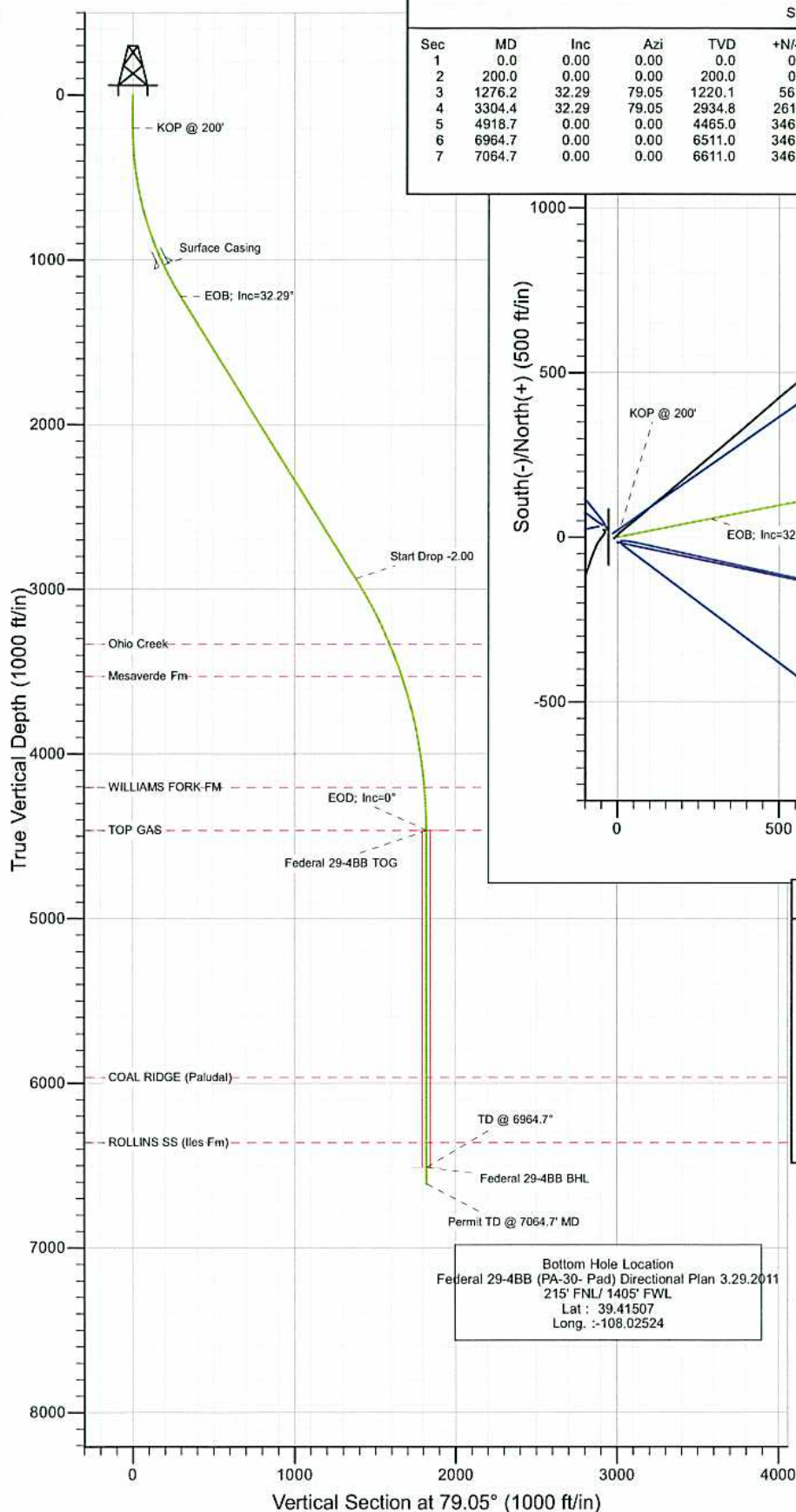
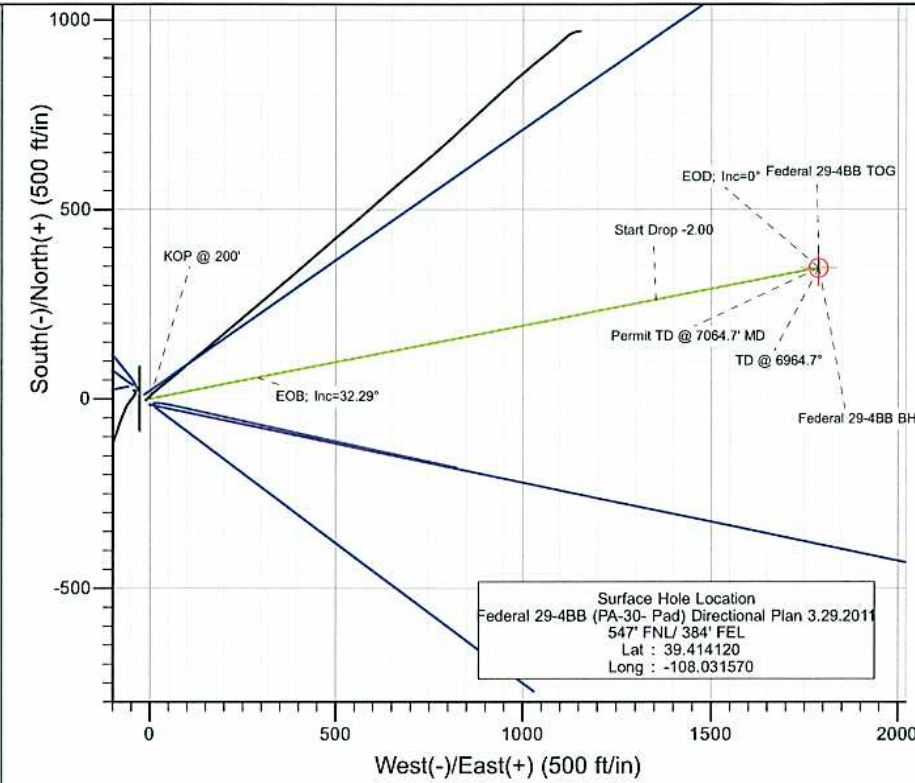




Project: S. Piceance (Parachute)
 Site: SESE 19-7S-95W (PA-30 Pad)
 Well: Federal 29-4BB (PA-30- Pad) Directional Plan 3.29.2011
 Wellbore: DD
 Design: Plan #1



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	1276.2	32.29	79.05	1220.1	56.1	289.9	3.00	79.05	295.3	
4	3304.4	32.29	79.05	2934.8	261.9	1353.5	0.00	0.00	1378.6	
5	4918.7	0.00	0.00	4465.0	346.1	1788.4	2.00	180.00	1821.6	Federal 29-4BB TOG
6	6964.7	0.00	0.00	6511.0	346.1	1788.4	0.00	0.00	1821.6	Federal 29-4BB BHL
7	7064.7	0.00	0.00	6611.0	346.1	1788.4	0.00	0.00	1821.6	



FORMATION TOP DETAILS		
TVDPath	MDPath	Formation
3333.0	3755.0	Ohio Creek
3529.0	3965.2	Mesaverde Fm
4203.0	4656.4	WILLIAMS FORK FM
4465.0	4918.7	TOP GAS
5965.0	6418.7	COAL RIDGE (Paludal)
6361.0	6814.7	ROLLINS SS (Iles Fm)



Azimuths to True North
 Magnetic North: 10.38°

Magnetic Field
 Strength: 52223.6nT
 Dip Angle: 65.67°
 Date: 3/29/2011
 Model: IGRF2010

DESIGN DETAILS: Plan #1					
Job #10xxx: KR					
WELL @ 5827.0ft (Original Well Elev)					
Target	Azimuth	Origin	N/S	E/W	From TVD
Federal 29-4BB BHL	79.05	Slot	0.0	0.0	0.0

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 29-4BB (PA-30- Pad) Directional P
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 29-4BB (PA-30- Pad) Directional Plan 3.29.20	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

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	SESE 19-7S-95W (PA-30 Pad)				
Site Position:		Northing:	1,585,669.17 ft	Latitude:	39.414060
From:	Lat/Long	Easting:	2,284,869.32 ft	Longitude:	-108.031520
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.60 °

Well	Federal 29-4BB (PA-30- Pad) Directional Plan 3.29.2011					
Well Position	+N/-S	0.0 ft	Northing:	1,585,691.40 ft	Latitude:	39.414120
	+E/-W	0.0 ft	Easting:	2,284,855.81 ft	Longitude:	-108.031570
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,805.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/29/2011	10.39	65.67	52,224

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	79.05

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	
1,276.2	32.29	79.05	1,220.1	56.1	289.9	3.00	3.00	0.00	79.05	
3,304.4	32.29	79.05	2,934.8	261.9	1,353.5	0.00	0.00	0.00	0.00	
4,918.7	0.00	0.00	4,465.0	346.1	1,788.4	2.00	-2.00	0.00	180.00	Federal 29-4BB TOG
6,964.7	0.00	0.00	6,511.0	346.1	1,788.4	0.00	0.00	0.00	0.00	Federal 29-4BB BHL
7,064.7	0.00	0.00	6,611.0	346.1	1,788.4	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 29-4BB (PA-30- Pad) Directional P
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 29-4BB (PA-30- Pad) Directional Plan 3.29.20	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

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'
300.0	3.00	79.05	300.0	0.5	2.6	2.6	3.00	3.00	
400.0	6.00	79.05	399.6	2.0	10.3	10.5	3.00	3.00	
500.0	9.00	79.05	498.8	4.5	23.1	23.5	3.00	3.00	
600.0	12.00	79.05	597.1	7.9	41.0	41.7	3.00	3.00	
700.0	15.00	79.05	694.3	12.4	63.9	65.1	3.00	3.00	
800.0	18.00	79.05	790.2	17.8	91.8	93.5	3.00	3.00	
900.0	21.00	79.05	884.4	24.1	124.5	126.9	3.00	3.00	
1,000.0	24.00	79.05	976.8	31.4	162.1	165.1	3.00	3.00	
1,059.0	25.77	79.05	1,030.3	36.1	186.5	189.9	3.00	3.00	Surface Casing
1,100.0	27.00	79.05	1,067.1	39.6	204.4	208.2	3.00	3.00	
1,200.0	30.00	79.05	1,154.9	48.6	251.2	255.9	3.00	3.00	
1,276.2	32.29	79.05	1,220.1	56.1	289.9	295.3	3.00	3.00	EOB; Inc=32.29°
1,300.0	32.29	79.05	1,240.3	58.5	302.4	308.0	0.00	0.00	
1,400.0	32.29	79.05	1,324.8	68.7	354.8	361.4	0.00	0.00	
1,500.0	32.29	79.05	1,409.3	78.8	407.3	414.8	0.00	0.00	
1,600.0	32.29	79.05	1,493.9	89.0	459.7	468.2	0.00	0.00	
1,700.0	32.29	79.05	1,578.4	99.1	512.1	521.7	0.00	0.00	
1,800.0	32.29	79.05	1,663.0	109.3	564.6	575.1	0.00	0.00	
1,900.0	32.29	79.05	1,747.5	119.4	617.0	628.5	0.00	0.00	
2,000.0	32.29	79.05	1,832.0	129.6	669.5	681.9	0.00	0.00	
2,100.0	32.29	79.05	1,916.6	139.7	721.9	735.3	0.00	0.00	
2,200.0	32.29	79.05	2,001.1	149.9	774.4	788.7	0.00	0.00	
2,300.0	32.29	79.05	2,085.7	160.0	826.8	842.1	0.00	0.00	
2,400.0	32.29	79.05	2,170.2	170.2	879.2	895.6	0.00	0.00	
2,500.0	32.29	79.05	2,254.7	180.3	931.7	949.0	0.00	0.00	
2,600.0	32.29	79.05	2,339.3	190.5	984.1	1,002.4	0.00	0.00	
2,700.0	32.29	79.05	2,423.8	200.6	1,036.6	1,055.8	0.00	0.00	
2,800.0	32.29	79.05	2,508.4	210.8	1,089.0	1,109.2	0.00	0.00	
2,900.0	32.29	79.05	2,592.9	220.9	1,141.4	1,162.6	0.00	0.00	
3,000.0	32.29	79.05	2,677.4	231.0	1,193.9	1,216.0	0.00	0.00	
3,100.0	32.29	79.05	2,762.0	241.2	1,246.3	1,269.5	0.00	0.00	
3,200.0	32.29	79.05	2,846.5	251.3	1,298.8	1,322.9	0.00	0.00	
3,300.0	32.29	79.05	2,931.0	261.5	1,351.2	1,376.3	0.00	0.00	
3,304.4	32.29	79.05	2,934.8	261.9	1,353.5	1,378.6	0.00	0.00	Start Drop -2.00
3,400.0	30.37	79.05	3,016.4	271.4	1,402.3	1,428.3	2.00	-2.00	
3,500.0	28.37	79.05	3,103.6	280.7	1,450.5	1,477.4	2.00	-2.00	
3,600.0	26.37	79.05	3,192.4	289.4	1,495.6	1,523.4	2.00	-2.00	
3,700.0	24.37	79.05	3,282.7	297.6	1,537.7	1,566.2	2.00	-2.00	
3,755.0	23.27	79.05	3,333.0	301.8	1,559.5	1,588.4	2.00	-2.00	Ohio Creek
3,800.0	22.37	79.05	3,374.5	305.1	1,576.6	1,605.9	2.00	-2.00	
3,900.0	20.37	79.05	3,467.6	312.0	1,612.4	1,642.3	2.00	-2.00	
3,965.2	19.07	79.05	3,529.0	316.2	1,634.0	1,664.3	2.00	-2.00	Mesaverde Fm
4,000.0	18.37	79.05	3,561.9	318.3	1,645.0	1,675.5	2.00	-2.00	
4,100.0	16.37	79.05	3,657.4	324.0	1,674.3	1,705.4	2.00	-2.00	
4,200.0	14.37	79.05	3,753.8	329.1	1,700.3	1,731.9	2.00	-2.00	
4,300.0	12.37	79.05	3,851.1	333.5	1,723.0	1,755.0	2.00	-2.00	
4,400.0	10.37	79.05	3,949.1	337.2	1,742.4	1,774.7	2.00	-2.00	
4,500.0	8.37	79.05	4,047.8	340.3	1,758.4	1,791.0	2.00	-2.00	
4,600.0	6.37	79.05	4,146.9	342.7	1,771.0	1,803.9	2.00	-2.00	

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 29-4BB (PA-30- Pad) Directional P
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 29-4BB (PA-30- Pad) Directional Plan 3.29.20	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

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
4,656.4	5.25	79.05	4,203.0	343.8	1,776.6	1,809.6	2.00	-2.00	WILLIAMS FORK FM
4,700.0	4.37	79.05	4,246.5	344.5	1,780.2	1,813.2	2.00	-2.00	
4,800.0	2.37	79.05	4,346.3	345.6	1,786.0	1,819.1	2.00	-2.00	
4,900.0	0.37	79.05	4,446.3	346.1	1,788.3	1,821.5	2.00	-2.00	
4,918.7	0.00	0.00	4,465.0	346.1	1,788.4	1,821.6	2.00	-2.00	EOD; Inc=0° - TOP GAS - Federal 29-4BB TOG
5,000.0	0.00	0.00	4,546.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,100.0	0.00	0.00	4,646.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,200.0	0.00	0.00	4,746.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,300.0	0.00	0.00	4,846.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,400.0	0.00	0.00	4,946.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,500.0	0.00	0.00	5,046.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,600.0	0.00	0.00	5,146.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,700.0	0.00	0.00	5,246.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,800.0	0.00	0.00	5,346.3	346.1	1,788.4	1,821.6	0.00	0.00	
5,900.0	0.00	0.00	5,446.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,000.0	0.00	0.00	5,546.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,100.0	0.00	0.00	5,646.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,200.0	0.00	0.00	5,746.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,300.0	0.00	0.00	5,846.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,400.0	0.00	0.00	5,946.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,418.7	0.00	0.00	5,965.0	346.1	1,788.4	1,821.6	0.00	0.00	COAL RIDGE (Paludal)
6,500.0	0.00	0.00	6,046.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,600.0	0.00	0.00	6,146.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,700.0	0.00	0.00	6,246.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,800.0	0.00	0.00	6,346.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,814.7	0.00	0.00	6,361.0	346.1	1,788.4	1,821.6	0.00	0.00	ROLLINS SS (Iles Fm)
6,900.0	0.00	0.00	6,446.3	346.1	1,788.4	1,821.6	0.00	0.00	
6,964.7	0.00	0.00	6,511.0	346.1	1,788.4	1,821.6	0.00	0.00	TD @ 6964.7° - Federal 29-4BB BHL
7,000.0	0.00	0.00	6,546.3	346.1	1,788.4	1,821.6	0.00	0.00	
7,064.7	0.00	0.00	6,611.0	346.1	1,788.4	1,821.6	0.00	0.00	Permit TD @ 7064.7° 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									
Federal 29-4BB BHL	0.00	0.00	6,511.0	346.1	1,788.4	1,585,987.53	2,286,653.14	39.415070	-108.025240
- plan hits target center									
- Circle (radius 25.0)									
Federal 29-4BB TOG	0.00	0.00	4,465.0	346.1	1,788.4	1,585,987.53	2,286,653.14	39.415070	-108.025240
- plan hits target center									
- Point									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,059.0	1,030.3	Surface Casing	5.500	6.000

Cathedral Energy Services

Planning Report

Database:	EDM 5000.1 US Multi Users DB	Local Co-ordinate Reference:	Well Federal 29-4BB (PA-30- Pad) Directional P
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	WELL @ 5827.0ft (Original Well Elev)
Project:	S. Piceance (Parachute)	MD Reference:	WELL @ 5827.0ft (Original Well Elev)
Site:	SESE 19-7S-95W (PA-30 Pad)	North Reference:	True
Well:	Federal 29-4BB (PA-30- Pad) Directional Plan 3.29.20'	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,755.0	3,333.0	Ohio Creek			
3,965.2	3,529.0	Mesaverde Fm			
4,656.4	4,203.0	WILLIAMS FORK FM			
4,918.7	4,465.0	TOP GAS			
6,418.7	5,965.0	COAL RIDGE (Paludal)			
6,814.7	6,361.0	ROLLINS SS (Iles Fm)			

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'
1,276.2	1,220.1	56.1	289.9	EOB; Inc=32.29°
3,304.4	2,934.8	261.9	1,353.5	Start Drop -2.00
4,918.7	4,465.0	346.1	1,788.4	EOD; Inc=0°
6,964.7	6,511.0	346.1	1,788.4	TD @ 6964.7°
7,064.7	6,611.0	346.1	1,788.4	Permit TD @ 7064.7' MD