

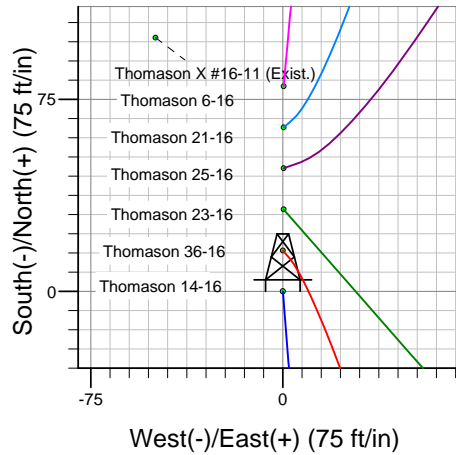
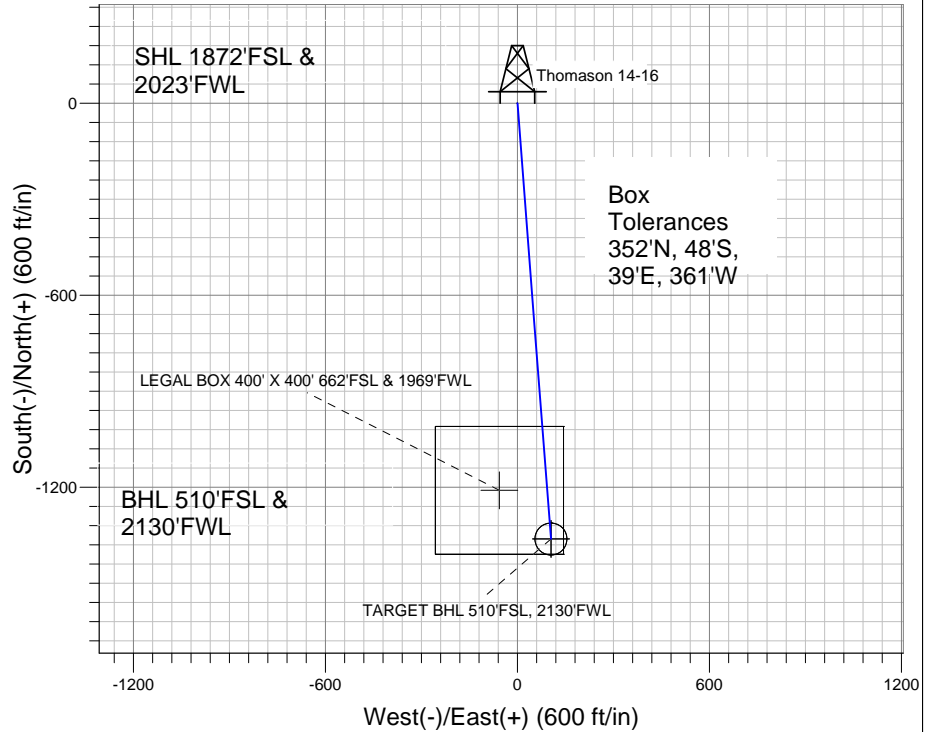
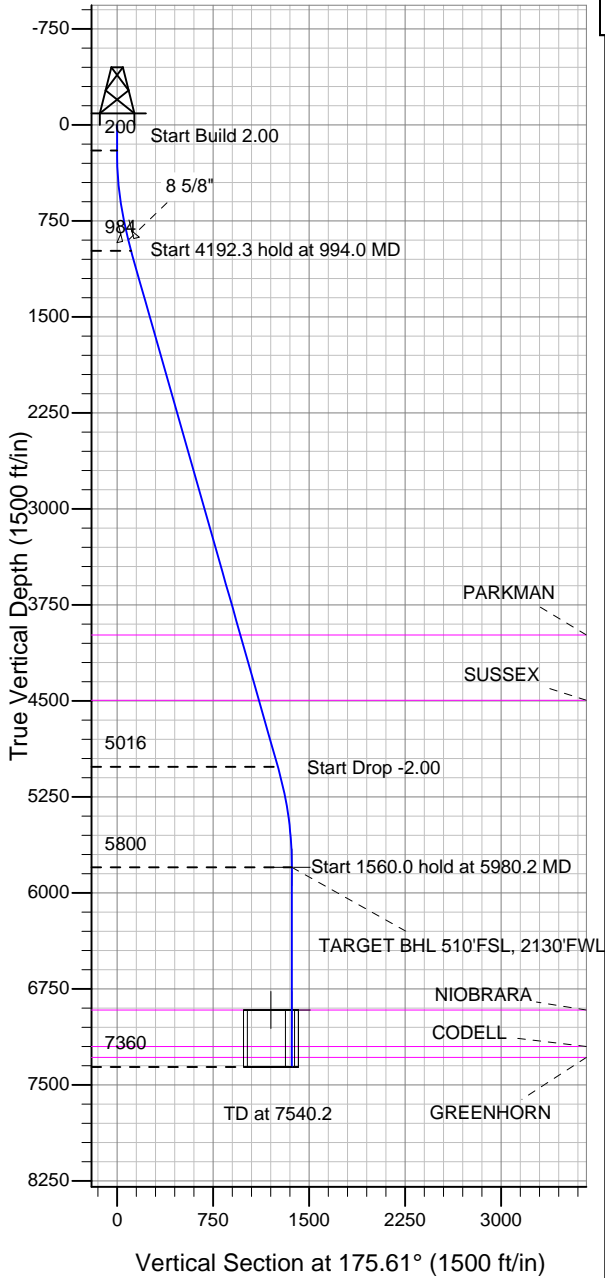
# ENSIGN

## Directional

### Well Name: Thomason 14-16

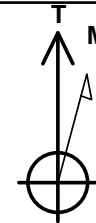
Surface Location: Thomason 11-16 Pad Sec.16-T2N-R65W  
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone  
 Ground Elevation: 4885.0  
 +N/-S +E/-W Northing Easting Latitude Longitude Slot  
 0.0 0.0 1293691.43 3231729.54 40.136604 -104.671176  
 Original Well Elev WELL @ 4899.0ft (Original Well Elev)

### Anadarko, Weld County CO



#### FORMATION TOP DETAILS

TVDPPath	MDPath	Formation
3985.0	4114.2	PARKMAN
4495.0	4644.4	SUSSEX
6915.0	7095.2	NIOBRARA
7200.0	7380.2	CODELL
7285.0	7465.2	GREENHORN



Azimuths to True North  
 Magnetic North: 8.83°  
 Magnetic Field  
 Strength: 53033.2snT  
 Dip Angle: 66.86°  
 Date: 3/1/2011  
 Model: IGRF2010

Well Name: Thomason 14-16 Lat/Long: 40.136604 -104.671176

#### WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 510'FSL, 2130'FWL	5800.0	-1361.7	104.6	40.132866	-104.670802	Point
LEGAL BOX 400' X 400' 662'FSL & 1969'FWL	6915.0	-1209.7	-56.4	40.133283	-104.671378	Rectangle (Sides: L400.0 W400.0)
TARGET CIRCLE 510'FSL & 2130'FWL	6915.0	-1361.7	104.6	40.132866	-104.670802	Circle (Radius: 50.0)

#### SECTION DETAILS

ec	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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	994.0	15.88	175.61	983.9	-109.0	8.4	2.00	175.61	109.3	
4	5186.2	15.88	175.61	5016.1	-1252.7	96.2	0.00	0.00	1256.4	
5	5980.2	0.00	0.00	5800.0	-1361.7	104.6	2.00	180.00	1365.7	TARGET BHL 510'FSL, 2130'FWL
6	7540.2	0.00	0.00	7360.0	-1361.7	104.6	0.00	0.00	1365.7	

#### CASING DETAILS

TVD	MD	Name	Size
900.0	907.2	8 5/8"	8-5/8

Thomason 11-16 Pad Sec.16-T2N-R65W  
 Thomason 14-16  
 Plan #1 (3-01-11)  
 17:35, March 10 2011



## **Anadarko, Weld County CO**

**SEC.16-T2N-R65W**

**Thomason 11-16 Pad Sec.16-T2N-R65W**

**Thomason 14-16**

**Wellbore #1**

**Plan: Plan #1 (3-01-11)**

## **Standard Planning Report**

**10 March, 2011**



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Company:</b>	Anadarko, Weld County CO	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (3-01-11)		

<b>Project</b>	SEC.16-T2N-R65W, Weld County, Colorado		
<b>Map System:</b>	US State Plane 1983	<b>System Datum:</b>	Mean Sea Level
<b>Geo Datum:</b>	North American Datum 1983		Using Well Reference Point
<b>Map Zone:</b>	Colorado Northern Zone		Using geodetic scale factor

Site		Thomason 11-16 Pad Sec.16-T2N-R65W			
Site Position:		Northing:	1,293,771.59ft	Latitude:	40.136824
From:	Lat/Long	Easting:	3,231,729.07ft	Longitude:	-104.671175
Position Uncertainty:	0.0 ft	Slot Radius:	"	Grid Convergence:	0.54 °

Well	Thomason 14-16					
Well Position	+N/-S	-80.2 ft	Northing:	1,293,691.43 ft	Latitude:	40.136604
	+E/-W	-0.3 ft	Easting:	3,231,729.54 ft	Longitude:	-104.671176
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,885.0 ft

<b>Wellbore</b>	Wellbore #1				
<b>Magnetics</b>	<b>Model Name</b>	<b>Sample Date</b>	<b>Declination (°)</b>	<b>Dip Angle (°)</b>	<b>Field Strength (nT)</b>
	IGRF2010	3/1/2011	8.83	66.86	53,033

<b>Design</b>	Plan #1 (3-01-11)			
<b>Audit Notes:</b>				
<b>Version:</b>	<b>Phase:</b>	PROTOTYPE	<b>Tie On Depth:</b>	0.0
<b>Vertical Section:</b>	<b>Depth From (TVD) (ft)</b>	<b>+N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Direction (°)</b>
	0.0	0.0	0.0	175.61

<b>Plan Sections</b>										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
994.0	15.88	175.61	983.9	-109.0	8.4	2.00	2.00	0.00	175.61	
5,186.2	15.88	175.61	5,016.1	-1,252.7	96.2	0.00	0.00	0.00	0.00	
5,980.2	0.00	0.00	5,800.0	-1,361.7	104.6	2.00	-2.00	0.00	180.00	TARGET BHL 510'I
7,540.2	0.00	0.00	7,360.0	-1,361.7	104.6	0.00	0.00	0.00	0.00	

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Company:</b>	Anadarko, Weld County CO	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (3-01-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
40.0	0.00	0.00	40.0	0.0	0.0	0.0	0.00	0.00	0.00
80.0	0.00	0.00	80.0	0.0	0.0	0.0	0.00	0.00	0.00
120.0	0.00	0.00	120.0	0.0	0.0	0.0	0.00	0.00	0.00
160.0	0.00	0.00	160.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
240.0	0.80	175.61	240.0	-0.3	0.0	0.3	2.00	2.00	0.00
280.0	1.60	175.61	280.0	-1.1	0.1	1.1	2.00	2.00	0.00
320.0	2.40	175.61	320.0	-2.5	0.2	2.5	2.00	2.00	0.00
360.0	3.20	175.61	359.9	-4.5	0.3	4.5	2.00	2.00	0.00
400.0	4.00	175.61	399.8	-7.0	0.5	7.0	2.00	2.00	0.00
440.0	4.80	175.61	439.7	-10.0	0.8	10.0	2.00	2.00	0.00
480.0	5.60	175.61	479.6	-13.6	1.0	13.7	2.00	2.00	0.00
520.0	6.40	175.61	519.3	-17.8	1.4	17.9	2.00	2.00	0.00
560.0	7.20	175.61	559.1	-22.5	1.7	22.6	2.00	2.00	0.00
600.0	8.00	175.61	598.7	-27.8	2.1	27.9	2.00	2.00	0.00
640.0	8.80	175.61	638.3	-33.6	2.6	33.7	2.00	2.00	0.00
680.0	9.60	175.61	677.8	-40.0	3.1	40.1	2.00	2.00	0.00
720.0	10.40	175.61	717.1	-46.9	3.6	47.1	2.00	2.00	0.00
760.0	11.20	175.61	756.4	-54.4	4.2	54.6	2.00	2.00	0.00
800.0	12.00	175.61	795.6	-62.4	4.8	62.6	2.00	2.00	0.00
840.0	12.80	175.61	834.7	-71.0	5.5	71.2	2.00	2.00	0.00
880.0	13.60	175.61	873.6	-80.1	6.2	80.3	2.00	2.00	0.00
907.2	14.14	175.61	900.0	-86.6	6.6	86.8	2.00	2.00	0.00
<b>8 5/8"</b>									
920.0	14.40	175.61	912.4	-89.7	6.9	90.0	2.00	2.00	0.00
960.0	15.20	175.61	951.1	-99.9	7.7	100.2	2.00	2.00	0.00
994.0	15.88	175.61	983.9	-109.0	8.4	109.3	2.00	2.00	0.00
1,000.0	15.88	175.61	989.6	-110.6	8.5	111.0	0.00	0.00	0.00
1,040.0	15.88	175.61	1,028.1	-121.6	9.3	121.9	0.00	0.00	0.00
1,080.0	15.88	175.61	1,066.6	-132.5	10.2	132.9	0.00	0.00	0.00
1,120.0	15.88	175.61	1,105.1	-143.4	11.0	143.8	0.00	0.00	0.00
1,160.0	15.88	175.61	1,143.5	-154.3	11.8	154.7	0.00	0.00	0.00
1,200.0	15.88	175.61	1,182.0	-165.2	12.7	165.7	0.00	0.00	0.00
1,240.0	15.88	175.61	1,220.5	-176.1	13.5	176.6	0.00	0.00	0.00
1,280.0	15.88	175.61	1,259.0	-187.0	14.4	187.6	0.00	0.00	0.00
1,320.0	15.88	175.61	1,297.4	-197.9	15.2	198.5	0.00	0.00	0.00
1,360.0	15.88	175.61	1,335.9	-208.9	16.0	209.5	0.00	0.00	0.00
1,400.0	15.88	175.61	1,374.4	-219.8	16.9	220.4	0.00	0.00	0.00
1,440.0	15.88	175.61	1,412.9	-230.7	17.7	231.4	0.00	0.00	0.00
1,480.0	15.88	175.61	1,451.3	-241.6	18.6	242.3	0.00	0.00	0.00
1,520.0	15.88	175.61	1,489.8	-252.5	19.4	253.3	0.00	0.00	0.00
1,560.0	15.88	175.61	1,528.3	-263.4	20.2	264.2	0.00	0.00	0.00
1,600.0	15.88	175.61	1,566.7	-274.3	21.1	275.1	0.00	0.00	0.00
1,640.0	15.88	175.61	1,605.2	-285.2	21.9	286.1	0.00	0.00	0.00
1,680.0	15.88	175.61	1,643.7	-296.2	22.7	297.0	0.00	0.00	0.00
1,720.0	15.88	175.61	1,682.2	-307.1	23.6	308.0	0.00	0.00	0.00
1,760.0	15.88	175.61	1,720.6	-318.0	24.4	318.9	0.00	0.00	0.00
1,800.0	15.88	175.61	1,759.1	-328.9	25.3	329.9	0.00	0.00	0.00
1,840.0	15.88	175.61	1,797.6	-339.8	26.1	340.8	0.00	0.00	0.00
1,880.0	15.88	175.61	1,836.1	-350.7	26.9	351.8	0.00	0.00	0.00
1,920.0	15.88	175.61	1,874.5	-361.6	27.8	362.7	0.00	0.00	0.00
1,960.0	15.88	175.61	1,913.0	-372.5	28.6	373.6	0.00	0.00	0.00
2,000.0	15.88	175.61	1,951.5	-383.5	29.4	384.6	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Company:</b>	Anadarko, Weld County CO	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (3-01-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
2,040.0	15.88	175.61	1,990.0	-394.4	30.3	395.5	0.00	0.00	0.00
2,080.0	15.88	175.61	2,028.4	-405.3	31.1	406.5	0.00	0.00	0.00
2,120.0	15.88	175.61	2,066.9	-416.2	32.0	417.4	0.00	0.00	0.00
2,160.0	15.88	175.61	2,105.4	-427.1	32.8	428.4	0.00	0.00	0.00
2,200.0	15.88	175.61	2,143.9	-438.0	33.6	439.3	0.00	0.00	0.00
2,240.0	15.88	175.61	2,182.3	-448.9	34.5	450.3	0.00	0.00	0.00
2,280.0	15.88	175.61	2,220.8	-459.8	35.3	461.2	0.00	0.00	0.00
2,320.0	15.88	175.61	2,259.3	-470.8	36.2	472.1	0.00	0.00	0.00
2,360.0	15.88	175.61	2,297.7	-481.7	37.0	483.1	0.00	0.00	0.00
2,400.0	15.88	175.61	2,336.2	-492.6	37.8	494.0	0.00	0.00	0.00
2,440.0	15.88	175.61	2,374.7	-503.5	38.7	505.0	0.00	0.00	0.00
2,480.0	15.88	175.61	2,413.2	-514.4	39.5	515.9	0.00	0.00	0.00
2,520.0	15.88	175.61	2,451.6	-525.3	40.3	526.9	0.00	0.00	0.00
2,560.0	15.88	175.61	2,490.1	-536.2	41.2	537.8	0.00	0.00	0.00
2,600.0	15.88	175.61	2,528.6	-547.1	42.0	548.8	0.00	0.00	0.00
2,640.0	15.88	175.61	2,567.1	-558.1	42.9	559.7	0.00	0.00	0.00
2,680.0	15.88	175.61	2,605.5	-569.0	43.7	570.7	0.00	0.00	0.00
2,720.0	15.88	175.61	2,644.0	-579.9	44.5	581.6	0.00	0.00	0.00
2,760.0	15.88	175.61	2,682.5	-590.8	45.4	592.5	0.00	0.00	0.00
2,800.0	15.88	175.61	2,721.0	-601.7	46.2	603.5	0.00	0.00	0.00
2,840.0	15.88	175.61	2,759.4	-612.6	47.0	614.4	0.00	0.00	0.00
2,880.0	15.88	175.61	2,797.9	-623.5	47.9	625.4	0.00	0.00	0.00
2,920.0	15.88	175.61	2,836.4	-634.5	48.7	636.3	0.00	0.00	0.00
2,960.0	15.88	175.61	2,874.8	-645.4	49.6	647.3	0.00	0.00	0.00
3,000.0	15.88	175.61	2,913.3	-656.3	50.4	658.2	0.00	0.00	0.00
3,040.0	15.88	175.61	2,951.8	-667.2	51.2	669.2	0.00	0.00	0.00
3,080.0	15.88	175.61	2,990.3	-678.1	52.1	680.1	0.00	0.00	0.00
3,120.0	15.88	175.61	3,028.7	-689.0	52.9	691.0	0.00	0.00	0.00
3,160.0	15.88	175.61	3,067.2	-699.9	53.8	702.0	0.00	0.00	0.00
3,200.0	15.88	175.61	3,105.7	-710.8	54.6	712.9	0.00	0.00	0.00
3,240.0	15.88	175.61	3,144.2	-721.8	55.4	723.9	0.00	0.00	0.00
3,280.0	15.88	175.61	3,182.6	-732.7	56.3	734.8	0.00	0.00	0.00
3,320.0	15.88	175.61	3,221.1	-743.6	57.1	745.8	0.00	0.00	0.00
3,360.0	15.88	175.61	3,259.6	-754.5	57.9	756.7	0.00	0.00	0.00
3,400.0	15.88	175.61	3,298.1	-765.4	58.8	767.7	0.00	0.00	0.00
3,440.0	15.88	175.61	3,336.5	-776.3	59.6	778.6	0.00	0.00	0.00
3,480.0	15.88	175.61	3,375.0	-787.2	60.5	789.5	0.00	0.00	0.00
3,520.0	15.88	175.61	3,413.5	-798.1	61.3	800.5	0.00	0.00	0.00
3,560.0	15.88	175.61	3,452.0	-809.1	62.1	811.4	0.00	0.00	0.00
3,600.0	15.88	175.61	3,490.4	-820.0	63.0	822.4	0.00	0.00	0.00
3,640.0	15.88	175.61	3,528.9	-830.9	63.8	833.3	0.00	0.00	0.00
3,680.0	15.88	175.61	3,567.4	-841.8	64.6	844.3	0.00	0.00	0.00
3,720.0	15.88	175.61	3,605.8	-852.7	65.5	855.2	0.00	0.00	0.00
3,760.0	15.88	175.61	3,644.3	-863.6	66.3	866.2	0.00	0.00	0.00
3,800.0	15.88	175.61	3,682.8	-874.5	67.2	877.1	0.00	0.00	0.00
3,840.0	15.88	175.61	3,721.3	-885.4	68.0	888.0	0.00	0.00	0.00
3,880.0	15.88	175.61	3,759.7	-896.4	68.8	899.0	0.00	0.00	0.00
3,920.0	15.88	175.61	3,798.2	-907.3	69.7	909.9	0.00	0.00	0.00
3,960.0	15.88	175.61	3,836.7	-918.2	70.5	920.9	0.00	0.00	0.00
4,000.0	15.88	175.61	3,875.2	-929.1	71.4	931.8	0.00	0.00	0.00
4,040.0	15.88	175.61	3,913.6	-940.0	72.2	942.8	0.00	0.00	0.00
4,080.0	15.88	175.61	3,952.1	-950.9	73.0	953.7	0.00	0.00	0.00
4,114.2	15.88	175.61	3,985.0	-960.2	73.7	963.1	0.00	0.00	0.00

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Company:</b>	Anadarko, Weld County CO	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (3-01-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
<b>PARKMAN</b>									
4,120.0	15.88	175.61	3,990.6	-961.8	73.9	964.7	0.00	0.00	0.00
4,160.0	15.88	175.61	4,029.1	-972.7	74.7	975.6	0.00	0.00	0.00
4,200.0	15.88	175.61	4,067.5	-983.7	75.5	986.6	0.00	0.00	0.00
4,240.0	15.88	175.61	4,106.0	-994.6	76.4	997.5	0.00	0.00	0.00
4,280.0	15.88	175.61	4,144.5	-1,005.5	77.2	1,008.4	0.00	0.00	0.00
4,320.0	15.88	175.61	4,182.9	-1,016.4	78.1	1,019.4	0.00	0.00	0.00
4,360.0	15.88	175.61	4,221.4	-1,027.3	78.9	1,030.3	0.00	0.00	0.00
4,400.0	15.88	175.61	4,259.9	-1,038.2	79.7	1,041.3	0.00	0.00	0.00
4,440.0	15.88	175.61	4,298.4	-1,049.1	80.6	1,052.2	0.00	0.00	0.00
4,480.0	15.88	175.61	4,336.8	-1,060.0	81.4	1,063.2	0.00	0.00	0.00
4,520.0	15.88	175.61	4,375.3	-1,071.0	82.2	1,074.1	0.00	0.00	0.00
4,560.0	15.88	175.61	4,413.8	-1,081.9	83.1	1,085.1	0.00	0.00	0.00
4,600.0	15.88	175.61	4,452.3	-1,092.8	83.9	1,096.0	0.00	0.00	0.00
4,640.0	15.88	175.61	4,490.7	-1,103.7	84.8	1,106.9	0.00	0.00	0.00
4,644.4	15.88	175.61	4,495.0	-1,104.9	84.9	1,108.2	0.00	0.00	0.00
<b>SUSSEX</b>									
4,680.0	15.88	175.61	4,529.2	-1,114.6	85.6	1,117.9	0.00	0.00	0.00
4,720.0	15.88	175.61	4,567.7	-1,125.5	86.4	1,128.8	0.00	0.00	0.00
4,760.0	15.88	175.61	4,606.2	-1,136.4	87.3	1,139.8	0.00	0.00	0.00
4,800.0	15.88	175.61	4,644.6	-1,147.3	88.1	1,150.7	0.00	0.00	0.00
4,840.0	15.88	175.61	4,683.1	-1,158.3	89.0	1,161.7	0.00	0.00	0.00
4,880.0	15.88	175.61	4,721.6	-1,169.2	89.8	1,172.6	0.00	0.00	0.00
4,920.0	15.88	175.61	4,760.1	-1,180.1	90.6	1,183.6	0.00	0.00	0.00
4,960.0	15.88	175.61	4,798.5	-1,191.0	91.5	1,194.5	0.00	0.00	0.00
5,000.0	15.88	175.61	4,837.0	-1,201.9	92.3	1,205.4	0.00	0.00	0.00
5,040.0	15.88	175.61	4,875.5	-1,212.8	93.1	1,216.4	0.00	0.00	0.00
5,080.0	15.88	175.61	4,913.9	-1,223.7	94.0	1,227.3	0.00	0.00	0.00
5,120.0	15.88	175.61	4,952.4	-1,234.6	94.8	1,238.3	0.00	0.00	0.00
5,160.0	15.88	175.61	4,990.9	-1,245.6	95.7	1,249.2	0.00	0.00	0.00
5,186.2	15.88	175.61	5,016.1	-1,252.7	96.2	1,256.4	0.00	0.00	0.00
5,200.0	15.60	175.61	5,029.4	-1,256.4	96.5	1,260.1	2.00	-2.00	0.00
5,240.0	14.80	175.61	5,068.0	-1,266.9	97.3	1,270.6	2.00	-2.00	0.00
5,280.0	14.00	175.61	5,106.7	-1,276.8	98.1	1,280.6	2.00	-2.00	0.00
5,320.0	13.20	175.61	5,145.6	-1,286.2	98.8	1,290.0	2.00	-2.00	0.00
5,360.0	12.40	175.61	5,184.6	-1,295.0	99.5	1,298.9	2.00	-2.00	0.00
5,400.0	11.60	175.61	5,223.7	-1,303.3	100.1	1,307.2	2.00	-2.00	0.00
5,440.0	10.80	175.61	5,263.0	-1,311.1	100.7	1,314.9	2.00	-2.00	0.00
5,480.0	10.00	175.61	5,302.3	-1,318.3	101.2	1,322.2	2.00	-2.00	0.00
5,520.0	9.20	175.61	5,341.7	-1,324.9	101.8	1,328.8	2.00	-2.00	0.00
5,560.0	8.40	175.61	5,381.3	-1,331.0	102.2	1,335.0	2.00	-2.00	0.00
5,600.0	7.60	175.61	5,420.9	-1,336.6	102.6	1,340.5	2.00	-2.00	0.00
5,640.0	6.80	175.61	5,460.6	-1,341.6	103.0	1,345.6	2.00	-2.00	0.00
5,680.0	6.00	175.61	5,500.3	-1,346.1	103.4	1,350.0	2.00	-2.00	0.00
5,720.0	5.20	175.61	5,540.1	-1,349.9	103.7	1,353.9	2.00	-2.00	0.00
5,760.0	4.40	175.61	5,580.0	-1,353.3	103.9	1,357.3	2.00	-2.00	0.00
5,800.0	3.60	175.61	5,619.9	-1,356.1	104.1	1,360.1	2.00	-2.00	0.00
5,840.0	2.80	175.61	5,659.8	-1,358.3	104.3	1,362.3	2.00	-2.00	0.00
5,880.0	2.00	175.61	5,699.8	-1,360.0	104.4	1,364.0	2.00	-2.00	0.00
5,920.0	1.20	175.61	5,739.8	-1,361.1	104.5	1,365.1	2.00	-2.00	0.00
5,960.0	0.40	175.61	5,779.8	-1,361.7	104.6	1,365.7	2.00	-2.00	0.00
5,980.2	0.00	0.00	5,800.0	-1,361.7	104.6	1,365.7	2.00	-2.00	-867.80
<b>TARGET BHL 510'FSL, 2130'FWL</b>									

<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Company:</b>	Anadarko, Weld County CO	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (3-01-11)		

Planned Survey									
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,000.0	0.00	0.00	5,819.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,040.0	0.00	0.00	5,859.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,080.0	0.00	0.00	5,899.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,120.0	0.00	0.00	5,939.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,160.0	0.00	0.00	5,979.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,200.0	0.00	0.00	6,019.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,240.0	0.00	0.00	6,059.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,280.0	0.00	0.00	6,099.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,320.0	0.00	0.00	6,139.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,360.0	0.00	0.00	6,179.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,400.0	0.00	0.00	6,219.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,440.0	0.00	0.00	6,259.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,480.0	0.00	0.00	6,299.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,520.0	0.00	0.00	6,339.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,560.0	0.00	0.00	6,379.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,600.0	0.00	0.00	6,419.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,640.0	0.00	0.00	6,459.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,680.0	0.00	0.00	6,499.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,720.0	0.00	0.00	6,539.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,760.0	0.00	0.00	6,579.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,800.0	0.00	0.00	6,619.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,840.0	0.00	0.00	6,659.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,880.0	0.00	0.00	6,699.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,920.0	0.00	0.00	6,739.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
6,960.0	0.00	0.00	6,779.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,000.0	0.00	0.00	6,819.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,040.0	0.00	0.00	6,859.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,080.0	0.00	0.00	6,899.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,095.2	0.00	0.00	6,915.0	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
<b>NIOBARRA - LEGAL BOX 400' X 400' 662'FSL &amp; 1969'FWL - TARGET CIRCLE 510'FSL &amp; 2130'FWL</b>									
7,120.0	0.00	0.00	6,939.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,160.0	0.00	0.00	6,979.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,200.0	0.00	0.00	7,019.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,240.0	0.00	0.00	7,059.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,280.0	0.00	0.00	7,099.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,320.0	0.00	0.00	7,139.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,360.0	0.00	0.00	7,179.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,380.2	0.00	0.00	7,200.0	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
<b>CODELL</b>									
7,400.0	0.00	0.00	7,219.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,440.0	0.00	0.00	7,259.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,465.2	0.00	0.00	7,285.0	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
<b>GREENHORN</b>									
7,480.0	0.00	0.00	7,299.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,520.0	0.00	0.00	7,339.8	-1,361.7	104.6	1,365.7	0.00	0.00	0.00
7,540.2	0.00	0.00	7,360.0	-1,361.7	104.6	1,365.7	0.00	0.00	0.00



<b>Database:</b>	Landmark	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Company:</b>	Anadarko, Weld County CO	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Project:</b>	SEC.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>North Reference:</b>	True
<b>Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Wellbore:</b>	Wellbore #1		
<b>Design:</b>	Plan #1 (3-01-11)		

Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)		
LEGAL BOX 400' X 400'	0.00	0.00	6,915.0	-1,209.7	-56.4	1,292,481.31	3,231,684.45	40.133283	-104.671378
- plan misses target center by 221.4ft at 7095.2ft MD (6915.0 TVD, -1361.7 N, 104.6 E)									
- Rectangle (sides W400.0 H400.0 D445.0)									
TARGET BHL 510'FS	0.00	0.00	5,800.0	-1,361.7	104.6	1,292,330.81	3,231,846.83	40.132866	-104.670802
- plan hits target center									
- Point									
TARGET CIRCLE 510'	0.00	0.00	6,915.0	-1,361.7	104.6	1,292,330.81	3,231,846.83	40.132866	-104.670802
- plan hits target center									
- Circle (radius 50.0)									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")	
907.2	900.0	8 5/8"	8-5/8	12-1/4	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,114.2	3,985.0	PARKMAN		0.00		
4,644.4	4,495.0	SUSSEX		0.00		
7,095.2	6,915.0	NIOBRARA		0.00		
7,380.2	7,200.0	CODELL		0.00		
7,465.2	7,285.0	GREENHORN		0.00		





## **Directional**

### **Anadarko, Weld County CO**

**SEC.16-T2N-R65W**

**Thomason 11-16 Pad Sec.16-T2N-R65W**

**Thomason 14-16**

**Wellbore #1**

**Plan #1 (3-01-11)**

### **Anticollision Report**

**10 March, 2011**



<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	SEC.16-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Reference Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (3-01-11)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Reference</b>	Plan #1 (3-01-11)		
<b>Filter type:</b>	NO GLOBAL FILTER: Using user defined selection & filtering criteria		
<b>Interpolation Method:</b>	Stations	<b>Error Model:</b>	ISCWSA
<b>Depth Range:</b>	Unlimited	<b>Scan Method:</b>	Closest Approach 3D
<b>Results Limited by:</b>	Maximum center-center distance of 10,000.0ft	<b>Error Surface:</b>	Elliptical Conic
<b>Warning Levels Evaluated at:</b>	2.00 Sigma		

<b>Survey Tool Program</b>	<b>Date</b> 3/10/2011			
<b>From (ft)</b>	<b>To (ft)</b>	<b>Survey (Wellbore)</b>	<b>Tool Name</b>	<b>Description</b>
0.0	7,540.2	Plan #1 (3-01-11) (Wellbore #1)	MWD	MWD - Standard

<b>Summary</b>						
<b>Site Name</b>	<b>Reference Measured Depth (ft)</b>	<b>Offset Measured Depth (ft)</b>	<b>Distance Between Centres (ft)</b>	<b>Distance Between Ellipses (ft)</b>	<b>Separation Factor</b>	<b>Warning</b>
<b>Offset Well - Wellbore - Design</b>						
Thomason 11-16 Pad Sec.16-T2N-R65W						
Thomason 36-16 - Wellbore #1 - Plan #1 (3-01-11)	200.0	200.0	16.0	15.4	23.765	CC, ES
Thomason 36-16 - Wellbore #1 - Plan #1 (3-01-11)	2,000.0	2,012.6	98.7	81.4	5.707	SF
Thomason X #16-11 (Exist.) - Wellbore #1 - Design #1	200.0	197.0	110.9	110.2	166.112	CC, ES
Thomason X #16-11 (Exist.) - Wellbore #1 - Design #1	7,540.2	7,357.0	1,468.9	1,434.5	42.623	SF

<b>Offset Design</b>												
Thomason 11-16 Pad Sec.16-T2N-R65W - Thomason 36-16 - Wellbore #1 - Plan #1 (3-01-11)												
Survey Program: 0-MWD												
<b>Reference</b>		<b>Offset</b>		<b>Semi Major Axis</b>			<b>Distance</b>					
<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Measured Depth (ft)</b>	<b>Vertical Depth (ft)</b>	<b>Reference (ft)</b>	<b>Offset (ft)</b>	<b>Highside Toolface (°)</b>	<b>Offset Wellbore Centre +N/-S (ft)</b>	<b>+E/-W (ft)</b>	<b>Between Centres (ft)</b>	<b>Between Ellipses (ft)</b>	<b>Minimum Separation (ft)</b>	<b>Separation Factor</b>
0.0	0.0	0.0	0.0	0.0	0.0	0.00	16.0	0.0	16.0	16.0	0.00	N/A
100.0	100.0	100.0	100.0	0.1	0.1	0.00	16.0	0.0	16.0	15.8	0.22	71.296
200.0	200.0	200.0	200.0	0.3	0.3	0.00	16.0	0.0	16.0	15.4	0.67	23.765 CC, ES
300.0	300.0	300.0	300.0	0.5	0.6	-176.04	16.0	0.0	17.8	16.7	1.11	16.037
400.0	399.8	399.8	399.8	0.8	0.8	-176.93	16.0	0.0	23.0	21.4	1.54	14.910
500.0	499.5	500.3	500.3	1.0	1.0	-175.74	14.7	1.1	30.3	28.4	1.96	15.463
600.0	598.7	601.0	600.8	1.3	1.2	-172.30	10.5	4.3	38.5	36.1	2.37	16.195
700.0	697.5	702.0	701.5	1.6	1.4	-169.18	3.0	8.6	46.9	44.0	2.82	16.641
800.0	795.6	803.3	802.1	2.0	1.7	-166.46	-8.0	13.6	55.5	52.2	3.29	16.860
900.0	893.1	904.8	902.4	2.4	2.0	-163.99	-22.5	19.5	64.3	60.5	3.81	16.882
994.0	983.9	1,000.5	996.3	2.9	2.3	-161.84	-39.3	25.7	72.9	68.5	4.35	16.750
1,000.0	989.6	1,006.6	1,002.3	2.9	2.3	-161.71	-40.5	26.1	73.4	69.0	4.39	16.730
1,100.0	1,085.8	1,108.7	1,101.8	3.5	2.8	-159.12	-62.0	33.6	80.9	75.8	5.05	16.011
1,200.0	1,182.0	1,211.0	1,200.7	4.0	3.3	-155.71	-87.1	41.9	85.5	79.7	5.82	14.678
1,300.0	1,278.2	1,313.3	1,298.5	4.6	3.8	-151.27	-115.5	51.0	87.5	80.7	6.74	12.967
1,400.0	1,374.4	1,415.4	1,395.0	5.1	4.4	-145.51	-147.3	60.9	87.3	79.4	7.88	11.081
1,500.0	1,470.6	1,516.8	1,489.7	5.7	5.1	-138.01	-182.2	71.4	85.6	76.3	9.27	9.230
1,600.0	1,566.7	1,617.2	1,582.0	6.3	5.8	-128.45	-219.8	82.5	83.6	72.6	10.97	7.620
1,649.0	1,613.9	1,665.6	1,626.4	6.5	6.2	-123.43	-238.4	88.0	83.3	71.4	11.85	7.025
1,700.0	1,662.9	1,716.1	1,672.6	6.8	6.6	-118.20	-257.8	93.7	83.6	70.9	12.77	6.549
1,800.0	1,759.1	1,814.9	1,763.2	7.4	7.4	-108.27	-295.7	104.9	86.3	71.9	14.48	5.963
1,900.0	1,855.3	1,913.8	1,853.8	7.9	8.2	-99.19	-333.7	116.1	91.5	75.5	16.00	5.719
2,000.0	1,951.5	2,012.6	1,944.3	8.5	8.9	-91.23	-371.7	127.2	98.7	81.4	17.30	5.707 SF

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	SEC.16-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Reference Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (3-01-11)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0ft
Survey Program: 0-MWD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
2,100.0	2,047.7	2,111.5	2,034.9	9.1	9.7	-84.45	-409.7	138.4	107.6	89.2	18.41	5.844	
2,200.0	2,143.9	2,210.3	2,125.5	9.6	10.5	-78.76	-447.7	149.6	117.8	98.4	19.39	6.074	
2,300.0	2,240.0	2,309.2	2,216.1	10.2	11.3	-74.00	-485.7	160.7	128.9	108.6	20.28	6.357	
2,400.0	2,336.2	2,408.0	2,306.6	10.8	12.1	-70.01	-523.7	171.9	140.8	119.7	21.10	6.671	
2,500.0	2,432.4	2,506.9	2,397.2	11.3	12.9	-66.65	-561.6	183.1	153.2	131.3	21.90	6.997	
2,600.0	2,528.6	2,605.7	2,487.8	11.9	13.7	-63.81	-599.6	194.3	166.1	143.4	22.67	7.327	
2,700.0	2,624.8	2,704.6	2,578.4	12.5	14.5	-61.37	-637.6	205.4	179.4	155.9	23.44	7.652	
2,800.0	2,721.0	2,803.4	2,668.9	13.0	15.3	-59.27	-675.6	216.6	192.9	168.7	24.20	7.969	
2,900.0	2,817.1	2,902.3	2,759.5	13.6	16.1	-57.45	-713.6	227.8	206.6	181.6	24.97	8.275	
3,000.0	2,913.3	3,001.1	2,850.1	14.2	16.8	-55.85	-751.6	239.0	220.5	194.8	25.73	8.569	
3,100.0	3,009.5	3,100.0	2,940.7	14.8	17.6	-54.45	-789.6	250.1	234.6	208.1	26.50	8.851	
3,200.0	3,105.7	3,198.8	3,031.2	15.3	18.4	-53.20	-827.5	261.3	248.8	221.5	27.28	9.120	
3,300.0	3,201.9	3,297.7	3,121.8	15.9	19.2	-52.09	-865.5	272.5	263.1	235.0	28.06	9.377	
3,400.0	3,298.1	3,396.5	3,212.4	16.5	20.0	-51.09	-903.5	283.7	277.5	248.6	28.84	9.621	
3,500.0	3,394.2	3,495.4	3,303.0	17.0	20.8	-50.19	-941.5	294.8	291.9	262.3	29.62	9.854	
3,600.0	3,490.4	3,594.2	3,393.5	17.6	21.6	-49.38	-979.5	306.0	306.4	276.0	30.41	10.075	
3,700.0	3,586.6	3,693.1	3,484.1	18.2	22.4	-48.64	-1,017.5	317.2	321.0	289.8	31.21	10.286	
3,800.0	3,682.8	3,791.9	3,574.7	18.7	23.2	-47.96	-1,055.5	328.3	335.6	303.6	32.00	10.486	
3,900.0	3,779.0	3,890.8	3,665.3	19.3	24.0	-47.34	-1,093.4	339.5	350.3	317.5	32.80	10.678	
4,000.0	3,875.2	3,989.6	3,755.8	19.9	24.8	-46.77	-1,131.4	350.7	365.0	331.4	33.61	10.860	
4,100.0	3,971.3	4,088.5	3,846.4	20.4	25.6	-46.24	-1,169.4	361.9	379.7	345.3	34.41	11.034	
4,200.0	4,067.5	4,187.3	3,937.0	21.0	26.4	-45.76	-1,207.4	373.0	394.5	359.2	35.22	11.200	
4,300.0	4,163.7	4,286.2	4,027.6	21.6	27.2	-45.31	-1,245.4	384.2	409.3	373.2	36.03	11.358	
4,400.0	4,259.9	4,385.0	4,118.1	22.2	28.0	-44.89	-1,283.4	395.4	424.1	387.2	36.84	11.509	
4,500.0	4,356.1	4,483.9	4,208.7	22.7	28.8	-44.49	-1,321.4	406.6	438.9	401.2	37.66	11.654	
4,600.0	4,452.3	4,582.7	4,299.3	23.3	29.6	-44.13	-1,359.3	417.7	453.7	415.3	38.48	11.793	
4,700.0	4,548.4	4,681.6	4,389.9	23.9	30.4	-43.78	-1,397.3	428.9	468.6	429.3	39.29	11.926	
4,800.0	4,644.6	4,780.4	4,480.4	24.4	31.2	-43.46	-1,435.3	440.1	483.5	443.4	40.11	12.053	
4,900.0	4,740.8	4,879.3	4,571.0	25.0	32.0	-43.16	-1,473.3	451.2	498.4	457.4	40.94	12.175	
5,000.0	4,837.0	4,978.1	4,661.6	25.6	32.8	-42.88	-1,511.3	462.4	513.3	471.5	41.76	12.292	
5,100.0	4,933.2	5,077.0	4,752.2	26.1	33.6	-42.61	-1,549.3	473.6	528.2	485.6	42.58	12.405	
5,186.2	5,016.1	5,162.3	4,830.3	26.6	34.3	-42.39	-1,582.0	483.2	541.1	497.8	43.29	12.498	
5,200.0	5,029.4	5,175.8	4,842.7	26.7	34.4	-42.38	-1,587.3	484.8	543.2	499.8	43.40	12.514	
5,300.0	5,126.1	5,292.1	4,950.0	27.1	35.1	-42.22	-1,630.2	497.4	558.3	514.3	44.03	12.680	
5,400.0	5,223.7	5,411.3	5,061.8	27.4	35.8	-42.03	-1,669.9	509.1	572.6	528.0	44.57	12.848	
5,500.0	5,322.0	5,531.4	5,176.1	27.7	36.3	-41.81	-1,705.3	519.5	585.8	540.8	45.01	13.016	
5,600.0	5,420.9	5,652.3	5,292.5	28.0	36.8	-41.57	-1,736.3	528.6	598.1	552.7	45.36	13.185	
5,700.0	5,520.2	5,773.9	5,411.0	28.2	37.3	-41.30	-1,762.7	536.4	609.3	563.7	45.62	13.356	
5,800.0	5,619.9	5,896.2	5,531.2	28.3	37.7	-41.00	-1,784.4	542.8	619.5	573.7	45.78	13.530	
5,900.0	5,719.8	6,019.2	5,652.9	28.5	38.0	-40.68	-1,801.2	547.7	628.5	582.7	45.84	13.710	
5,980.2	5,800.0	6,118.3	5,751.5	28.6	38.2	135.21	-1,811.1	550.6	635.0	589.2	45.84	13.854	
6,000.0	5,819.8	6,142.8	5,775.9	28.6	38.2	135.30	-1,813.0	551.2	636.4	590.6	45.84	13.883	
6,100.0	5,919.8	6,267.1	5,900.0	28.6	38.4	135.60	-1,819.8	553.2	641.4	595.5	45.94	13.962	
6,200.0	6,019.8	6,386.9	6,019.8	28.7	38.5	135.67	-1,821.5	553.7	642.7	596.5	46.14	13.929	
6,300.0	6,119.8	6,486.9	6,119.8	28.8	38.5	135.67	-1,821.5	553.7	642.7	596.3	46.34	13.870	
6,400.0	6,219.8	6,586.9	6,219.8	28.9	38.6	135.67	-1,821.5	553.7	642.7	596.1	46.53	13.811	
6,500.0	6,319.8	6,686.9	6,319.8	29.0	38.7	135.67	-1,821.5	553.7	642.7	595.9	46.74	13.751	
6,600.0	6,419.8	6,786.9	6,419.8	29.0	38.7	135.67	-1,821.5	553.7	642.7	595.7	46.94	13.690	
6,700.0	6,519.8	6,886.9	6,519.8	29.1	38.8	135.67	-1,821.5	553.7	642.7	595.5	47.15	13.629	
6,800.0	6,619.8	6,986.9	6,619.8	29.2	38.8	135.67	-1,821.5	553.7	642.7	595.3	47.37	13.568	
6,900.0	6,719.8	7,086.9	6,719.8	29.3	38.9	135.67	-1,821.5	553.7	642.7	595.1	47.58	13.506	
7,000.0	6,819.8	7,186.9	6,819.8	29.4	39.0	135.67	-1,821.5	553.7	642.7	594.9	47.80	13.444	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	SEC.16-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Reference Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (3-01-11)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Thomason 11-16 Pad Sec.16-T2N-R65W - Thomason 36-16 - Wellbore #1 - Plan #1 (3-01-11)												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
7,100.0	6,919.8	7,286.9	6,919.8	29.5	39.0	135.67	-1,821.5	553.7	642.7	594.6	48.03	13.382	
7,200.0	7,019.8	7,386.9	7,019.8	29.6	39.1	135.67	-1,821.5	553.7	642.7	594.4	48.25	13.319	
7,300.0	7,119.8	7,486.9	7,119.8	29.7	39.2	135.67	-1,821.5	553.7	642.7	594.2	48.48	13.256	
7,400.0	7,219.8	7,586.9	7,219.8	29.7	39.3	135.67	-1,821.5	553.7	642.7	594.0	48.71	13.193	
7,500.0	7,319.8	7,686.9	7,319.8	29.8	39.3	135.67	-1,821.5	553.7	642.7	593.7	48.95	13.130	
7,540.2	7,360.0	7,727.1	7,360.0	29.9	39.4	135.67	-1,821.5	553.7	642.7	593.6	49.04	13.104	

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	SEC.16-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Reference Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (3-01-11)	<b>Offset TVD Reference:</b>	Offset Datum

Offset Design												Offset Site Error:	0.0ft
Survey Program: 0-MWD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-26.67	99.1	-49.8	110.9				
100.0	100.0	97.0	97.0	0.1	0.1	-26.67	99.1	-49.8	110.9	110.7	0.22	500.852	
200.0	200.0	197.0	197.0	0.3	0.3	-26.67	99.1	-49.8	110.9	110.2	0.67	166.112 CC, ES	
300.0	300.0	297.0	297.0	0.5	0.6	158.05	99.1	-49.8	112.5	111.4	1.10	102.284	
400.0	399.8	396.8	396.8	0.8	0.8	158.97	99.1	-49.8	117.4	115.8	1.53	76.527	
500.0	499.5	496.5	496.5	1.0	1.0	160.34	99.1	-49.8	125.6	123.6	1.98	63.307	
600.0	598.7	595.7	595.7	1.3	1.2	161.98	99.1	-49.8	137.1	134.7	2.44	56.140	
700.0	697.5	694.5	694.5	1.6	1.4	163.72	99.1	-49.8	152.1	149.2	2.91	52.308	
800.0	795.6	792.6	792.6	2.0	1.7	165.42	99.1	-49.8	170.5	167.1	3.38	50.494	
900.0	893.1	890.1	890.1	2.4	1.9	167.00	99.1	-49.8	192.4	188.5	3.85	49.985	
994.0	983.9	980.9	980.9	2.9	2.1	168.35	99.1	-49.8	216.1	211.8	4.29	50.317	
1,000.0	989.6	986.6	986.6	2.9	2.1	168.44	99.1	-49.8	217.7	213.4	4.32	50.356	
1,100.0	1,085.8	1,082.8	1,082.8	3.5	2.3	169.72	99.1	-49.8	244.6	239.8	4.80	50.914	
1,200.0	1,182.0	1,179.0	1,179.0	4.0	2.5	170.75	99.1	-49.8	271.6	266.3	5.29	51.351	
1,300.0	1,278.2	1,275.2	1,275.2	4.6	2.8	171.59	99.1	-49.8	298.6	292.9	5.78	51.699	
1,400.0	1,374.4	1,371.4	1,371.4	5.1	3.0	172.30	99.1	-49.8	325.8	319.5	6.27	51.982	
1,500.0	1,470.6	1,467.6	1,467.6	5.7	3.2	172.89	99.1	-49.8	352.9	346.1	6.76	52.213	
1,600.0	1,566.7	1,563.7	1,563.7	6.3	3.4	173.40	99.1	-49.8	380.1	372.8	7.25	52.406	
1,700.0	1,662.9	1,659.9	1,659.9	6.8	3.6	173.84	99.1	-49.8	407.3	399.5	7.75	52.569	
1,800.0	1,759.1	1,756.1	1,756.1	7.4	3.8	174.23	99.1	-49.8	434.5	426.3	8.24	52.706	
1,900.0	1,855.3	1,852.3	1,852.3	7.9	4.1	174.57	99.1	-49.8	461.8	453.0	8.74	52.824	
2,000.0	1,951.5	1,948.5	1,948.5	8.5	4.3	174.87	99.1	-49.8	489.0	479.8	9.24	52.926	
2,100.0	2,047.7	2,044.7	2,044.7	9.1	4.5	175.15	99.1	-49.8	516.3	506.5	9.74	53.014	
2,200.0	2,143.9	2,140.9	2,140.9	9.6	4.7	175.39	99.1	-49.8	543.6	533.3	10.24	53.092	
2,300.0	2,240.0	2,237.0	2,237.0	10.2	4.9	175.61	99.1	-49.8	570.8	560.1	10.74	53.160	
2,400.0	2,336.2	2,333.2	2,333.2	10.8	5.1	175.81	99.1	-49.8	598.1	586.9	11.24	53.220	
2,500.0	2,432.4	2,429.4	2,429.4	11.3	5.3	175.99	99.1	-49.8	625.4	613.7	11.74	53.274	
2,600.0	2,528.6	2,525.6	2,525.6	11.9	5.6	176.16	99.1	-49.8	652.7	640.5	12.24	53.321	
2,700.0	2,624.8	2,621.8	2,621.8	12.5	5.8	176.32	99.1	-49.8	680.0	667.3	12.74	53.364	
2,800.0	2,721.0	2,718.0	2,718.0	13.0	6.0	176.46	99.1	-49.8	707.3	694.1	13.25	53.403	
2,900.0	2,817.1	2,814.1	2,814.1	13.6	6.2	176.59	99.1	-49.8	734.7	720.9	13.75	53.437	
3,000.0	2,913.3	2,910.3	2,910.3	14.2	6.4	176.71	99.1	-49.8	762.0	747.7	14.25	53.469	
3,100.0	3,009.5	3,006.5	3,006.5	14.8	6.6	176.83	99.1	-49.8	789.3	774.5	14.75	53.497	
3,200.0	3,105.7	3,102.7	3,102.7	15.3	6.9	176.93	99.1	-49.8	816.6	801.4	15.26	53.523	
3,300.0	3,201.9	3,198.9	3,198.9	15.9	7.1	177.03	99.1	-49.8	844.0	828.2	15.76	53.546	
3,400.0	3,298.1	3,295.1	3,295.1	16.5	7.3	177.13	99.1	-49.8	871.3	855.0	16.27	53.568	
3,500.0	3,394.2	3,391.2	3,391.2	17.0	7.5	177.21	99.1	-49.8	898.6	881.8	16.77	53.588	
3,600.0	3,490.4	3,487.4	3,487.4	17.6	7.7	177.29	99.1	-49.8	925.9	908.7	17.27	53.606	
3,700.0	3,586.6	3,583.6	3,583.6	18.2	7.9	177.37	99.1	-49.8	953.3	935.5	17.78	53.622	
3,800.0	3,682.8	3,679.8	3,679.8	18.7	8.2	177.45	99.1	-49.8	980.6	962.3	18.28	53.637	
3,900.0	3,779.0	3,776.0	3,776.0	19.3	8.4	177.52	99.1	-49.8	1,008.0	989.2	18.79	53.651	
4,000.0	3,875.2	3,872.2	3,872.2	19.9	8.6	177.58	99.1	-49.8	1,035.3	1,016.0	19.29	53.664	
4,100.0	3,971.3	3,968.3	3,968.3	20.4	8.8	177.64	99.1	-49.8	1,062.6	1,042.8	19.80	53.676	
4,200.0	4,067.5	4,064.5	4,064.5	21.0	9.0	177.70	99.1	-49.8	1,090.0	1,069.7	20.30	53.686	
4,300.0	4,163.7	4,160.7	4,160.7	21.6	9.2	177.76	99.1	-49.8	1,117.3	1,096.5	20.81	53.696	
4,400.0	4,259.9	4,256.9	4,256.9	22.2	9.5	177.81	99.1	-49.8	1,144.7	1,123.3	21.31	53.705	
4,500.0	4,356.1	4,353.1	4,353.1	22.7	9.7	177.86	99.1	-49.8	1,172.0	1,150.2	21.82	53.714	
4,600.0	4,452.3	4,449.3	4,449.3	23.3	9.9	177.91	99.1	-49.8	1,199.3	1,177.0	22.33	53.721	
4,700.0	4,548.4	4,545.4	4,545.4	23.9	10.1	177.96	99.1	-49.8	1,226.7	1,203.9	22.83	53.728	
4,800.0	4,644.6	4,641.6	4,641.6	24.4	10.3	178.00	99.1	-49.8	1,254.0	1,230.7	23.34	53.735	
4,900.0	4,740.8	4,737.8	4,737.8	25.0	10.5	178.05	99.1	-49.8	1,281.4	1,257.5	23.84	53.741	
5,000.0	4,837.0	4,834.0	4,834.0	25.6	10.8	178.09	99.1	-49.8	1,308.7	1,284.4	24.35	53.746	

CC - Min centre to center distance or convergent point, SF - min separation factor, ES - min ellipse separation

<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	SEC.16-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Reference Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (3-01-11)	<b>Offset TVD Reference:</b>	Offset Datum

<b>Offset Design</b> Thomason 11-16 Pad Sec.16-T2N-R65W - Thomason X #16-11 (Exist.) - Wellbore #1 - Design #1												<b>Offset Site Error:</b>	0.0 ft
Survey Program: 0-MWD												<b>Offset Well Error:</b>	0.0 ft
Reference		Offset		Semi Major Axis			Distance						
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	Reference (ft)	Offset (ft)	Highside Toolface (°)	Offset Wellbore Centre +N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)	Minimum Separation (ft)	Separation Factor	Warning
5,100.0	4,933.2	4,930.2	4,930.2	26.1	11.0	178.13	99.1	-49.8	1,336.1	1,311.2	24.86	53.751	
5,186.2	5,016.1	5,013.1	5,013.1	26.6	11.2	178.16	99.1	-49.8	1,359.7	1,334.4	25.29	53.755	
5,200.0	5,029.4	5,026.4	5,026.4	26.7	11.2	178.17	99.1	-49.8	1,363.4	1,338.0	25.37	53.733	
5,300.0	5,126.1	5,123.1	5,123.1	27.1	11.4	178.22	99.1	-49.8	1,388.6	1,362.7	25.91	53.589	
5,400.0	5,223.7	5,220.7	5,220.7	27.4	11.6	178.26	99.1	-49.8	1,410.4	1,384.0	26.41	53.395	
5,500.0	5,322.0	5,319.0	5,319.0	27.7	11.8	178.29	99.1	-49.8	1,428.8	1,401.9	26.88	53.157	
5,600.0	5,420.9	5,417.9	5,417.9	28.0	12.1	178.32	99.1	-49.8	1,443.8	1,416.5	27.30	52.878	
5,700.0	5,520.2	5,517.2	5,517.2	28.2	12.3	178.34	99.1	-49.8	1,455.3	1,427.6	27.69	52.558	
5,800.0	5,619.9	5,616.9	5,616.9	28.3	12.5	178.35	99.1	-49.8	1,463.3	1,435.3	28.03	52.202	
5,900.0	5,719.8	5,716.8	5,716.8	28.5	12.7	178.36	99.1	-49.8	1,467.8	1,439.5	28.33	51.808	
5,980.2	5,800.0	5,797.0	5,797.0	28.6	12.9	-6.03	99.1	-49.8	1,468.9	1,440.4	28.56	51.442	
6,000.0	5,819.8	5,816.8	5,816.8	28.6	13.0	-6.03	99.1	-49.8	1,468.9	1,440.3	28.63	51.307	
6,100.0	5,919.8	5,916.8	5,916.8	28.6	13.2	-6.03	99.1	-49.8	1,468.9	1,440.0	29.00	50.658	
6,200.0	6,019.8	6,016.8	6,016.8	28.7	13.4	-6.03	99.1	-49.8	1,468.9	1,439.6	29.37	50.023	
6,300.0	6,119.8	6,116.8	6,116.8	28.8	13.6	-6.03	99.1	-49.8	1,468.9	1,439.2	29.74	49.400	
6,400.0	6,219.8	6,216.8	6,216.8	28.9	13.9	-6.03	99.1	-49.8	1,468.9	1,438.8	30.11	48.789	
6,500.0	6,319.8	6,316.8	6,316.8	29.0	14.1	-6.03	99.1	-49.8	1,468.9	1,438.5	30.48	48.191	
6,600.0	6,419.8	6,416.8	6,416.8	29.0	14.3	-6.03	99.1	-49.8	1,468.9	1,438.1	30.86	47.604	
6,700.0	6,519.8	6,516.8	6,516.8	29.1	14.5	-6.03	99.1	-49.8	1,468.9	1,437.7	31.23	47.029	
6,800.0	6,619.8	6,616.8	6,616.8	29.2	14.8	-6.03	99.1	-49.8	1,468.9	1,437.3	31.61	46.466	
6,900.0	6,719.8	6,716.8	6,716.8	29.3	15.0	-6.03	99.1	-49.8	1,468.9	1,437.0	31.99	45.913	
7,000.0	6,819.8	6,816.8	6,816.8	29.4	15.2	-6.03	99.1	-49.8	1,468.9	1,436.6	32.38	45.372	
7,100.0	6,919.8	6,916.8	6,916.8	29.5	15.4	-6.03	99.1	-49.8	1,468.9	1,436.2	32.76	44.841	
7,200.0	7,019.8	7,016.8	7,016.8	29.6	15.7	-6.03	99.1	-49.8	1,468.9	1,435.8	33.14	44.320	
7,300.0	7,119.8	7,116.8	7,116.8	29.7	15.9	-6.03	99.1	-49.8	1,468.9	1,435.4	33.53	43.809	
7,400.0	7,219.8	7,216.8	7,216.8	29.7	16.1	-6.03	99.1	-49.8	1,468.9	1,435.0	33.92	43.309	
7,500.0	7,319.8	7,316.8	7,316.8	29.8	16.3	-6.03	99.1	-49.8	1,468.9	1,434.6	34.31	42.817	
7,540.2	7,360.0	7,357.0	7,357.0	29.9	16.4	-6.03	99.1	-49.8	1,468.9	1,434.5	34.46	42.623 SF	

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<b>Reference Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
<b>Reference Wellbore</b>	Wellbore #1	<b>Database:</b>	Landmark
<b>Reference Design:</b>	Plan #1 (3-01-11)	<b>Offset TVD Reference:</b>	Offset Datum

Reference Depths are relative to WELL @ 4899.0ft (Original Well Elev) Coordinates are relative to: Thomason 14-16  
Offset Depths are relative to Offset Datum Coordinate System is US State Plane 1983, Colorado Northern Zone  
Central Meridian is -105.500000 ° Grid Convergence at Surface is: 0.54°





<b>Company:</b>	Anadarko, Weld County CO	<b>Local Co-ordinate Reference:</b>	Well Thomason 14-16
<b>Project:</b>	SEC.16-T2N-R65W	<b>TVD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Reference Site:</b>	Thomason 11-16 Pad Sec.16-T2N-R65W	<b>MD Reference:</b>	WELL @ 4899.0ft (Original Well Elev)
<b>Site Error:</b>	0.0ft	<b>North Reference:</b>	True
<b>Reference Well:</b>	Thomason 14-16	<b>Survey Calculation Method:</b>	Minimum Curvature
<b>Well Error:</b>	0.0ft	<b>Output errors are at</b>	2.00 sigma
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