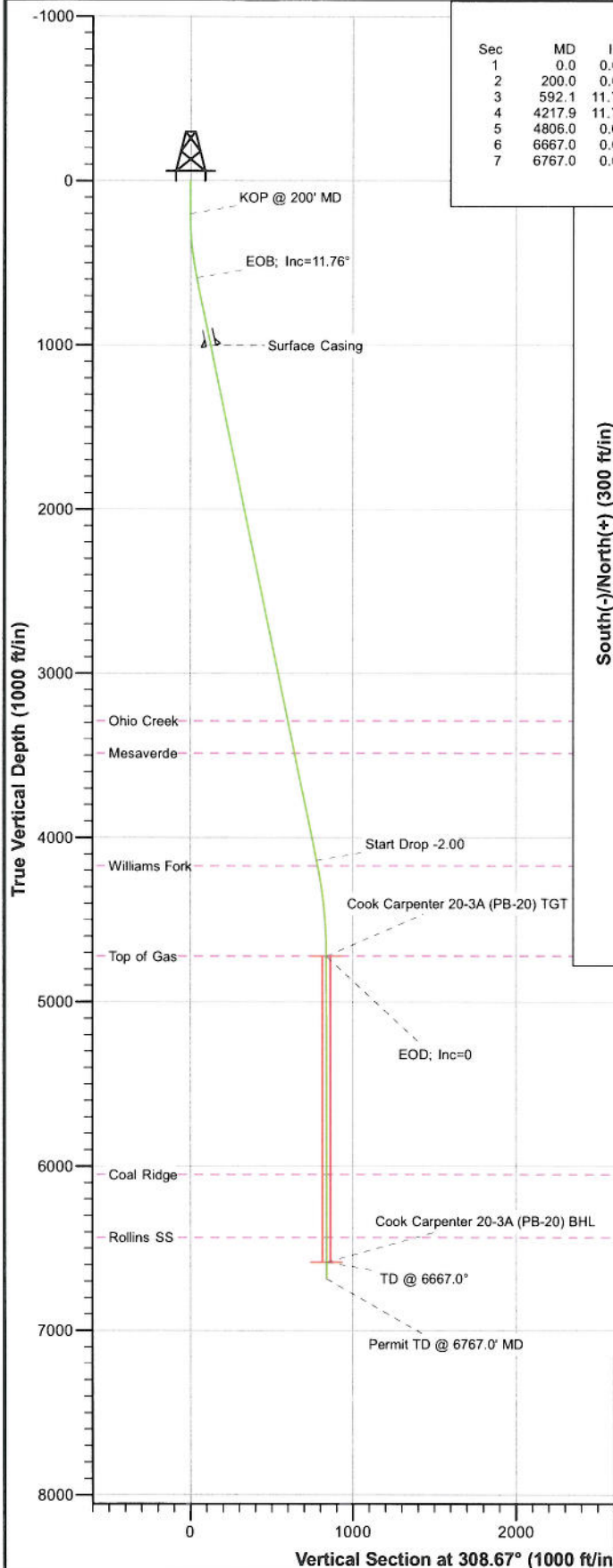
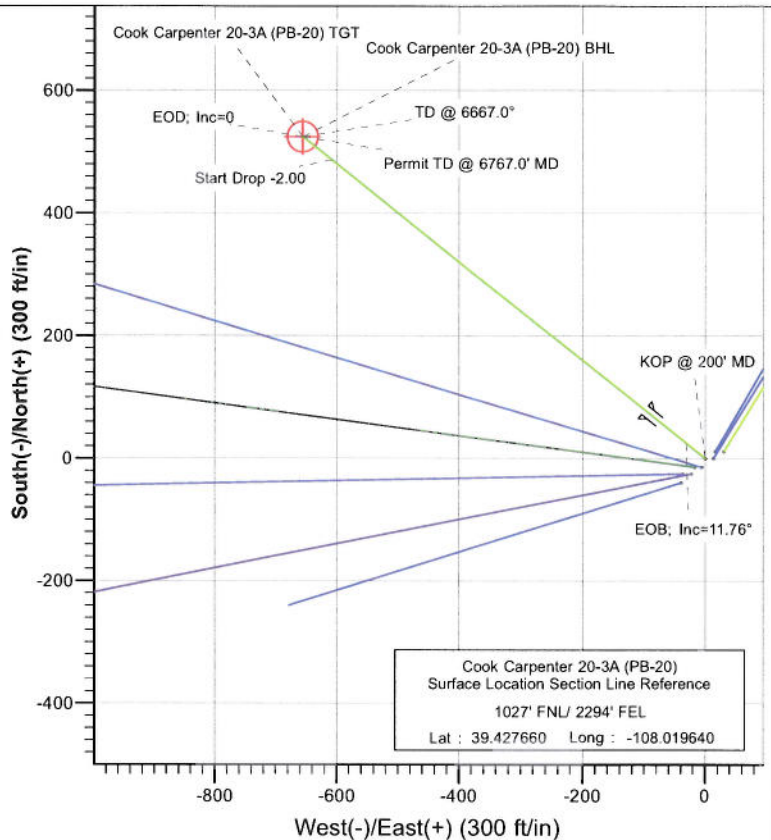




Project: S. Piceance (Parachute)
Site: NWNE S20-T7S-R95W (PB-20)
Well: Cook Carpenter 20-3A (PB-20)
Wellbore: DD
Plan: Plan #1



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	200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.0	
3	592.1	11.76	308.67	589.3	25.1	-31.3	3.00	308.67	40.1	
4	4217.9	11.76	308.67	4139.0	486.9	-608.4	0.00	0.00	779.2	
5	4806.0	0.00	0.00	4723.0	524.5	-655.3	2.00	180.00	839.4	Cook Carpenter 20-3A (PB-20) TGT
6	6667.0	0.00	0.00	6584.0	524.5	-655.3	0.00	0.00	839.4	Cook Carpenter 20-3A (PB-20) BHL
7	6767.0	0.00	0.00	6684.0	524.5	-655.3	0.00	0.00	839.4	



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3289.0	3349.7	Ohio Creek
3486.0	3550.9	Mesaverde
4173.0	4252.6	Williams Fork
4723.0	4806.0	Top of Gas
6051.0	6134.0	Coal Ridge
6434.0	6517.0	Rollins SS



Azimuths to True North
Magnetic North: 10.39°
Magnetic Field
Strength: 52292.6snT
Dip Angle: 65.70°
Date: 12/21/2010
Model: IGRF200510

Plan #1 Cook Carpenter 20-3A (PB-20) 105XXX; BH					
KBE @ 5665.0ft (Original Well Elev) North American Datum 1983 Well Cook Carpenter 20-3A (PB-20), True North					
Target	Azimuth	Origin	Type	N/S	
Cook Carpenter 20-3A (PB-20) BHL	308.67	Slot		0.0	
Name	TVD	+N/-S	+E/-W	Latitude	Longitude
Cook Carpenter 20-3A (PB-20) TGT	4723.0	524.5	-655.3	39.429100	-108.021960
Cook Carpenter 20-3A (PB-20) BHL	6584.0	524.5	-655.3	39.429100	-108.021960

Cathedral Energy Services

Planning Report

Database: EDM 5000.1 US Multi Users DB
Company: EnCana Oil & Gas (USA) Inc
Project: S. Piceance (Parachute)
Site: NWNE S20-T7S-R95W (PB-20)
Well: Cook Carpenter 20-3A (PB-20)
Wellbore: DD
Design: Plan #1

Local Co-ordinate Reference: Well Cook Carpenter 20-3A (PB-20)
TVD Reference: KBE @ 5665.0ft (Original Well Elev)
MD Reference: KBE @ 5665.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Project	S. Piceance (Parachute), Garfield County, CO		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	NWNE S20-T7S-R95W (PB-20)			
Site Position:		Northing:	1,590,537.60 ft	Latitude: 39.427690
From:	Lat/Long	Easting:	2,288,393.21 ft	Longitude: -108.019530
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence: -1.59 °

Well	Cook Carpenter 20-3A (PB-20)			
Well Position	+N/-S	0.0 ft	Northing:	1,590,527.53 ft
	+E/-W	0.0 ft	Easting:	2,288,361.85 ft
Position Uncertainty	0.0 ft	Wellhead Elevation:	ft	Ground Level: 5,643.0 ft

Wellbore	DD			
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)
	IGRF200510	12/21/2010	10.39	65.70
				Field Strength (nT)
				52,293

Design	Plan #1			
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	308.67

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	
200.0	0.00	0.00	200.0	0.0	0.0	0.00	0.00	0.00	0.00	
592.1	11.76	308.67	589.3	25.1	-31.3	3.00	3.00	0.00	308.67	
4,217.9	11.76	308.67	4,139.0	486.9	-608.4	0.00	0.00	0.00	0.00	
4,806.0	0.00	0.00	4,723.0	524.5	-655.3	2.00	-2.00	0.00	180.00	Cook Carpenter 20-3A
6,667.0	0.00	0.00	6,584.0	524.5	-655.3	0.00	0.00	0.00	0.00	Cook Carpenter 20-3A
6,767.0	0.00	0.00	6,684.0	524.5	-655.3	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

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Well: Cook Carpenter 20-3A (PB-20)
Wellbore: DD
Design: Plan #1

Local Co-ordinate Reference: Well Cook Carpenter 20-3A (PB-20)
TVD Reference: KBE @ 5665.0ft (Original Well Elev)
MD Reference: KBE @ 5665.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

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	KOP @ 200' MD
300.0	3.00	308.67	300.0	1.6	-2.0	2.6	3.00	3.00	
400.0	6.00	308.67	399.6	6.5	-8.2	10.5	3.00	3.00	
500.0	9.00	308.67	498.8	14.7	-18.4	23.5	3.00	3.00	
592.1	11.76	308.67	589.3	25.1	-31.3	40.1	3.00	3.00	EOB; Inc=11.76°
600.0	11.76	308.67	597.1	26.1	-32.6	41.7	0.00	0.00	
700.0	11.76	308.67	695.0	38.8	-48.5	62.1	0.00	0.00	
800.0	11.76	308.67	792.9	51.5	-64.4	82.5	0.00	0.00	
900.0	11.76	308.67	890.8	64.3	-80.3	102.9	0.00	0.00	
1,000.0	11.76	308.67	988.7	77.0	-96.2	123.3	0.00	0.00	
1,015.0	11.76	308.67	1,003.4	78.9	-98.6	126.3	0.00	0.00	Surface Casing
1,100.0	11.76	308.67	1,086.6	89.8	-112.1	143.6	0.00	0.00	
1,200.0	11.76	308.67	1,184.5	102.5	-128.1	164.0	0.00	0.00	
1,300.0	11.76	308.67	1,282.4	115.2	-144.0	184.4	0.00	0.00	
1,400.0	11.76	308.67	1,380.3	128.0	-159.9	204.8	0.00	0.00	
1,500.0	11.76	308.67	1,478.2	140.7	-175.8	225.2	0.00	0.00	
1,600.0	11.76	308.67	1,576.1	153.5	-191.7	245.6	0.00	0.00	
1,700.0	11.76	308.67	1,674.0	166.2	-207.6	266.0	0.00	0.00	
1,800.0	11.76	308.67	1,771.9	178.9	-223.6	286.3	0.00	0.00	
1,900.0	11.76	308.67	1,869.8	191.7	-239.5	306.7	0.00	0.00	
2,000.0	11.76	308.67	1,967.7	204.4	-255.4	327.1	0.00	0.00	
2,100.0	11.76	308.67	2,065.6	217.1	-271.3	347.5	0.00	0.00	
2,200.0	11.76	308.67	2,163.5	229.9	-287.2	367.9	0.00	0.00	
2,300.0	11.76	308.67	2,261.4	242.6	-303.1	388.3	0.00	0.00	
2,400.0	11.76	308.67	2,359.3	255.4	-319.0	408.7	0.00	0.00	
2,500.0	11.76	308.67	2,457.2	268.1	-335.0	429.0	0.00	0.00	
2,600.0	11.76	308.67	2,555.1	280.8	-350.9	449.4	0.00	0.00	
2,700.0	11.76	308.67	2,653.0	293.6	-366.8	469.8	0.00	0.00	
2,800.0	11.76	308.67	2,750.9	306.3	-382.7	490.2	0.00	0.00	
2,900.0	11.76	308.67	2,848.8	319.0	-398.6	510.6	0.00	0.00	
3,000.0	11.76	308.67	2,946.7	331.8	-414.5	531.0	0.00	0.00	
3,100.0	11.76	308.67	3,044.6	344.5	-430.4	551.3	0.00	0.00	
3,200.0	11.76	308.67	3,142.5	357.3	-446.4	571.7	0.00	0.00	
3,300.0	11.76	308.67	3,240.4	370.0	-462.3	592.1	0.00	0.00	
3,349.7	11.76	308.67	3,289.0	376.3	-470.2	602.2	0.00	0.00	Ohio Creek
3,400.0	11.76	308.67	3,338.3	382.7	-478.2	612.5	0.00	0.00	
3,500.0	11.76	308.67	3,436.2	395.5	-494.1	632.9	0.00	0.00	
3,550.9	11.76	308.67	3,486.0	402.0	-502.2	643.3	0.00	0.00	Mesaverde
3,600.0	11.76	308.67	3,534.1	408.2	-510.0	653.3	0.00	0.00	
3,700.0	11.76	308.67	3,632.0	421.0	-525.9	673.7	0.00	0.00	
3,800.0	11.76	308.67	3,729.9	433.7	-541.9	694.0	0.00	0.00	
3,900.0	11.76	308.67	3,827.8	446.4	-557.8	714.4	0.00	0.00	
4,000.0	11.76	308.67	3,925.7	459.2	-573.7	734.8	0.00	0.00	
4,100.0	11.76	308.67	4,023.6	471.9	-589.6	755.2	0.00	0.00	
4,200.0	11.76	308.67	4,121.5	484.6	-605.5	775.6	0.00	0.00	
4,217.9	11.76	308.67	4,139.0	486.9	-608.4	779.2	0.00	0.00	Start Drop -2.00
4,252.6	11.07	308.67	4,173.0	491.2	-613.7	786.1	2.00	-2.00	Williams Fork
4,300.0	10.12	308.67	4,219.6	496.7	-620.5	794.8	2.00	-2.00	
4,400.0	8.12	308.67	4,318.4	506.6	-632.9	810.7	2.00	-2.00	
4,500.0	6.12	308.67	4,417.6	514.3	-642.6	823.1	2.00	-2.00	

Cathedral Energy Services

Planning Report

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Site: NWN S20-T7S-R95W (PB-20)
Well: Cook Carpenter 20-3A (PB-20)
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TVD Reference: KBE @ 5665.0ft (Original Well Elev)
MD Reference: KBE @ 5665.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

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
4,600.0	4.12	308.67	4,517.2	519.9	-649.5	832.0	2.00	-2.00	
4,700.0	2.12	308.67	4,617.0	523.3	-653.8	837.4	2.00	-2.00	
4,800.0	0.12	308.67	4,717.0	524.5	-655.3	839.4	2.00	-2.00	
4,806.0	0.00	0.00	4,723.0	524.5	-655.3	839.4	2.00	-2.00	EOD; Inc=0 - Top of Gas - Cook Carpenter 20-3A
4,900.0	0.00	0.00	4,817.0	524.5	-655.3	839.4	0.00	0.00	
5,000.0	0.00	0.00	4,917.0	524.5	-655.3	839.4	0.00	0.00	
5,100.0	0.00	0.00	5,017.0	524.5	-655.3	839.4	0.00	0.00	
5,200.0	0.00	0.00	5,117.0	524.5	-655.3	839.4	0.00	0.00	
5,300.0	0.00	0.00	5,217.0	524.5	-655.3	839.4	0.00	0.00	
5,400.0	0.00	0.00	5,317.0	524.5	-655.3	839.4	0.00	0.00	
5,500.0	0.00	0.00	5,417.0	524.5	-655.3	839.4	0.00	0.00	
5,600.0	0.00	0.00	5,517.0	524.5	-655.3	839.4	0.00	0.00	
5,700.0	0.00	0.00	5,617.0	524.5	-655.3	839.4	0.00	0.00	
5,800.0	0.00	0.00	5,717.0	524.5	-655.3	839.4	0.00	0.00	
5,900.0	0.00	0.00	5,817.0	524.5	-655.3	839.4	0.00	0.00	
6,000.0	0.00	0.00	5,917.0	524.5	-655.3	839.4	0.00	0.00	
6,100.0	0.00	0.00	6,017.0	524.5	-655.3	839.4	0.00	0.00	
6,134.0	0.00	0.00	6,051.0	524.5	-655.3	839.4	0.00	0.00	Coal Ridge
6,200.0	0.00	0.00	6,117.0	524.5	-655.3	839.4	0.00	0.00	
6,300.0	0.00	0.00	6,217.0	524.5	-655.3	839.4	0.00	0.00	
6,400.0	0.00	0.00	6,317.0	524.5	-655.3	839.4	0.00	0.00	
6,500.0	0.00	0.00	6,417.0	524.5	-655.3	839.4	0.00	0.00	
6,517.0	0.00	0.00	6,434.0	524.5	-655.3	839.4	0.00	0.00	Rollins SS
6,600.0	0.00	0.00	6,517.0	524.5	-655.3	839.4	0.00	0.00	
6,667.0	0.00	0.00	6,584.0	524.5	-655.3	839.4	0.00	0.00	TD @ 6667.0' - Cook Carpenter 20-3A (PB-20)
6,700.0	0.00	0.00	6,617.0	524.5	-655.3	839.4	0.00	0.00	
6,767.0	0.00	0.00	6,684.0	524.5	-655.3	839.4	0.00	0.00	Permit TD @ 6767.0' MD

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									
Cook Carpenter 20-3A (I - plan hits target center - Circle (radius 25.0)	0.00	0.00	4,723.0	524.5	-655.3	1,591,070.01	2,287,721.31	39.429100	-108.021960
Cook Carpenter 20-3A (I - plan hits target center - Circle (radius 25.0)	0.00	0.00	6,584.0	524.5	-655.3	1,591,070.01	2,287,721.31	39.429100	-108.021960

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,015.0	1,003.4	Surface Casing	0.000	0.000

Cathedral Energy Services

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TVD Reference: KBE @ 5665.0ft (Original Well Elev)
MD Reference: KBE @ 5665.0ft (Original Well Elev)
North Reference: True
Survey Calculation Method: Minimum Curvature

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,349.7	3,289.0	Ohio Creek		0.00	
3,550.9	3,486.0	Mesaverde		0.00	
4,252.6	4,173.0	Williams Fork		0.00	
4,806.0	4,723.0	Top of Gas		0.00	
6,134.0	6,051.0	Coal Ridge		0.00	
6,517.0	6,434.0	Rollins SS		0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
200.0	200.0	0.0	0.0	KOP @ 200' MD
592.1	589.3	25.1	-31.3	EOB; Inc=11.76°
4,217.9	4,139.0	486.9	-608.4	Start Drop -2.00
4,806.0	4,723.0	524.5	-655.3	EOD; Inc=0
6,667.0	6,584.0	524.5	-655.3	TD @ 6667.0°
6,767.0	6,684.0	524.5	-655.3	Permit TD @ 6767.0' MD