742.22	-1,395.01	1,415.29	0.00	0.00	0.00	0.00
9,200.00	90.30	270.67	7,283.49	1,743.39	-1,495.00	1,515.29	0.00	0.00	0.00	0.00
9,300.00	90.30	270.67	7,282.96	1,744.56	-1,594.99	1,615.28	0.00	0.00	0.00	0.00
9,400.00	90.30	270.67	7,282.44	1,745.72	-1,694.98	1,715.28	0.00	0.00	0.00	0.00
9,500.00	90.30	270.67	7,281.91	1,746.89	-1,794.98	1,815.28	0.00	0.00	0.00	0.00
9,600.00	90.30	270.67	7,281.39	1,748.06	-1,894.97	1,915.28	0.00	0.00	0.00	0.00
9,700.00	90.30	270.67	7,280.86	1,749.23	-1,994.96	2,015.28	0.00	0.00	0.00	0.00
9,800.00	90.30	270.67	7,280.34	1,750.40	-2,094.95	2,115.28	0.00	0.00	0.00	0.00
9,900.00	90.30	270.67	7,279.81	1,751.57	-2,194.94	2,215.28	0.00	0.00	0.00	0.00
10,000.00	90.30	270.67	7,279.29	1,752.74	-2,294.94	2,315.27	0.00	0.00	0.00	0.00
10,100.00	90.30	270.67	7,278.76	1,753.91	-2,394.93	2,415.27	0.00	0.00	0.00	0.00
10,200.00	90.30	270.67	7,278.24	1,755.07	-2,494.92	2,515.27	0.00	0.00	0.00	0.00
10,300.00	90.30	270.67	7,277.71	1,756.24	-2,594.91	2,615.27	0.00	0.00	0.00	0.00
10,400.00	90.30	270.67	7,277.19	1,757.41	-2,694.90	2,715.27	0.00	0.00	0.00	0.00
10,500.00	90.30	270.67	7,276.66	1,758.58	-2,794.89	2,815.27	0.00	0.00	0.00	0.00
10,600.00	90.30	270.67	7,276.14	1,759.75	-2,894.89	2,915.27	0.00	0.00	0.00	0.00
10,700.00	90.30	270.67	7,275.61	1,760.92	-2,994.88	3,015.26	0.00	0.00	0.00	0.00
10,800.00	90.30	270.67	7,275.09	1,762.09	-3,094.87	3,115.26	0.00	0.00	0.00	0.00
10,900.00	90.30	270.67	7,274.56	1,763.25	-3,194.86	3,215.26	0.00	0.00	0.00	0.00
11,000.00	90.30	270.67	7,274.04	1,764.42	-3,294.85	3,315.26	0.00	0.00	0.00	0.00
11,100.00	90.30	270.67	7,273.51	1,765.59	-3,394.85	3,415.26	0.00	0.00	0.00	0.00
11,200.00	90.30	270.67	7,272.99	1,766.76	-3,494.84	3,515.26	0.00	0.00	0.00	0.00
11,300.00	90.30	270.67	7,272.46	1,767.93	-3,594.83	3,615.26	0.00	0.00	0.00	0.00
11,400.00	90.30	270.67	7,271.94	1,769.10	-3,694.82	3,715.25	0.00	0.00	0.00	0.00
11,500.00	90.30	270.67	7,271.41	1,770.27	-3,794.81	3,815.25	0.00	0.00	0.00	0.00
11,600.00	90.30	270.67	7,270.89	1,771.44	-3,894.80	3,915.25	0.00	0.00	0.00	0.00
11,700.00	90.30	270.67	7,270.36	1,772.60	-3,994.80	4,015.25	0.00	0.00	0.00	0.00
11,800.00	90.30	270.67	7,269.83	1,773.77	-4,094.79	4,115.25	0.00	0.00	0.00	0.00
11,900.00	90.30	270.67	7,269.31	1,774.94	-4,194.78	4,215.25	0.00	0.00	0.00	0.00
11,958.93	90.30	270.67	7,269.00	1,775.63	-4,253.70	4,274.18	0.00	0.00	0.00	0.00
Total Depth (Toe)										
11,958.94	90.30	270.67	7,269.00	1,775.63	-4,253.71	4,274.18	0.00	0.00	0.00	0.00
TD Well @ 11958.94ft - Frank 12C-31HZ_Toe										

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
2,563.88	2,563.88	0.00	0.00	Begin Nudge @ 2563.88ft
3,713.88	3,683.24	222.76	47.35	End Nudge @ 3713.88ft
6,913.88	6,628.86	1,445.78	307.31	Top of 4.5" Liner @ 6913.88ft
7,013.88	6,720.91	1,484.00	315.43	KOP @ 7013.88ft
7,500.00	7,130.21	1,656.64	156.87	DLS = 10°/100'
7,960.68	7,290.00	1,728.90	-255.78	End Build @ 7960.68ft
11,958.94	7,269.00	1,775.63	-4,253.71	TD Well @ 11958.94ft

Plan Report for Frank 12C-31HZ - Permit Rev-2

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/-S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	270.67	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
0.00	7,960.68	Permit Rev-2	MWD+IFR1
7,960.68	11,958.94	Permit Rev-2	MWD+IFR1

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,267.00	1,267.00	9 5/8"	9-5/8	13-1/2
7,960.68	7,290.00	7"	7	8-3/4

Formation Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
1,217.00	1,217.00	Fox Hills Marker		0.00	
4,192.70	4,124.00	Sussex		0.00	
4,745.66	4,633.00	Shannon		0.00	
7,252.85	6,938.00	Sharon Springs		0.00	
7,312.69	6,989.00	Niobrara A		0.00	
7,396.32	7,056.00	Niobrara B		0.00	
7,499.69	7,130.00	Niobrara C		0.00	
7,753.95	7,257.00	Fort Hays		0.00	
7,820.62	7,275.00	Codell		0.00	
7,960.68	7,290.00	Landing Target (Heel)		0.00	
11,958.93	7,269.00	Total Depth (Toe)		0.00	

Targets associated with this wellbore

Target Name	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Shape
4N-R67W-Sec. 31_Section Lines	0.00	48.43	61.09	Polygon
Frank 12C-31HZ_SHL	0.00	0.00	0.00	Point
Frank 12C-31HZ_Toe	7,269.00	1,775.63	-4,253.71	Point

North Reference Sheet for 4N-67W-31 Frank 16-31HZ Pad - Frank 12C-31HZ - 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' @ 4948.00usft (D Rig). Northing and Easting are relative to Frank 12C-31HZ

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: 0.99960050

Grid Coordinates of Well: 14,622,811.72 usft N, 1,661,388.81 usft E

Geographical Coordinates of Well: 40° 15' 49.75" N, 104° 55' 29.36" W

Grid Convergence at Surface is: 0.05°

Based upon Minimum Curvature type calculations, at a Measured Depth of 11,958.94usft
the Bottom Hole Displacement is 4,609.44usft in the Direction of 292.66° (True).

Magnetic Convergence at surface is: -8.42° (17 December 2014, , IGRF2010)

