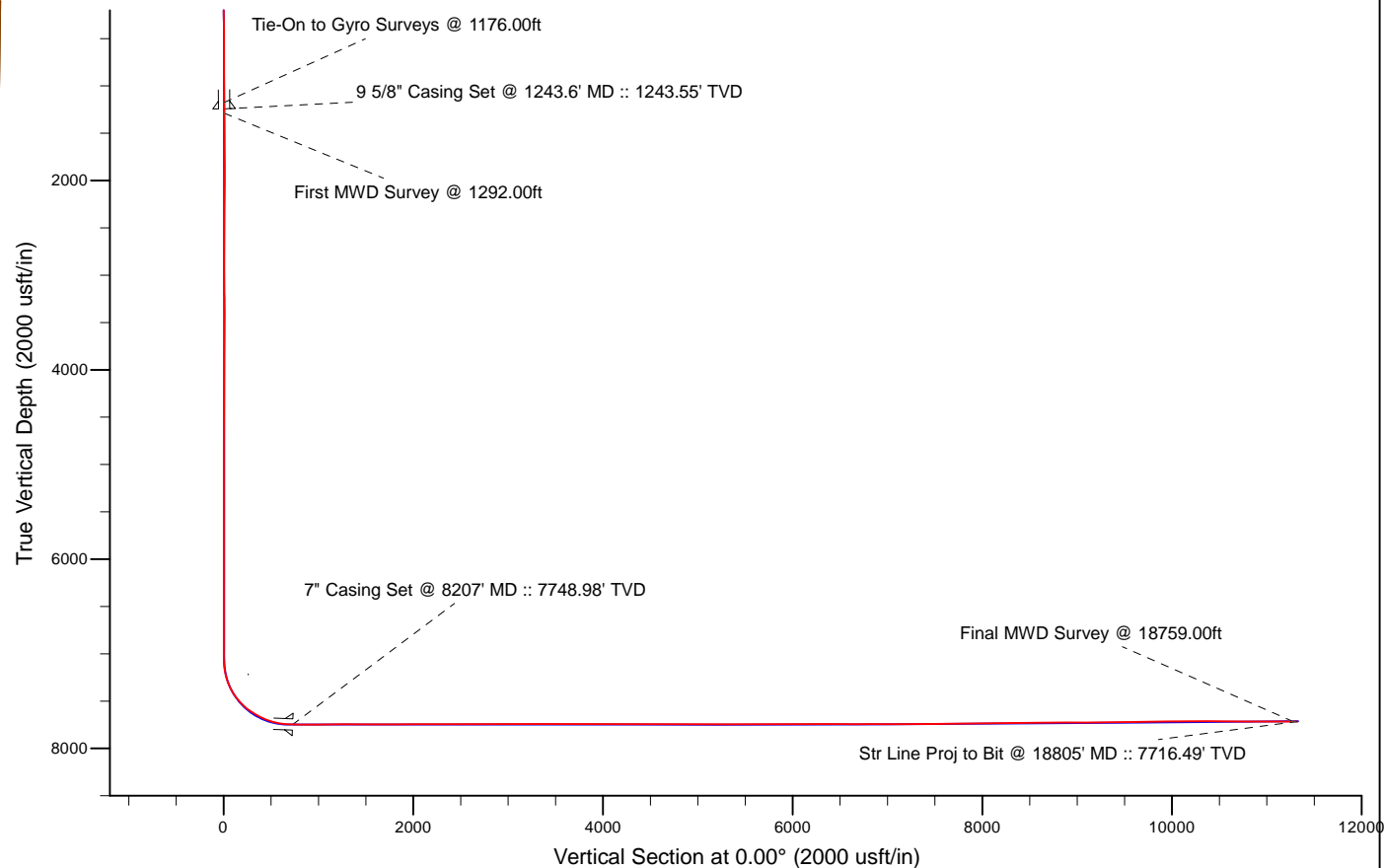
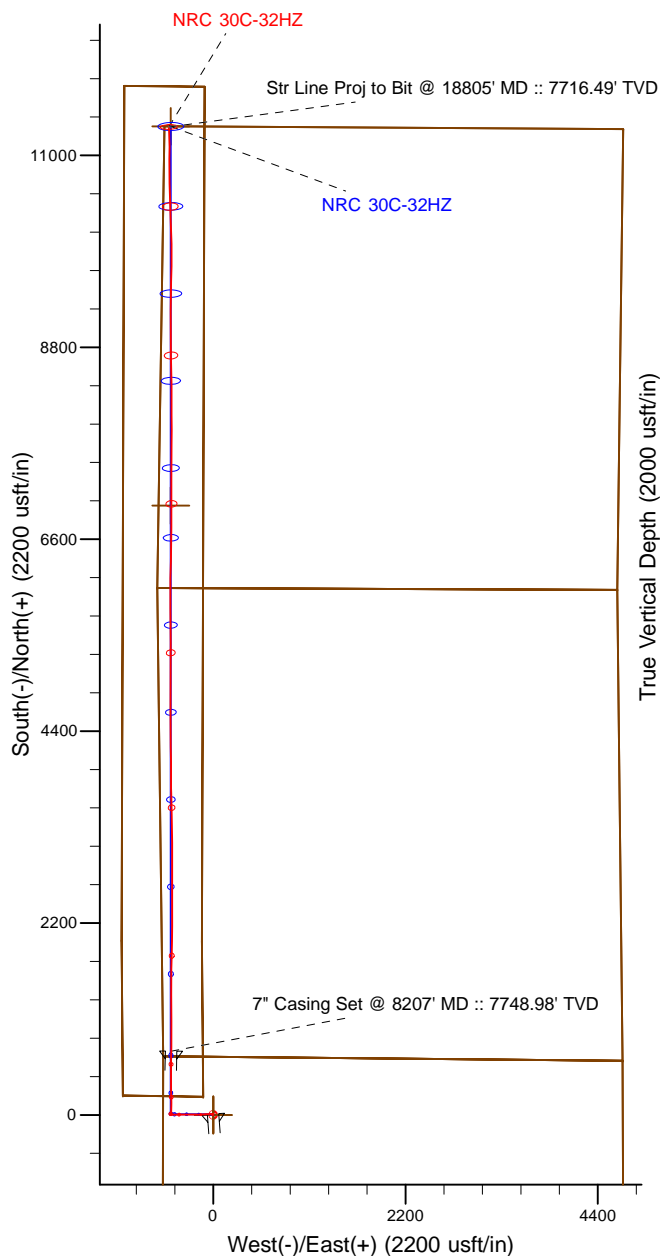


Project: Weld County, CO (NAD 83)
 Site: Sec. 8-T1N-R67W
 Well: NRC 30C-32HZ
 Wellbore: Plan A
 Design: Actual Field Surveys



LEGEND

- NRC 30C-32HZ, Plan A, Rev A0 V0
- Actual Field Surveys



7" Casing: ~57.18' FSL, ~91.79' FWL
 Lat/Long: 40.073059 N, -104.923578 E
 State Planes - CO Northern: 1,269,984.80' N, 3,161,312.54' E
 Location: Sec. 5-T1N-R67W

BHL: ~7.06' FNL, ~51.91' FWL
 Lat/Long: 40.102147 N, -104.923676 E
 State Planes - CO Northern: 1,280,580.32' N, 3,161,216.33' E
 Location: Sec. 32-T2N-R67W

WELL DETAILS: NRC 30C-32HZ	
Ground Level:	5061.00
RKB = 16' @ 5077.00usft (Xtreme 22)	
Design: Actual Field Surveys (NRC 30C-32HZ/Plan A)	
Created By: Clint Eshelman	Date: 7/22/2014
Reviewed: _____	Date: _____

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T1N-R67W

NRC 30C-32HZ

05-123-39188

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Standard Report

22 July, 2014

Surface UWI : 05-123-39188

Well Coordinates: 1,269,258.95 N, 3,161,799.49 E (40° 04' 15.81" N, 104° 55' 18.68" W)

Ground Level: 5,061.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well NRC 30C-32HZ

RKB = 16' @ 5077.00usft (Xtreme 22)

N

True

API - US Survey Feet - Custom

HALLIBURTON

Design Report for NRC 30C-32HZ - Actual Field 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
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
116.00	0.75	317.54	116.00	0.48	-0.44	0.48	0.75
216.00	0.93	327.96	215.99	1.65	-1.31	1.65	0.24
316.00	0.76	2.17	315.98	3.00	-1.72	3.00	0.52
416.00	0.42	1.02	415.97	4.03	-1.69	4.03	0.34
516.00	0.04	304.48	515.97	4.42	-1.71	4.42	0.40
616.00	0.38	266.69	615.97	4.42	-2.07	4.42	0.35
716.00	0.57	307.95	715.97	4.71	-2.79	4.71	0.38
816.00	0.69	344.02	815.96	5.59	-3.35	5.59	0.41
916.00	0.45	39.10	915.96	6.48	-3.27	6.48	0.57
1,016.00	0.30	28.11	1,015.95	7.01	-2.90	7.01	0.17
1,116.00	0.17	304.51	1,115.95	7.33	-2.90	7.33	0.33
1,176.00	0.31	312.33	1,175.95	7.49	-3.09	7.49	0.24
Tie-On to Gyro Surveys @ 1176.00ft							
1,243.60	0.50	355.36	1,243.55	7.90	-3.25	7.90	0.51
9 5/8" Casing Set @ 1243.6' MD :: 1243.55' TVD							
1,292.00	0.71	7.68	1,291.95	8.41	-3.23	8.41	0.51
First MWD Survey @ 1292.00ft							
1,481.00	0.41	348.20	1,480.94	10.23	-3.21	10.23	0.19
1,671.00	0.51	345.90	1,670.93	11.72	-3.55	11.72	0.05
1,854.00	0.83	315.56	1,853.92	13.45	-4.68	13.45	0.26
2,036.00	2.44	261.94	2,035.85	13.85	-9.44	13.85	1.13
2,219.00	1.92	201.59	2,218.74	10.45	-14.42	10.45	1.22
2,401.00	0.75	108.87	2,400.70	7.23	-14.42	7.23	1.15
2,584.00	0.52	139.80	2,583.69	6.21	-12.75	6.21	0.22
2,765.00	0.50	99.51	2,764.68	5.45	-11.44	5.45	0.19
2,947.00	0.17	100.22	2,946.68	5.28	-10.39	5.28	0.18
3,129.00	3.11	289.68	3,128.59	6.89	-14.78	6.89	1.80
3,311.00	5.77	276.95	3,310.03	9.66	-28.51	9.66	1.55
3,486.00	7.43	269.39	3,483.87	10.60	-48.56	10.60	1.07
3,658.00	7.86	265.65	3,654.34	9.59	-71.41	9.59	0.38
3,829.00	8.48	265.43	3,823.61	7.70	-95.63	7.70	0.36
3,996.00	8.43	263.26	3,988.79	5.29	-120.06	5.29	0.19
4,167.00	8.53	267.92	4,157.93	3.35	-145.18	3.35	0.41
4,338.00	8.94	270.75	4,326.94	3.07	-171.14	3.07	0.35
4,509.00	8.30	272.54	4,496.01	3.79	-196.76	3.79	0.41
4,680.00	8.54	269.63	4,665.17	4.25	-221.79	4.25	0.29
4,851.00	8.70	270.05	4,834.24	4.18	-247.42	4.18	0.10
5,022.00	7.63	270.88	5,003.50	4.37	-271.70	4.37	0.63
5,193.00	8.10	266.71	5,172.89	3.85	-295.08	3.85	0.43
5,364.00	8.06	269.38	5,342.20	3.03	-319.09	3.03	0.22
5,535.00	8.01	268.50	5,511.52	2.59	-342.99	2.59	0.08
5,707.00	8.51	272.36	5,681.73	2.80	-367.69	2.80	0.43
5,878.00	7.84	271.75	5,850.99	3.68	-391.99	3.68	0.40
6,050.00	6.86	269.36	6,021.58	3.92	-413.98	3.92	0.60
6,221.00	7.95	268.27	6,191.15	3.45	-436.02	3.45	0.64
6,393.00	6.32	264.41	6,361.81	2.17	-457.33	2.17	0.99
6,563.00	4.18	273.38	6,531.09	1.62	-472.83	1.62	1.34
6,734.00	2.73	261.30	6,701.78	1.37	-483.08	1.37	0.94

Design Report for NRC 30C-32HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
6,904.00	1.37	294.03	6,871.67	1.59	-488.93	1.59	1.03
7,075.00	0.26	122.38	7,042.66	2.21	-490.47	2.21	0.95
7,117.00	3.05	5.99	7,084.64	3.27	-490.28	3.27	7.56
7,160.00	6.16	13.64	7,127.50	6.65	-489.61	6.65	7.36
7,203.00	9.17	11.74	7,170.11	12.25	-488.37	12.25	7.02
7,246.00	12.18	10.23	7,212.36	20.07	-486.87	20.07	7.03
7,289.00	15.68	8.20	7,254.09	30.29	-485.23	30.29	8.22
7,332.00	19.85	4.85	7,295.03	43.32	-483.79	43.32	9.98
7,373.00	23.71	2.76	7,333.10	58.50	-482.80	58.50	9.60
7,416.00	27.08	2.30	7,371.94	76.92	-481.99	76.92	7.85
7,458.00	30.70	1.19	7,408.70	97.20	-481.39	97.20	8.71
7,501.00	34.72	0.18	7,444.88	120.43	-481.12	120.43	9.43
7,544.00	39.34	359.75	7,479.20	146.31	-481.14	146.31	10.76
7,587.00	42.81	358.84	7,511.61	174.56	-481.50	174.56	8.19
7,629.00	46.19	358.86	7,541.56	203.99	-482.09	203.99	8.05
7,672.00	49.67	358.63	7,570.37	235.90	-482.79	235.90	8.10
7,715.00	53.59	358.73	7,597.05	269.59	-483.56	269.59	9.12
7,758.00	57.27	358.91	7,621.45	304.99	-484.29	304.99	8.57
7,801.00	59.83	359.07	7,643.88	341.66	-484.94	341.66	5.96
7,844.00	62.54	359.40	7,664.60	379.33	-485.44	379.33	6.34
7,886.00	66.28	359.66	7,682.74	417.20	-485.75	417.20	8.92
7,929.00	69.11	359.93	7,699.06	456.98	-485.89	456.98	6.61
7,972.00	72.08	0.36	7,713.34	497.53	-485.78	497.53	6.97
8,015.00	76.15	0.90	7,725.11	538.88	-485.33	538.88	9.54
8,058.00	79.94	0.77	7,734.02	580.93	-484.71	580.93	8.82
8,101.00	82.74	1.09	7,740.49	623.43	-484.02	623.43	6.55
8,144.00	84.69	1.17	7,745.20	666.17	-483.18	666.17	4.54
8,171.00	86.55	0.79	7,747.26	693.08	-482.72	693.08	7.03
8,207.00	87.96	0.78	7,748.98	729.04	-482.23	729.04	3.92
7" Casing Set @ 8207' MD :: 7748.98' TVD							
8,277.00	90.71	0.77	7,749.79	799.02	-481.28	799.02	3.92
8,448.00	90.28	359.80	7,748.32	970.01	-480.43	970.01	0.62
8,619.00	90.06	359.46	7,747.81	1,141.00	-481.53	1,141.00	0.24
8,790.00	90.31	359.70	7,747.26	1,312.00	-482.79	1,312.00	0.20
8,961.00	90.03	0.26	7,746.75	1,483.00	-482.85	1,483.00	0.37
9,132.00	90.15	1.43	7,746.48	1,653.97	-480.32	1,653.97	0.69
9,303.00	90.09	1.28	7,746.12	1,824.93	-476.28	1,824.93	0.09
9,475.00	90.28	0.47	7,745.57	1,996.90	-473.65	1,996.90	0.48
9,645.00	89.88	0.47	7,745.33	2,166.90	-472.26	2,166.90	0.24
9,816.00	90.77	0.33	7,744.36	2,337.89	-471.07	2,337.89	0.53
9,987.00	90.03	359.43	7,743.17	2,508.88	-471.42	2,508.88	0.68
10,158.00	89.57	359.90	7,743.76	2,679.88	-472.42	2,679.88	0.38
10,327.00	90.59	0.20	7,743.53	2,848.87	-472.28	2,848.87	0.63
10,495.00	89.72	359.55	7,743.07	3,016.87	-472.64	3,016.87	0.65
10,663.00	90.03	0.02	7,743.44	3,184.87	-473.27	3,184.87	0.34
10,831.00	89.88	359.27	7,743.57	3,352.86	-474.31	3,352.86	0.46
11,000.00	89.85	358.19	7,743.97	3,521.82	-478.06	3,521.82	0.64
11,169.00	89.82	358.25	7,744.46	3,690.74	-483.31	3,690.74	0.04
11,338.00	90.62	0.57	7,743.81	3,859.71	-485.05	3,859.71	1.45
11,519.00	90.09	359.53	7,742.69	4,040.71	-484.89	4,040.71	0.64
11,703.00	89.29	359.62	7,743.68	4,224.70	-486.26	4,224.70	0.44

Design Report for NRC 30C-32HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
11,885.00	90.12	359.28	7,744.62	4,406.68	-488.00	4,406.68	0.49
12,069.00	90.06	359.29	7,744.33	4,590.67	-490.30	4,590.67	0.03
12,252.00	90.00	0.57	7,744.23	4,773.67	-490.52	4,773.67	0.70
12,434.00	90.03	0.53	7,744.19	4,955.66	-488.78	4,955.66	0.03
12,605.00	89.82	0.33	7,744.41	5,126.65	-487.49	5,126.65	0.17
12,776.00	90.00	359.73	7,744.68	5,297.65	-487.40	5,297.65	0.37
12,947.00	89.94	359.58	7,744.77	5,468.65	-488.43	5,468.65	0.09
13,117.00	90.15	359.18	7,744.63	5,638.64	-490.27	5,638.64	0.27
13,289.00	90.12	359.61	7,744.23	5,810.63	-492.09	5,810.63	0.25
13,460.00	89.94	0.37	7,744.14	5,981.63	-492.12	5,981.63	0.46
13,631.00	89.88	0.54	7,744.41	6,152.62	-490.76	6,152.62	0.11
13,802.00	90.62	1.11	7,743.66	6,323.60	-488.30	6,323.60	0.55
13,972.00	89.45	1.36	7,743.56	6,493.56	-484.63	6,493.56	0.70
14,143.00	90.18	1.21	7,744.11	6,664.51	-480.80	6,664.51	0.44
14,314.00	90.06	0.27	7,743.75	6,835.49	-478.59	6,835.49	0.55
14,484.00	89.88	359.05	7,743.84	7,005.49	-479.60	7,005.49	0.73
14,654.00	90.06	359.57	7,743.93	7,175.48	-481.65	7,175.48	0.32
14,825.00	90.34	0.47	7,743.33	7,346.47	-481.59	7,346.47	0.55
14,994.00	90.06	0.59	7,742.74	7,515.46	-480.02	7,515.46	0.18
15,164.00	90.65	0.77	7,741.69	7,685.45	-478.01	7,685.45	0.36
15,332.00	90.92	359.98	7,739.39	7,853.43	-476.91	7,853.43	0.50
15,502.00	91.23	359.58	7,736.20	8,023.40	-477.56	8,023.40	0.30
15,673.00	90.37	0.01	7,733.81	8,194.38	-478.17	8,194.38	0.56
15,844.00	90.92	359.59	7,731.89	8,365.36	-478.77	8,365.36	0.40
16,015.00	90.22	359.08	7,730.19	8,536.34	-480.75	8,536.34	0.51
16,185.00	90.52	358.41	7,729.09	8,706.30	-484.48	8,706.30	0.43
16,357.00	90.40	359.68	7,727.71	8,878.26	-487.34	8,878.26	0.74
16,528.00	89.82	0.12	7,727.38	9,049.26	-487.64	9,049.26	0.43
16,699.00	90.92	359.86	7,726.27	9,220.25	-487.67	9,220.25	0.66
16,870.00	90.09	1.04	7,724.77	9,391.24	-486.33	9,391.24	0.84
17,037.00	91.70	2.27	7,722.16	9,558.14	-481.51	9,558.14	1.21
17,208.00	91.48	0.48	7,717.41	9,729.02	-477.40	9,729.02	1.05
17,380.00	90.00	359.50	7,715.19	9,901.00	-477.43	9,901.00	1.03
17,549.00	89.72	358.01	7,715.60	10,069.95	-481.11	10,069.95	0.90
17,720.00	91.20	357.67	7,714.23	10,240.82	-487.55	10,240.82	0.89
17,892.00	89.41	358.66	7,713.32	10,412.72	-493.06	10,412.72	1.19
18,063.00	89.57	357.55	7,714.84	10,583.62	-498.71	10,583.62	0.66
18,234.00	89.63	0.16	7,716.03	10,754.56	-502.13	10,754.56	1.53
18,405.00	90.00	0.82	7,716.58	10,925.55	-500.67	10,925.55	0.44
18,576.00	89.72	359.10	7,717.00	11,096.55	-500.79	11,096.55	1.02
18,759.00	90.40	357.03	7,716.81	11,279.43	-506.97	11,279.43	1.19
Final MWD Survey @ 18759.00ft							
18,805.00	90.40	357.03	7,716.49	11,325.37	-509.35	11,325.37	0.00
Str Line Proj to Bit @ 18805' MD :: 7716.49' TVD							

Design Report for NRC 30C-32HZ - Actual Field Surveys

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
1,176.00	1,175.95	7.49	-3.09	Tie-On to Gyro Surveys @ 1176.00ft
1,292.00	1,291.95	8.41	-3.23	First MWD Survey @ 1292.00ft
18,759.00	7,716.81	11,279.43	-506.97	Final MWD Survey @ 18759.00ft
18,805.00	7,716.49	11,325.37	-509.35	Str Line Proj to Bit @ 18805' MD :: 7716.49' TVD

Vertical Section Information

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

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
16.00	1,176.00	MS Energy Gyro Surveys	NS-GYRO-MS
1,292.00	8,277.00	MWD Vertical/Build Surveys	MWD+IFR1+SC
8,448.00	18,759.00	MWD Lateral Surveys	MWD+IFR1+SC

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,243.60	1,243.55	9 5/8" Casing Set @ 1243.6' MD :: 1243.55' TVD	9-5/8	13-1/2
8,207.00	7,748.98	7" Casing Set @ 8207' MD :: 7748.98' TVD	7	8-3/4

Design Report for NRC 30C-32HZ - Actual Field Surveys

Wellbore 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
NRC 30C-32HZ_SHL - actual wellpath hits target center - Point	0.00	0.00	0.00	0.00	0.00	1,269,258.95	3,161,799.49	40° 4' 15.809 N	104° 55' 18.678 W
NRC 30C-32HZ_LD - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,269,258.95	3,161,799.49	40° 4' 15.809 N	104° 55' 18.678 W
Point 1				0.00	11,795.49	-1,019.54	1,281,047.09	3,160,703.11	
Point 2				0.00	11,787.56	-99.52	1,281,045.16	3,161,623.12	
Point 3				0.00	11,327.54	-101.17	1,280,585.15	3,161,624.47	
Point 4				0.00	1,990.50	-129.79	1,271,248.48	3,161,656.73	
Point 5				0.00	208.10	-114.46	1,269,466.29	3,161,683.68	
Point 6				0.00	220.86	-1,034.46	1,269,473.05	3,160,763.65	
Point 7				0.00	2,001.88	-1,049.96	1,271,253.86	3,160,736.54	
NRC 30C-32HZ_SEC - actual wellpath hits target center - Polygon	0.00	0.00	0.00	0.00	0.00	1,269,258.95	3,161,799.49	40° 4' 15.809 N	104° 55' 18.678 W
Point 1				0.00	11,333.16	-560.51	1,280,587.78	3,161,165.12	
Point 2				0.00	11,300.11	4,688.66	1,280,588.95	3,166,414.20	
Point 3				0.00	6,019.44	4,621.78	1,275,308.16	3,166,381.75	
Point 4				0.00	6,040.08	-640.03	1,275,294.49	3,161,120.12	
Point 5				0.00	6,019.44	4,621.78	1,275,308.16	3,166,381.75	
Point 6				0.00	6,019.44	4,621.78	1,275,308.16	3,166,381.75	
Point 7				0.00	619.37	4,683.97	1,269,908.82	3,166,479.14	
Point 8				0.00	-4,659.72	4,692.01	1,264,630.09	3,166,521.60	
Point 9				0.00	-4,612.28	-586.58	1,264,643.12	3,161,243.01	
Point 10				0.00	672.89	-573.37	1,269,928.06	3,161,221.77	
Point 11				0.00	619.40	4,683.93	1,269,908.85	3,166,479.10	
Point 12				0.00	672.89	-573.37	1,269,928.06	3,161,221.77	
Point 13				0.00	6,040.08	-640.03	1,275,294.49	3,161,120.12	
NRC 30C-32HZ_BHL - actual wellpath misses target center by 24.15usft at 18805.00usft MD (7716.49 TVD, 11325.37 N, -509.35 E) - Point	0.00	0.00	7,713.00	11,331.29	-486.20	1,280,586.40	3,161,239.45	40° 6' 7.787 N	104° 55' 24.935 W
NRC 30C-32HZ_Lat. T - actual wellpath misses target center by 8.67usft at 14464.13usft MD (7743.80 TVD, 6985.62 N, -479.30 E) - Point	0.00	0.00	7,749.00	6,985.58	-486.24	1,276,240.94	3,161,267.73	40° 5' 24.842 N	104° 55' 24.934 W

Directional Difficulty Index

Average Dogleg over Survey:	1.01 °/100usft	Maximum Dogleg over Survey:	10.76 °/100usft at 7,544.00 usft
Net Tortousity applicable to Plans:	0.42 °/100usft	Directional Difficulty Index:	6.737

Audit Info

North Reference Sheet for Sec. 8-T1N-R67W - NRC 30C-32HZ - 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 = 16' @ 5077.00usft (Xtreme 22). Northing and Easting are relative to NRC 30C-32HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is 105° 30' 0.000 W°, Longitude Origin:0° 0' 0.000 E°, Latitude Origin:40° 47' 0.000 N°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996174

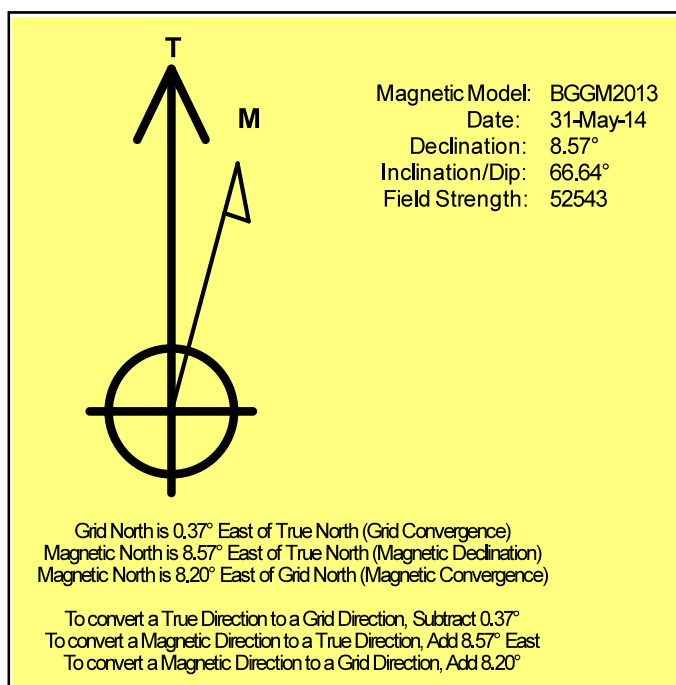
Grid Coordinates of Well: 1,269,258.95 usft N, 3,161,799.49 usft E

Geographical Coordinates of Well: 40° 04' 15.81" N, 104° 55' 18.68" W

Grid Convergence at Surface is: 0.37°

Based upon Minimum Curvature type calculations, at a Measured Depth of 18,805.00usft
the Bottom Hole Displacement is 11,336.82usft in the Direction of 357.42° (True).

Magnetic Convergence at surface is: -8.20° (31 May 2014, , BGGM2013)



Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 8-T1N-R67W

NRC 30C-32HZ

05-123-39188

Plan A

Design: Actual Field Surveys

Sperry Drilling Services

Geodetic Report

22 July, 2014

Well Coordinates: 1,269,258.95 N, 3,161,799.49 E (40° 04' 15.81" N, 104° 55' 18.68" W)

Ground Level: 5,061.00 usft

Local Coordinate Origin:

Viewing Datum:

TVDs to System:

North Reference:

Unit System:

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

Centered on Well NRC 30C-32HZ

RKB = 16' @ 5077.00usft (Xtreme 22)

N

True

Dec-Deg - API - US Survey Feet - Custom

HALLIBURTON

Design Report for NRC 30C-32HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+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	40.071058	-104.921855	1,269,258.95	3,161,799.49
16.00	0.00	0.00	16.00	0.00	0.00	40.071058	-104.921855	1,269,258.95	3,161,799.49
116.00	0.75	317.54	116.00	0.48	-0.44	40.071059	-104.921857	1,269,259.43	3,161,799.04
216.00	0.93	327.96	215.99	1.65	-1.31	40.071063	-104.921860	1,269,260.59	3,161,798.16
316.00	0.76	2.17	315.98	3.00	-1.72	40.071066	-104.921861	1,269,261.94	3,161,797.75
416.00	0.42	1.02	415.97	4.03	-1.69	40.071069	-104.921861	1,269,262.97	3,161,797.77
516.00	0.04	304.48	515.97	4.42	-1.71	40.071070	-104.921861	1,269,263.35	3,161,797.75
616.00	0.38	266.69	615.97	4.42	-2.07	40.071070	-104.921863	1,269,263.35	3,161,797.39
716.00	0.57	307.95	715.97	4.71	-2.79	40.071071	-104.921865	1,269,263.63	3,161,796.66
816.00	0.69	344.02	815.96	5.59	-3.35	40.071073	-104.921867	1,269,264.52	3,161,796.10
916.00	0.45	39.10	915.96	6.48	-3.27	40.071076	-104.921867	1,269,265.40	3,161,796.18
1,016.00	0.30	28.11	1,015.95	7.01	-2.90	40.071077	-104.921866	1,269,265.94	3,161,796.54
1,116.00	0.17	304.51	1,115.95	7.33	-2.90	40.071078	-104.921866	1,269,266.25	3,161,796.54
1,176.00	0.31	312.33	1,175.95	7.49	-3.09	40.071079	-104.921866	1,269,266.41	3,161,796.35
1,243.60	0.50	355.36	1,243.55	7.90	-3.25	40.071080	-104.921867	1,269,266.83	3,161,796.19
1,292.00	0.71	7.68	1,291.95	8.41	-3.23	40.071081	-104.921867	1,269,267.33	3,161,796.21
1,481.00	0.41	348.20	1,480.94	10.23	-3.21	40.071086	-104.921867	1,269,269.16	3,161,796.21
1,671.00	0.51	345.90	1,670.93	11.72	-3.55	40.071090	-104.921868	1,269,270.64	3,161,795.86
1,854.00	0.83	315.56	1,853.92	13.45	-4.68	40.071095	-104.921872	1,269,272.37	3,161,794.72
2,036.00	2.44	261.94	2,035.85	13.85	-9.44	40.071096	-104.921889	1,269,272.74	3,161,789.96
2,219.00	1.92	201.59	2,218.74	10.45	-14.42	40.071087	-104.921907	1,269,269.31	3,161,785.00
2,401.00	0.75	108.87	2,400.70	7.23	-14.42	40.071078	-104.921907	1,269,266.09	3,161,785.02
2,584.00	0.52	139.80	2,583.69	6.21	-12.75	40.071075	-104.921901	1,269,265.07	3,161,786.70
2,765.00	0.50	99.51	2,764.68	5.45	-11.44	40.071073	-104.921896	1,269,264.33	3,161,788.01
2,947.00	0.17	100.22	2,946.68	5.28	-10.39	40.071073	-104.921892	1,269,264.15	3,161,789.06
3,129.00	3.11	289.68	3,128.59	6.89	-14.78	40.071077	-104.921908	1,269,265.74	3,161,784.67
3,311.00	5.77	276.95	3,310.03	9.66	-28.51	40.071085	-104.921957	1,269,268.42	3,161,770.92
3,486.00	7.43	269.39	3,483.87	10.60	-48.56	40.071087	-104.922029	1,269,269.23	3,161,750.86
3,658.00	7.86	265.65	3,654.34	9.59	-71.41	40.071084	-104.922110	1,269,268.07	3,161,728.02
3,829.00	8.48	265.43	3,823.61	7.70	-95.63	40.071079	-104.922197	1,269,266.02	3,161,703.81
3,996.00	8.43	263.26	3,988.79	5.29	-120.06	40.071073	-104.922284	1,269,263.45	3,161,679.40
4,167.00	8.53	267.92	4,157.93	3.35	-145.18	40.071067	-104.922374	1,269,261.35	3,161,654.29
4,338.00	8.94	270.75	4,326.94	3.07	-171.14	40.071066	-104.922467	1,269,260.90	3,161,628.33
4,509.00	8.30	272.54	4,496.01	3.79	-196.76	40.071068	-104.922558	1,269,261.45	3,161,602.71
4,680.00	8.54	269.63	4,665.17	4.25	-221.79	40.071070	-104.922648	1,269,261.75	3,161,577.69
4,851.00	8.70	270.05	4,834.24	4.18	-247.42	40.071070	-104.922739	1,269,261.52	3,161,552.06
5,022.00	7.63	270.88	5,003.50	4.37	-271.70	40.071070	-104.922826	1,269,261.54	3,161,527.77
5,193.00	8.10	266.71	5,172.89	3.85	-295.08	40.071069	-104.922910	1,269,260.87	3,161,504.40
5,364.00	8.06	269.38	5,342.20	3.03	-319.09	40.071066	-104.922995	1,269,259.90	3,161,480.39
5,535.00	8.01	268.50	5,511.52	2.59	-342.99	40.071065	-104.923081	1,269,259.30	3,161,456.50
5,707.00	8.51	272.36	5,681.73	2.80	-367.69	40.071066	-104.923169	1,269,259.35	3,161,431.80
5,878.00	7.84	271.75	5,850.99	3.68	-391.99	40.071068	-104.923256	1,269,260.07	3,161,407.50

Design Report for NRC 30C-32HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
6,050.00	6.86	269.36	6,021.58	3.92	-413.98	40.071069	-104.923334	1,269,260.17	3,161,385.50
6,221.00	7.95	268.27	6,191.15	3.45	-436.02	40.071068	-104.923413	1,269,259.55	3,161,363.48
6,393.00	6.32	264.41	6,361.81	2.17	-457.33	40.071064	-104.923489	1,269,258.13	3,161,342.17
6,563.00	4.18	273.38	6,531.09	1.62	-472.83	40.071063	-104.923545	1,269,257.48	3,161,326.68
6,734.00	2.73	261.30	6,701.78	1.37	-483.08	40.071062	-104.923581	1,269,257.17	3,161,316.43
6,904.00	1.37	294.03	6,871.67	1.59	-488.93	40.071062	-104.923602	1,269,257.35	3,161,310.57
7,075.00	0.26	122.38	7,042.66	2.21	-490.47	40.071064	-104.923608	1,269,257.96	3,161,309.03
7,117.00	3.05	5.99	7,084.64	3.27	-490.28	40.071067	-104.923607	1,269,259.02	3,161,309.22
7,160.00	6.16	13.64	7,127.50	6.65	-489.61	40.071076	-104.923605	1,269,262.41	3,161,309.86
7,203.00	9.17	11.74	7,170.11	12.25	-488.37	40.071092	-104.923600	1,269,268.01	3,161,311.07
7,246.00	12.18	10.23	7,212.36	20.07	-486.87	40.071113	-104.923595	1,269,275.84	3,161,312.52
7,289.00	15.68	8.20	7,254.09	30.29	-485.23	40.071141	-104.923589	1,269,286.07	3,161,314.09
7,332.00	19.85	4.85	7,295.03	43.32	-483.79	40.071177	-104.923584	1,269,299.11	3,161,315.45
7,373.00	23.71	2.76	7,333.10	58.50	-482.80	40.071219	-104.923580	1,269,314.29	3,161,316.33
7,416.00	27.08	2.30	7,371.94	76.92	-481.99	40.071269	-104.923577	1,269,332.72	3,161,317.02
7,458.00	30.70	1.19	7,408.70	97.20	-481.39	40.071325	-104.923575	1,269,353.00	3,161,317.50
7,501.00	34.72	0.18	7,444.88	120.43	-481.12	40.071389	-104.923574	1,269,376.23	3,161,317.61
7,544.00	39.34	359.75	7,479.20	146.31	-481.14	40.071460	-104.923574	1,269,402.11	3,161,317.42
7,587.00	42.81	358.84	7,511.61	174.56	-481.50	40.071537	-104.923576	1,269,430.36	3,161,316.88
7,629.00	46.19	358.86	7,541.56	203.99	-482.09	40.071618	-104.923578	1,269,459.78	3,161,316.10
7,672.00	49.67	358.63	7,570.37	235.90	-482.79	40.071706	-104.923580	1,269,491.68	3,161,315.19
7,715.00	53.59	358.73	7,597.05	269.59	-483.56	40.071798	-104.923583	1,269,525.37	3,161,314.20
7,758.00	57.27	358.91	7,621.45	304.99	-484.29	40.071895	-104.923586	1,269,560.76	3,161,313.24
7,801.00	59.83	359.07	7,643.88	341.66	-484.94	40.071996	-104.923588	1,269,597.43	3,161,312.35
7,844.00	62.54	359.40	7,664.60	379.33	-485.44	40.072099	-104.923590	1,269,635.09	3,161,311.61
7,886.00	66.28	359.66	7,682.74	417.20	-485.75	40.072203	-104.923591	1,269,672.96	3,161,311.05
7,929.00	69.11	359.93	7,699.06	456.98	-485.89	40.072312	-104.923591	1,269,712.73	3,161,310.65
7,972.00	72.08	0.36	7,713.34	497.53	-485.78	40.072424	-104.923591	1,269,753.28	3,161,310.49
8,015.00	76.15	0.90	7,725.11	538.88	-485.33	40.072537	-104.923589	1,269,794.63	3,161,310.68
8,058.00	79.94	0.77	7,734.02	580.93	-484.71	40.072653	-104.923587	1,269,836.69	3,161,311.01
8,101.00	82.74	1.09	7,740.49	623.43	-484.02	40.072769	-104.923585	1,269,879.19	3,161,311.43
8,144.00	84.69	1.17	7,745.20	666.17	-483.18	40.072887	-104.923582	1,269,921.92	3,161,311.99
8,171.00	86.55	0.79	7,747.26	693.08	-482.72	40.072961	-104.923580	1,269,948.84	3,161,312.28
8,207.00	87.96	0.78	7,748.98	729.04	-482.23	40.073059	-104.923578	1,269,984.80	3,161,312.54
8,277.00	90.71	0.77	7,749.79	799.02	-481.28	40.073251	-104.923575	1,270,054.78	3,161,313.03
8,448.00	90.28	359.80	7,748.32	970.01	-480.43	40.073721	-104.923572	1,270,225.76	3,161,312.76
8,619.00	90.06	359.46	7,747.81	1,141.00	-481.53	40.074190	-104.923576	1,270,396.74	3,161,310.55
8,790.00	90.31	359.70	7,747.26	1,312.00	-482.79	40.074660	-104.923580	1,270,567.72	3,161,308.18
8,961.00	90.03	0.26	7,746.75	1,483.00	-482.85	40.075129	-104.923581	1,270,738.71	3,161,307.00
9,132.00	90.15	1.43	7,746.48	1,653.97	-480.32	40.075598	-104.923572	1,270,909.69	3,161,308.41
9,303.00	90.09	1.28	7,746.12	1,824.93	-476.28	40.076068	-104.923557	1,271,080.66	3,161,311.34
9,475.00	90.28	0.47	7,745.57	1,996.90	-473.65	40.076540	-104.923548	1,271,252.64	3,161,312.84

Design Report for NRC 30C-32HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates		Geographic Coordinates		UTM Coordinates	
				+N/-S (usft)	+E/-W (usft)	Latitude (usft)	Longitude (usft)	Northing (usft)	Easting (usft)
9,645.00	89.88	0.47	7,745.33	2,166.90	-472.26	40.077006	-104.923543	1,271,422.63	3,161,313.13
9,816.00	90.77	0.33	7,744.36	2,337.89	-471.07	40.077476	-104.923539	1,271,593.62	3,161,313.21
9,987.00	90.03	359.43	7,743.17	2,508.88	-471.42	40.077945	-104.923540	1,271,764.60	3,161,311.74
10,158.00	89.57	359.90	7,743.76	2,679.88	-472.42	40.078414	-104.923543	1,271,935.58	3,161,309.62
10,327.00	90.59	0.20	7,743.53	2,848.87	-472.28	40.078878	-104.923543	1,272,104.57	3,161,308.67
10,495.00	89.72	359.55	7,743.07	3,016.87	-472.64	40.079340	-104.923544	1,272,272.55	3,161,307.21
10,663.00	90.03	0.02	7,743.44	3,184.87	-473.27	40.079801	-104.923547	1,272,440.54	3,161,305.48
10,831.00	89.88	359.27	7,743.57	3,352.86	-474.31	40.080262	-104.923550	1,272,608.52	3,161,303.34
11,000.00	89.85	358.19	7,743.97	3,521.82	-478.06	40.080726	-104.923564	1,272,777.44	3,161,298.50
11,169.00	89.82	358.25	7,744.46	3,690.74	-483.31	40.081189	-104.923582	1,272,946.31	3,161,292.15
11,338.00	90.62	0.57	7,743.81	3,859.71	-485.05	40.081653	-104.923589	1,273,115.27	3,161,289.30
11,519.00	90.09	359.53	7,742.69	4,040.71	-484.89	40.082150	-104.923588	1,273,296.25	3,161,288.28
11,703.00	89.29	359.62	7,743.68	4,224.70	-486.26	40.082655	-104.923593	1,273,480.22	3,161,285.72
11,885.00	90.12	359.28	7,744.62	4,406.68	-488.00	40.083155	-104.923599	1,273,662.19	3,161,282.78
12,069.00	90.06	359.29	7,744.33	4,590.67	-490.30	40.083660	-104.923607	1,273,846.15	3,161,279.29
12,252.00	90.00	0.57	7,744.23	4,773.67	-490.52	40.084162	-104.923608	1,274,029.13	3,161,277.87
12,434.00	90.03	0.53	7,744.19	4,955.66	-488.78	40.084662	-104.923602	1,274,211.12	3,161,278.43
12,605.00	89.82	0.33	7,744.41	5,126.65	-487.49	40.085131	-104.923597	1,274,382.11	3,161,278.60
12,776.00	90.00	359.73	7,744.68	5,297.65	-487.40	40.085600	-104.923597	1,274,553.10	3,161,277.58
12,947.00	89.94	359.58	7,744.77	5,468.65	-488.43	40.086070	-104.923601	1,274,724.08	3,161,275.43
13,117.00	90.15	359.18	7,744.63	5,638.64	-490.27	40.086536	-104.923607	1,274,894.05	3,161,272.48
13,289.00	90.12	359.61	7,744.23	5,810.63	-492.09	40.087009	-104.923614	1,275,066.02	3,161,269.55
13,460.00	89.94	0.37	7,744.14	5,981.63	-492.12	40.087478	-104.923614	1,275,237.01	3,161,268.40
13,631.00	89.88	0.54	7,744.41	6,152.62	-490.76	40.087947	-104.923609	1,275,408.00	3,161,268.64
13,802.00	90.62	1.11	7,743.66	6,323.60	-488.30	40.088417	-104.923600	1,275,578.98	3,161,269.99
13,972.00	89.45	1.36	7,743.56	6,493.56	-484.63	40.088883	-104.923587	1,275,748.96	3,161,272.55
14,143.00	90.18	1.21	7,744.11	6,664.51	-480.80	40.089353	-104.923574	1,275,919.93	3,161,275.27
14,314.00	90.06	0.27	7,743.75	6,835.49	-478.59	40.089822	-104.923566	1,276,090.91	3,161,276.36
14,484.00	89.88	359.05	7,743.84	7,005.49	-479.60	40.090289	-104.923569	1,276,260.89	3,161,274.24
14,654.00	90.06	359.57	7,743.93	7,175.48	-481.65	40.090755	-104.923577	1,276,430.85	3,161,271.09
14,825.00	90.34	0.47	7,743.33	7,346.47	-481.59	40.091225	-104.923577	1,276,601.84	3,161,270.03
14,994.00	90.06	0.59	7,742.74	7,515.46	-480.02	40.091688	-104.923571	1,276,770.83	3,161,270.50
15,164.00	90.65	0.77	7,741.69	7,685.45	-478.01	40.092155	-104.923564	1,276,940.82	3,161,271.40
15,332.00	90.92	359.98	7,739.39	7,853.43	-476.91	40.092616	-104.923560	1,277,108.80	3,161,271.41
15,502.00	91.23	359.58	7,736.20	8,023.40	-477.56	40.093083	-104.923562	1,277,278.75	3,161,269.65
15,673.00	90.37	0.01	7,733.81	8,194.38	-478.17	40.093552	-104.923564	1,277,449.72	3,161,267.92
15,844.00	90.92	359.59	7,731.89	8,365.36	-478.77	40.094021	-104.923567	1,277,620.69	3,161,266.21
16,015.00	90.22	359.08	7,730.19	8,536.34	-480.75	40.094491	-104.923574	1,277,791.64	3,161,263.11
16,185.00	90.52	358.41	7,729.09	8,706.30	-484.48	40.094957	-104.923587	1,277,961.56	3,161,258.28
16,357.00	90.40	359.68	7,727.71	8,878.26	-487.34	40.095429	-104.923597	1,278,133.50	3,161,254.29
16,528.00	89.82	0.12	7,727.38	9,049.26	-487.64	40.095899	-104.923598	1,278,304.49	3,161,252.88
16,699.00	90.92	359.86	7,726.27	9,220.25	-487.67	40.096368	-104.923598	1,278,475.47	3,161,251.73

Design Report for NRC 30C-32HZ - Actual Field Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Geographic Coordinates Latitude (usft)	Longitude (usft)	UTM Coordinates Northing (usft)	Easting (usft)
16,870.00	90.09	1.04	7,724.77	9,391.24	-486.33	40.096838	-104.923594	1,278,646.45	3,161,251.96
17,037.00	91.70	2.27	7,722.16	9,558.14	-481.51	40.097296	-104.923576	1,278,813.38	3,161,255.70
17,208.00	91.48	0.48	7,717.41	9,729.02	-477.40	40.097765	-104.923562	1,278,984.27	3,161,258.68
17,380.00	90.00	359.50	7,715.19	9,901.00	-477.43	40.098237	-104.923562	1,279,156.24	3,161,257.53
17,549.00	89.72	358.01	7,715.60	10,069.95	-481.11	40.098701	-104.923575	1,279,325.16	3,161,252.76
17,720.00	91.20	357.67	7,714.23	10,240.82	-487.55	40.099170	-104.923598	1,279,495.98	3,161,245.20
17,892.00	89.41	358.66	7,713.32	10,412.72	-493.06	40.099642	-104.923618	1,279,667.83	3,161,238.57
18,063.00	89.57	357.55	7,714.84	10,583.62	-498.71	40.100111	-104.923638	1,279,838.68	3,161,231.80
18,234.00	89.63	0.16	7,716.03	10,754.56	-502.13	40.100580	-104.923650	1,280,009.59	3,161,227.27
18,405.00	90.00	0.82	7,716.58	10,925.55	-500.67	40.101049	-104.923645	1,280,180.59	3,161,227.62
18,576.00	89.72	359.10	7,717.00	11,096.55	-500.79	40.101519	-104.923645	1,280,351.57	3,161,226.39
18,759.00	90.40	357.03	7,716.81	11,279.43	-506.97	40.102021	-104.923668	1,280,534.40	3,161,219.02
18,805.00	90.40	357.03	7,716.49	11,325.37	-509.35	40.102147	-104.923676	1,280,580.32	3,161,216.33

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
1,176.00	1,175.95	7.49	-3.09	Tie-On to Gyro Surveys @ 1176.00ft
1,292.00	1,291.95	8.41	-3.23	First MWD Survey @ 1292.00ft
18,759.00	7,716.81	11,279.43	-506.97	Final MWD Survey @ 18759.00ft
18,805.00	7,716.49	11,325.37	-509.35	Str Line Proj to Bit @ 18805' MD :: 7716.49' TVD

Vertical Section Information

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

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
16.00	1,176.00	MS Energy Gyro Surveys	NS-GYRO-MS
1,292.00	8,277.00	MWD Vertical/Build Surveys	MWD+IFR1+SC
8,448.00	18,759.00	MWD Lateral Surveys	MWD+IFR1+SC

Design Report for NRC 30C-32HZ - Actual Field Surveys

Casing Details

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,243.60	1,243.55	9 5/8" Casing Set @ 1243.6' MD :: 1243.55' TVD	9-5/8	13-1/2
8,207.00	7,748.98	7" Casing Set @ 8207' MD :: 7748.98' TVD	7	8-3/4

Design Targets

Shape	Target Name	TVD (')	Northing (')	Easting (')	+N/-S	+E/-W	Created	Updated
-------	-------------	---------	--------------	-------------	-------	-------	---------	---------

Directional Difficulty Index

Average Dogleg over Survey:	1.01 °/100usft	Maximum Dogleg over Survey:	10.76 °/100usft at 7,544.00 usft
Net Tortosity applicable to Plans:	0.42 °/100usft	Directional Difficulty Index:	6.737

Audit Info

North Reference Sheet for Sec. 8-T1N-R67W - NRC 30C-32HZ - 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 = 16' @ 5077.00usft (Xtreme 22). Northing and Easting are relative to NRC 30C-32HZ

Coordinate System is US State Plane 1983, Colorado Northern Zone using datum North American Datum 1983, ellipsoid GRS 1980

Projection method is Lambert Conformal Conic (2 parallel)

Central Meridian is -105.500000°, Longitude Origin:0.000000°, Latitude Origin:40.783333°

False Easting: 3,000,000.00usft, False Northing: 1,000,000.00usft, Scale Reduction: 0.99996174

Grid Coordinates of Well: 1,269,258.95 usft N, 3,161,799.49 usft E

Geographical Coordinates of Well: 40° 04' 15.81" N, 104° 55' 18.68" W

Grid Convergence at Surface is: 0.37°

Based upon Minimum Curvature type calculations, at a Measured Depth of 18,805.00usft

the Bottom Hole Displacement is 11,336.82usft in the Direction of 357.42° (True).

Magnetic Convergence at surface is: -8.20° (31 May 2014, , BGGM2013)

