SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Anadarko Petroleum Corp
WELL:	Milk 35N-28HZ
FIELD:	Wattenberg
RIG:	Ensign 145
LEGALS:	Sec 3N-65W-21
COUNTY:	Weld
STATE:	Colorado
CAL. METHOD:	Minimum Curvature
MAG. DECL. APPLIED:	8.51
VERTICAL SEC. DIR. :	179.970

SSDS Job Number :	902261553
Start Date of Job :	19-May-15
End Date of Job :	25-May-15
Lead Directional Driller:	Ryan White
Other SSDS DD's :	Dan Dietrich
	Omar Dominguez
SSDS MWD Engineers :	Matt Busche
	Scott Trowbridge

	Main Hole ==========>		1st Side Track ========>		2nd Side Track ========>		3rd Side Track ========>		4th Side Track ========>	
				Tie On		Tie On		Tie On		Tie On
Tie On Point	1177.00	MWD								
First Survey	1284.00	MWD								
KOP Depth	6430.00	KOP		KOP-ST1		KOP-ST2		KOP-ST3		KOP-ST4
Last Survey Depth	12414.00	MWD		MWD		MWD		MWD		MWD
Bit Extrapolation to TD	12456.00	Projection		T.D.		T.D.		T.D.		T.D.

The following personnel listed below, certify the above survey information to be accurate to the their knowledge. :

Print Name : Ryan White	Print Name : Omar Dominguez	Print Name :
Sign Name :	Sign Name :	Sign Name :
Print Name : Matt Busche	Print Name : Scott Trowbridge	Print Name :
Sign Name :	Sign Name :	Sign Name :

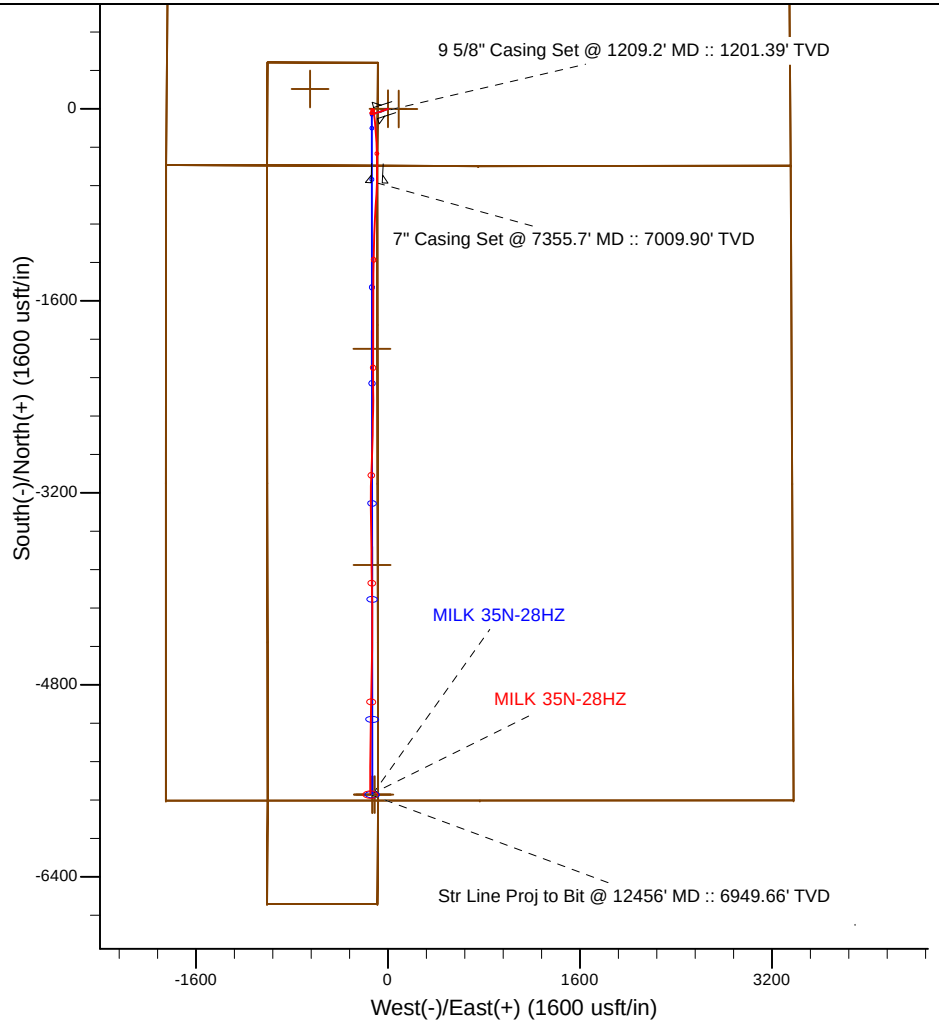
Examples of Survey Types:

TieOn	Tie On to Surface Casing (Assumed Vertical), Tie On to existing MWD Survey (prior drilled hole)
MWD	Sperry Sun Drilling Services (SSDS) Measurement While Drilling (MWD) Survey's
ESS	Sperry Sun Drilling Services (SSDS) Electronic Survey System (ESS) Survey's
Gyro	Gyro Survey's ; Provided by third party vendor, or by Sperry Sun Drilling Services (SSDS)
SS	Single Shot (SS) Survey's ; Provided by Sperry Sun Drilling Services (SSDS) or third party vendor.

Project: WELD-NAD83-UTMFT13N
Site: 3N-65W-21 Milk 4-21HZ Pad
Well: MILK 35N-28HZ
Wellbore: Plan B
Design: Actual Surveys

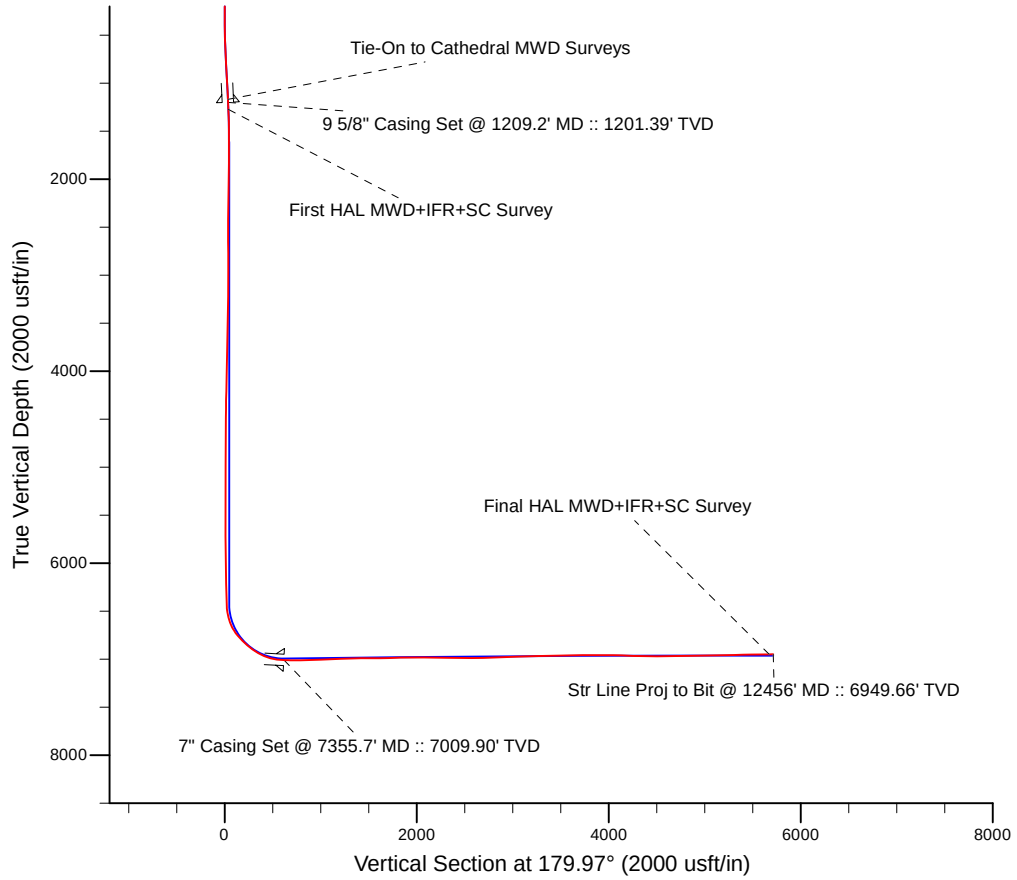
Anadarko Petroleum Corporation

HALLIBURTON
Sperry Drilling



LEGEND

MILK 35N-28HZ, Plan B, Rev B0 V0
Actual Surveys



7" Casing: ~142.34' FNL, ~1757.56' FWL
Lat/Long: 40.203301 N, -104.671615 E
UTM - NAD 83 - Zone 13N: 14,600,934.50.11' N, 1,732,107.95' E
Location: Sec. 28-T3N-R65W

BHL: ~49.96' FSL, ~1703.84' FWL
Lat/Long: 40.189303 N, -104.671812 E
UTM - NAD 83 - Zone 13N: 14,595,836.69' N, 1,732,071.76' E
Location: Sec. 28-T3N-R65W

WELL DETAILS: MILK 35N-28HZ

Ground Level: 4838.00
RKB = 13' @ 4851.00usft (Ensign 145)

Design: Actual Surveys (MILK 35N-28HZ/Plan B)

Created By: Clint Eshelman Date: 5/28/2015
Reviewed: _____ Date: _____

US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N
3N-65W-21 Milk 4-21HZ Pad
MILK 35N-28HZ
05-123-40997

Design: Actual Surveys

Sperry Drilling Services

Standard Report

28 May, 2015

Surface UWI : 05-123-40997

Well Coordinates: 14,601,552.08 N, 1,732,197.27 E (40° 12' 17.99" N, 104° 40' 16.63" W)
Ground Level: 4,838.00 usft

Local Coordinate Origin:	Centered on Well MILK 35N-28HZ
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 35N-28HZ - 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
91.00	0.20	93.50	91.00	-0.01	0.16	0.01	0.22
First Cathedral MWD Survey							
183.00	0.40	121.70	183.00	-0.19	0.59	0.19	0.26
273.00	0.10	87.50	273.00	-0.35	0.94	0.35	0.36
332.00	0.80	261.70	332.00	-0.41	0.58	0.41	1.52
396.00	2.10	250.00	395.97	-0.87	-0.96	0.87	2.07
459.00	3.70	248.70	458.89	-2.01	-3.94	2.00	2.54
522.00	4.70	251.40	521.72	-3.57	-8.28	3.56	1.62
586.00	5.20	254.10	585.48	-5.20	-13.56	5.19	0.86
650.00	6.70	249.10	649.14	-7.33	-19.83	7.31	2.48
713.00	7.50	251.10	711.65	-9.97	-27.16	9.95	1.33
776.00	8.60	251.20	774.03	-12.82	-35.51	12.80	1.75
871.00	10.50	249.80	867.71	-18.10	-50.36	18.07	2.01
965.00	10.30	249.30	960.17	-24.02	-66.25	23.99	0.23
1,059.00	9.60	252.40	1,052.75	-29.37	-81.59	29.32	0.94
1,122.00	8.30	253.10	1,114.98	-32.28	-90.95	32.23	2.07
1,177.00	7.50	251.90	1,169.46	-34.54	-98.16	34.49	1.49
Tie-On to Cathedral MWD Surveys							
1,209.20	7.44	251.68	1,201.39	-35.85	-102.13	35.80	0.21
9 5/8" Casing Set @ 1209.2' MD :: 1201.39' TVD							
1,284.00	7.30	251.15	1,275.57	-38.91	-111.23	38.85	0.21
First HAL MWD+IFR+SC Survey							
1,378.00	6.29	255.93	1,368.91	-42.09	-121.87	42.03	1.23
1,471.00	4.58	261.05	1,461.49	-43.91	-130.48	43.84	1.91
1,565.00	2.86	267.91	1,555.29	-44.58	-136.54	44.51	1.89
1,659.00	1.37	274.13	1,649.22	-44.58	-140.00	44.51	1.60
1,752.00	1.72	265.34	1,742.19	-44.62	-142.50	44.54	0.45
1,846.00	0.75	39.28	1,836.17	-44.25	-143.52	44.18	2.45
1,939.00	0.84	27.81	1,929.17	-43.18	-142.81	43.11	0.20
2,033.00	0.79	15.10	2,023.16	-41.94	-142.32	41.87	0.20
2,126.00	1.03	8.34	2,116.14	-40.50	-142.03	40.42	0.28
2,219.00	0.95	5.54	2,209.13	-38.90	-141.84	38.83	0.10
2,313.00	0.81	0.04	2,303.12	-37.46	-141.76	37.39	0.17
2,407.00	0.41	24.05	2,397.11	-36.49	-141.63	36.42	0.50
2,500.00	0.34	14.35	2,490.11	-35.92	-141.42	35.85	0.10
2,594.00	0.19	230.51	2,584.11	-35.75	-141.47	35.68	0.54
2,687.00	0.53	232.06	2,677.11	-36.11	-141.93	36.04	0.37
2,781.00	0.40	245.12	2,771.11	-36.52	-142.57	36.44	0.18
2,874.00	0.42	232.29	2,864.10	-36.86	-143.14	36.79	0.10
2,964.00	0.58	240.28	2,954.10	-37.29	-143.79	37.22	0.19
3,054.00	0.79	231.46	3,044.09	-37.90	-144.67	37.83	0.26
3,144.00	1.09	33.02	3,134.09	-37.57	-144.69	37.50	2.06
3,234.00	0.90	32.92	3,224.08	-36.26	-143.84	36.19	0.21
3,324.00	1.09	17.61	3,314.06	-34.85	-143.20	34.78	0.36
3,414.00	1.10	15.77	3,404.05	-33.20	-142.70	33.13	0.04
3,504.00	1.03	17.98	3,494.03	-31.60	-142.22	31.53	0.09
3,594.00	1.01	13.64	3,584.02	-30.06	-141.78	29.99	0.09
3,684.00	1.08	16.83	3,674.00	-28.48	-141.35	28.41	0.10
3,774.00	1.30	16.24	3,763.98	-26.69	-140.82	26.62	0.24

Design Report for MILK 35N-28HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
3,864.00	1.31	19.02	3,853.96	-24.74	-140.20	24.66	0.07
4,044.00	1.29	27.20	4,033.91	-20.99	-138.60	20.92	0.10
4,134.00	1.66	35.11	4,123.88	-19.02	-137.39	18.95	0.47
4,224.00	2.09	54.93	4,213.84	-17.01	-135.30	16.94	0.86
4,314.00	1.91	68.60	4,303.78	-15.52	-132.56	15.45	0.56
4,403.00	1.58	66.39	4,392.74	-14.49	-130.05	14.42	0.38
4,493.00	1.46	58.20	4,482.71	-13.39	-127.94	13.32	0.28
4,583.00	1.30	51.13	4,572.68	-12.14	-126.17	12.08	0.26
4,673.00	0.83	50.62	4,662.67	-11.09	-124.87	11.02	0.52
4,763.00	0.57	345.97	4,752.66	-10.24	-124.48	10.18	0.87
4,852.00	1.01	318.36	4,841.65	-9.23	-125.11	9.16	0.64
4,942.00	0.79	292.63	4,931.64	-8.39	-126.21	8.33	0.51
5,031.00	0.75	247.29	5,020.63	-8.38	-127.31	8.32	0.67
5,121.00	0.94	254.20	5,110.62	-8.81	-128.56	8.74	0.24
5,211.00	0.77	253.45	5,200.61	-9.18	-129.85	9.12	0.19
5,301.00	0.85	260.01	5,290.61	-9.47	-131.09	9.40	0.14
5,391.00	0.23	258.24	5,380.60	-9.62	-131.92	9.56	0.69
5,481.00	0.28	247.40	5,470.60	-9.75	-132.30	9.68	0.08
5,571.00	0.48	285.18	5,560.60	-9.73	-132.87	9.66	0.34
5,661.00	0.51	329.56	5,650.60	-9.29	-133.44	9.22	0.42
5,751.00	0.61	121.33	5,740.59	-9.19	-133.23	9.12	1.21
5,841.00	0.88	138.31	5,830.59	-9.96	-132.36	9.89	0.38
5,931.00	1.21	118.78	5,920.57	-10.93	-131.07	10.86	0.53
6,021.00	1.39	115.33	6,010.55	-11.86	-129.25	11.79	0.22
6,111.00	1.74	115.99	6,100.51	-12.92	-127.04	12.85	0.39
6,201.00	2.20	118.07	6,190.46	-14.33	-124.28	14.27	0.52
6,291.00	2.37	125.61	6,280.39	-16.23	-121.25	16.17	0.38
6,380.00	1.43	128.27	6,369.34	-17.99	-118.88	17.93	1.06
6,470.00	4.91	170.37	6,459.20	-22.48	-117.35	22.42	4.41
6,560.00	11.62	174.54	6,548.21	-35.32	-115.84	35.26	7.48
6,650.00	23.16	174.10	6,633.95	-62.04	-113.15	61.98	12.82
6,741.00	33.55	174.81	6,713.92	-105.00	-109.03	104.94	11.42
6,831.00	43.21	174.66	6,784.39	-160.57	-103.90	160.52	10.73
6,921.00	49.36	176.21	6,846.56	-225.39	-98.77	225.33	6.95
7,011.00	55.21	178.08	6,901.60	-296.46	-95.27	296.41	6.70
7,101.00	60.24	177.61	6,949.64	-372.48	-92.40	372.43	5.61
7,191.00	72.86	179.37	6,985.39	-454.84	-90.29	454.80	14.14
7,281.00	83.64	180.33	7,003.69	-542.83	-90.07	542.78	12.02
7,318.00	85.33	181.25	7,007.24	-579.65	-90.58	579.60	5.19
7,355.70	86.60	181.87	7,009.90	-617.24	-91.61	617.19	3.75
7" Casing Set @ 7355.7' MD :: 7009.90' TVD							
7,450.00	89.78	183.43	7,012.87	-711.38	-95.97	711.33	3.75
7,543.00	91.33	183.56	7,011.97	-804.20	-101.64	804.15	1.67
7,637.00	91.85	183.52	7,009.36	-897.98	-107.44	897.93	0.55
7,727.00	92.10	182.22	7,006.26	-987.81	-111.94	987.76	1.47
7,817.00	92.03	181.63	7,003.02	-1,077.70	-114.96	1,077.64	0.66
7,907.00	92.81	181.43	6,999.22	-1,167.59	-117.37	1,167.53	0.89
7,997.00	91.39	181.04	6,995.92	-1,257.51	-119.30	1,257.45	1.64
8,087.00	91.82	180.86	6,993.40	-1,347.46	-120.80	1,347.40	0.52
8,177.00	90.37	180.42	6,991.68	-1,437.44	-121.80	1,437.37	1.68
8,267.00	90.77	180.34	6,990.79	-1,527.43	-122.40	1,527.36	0.45

Design Report for MILK 35N-28HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
8,357.00	90.22	180.09	6,990.01	-1,617.42	-122.73	1,617.36	0.67
8,447.00	91.51	179.66	6,988.65	-1,707.41	-122.54	1,707.35	1.51
8,537.00	90.93	180.37	6,986.73	-1,797.39	-122.56	1,797.33	1.02
8,627.00	91.17	180.68	6,985.08	-1,887.37	-123.39	1,887.31	0.44
8,717.00	91.02	180.46	6,983.36	-1,977.35	-124.28	1,977.28	0.30
8,807.00	89.29	179.63	6,983.12	-2,067.35	-124.35	2,067.28	2.13
8,897.00	89.51	179.71	6,984.06	-2,157.34	-123.83	2,157.27	0.26
8,986.00	89.23	180.20	6,985.04	-2,246.33	-123.76	2,246.27	0.63
9,076.00	89.07	179.21	6,986.38	-2,336.32	-123.30	2,336.26	1.11
9,166.00	89.57	180.60	6,987.44	-2,426.31	-123.15	2,426.25	1.64
9,256.00	89.72	180.85	6,988.00	-2,516.30	-124.29	2,516.24	0.32
9,346.00	90.28	180.36	6,988.00	-2,606.30	-125.24	2,606.23	0.83
9,435.00	91.29	181.21	6,986.78	-2,695.28	-126.46	2,695.21	1.48
9,525.00	91.76	181.62	6,984.39	-2,785.22	-128.68	2,785.15	0.69
9,615.00	92.50	182.12	6,981.04	-2,875.11	-131.62	2,875.04	0.99
9,705.00	92.34	182.42	6,977.24	-2,964.96	-135.18	2,964.89	0.38
9,794.00	91.51	181.72	6,974.25	-3,053.85	-138.39	3,053.77	1.22
9,884.00	91.94	181.65	6,971.54	-3,143.77	-141.04	3,143.69	0.48
9,974.00	90.93	180.07	6,969.29	-3,233.73	-142.39	3,233.65	2.08
10,064.00	91.17	179.37	6,967.64	-3,323.71	-141.95	3,323.63	0.82
10,154.00	91.82	179.34	6,965.29	-3,413.67	-140.93	3,413.60	0.72
10,244.00	90.89	179.30	6,963.16	-3,503.64	-139.87	3,503.57	1.03
10,334.00	91.79	179.12	6,961.06	-3,593.61	-138.63	3,593.53	1.02
10,425.00	90.28	179.23	6,959.42	-3,684.58	-137.32	3,684.51	1.66
10,513.00	89.91	179.77	6,959.27	-3,772.57	-136.55	3,772.50	0.74
10,603.00	90.99	179.02	6,958.56	-3,862.56	-135.60	3,862.49	1.46
10,693.00	89.26	178.89	6,958.37	-3,952.55	-133.96	3,952.48	1.93
10,783.00	88.92	179.45	6,959.80	-4,042.52	-132.65	4,042.45	0.73
10,873.00	88.95	178.89	6,961.47	-4,132.50	-131.35	4,132.43	0.62
10,963.00	88.24	179.61	6,963.68	-4,222.46	-130.17	4,222.39	1.12
11,053.00	88.15	180.54	6,966.51	-4,312.42	-130.29	4,312.35	1.04
11,143.00	87.87	180.50	6,969.64	-4,402.36	-131.10	4,402.29	0.31
11,323.00	90.59	181.36	6,972.05	-4,582.30	-134.03	4,582.23	1.58
11,413.00	91.51	180.65	6,970.41	-4,672.27	-135.60	4,672.20	1.29
11,503.00	92.25	179.92	6,967.45	-4,762.22	-136.05	4,762.15	1.15
11,593.00	91.48	180.83	6,964.52	-4,852.17	-136.64	4,852.10	1.32
11,683.00	90.22	182.16	6,963.19	-4,942.12	-138.99	4,942.05	2.04
11,773.00	90.62	181.22	6,962.53	-5,032.08	-141.64	5,032.01	1.14
11,864.00	91.14	180.91	6,961.13	-5,123.05	-143.33	5,122.98	0.67
12,044.00	91.42	180.61	6,957.11	-5,302.99	-145.72	5,302.92	0.23
12,134.00	90.65	181.09	6,955.48	-5,392.97	-147.06	5,392.89	1.01
12,224.00	91.51	180.56	6,953.79	-5,482.94	-148.35	5,482.86	1.12
12,414.00	90.68	178.91	6,950.16	-5,672.90	-147.47	5,672.82	0.97
Final HAL MWD+IFR+SC Survey							
12,456.00	90.68	178.91	6,949.66	-5,714.89	-146.67	5,714.81	0.00
Str Line Proj to Bit @ 12456' MD :: 6949.66' TVD							

Design Report for MILK 35N-28HZ - Actual Surveys

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
91.00	91.00	-0.01	0.16	First Cathedral MWD Survey
1,177.00	1,169.46	-34.54	-98.16	Tie-On to Cathedral MWD Surveys
1,284.00	1,275.57	-38.91	-111.23	First HAL MWD+IFR+SC Survey
12,414.00	6,950.16	-5,672.90	-147.47	Final HAL MWD+IFR+SC Survey
12,456.00	6,949.66	-5,714.89	-146.67	Str Line Proj to Bit @ 12456' MD :: 6949.66' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	179.97	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
91.00	1,177.00	CES Surface Surveys	APC_ISCWSA REV 2 MWD
1,284.00	7,318.00	HAL MWD+IFR+SC Vertical/Build	APC_ISCWSA REV 2 MWD+IFR1+SC
7,450.00	12,414.00	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 (")
1,209.20	1,201.39	9 5/8" Casing Set @ 1209.2' MD :: 1201.39' TVD	9-5/8	13-1/2
7,355.70	7,009.90	7" Casing Set @ 7355.7' MD :: 7009.90' TVD	7	8-3/4

Design Report for MILK 35N-28HZ - 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
MILK 35N-28HZ_ 2nd	0.00	0.00	6,965.00	-3,800.00	-131.96	14,597,751.62	1,732,079.38	40.194561	-104.671760
- actual wellpath misses target center by 7.27usft at 10540.43usft MD (6959.23 TVD, -3800.00 N, -136.38 E)									
- Point									
MILK 35N-28HZ_Later	0.00	0.00	6,978.00	-2,000.00	-132.87	14,599,551.60	1,732,071.80	40.199504	-104.671763
- actual wellpath misses target center by 9.84usft at 8739.67usft MD (6983.05 TVD, -2000.02 N, -124.42 E)									
- Point									
MILK 35N-28HZ_Bhl	0.00	0.00	6,965.00	-5,715.07	-129.01	14,595,836.57	1,732,089.42	40.189302	-104.671749
- actual wellpath misses target center by 23.40usft at 12456.00usft MD (6949.66 TVD, -5714.89 N, -146.67 E)									
- Point									
MILK 35N-28HZ_Hardl	0.00	0.00	0.00	-0.73	89.91	14,601,551.69	1,732,287.18	40.204994	-104.670965
- actual wellpath misses target center by 89.91usft at 0.16usft MD (0.16 TVD, 0.00 N, 0.00 E)									
- Polygon									
Point 1				-173.73	385.97	14,601,937.01	1,732,112.02		
Point 2				-177.94	-474.19	14,601,076.84	1,732,110.99		
Point 3				-176.68	-1,796.18	14,599,754.86	1,732,117.15		
Point 4				-175.41	-3,118.17	14,598,432.89	1,732,123.32		
Point 5				-174.15	-4,441.13	14,597,109.94	1,732,129.48		
Point 6				-172.88	-5,764.09	14,595,786.99	1,732,135.65		
Point 7				-177.27	-6,625.06	14,594,926.01	1,732,134.44		
Point 8				-1,096.97	-6,625.41	14,594,922.26	1,731,214.75		
Point 9				-1,092.56	-5,764.53	14,595,783.15	1,731,215.97		
Point 10				-1,093.82	-4,440.78	14,597,106.88	1,731,209.81		
Point 11				-1,095.09	-3,117.03	14,598,430.62	1,731,203.64		
Point 12				-1,096.36	-1,793.74	14,599,753.90	1,731,197.47		
Point 13				-1,097.62	-470.45	14,601,077.17	1,731,191.31		
Point 14				-1,093.41	387.77	14,601,935.40	1,731,192.34		
Point 15				-173.73	385.97	14,601,937.01	1,732,112.02		
MILK 35N-28HZ_BHL	0.00	0.00	6,965.00	-5,715.07	-130.99	14,595,836.56	1,732,087.44	40.189302	-104.671756
- actual wellpath misses target center by 21.94usft at 12456.00usft MD (6949.66 TVD, -5714.89 N, -146.67 E)									
- Point									
Sec. 28 and 21-T3N-R	0.00	0.00	-13.00	166.06	-648.33	14,601,715.74	1,731,548.32	40.205452	-104.673609
- actual wellpath misses target center by 669.39usft 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	14,606,362.74	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	14,595,801.60	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	1,730,368.30		
Point 14				-1,201.40	-3,282.80	14,598,428.52	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 35N-28HZ_BHL	0.00	0.00	6,965.00	-5,715.07	-109.01	14,595,836.65	1,732,109.42	40.189302	-104.671677
- actual wellpath misses target center by 40.67usft at 12456.00usft MD (6949.66 TVD, -5714.89 N, -146.67 E)									
- Point									
MILK 35N-28HZ_SHL	0.00	0.00	0.00	0.00	0.00	14,601,552.08	1,732,197.27	40.204996	-104.671287
- actual wellpath hits target center									
- Point									

North Reference Sheet for 3N-65W-21 Milk 4-21HZ Pad - MILK 35N-28HZ - 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 35N-28HZ

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: 0.99960963

Grid Coordinates of Well: 14,601,552.08 usft N, 1,732,197.27 usft E

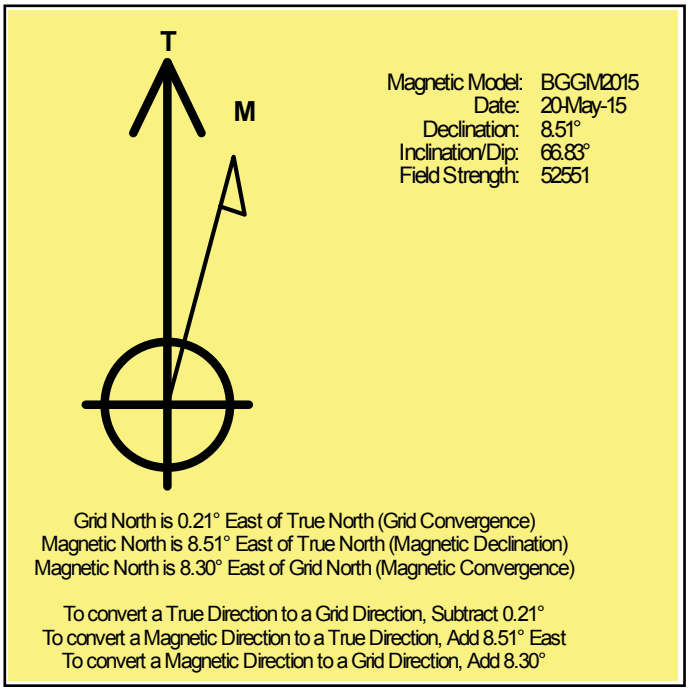
Geographical Coordinates of Well: 40° 12' 17.99" N, 104° 40' 16.63" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,456.00usft

the Bottom Hole Displacement is 5,716.77usft in the Direction of 181.47° (True).

Magnetic Convergence at surface is: -8.30° (20 May 2015, , BGGM2015)



US ROCKIES WATTENBERG PLANNING

WELD-NAD83-UTMFT13N
3N-65W-21 Milk 4-21HZ Pad
MILK 35N-28HZ
05-123-40997
Plan B

Design: Actual Surveys

Sperry Drilling Services

Geodetic Report

28 May, 2015

Well Coordinates: 14,601,552.08 N, 1,732,197.27 E (40° 12' 17.99" N, 104° 40' 16.63" W)
Ground Level: 4,838.00 usft

Local Coordinate Origin:	Centered on Well MILK 35N-28HZ
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 35N-28HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Geographic Coordinates Latitude (usft)	Geographic Coordinates Longitude (usft)	UTM Coordinates Northing (usft)	UTM Coordinates Easting (usft)
0.00	0.00	0.00	0.00	0.00	0.00	40.204996	-104.671287	14,601,552.08	1,732,197.27
91.00	0.20	93.50	91.00	-0.01	0.16	40.204996	-104.671287	14,601,552.07	1,732,197.43
183.00	0.40	121.70	183.00	-0.19	0.59	40.204996	-104.671285	14,601,551.89	1,732,197.86
273.00	0.10	87.50	273.00	-0.35	0.94	40.204995	-104.671284	14,601,551.73	1,732,198.21
332.00	0.80	261.70	332.00	-0.41	0.58	40.204995	-104.671285	14,601,551.68	1,732,197.85
396.00	2.10	250.00	395.97	-0.87	-0.96	40.204994	-104.671291	14,601,551.20	1,732,196.31
459.00	3.70	248.70	458.89	-2.01	-3.94	40.204991	-104.671301	14,601,550.06	1,732,193.33
522.00	4.70	251.40	521.72	-3.57	-8.28	40.204986	-104.671317	14,601,548.48	1,732,189.00
586.00	5.20	254.10	585.48	-5.20	-13.56	40.204982	-104.671336	14,601,546.83	1,732,183.73
650.00	6.70	249.10	649.14	-7.33	-19.83	40.204976	-104.671358	14,601,544.68	1,732,177.46
713.00	7.50	251.10	711.65	-9.97	-27.16	40.204969	-104.671385	14,601,542.01	1,732,170.15
776.00	8.60	251.20	774.03	-12.82	-35.51	40.204961	-104.671414	14,601,539.13	1,732,161.81
871.00	10.50	249.80	867.71	-18.10	-50.36	40.204946	-104.671468	14,601,533.80	1,732,146.98
965.00	10.30	249.30	960.17	-24.02	-66.25	40.204930	-104.671525	14,601,527.81	1,732,131.10
1,059.00	9.60	252.40	1,052.75	-29.37	-81.59	40.204915	-104.671579	14,601,522.41	1,732,115.79
1,122.00	8.30	253.10	1,114.98	-32.28	-90.95	40.204907	-104.671613	14,601,519.47	1,732,106.44
1,177.00	7.50	251.90	1,169.46	-34.54	-98.16	40.204901	-104.671639	14,601,517.17	1,732,099.24
1,209.20	7.44	251.68	1,201.39	-35.85	-102.13	40.204898	-104.671653	14,601,515.85	1,732,095.27
1,284.00	7.30	251.15	1,275.57	-38.91	-111.23	40.204889	-104.671686	14,601,512.76	1,732,086.18
1,378.00	6.29	255.93	1,368.91	-42.09	-121.87	40.204881	-104.671724	14,601,509.54	1,732,075.55
1,471.00	4.58	261.05	1,461.49	-43.91	-130.48	40.204876	-104.671755	14,601,507.69	1,732,066.95
1,565.00	2.86	267.91	1,555.29	-44.58	-136.54	40.204874	-104.671776	14,601,507.00	1,732,060.90
1,659.00	1.37	274.13	1,649.22	-44.58	-140.00	40.204874	-104.671789	14,601,506.98	1,732,057.43
1,752.00	1.72	265.34	1,742.19	-44.62	-142.50	40.204874	-104.671798	14,601,506.94	1,732,054.93
1,846.00	0.75	39.28	1,836.17	-44.25	-143.52	40.204875	-104.671801	14,601,507.30	1,732,053.91
1,939.00	0.84	27.81	1,929.17	-43.18	-142.81	40.204878	-104.671799	14,601,508.37	1,732,054.61
2,033.00	0.79	15.10	2,023.16	-41.94	-142.32	40.204881	-104.671797	14,601,509.61	1,732,055.10
2,126.00	1.03	8.34	2,116.14	-40.50	-142.03	40.204885	-104.671796	14,601,511.06	1,732,055.38
2,219.00	0.95	5.54	2,209.13	-38.90	-141.84	40.204889	-104.671795	14,601,512.65	1,732,055.57
2,313.00	0.81	0.04	2,303.12	-37.46	-141.76	40.204893	-104.671795	14,601,514.09	1,732,055.64
2,407.00	0.41	24.05	2,397.11	-36.49	-141.63	40.204896	-104.671794	14,601,515.06	1,732,055.78
2,500.00	0.34	14.35	2,490.11	-35.92	-141.42	40.204897	-104.671794	14,601,515.64	1,732,055.98
2,594.00	0.19	230.51	2,584.11	-35.75	-141.47	40.204898	-104.671794	14,601,515.81	1,732,055.93
2,687.00	0.53	232.06	2,677.11	-36.11	-141.93	40.204897	-104.671796	14,601,515.44	1,732,055.47
2,781.00	0.40	245.12	2,771.11	-36.52	-142.57	40.204896	-104.671798	14,601,515.03	1,732,054.83
2,874.00	0.42	232.29	2,864.10	-36.86	-143.14	40.204895	-104.671800	14,601,514.69	1,732,054.27
2,964.00	0.58	240.28	2,954.10	-37.29	-143.79	40.204894	-104.671802	14,601,514.26	1,732,053.61
3,054.00	0.79	231.46	3,044.09	-37.90	-144.67	40.204892	-104.671805	14,601,513.64	1,732,052.73
3,144.00	1.09	33.02	3,134.09	-37.57	-144.69	40.204893	-104.671805	14,601,513.97	1,732,052.71
3,234.00	0.90	32.92	3,224.08	-36.26	-143.84	40.204897	-104.671802	14,601,515.29	1,732,053.56
3,324.00	1.09	17.61	3,314.06	-34.85	-143.20	40.204900	-104.671800	14,601,516.70	1,732,054.20
3,414.00	1.10	15.77	3,404.05	-33.20	-142.70	40.204905	-104.671798	14,601,518.35	1,732,054.69

Design Report for MILK 35N-28HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Geographic Coordinates Latitude (usft)	Geographic Coordinates Longitude (usft)	UTM Coordinates Northing (usft)	UTM Coordinates Easting (usft)
3,504.00	1.03	17.98	3,494.03	-31.60	-142.22	40.204909	-104.671797	14,601,519.95	1,732,055.16
3,594.00	1.01	13.64	3,584.02	-30.06	-141.78	40.204914	-104.671795	14,601,521.49	1,732,055.60
3,684.00	1.08	16.83	3,674.00	-28.48	-141.35	40.204918	-104.671794	14,601,523.08	1,732,056.02
3,774.00	1.30	16.24	3,763.98	-26.69	-140.82	40.204923	-104.671792	14,601,524.87	1,732,056.55
3,864.00	1.31	19.02	3,853.96	-24.74	-140.20	40.204928	-104.671789	14,601,526.83	1,732,057.16
4,044.00	1.29	27.20	4,033.91	-20.99	-138.60	40.204938	-104.671784	14,601,530.58	1,732,058.74
4,134.00	1.66	35.11	4,123.88	-19.02	-137.39	40.204944	-104.671779	14,601,532.55	1,732,059.95
4,224.00	2.09	54.93	4,213.84	-17.01	-135.30	40.204949	-104.671772	14,601,534.57	1,732,062.03
4,314.00	1.91	68.60	4,303.78	-15.52	-132.56	40.204953	-104.671762	14,601,536.07	1,732,064.77
4,403.00	1.58	66.39	4,392.74	-14.49	-130.05	40.204956	-104.671753	14,601,537.11	1,732,067.27
4,493.00	1.46	58.20	4,482.71	-13.39	-127.94	40.204959	-104.671745	14,601,538.22	1,732,069.38
4,583.00	1.30	51.13	4,572.68	-12.14	-126.17	40.204963	-104.671739	14,601,539.47	1,732,071.14
4,673.00	0.83	50.62	4,662.67	-11.09	-124.87	40.204966	-104.671734	14,601,540.53	1,732,072.44
4,763.00	0.57	345.97	4,752.66	-10.24	-124.48	40.204968	-104.671733	14,601,541.38	1,732,072.83
4,852.00	1.01	318.36	4,841.65	-9.23	-125.11	40.204971	-104.671735	14,601,542.39	1,732,072.20
4,942.00	0.79	292.63	4,931.64	-8.39	-126.21	40.204973	-104.671739	14,601,543.22	1,732,071.09
5,031.00	0.75	247.29	5,020.63	-8.38	-127.31	40.204973	-104.671743	14,601,543.23	1,732,069.99
5,121.00	0.94	254.20	5,110.62	-8.81	-128.56	40.204972	-104.671748	14,601,542.79	1,732,068.74
5,211.00	0.77	253.45	5,200.61	-9.18	-129.85	40.204971	-104.671752	14,601,542.42	1,732,067.45
5,301.00	0.85	260.01	5,290.61	-9.47	-131.09	40.204970	-104.671757	14,601,542.12	1,732,066.21
5,391.00	0.23	258.24	5,380.60	-9.62	-131.92	40.204970	-104.671760	14,601,541.97	1,732,065.38
5,481.00	0.28	247.40	5,470.60	-9.75	-132.30	40.204969	-104.671761	14,601,541.84	1,732,065.00
5,571.00	0.48	285.18	5,560.60	-9.73	-132.87	40.204969	-104.671763	14,601,541.86	1,732,064.43
5,661.00	0.51	329.56	5,650.60	-9.29	-133.44	40.204971	-104.671765	14,601,542.30	1,732,063.86
5,751.00	0.61	121.33	5,740.59	-9.19	-133.23	40.204971	-104.671764	14,601,542.40	1,732,064.07
5,841.00	0.88	138.31	5,830.59	-9.96	-132.36	40.204969	-104.671761	14,601,541.63	1,732,064.94
5,931.00	1.21	118.78	5,920.57	-10.93	-131.07	40.204966	-104.671757	14,601,540.66	1,732,066.24
6,021.00	1.39	115.33	6,010.55	-11.86	-129.25	40.204964	-104.671750	14,601,539.75	1,732,068.06
6,111.00	1.74	115.99	6,100.51	-12.92	-127.04	40.204961	-104.671742	14,601,538.69	1,732,070.28
6,201.00	2.20	118.07	6,190.46	-14.33	-124.28	40.204957	-104.671732	14,601,537.29	1,732,073.04
6,291.00	2.37	125.61	6,280.39	-16.23	-121.25	40.204952	-104.671722	14,601,535.40	1,732,076.08
6,380.00	1.43	128.27	6,369.34	-17.99	-118.88	40.204947	-104.671713	14,601,533.65	1,732,078.46
6,470.00	4.91	170.37	6,459.20	-22.48	-117.35	40.204934	-104.671708	14,601,529.16	1,732,080.00
6,560.00	11.62	174.54	6,548.21	-35.32	-115.84	40.204899	-104.671702	14,601,516.33	1,732,081.56
6,650.00	23.16	174.10	6,633.95	-62.04	-113.15	40.204826	-104.671693	14,601,489.63	1,732,084.35
6,741.00	33.55	174.81	6,713.92	-105.00	-109.03	40.204708	-104.671678	14,601,446.68	1,732,088.63
6,831.00	43.21	174.66	6,784.39	-160.57	-103.90	40.204555	-104.671659	14,601,391.12	1,732,093.96
6,921.00	49.36	176.21	6,846.56	-225.39	-98.77	40.204377	-104.671641	14,601,326.33	1,732,099.33
7,011.00	55.21	178.08	6,901.60	-296.46	-95.27	40.204182	-104.671628	14,601,255.27	1,732,103.10
7,101.00	60.24	177.61	6,949.64	-372.48	-92.40	40.203973	-104.671618	14,601,179.27	1,732,106.25
7,191.00	72.86	179.37	6,985.39	-454.84	-90.29	40.203747	-104.671611	14,601,096.91	1,732,108.66
7,281.00	83.64	180.33	7,003.69	-542.83	-90.07	40.203505	-104.671610	14,601,008.92	1,732,109.20

Design Report for MILK 35N-28HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Geographic Coordinates Latitude (usft)	Geographic Coordinates Longitude (usft)	UTM Coordinates Northing (usft)	UTM Coordinates Easting (usft)
7,318.00	85.33	181.25	7,007.24	-579.65	-90.58	40.203404	-104.671612	14,600,972.10	1,732,108.83
7,355.70	86.60	181.87	7,009.90	-617.24	-91.61	40.203301	-104.671615	14,600,934.50	1,732,107.95
7,450.00	89.78	183.43	7,012.87	-711.38	-95.97	40.203043	-104.671631	14,600,840.35	1,732,103.93
7,543.00	91.33	183.56	7,011.97	-804.20	-101.64	40.202788	-104.671651	14,600,747.51	1,732,098.61
7,637.00	91.85	183.52	7,009.36	-897.98	-107.44	40.202530	-104.671672	14,600,653.71	1,732,093.15
7,727.00	92.10	182.22	7,006.26	-987.81	-111.94	40.202283	-104.671688	14,600,563.86	1,732,088.98
7,817.00	92.03	181.63	7,003.02	-1,077.70	-114.96	40.202037	-104.671699	14,600,473.96	1,732,086.29
7,907.00	92.81	181.43	6,999.22	-1,167.59	-117.37	40.201790	-104.671708	14,600,384.06	1,732,084.23
7,997.00	91.39	181.04	6,995.92	-1,257.51	-119.30	40.201543	-104.671715	14,600,294.14	1,732,082.62
8,087.00	91.82	180.86	6,993.40	-1,347.46	-120.80	40.201296	-104.671720	14,600,204.18	1,732,081.46
8,177.00	90.37	180.42	6,991.68	-1,437.44	-121.80	40.201049	-104.671723	14,600,114.20	1,732,080.79
8,267.00	90.77	180.34	6,990.79	-1,527.43	-122.40	40.200802	-104.671726	14,600,024.21	1,732,080.53
8,357.00	90.22	180.09	6,990.01	-1,617.42	-122.73	40.200555	-104.671727	14,599,934.21	1,732,080.52
8,447.00	91.51	179.66	6,988.65	-1,707.41	-122.54	40.200307	-104.671726	14,599,844.23	1,732,081.05
8,537.00	90.93	180.37	6,986.73	-1,797.39	-122.56	40.200060	-104.671726	14,599,754.25	1,732,081.36
8,627.00	91.17	180.68	6,985.08	-1,887.37	-123.39	40.199813	-104.671729	14,599,664.27	1,732,080.87
8,717.00	91.02	180.46	6,983.36	-1,977.35	-124.28	40.199566	-104.671732	14,599,574.28	1,732,080.31
8,807.00	89.29	179.63	6,983.12	-2,067.35	-124.35	40.199319	-104.671733	14,599,484.29	1,732,080.57
8,897.00	89.51	179.71	6,984.06	-2,157.34	-123.83	40.199072	-104.671731	14,599,394.30	1,732,081.42
8,986.00	89.23	180.20	6,985.04	-2,246.33	-123.76	40.198828	-104.671730	14,599,305.30	1,732,081.82
9,076.00	89.07	179.21	6,986.38	-2,336.32	-123.30	40.198580	-104.671729	14,599,215.32	1,732,082.62
9,166.00	89.57	180.60	6,987.44	-2,426.31	-123.15	40.198333	-104.671728	14,599,125.33	1,732,083.10
9,256.00	89.72	180.85	6,988.00	-2,516.30	-124.29	40.198086	-104.671732	14,599,035.33	1,732,082.30
9,346.00	90.28	180.36	6,988.00	-2,606.30	-125.24	40.197839	-104.671736	14,598,945.34	1,732,081.68
9,435.00	91.29	181.21	6,986.78	-2,695.28	-126.46	40.197595	-104.671740	14,598,856.35	1,732,080.79
9,525.00	91.76	181.62	6,984.39	-2,785.22	-128.68	40.197348	-104.671748	14,598,766.40	1,732,078.90
9,615.00	92.50	182.12	6,981.04	-2,875.11	-131.62	40.197101	-104.671759	14,598,676.50	1,732,076.30
9,705.00	92.34	182.42	6,977.24	-2,964.96	-135.18	40.196854	-104.671771	14,598,586.64	1,732,073.07
9,794.00	91.51	181.72	6,974.25	-3,053.85	-138.39	40.196610	-104.671783	14,598,497.74	1,732,070.19
9,884.00	91.94	181.65	6,971.54	-3,143.77	-141.04	40.196363	-104.671792	14,598,407.81	1,732,067.88
9,974.00	90.93	180.07	6,969.29	-3,233.73	-142.39	40.196116	-104.671797	14,598,317.85	1,732,066.86
10,064.00	91.17	179.37	6,967.64	-3,323.71	-141.95	40.195869	-104.671796	14,598,227.87	1,732,067.63
10,154.00	91.82	179.34	6,965.29	-3,413.67	-140.93	40.195622	-104.671792	14,598,137.91	1,732,068.98
10,244.00	90.89	179.30	6,963.16	-3,503.64	-139.87	40.195375	-104.671788	14,598,047.95	1,732,070.38
10,334.00	91.79	179.12	6,961.06	-3,593.61	-138.63	40.195128	-104.671784	14,597,957.99	1,732,071.95
10,425.00	90.28	179.23	6,959.42	-3,684.58	-137.32	40.194878	-104.671779	14,597,867.02	1,732,073.60
10,513.00	89.91	179.77	6,959.27	-3,772.57	-136.55	40.194636	-104.671776	14,597,779.03	1,732,074.69
10,603.00	90.99	179.02	6,958.56	-3,862.56	-135.60	40.194389	-104.671773	14,597,689.04	1,732,075.98
10,693.00	89.26	178.89	6,958.37	-3,952.55	-133.96	40.194142	-104.671767	14,597,599.07	1,732,077.95
10,783.00	88.92	179.45	6,959.80	-4,042.52	-132.65	40.193895	-104.671762	14,597,509.09	1,732,079.59
10,873.00	88.95	178.89	6,961.47	-4,132.50	-131.35	40.193648	-104.671758	14,597,419.12	1,732,081.22
10,963.00	88.24	179.61	6,963.68	-4,222.46	-130.17	40.193401	-104.671753	14,597,329.16	1,732,082.74

Design Report for MILK 35N-28HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Geographic Coordinates Latitude (usft)	Geographic Coordinates Longitude (usft)	UTM Coordinates Northing (usft)	UTM Coordinates Easting (usft)
11,053.00	88.15	180.54	6,966.51	-4,312.42	-130.29	40.193154	-104.671754	14,597,239.21	1,732,082.95
11,143.00	87.87	180.50	6,969.64	-4,402.36	-131.10	40.192907	-104.671757	14,597,149.27	1,732,082.47
11,323.00	90.59	181.36	6,972.05	-4,582.30	-134.03	40.192413	-104.671767	14,596,969.31	1,732,080.21
11,413.00	91.51	180.65	6,970.41	-4,672.27	-135.60	40.192166	-104.671773	14,596,879.34	1,732,078.97
11,503.00	92.25	179.92	6,967.45	-4,762.22	-136.05	40.191919	-104.671774	14,596,789.39	1,732,078.85
11,593.00	91.48	180.83	6,964.52	-4,852.17	-136.64	40.191672	-104.671777	14,596,699.44	1,732,078.60
11,683.00	90.22	182.16	6,963.19	-4,942.12	-138.99	40.191425	-104.671785	14,596,609.48	1,732,076.58
11,773.00	90.62	181.22	6,962.53	-5,032.08	-141.64	40.191178	-104.671794	14,596,519.51	1,732,074.26
11,864.00	91.14	180.91	6,961.13	-5,123.05	-143.33	40.190928	-104.671800	14,596,428.53	1,732,072.91
12,044.00	91.42	180.61	6,957.11	-5,302.99	-145.72	40.190434	-104.671809	14,596,248.58	1,732,071.19
12,134.00	90.65	181.09	6,955.48	-5,392.97	-147.06	40.190187	-104.671814	14,596,158.61	1,732,070.19
12,224.00	91.51	180.56	6,953.79	-5,482.94	-148.35	40.189940	-104.671818	14,596,068.63	1,732,069.22
12,414.00	90.68	178.91	6,950.16	-5,672.90	-147.47	40.189418	-104.671815	14,595,878.68	1,732,070.81
12,456.00	90.68	178.91	6,949.66	-5,714.89	-146.67	40.189303	-104.671812	14,595,836.69	1,732,071.76

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
91.00	91.00	-0.01	0.16	First Cathedral MWD Survey
1,177.00	1,169.46	-34.54	-98.16	Tie-On to Cathedral MWD Surveys
1,284.00	1,275.57	-38.91	-111.23	First HAL MWD+IFR+SC Survey
12,414.00	6,950.16	-5,672.90	-147.47	Final HAL MWD+IFR+SC Survey
12,456.00	6,949.66	-5,714.89	-146.67	Str Line Proj to Bit @ 12456' MD :: 6949.66' TVD

Vertical Section Information

Angle Type	Target	Azimuth (°)	Origin Type	Origin +N/_S (usft)	Origin +E/-W (usft)	Start TVD (usft)
User	No Target (Freehand)	179.97	Slot	0.00	0.00	0.00

Design Report for MILK 35N-28HZ - Actual Surveys

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
91.00	1,177.00	CES Surface Surveys	APC_ISCWSA REV 2 MWD
1,284.00	7,318.00	HAL MWD+IFR+SC Vertical/Build	APC_ISCWSA REV 2 MWD+IFR1+SC
7,450.00	12,414.00	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 (")
1,209.20	1,201.39	9 5/8" Casing Set @ 1209.2' MD :: 1201.39' TVD	9-5/8	13-1/2
7,355.70	7,009.90	7" Casing Set @ 7355.7' MD :: 7009.90' 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
Point	MILK 35N-28HZ_ 2nd Lateral Target	6,965.00	14,597,751.62	1,732,079.38	-3,800.00	-131.96	5/19/2015	5/19/2015
Point	MILK 35N-28HZ_Lateral Target	6,978.00	14,599,551.60	1,732,071.80	-2,000.00	-132.87	5/19/2015	5/19/2015
Point	MILK 35N-28HZ_Bhl	6,965.00	14,595,836.57	1,732,089.42	-5,715.07	-129.01	10/13/2014	10/13/2014
Polygon	MILK 35N-28HZ_Hardline	0.00	14,601,551.69	1,732,287.18	-0.73	89.91	3/25/2015	3/25/2015
Point	MILK 35N-28HZ_BHL	6,965.00	14,595,836.56	1,732,087.44	-5,715.07	-130.99	5/19/2015	5/19/2015
Polygon	Sec. 28 and 21-T3N-R65W	-13.00	14,601,715.74	1,731,548.32	166.06	-648.33	10/10/2014	10/10/2014
Point	MILK 35N-28HZ_BHL	6,965.00	14,595,836.65	1,732,109.42	-5,715.07	-109.01	10/11/2014	10/12/2014
Point	MILK 35N-28HZ_SHL	0.00	14,601,552.08	1,732,197.27	0.00	0.00	10/11/2014	4/1/2015

North Reference Sheet for 3N-65W-21 Milk 4-21HZ Pad - MILK 35N-28HZ - 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 35N-28HZ

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: 0.99960963

Grid Coordinates of Well: 14,601,552.08 usft N, 1,732,197.27 usft E

Geographical Coordinates of Well: 40° 12' 17.99" N, 104° 40' 16.63" W

Grid Convergence at Surface is: 0.21°

Based upon Minimum Curvature type calculations, at a Measured Depth of 12,456.00usft

the Bottom Hole Displacement is 5,716.77usft in the Direction of 181.47° (True).

Magnetic Convergence at surface is: -8.30° (20 May 2015, , BGGM2015)