

ENSIGN

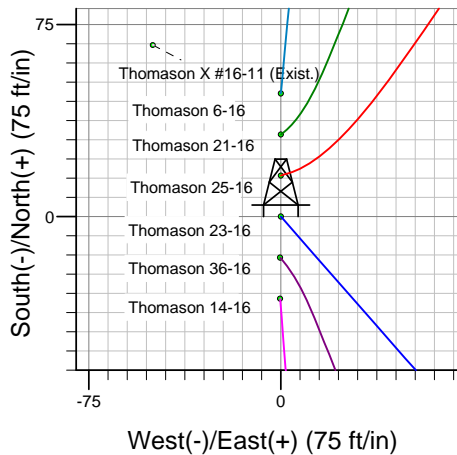
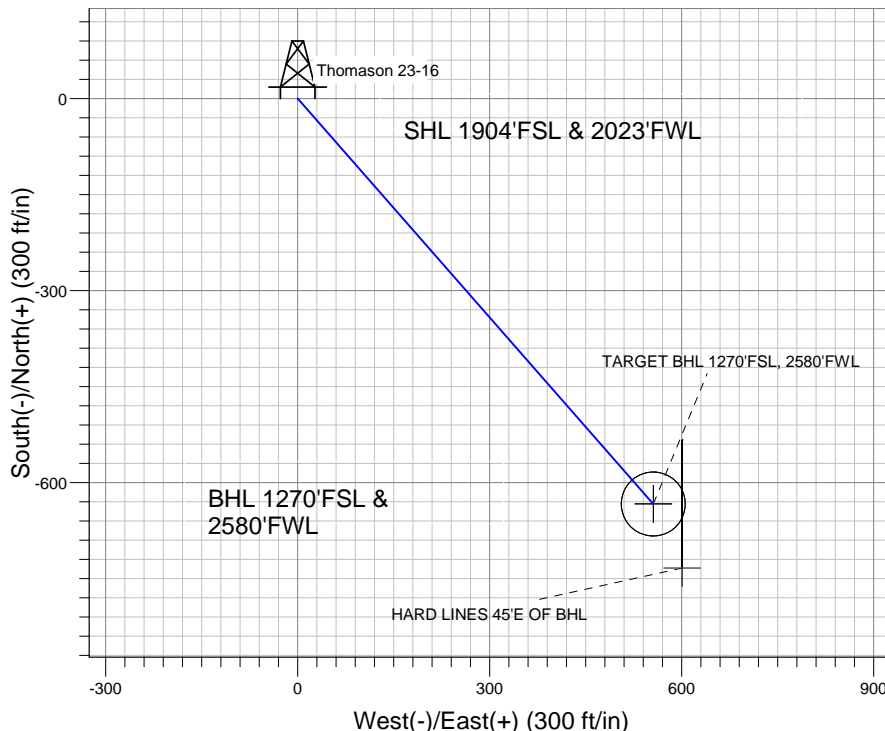
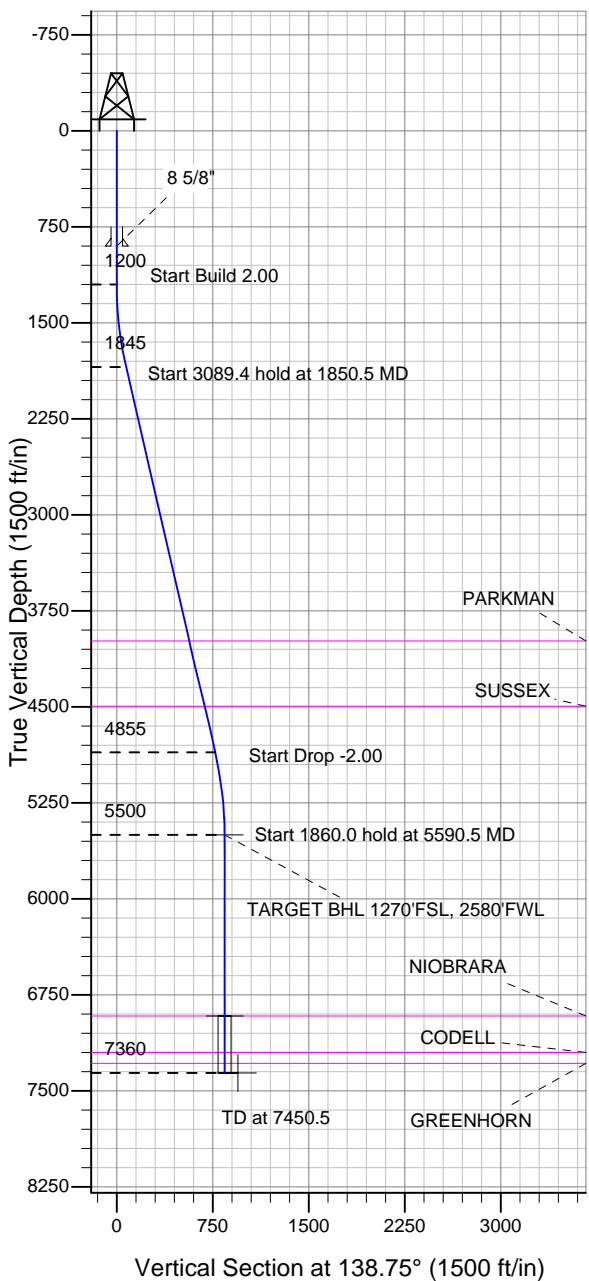
Directional

Well Name: Thomason 23-16

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	1293723.49	3231729.52	40.136692	-104.671175	
Original Well Elev WELL @ 4899.0ft (Original Well Elev)						

Anadarko, Weld County CO



FORMATION TOP DETAILS

TVDPATH	MDPATH	FORMATION
3985.0	4047.0	PARKMAN
4495.0	4570.4	SUSSEX
6915.0	7005.5	NIOBRARA
7200.0	7290.5	CODELL
7285.0	7375.5	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 23-16 Lat/Long: 40.136692 -104.671175

WELLBORE TARGET DETAILS (LAT/LONG)

Name	TVD	+N/-S	+E/-W	Latitude	Longitude	Shape
TARGET BHL 1270'FSL, 2580'FWL	5500.0	-633.5	555.6	40.134953	-104.669188	Point
TARGET CIRCLE 1270'FSL, 2580'FWL	6915.0	-633.5	555.6	40.134953	-104.669188	Circle (Radius: 50.0)
HARD LINES 45°E OF BHL	7360.0	-733.5	600.6	40.134678	-104.669027	Polygon

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	1200.0	0.00	0.00	1200.0	0.0	0.0	0.00	0.00	0.0	
3	1850.5	13.01	138.75	1845.0	-55.3	48.5	2.00	138.75	73.5	
4	4939.9	13.01	138.75	4855.0	-578.2	507.1	0.00	0.00	769.1	
5	5590.5	0.00	0.00	5500.0	-633.5	555.6	2.00	180.00	842.6	TARGET BHL 1270'FSL, 2580'FWL
6	7450.5	0.00	0.00	7360.0	-633.5	555.6	0.00	0.00	842.6	

CASING DETAILS

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

Thomason 11-16 Pad Sec.16-T2N-R65W
 Thomason 23-16
 Plan #1 (3-01-11)
 15:39, March 10 2011



Anadarko, Weld County CO

SEC.16-T2N-R65W

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

Thomason 23-16

Wellbore #1

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

Standard Planning Report

10 March, 2011



Database:	Landmark	Local Co-ordinate Reference:	Well Thomason 23-16
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Project:	SEC.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	North Reference:	True
Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-01-11)		

Project	SEC.16-T2N-R65W, Weld County, Colorado		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		Using Well Reference Point
Map Zone:	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 23-16					
Well Position	+N/-S	-48.1 ft	Northing:	1,293,723.49 ft	Latitude:	40.136692
	+E/-W	0.0 ft	Easting:	3,231,729.52 ft	Longitude:	-104.671175
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,885.0 ft

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

Design	Plan #1 (3-01-11)			
Audit Notes:				
Version:	Phase:	PROTOTYPE	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.0	0.0	0.0	138.75

Plan Sections										
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	
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,850.5	13.01	138.75	1,845.0	-55.3	48.5	2.00	2.00	0.00	138.75	
4,939.9	13.01	138.75	4,855.0	-578.2	507.1	0.00	0.00	0.00	0.00	
5,590.5	0.00	0.00	5,500.0	-633.5	555.6	2.00	-2.00	0.00	180.00	TARGET BHL 127C
7,450.5	0.00	0.00	7,360.0	-633.5	555.6	0.00	0.00	0.00	0.00	

Database:	Landmark	Local Co-ordinate Reference:	Well Thomason 23-16
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Project:	SEC.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	North Reference:	True
Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	0.00	0.00	240.0	0.0	0.0	0.0	0.00	0.00	0.00
280.0	0.00	0.00	280.0	0.0	0.0	0.0	0.00	0.00	0.00
320.0	0.00	0.00	320.0	0.0	0.0	0.0	0.00	0.00	0.00
360.0	0.00	0.00	360.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
440.0	0.00	0.00	440.0	0.0	0.0	0.0	0.00	0.00	0.00
480.0	0.00	0.00	480.0	0.0	0.0	0.0	0.00	0.00	0.00
520.0	0.00	0.00	520.0	0.0	0.0	0.0	0.00	0.00	0.00
560.0	0.00	0.00	560.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
640.0	0.00	0.00	640.0	0.0	0.0	0.0	0.00	0.00	0.00
680.0	0.00	0.00	680.0	0.0	0.0	0.0	0.00	0.00	0.00
720.0	0.00	0.00	720.0	0.0	0.0	0.0	0.00	0.00	0.00
760.0	0.00	0.00	760.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
840.0	0.00	0.00	840.0	0.0	0.0	0.0	0.00	0.00	0.00
880.0	0.00	0.00	880.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
8 5/8"									
920.0	0.00	0.00	920.0	0.0	0.0	0.0	0.00	0.00	0.00
960.0	0.00	0.00	960.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,040.0	0.00	0.00	1,040.0	0.0	0.0	0.0	0.00	0.00	0.00
1,080.0	0.00	0.00	1,080.0	0.0	0.0	0.0	0.00	0.00	0.00
1,120.0	0.00	0.00	1,120.0	0.0	0.0	0.0	0.00	0.00	0.00
1,160.0	0.00	0.00	1,160.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,240.0	0.80	138.75	1,240.0	-0.2	0.2	0.3	2.00	2.00	0.00
1,280.0	1.60	138.75	1,280.0	-0.8	0.7	1.1	2.00	2.00	0.00
1,320.0	2.40	138.75	1,320.0	-1.9	1.7	2.5	2.00	2.00	0.00
1,360.0	3.20	138.75	1,359.9	-3.4	2.9	4.5	2.00	2.00	0.00
1,400.0	4.00	138.75	1,399.8	-5.2	4.6	7.0	2.00	2.00	0.00
1,440.0	4.80	138.75	1,439.7	-7.6	6.6	10.0	2.00	2.00	0.00
1,480.0	5.60	138.75	1,479.6	-10.3	9.0	13.7	2.00	2.00	0.00
1,520.0	6.40	138.75	1,519.3	-13.4	11.8	17.9	2.00	2.00	0.00
1,560.0	7.20	138.75	1,559.1	-17.0	14.9	22.6	2.00	2.00	0.00
1,600.0	8.00	138.75	1,598.7	-21.0	18.4	27.9	2.00	2.00	0.00
1,640.0	8.80	138.75	1,638.3	-25.4	22.2	33.7	2.00	2.00	0.00
1,680.0	9.60	138.75	1,677.8	-30.2	26.5	40.1	2.00	2.00	0.00
1,720.0	10.40	138.75	1,717.1	-35.4	31.0	47.1	2.00	2.00	0.00
1,760.0	11.20	138.75	1,756.4	-41.0	36.0	54.6	2.00	2.00	0.00
1,800.0	12.00	138.75	1,795.6	-47.1	41.3	62.6	2.00	2.00	0.00
1,840.0	12.80	138.75	1,834.7	-53.5	46.9	71.2	2.00	2.00	0.00
1,850.5	13.01	138.75	1,845.0	-55.3	48.5	73.5	2.00	2.00	0.00
1,880.0	13.01	138.75	1,873.7	-60.3	52.9	80.2	0.00	0.00	0.00
1,920.0	13.01	138.75	1,912.6	-67.0	58.8	89.2	0.00	0.00	0.00
1,960.0	13.01	138.75	1,951.6	-73.8	64.7	98.2	0.00	0.00	0.00
2,000.0	13.01	138.75	1,990.6	-80.6	70.7	107.2	0.00	0.00	0.00

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Project:	SEC.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	North Reference:	True
Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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	13.01	138.75	2,029.6	-87.4	76.6	116.2	0.00	0.00	0.00
2,080.0	13.01	138.75	2,068.5	-94.1	82.6	125.2	0.00	0.00	0.00
2,120.0	13.01	138.75	2,107.5	-100.9	88.5	134.2	0.00	0.00	0.00
2,160.0	13.01	138.75	2,146.5	-107.7	94.4	143.2	0.00	0.00	0.00
2,200.0	13.01	138.75	2,185.5	-114.4	100.4	152.2	0.00	0.00	0.00
2,240.0	13.01	138.75	2,224.4	-121.2	106.3	161.2	0.00	0.00	0.00
2,280.0	13.01	138.75	2,263.4	-128.0	112.2	170.2	0.00	0.00	0.00
2,320.0	13.01	138.75	2,302.4	-134.8	118.2	179.2	0.00	0.00	0.00
2,360.0	13.01	138.75	2,341.3	-141.5	124.1	188.2	0.00	0.00	0.00
2,400.0	13.01	138.75	2,380.3	-148.3	130.1	197.2	0.00	0.00	0.00
2,440.0	13.01	138.75	2,419.3	-155.1	136.0	206.3	0.00	0.00	0.00
2,480.0	13.01	138.75	2,458.3	-161.8	141.9	215.3	0.00	0.00	0.00
2,520.0	13.01	138.75	2,497.2	-168.6	147.9	224.3	0.00	0.00	0.00
2,560.0	13.01	138.75	2,536.2	-175.4	153.8	233.3	0.00	0.00	0.00
2,600.0	13.01	138.75	2,575.2	-182.1	159.7	242.3	0.00	0.00	0.00
2,640.0	13.01	138.75	2,614.2	-188.9	165.7	251.3	0.00	0.00	0.00
2,680.0	13.01	138.75	2,653.1	-195.7	171.6	260.3	0.00	0.00	0.00
2,720.0	13.01	138.75	2,692.1	-202.5	177.6	269.3	0.00	0.00	0.00
2,760.0	13.01	138.75	2,731.1	-209.2	183.5	278.3	0.00	0.00	0.00
2,800.0	13.01	138.75	2,770.0	-216.0	189.4	287.3	0.00	0.00	0.00
2,840.0	13.01	138.75	2,809.0	-222.8	195.4	296.3	0.00	0.00	0.00
2,880.0	13.01	138.75	2,848.0	-229.5	201.3	305.3	0.00	0.00	0.00
2,920.0	13.01	138.75	2,887.0	-236.3	207.2	314.3	0.00	0.00	0.00
2,960.0	13.01	138.75	2,925.9	-243.1	213.2	323.3	0.00	0.00	0.00
3,000.0	13.01	138.75	2,964.9	-249.8	219.1	332.3	0.00	0.00	0.00
3,040.0	13.01	138.75	3,003.9	-256.6	225.1	341.3	0.00	0.00	0.00
3,080.0	13.01	138.75	3,042.9	-263.4	231.0	350.3	0.00	0.00	0.00
3,120.0	13.01	138.75	3,081.8	-270.2	236.9	359.3	0.00	0.00	0.00
3,160.0	13.01	138.75	3,120.8	-276.9	242.9	368.3	0.00	0.00	0.00
3,200.0	13.01	138.75	3,159.8	-283.7	248.8	377.4	0.00	0.00	0.00
3,240.0	13.01	138.75	3,198.8	-290.5	254.8	386.4	0.00	0.00	0.00
3,280.0	13.01	138.75	3,237.7	-297.2	260.7	395.4	0.00	0.00	0.00
3,320.0	13.01	138.75	3,276.7	-304.0	266.6	404.4	0.00	0.00	0.00
3,360.0	13.01	138.75	3,315.7	-310.8	272.6	413.4	0.00	0.00	0.00
3,400.0	13.01	138.75	3,354.6	-317.6	278.5	422.4	0.00	0.00	0.00
3,440.0	13.01	138.75	3,393.6	-324.3	284.4	431.4	0.00	0.00	0.00
3,480.0	13.01	138.75	3,432.6	-331.1	290.4	440.4	0.00	0.00	0.00
3,520.0	13.01	138.75	3,471.6	-337.9	296.3	449.4	0.00	0.00	0.00
3,560.0	13.01	138.75	3,510.5	-344.6	302.3	458.4	0.00	0.00	0.00
3,600.0	13.01	138.75	3,549.5	-351.4	308.2	467.4	0.00	0.00	0.00
3,640.0	13.01	138.75	3,588.5	-358.2	314.1	476.4	0.00	0.00	0.00
3,680.0	13.01	138.75	3,627.5	-364.9	320.1	485.4	0.00	0.00	0.00
3,720.0	13.01	138.75	3,666.4	-371.7	326.0	494.4	0.00	0.00	0.00
3,760.0	13.01	138.75	3,705.4	-378.5	331.9	503.4	0.00	0.00	0.00
3,800.0	13.01	138.75	3,744.4	-385.3	337.9	512.4	0.00	0.00	0.00
3,840.0	13.01	138.75	3,783.4	-392.0	343.8	521.4	0.00	0.00	0.00
3,880.0	13.01	138.75	3,822.3	-398.8	349.8	530.4	0.00	0.00	0.00
3,920.0	13.01	138.75	3,861.3	-405.6	355.7	539.4	0.00	0.00	0.00
3,960.0	13.01	138.75	3,900.3	-412.3	361.6	548.4	0.00	0.00	0.00
4,000.0	13.01	138.75	3,939.2	-419.1	367.6	557.5	0.00	0.00	0.00
4,040.0	13.01	138.75	3,978.2	-425.9	373.5	566.5	0.00	0.00	0.00
4,047.0	13.01	138.75	3,985.0	-427.1	374.5	568.0	0.00	0.00	0.00
PARKMAN									

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Project:	SEC.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	North Reference:	True
Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
4,080.0	13.01	138.75	4,017.2	-432.6	379.4	575.5	0.00	0.00	0.00
4,120.0	13.01	138.75	4,056.2	-439.4	385.4	584.5	0.00	0.00	0.00
4,160.0	13.01	138.75	4,095.1	-446.2	391.3	593.5	0.00	0.00	0.00
4,200.0	13.01	138.75	4,134.1	-453.0	397.3	602.5	0.00	0.00	0.00
4,240.0	13.01	138.75	4,173.1	-459.7	403.2	611.5	0.00	0.00	0.00
4,280.0	13.01	138.75	4,212.1	-466.5	409.1	620.5	0.00	0.00	0.00
4,320.0	13.01	138.75	4,251.0	-473.3	415.1	629.5	0.00	0.00	0.00
4,360.0	13.01	138.75	4,290.0	-480.0	421.0	638.5	0.00	0.00	0.00
4,400.0	13.01	138.75	4,329.0	-486.8	426.9	647.5	0.00	0.00	0.00
4,440.0	13.01	138.75	4,367.9	-493.6	432.9	656.5	0.00	0.00	0.00
4,480.0	13.01	138.75	4,406.9	-500.3	438.8	665.5	0.00	0.00	0.00
4,520.0	13.01	138.75	4,445.9	-507.1	444.8	674.5	0.00	0.00	0.00
4,560.0	13.01	138.75	4,484.9	-513.9	450.7	683.5	0.00	0.00	0.00
4,570.4	13.01	138.75	4,495.0	-515.6	452.2	685.9	0.00	0.00	0.00
SUSSEX									
4,600.0	13.01	138.75	4,523.8	-520.7	456.6	692.5	0.00	0.00	0.00
4,640.0	13.01	138.75	4,562.8	-527.4	462.6	701.5	0.00	0.00	0.00
4,680.0	13.01	138.75	4,601.8	-534.2	468.5	710.5	0.00	0.00	0.00
4,720.0	13.01	138.75	4,640.8	-541.0	474.4	719.5	0.00	0.00	0.00
4,760.0	13.01	138.75	4,679.7	-547.7	480.4	728.6	0.00	0.00	0.00
4,800.0	13.01	138.75	4,718.7	-554.5	486.3	737.6	0.00	0.00	0.00
4,840.0	13.01	138.75	4,757.7	-561.3	492.3	746.6	0.00	0.00	0.00
4,880.0	13.01	138.75	4,796.7	-568.1	498.2	755.6	0.00	0.00	0.00
4,920.0	13.01	138.75	4,835.6	-574.8	504.1	764.6	0.00	0.00	0.00
4,939.9	13.01	138.75	4,855.0	-578.2	507.1	769.1	0.00	0.00	0.00
4,960.0	12.61	138.75	4,874.6	-581.5	510.0	773.5	2.00	-2.00	0.00
5,000.0	11.81	138.75	4,913.7	-587.9	515.6	782.0	2.00	-2.00	0.00
5,040.0	11.01	138.75	4,952.9	-593.8	520.8	789.9	2.00	-2.00	0.00
5,080.0	10.21	138.75	4,992.2	-599.4	525.7	797.2	2.00	-2.00	0.00
5,120.0	9.41	138.75	5,031.7	-604.5	530.2	804.1	2.00	-2.00	0.00
5,160.0	8.61	138.75	5,071.2	-609.2	534.3	810.3	2.00	-2.00	0.00
5,200.0	7.81	138.75	5,110.7	-613.5	538.1	816.0	2.00	-2.00	0.00
5,240.0	7.01	138.75	5,150.4	-617.4	541.5	821.2	2.00	-2.00	0.00
5,280.0	6.21	138.75	5,190.1	-620.9	544.5	825.8	2.00	-2.00	0.00
5,320.0	5.41	138.75	5,229.9	-623.9	547.2	829.8	2.00	-2.00	0.00
5,360.0	4.61	138.75	5,269.8	-626.5	549.5	833.3	2.00	-2.00	0.00
5,400.0	3.81	138.75	5,309.7	-628.7	551.4	836.3	2.00	-2.00	0.00
5,440.0	3.01	138.75	5,349.6	-630.5	553.0	838.7	2.00	-2.00	0.00
5,480.0	2.21	138.75	5,389.6	-631.9	554.2	840.5	2.00	-2.00	0.00
5,520.0	1.41	138.75	5,429.5	-632.8	555.0	841.7	2.00	-2.00	0.00
5,560.0	0.61	138.75	5,469.5	-633.4	555.5	842.4	2.00	-2.00	0.00
5,590.5	0.00	0.00	5,500.0	-633.5	555.6	842.6	2.00	-2.00	0.00
TARGET BHL 1270'FSL, 2580'FWL									
5,600.0	0.00	0.00	5,509.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,640.0	0.00	0.00	5,549.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,680.0	0.00	0.00	5,589.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,720.0	0.00	0.00	5,629.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,760.0	0.00	0.00	5,669.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,709.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,840.0	0.00	0.00	5,749.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,880.0	0.00	0.00	5,789.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,920.0	0.00	0.00	5,829.5	-633.5	555.6	842.6	0.00	0.00	0.00
5,960.0	0.00	0.00	5,869.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,909.5	-633.5	555.6	842.6	0.00	0.00	0.00

Database:	Landmark	Local Co-ordinate Reference:	Well Thomason 23-16
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Project:	SEC.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	North Reference:	True
Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	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)
6,040.0	0.00	0.00	5,949.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,080.0	0.00	0.00	5,989.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,120.0	0.00	0.00	6,029.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,160.0	0.00	0.00	6,069.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,200.0	0.00	0.00	6,109.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,240.0	0.00	0.00	6,149.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,280.0	0.00	0.00	6,189.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,320.0	0.00	0.00	6,229.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,360.0	0.00	0.00	6,269.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,309.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,440.0	0.00	0.00	6,349.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,480.0	0.00	0.00	6,389.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,520.0	0.00	0.00	6,429.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,560.0	0.00	0.00	6,469.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,509.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,640.0	0.00	0.00	6,549.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,680.0	0.00	0.00	6,589.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,720.0	0.00	0.00	6,629.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,760.0	0.00	0.00	6,669.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,800.0	0.00	0.00	6,709.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,840.0	0.00	0.00	6,749.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,880.0	0.00	0.00	6,789.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,920.0	0.00	0.00	6,829.5	-633.5	555.6	842.6	0.00	0.00	0.00
6,960.0	0.00	0.00	6,869.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,909.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,005.5	0.00	0.00	6,915.0	-633.5	555.6	842.6	0.00	0.00	0.00
NIOBRARA - TARGET CIRCLE 1270'FSL, 2580'FWL									
7,040.0	0.00	0.00	6,949.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,080.0	0.00	0.00	6,989.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,120.0	0.00	0.00	7,029.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,160.0	0.00	0.00	7,069.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,200.0	0.00	0.00	7,109.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,240.0	0.00	0.00	7,149.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,280.0	0.00	0.00	7,189.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,290.5	0.00	0.00	7,200.0	-633.5	555.6	842.6	0.00	0.00	0.00
CODELL									
7,320.0	0.00	0.00	7,229.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,360.0	0.00	0.00	7,269.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,375.5	0.00	0.00	7,285.0	-633.5	555.6	842.6	0.00	0.00	0.00
GREENHORN									
7,400.0	0.00	0.00	7,309.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,440.0	0.00	0.00	7,349.5	-633.5	555.6	842.6	0.00	0.00	0.00
7,450.5	0.00	0.00	7,360.0	-633.5	555.6	842.6	0.00	0.00	0.00
HARD LINES 45'E OF BHL									

Database:	Landmark	Local Co-ordinate Reference:	Well Thomason 23-16
Company:	Anadarko, Weld County CO	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Project:	SEC.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	North Reference:	True
Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Plan #1 (3-01-11)		

Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
TARGET BHL 1270'F:	0.00	0.00	5,500.0	-633.5	555.6	1,293,095.25	3,232,290.98	40.134953	-104.669188
- plan hits target center									
- Point									
HARD LINES 45'E OF	0.00	0.00	7,360.0	-733.5	600.6	1,292,995.67	3,232,336.92	40.134678	-104.669027
- plan misses target center by 109.7ft at 7450.5ft MD (7360.0 TVD, -633.5 N, 555.6 E)									
- Polygon									
Point 1			7,360.0	0.0	0.0	1,292,995.67	3,232,336.92		
Point 2			7,360.0	200.0	0.0	1,293,195.65	3,232,335.05		
TARGET CIRCLE 127	0.00	0.00	6,915.0	-633.5	555.6	1,293,095.25	3,232,290.98	40.134953	-104.669188
- plan hits target center									
- Circle (radius 50.0)									

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

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,047.0	3,985.0	PARKMAN		0.00		
4,570.4	4,495.0	SUSSEX		0.00		
7,005.5	6,915.0	NIOBRARA		0.00		
7,290.5	7,200.0	CODELL		0.00		
7,375.5	7,285.0	GREENHORN		0.00		



Directional

Anadarko, Weld County CO

SEC.16-T2N-R65W

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

Thomason 23-16

Wellbore #1

Plan #1 (3-01-11)

Anticollision Report

10 March, 2011



Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

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

Survey Tool Program	Date 3/10/2011			
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.0	7,450.5	Plan #1 (3-01-11) (Wellbore #1)	MWD	MWD - Standard

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Distance Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
Thomason 11-16 Pad Sec.16-T2N-R65W						
Thomason 25-16 - Wellbore #1 - Plan #1 (3-01-11)	200.0	200.0	16.0	15.4	23.778	CC, ES
Thomason 25-16 - Wellbore #1 - Plan #1 (3-01-11)	400.0	399.3	19.5	18.0	12.440	SF
Thomason 36-16 - Wellbore #1 - Plan #1 (3-01-11)	400.0	400.0	16.0	14.5	10.189	CC, ES
Thomason 36-16 - Wellbore #1 - Plan #1 (3-01-11)	500.0	499.5	17.4	15.4	8.693	SF
Thomason X #16-11 (Exist.) - Wellbore #1 - Design #1	1,200.0	1,197.0	83.7	78.5	16.204	CC, ES
Thomason X #16-11 (Exist.) - Wellbore #1 - Design #1	1,400.0	1,396.8	90.6	84.6	15.142	SF

Offset Design Thomason 11-16 Pad Sec.16-T2N-R65W - Thomason 25-16 - Wellbore #1 - Plan #1 (3-01-11)												
Survey Program: 0-MWD												
Reference												
Measured Depth (ft)	Vertical Depth (ft)	Offset Measured Depth (ft)	Vertical Depth (ft)	Semi Major Axis		Highside Toolface (°)	Offset Wellbore Centre		Distance		Minimum Separation (ft)	Separation Factor
				Reference (ft)	Offset (ft)		+N/-S (ft)	+E/-W (ft)	Between Centres (ft)	Between Ellipses (ft)		Warning
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	71.333
200.0	200.0	200.0	200.0	0.3	0.3	0.00	16.0	0.0	16.0	15.4	0.67	23.778 CC, ES
300.0	300.0	299.8	299.7	0.6	0.6	5.61	16.6	1.6	16.7	15.6	1.12	14.939
400.0	400.0	399.3	399.1	0.8	0.8	19.49	18.4	6.5	19.5	18.0	1.57	12.440 SF
500.0	500.0	498.2	497.7	1.0	1.0	31.32	22.3	13.6	26.2	24.2	2.03	12.959
600.0	600.0	596.5	595.4	1.2	1.3	36.60	29.4	21.8	36.9	34.4	2.48	14.853
700.0	700.0	694.1	692.0	1.5	1.6	38.27	39.5	31.2	50.9	48.0	2.96	17.221
800.0	800.0	790.7	787.2	1.7	1.9	38.34	52.5	41.6	68.2	64.8	3.45	19.748
900.0	900.0	886.1	880.5	1.9	2.3	37.73	68.4	52.9	88.6	84.6	3.97	22.299
1,000.0	1,000.0	982.8	974.8	2.1	2.7	37.01	86.5	65.2	111.2	106.7	4.51	24.633
1,100.0	1,100.0	1,080.2	1,069.6	2.4	3.1	36.51	104.8	77.6	133.9	128.8	5.07	26.423
1,200.0	1,200.0	1,177.6	1,164.4	2.6	3.6	36.15	123.2	90.0	156.6	151.0	5.63	27.827
1,300.0	1,300.0	1,274.9	1,259.2	2.8	4.0	-102.95	141.5	102.4	179.7	174.0	5.76	31.204
1,400.0	1,399.8	1,371.8	1,353.6	3.0	4.5	-104.09	159.7	114.7	203.7	197.5	6.19	32.878
1,500.0	1,499.5	1,468.3	1,447.5	3.2	4.9	-105.72	177.9	127.0	228.6	222.0	6.65	34.404
1,600.0	1,598.7	1,564.3	1,541.0	3.4	5.4	-107.68	195.9	139.2	254.9	247.8	7.12	35.798
1,700.0	1,697.5	1,659.5	1,633.8	3.6	5.8	-109.83	213.9	151.3	282.7	275.0	7.63	37.070
1,800.0	1,795.6	1,754.0	1,725.8	3.9	6.3	-112.07	231.7	163.4	312.2	304.0	8.17	38.229
1,850.5	1,845.0	1,801.4	1,772.0	4.1	6.5	-113.21	240.6	169.4	327.8	319.4	8.45	38.778
1,900.0	1,893.2	1,847.7	1,817.0	4.3	6.7	-114.56	249.3	175.3	343.5	334.8	8.76	39.227

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

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

Offset Design												Offset Site Error:	0.0ft
Survey Program: 0-MWD												Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance						Warning
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	
2,000.0	1,990.6	1,941.3	1,908.2	4.6	7.2	-116.96	266.9	187.2	375.7	366.3	9.39	40.024	
2,100.0	2,088.0	2,034.9	1,999.3	5.0	7.6	-118.99	284.5	199.1	408.3	398.3	10.03	40.699	
2,200.0	2,185.5	2,128.5	2,090.5	5.4	8.0	-120.72	302.1	211.0	441.4	430.7	10.69	41.282	
2,300.0	2,282.9	2,222.1	2,181.6	5.8	8.5	-122.21	319.8	223.0	474.7	463.4	11.36	41.792	
2,400.0	2,380.3	2,315.7	2,272.7	6.3	8.9	-123.51	337.4	234.9	508.4	496.3	12.03	42.244	
2,500.0	2,477.8	2,409.3	2,363.9	6.7	9.4	-124.65	355.0	246.8	542.2	529.5	12.71	42.647	
2,600.0	2,575.2	2,502.9	2,455.0	7.2	9.8	-125.65	372.6	258.7	576.2	562.8	13.40	43.011	
2,700.0	2,672.6	2,596.4	2,546.2	7.6	10.3	-126.55	390.2	270.6	610.3	596.2	14.08	43.340	
2,800.0	2,770.0	2,690.0	2,637.3	8.1	10.7	-127.35	407.8	282.5	644.6	629.8	14.77	43.641	
2,900.0	2,867.5	2,783.6	2,728.4	8.5	11.2	-128.06	425.4	294.4	678.9	663.4	15.46	43.916	
3,000.0	2,964.9	2,877.2	2,819.6	9.0	11.6	-128.72	443.1	306.4	713.3	697.2	16.15	44.170	
3,100.0	3,062.3	2,970.8	2,910.7	9.5	12.1	-129.31	460.7	318.3	747.8	731.0	16.84	44.404	
3,200.0	3,159.8	3,064.4	3,001.9	10.0	12.5	-129.85	478.3	330.2	782.4	764.9	17.54	44.621	
3,300.0	3,257.2	3,158.0	3,093.0	10.4	13.0	-130.34	495.9	342.1	817.1	798.8	18.23	44.822	
3,400.0	3,354.6	3,251.6	3,184.1	10.9	13.4	-130.79	513.5	354.0	851.7	832.8	18.92	45.010	
3,500.0	3,452.1	3,345.1	3,275.3	11.4	13.8	-131.21	531.1	365.9	886.5	866.8	19.62	45.186	
3,600.0	3,549.5	3,438.7	3,366.4	11.9	14.3	-131.60	548.8	377.8	921.2	900.9	20.31	45.350	
3,700.0	3,646.9	3,532.3	3,457.6	12.3	14.7	-131.96	566.4	389.8	956.0	935.0	21.01	45.505	
3,800.0	3,744.4	3,625.9	3,548.7	12.8	15.2	-132.29	584.0	401.7	990.8	969.1	21.71	45.650	
3,900.0	3,841.8	3,719.5	3,639.8	13.3	15.6	-132.60	601.6	413.6	1,025.7	1,003.3	22.40	45.786	
4,000.0	3,939.2	3,813.1	3,731.0	13.8	16.1	-132.89	619.2	425.5	1,060.6	1,037.5	23.10	45.915	
4,100.0	4,036.7	3,906.7	3,822.1	14.3	16.5	-133.16	636.8	437.4	1,095.5	1,071.7	23.80	46.037	
4,200.0	4,134.1	4,000.3	3,913.3	14.8	17.0	-133.42	654.4	449.3	1,130.4	1,105.9	24.49	46.152	
4,300.0	4,231.5	4,093.8	4,004.4	15.2	17.4	-133.66	672.1	461.2	1,165.3	1,140.2	25.19	46.262	
4,400.0	4,329.0	4,187.4	4,095.5	15.7	17.9	-133.89	689.7	473.2	1,200.3	1,174.4	25.89	46.365	
4,500.0	4,426.4	4,281.0	4,186.7	16.2	18.3	-134.10	707.3	485.1	1,235.3	1,208.7	26.59	46.464	
4,600.0	4,523.8	4,374.6	4,277.8	16.7	18.8	-134.30	724.9	497.0	1,270.3	1,243.0	27.28	46.557	
4,700.0	4,621.3	4,481.2	4,381.6	17.2	19.3	-134.52	744.8	510.4	1,305.2	1,277.2	28.01	46.595	
4,800.0	4,718.7	4,636.7	4,534.3	17.7	19.8	-134.96	769.2	526.9	1,337.1	1,308.3	28.78	46.463	
4,900.0	4,816.1	4,796.1	4,692.3	18.2	20.2	-135.58	787.0	539.0	1,364.6	1,335.1	29.50	46.253	
4,939.9	4,855.0	4,860.7	4,756.5	18.4	20.3	-135.87	792.2	542.5	1,374.3	1,344.6	29.78	46.154	
5,000.0	4,913.7	4,958.8	4,854.5	18.6	20.5	-136.52	797.7	546.2	1,387.2	1,357.0	30.23	45.886	
5,100.0	5,011.9	5,116.4	5,011.9	18.9	20.7	-137.50	800.7	548.3	1,402.9	1,372.0	30.86	45.455	
5,200.0	5,110.7	5,215.2	5,110.7	19.2	20.8	-138.07	800.7	548.3	1,414.3	1,382.9	31.36	45.094	
5,300.0	5,210.0	5,314.5	5,210.0	19.5	20.9	-138.51	800.7	548.3	1,423.2	1,391.3	31.83	44.714	
5,400.0	5,309.7	5,414.1	5,309.7	19.7	21.1	-138.81	800.7	548.3	1,429.5	1,397.2	32.25	44.329	
5,500.0	5,409.6	5,514.0	5,409.6	19.8	21.2	-138.99	800.7	548.3	1,433.2	1,400.6	32.62	43.938	
5,590.5	5,500.0	5,604.4	5,500.0	20.0	21.3	-0.29	800.7	548.3	1,434.2	1,401.3	32.92	43.570	
5,600.0	5,509.5	5,614.0	5,509.5	20.0	21.3	-0.29	800.7	548.3	1,434.2	1,401.3	32.95	43.532	
5,700.0	5,609.5	5,714.0	5,609.5	20.1	21.4	-0.29	800.7	548.3	1,434.2	1,401.0	33.25	43.134	
5,800.0	5,709.5	5,814.0	5,709.5	20.2	21.5	-0.29	800.7	548.3	1,434.2	1,400.7	33.56	42.740	
5,900.0	5,809.5	5,914.0	5,809.5	20.3	21.7	-0.29	800.7	548.3	1,434.2	1,400.4	33.87	42.349	
6,000.0	5,909.5	6,014.0	5,909.5	20.4	21.8	-0.29	800.7	548.3	1,434.2	1,400.1	34.18	41.961	
6,100.0	6,009.5	6,114.0	6,009.5	20.6	21.9	-0.29	800.7	548.3	1,434.2	1,399.8	34.50	41.577	
6,200.0	6,109.5	6,214.0	6,109.5	20.7	22.0	-0.29	800.7	548.3	1,434.2	1,399.4	34.82	41.196	
6,300.0	6,209.5	6,314.0	6,209.5	20.8	22.2	-0.29	800.7	548.3	1,434.2	1,399.1	35.14	40.819	
6,400.0	6,309.5	6,414.0	6,309.5	21.0	22.3	-0.29	800.7	548.3	1,434.2	1,398.8	35.46	40.445	
6,500.0	6,409.5	6,514.0	6,409.5	21.1	22.4	-0.29	800.7	548.3	1,434.2	1,398.5	35.79	40.075	
6,600.0	6,509.5	6,614.0	6,509.5	21.2	22.6	-0.29	800.7	548.3	1,434.2	1,398.1	36.12	39.709	
6,700.0	6,609.5	6,714.0	6,609.5	21.4	22.7	-0.29	800.7	548.3	1,434.2	1,397.8	36.45	39.347	
6,800.0	6,709.5	6,814.0	6,709.5	21.5	22.9	-0.29	800.7	548.3	1,434.2	1,397.5	36.79	38.989	
6,900.0	6,809.5	6,914.0	6,809.5	21.6	23.0	-0.29	800.7	548.3	1,434.2	1,397.1	37.12	38.634	

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

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

Offset Design Thomason 11-16 Pad Sec.16-T2N-R65W - Thomason 25-16 - Wellbore #1 - Plan #1 (3-01-11)												Offset Site Error:	0.0 ft
Survey Program: 0-MWD												Offset Well Error:	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
7,000.0	6,909.5	7,014.0	6,909.5	21.8	23.1	-0.29	800.7	548.3	1,434.2	1,396.8	37.46	38.284	
7,100.0	7,009.5	7,114.0	7,009.5	21.9	23.3	-0.29	800.7	548.3	1,434.2	1,396.4	37.81	37.938	
7,200.0	7,109.5	7,214.0	7,109.5	22.0	23.4	-0.29	800.7	548.3	1,434.2	1,396.1	38.15	37.595	
7,300.0	7,209.5	7,314.0	7,209.5	22.2	23.6	-0.29	800.7	548.3	1,434.2	1,395.8	38.50	37.257	
7,400.0	7,309.5	7,414.0	7,309.5	22.3	23.7	-0.29	800.7	548.3	1,434.2	1,395.4	38.84	36.923	
7,450.5	7,360.0	7,464.4	7,360.0	22.4	23.8	-0.29	800.7	548.3	1,434.2	1,395.2	39.02	36.755	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0ft
Survey Program: 0-MWD													Offset Well Error:	0.0ft
Reference		Offset		Semi Major Axis			Distance							Warning
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		
0.0	0.0	0.0	0.0	0.0	0.0	-179.00	-16.0	-0.3	16.0	16.0	0.00	N/A		
100.0	100.0	100.0	100.0	0.1	0.1	-179.00	-16.0	-0.3	16.0	15.8	0.22	71.325		
200.0	200.0	200.0	200.0	0.3	0.3	-179.00	-16.0	-0.3	16.0	15.4	0.67	23.775		
300.0	300.0	300.0	300.0	0.6	0.6	-179.00	-16.0	-0.3	16.0	14.9	1.12	14.265		
400.0	400.0	400.0	400.0	0.8	0.8	-179.00	-16.0	-0.3	16.0	14.5	1.57	10.189 CC, ES		
500.0	500.0	499.5	499.5	1.0	1.0	177.26	-17.4	0.8	17.4	15.4	2.00	8.693 SF		
600.0	600.0	598.8	598.6	1.2	1.2	169.46	-21.4	4.0	21.8	19.4	2.42	9.014		
700.0	700.0	697.6	697.0	1.5	1.4	164.26	-28.6	8.1	29.9	27.0	2.86	10.465		
800.0	800.0	795.6	794.4	1.7	1.6	161.74	-39.1	12.9	41.6	38.2	3.32	12.516		
900.0	900.0	892.8	890.5	1.9	1.9	160.71	-52.7	18.4	56.6	52.8	3.80	14.880		
1,000.0	1,000.0	989.0	985.0	2.1	2.3	160.41	-69.2	24.6	75.0	70.7	4.31	17.389		
1,100.0	1,100.0	1,083.8	1,077.6	2.4	2.7	160.45	-88.5	31.4	96.6	91.7	4.84	19.941		
1,200.0	1,200.0	1,177.1	1,168.0	2.6	3.1	160.64	-110.5	38.8	121.4	116.0	5.40	22.474		
1,300.0	1,300.0	1,269.3	1,256.5	2.8	3.6	22.19	-134.9	46.7	147.7	142.2	5.55	26.595		
1,400.0	1,399.8	1,360.6	1,343.4	3.0	4.1	22.86	-161.9	55.2	174.0	168.0	5.98	29.100		
1,500.0	1,499.5	1,451.1	1,428.5	3.2	4.7	23.74	-191.2	64.2	200.3	193.9	6.42	31.193		
1,600.0	1,598.7	1,540.8	1,511.8	3.4	5.3	24.75	-222.9	73.7	226.7	219.8	6.88	32.964		
1,700.0	1,697.5	1,632.7	1,596.3	3.6	6.0	25.88	-257.8	84.0	252.9	245.5	7.37	34.302		
1,800.0	1,795.6	1,729.6	1,685.0	3.9	6.7	27.16	-295.0	95.0	276.7	268.8	7.90	35.035		
1,850.5	1,845.0	1,778.8	1,730.1	4.1	7.1	27.85	-313.9	100.5	287.7	279.5	8.18	35.175		
1,900.0	1,893.2	1,827.0	1,774.3	4.3	7.5	28.61	-332.4	106.0	298.1	289.7	8.48	35.177		
2,000.0	1,990.6	1,924.4	1,863.6	4.6	8.2	29.98	-369.9	117.0	319.3	310.2	9.09	35.115		
2,100.0	2,088.0	2,021.9	1,952.8	5.0	9.0	31.19	-407.3	128.0	340.7	330.9	9.74	34.986		
2,200.0	2,185.5	2,119.3	2,042.1	5.4	9.8	32.26	-444.8	139.0	362.2	351.7	10.40	34.809		
2,300.0	2,282.9	2,216.8	2,131.4	5.8	10.6	33.21	-482.2	150.0	383.7	372.6	11.09	34.601		
2,400.0	2,380.3	2,314.3	2,220.7	6.3	11.3	34.05	-519.7	161.0	405.4	393.6	11.79	34.374		
2,500.0	2,477.8	2,411.7	2,310.0	6.7	12.1	34.81	-557.1	172.1	427.2	414.6	12.51	34.136		
2,600.0	2,575.2	2,509.2	2,399.3	7.2	12.9	35.50	-594.6	183.1	449.0	435.7	13.25	33.894		
2,700.0	2,672.6	2,606.6	2,488.6	7.6	13.7	36.12	-632.0	194.1	470.8	456.8	13.99	33.654		
2,800.0	2,770.0	2,704.1	2,577.9	8.1	14.5	36.69	-669.5	205.1	492.8	478.0	14.75	33.417		
2,900.0	2,867.5	2,801.5	2,667.2	8.5	15.2	37.21	-706.9	216.1	514.7	499.2	15.51	33.187		
3,000.0	2,964.9	2,899.0	2,756.5	9.0	16.0	37.69	-744.4	227.1	536.7	520.4	16.28	32.964		
3,100.0	3,062.3	2,996.5	2,845.8	9.5	16.8	38.13	-781.8	238.2	558.7	541.7	17.06	32.749		
3,200.0	3,159.8	3,093.9	2,935.1	10.0	17.6	38.53	-819.3	249.2	580.8	562.9	17.85	32.544		
3,300.0	3,257.2	3,191.4	3,024.4	10.4	18.4	38.91	-856.7	260.2	602.9	584.2	18.64	32.347		
3,400.0	3,354.6	3,288.8	3,113.7	10.9	19.2	39.26	-894.2	271.2	625.0	605.5	19.43	32.158		
3,500.0	3,452.1	3,386.3	3,203.0	11.4	20.0	39.58	-931.6	282.2	647.1	626.9	20.24	31.979		
3,600.0	3,549.5	3,483.7	3,292.3	11.9	20.7	39.89	-969.1	293.2	669.3	648.2	21.04	31.808		
3,700.0	3,646.9	3,581.2	3,381.6	12.3	21.5	40.17	-1,006.5	304.2	691.4	669.6	21.85	31.644		
3,800.0	3,744.4	3,678.7	3,470.9	12.8	22.3	40.44	-1,044.0	315.3	713.6	690.9	22.66	31.489		
3,900.0	3,841.8	3,776.1	3,560.2	13.3	23.1	40.69	-1,081.4	326.3	735.8	712.3	23.48	31.340		
4,000.0	3,939.2	3,873.6	3,649.5	13.8	23.9	40.93	-1,118.9	337.3	758.0	733.7	24.30	31.199		
4,100.0	4,036.7	3,971.0	3,738.8	14.3	24.7	41.15	-1,156.3	348.3	780.2	755.1	25.12	31.064		
4,200.0	4,134.1	4,068.5	3,828.1	14.8	25.5	41.36	-1,193.8	359.3	802.4	776.5	25.94	30.935		
4,300.0	4,231.5	4,165.9	3,917.4	15.2	26.3	41.56	-1,231.2	370.3	824.7	797.9	26.76	30.813		
4,400.0	4,329.0	4,263.4	4,006.7	15.7	27.0	41.75	-1,268.7	381.4	846.9	819.3	27.59	30.695		
4,500.0	4,426.4	4,360.9	4,096.0	16.2	27.8	41.93	-1,306.1	392.4	869.2	840.8	28.42	30.583		
4,600.0	4,523.8	4,458.3	4,185.3	16.7	28.6	42.10	-1,343.6	403.4	891.4	862.2	29.25	30.476		
4,700.0	4,621.3	4,555.8	4,274.6	17.2	29.4	42.26	-1,381.0	414.4	913.7	883.6	30.08	30.373		
4,800.0	4,718.7	4,653.2	4,363.9	17.7	30.2	42.42	-1,418.5	425.4	936.0	905.1	30.92	30.275		
4,900.0	4,816.1	4,750.7	4,453.2	18.2	31.0	42.56	-1,455.9	436.4	958.3	926.5	31.75	30.180		
4,939.9	4,855.0	4,789.6	4,488.8	18.4	31.3	42.62	-1,470.9	440.8	967.2	935.1	32.08	30.144		

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

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

Offset Design													Offset Site Error:	0.0 ft
Survey Program: 0-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
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		
5,000.0	4,913.7	4,848.1	4,542.4	18.6	31.8	42.87	-1,493.3	447.4	981.0	948.4	32.57	30.120		
5,100.0	5,011.9	4,944.9	4,631.1	18.9	32.6	43.21	-1,530.5	458.4	1,006.0	972.7	33.28	30.225		
5,200.0	5,110.7	5,041.0	4,719.2	19.2	33.3	43.44	-1,567.5	469.2	1,033.5	999.6	33.93	30.461		
5,300.0	5,210.0	5,136.3	4,806.5	19.5	34.1	43.59	-1,604.1	480.0	1,063.4	1,028.9	34.50	30.823		
5,400.0	5,309.7	5,255.7	4,916.3	19.7	34.9	43.56	-1,649.3	493.3	1,095.3	1,060.3	35.02	31.274		
5,500.0	5,409.6	5,406.2	5,056.9	19.8	35.7	43.34	-1,700.3	508.3	1,125.6	1,090.1	35.47	31.734		
5,590.5	5,500.0	5,545.4	5,189.4	20.0	36.4	-178.18	-1,741.2	520.3	1,151.0	1,115.2	35.79	32.162		
5,600.0	5,509.5	5,560.2	5,203.7	20.0	36.4	-178.24	-1,745.2	521.5	1,153.5	1,117.7	35.81	32.208		
5,700.0	5,609.5	5,718.5	5,356.9	20.1	37.1	-178.86	-1,783.4	532.7	1,177.5	1,141.4	36.13	32.593		
5,800.0	5,709.5	5,880.9	5,516.1	20.2	37.6	-179.33	-1,814.0	541.8	1,196.4	1,159.9	36.46	32.809		
5,900.0	5,809.5	6,046.6	5,680.1	20.3	38.0	-179.65	-1,836.3	548.3	1,209.8	1,173.0	36.81	32.865		
6,000.0	5,909.5	6,214.4	5,847.3	20.4	38.3	-179.84	-1,849.6	552.2	1,217.7	1,180.6	37.16	32.767		
6,100.0	6,009.5	6,376.7	6,009.5	20.6	38.5	-179.90	-1,853.5	553.4	1,220.0	1,182.5	37.51	32.526		
6,200.0	6,109.5	6,476.7	6,109.5	20.7	38.5	-179.90	-1,853.5	553.4	1,220.0	1,182.2	37.78	32.293		
6,300.0	6,209.5	6,576.7	6,209.5	20.8	38.6	-179.90	-1,853.5	553.4	1,220.0	1,182.0	38.05	32.062		
6,400.0	6,309.5	6,676.7	6,309.5	21.0	38.6	-179.90	-1,853.5	553.4	1,220.0	1,181.7	38.33	31.832		
6,500.0	6,409.5	6,776.7	6,409.5	21.1	38.7	-179.90	-1,853.5	553.4	1,220.0	1,181.4	38.61	31.603		
6,600.0	6,509.5	6,876.7	6,509.5	21.2	38.8	-179.90	-1,853.5	553.4	1,220.0	1,181.1	38.89	31.374		
6,700.0	6,609.5	6,976.7	6,609.5	21.4	38.8	-179.90	-1,853.5	553.4	1,220.0	1,180.9	39.17	31.146		
6,800.0	6,709.5	7,076.7	6,709.5	21.5	38.9	-179.90	-1,853.5	553.4	1,220.0	1,180.6	39.46	30.919		
6,900.0	6,809.5	7,176.7	6,809.5	21.6	39.0	-179.90	-1,853.5	553.4	1,220.0	1,180.3	39.75	30.693		
7,000.0	6,909.5	7,276.7	6,909.5	21.8	39.0	-179.90	-1,853.5	553.4	1,220.0	1,180.0	40.04	30.468		
7,100.0	7,009.5	7,376.7	7,009.5	21.9	39.1	-179.90	-1,853.5	553.4	1,220.0	1,179.7	40.34	30.244		
7,200.0	7,109.5	7,476.7	7,109.5	22.0	39.2	-179.90	-1,853.5	553.4	1,220.0	1,179.4	40.64	30.022		
7,300.0	7,209.5	7,576.7	7,209.5	22.2	39.3	-179.90	-1,853.5	553.4	1,220.0	1,179.1	40.94	29.800		
7,400.0	7,309.5	7,676.7	7,309.5	22.3	39.3	-179.90	-1,853.5	553.4	1,220.0	1,178.8	41.24	29.580		
7,450.5	7,360.0	7,727.1	7,360.0	22.4	39.4	-179.90	-1,853.5	553.4	1,220.0	1,178.6	41.40	29.470		

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	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	-36.74	67.0	-50.0	83.7				
100.0	100.0	97.0	97.0	0.1	0.1	-36.74	67.0	-50.0	83.7	83.4	0.22	377.870	
200.0	200.0	197.0	197.0	0.3	0.3	-36.74	67.0	-50.0	83.7	83.0	0.67	125.324	
300.0	300.0	297.0	297.0	0.6	0.6	-36.74	67.0	-50.0	83.7	82.5	1.12	74.892	
400.0	400.0	397.0	397.0	0.8	0.8	-36.74	67.0	-50.0	83.7	82.1	1.57	53.402	
500.0	500.0	497.0	497.0	1.0	1.0	-36.74	67.0	-50.0	83.7	81.6	2.02	41.495	
600.0	600.0	597.0	597.0	1.2	1.2	-36.74	67.0	-50.0	83.7	81.2	2.47	33.930	
700.0	700.0	697.0	697.0	1.5	1.5	-36.74	67.0	-50.0	83.7	80.7	2.92	28.698	
800.0	800.0	797.0	797.0	1.7	1.7	-36.74	67.0	-50.0	83.7	80.3	3.36	24.864	
900.0	900.0	897.0	897.0	1.9	1.9	-36.74	67.0	-50.0	83.7	79.8	3.81	21.934	
1,000.0	1,000.0	997.0	997.0	2.1	2.1	-36.74	67.0	-50.0	83.7	79.4	4.26	19.621	
1,100.0	1,100.0	1,097.0	1,097.0	2.4	2.4	-36.74	67.0	-50.0	83.7	78.9	4.71	17.750	
1,200.0	1,200.0	1,197.0	1,197.0	2.6	2.6	-36.74	67.0	-50.0	83.7	78.5	5.16	16.204 CC, ES	
1,300.0	1,300.0	1,297.0	1,297.0	2.8	2.8	-175.58	67.0	-50.0	85.4	79.8	5.59	15.288	
1,400.0	1,399.8	1,396.8	1,396.8	3.0	3.0	-175.83	67.0	-50.0	90.6	84.6	5.98	15.142 SF	
1,500.0	1,499.5	1,496.5	1,496.5	3.2	3.3	-176.18	67.0	-50.0	99.3	92.9	6.38	15.559	
1,600.0	1,598.7	1,595.7	1,595.7	3.4	3.5	-176.59	67.0	-50.0	111.5	104.7	6.78	16.442	
1,700.0	1,697.5	1,694.5	1,694.5	3.6	3.7	-176.99	67.0	-50.0	127.1	119.9	7.17	17.716	
1,800.0	1,795.6	1,792.6	1,792.6	3.9	3.9	-177.36	67.0	-50.0	146.2	138.6	7.56	19.320	
1,850.5	1,845.0	1,842.0	1,842.0	4.1	4.0	-177.54	67.0	-50.0	157.1	149.3	7.76	20.240	
1,900.0	1,893.2	1,890.2	1,890.2	4.3	4.1	-177.70	67.0	-50.0	168.2	160.2	7.97	21.093	
2,000.0	1,990.6	1,987.6	1,987.6	4.6	4.4	-177.97	67.0	-50.0	190.7	182.3	8.41	22.673	
2,100.0	2,088.0	2,085.0	2,085.0	5.0	4.6	-178.19	67.0	-50.0	213.2	204.4	8.85	24.081	
2,200.0	2,185.5	2,182.5	2,182.5	5.4	4.8	-178.36	67.0	-50.0	235.7	226.4	9.30	25.341	
2,300.0	2,282.9	2,279.9	2,279.9	5.8	5.0	-178.50	67.0	-50.0	258.2	248.5	9.75	26.474	
2,400.0	2,380.3	2,377.3	2,377.3	6.3	5.2	-178.62	67.0	-50.0	280.7	270.5	10.21	27.496	
2,500.0	2,477.8	2,474.8	2,474.8	6.7	5.5	-178.72	67.0	-50.0	303.2	292.6	10.67	28.421	
2,600.0	2,575.2	2,572.2	2,572.2	7.2	5.7	-178.81	67.0	-50.0	325.7	314.6	11.13	29.263	
2,700.0	2,672.6	2,669.6	2,669.6	7.6	5.9	-178.89	67.0	-50.0	348.2	336.7	11.60	30.031	
2,800.0	2,770.0	2,767.0	2,767.0	8.1	6.1	-178.96	67.0	-50.0	370.8	358.7	12.06	30.735	
2,900.0	2,867.5	2,864.5	2,864.5	8.5	6.3	-179.02	67.0	-50.0	393.3	380.7	12.53	31.381	
3,000.0	2,964.9	2,961.9	2,961.9	9.0	6.5	-179.07	67.0	-50.0	415.8	402.8	13.00	31.976	
3,100.0	3,062.3	3,059.3	3,059.3	9.5	6.8	-179.12	67.0	-50.0	438.3	424.8	13.47	32.526	
3,200.0	3,159.8	3,156.8	3,156.8	10.0	7.0	-179.16	67.0	-50.0	460.8	446.9	13.95	33.036	
3,300.0	3,257.2	3,254.2	3,254.2	10.4	7.2	-179.20	67.0	-50.0	483.3	468.9	14.42	33.509	
3,400.0	3,354.6	3,351.6	3,351.6	10.9	7.4	-179.24	67.0	-50.0	505.8	490.9	14.90	33.950	
3,500.0	3,452.1	3,449.1	3,449.1	11.4	7.6	-179.27	67.0	-50.0	528.3	513.0	15.38	34.361	
3,600.0	3,549.5	3,546.5	3,546.5	11.9	7.9	-179.30	67.0	-50.0	550.8	535.0	15.85	34.745	
3,700.0	3,646.9	3,643.9	3,643.9	12.3	8.1	-179.33	67.0	-50.0	573.4	557.0	16.33	35.105	
3,800.0	3,744.4	3,741.4	3,741.4	12.8	8.3	-179.35	67.0	-50.0	595.9	579.1	16.81	35.443	
3,900.0	3,841.8	3,838.8	3,838.8	13.3	8.5	-179.37	67.0	-50.0	618.4	601.1	17.29	35.760	
4,000.0	3,939.2	3,936.2	3,936.2	13.8	8.7	-179.40	67.0	-50.0	640.9	623.1	17.77	36.060	
4,100.0	4,036.7	4,033.7	4,033.7	14.3	9.0	-179.42	67.0	-50.0	663.4	645.1	18.25	36.342	
4,200.0	4,134.1	4,131.1	4,131.1	14.8	9.2	-179.44	67.0	-50.0	685.9	667.2	18.74	36.609	
4,300.0	4,231.5	4,228.5	4,228.5	15.2	9.4	-179.45	67.0	-50.0	708.4	689.2	19.22	36.861	
4,400.0	4,329.0	4,326.0	4,326.0	15.7	9.6	-179.47	67.0	-50.0	730.9	711.2	19.70	37.100	
4,500.0	4,426.4	4,423.4	4,423.4	16.2	9.8	-179.49	67.0	-50.0	753.5	733.3	20.19	37.327	
4,600.0	4,523.8	4,520.8	4,520.8	16.7	10.0	-179.50	67.0	-50.0	776.0	755.3	20.67	37.542	
4,700.0	4,621.3	4,618.3	4,618.3	17.2	10.3	-179.52	67.0	-50.0	798.5	777.3	21.15	37.747	
4,800.0	4,718.7	4,715.7	4,715.7	17.7	10.5	-179.53	67.0	-50.0	821.0	799.3	21.64	37.942	
4,900.0	4,816.1	4,813.1	4,813.1	18.2	10.7	-179.54	67.0	-50.0	843.5	821.4	22.12	38.128	
4,939.9	4,855.0	4,852.0	4,852.0	18.4	10.8	-179.55	67.0	-50.0	852.5	830.2	22.32	38.200	

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

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

Offset Design Thomason 11-16 Pad Sec.16-T2N-R65W - Thomason X #16-11 (Exist.) - Wellbore #1 - Design #1												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
5,000.0	4,913.7	4,910.7	4,910.7	18.6	10.9	-179.56	67.0	-50.0	865.4	842.7	22.65	38.212	
5,100.0	5,011.9	5,008.9	5,008.9	18.9	11.1	-179.57	67.0	-50.0	884.1	861.0	23.16	38.178	
5,200.0	5,110.7	5,107.7	5,107.7	19.2	11.4	-179.58	67.0	-50.0	899.5	875.8	23.64	38.050	
5,300.0	5,210.0	5,207.0	5,207.0	19.5	11.6	-179.58	67.0	-50.0	911.3	887.2	24.09	37.834	
5,400.0	5,309.7	5,306.7	5,306.7	19.7	11.8	-179.59	67.0	-50.0	919.7	895.2	24.50	37.536	
5,500.0	5,409.6	5,406.6	5,406.6	19.8	12.0	-179.59	67.0	-50.0	924.6	899.7	24.88	37.159	
5,590.5	5,500.0	5,497.0	5,497.0	20.0	12.2	-40.84	67.0	-50.0	926.0	900.8	25.20	36.743	
5,600.0	5,509.5	5,506.5	5,506.5	20.0	12.3	-40.84	67.0	-50.0	926.0	900.8	25.24	36.687	
5,700.0	5,609.5	5,606.5	5,606.5	20.1	12.5	-40.84	67.0	-50.0	926.0	900.4	25.64	36.112	
5,800.0	5,709.5	5,706.5	5,706.5	20.2	12.7	-40.84	67.0	-50.0	926.0	900.0	26.05	35.553	
5,900.0	5,809.5	5,806.5	5,806.5	20.3	12.9	-40.84	67.0	-50.0	926.0	899.6	26.45	35.010	
6,000.0	5,909.5	5,906.5	5,906.5	20.4	13.2	-40.84	67.0	-50.0	926.0	899.2	26.86	34.481	
6,100.0	6,009.5	6,006.5	6,006.5	20.6	13.4	-40.84	67.0	-50.0	926.0	898.8	27.26	33.966	
6,200.0	6,109.5	6,106.5	6,106.5	20.7	13.6	-40.84	67.0	-50.0	926.0	898.4	27.67	33.465	
6,300.0	6,209.5	6,206.5	6,206.5	20.8	13.8	-40.84	67.0	-50.0	926.0	897.9	28.08	32.977	
6,400.0	6,309.5	6,306.5	6,306.5	21.0	14.1	-40.84	67.0	-50.0	926.0	897.5	28.49	32.502	
6,500.0	6,409.5	6,406.5	6,406.5	21.1	14.3	-40.84	67.0	-50.0	926.0	897.1	28.90	32.039	
6,600.0	6,509.5	6,506.5	6,506.5	21.2	14.5	-40.84	67.0	-50.0	926.0	896.7	29.32	31.588	
6,700.0	6,609.5	6,606.5	6,606.5	21.4	14.7	-40.84	67.0	-50.0	926.0	896.3	29.73	31.149	
6,800.0	6,709.5	6,706.5	6,706.5	21.5	15.0	-40.84	67.0	-50.0	926.0	895.9	30.14	30.720	
6,900.0	6,809.5	6,806.5	6,806.5	21.6	15.2	-40.84	67.0	-50.0	926.0	895.5	30.56	30.302	
7,000.0	6,909.5	6,906.5	6,906.5	21.8	15.4	-40.84	67.0	-50.0	926.0	895.1	30.98	29.895	
7,100.0	7,009.5	7,006.5	7,006.5	21.9	15.6	-40.84	67.0	-50.0	926.0	894.6	31.39	29.497	
7,200.0	7,109.5	7,106.5	7,106.5	22.0	15.9	-40.84	67.0	-50.0	926.0	894.2	31.81	29.110	
7,300.0	7,209.5	7,206.5	7,206.5	22.2	16.1	-40.84	67.0	-50.0	926.0	893.8	32.23	28.731	
7,400.0	7,309.5	7,306.5	7,306.5	22.3	16.3	-40.84	67.0	-50.0	926.0	893.4	32.65	28.362	
7,450.5	7,360.0	7,357.0	7,357.0	22.4	16.4	-40.84	67.0	-50.0	926.0	893.2	32.86	28.179	

Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4899.0ft (Original Well Elev) Coordinates are relative to: Thomason 23-16
 Offset Depths are relative to Offset Datum
 Central Meridian is -105.500000 °
 Coordinate System is US State Plane 1983, Colorado Northern Zone
 Grid Convergence at Surface is: 0.54°



Company:	Anadarko, Weld County CO	Local Co-ordinate Reference:	Well Thomason 23-16
Project:	SEC.16-T2N-R65W	TVD Reference:	WELL @ 4899.0ft (Original Well Elev)
Reference Site:	Thomason 11-16 Pad Sec.16-T2N-R65W	MD Reference:	WELL @ 4899.0ft (Original Well Elev)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 23-16	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	Wellbore #1	Database:	Landmark
Reference Design:	Plan #1 (3-01-11)	Offset TVD Reference:	Offset Datum

Reference Depths are relative to WELL @ 4899.0ft (Original Well Elev) Coordinates are relative to: Thomason 23-16
 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°

