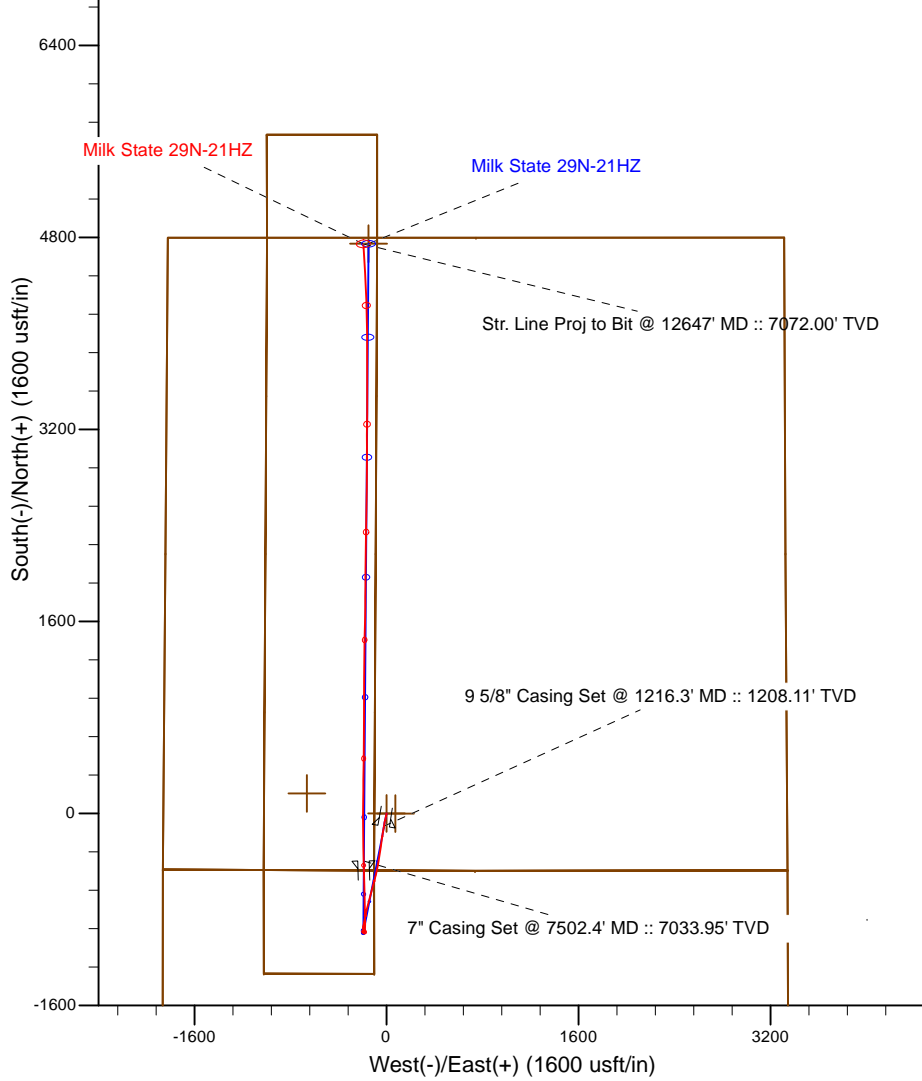


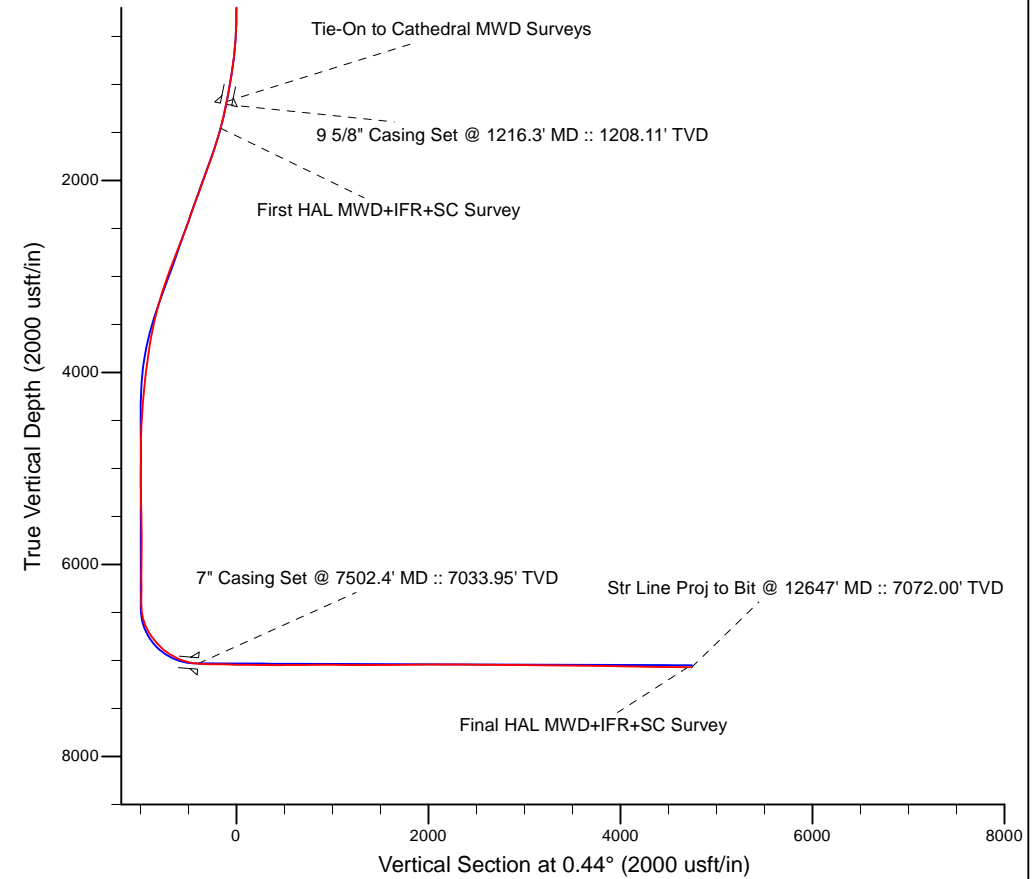


Project: WELD-NAD83-UTMFT13N  
 Site: 3N-65W-21 Milk 4-21HZ Pad  
 Well: Milk State 29N-21HZ  
 Wellbore: Plan B  
 Design: Actual Surveys



LEGEND

- + Milk State 29N-21HZ, Plan B, Rev B0 V0
- + Actual Surveys



7" Casing: -78.35' FSL, -1671.90' FWL  
 Lat/Long: 40.203908 N, -104.671920 E  
 UTM - NAD 83 - Zone 13N: 14,601,155.22' N, 1,732,022.16' E  
 Location: Sec. 28-T3N-R65W

BHL: -50.86' FNL, -1628.44' FWL  
 Lat/Long: 40.218031 N, -104.671925 E  
 UTM - NAD 83 - Zone 13N: 14,606,298.15' N, 1,732,001.76' E  
 Location: Sec. 21-T3N-R65W

WELL DETAILS: Milk State 29N-21HZ	
Ground Level: 4838.00 RKB=13 @ 4851.00usft (Ensign 145)	
Design: Actual Surveys (Milk State 29N-21HZ/Plan B)	
Created By: Clint Eshelman	Date: 5/20/2015
Reviewed: _____	Date: _____

# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N  
3N-65W-21 Milk 4-21HZ Pad  
Milk State 29N-21HZ  
05-123-41001

Design: Actual Surveys

## Sperry Drilling Services Standard Report

20 May, 2015

Surface UWI : 05-123-41001

Well Coordinates: 14,601,551.77 N, 1,732,212.07 E (40° 12' 17.98" N, 104° 40' 16.44" W)  
Ground Level: 4,838.00 usft

Local Coordinate Origin:	Centered on Well Milk State 29N-21HZ
Viewing Datum:	RKB=13 @ 4851.00usft (Ensign 145)
TVDs to System:	N
North Reference:	True
Unit System:	Dec-Deg - API - US Survey Feet - Custom

Version: 5000.1 Build: 70

**HALLIBURTON**



Design Report for Milk State 29N-21HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
126.00	0.50	69.40	126.00	0.19	0.51	0.20	0.40
<b>First Cathedral MWD Survey</b>							
184.00	0.30	89.30	184.00	0.28	0.90	0.29	0.41
243.00	0.60	171.70	243.00	-0.02	1.10	-0.01	1.08
302.00	0.70	187.80	301.99	-0.68	1.10	-0.67	0.35
365.00	1.20	212.40	364.98	-1.62	0.69	-1.62	1.01
427.00	2.00	202.60	426.96	-3.17	-0.07	-3.17	1.36
491.00	3.20	192.90	490.89	-5.94	-0.90	-5.95	1.99
555.00	4.10	194.70	554.76	-9.89	-1.88	-9.91	1.42
619.00	5.30	188.10	618.55	-15.03	-2.88	-15.06	2.05
682.00	6.50	192.00	681.21	-21.40	-4.03	-21.43	2.01
746.00	7.30	192.20	744.75	-28.92	-5.64	-28.96	1.25
809.00	8.00	191.20	807.19	-37.13	-7.34	-37.19	1.13
872.00	8.60	190.70	869.53	-46.06	-9.06	-46.13	0.96
935.00	9.30	194.40	931.76	-55.62	-11.20	-55.71	1.44
996.00	10.50	193.60	991.85	-65.80	-13.74	-65.90	1.98
1,060.00	10.70	189.60	1,054.76	-77.32	-16.10	-77.45	1.19
1,123.00	10.90	188.90	1,116.64	-88.98	-18.00	-89.11	0.38
1,184.00	11.50	189.40	1,176.48	-100.67	-19.88	-100.82	1.00
<b>Tie-On to Cathedral MWD Surveys</b>							
1,216.30	11.88	189.43	1,208.11	-107.13	-20.95	-107.29	1.18
<b>9 5/8" Casing Set @ 1216.3' MD :: 1208.11' TVD</b>							
1,470.00	14.87	189.61	1,454.90	-165.00	-30.67	-165.23	1.18
<b>First HAL MWD+IFR+SC Survey</b>							
1,563.00	16.37	190.14	1,544.46	-189.67	-34.97	-189.93	1.62
1,750.00	18.25	187.24	1,722.99	-244.66	-43.30	-244.99	1.11
1,845.00	20.29	188.46	1,812.66	-275.72	-47.60	-276.07	2.19
1,939.00	20.26	186.91	1,900.84	-307.99	-51.95	-308.38	0.57
2,032.00	20.60	190.81	1,987.99	-340.05	-56.96	-340.48	1.51
2,219.00	19.96	189.48	2,163.40	-403.85	-68.38	-404.36	0.42
2,312.00	19.88	189.30	2,250.84	-435.11	-73.55	-435.66	0.11
2,406.00	21.05	192.02	2,338.90	-467.39	-79.65	-467.99	1.60
2,499.00	19.98	191.02	2,426.01	-499.33	-86.17	-499.97	1.21
2,593.00	19.87	194.55	2,514.38	-530.55	-93.25	-531.25	1.28
2,686.00	21.65	195.96	2,601.34	-562.35	-101.94	-563.11	1.99
2,780.00	21.75	195.23	2,688.68	-595.82	-111.28	-596.66	0.31
2,873.00	21.98	194.68	2,774.99	-629.29	-120.22	-630.19	0.33
2,963.00	22.02	194.97	2,858.44	-661.88	-128.85	-662.85	0.13
3,053.00	21.52	193.91	2,942.02	-694.20	-137.17	-695.23	0.71
3,143.00	20.58	194.46	3,026.01	-725.54	-145.09	-726.63	1.07
3,233.00	18.26	195.18	3,110.88	-754.47	-152.73	-755.62	2.59
3,323.00	17.36	195.10	3,196.57	-781.04	-159.92	-782.25	1.00
3,413.00	14.99	194.53	3,283.00	-805.28	-166.34	-806.53	2.64
3,503.00	14.88	191.28	3,369.96	-827.88	-171.52	-829.17	0.94
3,593.00	13.74	190.77	3,457.17	-849.71	-175.78	-851.03	1.27
3,683.00	12.11	190.49	3,544.89	-869.49	-179.50	-870.85	1.81
3,863.00	8.96	191.64	3,721.83	-901.80	-185.77	-903.20	1.75
3,954.00	7.87	193.78	3,811.85	-914.79	-188.68	-916.21	1.25
4,043.00	7.86	196.19	3,900.01	-926.55	-191.83	-928.00	0.37

## Design Report for Milk State 29N-21HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
4,223.00	7.56	181.91	4,078.40	-950.21	-195.65	-951.68	1.07
4,313.00	5.27	178.38	4,167.83	-960.26	-195.73	-961.73	2.58
4,403.00	5.03	179.51	4,257.47	-968.33	-195.58	-969.81	0.29
4,492.00	3.43	175.92	4,346.22	-974.89	-195.36	-976.36	1.82
4,582.00	3.10	173.64	4,436.08	-979.99	-194.90	-981.46	0.39
4,672.00	2.77	174.70	4,525.96	-984.58	-194.43	-986.04	0.37
4,762.00	2.89	177.16	4,615.85	-989.01	-194.12	-990.47	0.19
4,852.00	1.33	153.49	4,705.79	-992.21	-193.54	-993.67	1.95
4,941.00	0.78	109.80	4,794.77	-993.34	-192.51	-994.79	1.05
5,031.00	0.89	102.13	4,884.76	-993.69	-191.25	-995.13	0.17
5,121.00	1.34	87.87	4,974.75	-993.80	-189.51	-995.23	0.58
5,210.00	1.06	71.21	5,063.73	-993.50	-187.69	-994.91	0.50
5,300.00	1.02	69.69	5,153.71	-992.95	-186.15	-994.35	0.05
5,390.00	0.69	43.49	5,243.70	-992.28	-185.03	-993.67	0.56
5,480.00	0.76	20.57	5,333.69	-991.33	-184.45	-992.72	0.33
5,570.00	1.07	5.35	5,423.68	-989.93	-184.16	-991.32	0.43
5,660.00	1.14	0.87	5,513.67	-988.20	-184.07	-989.59	0.12
5,750.00	1.28	354.98	5,603.65	-986.30	-184.14	-987.69	0.21
5,840.00	0.81	12.10	5,693.63	-984.68	-184.10	-986.07	0.62
5,930.00	1.00	228.17	5,783.63	-984.58	-184.55	-985.97	1.91
6,020.00	1.17	219.06	5,873.61	-985.82	-185.71	-987.22	0.27
6,200.00	0.78	137.08	6,053.59	-988.14	-186.03	-989.54	0.73
6,290.00	0.52	100.42	6,143.59	-988.67	-185.22	-990.06	0.53
6,380.00	0.51	74.48	6,233.58	-988.63	-184.43	-990.02	0.26
6,470.00	0.59	65.87	6,323.58	-988.34	-183.62	-989.72	0.13
6,560.00	0.83	48.71	6,413.57	-987.72	-182.71	-989.09	0.35
6,650.00	5.87	15.04	6,503.39	-982.84	-181.02	-984.20	5.78
6,740.00	18.96	0.13	6,591.11	-963.69	-179.79	-965.04	14.86
6,830.00	28.58	3.71	6,673.39	-927.50	-178.36	-928.84	10.80
6,920.00	34.00	358.03	6,750.28	-880.82	-177.83	-882.16	6.85
7,010.00	40.88	358.48	6,821.70	-826.17	-179.48	-827.52	7.65
7,100.00	50.18	359.02	6,884.68	-762.03	-180.85	-763.39	10.34
7,190.00	58.14	359.20	6,937.33	-689.13	-181.98	-690.51	8.85
7,280.00	64.27	359.17	6,980.66	-610.31	-183.10	-611.70	6.81
7,370.00	75.06	356.64	7,011.90	-526.11	-186.25	-527.52	12.27
7,466.00	82.96	358.27	7,030.19	-432.04	-190.41	-433.49	8.40
7,502.40	85.18	358.69	7,033.95	-395.85	-191.37	-397.31	6.21
<b>7" Casing Set @ 7502.4' MD :: 7033.95' TVD</b>							
7,543.00	87.66	359.16	7,036.48	-355.34	-192.13	-356.80	6.21
7,637.00	88.43	359.13	7,039.69	-261.41	-193.53	-262.88	0.82
7,727.00	89.48	0.26	7,041.33	-171.42	-194.01	-172.91	1.71
7,817.00	89.11	0.04	7,042.44	-81.43	-193.78	-82.92	0.48
7,907.00	88.86	359.51	7,044.03	8.55	-194.13	7.06	0.65
7,997.00	89.48	0.75	7,045.33	98.54	-193.92	97.05	1.54
8,087.00	88.46	0.85	7,046.95	188.52	-192.67	187.03	1.14
8,177.00	89.82	359.69	7,048.30	278.50	-192.24	277.02	1.99
8,267.00	90.15	1.00	7,048.33	368.50	-191.70	367.02	1.50
8,357.00	90.18	1.06	7,048.07	458.48	-190.08	457.01	0.07
8,447.00	90.46	0.68	7,047.57	548.47	-188.72	547.01	0.52
8,537.00	90.49	0.49	7,046.82	638.46	-187.80	637.00	0.21
8,627.00	90.46	0.22	7,046.07	728.46	-187.24	727.00	0.30

## Design Report for Milk State 29N-21HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,717.00	90.25	359.38	7,045.52	818.46	-187.56	816.99	0.96
8,807.00	90.43	0.45	7,044.98	908.45	-187.69	906.98	1.21
8,897.00	90.74	0.01	7,044.06	998.45	-187.33	996.98	0.60
8,986.00	89.20	359.99	7,044.11	1,087.44	-187.33	1,085.97	1.73
9,166.00	89.26	1.15	7,046.53	1,267.42	-185.54	1,265.95	0.65
9,256.00	89.11	0.94	7,047.81	1,357.39	-183.90	1,355.94	0.29
9,345.00	89.88	1.14	7,048.59	1,446.37	-182.28	1,444.93	0.89
9,435.00	90.49	1.12	7,048.30	1,536.35	-180.51	1,534.92	0.68
9,525.00	90.62	1.08	7,047.43	1,626.33	-178.78	1,624.91	0.15
9,615.00	90.71	0.89	7,046.39	1,716.31	-177.23	1,714.90	0.23
9,705.00	90.92	0.34	7,045.11	1,806.30	-176.26	1,804.89	0.65
9,794.00	91.29	0.37	7,043.39	1,895.28	-175.71	1,893.88	0.42
9,884.00	90.03	0.06	7,042.35	1,985.27	-175.38	1,983.87	1.44
9,974.00	89.88	0.58	7,042.42	2,075.27	-174.87	2,073.87	0.60
10,064.00	90.28	0.36	7,042.30	2,165.27	-174.14	2,163.87	0.51
10,154.00	89.23	1.69	7,042.68	2,255.25	-172.53	2,253.86	1.88
10,244.00	89.32	1.62	7,043.82	2,345.20	-169.93	2,343.83	0.13
10,334.00	89.82	1.09	7,044.50	2,435.18	-167.80	2,433.82	0.81
10,424.00	90.34	0.64	7,044.37	2,525.16	-166.44	2,523.81	0.76
10,513.00	89.14	0.81	7,044.77	2,614.16	-165.31	2,612.81	1.36
10,603.00	89.48	0.50	7,045.86	2,704.14	-164.28	2,702.80	0.51
10,693.00	89.38	0.32	7,046.75	2,794.14	-163.64	2,792.80	0.23
10,783.00	89.20	359.62	7,047.87	2,884.13	-163.69	2,882.79	0.80
10,873.00	89.20	359.36	7,049.13	2,974.12	-164.49	2,972.77	0.29
10,963.00	89.11	0.33	7,050.45	3,064.10	-164.73	3,062.75	1.08
11,053.00	89.82	0.98	7,051.29	3,154.09	-163.70	3,152.74	1.07
11,143.00	89.72	1.05	7,051.65	3,244.08	-162.11	3,242.74	0.14
11,233.00	89.66	0.39	7,052.14	3,334.07	-160.98	3,332.74	0.74
11,323.00	89.54	0.35	7,052.77	3,424.07	-160.40	3,422.73	0.14
11,413.00	89.20	359.70	7,053.76	3,514.06	-160.36	3,512.72	0.82
11,503.00	88.89	359.18	7,055.26	3,604.04	-161.24	3,602.70	0.67
11,593.00	89.17	359.97	7,056.78	3,694.03	-161.90	3,692.67	0.93
11,683.00	89.35	0.96	7,057.95	3,784.01	-161.17	3,782.67	1.12
11,773.00	89.17	0.31	7,059.11	3,874.00	-160.18	3,872.66	0.75
11,863.00	89.17	359.68	7,060.41	3,963.99	-160.18	3,962.64	0.70
12,043.00	89.04	357.42	7,063.22	4,143.90	-164.74	4,142.51	1.26
12,133.00	88.71	358.50	7,064.99	4,233.82	-167.94	4,232.41	1.25
12,223.00	89.29	358.43	7,066.56	4,323.78	-170.35	4,322.34	0.65
12,403.00	89.07	356.84	7,069.14	4,503.60	-177.78	4,502.10	0.89
12,605.00	89.51	356.24	7,071.64	4,705.22	-189.97	4,703.62	0.37
<b>Final HAL MWD+IFR+SC Survey</b>							
12,647.00	89.51	356.24	7,072.00	4,747.12	-192.72	4,745.50	0.00
<b>Str Line Proj to Bit @ 12647' MD :: 7072.00' TVD</b>							

**Design Report for Milk State 29N-21HZ - Actual Surveys****Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
126.00	126.00	0.19	0.51	First Cathedral MWD Survey
1,184.00	1,176.48	-100.67	-19.88	Tie-On to Cathedral MWD Surveys
1,470.00	1,454.90	-165.00	-30.67	First HAL MWD+IFR+SC Survey
12,605.00	7,071.64	4,705.22	-189.97	Final HAL MWD+IFR+SC Survey
12,647.00	7,072.00	4,747.12	-192.72	Str Line Proj to Bit @ 12647' MD :: 7072.00' TVD

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
				+N/-S (usft)	+E/-W (usft)	
User	No Target (Freehand)	0.44	Slot	0.00	0.00	0.00

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
126.00	1,184.00	CES Surface Surveys	APC_ISCWSA REV 2 MWD
1,468.00	7,466.00	HAL MWD+IFR+SC Vertical/Build	APC_ISCWSA REV 2 MWD+IFR1+SC
7,543.00	12,605.00	HAL MWD+IFR+SC Lateral	APC_ISCWSA REV 2 MWD+IFR1+SC

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,216.30	1,208.11	9 5/8" Casing Set @ 1216.3' MD :: 1208.11' TVD	9-5/8	13-1/2
7,502.40	7,033.95	7" Casing Set @ 7502.4' MD :: 7033.95' TVD	7	8-3/4



Design Report for Milk State 29N-21HZ - Actual Surveys

**Targets**

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
Sec. 28 and 21-T3N-R	0.00	0.00	-13.00	166.43	-663.13	14,601,715.74	1,731,548.32	40.205452	-104.673609
- actual wellpath misses target center by 683.82usft at 0.00usft MD (0.00 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-1,157.80	4,631.20	14,606,342.62	1,730,373.38		
Point 2				1,410.20	4,631.80	14,606,352.73	1,732,941.36		
Point 3				3,978.20	4,632.30	14,606,362.75	1,735,509.34		
Point 4				3,987.10	1,999.70	14,603,730.20	1,735,527.99		
Point 5				4,004.20	-640.90	14,601,089.68	1,735,554.87		
Point 6				1,401.70	-644.40	14,601,076.54	1,732,952.40		
Point 7				-1,200.80	-633.90	14,601,077.40	1,730,349.88		
Point 8				1,401.70	-644.40	14,601,076.54	1,732,952.40		
Point 9				4,004.20	-640.90	14,601,089.68	1,735,554.87		
Point 10				4,016.60	-3,289.10	14,598,441.54	1,735,577.08		
Point 11				4,028.80	-5,929.10	14,595,801.61	1,735,599.06		
Point 12				1,413.40	-5,930.40	14,595,790.62	1,732,983.68		
Point 13				-1,202.00	-5,931.80	14,595,779.53	1,730,368.31		
Point 14				-1,201.40	-3,282.80	14,598,428.51	1,730,359.09		
Point 15				-1,200.80	-633.90	14,601,077.40	1,730,349.88		
Point 16				-1,179.30	1,998.70	14,603,710.06	1,730,361.63		
Milk State 29N-21HZ_I	0.00	0.00	0.00	-0.36	75.11	14,601,551.69	1,732,287.18	40.204994	-104.670965
- actual wellpath misses target center by 75.11usft at 0.31usft MD (0.31 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-152.27	5,656.58	14,607,207.66	1,732,113.95		
Point 2				-152.07	4,798.37	14,606,349.46	1,732,117.33		
Point 3				-158.53	3,482.09	14,605,033.16	1,732,115.75		
Point 4				-164.98	2,165.81	14,603,716.87	1,732,114.17		
Point 5				-171.46	845.81	14,602,396.85	1,732,112.58		
Point 6				-177.94	-474.19	14,601,076.84	1,732,110.99		
Point 7				-177.12	-1,336.34	14,600,214.70	1,732,115.01		
Point 8				-1,096.80	-1,333.90	14,600,213.73	1,731,195.32		
Point 9				-1,097.62	-470.45	14,601,077.17	1,731,191.31		
Point 10				-1,091.15	847.61	14,602,395.25	1,731,192.89		
Point 11				-1,084.68	2,165.66	14,603,713.31	1,731,194.48		
Point 12				-1,078.22	3,481.93	14,605,029.60	1,731,196.07		
Point 13				-1,071.75	4,798.21	14,606,345.89	1,731,197.66		
Point 14				-1,071.96	5,657.33	14,607,205.01	1,731,194.27		
Point 15				-152.27	5,656.58	14,607,207.66	1,732,113.95		
Milk State 29N-21HZ_I	0.00	0.00	7,051.00	4,747.88	-149.63	14,606,299.07	1,732,044.85	40.218033	-104.671770
- actual wellpath misses target center by 47.89usft at 12644.75usft MD (7071.98 TVD, 4744.88 N, -192.58 E)									
- Point									
Milk State 29N-21HZ_I	0.00	0.00	0.00	0.00	0.00	14,601,551.77	1,732,212.07	40.204995	-104.671234
- actual wellpath hits target center									
- Point									

**North Reference Sheet for 3N-65W-21 Milk 4-21HZ Pad - Milk State 29N-21HZ - 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=13 @ 4851.00usft (Ensign 145). Northing and Easting are relative to Milk State 29N-21HZ

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 -105.000000°, Longitude Origin:0.000000°, Latitude Origin:0.000000°

False Easting: 1,640,416.67usft, False Northing: 0.00usft, Scale Reduction: 0.99960964

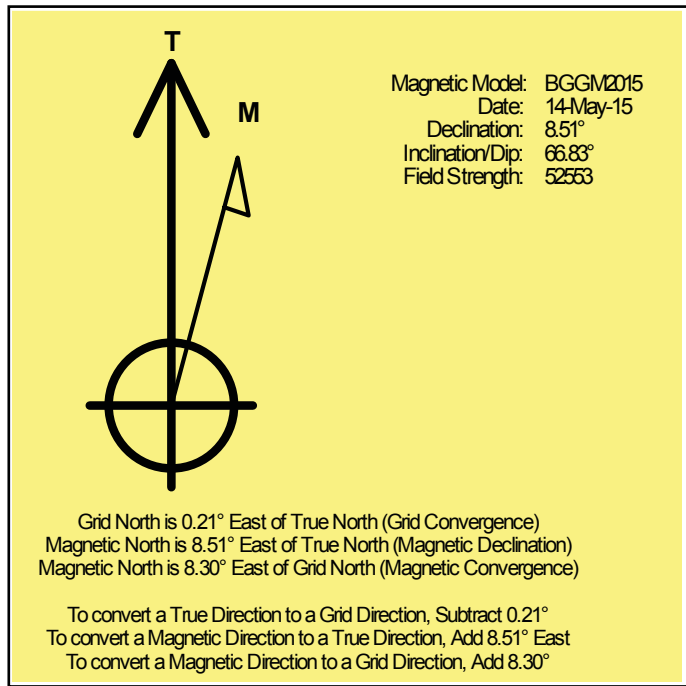
Grid Coordinates of Well: 14,601,551.77 usft N, 1,732,212.07 usft E

Geographical Coordinates of Well: 40° 12' 17.98" N, 104° 40' 16.44" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,647.00usft the Bottom Hole Displacement is 4,751.03usft in the Direction of 357.68° ( True).

Magnetic Convergence at surface is: -8.30° (14 May 2015, , BGGM2015)



# US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N

3N-65W-21 Milk 4-21HZ Pad

Milk State 29N-21HZ

05-123-41001

Plan B

Design: Actual Surveys

## Sperry Drilling Services

### Geodetic Report

20 May, 2015

Well Coordinates: 14,601,551.77 N, 1,732,212.07 E (40° 12' 17.98" N, 104° 40' 16.44" W)

Ground Level: 4,838.00 usft

Local Coordinate Origin:	Centered on Well Milk State 29N-21HZ
Viewing Datum:	RKB=13 @ 4851.00usft (Ensign 145)
TVDs to System:	N
North Reference:	True
Unit System:	Dec-Deg - API - US Survey Feet - Custom

Version: 5000.1 Build: 70

**HALLIBURTON**

**Design Report for Milk State 29N-21HZ - Actual Surveys**

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	40.204995	-104.671234	14,601,551.77	1,732,212.07
126.00	0.50	69.40	126.00	0.19	0.51	40.204996	-104.671232	14,601,551.97	1,732,212.58
184.00	0.30	89.30	184.00	0.28	0.90	40.204996	-104.671231	14,601,552.06	1,732,212.97
243.00	0.60	171.70	243.00	-0.02	1.10	40.204995	-104.671230	14,601,551.76	1,732,213.17
302.00	0.70	187.80	301.99	-0.68	1.10	40.204993	-104.671230	14,601,551.09	1,732,213.17
365.00	1.20	212.40	364.98	-1.62	0.69	40.204991	-104.671232	14,601,550.15	1,732,212.76
427.00	2.00	202.60	426.96	-3.17	-0.07	40.204986	-104.671235	14,601,548.60	1,732,212.01
491.00	3.20	192.90	490.89	-5.94	-0.90	40.204979	-104.671237	14,601,545.83	1,732,211.19
555.00	4.10	194.70	554.76	-9.89	-1.88	40.204968	-104.671241	14,601,541.87	1,732,210.22
619.00	5.30	188.10	618.55	-15.03	-2.88	40.204954	-104.671245	14,601,536.73	1,732,209.25
682.00	6.50	192.00	681.21	-21.40	-4.03	40.204936	-104.671249	14,601,530.35	1,732,208.12
746.00	7.30	192.20	744.75	-28.92	-5.64	40.204916	-104.671254	14,601,522.83	1,732,206.53
809.00	8.00	191.20	807.19	-37.13	-7.34	40.204893	-104.671261	14,601,514.61	1,732,204.87
872.00	8.60	190.70	869.53	-46.06	-9.06	40.204869	-104.671267	14,601,505.68	1,732,203.17
935.00	9.30	194.40	931.76	-55.62	-11.20	40.204842	-104.671274	14,601,496.11	1,732,201.07
996.00	10.50	193.60	991.85	-65.80	-13.74	40.204814	-104.671283	14,601,485.92	1,732,198.57
1,060.00	10.70	189.60	1,054.76	-77.32	-16.10	40.204783	-104.671292	14,601,474.39	1,732,196.25
1,123.00	10.90	188.90	1,116.64	-88.98	-18.00	40.204751	-104.671299	14,601,462.73	1,732,194.40
1,184.00	11.50	189.40	1,176.48	-100.67	-19.88	40.204719	-104.671305	14,601,451.03	1,732,192.56
1,216.30	11.88	189.43	1,208.11	-107.13	-20.95	40.204701	-104.671309	14,601,444.56	1,732,191.51
1,470.00	14.87	189.61	1,454.90	-165.00	-30.67	40.204542	-104.671344	14,601,386.66	1,732,182.01
1,563.00	16.37	190.14	1,544.46	-189.67	-34.97	40.204474	-104.671359	14,601,361.97	1,732,177.80
1,750.00	18.25	187.24	1,722.99	-244.66	-43.30	40.204323	-104.671389	14,601,306.95	1,732,169.68
1,845.00	20.29	188.46	1,812.66	-275.72	-47.60	40.204238	-104.671405	14,601,275.88	1,732,165.49
1,939.00	20.26	186.91	1,900.84	-307.99	-51.95	40.204149	-104.671420	14,601,243.59	1,732,161.26
2,032.00	20.60	190.81	1,987.99	-340.05	-56.96	40.204061	-104.671438	14,601,211.51	1,732,156.37
2,219.00	19.96	189.48	2,163.40	-403.85	-68.38	40.203886	-104.671479	14,601,147.67	1,732,145.18
2,312.00	19.88	189.30	2,250.84	-435.11	-73.55	40.203800	-104.671498	14,601,116.39	1,732,140.12
2,406.00	21.05	192.02	2,338.90	-467.39	-79.65	40.203712	-104.671520	14,601,084.09	1,732,134.15
2,499.00	19.98	191.02	2,426.01	-499.33	-86.17	40.203624	-104.671543	14,601,052.13	1,732,127.75
2,593.00	19.87	194.55	2,514.38	-530.55	-93.25	40.203538	-104.671568	14,601,020.88	1,732,120.78
2,686.00	21.65	195.96	2,601.34	-562.35	-101.94	40.203451	-104.671599	14,600,989.05	1,732,112.21
2,780.00	21.75	195.23	2,688.68	-595.82	-111.28	40.203359	-104.671633	14,600,955.54	1,732,102.99
2,873.00	21.98	194.68	2,774.99	-629.29	-120.22	40.203267	-104.671665	14,600,922.04	1,732,094.18
2,963.00	22.02	194.97	2,858.44	-661.88	-128.85	40.203178	-104.671696	14,600,889.42	1,732,085.67
3,053.00	21.52	193.91	2,942.02	-694.20	-137.17	40.203089	-104.671726	14,600,857.07	1,732,077.47
3,143.00	20.58	194.46	3,026.01	-725.54	-145.09	40.203003	-104.671754	14,600,825.70	1,732,069.66
3,233.00	18.26	195.18	3,110.88	-754.47	-152.73	40.202923	-104.671781	14,600,796.74	1,732,062.13
3,323.00	17.36	195.10	3,196.57	-781.04	-159.92	40.202850	-104.671807	14,600,770.14	1,732,055.04
3,413.00	14.99	194.53	3,283.00	-805.28	-166.34	40.202784	-104.671830	14,600,745.88	1,732,048.71
3,503.00	14.88	191.28	3,369.96	-827.88	-171.52	40.202722	-104.671849	14,600,723.27	1,732,043.61
3,593.00	13.74	190.77	3,457.17	-849.71	-175.78	40.202662	-104.671864	14,600,701.42	1,732,039.43



Design Report for Milk State 29N-21HZ - Actual Surveys

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
3,683.00	12.11	190.49	3,544.89	-869.49	-179.50	40.202607	-104.671877	14,600,681.62	1,732,035.79
3,863.00	8.96	191.64	3,721.83	-901.80	-185.77	40.202519	-104.671900	14,600,649.29	1,732,029.64
3,954.00	7.87	193.78	3,811.85	-914.79	-188.68	40.202483	-104.671910	14,600,636.29	1,732,026.78
4,043.00	7.86	196.19	3,900.01	-926.55	-191.83	40.202451	-104.671921	14,600,624.52	1,732,023.67
4,223.00	7.56	181.91	4,078.40	-950.21	-195.65	40.202386	-104.671935	14,600,600.85	1,732,019.93
4,313.00	5.27	178.38	4,167.83	-960.26	-195.73	40.202358	-104.671935	14,600,590.80	1,732,019.89
4,403.00	5.03	179.51	4,257.47	-968.33	-195.58	40.202336	-104.671935	14,600,582.72	1,732,020.07
4,492.00	3.43	175.92	4,346.22	-974.89	-195.36	40.202318	-104.671934	14,600,576.16	1,732,020.32
4,582.00	3.10	173.64	4,436.08	-979.99	-194.90	40.202304	-104.671932	14,600,571.06	1,732,020.80
4,672.00	2.77	174.70	4,525.96	-984.58	-194.43	40.202291	-104.671931	14,600,566.48	1,732,021.29
4,762.00	2.89	177.16	4,615.85	-989.01	-194.12	40.202279	-104.671929	14,600,562.05	1,732,021.61
4,852.00	1.33	153.49	4,705.79	-992.21	-193.54	40.202270	-104.671927	14,600,558.85	1,732,022.21
4,941.00	0.78	109.80	4,794.77	-993.34	-192.51	40.202267	-104.671924	14,600,557.72	1,732,023.24
5,031.00	0.89	102.13	4,884.76	-993.69	-191.25	40.202266	-104.671919	14,600,557.38	1,732,024.50
5,121.00	1.34	87.87	4,974.75	-993.80	-189.51	40.202266	-104.671913	14,600,557.27	1,732,026.24
5,210.00	1.06	71.21	5,063.73	-993.50	-187.69	40.202267	-104.671906	14,600,557.58	1,732,028.06
5,300.00	1.02	69.69	5,153.71	-992.95	-186.15	40.202268	-104.671901	14,600,558.14	1,732,029.59
5,390.00	0.69	43.49	5,243.70	-992.28	-185.03	40.202270	-104.671897	14,600,558.81	1,732,030.71
5,480.00	0.76	20.57	5,333.69	-991.33	-184.45	40.202273	-104.671895	14,600,559.77	1,732,031.29
5,570.00	1.07	5.35	5,423.68	-989.93	-184.16	40.202277	-104.671894	14,600,561.16	1,732,031.58
5,660.00	1.14	0.87	5,513.67	-988.20	-184.07	40.202281	-104.671893	14,600,562.89	1,732,031.66
5,750.00	1.28	354.98	5,603.65	-986.30	-184.14	40.202287	-104.671894	14,600,564.79	1,732,031.58
5,840.00	0.81	12.10	5,693.63	-984.68	-184.10	40.202291	-104.671894	14,600,566.41	1,732,031.62
5,930.00	1.00	228.17	5,783.63	-984.58	-184.55	40.202291	-104.671895	14,600,566.51	1,732,031.17
6,020.00	1.17	219.06	5,873.61	-985.82	-185.71	40.202288	-104.671899	14,600,565.27	1,732,030.01
6,200.00	0.78	137.08	6,053.59	-988.14	-186.03	40.202282	-104.671901	14,600,562.94	1,732,029.69
6,290.00	0.52	100.42	6,143.59	-988.67	-185.22	40.202280	-104.671898	14,600,562.42	1,732,030.51
6,380.00	0.51	74.48	6,233.58	-988.63	-184.43	40.202280	-104.671895	14,600,562.46	1,732,031.30
6,470.00	0.59	65.87	6,323.58	-988.34	-183.62	40.202281	-104.671892	14,600,562.76	1,732,032.11
6,560.00	0.83	48.71	6,413.57	-987.72	-182.71	40.202283	-104.671889	14,600,563.38	1,732,033.02
6,650.00	5.87	15.04	6,503.39	-982.84	-181.02	40.202296	-104.671883	14,600,568.27	1,732,034.69
6,740.00	18.96	0.13	6,591.11	-963.69	-179.79	40.202349	-104.671878	14,600,587.42	1,732,035.85
6,830.00	28.58	3.71	6,673.39	-927.50	-178.36	40.202448	-104.671873	14,600,623.62	1,732,037.14
6,920.00	34.00	358.03	6,750.28	-880.82	-177.83	40.202576	-104.671871	14,600,670.30	1,732,037.50
7,010.00	40.88	358.48	6,821.70	-826.17	-179.48	40.202726	-104.671877	14,600,724.95	1,732,035.65
7,100.00	50.18	359.02	6,884.68	-762.03	-180.85	40.202903	-104.671882	14,600,789.08	1,732,034.04
7,190.00	58.14	359.20	6,937.33	-689.13	-181.98	40.203103	-104.671886	14,600,861.97	1,732,032.64
7,280.00	64.27	359.17	6,980.66	-610.31	-183.10	40.203319	-104.671890	14,600,940.79	1,732,031.23
7,370.00	75.06	356.64	7,011.90	-526.11	-186.25	40.203550	-104.671901	14,601,024.98	1,732,027.77
7,466.00	82.96	358.27	7,030.19	-432.04	-190.41	40.203809	-104.671916	14,601,119.03	1,732,023.26
7,502.40	85.18	358.69	7,033.95	-395.85	-191.37	40.203908	-104.671920	14,601,155.22	1,732,022.16
7,543.00	87.66	359.16	7,036.48	-355.34	-192.13	40.204019	-104.671922	14,601,195.72	1,732,021.25

**Design Report for Milk State 29N-21HZ - Actual Surveys**

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
7,637.00	88.43	359.13	7,039.69	-261.41	-193.53	40.204277	-104.671927	14,601,289.65	1,732,019.50
7,727.00	89.48	0.26	7,041.33	-171.42	-194.01	40.204524	-104.671929	14,601,379.63	1,732,018.69
7,817.00	89.11	0.04	7,042.44	-81.43	-193.78	40.204771	-104.671928	14,601,469.62	1,732,018.59
7,907.00	88.86	359.51	7,044.03	8.55	-194.13	40.205019	-104.671930	14,601,559.61	1,732,017.91
7,997.00	89.48	0.75	7,045.33	98.54	-193.92	40.205266	-104.671929	14,601,649.59	1,732,017.78
8,087.00	88.46	0.85	7,046.95	188.52	-192.67	40.205513	-104.671924	14,601,739.57	1,732,018.70
8,177.00	89.82	359.69	7,048.30	278.50	-192.24	40.205760	-104.671923	14,601,829.56	1,732,018.79
8,267.00	90.15	1.00	7,048.33	368.50	-191.70	40.206007	-104.671921	14,601,919.56	1,732,019.00
8,357.00	90.18	1.06	7,048.07	458.48	-190.08	40.206254	-104.671915	14,602,009.55	1,732,020.29
8,447.00	90.46	0.68	7,047.57	548.47	-188.72	40.206501	-104.671910	14,602,099.54	1,732,021.32
8,537.00	90.49	0.49	7,046.82	638.46	-187.80	40.206748	-104.671907	14,602,189.53	1,732,021.90
8,627.00	90.46	0.22	7,046.07	728.46	-187.24	40.206995	-104.671905	14,602,279.53	1,732,022.13
8,717.00	90.25	359.38	7,045.52	818.46	-187.56	40.207243	-104.671906	14,602,369.53	1,732,021.48
8,807.00	90.43	0.45	7,044.98	908.45	-187.69	40.207490	-104.671906	14,602,459.52	1,732,021.01
8,897.00	90.74	0.01	7,044.06	998.45	-187.33	40.207737	-104.671905	14,602,549.52	1,732,021.04
8,986.00	89.20	359.99	7,044.11	1,087.44	-187.33	40.207981	-104.671905	14,602,638.51	1,732,020.71
9,166.00	89.26	1.15	7,046.53	1,267.42	-185.54	40.208476	-104.671899	14,602,818.49	1,732,021.84
9,256.00	89.11	0.94	7,047.81	1,357.39	-183.90	40.208723	-104.671893	14,602,908.47	1,732,023.14
9,345.00	89.88	1.14	7,048.59	1,446.37	-182.28	40.208967	-104.671887	14,602,997.46	1,732,024.43
9,435.00	90.49	1.12	7,048.30	1,536.35	-180.51	40.209214	-104.671881	14,603,087.45	1,732,025.87
9,525.00	90.62	1.08	7,047.43	1,626.33	-178.78	40.209461	-104.671875	14,603,177.43	1,732,027.27
9,615.00	90.71	0.89	7,046.39	1,716.31	-177.23	40.209708	-104.671869	14,603,267.42	1,732,028.48
9,705.00	90.92	0.34	7,045.11	1,806.30	-176.26	40.209955	-104.671866	14,603,357.41	1,732,029.11
9,794.00	91.29	0.37	7,043.39	1,895.28	-175.71	40.210200	-104.671864	14,603,446.39	1,732,029.33
9,884.00	90.03	0.06	7,042.35	1,985.27	-175.38	40.210447	-104.671862	14,603,536.38	1,732,029.34
9,974.00	89.88	0.58	7,042.42	2,075.27	-174.87	40.210694	-104.671861	14,603,626.38	1,732,029.51
10,064.00	90.28	0.36	7,042.30	2,165.27	-174.14	40.210941	-104.671858	14,603,716.38	1,732,029.91
10,154.00	89.23	1.69	7,042.68	2,255.25	-172.53	40.211188	-104.671852	14,603,806.37	1,732,031.19
10,244.00	89.32	1.62	7,043.82	2,345.20	-169.93	40.211435	-104.671843	14,603,896.33	1,732,033.45
10,334.00	89.82	1.09	7,044.50	2,435.18	-167.80	40.211682	-104.671835	14,603,986.31	1,732,035.25
10,424.00	90.34	0.64	7,044.37	2,525.16	-166.44	40.211929	-104.671830	14,604,076.30	1,732,036.27
10,513.00	89.14	0.81	7,044.77	2,614.16	-165.31	40.212174	-104.671826	14,604,165.30	1,732,037.07
10,603.00	89.48	0.50	7,045.86	2,704.14	-164.28	40.212421	-104.671823	14,604,255.29	1,732,037.77
10,693.00	89.38	0.32	7,046.75	2,794.14	-163.64	40.212668	-104.671820	14,604,345.28	1,732,038.08
10,783.00	89.20	359.62	7,047.87	2,884.13	-163.69	40.212915	-104.671821	14,604,435.27	1,732,037.70
10,873.00	89.20	359.36	7,049.13	2,974.12	-164.49	40.213162	-104.671823	14,604,525.26	1,732,036.56
10,963.00	89.11	0.33	7,050.45	3,064.10	-164.73	40.213409	-104.671824	14,604,615.24	1,732,035.99
11,053.00	89.82	0.98	7,051.29	3,154.09	-163.70	40.213656	-104.671821	14,604,705.24	1,732,036.68
11,143.00	89.72	1.05	7,051.65	3,244.08	-162.11	40.213904	-104.671815	14,604,795.23	1,732,037.94
11,233.00	89.66	0.39	7,052.14	3,334.07	-160.98	40.214151	-104.671811	14,604,885.22	1,732,038.74
11,323.00	89.54	0.35	7,052.77	3,424.07	-160.40	40.214398	-104.671809	14,604,975.21	1,732,038.99
11,413.00	89.20	359.70	7,053.76	3,514.06	-160.36	40.214645	-104.671809	14,605,065.21	1,732,038.69

**Design Report for Milk State 29N-21HZ - Actual Surveys**

Measured			Vertical	Local Coordinates		Geographic Coordinates		UTM Coordinates	
Depth (usft)	Inclination (°)	Azimuth (°)	Depth (usft)	+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
11,503.00	88.89	359.18	7,055.26	3,604.04	-161.24	40.214892	-104.671812	14,605,155.19	1,732,037.48
11,593.00	89.17	359.97	7,056.78	3,694.03	-161.90	40.215139	-104.671814	14,605,245.17	1,732,036.48
11,683.00	89.35	0.96	7,057.95	3,784.01	-161.17	40.215386	-104.671812	14,605,335.16	1,732,036.88
11,773.00	89.17	0.31	7,059.11	3,874.00	-160.18	40.215633	-104.671808	14,605,425.15	1,732,037.54
11,863.00	89.17	359.68	7,060.41	3,963.99	-160.18	40.215880	-104.671808	14,605,515.14	1,732,037.20
12,043.00	89.04	357.42	7,063.22	4,143.90	-164.74	40.216375	-104.671824	14,605,695.03	1,732,031.98
12,133.00	88.71	358.50	7,064.99	4,233.82	-167.94	40.216621	-104.671836	14,605,784.94	1,732,028.44
12,223.00	89.29	358.43	7,066.56	4,323.78	-170.35	40.216868	-104.671844	14,605,874.89	1,732,025.70
12,403.00	89.07	356.84	7,069.14	4,503.60	-177.78	40.217362	-104.671871	14,606,054.68	1,732,017.61
12,605.00	89.51	356.24	7,071.64	4,705.22	-189.97	40.217916	-104.671915	14,606,256.25	1,732,004.67
12,647.00	89.51	356.24	7,072.00	4,747.12	-192.72	40.218031	-104.671925	14,606,298.15	1,732,001.76

**Design Annotations**

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
126.00	126.00	0.19	0.51	First Cathedral MWD Survey
1,184.00	1,176.48	-100.67	-19.88	Tie-On to Cathedral MWD Surveys
1,470.00	1,454.90	-165.00	-30.67	First HAL MWD+IFR+SC Survey
12,605.00	7,071.64	4,705.22	-189.97	Final HAL MWD+IFR+SC Survey
12,647.00	7,072.00	4,747.12	-192.72	Proj to Bit @ 12647' MD :: 7072.0' TVD

**Vertical Section Information**

Angle Type	Target	Azimuth (°)	Origin Type	+N/_S (usft)	+E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	0.44	Slot	0.00	0.00	0.00

**Design Report for Milk State 29N-21HZ - Actual Surveys**

**Survey tool program**

From (usft)	To (usft)	Survey/Plan	Survey Tool
126.00	1,184.00	CES Surface Surveys	APC_ISCWSA REV 2 MWD
1,468.00	7,466.00	HAL MWD+IFR+SC Vertical/Build	APC_ISCWSA REV 2 MWD+IFR1+SC
7,543.00	12,605.00	HAL MWD+IFR+SC Lateral	APC_ISCWSA REV 2 MWD+IFR1+SC

**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,216.30	1,208.11	9 5/8" Casing Set @ 1216.3' MD :: 1208.11' TVD	9-5/8	13-1/2
7,502.40	7,033.95	7" Casing Set @ 7502.4' MD :: 7033.95' TVD	7	8-3/4

**Targets for Plan B**

Shape	Target Name	TVD (usft)	Northing (usft)	Easting (usft)	+N/-S usft	+E/-W usft	Created	Updated
Polygon	Sec. 28 and 21-T3N-R65W	-13.00	14,601,715.74	1,731,548.32	166.43	-663.13	10/10/2014	10/10/2014
Polygon	Milk State 29N-21HZ_Hardlines	0.00	14,601,551.69	1,732,287.18	-0.36	75.11	3/25/2015	3/25/2015
Point	Milk State 29N-21HZ_BHL	7,051.00	14,606,299.07	1,732,044.85	4,747.88	-149.63	10/11/2014	4/1/2015
Point	Milk State 29N-21HZ_SHL	0.00	14,601,551.77	1,732,212.07	0.00	0.00	10/11/2014	4/1/2015

**North Reference Sheet for 3N-65W-21 Milk 4-21HZ Pad - Milk State 29N-21HZ - 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=13 @ 4851.00usft (Ensign 145). Northing and Easting are relative to Milk State 29N-21HZ

Coordinate System is Universal Transverse Mercator (US Survey Feet), Zone 13N (108 W to 102 W) using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Transverse Mercator (Gauss-Kruger)

Central Meridian is -105.000000°, Longitude Origin:0.000000°, Latitude Origin:0.000000°

False Easting: 1,640,416.67usft, False Northing: 0.00usft, Scale Reduction: 0.99960964

Grid Coordinates of Well: 14,601,551.77 usft N, 1,732,212.07 usft E

Geographical Coordinates of Well: 40° 12' 17.98" N, 104° 40' 16.44" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,647.00usft

the Bottom Hole Displacement is 4,751.03usft in the Direction of 357.68° (True).

Magnetic Convergence at surface is: -8.30° (14 May 2015, , BGGM2015)

