



Ursa Operating Company, LLC

Rockies Region

Hangs A

Hangs A 23C-09-06-92

Wellbore #1

Plan: Design #1

Standard Planning Report

20 August, 2015



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Hangs A 23C-09-06-92
Company:	Ursa Operating Company, LLC	TVD Reference:	Hangs A 23C-09-06-92 @ 5424.5usft (Capstar 321)
Project:	Rockies Region	MD Reference:	Hangs A 23C-09-06-92 @ 5424.5usft (Capstar 321)
Site:	Hangs A	North Reference:	True
Well:	Hangs A 23C-09-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Project	Rockies Region		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site		Hangs A			
Site Position:		Northing:	1,627,718.49 usft	Latitude:	39° 32' 12.404 N
From:	Lat/Long	Easting:	2,387,658.46 usft	Longitude:	107° 40' 16.846 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-1.37 °

Well	Hangs A 23C-09-06-92, SHL: 39.536668463 -107.671343102					
Well Position	+N/-S	-40.3 usft	Northing:	1,627,678.21 usft	Latitude:	39° 32' 12.006 N
	+E/-W	0.8 usft	Easting:	2,387,658.32 usft	Longitude:	107° 40' 16.835 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	5,424.5 usft	Ground Level:	5,407.5 usft

Wellbore	Wellbore #1				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/17/2015	9.67	65.72	51,897

Design	Design #1				
Audit Notes:					
Version:	Phase:	PROTOTYPE		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	316.85	

Plan Sections										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,653.9	19.39	316.85	1,643.4	67.7	-63.5	3.50	3.50	0.00	316.85	
4,844.0	19.39	316.85	4,652.6	840.2	-787.8	0.00	0.00	0.00	0.00	
5,397.9	0.00	0.00	5,196.0	907.9	-851.2	3.50	-3.50	0.00	180.00	Hangs A 23C-09-06-9
8,214.9	0.00	0.00	8,013.0	907.9	-851.2	0.00	0.00	0.00	0.00	

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well Hangs A 23C-09-06-92
Company:	Ursa Operating Company, LLC	TVD Reference:	Hangs A 23C-09-06-92 @ 5424.5usft (Capstar 321)
Project:	Rockies Region	MD Reference:	Hangs A 23C-09-06-92 @ 5424.5usft (Capstar 321)
Site:	Hangs A	North Reference:	True
Well:	Hangs A 23C-09-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey										
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00	
0.1	0.00	0.00	0.1	0.0	0.0	0.0	0.00	0.00	0.00	
SHL: 39.536668463 -107.671343102										
100.0	0.00	0.00	100.0	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	
300.0	0.00	0.00	300.0	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	
500.0	0.00	0.00	500.0	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	
700.0	0.00	0.00	700.0	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	
900.0	0.00	0.00	900.0	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	
Surface Casing										
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00	
Start Build 3.50										
1,200.0	3.50	316.85	1,199.9	2.2	-2.1	3.1	3.50	3.50	0.00	
1,300.0	7.00	316.85	1,299.5	8.9	-8.3	12.2	3.50	3.50	0.00	
1,400.0	10.50	316.85	1,398.3	20.0	-18.7	27.4	3.50	3.50	0.00	
1,500.0	14.00	316.85	1,496.0	35.5	-33.3	48.6	3.50	3.50	0.00	
1,600.0	17.50	316.85	1,592.3	55.3	-51.8	75.8	3.50	3.50	0.00	
1,653.9	19.39	316.85	1,643.4	67.7	-63.5	92.8	3.50	3.50	0.00	
Start 3190.1 hold at 1653.9 MD										
1,700.0	19.39	316.85	1,686.9	78.9	-74.0	108.1	0.00	0.00	0.00	
1,800.0	19.39	316.85	1,781.2	103.1	-96.7	141.3	0.00	0.00	0.00	
1,900.0	19.39	316.85	1,875.5	127.3	-119.4	174.5	0.00	0.00	0.00	
2,000.0	19.39	316.85	1,969.9	151.5	-142.1	207.7	0.00	0.00	0.00	
2,100.0	19.39	316.85	2,064.2	175.7	-164.8	240.9	0.00	0.00	0.00	
2,200.0	19.39	316.85	2,158.5	200.0	-187.5	274.1	0.00	0.00	0.00	
2,300.0	19.39	316.85	2,252.9	224.2	-210.2	307.3	0.00	0.00	0.00	
2,400.0	19.39	316.85	2,347.2	248.4	-232.9	340.5	0.00	0.00	0.00	
2,500.0	19.39	316.85	2,441.5	272.6	-255.6	373.7	0.00	0.00	0.00	
2,600.0	19.39	316.85	2,535.8	296.8	-278.3	406.9	0.00	0.00	0.00	
2,700.0	19.39	316.85	2,630.2	321.0	-301.0	440.1	0.00	0.00	0.00	
2,800.0	19.39	316.85	2,724.5	345.2	-323.7	473.3	0.00	0.00	0.00	
2,900.0	19.39	316.85	2,818.8	369.5	-346.4	506.4	0.00	0.00	0.00	
3,000.0	19.39	316.85	2,913.2	393.7	-369.1	539.6	0.00	0.00	0.00	
3,100.0	19.39	316.85	3,007.5	417.9	-391.8	572.8	0.00	0.00	0.00	
3,200.0	19.39	316.85	3,101.8	442.1	-414.5	606.0	0.00	0.00	0.00	
3,300.0	19.39	316.85	3,196.2	466.3	-437.2	639.2	0.00	0.00	0.00	
3,400.0	19.39	316.85	3,290.5	490.5	-459.9	672.4	0.00	0.00	0.00	
3,500.0	19.39	316.85	3,384.8	514.8	-482.6	705.6	0.00	0.00	0.00	
3,600.0	19.39	316.85	3,479.1	539.0	-505.3	738.8	0.00	0.00	0.00	
3,700.0	19.39	316.85	3,573.5	563.2	-528.0	772.0	0.00	0.00	0.00	
3,800.0	19.39	316.85	3,667.8	587.4	-550.7	805.2	0.00	0.00	0.00	
3,900.0	19.39	316.85	3,762.1	611.6	-573.4	838.4	0.00	0.00	0.00	
4,000.0	19.39	316.85	3,856.5	635.8	-596.1	871.6	0.00	0.00	0.00	
4,049.9	19.39	316.85	3,903.5	647.9	-607.5	888.1	0.00	0.00	0.00	
Williams Fork										
4,100.0	19.39	316.85	3,950.8	660.0	-618.8	904.8	0.00	0.00	0.00	
4,200.0	19.39	316.85	4,045.1	684.3	-641.5	938.0	0.00	0.00	0.00	

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Project:	Rockies Region	MD Reference:	Hangs A 23C-09-06-92 @ 5424.5usft (Capstar 321)
Site:	Hangs A	North Reference:	True
Well:	Hangs A 23C-09-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
4,300.0	19.39	316.85	4,139.5	708.5	-664.3	971.2	0.00	0.00	0.00
4,400.0	19.39	316.85	4,233.8	732.7	-687.0	1,004.4	0.00	0.00	0.00
4,500.0	19.39	316.85	4,328.1	756.9	-709.7	1,037.6	0.00	0.00	0.00
4,600.0	19.39	316.85	4,422.4	781.1	-732.4	1,070.7	0.00	0.00	0.00
4,700.0	19.39	316.85	4,516.8	805.3	-755.1	1,103.9	0.00	0.00	0.00
4,800.0	19.39	316.85	4,611.1	829.6	-777.8	1,137.1	0.00	0.00	0.00
4,844.0	19.39	316.85	4,652.6	840.2	-787.8	1,151.7	0.00	0.00	0.00
Start Drop -3.50									
4,900.0	17.43	316.85	4,705.7	853.1	-799.9	1,169.4	3.50	-3.50	0.00
5,000.0	13.93	316.85	4,802.0	872.8	-818.3	1,196.4	3.50	-3.50	0.00
5,100.0	10.43	316.85	4,899.7	888.2	-832.8	1,217.5	3.50	-3.50	0.00
5,200.0	6.93	316.85	4,998.6	899.2	-843.1	1,232.6	3.50	-3.50	0.00
5,300.0	3.43	316.85	5,098.2	905.8	-849.2	1,241.6	3.50	-3.50	0.00
5,397.4	0.02	316.85	5,195.5	907.9	-851.2	1,244.6	3.50	-3.50	0.00
Top of Gas									
5,397.9	0.00	0.00	5,196.0	907.9	-851.2	1,244.6	3.50	-3.50	0.00
Back to Vertical - Start 2817.0 hold at 5397.9 MD									
5,400.0	0.00	0.00	5,198.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
5,500.0	0.00	0.00	5,298.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
5,600.0	0.00	0.00	5,398.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
5,700.0	0.00	0.00	5,498.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
5,800.0	0.00	0.00	5,598.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
5,900.0	0.00	0.00	5,698.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,000.0	0.00	0.00	5,798.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,100.0	0.00	0.00	5,898.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,200.0	0.00	0.00	5,998.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,300.0	0.00	0.00	6,098.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,400.0	0.00	0.00	6,198.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,500.0	0.00	0.00	6,298.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,600.0	0.00	0.00	6,398.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,700.0	0.00	0.00	6,498.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,752.4	0.00	0.00	6,550.5	907.9	-851.2	1,244.6	0.00	0.00	0.00
Cameo									
6,800.0	0.00	0.00	6,598.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
6,900.0	0.00	0.00	6,698.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,000.0	0.00	0.00	6,798.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,100.0	0.00	0.00	6,898.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,200.0	0.00	0.00	6,998.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,300.0	0.00	0.00	7,098.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,400.0	0.00	0.00	7,198.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,500.0	0.00	0.00	7,298.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,600.0	0.00	0.00	7,398.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,700.0	0.00	0.00	7,498.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,714.4	0.00	0.00	7,512.5	907.9	-851.2	1,244.6	0.00	0.00	0.00
Rollins									
7,800.0	0.00	0.00	7,598.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
7,900.0	0.00	0.00	7,698.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
8,000.0	0.00	0.00	7,798.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
8,100.0	0.00	0.00	7,898.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
8,200.0	0.00	0.00	7,998.1	907.9	-851.2	1,244.6	0.00	0.00	0.00
8,214.4	0.00	0.00	8,012.5	907.9	-851.2	1,244.6	0.00	0.00	0.00

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Project:	Rockies Region	MD Reference:	Hangs A 23C-09-06-92 @ 5424.5usft (Capstar 321)
Site:	Hangs A	North Reference:	True
Well:	Hangs A 23C-09-06-92	Survey Calculation Method:	Minimum Curvature
Wellbore:	Wellbore #1		
Design:	Design #1		

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
TD	8,214.9	0.00	0.00	8,013.0	907.9	-851.2	1,244.6	0.00	0.00
TD at 8214.9 - BHL: 39.5391610 -107.6743614									

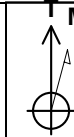
Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
Hangs A 23C-09-06-92 1	0.00	0.00	5,196.0	907.9	-851.2	1,628,606.21	2,386,829.02	39° 32' 20.980 N	107° 40' 27.701 W
- plan hits target center									
- Rectangle (sides W100.0 H40.0 D2,817.0)									

Formations						
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,049.9	3,903.5	Williams Fork		0.00		
5,397.4	5,195.5	Top of Gas		0.00		
6,752.4	6,550.5	Cameo		0.00		
7,714.4	7,512.5	Rollins		0.00		
8,214.4	8,012.5	TD		0.00		

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
0.1	0.1	0.0	0.0	SHL: 39.536668463 -107.671343102
1,000.0	1,000.0	0.0	0.0	Surface Casing
1,100.0	1,100.0	0.0	0.0	Start Build 3.50
1,653.9	1,643.4	67.7	-63.5	Start 3190.1 hold at 1653.9 MD
4,844.0	4,652.6	840.2	-787.8	Start Drop -3.50
5,397.9	5,196.0	907.9	-851.2	Back to Vertical
5,397.9	5,196.0	907.9	-851.2	Start 2817.0 hold at 5397.9 MD
8,214.9	8,013.0	907.9	-851.2	TD at 8214.9
8,214.9	8,013.0	907.9	-851.2	BHL: 39.5391610 -107.6743614



Well Name: Hangs A 23C-09-06-92
Surface Location: Hangs A
North American Datum 1983, US State Plane 1983, Colorado Central Zone
Ground Elevation: 5407.5
+N/-S +E/-W Northing Easting Latitude Longitude
0.0 0.0 1627678.21 2387658.31 39° 32' 12.006 N 107° 40' 16.835 W
Capstar 321 Hangs A 23C-09-06-92 @ 5424.5usft (Capstar 321)



Azimuths to True North
Magnetic North: 9.67°
Magnetic Field
Strength: 51896.6snT
Dip Angle: 65.72°
Date: 8/17/2015
Model: IGRF2010

Hangs A
Hangs A 23C-09-06-92
Design #1
12:56, August 20 2015

WELLBORE TARGET DETAILS (MAP CO-ORDINATES AND LAT/LONG)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
Hangs A 23C-09-06-92 TGT	5196.0	907.9	-851.2	1628606.21	2386829.0	39° 32' 20.980 N	107° 40' 27.701 W	Rectangle (Sides: L40.0 W100.0)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	1100.0	0.00	0.00	1100.0	0.0	0.0	0.00	0.00	0.0	
3	1653.9	19.39	316.85	1643.4	67.7	-63.5	3.50	316.85	92.8	
4	4844.0	19.39	316.85	4652.6	840.2	-787.8	0.00	0.00	1151.7	
5	5397.9	0.00	0.00	5196.0	907.9	-851.2	3.50	180.00	1244.6	Hangs A 23C-09-06-92 TGT
6	8214.9	0.00	0.00	8013.0	907.9	-851.2	0.00	0.00	1244.6	

ANNOTATIONS

TVD	MD	Annotation
0.1	0.1	SHL: 39.536668463 -107.671343102
1000.0	1000.0	Surface Casing
1100.0	1100.0	Start Build 3.50
1643.4	1653.9	Start 3190.1 hold at 1653.9 MD
4652.6	4844.0	Start Drop -3.50
5196.0	5397.9	Back to Vertical
5196.0	5397.9	Start 2817.0 hold at 5397.9 MD
8013.0	8214.9	TD at 8214.9
8013.0	8214.9	BHL: 39.5391610 -107.6743614

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
3903.5	4049.9	Williams Fork	0.00	
5195.5	5397.4	Top of Gas	0.00	
6550.5	6752.4	Cameo	0.00	
7512.5	7714.4	Rollins	0.00	
8012.5	8214.4	TD	0.00	

