

HALLIBURTON

Sperry Drilling

END OF WELL REPORT

For

Anadarko Petroleum Corp.

Grenemyer 35C-3HZ

Sec. 34-T1N-R67W

Weld County, CO

Job #900930443

TABLE OF CONTENTS

Section 1 – Survey Data

Contents: Final Well Survey submitted as the official survey.

Section 2 – Proposal Report

Section 3 – BHA Data

Contents: BHA Report, BHA Schematic, Motor Performance Report, &
Survey & Drilling Parameters

Section 4 – Event Log (Total Well)

Contents: Daily Morning Reports

Section 5

Contents: Graphics

Section 1

Contents: Surveys

SPERRY-SUN DRILLING SERVICES

CERTIFIED SURVEY WORK SHEET

OPERATOR:	Anadarko Petroleum Corp.
WELL:	Grenemyer 35C-3HZ
FIELD:	Grenemyer
RIG:	Xtreme 22
LEGALS:	Sec. 34-T1N-R67W
COUNTY:	Weld
STATE:	CO
CAL. METHOD:	Min Curvature
MAG. DECL. APPLIED:	8.5892
VERTICAL SEC. DIR. :	180.000

SSDS Job Number :	900930443
Start Date of Job :	1/2/2014
End Date of Job :	1/30/2014
Lead Directional Driller:	Jacob Suitter
Other SSDS DD's :	Bogdan Cristian
SSDS MWD Engineers :	Caleb Jones Reuben Edginton

Main Hole	1st Side Track		2nd Side Track		3rd Side Track		4th Side Track	
	Tie On		Tie On		Tie On		Tie On	
961.00								
7180.00	KOP		KOP-ST1		KOP-ST2		KOP-ST3	KOP-ST4
1105.00	MWD		MWD		MWD		MWD	MWD
16856.00	MWD		MWD		MWD		MWD	MWD
16902.00	T.D.		T.D.		T.D.		T.D.	T.D.

First Survey Depth
Last Survey Depth

KOP Depth/Sidetrack MD

First Survey Depth
Last Survey Depth
Bit Extrapolation to TD

The following Sperry Sun Drilling Services personnel listed below, do certify the above survey information to be accurate :

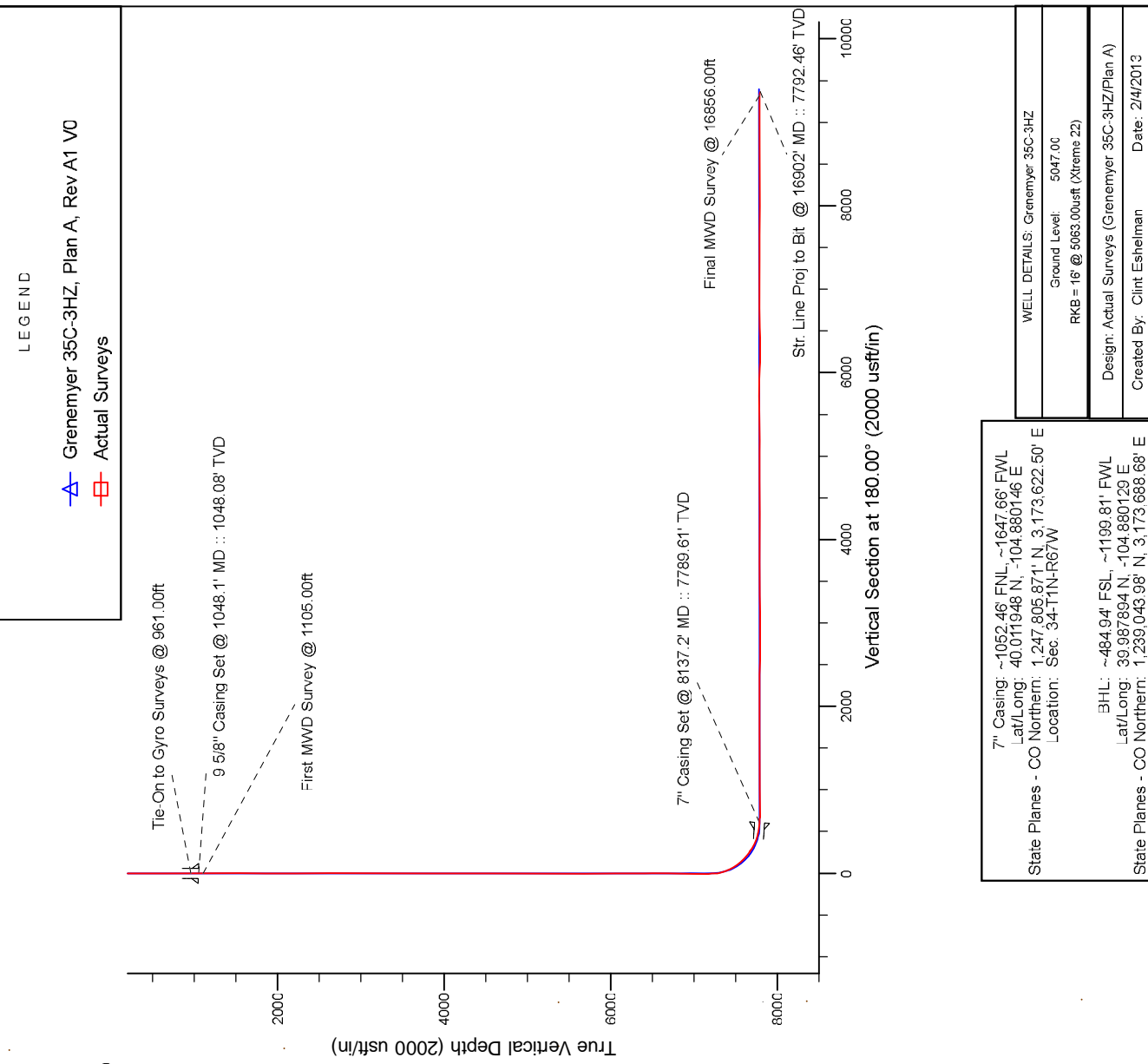
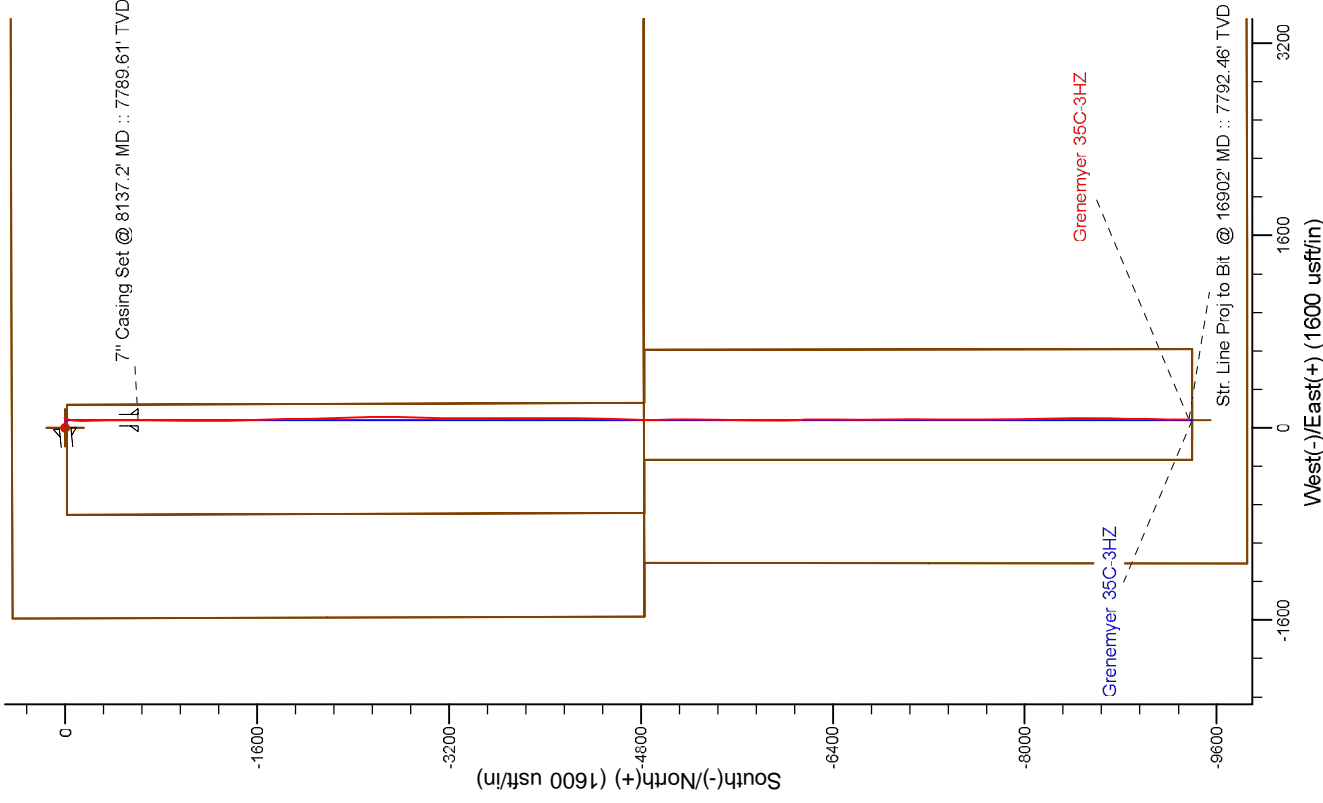
Print Name :	Jacob Suitter	Print Name :	Caleb Jones	Print Name :	Bogdan Cristian
Sign Name :		Sign Name :		Sign Name :	
Print Name :	0	Print Name :	Reuben Edginton	Print Name :	
Sign Name :		Sign Name :		Sign Name :	

Tie On
MWD
ESS
Gyro
SS

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



Project: Weld County, CO (NAD 83)
 Site: Sec. 34-T1N-R67W
 Well: Grenemyer 35C-3HZ
 Wellbore: Plan A
 Design: Actual Surveys



LEGEND

- Grenemyer 35C-3HZ, Plan A, Rev A1 V0
- Actual Surveys

7" Casing: ~1052.46' FNL, ~1647.66' FWL
 Lat/Long: 40.011948 N, -104.880146 E
 State Planes - CO Northern: 1,247,805.871' N, 3,173,622.50' E
 Location: Sec. 34-T1N-R67W

BHL: ~484.94' FSL, ~1199.81' FWL
 Lat/Long: 39.987894 N, -104.880129 E
 State Planes - CO Northern: 1,239,043.98' N, 3,173,688.68' E
 Location: Sec. 3-T1S-R67W

WELL DETAILS: Grenemyer 35C-3HZ	
Ground Level:	5047.00
RKB = 16' @ 5063.00usft (Xtreme 22)	
Design: Actual Surveys (Grenemyer 35C-3HZ/Plan A)	
Created By: Clint Eshelman	Date: 2/4/2013
Reviewed:	Date:

Anadarko Petroleum Corp.

Weld County, CO (NAD 83)

Sec. 34-T1N-R67W

Grenemyer 35C-3HZ

Plan A

Design: Actual Surveys

Sperry Drilling Services

Standard Report

04 February, 2014

Well Coordinates: 1,248,412.78 N, 3,173,553.54 E (40° 00' 49.01" N, 104° 52' 49.36" W)

Ground Level: 5,047.00 usft

Local Coordinate Origin:

Centered on Well Grenemyer 35C-3HZ

Viewing Datum:

RKB = 16' @ 5063.00usft (Xtreme 22)

TVDs to System:

N

North Reference:

True

Unit System:

Dec-Deg - API - US Survey Feet - Custom

Geodetic Scale Factor Applied

Version: 5000.1 Build: 70

HALLIBURTON

Design Report for Grenemyer 35C-3HZ - 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
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
116.00	0.44	249.00	116.00	-0.14	-0.36	0.14	0.44
216.00	0.55	255.22	216.00	-0.40	-1.18	0.40	0.12
316.00	0.44	258.18	315.99	-0.60	-2.02	0.60	0.11
416.00	0.34	235.36	415.99	-0.85	-2.64	0.85	0.18
516.00	0.16	131.47	515.99	-1.11	-2.78	1.11	0.41
616.00	0.15	352.07	615.99	-1.07	-2.69	1.07	0.29
716.00	0.37	316.91	715.99	-0.70	-2.93	0.70	0.26
816.00	0.45	230.70	815.99	-0.72	-3.46	0.72	0.56
916.00	0.16	7.29	915.98	-0.83	-3.74	0.83	0.58
961.00	0.18	32.83	960.98	-0.71	-3.70	0.71	0.17
Tie-On to Gyro Surveys @ 961.00ft							
1,048.10	0.12	83.75	1,048.08	-0.58	-3.53	0.58	0.16
9 5/8" Casing Set @ 1048.1' MD :: 1048.08' TVD							
1,105.00	0.15	121.23	1,104.98	-0.61	-3.41	0.61	0.16
First MWD Survey @ 1105.00ft							
1,295.00	0.14	124.75	1,294.98	-0.87	-3.01	0.87	0.01
1,484.00	0.44	76.13	1,483.98	-0.83	-2.12	0.83	0.19
1,673.00	0.48	39.18	1,672.98	-0.04	-0.91	0.04	0.16
1,856.00	0.65	29.25	1,855.97	1.45	0.08	-1.45	0.11
2,039.00	0.51	43.43	2,038.96	2.95	1.15	-2.95	0.11
2,222.00	1.26	284.98	2,221.94	4.06	-0.24	-4.06	0.86
2,406.00	1.95	240.34	2,405.88	3.04	-4.91	-3.04	0.75
2,588.00	0.50	122.32	2,587.84	1.08	-6.93	-1.08	1.22
2,769.00	0.46	164.09	2,768.84	-0.04	-6.06	0.04	0.19
2,952.00	0.61	217.78	2,951.83	-1.52	-6.46	1.52	0.27
3,135.00	0.25	63.92	3,134.83	-2.11	-6.70	2.11	0.46
3,318.00	0.25	295.83	3,317.83	-1.76	-6.70	1.76	0.25
3,495.00	0.83	270.51	3,494.82	-1.58	-8.33	1.58	0.35
3,667.00	0.81	283.34	3,666.80	-1.29	-10.76	1.29	0.11
3,838.00	0.81	82.17	3,837.79	-0.85	-10.74	0.85	0.93
4,009.00	0.49	85.85	4,008.78	-0.63	-8.81	0.63	0.19
4,181.00	0.79	235.74	4,180.78	-1.24	-9.06	1.24	0.72
4,352.00	0.84	23.23	4,351.77	-0.76	-9.54	0.76	0.92
4,523.00	0.77	335.14	4,522.76	1.44	-9.52	-1.44	0.39
4,694.00	0.67	311.01	4,693.74	3.14	-10.76	-3.14	0.19
4,866.00	0.34	112.49	4,865.74	3.60	-11.05	-3.60	0.58
5,037.00	0.91	88.96	5,036.73	3.43	-9.22	-3.43	0.36
5,208.00	1.03	69.37	5,207.71	4.00	-6.43	-4.00	0.21
5,379.00	0.88	102.75	5,378.68	4.25	-3.71	-4.25	0.33
5,551.00	0.95	82.09	5,550.66	4.16	-1.01	-4.16	0.19
5,722.00	0.77	59.37	5,721.64	4.94	1.39	-4.94	0.22
5,893.00	1.76	77.04	5,892.60	6.11	4.93	-6.11	0.62
6,065.00	4.58	97.45	6,064.32	5.81	14.32	-5.81	1.74
6,236.00	4.57	97.99	6,234.78	3.98	27.84	-3.98	0.03
6,407.00	4.67	96.86	6,405.22	2.20	41.49	-2.20	0.08
6,578.00	5.73	88.34	6,575.52	1.62	56.94	-1.62	0.77
6,750.00	3.02	85.95	6,747.00	2.19	70.04	-2.19	1.58
6,921.00	1.42	45.02	6,917.88	4.00	76.04	-4.00	1.26

Design Report for Grenemyer 35C-3HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
7,092.00	0.80	7.68	7,088.85	6.68	77.69	-6.68	0.54
7,177.00	0.14	339.14	7,173.84	7.37	77.74	-7.37	0.80
7,220.00	4.05	187.77	7,216.81	5.91	77.51	-5.91	9.71
7,263.00	8.27	198.86	7,259.55	1.48	76.31	-1.48	10.15
7,306.00	11.65	193.87	7,301.90	-5.66	74.27	5.66	8.11
7,349.00	18.11	192.80	7,343.44	-16.41	71.74	16.41	15.04
7,392.00	20.47	194.53	7,384.02	-30.21	68.37	30.21	5.65
7,435.00	25.74	189.11	7,423.56	-46.72	65.01	46.72	13.20
7,478.00	30.53	187.27	7,461.47	-66.78	62.14	66.78	11.32
7,521.00	34.31	184.73	7,497.76	-89.70	59.76	89.70	9.34
7,564.00	38.44	182.52	7,532.38	-115.15	58.17	115.15	10.08
7,607.00	41.72	180.98	7,565.28	-142.81	57.34	142.81	7.97
7,649.00	45.60	179.55	7,595.65	-171.80	57.22	171.80	9.53
7,692.00	48.71	177.25	7,624.89	-203.31	58.12	203.31	8.23
7,735.00	51.56	177.07	7,652.45	-236.27	59.75	236.27	6.64
7,778.00	55.01	178.77	7,678.16	-270.71	60.99	270.71	8.63
7,821.00	59.99	178.87	7,701.25	-306.96	61.74	306.96	11.58
7,863.00	63.25	179.39	7,721.22	-343.90	62.30	343.90	7.84
7,906.00	67.37	178.08	7,739.17	-382.95	63.17	382.95	9.97
7,949.00	70.92	178.73	7,754.48	-423.11	64.28	423.11	8.38
7,992.00	74.88	180.16	7,767.12	-464.20	64.67	464.20	9.74
8,035.00	78.78	179.37	7,776.92	-506.06	64.85	506.06	9.24
8,099.00	84.26	180.38	7,786.35	-569.33	64.98	569.33	8.70
8,137.20	85.96	180.40	7,789.61	-607.39	64.72	607.39	4.44
7" Casing Set @ 8137.2' MD :: 7789.61' TVD							
8,199.00	88.70	180.43	7,792.49	-669.12	64.28	669.12	4.44
8,370.00	90.43	181.51	7,793.79	-840.08	61.38	840.08	1.19
8,542.00	90.99	181.99	7,791.66	-1,011.98	56.13	1,011.98	0.43
8,713.00	90.80	178.63	7,788.98	-1,182.94	55.20	1,182.94	1.97
8,885.00	90.37	177.70	7,787.23	-1,354.84	60.71	1,354.84	0.60
9,056.00	89.57	178.57	7,787.32	-1,525.74	66.28	1,525.74	0.69
9,227.00	89.51	178.96	7,788.69	-1,696.70	69.96	1,696.70	0.23
9,399.00	89.51	178.92	7,790.16	-1,868.66	73.14	1,868.66	0.02
9,570.00	90.56	179.39	7,790.06	-2,039.64	75.67	2,039.64	0.67
9,742.00	90.19	178.56	7,788.93	-2,211.61	78.74	2,211.61	0.53
9,913.00	89.20	178.04	7,789.84	-2,382.53	83.82	2,382.53	0.65
10,084.00	88.95	178.27	7,792.60	-2,553.42	89.32	2,553.42	0.20
10,302.00	89.63	181.07	7,795.30	-2,771.37	90.57	2,771.37	1.32
10,485.00	91.05	182.13	7,794.22	-2,954.29	85.47	2,954.29	0.97
10,668.00	89.32	180.19	7,793.63	-3,137.24	81.76	3,137.24	1.42
10,851.00	90.74	180.12	7,793.53	-3,320.23	81.27	3,320.23	0.78
11,035.00	91.42	180.47	7,790.06	-3,504.20	80.32	3,504.20	0.42
11,212.00	90.31	179.32	7,787.39	-3,681.17	80.64	3,681.17	0.90
11,383.00	89.75	180.03	7,787.30	-3,852.16	81.61	3,852.16	0.53
11,554.00	89.94	180.14	7,787.76	-4,023.16	81.36	4,023.16	0.13
11,726.00	89.81	179.58	7,788.14	-4,195.16	81.78	4,195.16	0.33
11,897.00	88.83	181.55	7,790.17	-4,366.13	80.09	4,366.13	1.29
12,068.00	91.11	182.36	7,790.26	-4,537.02	74.26	4,537.02	1.41
12,240.00	90.99	181.62	7,787.11	-4,708.88	68.29	4,708.88	0.44
12,411.00	89.63	180.05	7,786.18	-4,879.85	65.80	4,879.85	1.21
12,582.00	89.94	179.12	7,786.82	-5,050.85	67.04	5,050.85	0.57

Design Report for Grenemyer 35C-3HZ - Actual Surveys

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)
12,753.00	89.88	179.71	7,787.09	-5,221.84	68.78	5,221.84	0.35
12,925.00	89.51	180.57	7,788.01	-5,393.83	68.36	5,393.83	0.54
13,096.00	90.93	181.28	7,787.35	-5,564.80	65.60	5,564.80	0.93
13,267.00	91.48	180.97	7,783.75	-5,735.73	62.25	5,735.73	0.37
13,438.00	87.96	179.83	7,784.59	-5,906.70	61.05	5,906.70	2.16
13,610.00	87.34	177.66	7,791.64	-6,078.50	64.81	6,078.50	1.31
13,781.00	90.06	180.19	7,795.52	-6,249.39	68.02	6,249.39	2.17
13,953.00	91.36	180.15	7,793.39	-6,421.38	67.51	6,421.38	0.76
14,124.00	91.79	180.03	7,788.69	-6,592.31	67.24	6,592.31	0.26
14,295.00	90.99	180.22	7,784.54	-6,763.26	66.87	6,763.26	0.48
14,467.00	88.52	178.67	7,785.28	-6,935.23	68.53	6,935.23	1.70
14,638.00	90.43	179.70	7,786.85	-7,106.20	70.97	7,106.20	1.27
14,809.00	90.25	180.33	7,785.83	-7,277.19	70.92	7,277.19	0.38
14,980.00	88.77	179.82	7,787.29	-7,448.18	70.70	7,448.18	0.92
15,183.00	89.01	181.06	7,791.23	-7,651.13	69.14	7,651.13	0.62
15,354.00	90.25	179.40	7,792.33	-7,822.12	68.45	7,822.12	1.21
15,526.00	91.20	178.25	7,790.15	-7,994.06	71.98	7,994.06	0.87
15,697.00	89.81	178.78	7,788.65	-8,165.00	76.41	8,165.00	0.87
15,868.00	88.67	179.88	7,790.92	-8,335.96	78.41	8,335.96	0.93
16,040.00	90.59	180.15	7,792.03	-8,507.95	78.36	8,507.95	1.13
16,211.00	90.71	181.05	7,790.09	-8,678.93	76.57	8,678.93	0.53
16,382.00	89.85	179.47	7,789.25	-8,849.92	75.80	8,849.92	1.05
16,554.00	89.17	181.14	7,790.72	-9,021.90	74.88	9,021.90	1.05
16,725.00	90.52	181.39	7,791.18	-9,192.86	71.11	9,192.86	0.80
16,856.00	89.04	179.92	7,791.69	-9,323.84	69.61	9,323.84	1.59
Final MWD Survey @ 16856.00ft							
16,902.00	89.04	179.92	7,792.46	-9,369.83	69.67	9,369.83	0.00
Str. Line Proj to Bit @ 16902' MD :: 7792.46' TVD							

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
961.00	960.98	-0.71	-3.70	Tie-On to Gyro Surveys @ 961.00ft
1,105.00	1,104.98	-0.61	-3.41	First MWD Survey @ 1105.00ft
16,856.00	7,791.69	-9,323.84	69.61	Final MWD Survey @ 16856.00ft
16,902.00	7,792.46	-9,369.83	69.67	Str. Line Proj to Bit @ 16902' MD :: 7792.46' TVD

Vertical Section Information

User	Angle Type	Target	Azimuth (°)	Origin Type	Origin		Start TVD (usft)
					+N/_S (usft)	+E/-W (usft)	
User		No Target (Freehand)	180.00	Slot	0.00	0.00	0.00

Survey tool program

From (usft)	To (usft)	Survey/Plan	Survey Tool
16.00	961.00	MS Energy Gyro Surveys	NS-GYRO-MS
1,105.00	8,370.00	MWD Vertical/Build Surveys	MWD+IFR1+SC
8,542.00	16,856.00	MWD Lateral Surveys	MWD+IFR1+SC

Design Report for Grenemyer 35C-3HZ - Actual Surveys**Casing Details**

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,048.10	1,048.08	9 5/8" Casing Set @ 1048.1' MD :: 1048.08' TVD	9-5/8	13-1/2
8,137.20	7,789.61	7" Casing Set @ 8137.2' MD :: 7789.61' TVD	7	8-3/4

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
Grenemyer 35C-3HZ_!	0.00	0.00	0.00	0.00	0.00	1,248,412.78	3,173,553.54	40.013615	-104.880377
- actual wellpath hits target center									
- Point									
Grenemyer 35C-3HZ_!	0.00	0.00	0.00	0.00	0.00	1,248,412.78	3,173,553.54	40.013615	-104.880377
- actual wellpath hits target center									
- Polygon									
Point 1				0.00	439.80	-1,585.91	1,248,841.47	3,171,964.65	
Point 2				0.00	448.28	1,049.33	1,248,868.36	3,174,599.68	
Point 3				0.00	456.08	3,684.54	1,248,894.58	3,177,234.68	
Point 4				0.00	-2,183.73	3,702.94	1,246,255.05	3,177,271.52	
Point 5				0.00	-4,822.88	3,720.34	1,243,616.18	3,177,307.36	
Point 6				0.00	-4,824.68	1,073.51	1,243,595.88	3,174,660.70	
Point 7				0.00	-4,826.89	-1,572.77	1,243,575.18	3,172,014.59	
Point 8				0.00	-4,824.68	1,073.51	1,243,595.88	3,174,660.70	
Point 9				0.00	-4,822.53	4,140.91	1,243,619.47	3,177,727.90	
Point 10				0.00	-7,209.62	4,154.70	1,241,232.61	3,177,758.37	
Point 11				0.00	-9,848.94	4,169.83	1,238,593.55	3,177,791.94	
Point 12				0.00	-9,852.93	1,519.12	1,238,571.04	3,175,141.42	
Point 13				0.00	-9,856.34	-1,130.85	1,238,549.12	3,172,491.63	
Point 14				0.00	-7,204.06	-1,127.21	1,241,201.27	3,172,476.73	
Point 15				0.00	-4,826.52	-1,124.08	1,243,578.69	3,172,463.25	
Point 16				0.00	-4,826.89	-1,572.77	1,243,575.18	3,172,014.59	
Point 17				0.00	-2,187.59	-1,578.62	1,246,214.29	3,171,990.30	
Grenemyer 35C-3HZ_	0.00	0.00	0.00	0.00	0.00	1,248,412.78	3,173,553.54	40.013615	-104.880377
- actual wellpath hits target center									
- Polygon									
Point 1				0.00	-17.46	-726.61	1,248,390.24	3,172,827.10	
Point 2				0.00	-14.50	193.42	1,248,399.63	3,173,747.05	
Point 3				0.00	-4,825.40	210.38	1,243,589.13	3,173,797.63	
Point 4				0.00	-4,825.08	651.78	1,243,592.54	3,174,239.00	
Point 5				0.00	-9,394.03	653.68	1,239,023.87	3,174,272.82	
Point 6				0.00	-9,395.21	-266.35	1,239,016.26	3,173,352.85	
Point 7				0.00	-4,825.83	-267.92	1,243,585.36	3,173,319.36	
Point 8				0.00	-4,826.17	-709.64	1,243,581.93	3,172,877.66	
Grenemyer 35C-3HZ_	0.00	0.00	7,781.00	-9,394.94	64.73	1,239,018.84	3,173,683.91	39.987825	-104.880146
- actual wellpath misses target center by 28.04usft at 16902.00usft MD (7792.46 TVD, -9369.83 N, 69.67 E)									
- Point									

Directional Difficulty Index

Average Dogleg over Survey:	1.18 °/100usft	Maximum Dogleg over Survey:	15.04 °/100usft at 7,349.00 usft
Net Tortosity applicable to Plans:	0.43 °/100usft	Directional Difficulty Index:	6,615

Audit Info

North Reference Sheet for Sec. 34-T1N-R67W - Grenemyer 35C-3HZ - 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' @ 5063.00usft (Xtreme 22). Northing and Easting are relative to Grenemyer 35C-3HZ

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: 0.99996536

Grid Coordinates of Well: 1,248,412.78 usft N, 3,173,553.54 usft E

Geographical Coordinates of Well: 40° 00' 49.01" N, 104° 52' 49.36" W

Grid Convergence at Surface is: 0.40°

Based upon Minimum Curvature type calculations, at a Measured Depth of 16,902.00usft
the Bottom Hole Displacement is 9,370.09usft in the Direction of 179.57° (True).

Magnetic Convergence at surface is: -8.20° (11 December 2013, , BGGM2013)

