



Anadarko E&P

Weld County

Section 19 T12N, R64W

Resolution FED 12-64-19-30CH

Wellbore #1

Plan: Design #1

Anadarko Planning Report

04 August, 2014



Company:	Anadarko E&P	Local Co-ordinate Reference:	Well Resolution FED 12-64-19-30CH
Project:	Weld County	TVD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Site:	Section 19 T12N, R64W	MD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Well:	Resolution FED 12-64-19-30CH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Project		Weld County	
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	Section 19 T12N, R64W				
Site Position:		Northing:	1,607,802.80 usft	Latitude:	40° 59' 53.839 N
From:	Lat/Long	Easting:	3,249,297.63 usft	Longitude:	104° 35' 48.851 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.58 °

Well		Resolution FED 12-64-19-30CH, SHL LAT: 40 59 53.839 LONG: -104 35 48.851				
Well Position	+N/-S	0.0 usft	Northing:	1,607,802.78 usft	Latitude:	40° 59' 53.839 N
	+E/-W	0.0 usft	Easting:	3,249,297.63 usft	Longitude:	104° 35' 48.851 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,882.0 usft	Ground Level:	5,856.0 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	8/4/2014	8.34	67.46	53,147

Design		Design #1			
Audit Notes:					
Version:		Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:		Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
		0.0	0.0	0.0	181.50

Survey Tool Program		Date	8/4/2014		
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
0.0	17,489.1	Design #1 (Wellbore #1)	MWD	MWD - Standard	

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
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Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,061.0	0.00	0.00	2,061.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
Aquifer (Fox Hills)										
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63

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Well:	Resolution FED 12-64-19-30CH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
9 5/8"										
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63

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MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63

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Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
7,956.0	0.00	0.00	7,956.0	0.0	0.0	0.0	0.00	0.00	1,607,802.78	3,249,297.63
Start DLS 10.00 TFO 181.50										
8,000.0	4.40	181.50	8,000.0	-1.7	0.0	1.7	10.00	10.00	1,607,801.09	3,249,297.60
8,050.0	9.40	181.50	8,049.6	-7.7	-0.2	7.7	10.00	10.00	1,607,795.09	3,249,297.50
8,100.0	14.40	181.50	8,098.5	-18.0	-0.5	18.0	10.00	10.00	1,607,784.79	3,249,297.34
8,150.0	19.40	181.50	8,146.3	-32.5	-0.9	32.5	10.00	10.00	1,607,770.26	3,249,297.10
8,200.0	24.40	181.50	8,192.7	-51.2	-1.3	51.2	10.00	10.00	1,607,751.62	3,249,296.81
8,246.3	29.03	181.50	8,234.0	-71.9	-1.9	72.0	10.00	10.00	1,607,730.83	3,249,296.47
Niobrara										
8,250.0	29.40	181.50	8,237.3	-73.8	-1.9	73.8	10.00	10.00	1,607,729.00	3,249,296.44
8,300.0	34.40	181.50	8,279.7	-100.2	-2.6	100.2	10.00	10.00	1,607,702.59	3,249,296.02
8,350.0	39.40	181.50	8,319.7	-130.2	-3.4	130.2	10.00	10.00	1,607,672.59	3,249,295.54
8,400.0	44.40	181.50	8,356.9	-163.5	-4.3	163.6	10.00	10.00	1,607,639.21	3,249,295.00
8,450.0	49.40	181.50	8,391.0	-200.0	-5.2	200.1	10.00	10.00	1,607,602.72	3,249,294.41
8,500.0	54.40	181.50	8,421.9	-239.3	-6.3	239.4	10.00	10.00	1,607,563.39	3,249,293.78
8,550.0	59.40	181.50	8,449.2	-281.2	-7.4	281.3	10.00	10.00	1,607,521.52	3,249,293.11
8,600.0	64.40	181.50	8,472.7	-325.3	-8.5	325.4	10.00	10.00	1,607,477.43	3,249,292.40
8,650.0	69.40	181.50	8,492.3	-371.2	-9.7	371.4	10.00	10.00	1,607,431.46	3,249,291.66
8,700.0	74.40	181.50	8,507.9	-418.7	-11.0	418.9	10.00	10.00	1,607,383.96	3,249,290.90
8,749.0	79.30	181.50	8,519.0	-466.4	-12.2	466.6	10.00	10.00	1,607,336.24	3,249,290.14
Codell										
8,750.0	79.40	181.50	8,519.2	-467.4	-12.3	467.6	10.00	10.00	1,607,335.28	3,249,290.12
8,800.0	84.40	181.50	8,526.2	-516.9	-13.6	517.0	10.00	10.00	1,607,285.80	3,249,289.33
8,850.0	89.40	181.50	8,528.9	-566.8	-14.9	567.0	10.00	10.00	1,607,235.90	3,249,288.52

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Well:	Resolution FED 12-64-19-30CH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
8,856.0	90.00	181.50	8,529.0	-572.8	-15.0	573.0	10.00	10.00	1,607,229.90	3,249,288.43
Start 8634.1 hold at 8856.0 MD										
8,859.0	90.00	181.50	8,529.0	-575.8	-15.1	576.0	0.00	0.00	1,607,226.90	3,249,288.38
7"										
8,900.0	90.00	181.50	8,529.0	-616.7	-16.2	617.0	0.00	0.00	1,607,185.91	3,249,287.72
9,000.0	90.00	181.50	8,529.0	-716.7	-18.8	717.0	0.00	0.00	1,607,085.92	3,249,286.12
9,100.0	90.00	181.50	8,529.0	-816.7	-21.4	817.0	0.00	0.00	1,606,985.93	3,249,284.51
9,200.0	90.00	181.50	8,529.0	-916.6	-24.1	917.0	0.00	0.00	1,606,885.94	3,249,282.91
9,300.0	90.00	181.50	8,529.0	-1,016.6	-26.7	1,017.0	0.00	0.00	1,606,785.96	3,249,281.30
9,400.0	90.00	181.50	8,529.0	-1,116.6	-29.3	1,117.0	0.00	0.00	1,606,685.97	3,249,279.69
9,500.0	90.00	181.50	8,529.0	-1,216.5	-31.9	1,217.0	0.00	0.00	1,606,585.98	3,249,278.09
9,600.0	90.00	181.50	8,529.0	-1,316.5	-34.6	1,317.0	0.00	0.00	1,606,486.00	3,249,276.48
9,700.0	90.00	181.50	8,529.0	-1,416.5	-37.2	1,417.0	0.00	0.00	1,606,386.01	3,249,274.88
9,800.0	90.00	181.50	8,529.0	-1,516.4	-39.8	1,517.0	0.00	0.00	1,606,286.02	3,249,273.27
9,900.0	90.00	181.50	8,529.0	-1,616.4	-42.4	1,617.0	0.00	0.00	1,606,186.03	3,249,271.67
10,000.0	90.00	181.50	8,529.0	-1,716.4	-45.0	1,717.0	0.00	0.00	1,606,086.05	3,249,270.06
10,100.0	90.00	181.50	8,529.0	-1,816.3	-47.7	1,817.0	0.00	0.00	1,605,986.06	3,249,268.46
10,200.0	90.00	181.50	8,529.0	-1,916.3	-50.3	1,917.0	0.00	0.00	1,605,886.07	3,249,266.85
10,300.0	90.00	181.50	8,529.0	-2,016.3	-52.9	2,017.0	0.00	0.00	1,605,786.09	3,249,265.25
10,400.0	90.00	181.50	8,529.0	-2,116.2	-55.5	2,117.0	0.00	0.00	1,605,686.10	3,249,263.64
10,500.0	90.00	181.50	8,529.0	-2,216.2	-58.2	2,217.0	0.00	0.00	1,605,586.11	3,249,262.03
10,600.0	90.00	181.50	8,529.0	-2,316.2	-60.8	2,317.0	0.00	0.00	1,605,486.12	3,249,260.43
10,700.0	90.00	181.50	8,529.0	-2,416.1	-63.4	2,417.0	0.00	0.00	1,605,386.14	3,249,258.82
10,800.0	90.00	181.50	8,529.0	-2,516.1	-66.0	2,517.0	0.00	0.00	1,605,286.15	3,249,257.22
10,900.0	90.00	181.50	8,529.0	-2,616.1	-68.7	2,617.0	0.00	0.00	1,605,186.16	3,249,255.61
11,000.0	90.00	181.50	8,529.0	-2,716.0	-71.3	2,717.0	0.00	0.00	1,605,086.18	3,249,254.01
11,100.0	90.00	181.50	8,529.0	-2,816.0	-73.9	2,817.0	0.00	0.00	1,604,986.19	3,249,252.40

Company:	Anadarko E&P	Local Co-ordinate Reference:	Well Resolution FED 12-64-19-30CH
Project:	Weld County	TVD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Site:	Section 19 T12N, R64W	MD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Well:	Resolution FED 12-64-19-30CH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Planned Survey

MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
11,200.0	90.00	181.50	8,529.0	-2,916.0	-76.5	2,917.0	0.00	0.00	1,604,886.20	3,249,250.80
11,300.0	90.00	181.50	8,529.0	-3,015.9	-79.2	3,017.0	0.00	0.00	1,604,786.21	3,249,249.19
11,400.0	90.00	181.50	8,529.0	-3,115.9	-81.8	3,117.0	0.00	0.00	1,604,686.23	3,249,247.59
11,500.0	90.00	181.50	8,529.0	-3,215.9	-84.4	3,217.0	0.00	0.00	1,604,586.24	3,249,245.98
11,600.0	90.00	181.50	8,529.0	-3,315.8	-87.0	3,317.0	0.00	0.00	1,604,486.25	3,249,244.38
11,700.0	90.00	181.50	8,529.0	-3,415.8	-89.6	3,417.0	0.00	0.00	1,604,386.27	3,249,242.77
11,800.0	90.00	181.50	8,529.0	-3,515.7	-92.3	3,517.0	0.00	0.00	1,604,286.28	3,249,241.16
11,900.0	90.00	181.50	8,529.0	-3,615.7	-94.9	3,617.0	0.00	0.00	1,604,186.29	3,249,239.56
12,000.0	90.00	181.50	8,529.0	-3,715.7	-97.5	3,717.0	0.00	0.00	1,604,086.30	3,249,237.95
12,100.0	90.00	181.50	8,529.0	-3,815.6	-100.1	3,817.0	0.00	0.00	1,603,986.32	3,249,236.35
12,200.0	90.00	181.50	8,529.0	-3,915.6	-102.8	3,917.0	0.00	0.00	1,603,886.33	3,249,234.74
12,300.0	90.00	181.50	8,529.0	-4,015.6	-105.4	4,017.0	0.00	0.00	1,603,786.34	3,249,233.14
12,400.0	90.00	181.50	8,529.0	-4,115.5	-108.0	4,117.0	0.00	0.00	1,603,686.36	3,249,231.53
12,500.0	90.00	181.50	8,529.0	-4,215.5	-110.6	4,217.0	0.00	0.00	1,603,586.37	3,249,229.93
12,600.0	90.00	181.50	8,529.0	-4,315.5	-113.3	4,317.0	0.00	0.00	1,603,486.38	3,249,228.32
12,700.0	90.00	181.50	8,529.0	-4,415.4	-115.9	4,417.0	0.00	0.00	1,603,386.39	3,249,226.72
12,800.0	90.00	181.50	8,529.0	-4,515.4	-118.5	4,517.0	0.00	0.00	1,603,286.41	3,249,225.11
12,900.0	90.00	181.50	8,529.0	-4,615.4	-121.1	4,617.0	0.00	0.00	1,603,186.42	3,249,223.50
13,000.0	90.00	181.50	8,529.0	-4,715.3	-123.8	4,717.0	0.00	0.00	1,603,086.43	3,249,221.90
13,100.0	90.00	181.50	8,529.0	-4,815.3	-126.4	4,817.0	0.00	0.00	1,602,986.45	3,249,220.29
13,200.0	90.00	181.50	8,529.0	-4,915.3	-129.0	4,917.0	0.00	0.00	1,602,886.46	3,249,218.69
13,300.0	90.00	181.50	8,529.0	-5,015.2	-131.6	5,017.0	0.00	0.00	1,602,786.47	3,249,217.08
13,400.0	90.00	181.50	8,529.0	-5,115.2	-134.3	5,117.0	0.00	0.00	1,602,686.49	3,249,215.48
13,500.0	90.00	181.50	8,529.0	-5,215.2	-136.9	5,217.0	0.00	0.00	1,602,586.50	3,249,213.87
13,600.0	90.00	181.50	8,529.0	-5,315.1	-139.5	5,317.0	0.00	0.00	1,602,486.51	3,249,212.27
13,700.0	90.00	181.50	8,529.0	-5,415.1	-142.1	5,417.0	0.00	0.00	1,602,386.52	3,249,210.66
13,800.0	90.00	181.50	8,529.0	-5,515.1	-144.7	5,517.0	0.00	0.00	1,602,286.54	3,249,209.06

Company:	Anadarko E&P	Local Co-ordinate Reference:	Well Resolution FED 12-64-19-30CH
Project:	Weld County	TVD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Site:	Section 19 T12N, R64W	MD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Well:	Resolution FED 12-64-19-30CH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
13,900.0	90.00	181.50	8,529.0	-5,615.0	-147.4	5,617.0	0.00	0.00	1,602,186.55	3,249,207.45
14,000.0	90.00	181.50	8,529.0	-5,715.0	-150.0	5,717.0	0.00	0.00	1,602,086.56	3,249,205.84
14,100.0	90.00	181.50	8,529.0	-5,815.0	-152.6	5,817.0	0.00	0.00	1,601,986.58	3,249,204.24
14,200.0	90.00	181.50	8,529.0	-5,914.9	-155.2	5,917.0	0.00	0.00	1,601,886.59	3,249,202.63
14,300.0	90.00	181.50	8,529.0	-6,014.9	-157.9	6,017.0	0.00	0.00	1,601,786.60	3,249,201.03
14,400.0	90.00	181.50	8,529.0	-6,114.9	-160.5	6,117.0	0.00	0.00	1,601,686.61	3,249,199.42
14,500.0	90.00	181.50	8,529.0	-6,214.8	-163.1	6,217.0	0.00	0.00	1,601,586.63	3,249,197.82
14,600.0	90.00	181.50	8,529.0	-6,314.8	-165.7	6,317.0	0.00	0.00	1,601,486.64	3,249,196.21
14,700.0	90.00	181.50	8,529.0	-6,414.7	-168.4	6,417.0	0.00	0.00	1,601,386.65	3,249,194.61
14,800.0	90.00	181.50	8,529.0	-6,514.7	-171.0	6,517.0	0.00	0.00	1,601,286.67	3,249,193.00
14,900.0	90.00	181.50	8,529.0	-6,614.7	-173.6	6,617.0	0.00	0.00	1,601,186.68	3,249,191.40
15,000.0	90.00	181.50	8,529.0	-6,714.6	-176.2	6,717.0	0.00	0.00	1,601,086.69	3,249,189.79
15,100.0	90.00	181.50	8,529.0	-6,814.6	-178.9	6,817.0	0.00	0.00	1,600,986.70	3,249,188.18
15,200.0	90.00	181.50	8,529.0	-6,914.6	-181.5	6,917.0	0.00	0.00	1,600,886.72	3,249,186.58
15,300.0	90.00	181.50	8,529.0	-7,014.5	-184.1	7,017.0	0.00	0.00	1,600,786.73	3,249,184.97
15,400.0	90.00	181.50	8,529.0	-7,114.5	-186.7	7,117.0	0.00	0.00	1,600,686.74	3,249,183.37
15,500.0	90.00	181.50	8,529.0	-7,214.5	-189.3	7,217.0	0.00	0.00	1,600,586.76	3,249,181.76
15,600.0	90.00	181.50	8,529.0	-7,314.4	-192.0	7,317.0	0.00	0.00	1,600,486.77	3,249,180.16
15,700.0	90.00	181.50	8,529.0	-7,414.4	-194.6	7,417.0	0.00	0.00	1,600,386.78	3,249,178.55
15,800.0	90.00	181.50	8,529.0	-7,514.4	-197.2	7,517.0	0.00	0.00	1,600,286.79	3,249,176.95
15,900.0	90.00	181.50	8,529.0	-7,614.3	-199.8	7,617.0	0.00	0.00	1,600,186.81	3,249,175.34
16,000.0	90.00	181.50	8,529.0	-7,714.3	-202.5	7,717.0	0.00	0.00	1,600,086.82	3,249,173.74
16,100.0	90.00	181.50	8,529.0	-7,814.3	-205.1	7,817.0	0.00	0.00	1,599,986.83	3,249,172.13
16,200.0	90.00	181.50	8,529.0	-7,914.2	-207.7	7,917.0	0.00	0.00	1,599,886.85	3,249,170.53
16,300.0	90.00	181.50	8,529.0	-8,014.2	-210.3	8,017.0	0.00	0.00	1,599,786.86	3,249,168.92
16,400.0	90.00	181.50	8,529.0	-8,114.2	-213.0	8,117.0	0.00	0.00	1,599,686.87	3,249,167.31
16,500.0	90.00	181.50	8,529.0	-8,214.1	-215.6	8,217.0	0.00	0.00	1,599,586.88	3,249,165.71

Company:	Anadarko E&P	Local Co-ordinate Reference:	Well Resolution FED 12-64-19-30CH
Project:	Weld County	TVD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Site:	Section 19 T12N, R64W	MD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Well:	Resolution FED 12-64-19-30CH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Planned Survey										
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	V. Sec (usft)	DLeg (°/100usft)	Build (°/100usft)	Northing (usft)	Easting (usft)
16,600.0	90.00	181.50	8,529.0	-8,314.1	-218.2	8,317.0	0.00	0.00	1,599,486.90	3,249,164.10
16,700.0	90.00	181.50	8,529.0	-8,414.1	-220.8	8,417.0	0.00	0.00	1,599,386.91	3,249,162.50
16,800.0	90.00	181.50	8,529.0	-8,514.0	-223.5	8,517.0	0.00	0.00	1,599,286.92	3,249,160.89
16,900.0	90.00	181.50	8,529.0	-8,614.0	-226.1	8,617.0	0.00	0.00	1,599,186.94	3,249,159.29
17,000.0	90.00	181.50	8,529.0	-8,714.0	-228.7	8,717.0	0.00	0.00	1,599,086.95	3,249,157.68
17,100.0	90.00	181.50	8,529.0	-8,813.9	-231.3	8,817.0	0.00	0.00	1,598,986.96	3,249,156.08
17,200.0	90.00	181.50	8,529.0	-8,913.9	-233.9	8,917.0	0.00	0.00	1,598,886.97	3,249,154.47
17,300.0	90.00	181.50	8,529.0	-9,013.9	-236.6	9,017.0	0.00	0.00	1,598,786.99	3,249,152.87
17,400.0	90.00	181.50	8,529.0	-9,113.8	-239.2	9,117.0	0.00	0.00	1,598,687.00	3,249,151.26
17,490.1	90.00	181.50	8,529.0	-9,203.9	-241.6	9,207.1	0.00	0.00	1,598,596.91	3,249,149.81
TD at 17490.1 - 12-64-19-30CH TGT										

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
2,500.0	2,500.0	9 5/8"	9-5/8	12-1/4	
8,859.0	8,529.0	7"	7	7-1/2	

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
8,246.3	8,234.0	Niobrara		0.00		
8,749.0	8,519.0	Codell		0.00		
2,061.0	2,061.0	Aquifer (Fox Hills)		0.00		

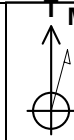
Company:	Anadarko E&P	Local Co-ordinate Reference:	Well Resolution FED 12-64-19-30CH
Project:	Weld County	TVD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Site:	Section 19 T12N, R64W	MD Reference:	Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB
Well:	Resolution FED 12-64-19-30CH	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Design #1	Database:	MasterDB

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,956.0	7,956.0	0.0	0.0	Start DLS 10.00 TFO 181.50
8,856.0	8,529.0	-572.8	-15.0	Start 8634.1 hold at 8856.0 MD
17,490.1	8,529.0	-9,203.9	-241.6	TD at 17490.1

Checked By: _____	Approved By: _____	Date: _____
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Well Name: Resolution FED 12-64-19-30CH
 Surface Location: Section 19 T12N, R64W
 North American Datum 1983, US State Plane 1983, Colorado Northern Zone
 Ground Elevation: 5856.0
 +N/-S 0.0 +E/-W 0.0 Northing 1607802.78 Easting 3249297.63 Latitude 40° 59' 53.839 N Longitude 104° 35' 48.851 W
 EST KB Resolution FED 12-64-19-30CH @ 5882.0usft (EST KB)

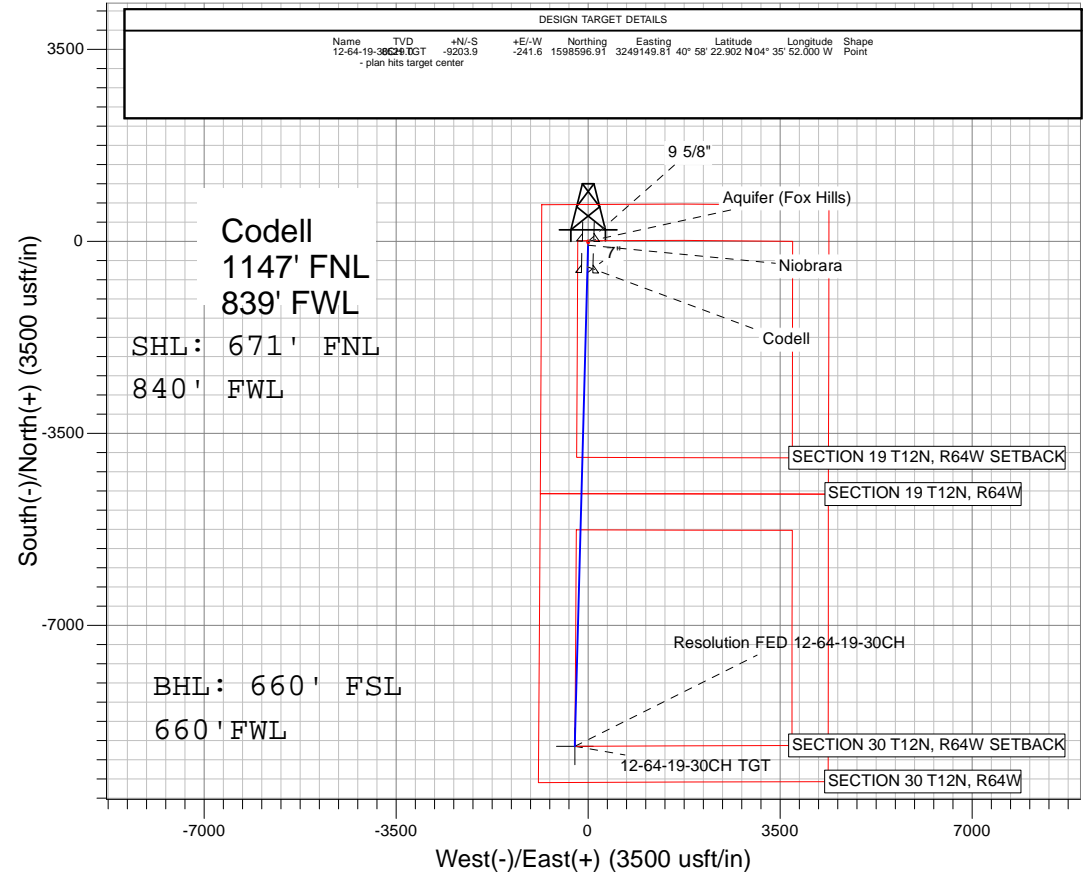
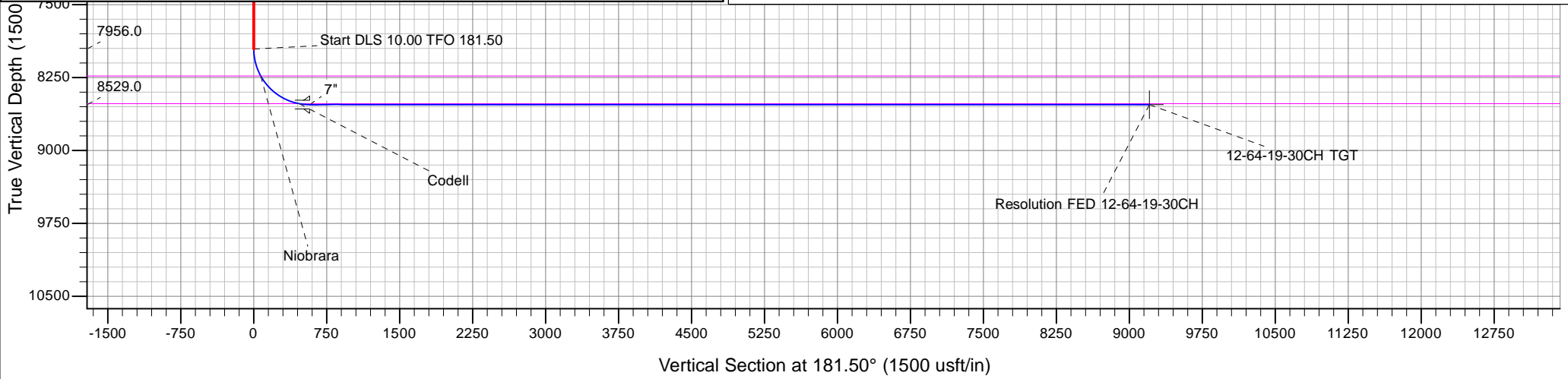
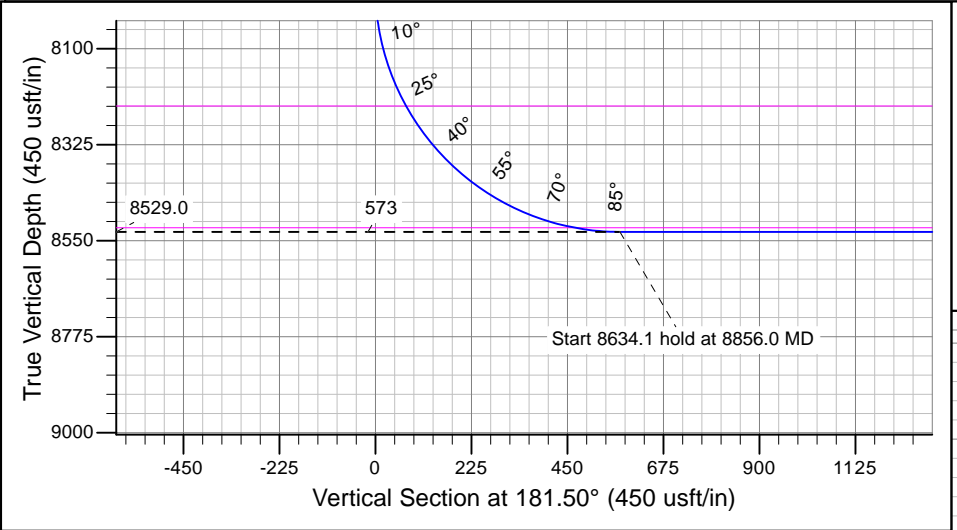


Azimuths to True North
 Magnetic North: 8.34°
 Magnetic Field
 Strength: 53147.3snT
 Dip Angle: 67.46°
 Date: 8/4/2014
 Model: IGRF200510

Section 19 T12N, R64W
 Resolution FED 12-64-19-30CH
 Design #1
 11:08, August 04 2014

SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	7956.0	0.00	0.00	7956.0	0.0	0.0	0.00	0.00	0.0	
3	8556.0	90.00	181.50	8529.0	-572.8	-15.0	10.00	181.50	573.0	
4	417490.1	90.00	181.50	8529.0	-9203.9	-241.6	0.00	0.00	9207.1	12-64-19-30CH TGT

FORMATION TOP DETAILS				
TVDPPath	MDPath	Formation	DipAngle	DipDir
2061.0	2061.0	Aquifer (Fox Hills)	0.00	
8234.0	8246.3	Niobrara	0.00	
8519.0	8749.0	Codell	0.00	



T12N, R64W

NW. COR.
SEC. 19, T12N, R64W
FOUND ALUM. CAP
L.S. NO. 9911

NE. COR.
SEC. 19, T12N, R64W
FOUND STONE

S 89°11'42" W 2576.04' (M)

S 89°58'13" W 2658.90' (M)

N. 1/4 COR.
SEC. 19, T12N, R64W
FOUND STONE

**RESOLUTION FED
12-64-19-30CH**
SURFACE LOCATION

SURFACE LOCATION
GROUND ELEVATION= 5870.6'
NAD 83
LATITUDE= 40.998289°
LONGITUDE= -104.596903°

LATITUDE= 40°59'53.839"
LONGITUDE= -104°35'48.851"

BOTTOM HOLE LOCATION
NAD 83
LATITUDE= 40.973028°
LONGITUDE= -104.597778°

LATITUDE= 40°58'22.902"
LONGITUDE= -104°35'52.000"

19

S 89°34'04" W
2586.08' (C)

S 89°34'04" W
2657.29' (C)

SURFACE LOCATION
NAD 27
LATITUDE= 40.998306°
LONGITUDE= -104.596385°

LATITUDE= 40°59'53.902"
LONGITUDE= -104°35'46.984"

BOTTOM HOLE LOCATION
NAD 27
LATITUDE= 40.973046°
LONGITUDE= -104.597260°

LATITUDE= 40°58'22.965"
LONGITUDE= -104°35'50.134"

W. 1/4 COR.
SEC. 19, T12N, R64W
FOUND ALUM. CAP
L.S. NO. 9911

S 00°55'12" W 9207' GRID
S 01°30'11" W TRUE
S 06°54'48" E MAGNETIC

SW. COR.
SEC. 19, T12N, R64W
FOUND ALUM. CAP
L.S. NO. 9911

S. 1/4 COR.
SEC. 19, T12N, R64W
FOUND ALUM. CAP
L.S. NO. 16154

SE. COR.
SEC. 19, T12N, R64W
FOUND STONE

WELL BORE CONTINUES
INTO SECTION 30

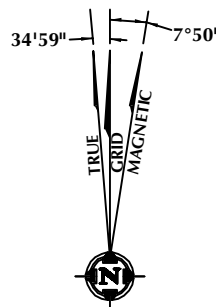
MATCH LINE
SEE SHEET 2

CERTIFICATE OF SURVEYOR:

THIS IS TO CERTIFY THAT THE ABOVE PLAT WAS PREPARED FROM FIELD NOTES OF ACTUAL SURVEY MADE BY ME OR UNDER MY SUPERVISION AND THAT THE SAME ARE TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. THIS CERTIFICATE DOES NOT REPRESENT A LAND SURVEY PLAT OR IMPROVEMENT SURVEY PLAT AS DEFINED BY C.S. 38-51-102 AND CANNOT BE RELIED UPON TO DETERMINE OWNERSHIP.

Benjamin J. Reenders
BENJAMIN J. REENDERS
PROFESSIONAL LAND SURVEYOR
COLORADO REGISTRATION NUMBER 48363
7/29/14

NOTICE:
ACCORDING TO COLORADO STATE LAW YOU MUST COMMENCE ANY LEGAL ACTION BASED UPON ANY DEFECT IN THIS SURVEY WITHIN THREE YEARS AFTER YOU FIRST DISCOVER SUCH DEFECT. IN NO EVENT MAY ANY ACTION BASED UPON ANY DEFECT IN THIS SURVEY BE COMMENCED MORE THAN TEN YEARS FROM THE DATE ON THE CERTIFICATION SHOWN HEREON.



NOTE:
MAGNETIC NORTH IS CURRENT AS OF 7/25/2014.
MAGNETIC NORTH CHANGES WEST 0°08' PER YEAR.

NOTES:

- ▲ INDICATES FOUND SECTION CORNER
- INDICATES CALCULATED CORNER
- ELEVATION BASED ON NAVD88 (GEOID09)
- BASIS OF BEARING DERIVED FROM COLORADO COORDINATE SYSTEM 1983 NORTH ZONE UNLESS OTHERWISE NOTED.
- ALL MEASURED DISTANCES ARE GRID.
COMBINED SCALE FACTOR: .99976561
- OPERATOR: NICK ROADIFER / PDOP = 1.3
- SEE ADDENDUM TO WELL LOCATION CERTIFICATE FOR EXISTING IMPROVEMENTS WITHIN 500' OF THE WELL PAD.
- WELL FOOTAGES ARE MEASURED AT RIGHT ANGLES TO THE SECTION LINES.
- THE BOTTOM OF HOLE BEARS S00°55'12"W 9207' FROM THE SURFACE LOCATION.



WELL PAD - RESOLUTION FED 12-64-19-30CH

RESOLUTION FED 12-64-19-30CH
WELL LOCATION CERTIFICATE
671' FNL & 848' FWL NWNW (SURFACE)
LOCATED IN SECTION 19
660' FSL & 660' FWL SWSW (BOTTOM)
LOCATED IN SECTION 30
T12N, R64W, 6TH P.M.
WELD COUNTY, COLORADO

**Anadarko E&P
Onshore LLC**
1099 18th Street
Denver, Colorado 80202



CONSULTING, LLC



SHERIDAN OFFICE
2155 North Main Street
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Phone 970-776-4331

DRAFTED BY:	LMO	CHECKED BY:	BJR	SHEET NO:
DATE DRAFTED:	7/29/14	DATE SURVEYED:	7/23/14	1
REVISED:		FILE NAME:	14-52	1 OF 2



Benjamin J. Reenders
 BENJAMIN J. REENDERS
 PROFESSIONAL LAND SURVEYOR
 COLORADO REGISTRATION NUMBER 48305
 7/29/14

1.  INDICATES FOUND SECTION CORNER
2.  INDICATES CALCULATED CORNER
3. ELEVATION BASED ON NAVD88 (GEOID09)
4. BASIS OF BEARING DERIVED FROM COLORADO COORDINATE SYSTEM 1983 NORTH ZONE UNLESS OTHERWISE NOTED.
5. ALL MEASURED DISTANCES ARE GRID.
COMBINED SCALE FACTOR: .99976561
6. OPERATOR: NICK ROADIFER / PDOP = 1.3
7. SEE ADDENDUM TO WELL LOCATION CERTIFICATE FOR EXISTING IMPROVEMENTS WITHIN 500' OF THE WELL PAD.
8. WELL FOOTAGES ARE MEASURED AT RIGHT ANGLES TO THE SECTION LINES.
9. THE BOTTOM OF HOLE BEARS S00°55'12"W 9207' FROM THE SURFACE LOCATION.

RESOLUTION FED 12-64-19-30CH
WELL LOCATION CERTIFICATE
671' FNL & 848' FWL NWNW (SURFACE)
LOCATED IN SECTION 19
660' FSL & 660' FWL SWSW (BOTTOM)
LOCATED IN SECTION 30
T12N, R64W, 6TH P.M.
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