

Azimuths to True North
 Magnetic North: 8.75°

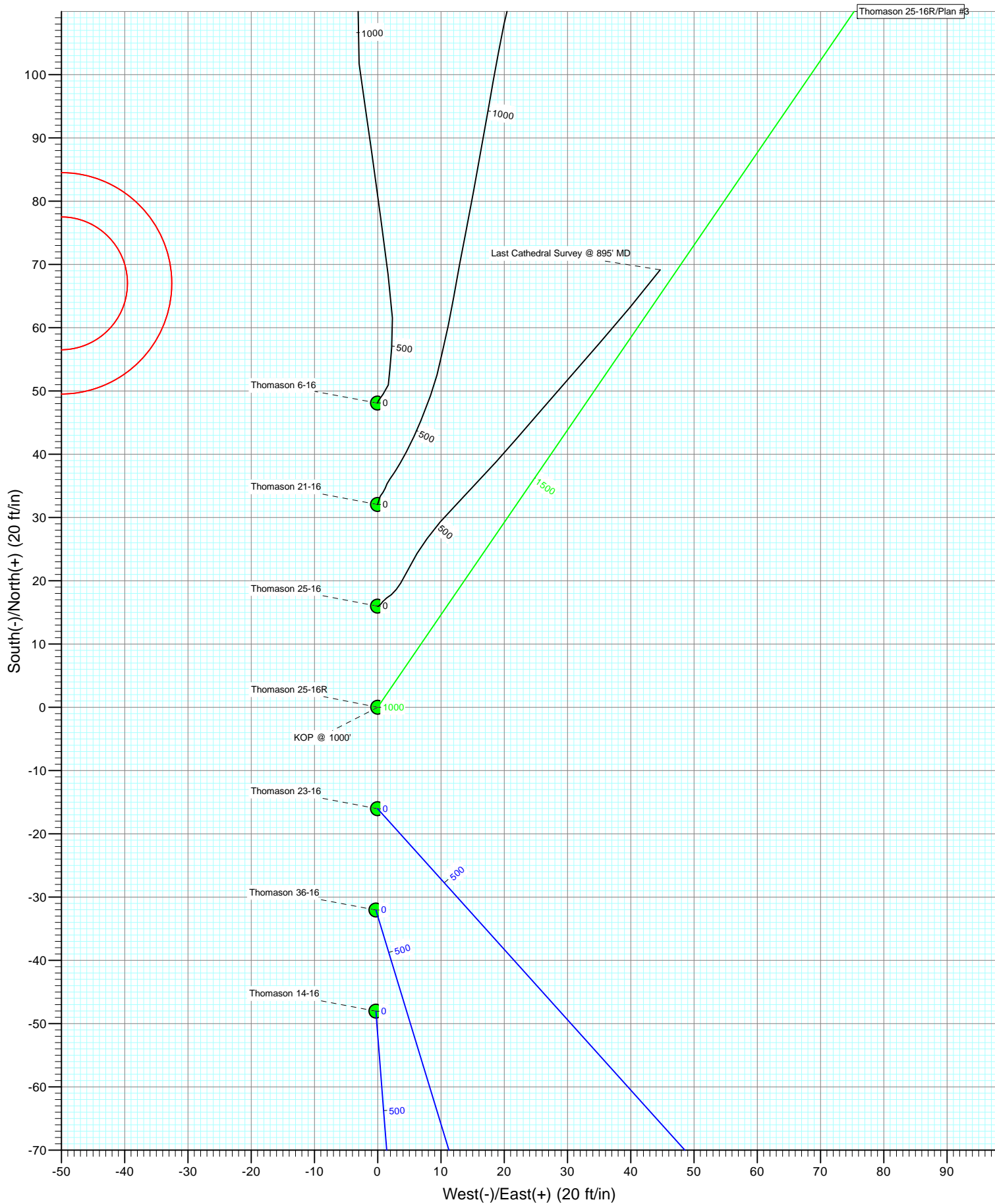
Magnetic Field
 Strength: 52971.0snT
 Dip Angle: 66.84°
 Date: 10/2/2011
 Model: IGRF2010

FORMATION TOP DETAILS

TVDPath	MDPath	Formation
3985.0	4145.0	PK
4495.0	4657.7	SX
6915.0	7077.7	NIO
7200.0	7362.7	CD
7285.0	7447.7	GH

Plan #3
 Thomason 25-16R
 115426; BH
 KBE @ 4907.0ft (Xtreme 14)
 North American Datum 1983
 Well Thomason 25-16R, True North

Type	Target	Azimuth	Origin	Type	N/S	E/W	From
TD	No Target (Freehand)	34.40	Slot		0.0	0.0	TVD
Name							
Thomason 25-16 TGT		4495.0	800.7	548.3	40.138890	-104.669214	
Thomason 25-16 BHL		7360.0	800.7	548.3	40.138890	-104.669214	



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Thomason 25-16R
Company:	Anadarko Petroleum Corporation	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site:	S16-T2N-R65W (Thomason 6 pad)	North Reference:	True
Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

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

Site		S16-T2N-R65W (Thomason 6 pad)			
Site Position:		Northing:	1,293,758.15 ft	Latitude:	40.136780
From:	Lat/Long	Easting:	3,231,735.68 ft	Longitude:	-104.671175
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	0.54 °

Well	Thomason 25-16R					
Well Position	+N/-S	0.0 ft	Northing:	1,293,726.09 ft	Latitude:	40.136692
	+E/-W	0.0 ft	Easting:	3,231,735.98 ft	Longitude:	-104.671175
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	4,885.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/2/2011	8.75	66.84	52,971

Design	Plan #3				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0.0	
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)	
	0.0	0.0	0.0	34.40	

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	
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.00	0.00	0.00	0.00	
2,115.3	22.31	34.40	2,087.4	176.9	121.1	2.00	2.00	0.00	34.40	
3,542.4	22.31	34.40	3,407.6	623.8	427.1	0.00	0.00	0.00	0.00	
4,657.7	0.00	0.00	4,495.0	800.7	548.3	2.00	-2.00	0.00	180.00	Thomason 25-16 TG1
7,522.7	0.00	0.00	7,360.0	800.7	548.3	0.00	0.00	0.00	0.00	Thomason 25-16 BHL

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Thomason 25-16R
Company:	Anadarko Petroleum Corporation	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site:	S16-T2N-R65W (Thomason 6 pad)	North Reference:	True
Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

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)	Comments / Formations
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	Surface Casing
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	KOP @ 1000'
1,100.0	2.00	34.40	1,100.0	1.4	1.0	1.7	2.00	2.00	
1,200.0	4.00	34.40	1,199.8	5.8	3.9	7.0	2.00	2.00	
1,300.0	6.00	34.40	1,299.5	12.9	8.9	15.7	2.00	2.00	
1,400.0	8.00	34.40	1,398.7	23.0	15.8	27.9	2.00	2.00	
1,500.0	10.00	34.40	1,497.5	35.9	24.6	43.5	2.00	2.00	
1,600.0	12.00	34.40	1,595.6	51.7	35.4	62.6	2.00	2.00	
1,700.0	14.00	34.40	1,693.1	70.2	48.1	85.1	2.00	2.00	
1,800.0	16.00	34.40	1,789.6	91.6	62.7	111.0	2.00	2.00	
1,900.0	18.00	34.40	1,885.3	115.7	79.2	140.2	2.00	2.00	
2,000.0	20.00	34.40	1,979.8	142.6	97.6	172.8	2.00	2.00	
2,100.0	22.00	34.40	2,073.2	172.1	117.9	208.6	2.00	2.00	
2,115.3	22.31	34.40	2,087.4	176.9	121.1	214.4	2.00	2.00	EOB; Inc=22.31°
2,200.0	22.31	34.40	2,165.7	203.4	139.3	246.5	0.00	0.00	
2,300.0	22.31	34.40	2,258.2	234.7	160.7	284.5	0.00	0.00	
2,400.0	22.31	34.40	2,350.7	266.0	182.2	322.4	0.00	0.00	
2,500.0	22.31	34.40	2,443.3	297.4	203.6	360.4	0.00	0.00	
2,600.0	22.31	34.40	2,535.8	328.7	225.1	398.3	0.00	0.00	
2,700.0	22.31	34.40	2,628.3	360.0	246.5	436.3	0.00	0.00	
2,800.0	22.31	34.40	2,720.8	391.3	267.9	474.3	0.00	0.00	
2,900.0	22.31	34.40	2,813.3	422.6	289.4	512.2	0.00	0.00	
3,000.0	22.31	34.40	2,905.8	453.9	310.8	550.2	0.00	0.00	
3,100.0	22.31	34.40	2,998.4	485.3	332.3	588.1	0.00	0.00	
3,200.0	22.31	34.40	3,090.9	516.6	353.7	626.1	0.00	0.00	
3,300.0	22.31	34.40	3,183.4	547.9	375.2	664.0	0.00	0.00	
3,400.0	22.31	34.40	3,275.9	579.2	396.6	702.0	0.00	0.00	
3,500.0	22.31	34.40	3,368.4	610.5	418.1	739.9	0.00	0.00	
3,542.4	22.31	34.40	3,407.6	623.8	427.1	756.0	0.00	0.00	Start Drop -2.00
3,600.0	21.15	34.40	3,461.2	641.4	439.2	777.4	2.00	-2.00	
3,700.0	19.15	34.40	3,555.0	669.8	458.7	811.8	2.00	-2.00	
3,800.0	17.15	34.40	3,650.0	695.5	476.3	843.0	2.00	-2.00	
3,900.0	15.15	34.40	3,746.1	718.5	492.0	870.8	2.00	-2.00	
4,000.0	13.15	34.40	3,843.0	738.7	505.8	895.2	2.00	-2.00	
4,100.0	11.15	34.40	3,940.8	756.0	517.7	916.3	2.00	-2.00	
4,145.0	10.25	34.40	3,985.0	762.9	522.4	924.7	2.00	-2.00	PK
4,200.0	9.15	34.40	4,039.2	770.6	527.6	933.9	2.00	-2.00	
4,300.0	7.15	34.40	4,138.2	782.3	535.7	948.1	2.00	-2.00	
4,400.0	5.15	34.40	4,237.6	791.1	541.7	958.8	2.00	-2.00	
4,500.0	3.15	34.40	4,337.4	797.1	545.8	966.1	2.00	-2.00	
4,600.0	1.15	34.40	4,437.3	800.2	547.9	969.8	2.00	-2.00	
4,657.7	0.00	0.00	4,495.0	800.7	548.3	970.4	2.00	-2.00	EOD; Inc=0° - SX - Thomason 25-16 TGT
4,700.0	0.00	0.00	4,537.3	800.7	548.3	970.4	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Thomason 25-16R
Company:	Anadarko Petroleum Corporation	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site:	S16-T2N-R65W (Thomason 6 pad)	North Reference:	True
Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

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)	Comments / Formations
4,800.0	0.00	0.00	4,637.3	800.7	548.3	970.4	0.00	0.00	
4,900.0	0.00	0.00	4,737.3	800.7	548.3	970.4	0.00	0.00	
5,000.0	0.00	0.00	4,837.3	800.7	548.3	970.4	0.00	0.00	
5,100.0	0.00	0.00	4,937.3	800.7	548.3	970.4	0.00	0.00	
5,200.0	0.00	0.00	5,037.3	800.7	548.3	970.4	0.00	0.00	
5,300.0	0.00	0.00	5,137.3	800.7	548.3	970.4	0.00	0.00	
5,400.0	0.00	0.00	5,237.3	800.7	548.3	970.4	0.00	0.00	
5,500.0	0.00	0.00	5,337.3	800.7	548.3	970.4	0.00	0.00	
5,600.0	0.00	0.00	5,437.3	800.7	548.3	970.4	0.00	0.00	
5,700.0	0.00	0.00	5,537.3	800.7	548.3	970.4	0.00	0.00	
5,800.0	0.00	0.00	5,637.3	800.7	548.3	970.4	0.00	0.00	
5,900.0	0.00	0.00	5,737.3	800.7	548.3	970.4	0.00	0.00	
6,000.0	0.00	0.00	5,837.3	800.7	548.3	970.4	0.00	0.00	
6,100.0	0.00	0.00	5,937.3	800.7	548.3	970.4	0.00	0.00	
6,200.0	0.00	0.00	6,037.3	800.7	548.3	970.4	0.00	0.00	
6,300.0	0.00	0.00	6,137.3	800.7	548.3	970.4	0.00	0.00	
6,400.0	0.00	0.00	6,237.3	800.7	548.3	970.4	0.00	0.00	
6,500.0	0.00	0.00	6,337.3	800.7	548.3	970.4	0.00	0.00	
6,600.0	0.00	0.00	6,437.3	800.7	548.3	970.4	0.00	0.00	
6,700.0	0.00	0.00	6,537.3	800.7	548.3	970.4	0.00	0.00	
6,800.0	0.00	0.00	6,637.3	800.7	548.3	970.4	0.00	0.00	
6,900.0	0.00	0.00	6,737.3	800.7	548.3	970.4	0.00	0.00	
7,000.0	0.00	0.00	6,837.3	800.7	548.3	970.4	0.00	0.00	
7,077.7	0.00	0.00	6,915.0	800.7	548.3	970.4	0.00	0.00	NIO
7,100.0	0.00	0.00	6,937.3	800.7	548.3	970.4	0.00	0.00	
7,200.0	0.00	0.00	7,037.3	800.7	548.3	970.4	0.00	0.00	
7,300.0	0.00	0.00	7,137.3	800.7	548.3	970.4	0.00	0.00	
7,362.7	0.00	0.00	7,200.0	800.7	548.3	970.4	0.00	0.00	CD
7,400.0	0.00	0.00	7,237.3	800.7	548.3	970.4	0.00	0.00	
7,447.7	0.00	0.00	7,285.0	800.7	548.3	970.4	0.00	0.00	GH
7,500.0	0.00	0.00	7,337.3	800.7	548.3	970.4	0.00	0.00	
7,522.7	0.00	0.00	7,360.0	800.7	548.3	970.4	0.00	0.00	TD at 7522.7 - Thomason 25-16 BHL

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									
Thomason 25-16 BHL	0.00	0.00	7,360.0	800.7	548.3	1,294,531.88	3,232,276.73	40.138890	-104.669214
- plan hits target center									
- Circle (radius 50.0)									
Thomason 25-16 TGT	0.00	0.00	4,495.0	800.7	548.3	1,294,531.88	3,232,276.73	40.138890	-104.669214
- plan hits target center									
- Point									

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Thomason 25-16R
Company:	Anadarko Petroleum Corporation	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Project:	DJ Wattenberg	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site:	S16-T2N-R65W (Thomason 6 pad)	North Reference:	True
Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
900.0	900.0	Surface Casing	0.000	0.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,145.0	3,985.0	PK		0.00	
4,657.7	4,495.0	SX		0.00	
7,077.7	6,915.0	NIO		0.00	
7,362.7	7,200.0	CD		0.00	
7,447.7	7,285.0	GH		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,000.0	1,000.0	0.0	0.0	KOP @ 1000'
2,115.3	2,087.4	176.9	121.1	EOB; Inc=22.31°
3,542.4	3,407.6	623.8	427.1	Start Drop -2.00
4,657.7	4,495.0	800.7	548.3	EOD; Inc=0°
7,522.7	7,360.0	800.7	548.3	TD at 7522.7

Anadarko Petroleum Corporation

DJ Wattenberg

S16-T2N-R65W (Thomason 6 pad)

Thomason 25-16R

DD

Plan #3

Anticollision Report

04 October, 2011

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference	Plan #3		
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 100.0ft	Error Surface:	Elliptical Conic
Warning Levels Evaluated at:	2.00 Sigma		

Survey Tool Program		Date	10/4/2011		
From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description	
0.0	7,522.7	Plan #3 (DD)	MWD	Geolink MWD	

Summary						
Site Name	Reference Measured Depth (ft)	Offset Measured Depth (ft)	Distance Between Centres (ft)	Between Ellipses (ft)	Separation Factor	Warning
Offset Well - Wellbore - Design						
S16-T2N-R65W (Thomason 6 pad)						
Thomason 14-16 - DD - Plan #2	200.0	200.0	48.0	47.4	77.317	CC, ES
Thomason 14-16 - DD - Plan #2	600.0	591.0	75.3	73.3	36.781	SF
Thomason 21-16 - DD - DD	0.0	0.0	32.1			
Thomason 21-16 - DD - DD	700.0	695.3	58.8	56.4	24.344	SF
Thomason 23-16 - DD - Plan #2	200.0	200.0	16.0	15.4	25.797	CC, ES
Thomason 23-16 - DD - Plan #2	400.0	398.9	21.7	20.4	16.463	SF
Thomason 25-16 - DD - DD	100.0	100.0	16.0	15.7	58.623	CC, ES
Thomason 25-16 - DD - DD	500.0	498.2	30.4	28.7	17.828	SF
Thomason 36-16 - DD - Plan #1	300.0	300.0	32.1	31.1	33.036	CC, ES
Thomason 36-16 - DD - Plan #1	500.0	497.6	38.7	37.0	23.218	SF
Thomason 6-16 - DD - DD	0.0	0.0	48.1			
Thomason 6-16 - DD - DD	800.0	792.0	81.5	78.7	29.612	SF
Thomason X #16-11 (Existing) - DD - DD	1,393.8	1,377.6	79.2	74.3	16.259	CC
Thomason X #16-11 (Existing) - DD - DD	1,400.0	1,383.7	79.2	74.3	16.178	ES
Thomason X #16-11 (Existing) - DD - DD	1,600.0	1,580.6	86.8	81.0	15.126	SF

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S16-T2N-R65W (Thomason 6 pad) - Thomason 14-16 - DD - Plan #2													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)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-179.67	-48.0	-0.3	48.0					
100.0	100.0	100.0	100.0	0.1	0.1	-179.67	-48.0	-0.3	48.0	47.8	0.27	176.441		
200.0	200.0	200.0	200.0	0.3	0.3	-179.67	-48.0	-0.3	48.0	47.4	0.62	77.317 CC, ES		
300.0	300.0	298.3	298.3	0.5	0.5	-179.83	-49.7	-0.1	49.8	48.8	0.97	51.373		
400.0	400.0	396.4	396.3	0.7	0.7	179.75	-54.7	0.2	54.9	53.6	1.32	41.593		
500.0	500.0	494.0	493.5	0.8	0.9	179.19	-63.1	0.9	63.4	61.7	1.68	37.789		
600.0	600.0	591.0	589.8	1.0	1.2	178.63	-74.6	1.8	75.3	73.3	2.05	36.781 SF		
700.0	700.0	687.0	684.7	1.2	1.5	178.13	-89.2	2.9	90.6	88.1	2.43	37.241		

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S16-T2N-R65W (Thomason 6 pad) - Thomason 21-16 - DD - DD													Offset Site Error:	0.0 ft
Survey Program: 86-MWD													Offset Well Error:	0.0 ft
Reference		Offset		Semi Major Axis			Distance							Warning
Measured Depth	Vertical Depth	Measured Depth	Vertical Depth	Reference	Offset	Highside Toolface	Offset Wellbore Centre	Between Centres	Between Ellipses	Total Uncertainty Axis	Separation Factor			
(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(°)	+N/-S (ft)	+E/-W (ft)	(ft)	(ft)				
0.0	0.0	0.0	0.0	0.0	0.0	0.00	32.1	0.0	32.1					
100.0	100.0	99.6	99.6	0.1	0.1	0.33	32.7	0.2	32.7	32.4	0.27	120.183		
200.0	200.0	199.4	199.4	0.3	0.3	1.14	33.8	0.7	33.8	33.1	0.62	54.279		
300.0	300.0	299.1	299.0	0.5	0.5	2.99	36.0	1.9	36.1	35.1	0.97	37.035		
400.0	400.0	398.6	398.5	0.7	0.7	5.63	39.1	3.9	39.3	38.0	1.33	29.576		
500.0	500.0	497.6	497.4	0.8	0.9	7.96	43.6	6.1	44.1	42.4	1.69	26.116		
600.0	600.0	596.8	596.3	1.0	1.1	9.72	49.6	8.5	50.5	48.5	2.05	24.631		
700.0	700.0	695.3	694.5	1.2	1.3	10.37	57.6	10.5	58.8	56.4	2.41	24.344	SF	
800.0	800.0	793.4	792.0	1.4	1.5	10.47	67.6	12.5	69.3	66.5	2.78	24.868		
900.0	900.0	891.1	889.0	1.5	1.8	10.53	79.4	14.8	81.6	78.4	3.16	25.790		
1,000.0	1,000.0	990.8	987.8	1.7	2.0	10.50	92.7	17.2	95.1	91.5	3.54	26.823		

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S16-T2N-R65W (Thomason 6 pad) - Thomason 23-16 - DD - Plan #2												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)	Total Uncertainty Axis	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	-180.00	-16.0	0.0	16.0				
100.0	100.0	100.0	100.0	0.1	0.1	-180.00	-16.0	0.0	16.0	15.8	0.27	58.869	
200.0	200.0	200.0	200.0	0.3	0.3	-180.00	-16.0	0.0	16.0	15.4	0.62	25.797 CC, ES	
300.0	300.0	299.5	299.5	0.5	0.5	176.18	-17.3	1.2	17.4	16.4	0.97	17.902	
400.0	400.0	398.9	398.7	0.7	0.7	167.70	-21.2	4.6	21.7	20.4	1.32	16.463 SF	
500.0	500.0	497.7	497.1	0.8	0.9	159.41	-27.5	10.3	29.5	27.9	1.67	17.698	
600.0	600.0	595.8	594.5	1.0	1.2	153.31	-36.3	18.3	41.0	39.0	2.03	20.211	
700.0	700.0	693.0	690.6	1.2	1.5	149.20	-47.5	28.3	56.1	53.7	2.41	23.305	
800.0	800.0	789.1	784.9	1.4	1.8	146.46	-60.9	40.4	74.6	71.8	2.80	26.617	
900.0	900.0	883.8	877.3	1.5	2.2	144.59	-76.4	54.3	96.5	93.2	3.22	29.959	

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S16-T2N-R65W (Thomason 6 pad) - Thomason 25-16 - DD - DD												Offset Site Error:	0.0 ft
Survey Program: 90-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)	Total Uncertainty Axis	Separation Factor	
0.0	0.0	0.0	0.0	0.0	0.0	0.00	16.0	0.0	16.0				
100.0	100.0	100.0	100.0	0.1	0.1	0.32	16.0	0.1	16.0	15.7	0.27	58.623 CC, ES	
200.0	200.0	199.7	199.7	0.3	0.3	3.84	17.1	1.1	17.1	16.5	0.62	27.502	
300.0	300.0	299.3	299.3	0.5	0.5	10.09	19.3	3.4	19.6	18.6	0.98	20.079	
400.0	400.0	398.9	398.7	0.7	0.7	13.68	23.5	5.7	24.2	22.8	1.34	18.089	
500.0	500.0	498.2	497.8	0.8	0.9	18.24	28.8	9.5	30.4	28.7	1.71	17.828 SF	
600.0	600.0	597.1	596.3	1.0	1.1	23.85	35.5	15.7	39.0	36.9	2.08	18.695	
700.0	700.0	695.2	693.8	1.2	1.4	27.78	43.7	23.0	49.8	47.3	2.47	20.157	
800.0	800.0	791.9	789.4	1.4	1.7	30.72	54.5	32.4	64.3	61.4	2.87	22.390	
900.0	900.0	887.9	883.8	1.5	2.0	32.77	68.0	43.8	82.5	79.3	3.28	25.153	

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S16-T2N-R65W (Thomason 6 pad) - Thomason 36-16 - DD - Plan #1													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)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	-179.50	-32.1	-0.3	32.1					
100.0	100.0	100.0	100.0	0.1	0.1	-179.50	-32.1	-0.3	32.1	31.8	0.27	117.742		
200.0	200.0	200.0	200.0	0.3	0.3	-179.50	-32.1	-0.3	32.1	31.4	0.62	51.595		
300.0	300.0	300.0	300.0	0.5	0.5	-179.50	-32.1	-0.3	32.1	31.1	0.97	33.036 CC, ES		
400.0	400.0	398.9	398.9	0.7	0.7	179.63	-33.7	0.2	33.7	32.4	1.32	25.579		
500.0	500.0	497.6	497.4	0.8	0.8	177.47	-38.6	1.7	38.7	37.0	1.67	23.218 SF		
600.0	600.0	595.8	595.2	1.0	1.1	174.91	-46.7	4.2	47.1	45.1	2.02	23.309		
700.0	700.0	693.3	692.1	1.2	1.3	172.55	-57.8	7.6	58.9	56.5	2.38	24.723		
800.0	800.0	789.9	787.5	1.4	1.6	170.64	-72.0	11.9	74.1	71.3	2.76	26.874		
900.0	900.0	885.4	881.3	1.5	1.9	169.16	-89.1	17.1	92.6	89.5	3.15	29.424		

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S16-T2N-R65W (Thomason 6 pad) - Thomason 6-16 - DD - DD													Offset Site Error:	0.0 ft
Survey Program: 109-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)	Total Uncertainty Axis	Separation Factor		
0.0	0.0	0.0	0.0	0.0	0.0	0.00	48.1	0.0	48.1					
100.0	100.0	99.7	99.7	0.1	0.1	0.11	48.4	0.1	48.4	48.1	0.28	175.793		
200.0	200.0	199.2	199.2	0.3	0.3	0.93	49.5	0.8	49.5	48.8	0.62	79.453		
300.0	300.0	299.2	299.2	0.5	0.5	1.91	51.0	1.7	51.0	50.1	0.97	52.462		
400.0	400.0	398.4	398.4	0.7	0.7	2.07	53.3	1.9	53.4	52.0	1.32	40.337		
500.0	500.0	497.6	497.5	0.8	0.9	2.24	57.0	2.2	57.1	55.4	1.68	34.073		
600.0	600.0	596.0	595.7	1.0	1.0	2.07	62.5	2.3	62.7	60.7	2.03	30.904		
700.0	700.0	693.8	693.2	1.2	1.3	1.09	70.7	1.3	71.1	68.7	2.39	29.784		
800.0	800.0	792.0	790.9	1.4	1.5	0.01	81.0	0.0	81.5	78.7	2.75	29.612 SF		
900.0	900.0	890.7	888.8	1.5	1.7	-1.01	92.6	-1.6	93.3	90.2	3.12	29.899		

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Offset Design S16-T2N-R65W (Thomason 6 pad) - Thomason X #16-11 (Existing) - DD - DD												Offset Site Error:	0.0 ft
Survey Program: 9000-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)	Total Uncertainty Axis	Separation Factor	Warning
0.0	0.0	0.0	0.0	0.0	0.0	-36.75	67.0	-50.0	85.0				
100.0	100.0	85.0	85.0	0.1	0.1	-36.75	67.0	-50.0	83.6	83.4	0.28	294.185	
200.0	200.0	185.0	185.0	0.3	0.3	-36.75	67.0	-50.0	83.6	83.0	0.63	132.098	
300.0	300.0	285.0	285.0	0.5	0.5	-36.75	67.0	-50.0	83.6	82.7	0.98	85.171	
400.0	400.0	385.0	385.0	0.7	0.7	-36.75	67.0	-50.0	83.6	82.3	1.33	62.846	
500.0	500.0	485.0	485.0	0.8	0.8	-36.75	67.0	-50.0	83.6	82.0	1.68	49.794	
600.0	600.0	585.0	585.0	1.0	1.0	-36.75	67.0	-50.0	83.6	81.6	2.03	41.231	
700.0	700.0	685.0	685.0	1.2	1.2	-36.75	67.0	-50.0	83.6	81.3	2.38	35.181	
800.0	800.0	785.0	785.0	1.4	1.4	-36.75	67.0	-50.0	83.6	80.9	2.73	30.679	
900.0	900.0	885.0	885.0	1.5	1.5	-36.75	67.0	-50.0	83.6	80.6	3.08	27.199	
1,000.0	1,000.0	985.0	985.0	1.7	1.7	-36.75	67.0	-50.0	83.6	80.2	3.42	24.427	
1,100.0	1,100.0	1,085.0	1,085.0	1.9	1.9	-72.30	67.0	-50.0	83.1	79.3	3.77	22.020	
1,200.0	1,199.8	1,184.8	1,184.8	2.1	2.1	-75.82	67.0	-50.0	81.7	77.5	4.13	19.777	
1,300.0	1,299.5	1,284.5	1,284.5	2.3	2.2	-81.90	67.0	-50.0	80.0	75.5	4.50	17.775	
1,393.8	1,392.6	1,377.6	1,377.6	2.5	2.4	-90.00	67.0	-50.0	79.2	74.3	4.87	16.259 CC	
1,400.0	1,398.7	1,383.7	1,383.7	2.5	2.4	-90.61	67.0	-50.0	79.2	74.3	4.89	16.178 ES	
1,500.0	1,497.5	1,482.5	1,482.5	2.7	2.6	-101.60	67.0	-50.0	80.9	75.5	5.31	15.219	
1,600.0	1,595.6	1,580.6	1,580.6	3.0	2.8	-113.73	67.0	-50.0	86.8	81.0	5.74	15.126 SF	
1,700.0	1,693.1	1,678.1	1,678.1	3.4	2.9	-125.45	67.0	-50.0	98.2	92.0	6.14	16.000	

Cathedral Energy Services

Anticollision Report

Company:	Anadarko Petroleum Corporation	Local Co-ordinate Reference:	Well Thomason 25-16R
Project:	DJ Wattenberg	TVD Reference:	KBE @ 4907.0ft (Xtreme 14)
Reference Site:	S16-T2N-R65W (Thomason 6 pad)	MD Reference:	KBE @ 4907.0ft (Xtreme 14)
Site Error:	0.0ft	North Reference:	True
Reference Well:	Thomason 25-16R	Survey Calculation Method:	Minimum Curvature
Well Error:	0.0ft	Output errors are at	2.00 sigma
Reference Wellbore	DD	Database:	USA EDM 5000 Multi Users DB
Reference Design:	Plan #3	Offset TVD Reference:	Offset Datum

Reference Depths are relative to KBE @ 4907.0ft (Xtreme 14)
Offset Depths are relative to Offset Datum
Central Meridian is -105.500000 °

Coordinates are relative to: Thomason 25-16R
Coordinate System is US State Plane 1983, Colorado Northern Zone
Grid Convergence at Surface is: 0.54 °

