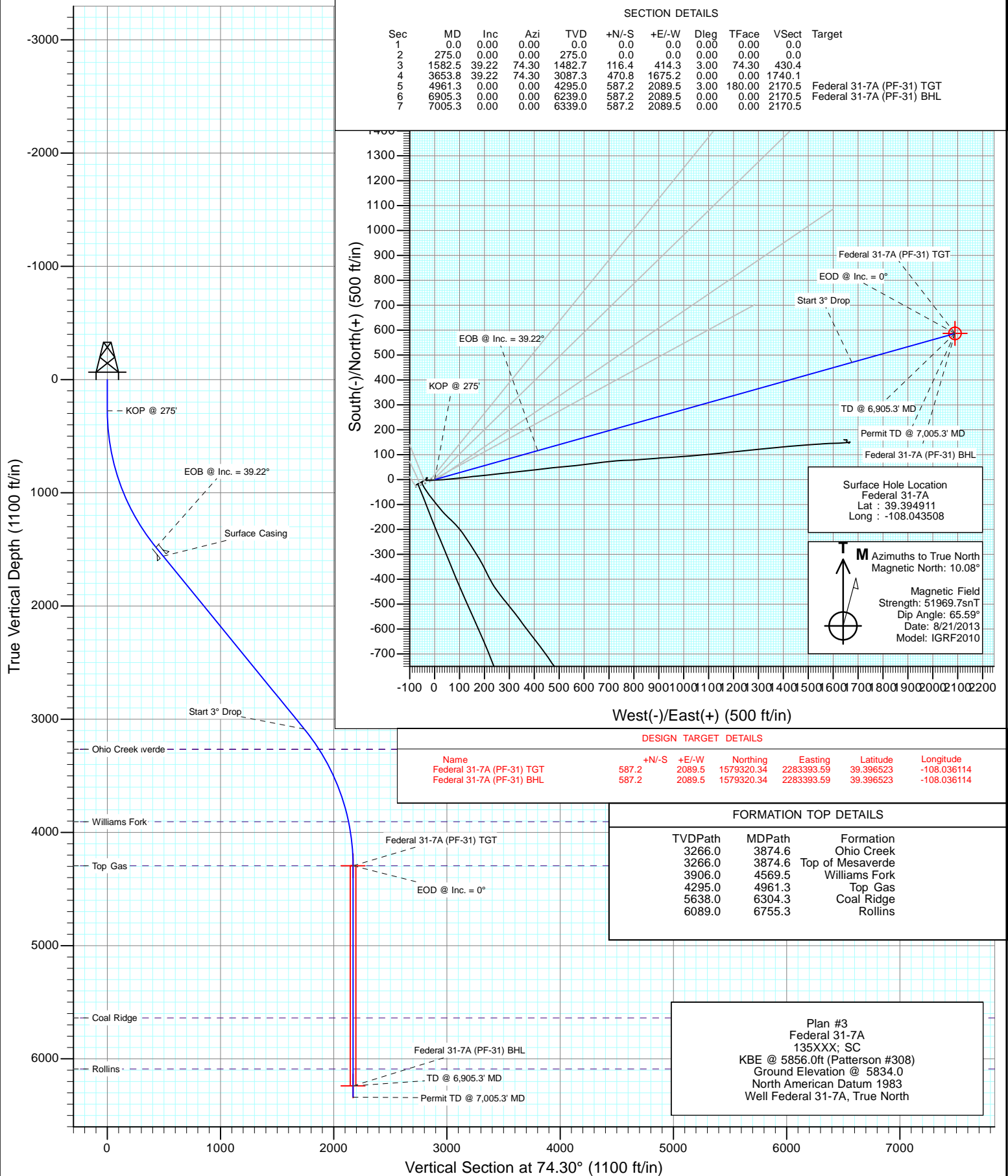


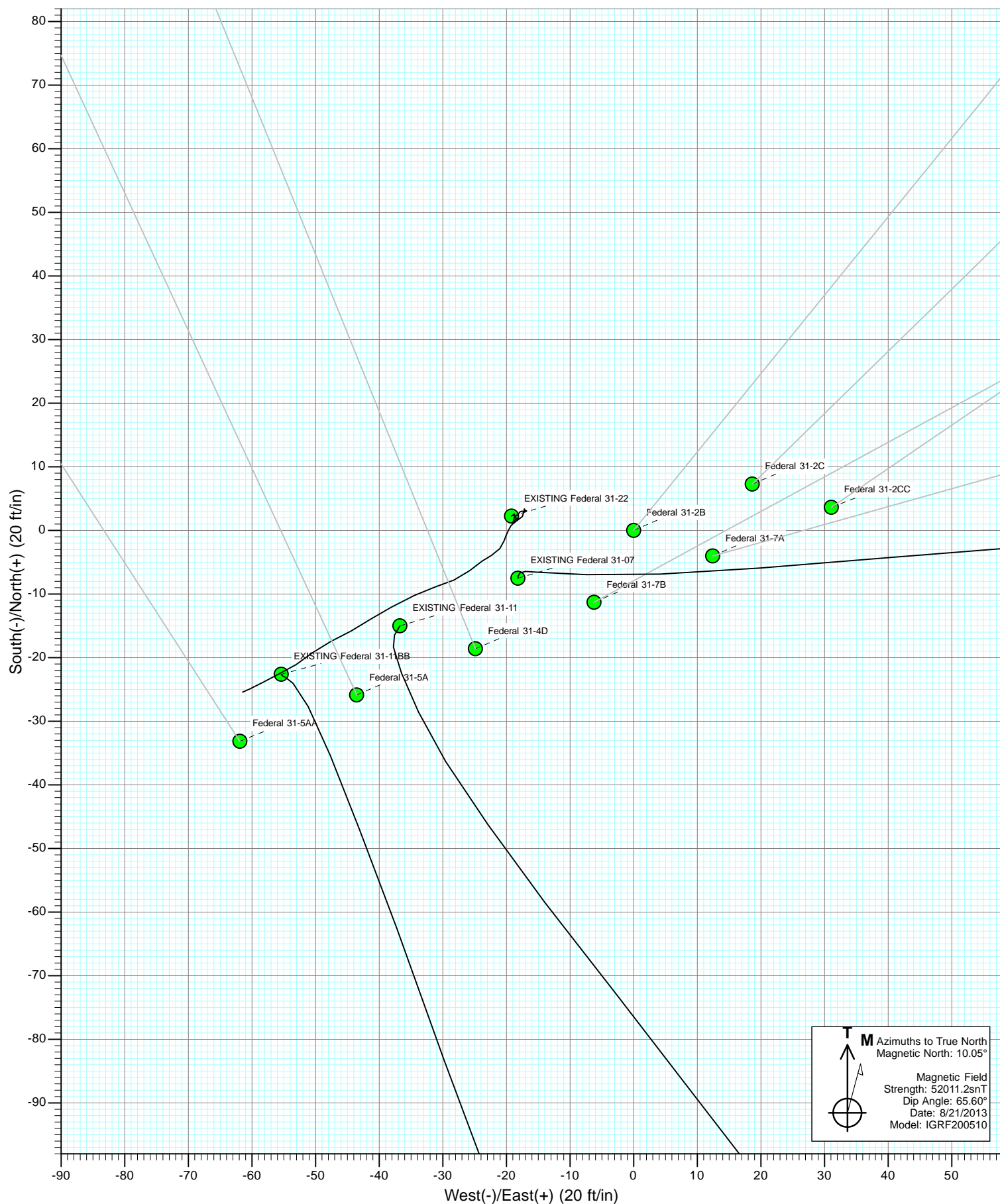


Project: S. Piceance (Parachute)
Site: PF-31 Pad - S31-T7S-R95W
Well: Federal 31-7A
Wellbore: DD
Design: Plan #3



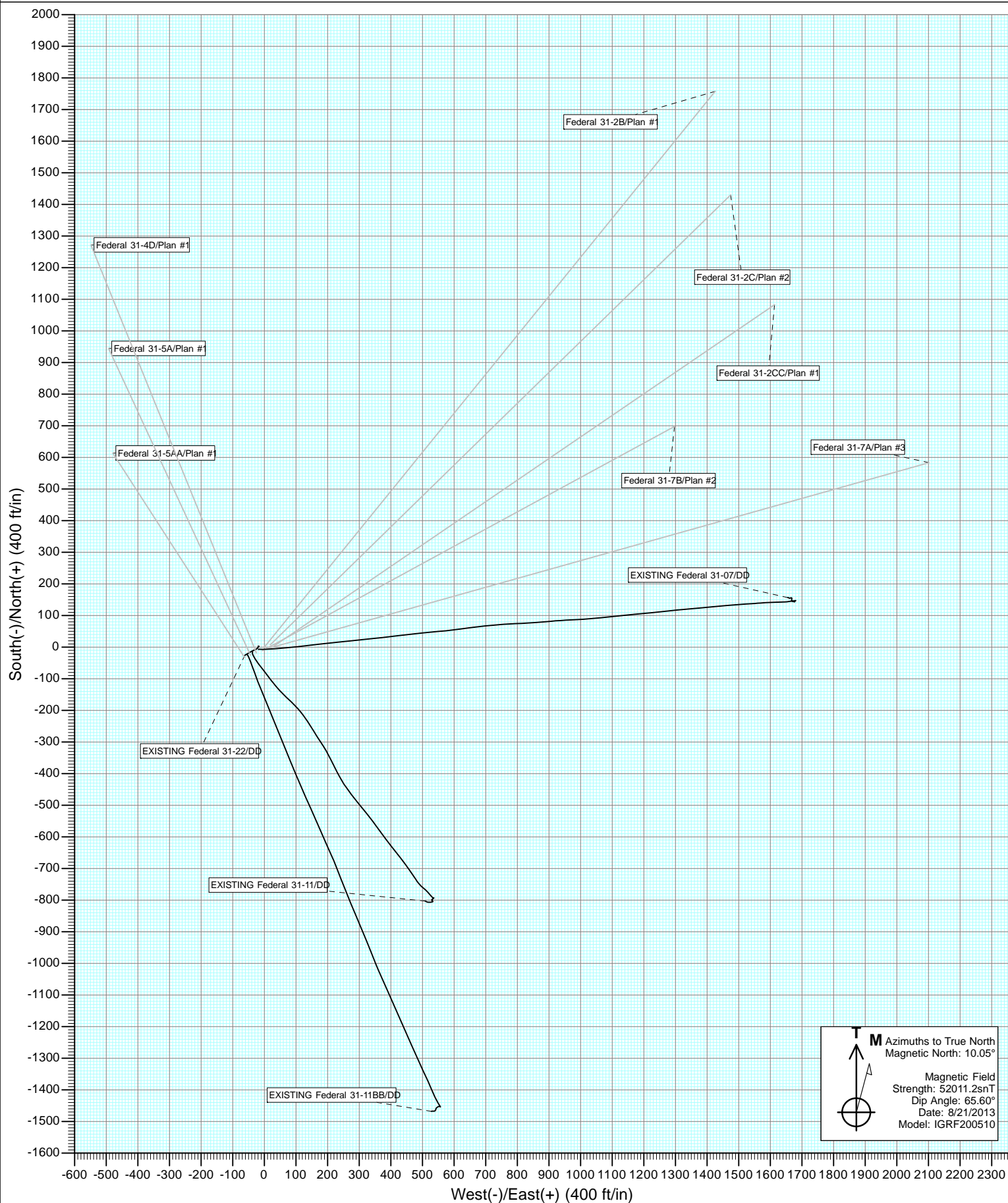


Project: S. Piceance (Parachute)
Site: PF-31 Pad - S31-T7S-R95W



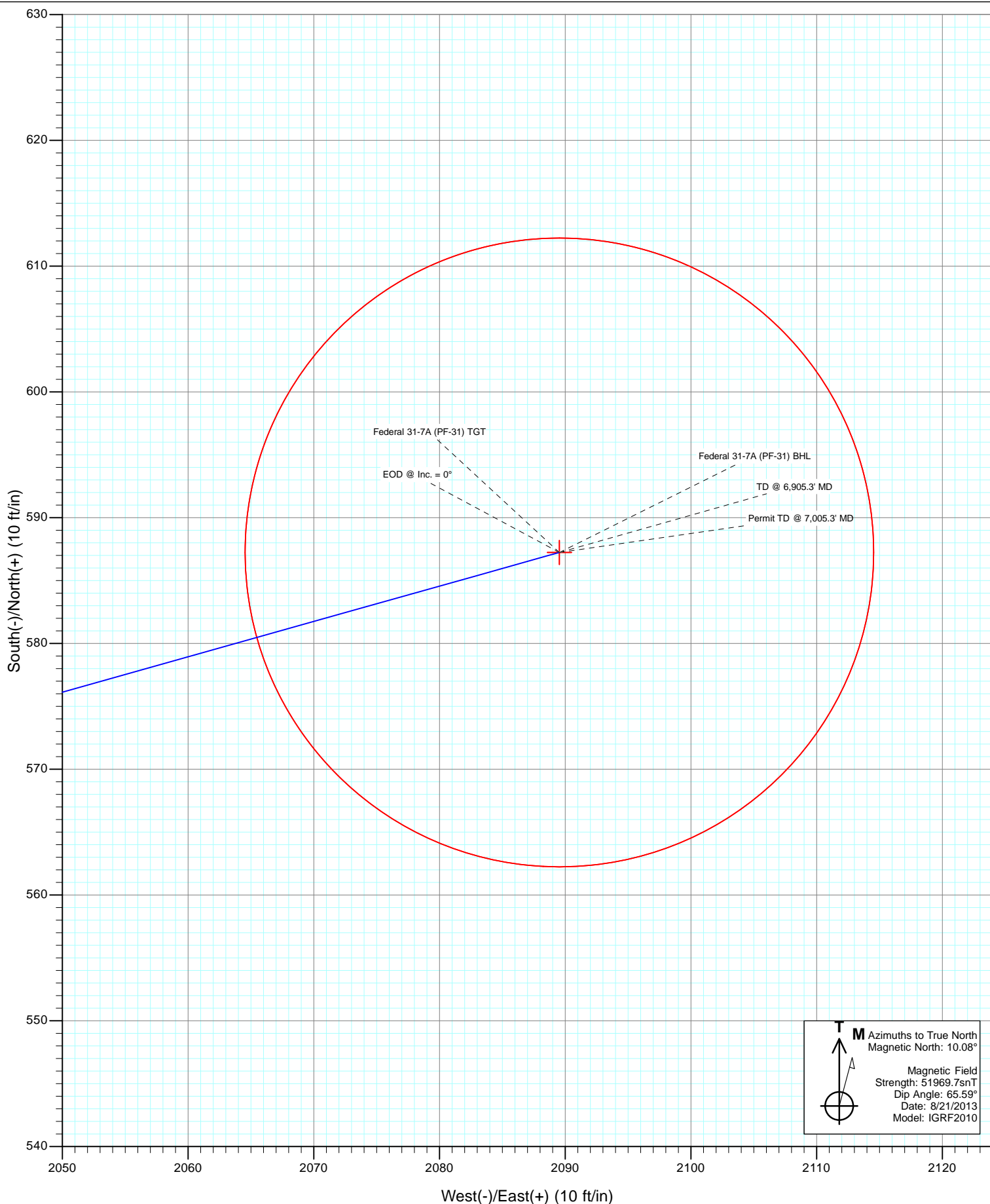


Project: S. Piceance (Parachute)
Site: PF-31 Pad - S31-T7S-R95W





Project: S. Piceance (Parachute)
Site: PF-31 Pad - S31-T7S-R95W
Well: Federal 31-7A
Wellbore: DD
Design: Plan #3



Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Federal 31-7A
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5856.0ft (Patterson #308)
Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 5856.0ft (Patterson #308)
Site:	PF-31 Pad - S31-T7S-R95W	North Reference:	True
Well:	Federal 31-7A	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

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		PF-31 Pad - S31-T7S-R95W			
Site Position:		Northing:	1,578,802.25 ft	Latitude:	39.394940
From:	Lat/Long	Easting:	2,281,293.81 ft	Longitude:	-108.043490
Position Uncertainty:	0.0 ft	Slot Radius:	13.200 in	Grid Convergence:	-1.60 °

Well	Federal 31-7A					
Well Position	+N/-S	0.0 ft	Northing:	1,578,791.82 ft	Latitude:	39.394911
	+E/-W	0.0 ft	Easting:	2,281,288.43 ft	Longitude:	-108.043508
Position Uncertainty		0.0 ft	Wellhead Elevation:	ft	Ground Level:	5,834.0 ft

Wellbore	DD				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	8/21/2013	10.08	65.59	51,970

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	74.30

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	
275.0	0.00	0.00	275.0	0.0	0.0	0.00	0.00	0.00	0.00	
1,582.5	39.22	74.30	1,482.7	116.4	414.3	3.00	3.00	0.00	74.30	
3,653.8	39.22	74.30	3,087.3	470.8	1,675.2	0.00	0.00	0.00	0.00	
4,961.3	0.00	0.00	4,295.0	587.2	2,089.5	3.00	-3.00	0.00	180.00	Federal 31-7A (PF-31
6,905.3	0.00	0.00	6,239.0	587.2	2,089.5	0.00	0.00	0.00	0.00	Federal 31-7A (PF-31
7,005.3	0.00	0.00	6,339.0	587.2	2,089.5	0.00	0.00	0.00	0.00	

Cathedral Energy Services

Planning Report

Database:	USA EDM 5000 Multi Users DB	Local Co-ordinate Reference:	Well Federal 31-7A
Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5856.0ft (Patterson #308)
Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 5856.0ft (Patterson #308)
Site:	PF-31 Pad - S31-T7S-R95W	North Reference:	True
Well:	Federal 31-7A	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	
275.0	0.00	0.00	275.0	0.0	0.0	0.0	0.00	0.00	KOP @ 275'
300.0	0.75	74.30	300.0	0.0	0.2	0.2	3.00	3.00	
400.0	3.75	74.30	399.9	1.1	3.9	4.1	3.00	3.00	
500.0	6.75	74.30	499.5	3.6	12.7	13.2	3.00	3.00	
600.0	9.75	74.30	598.4	7.5	26.6	27.6	3.00	3.00	
700.0	12.75	74.30	696.5	12.7	45.3	47.1	3.00	3.00	
800.0	15.75	74.30	793.4	19.4	69.0	71.7	3.00	3.00	
900.0	18.75	74.30	888.9	27.4	97.6	101.4	3.00	3.00	
1,000.0	21.75	74.30	982.7	36.8	130.9	136.0	3.00	3.00	
1,100.0	24.75	74.30	1,074.6	47.5	168.9	175.4	3.00	3.00	
1,200.0	27.75	74.30	1,164.3	59.4	211.5	219.7	3.00	3.00	
1,300.0	30.75	74.30	1,251.5	72.6	258.5	268.5	3.00	3.00	
1,400.0	33.75	74.30	1,336.1	87.1	309.9	321.9	3.00	3.00	
1,500.0	36.75	74.30	1,417.7	102.7	365.4	379.6	3.00	3.00	
1,582.5	39.22	74.30	1,482.7	116.4	414.3	430.4	3.00	3.00	EOB @ Inc. = 39.22°
1,600.0	39.22	74.30	1,496.3	119.4	425.0	441.4	0.00	0.00	
1,682.5	39.22	74.30	1,560.2	133.5	475.2	493.6	0.00	0.00	Surface Casing
1,700.0	39.22	74.30	1,573.8	136.5	485.8	504.7	0.00	0.00	
1,800.0	39.22	74.30	1,651.2	153.6	546.7	567.9	0.00	0.00	
1,900.0	39.22	74.30	1,728.7	170.8	607.6	631.1	0.00	0.00	
2,000.0	39.22	74.30	1,806.2	187.9	668.5	694.4	0.00	0.00	
2,100.0	39.22	74.30	1,883.6	205.0	729.3	757.6	0.00	0.00	
2,200.0	39.22	74.30	1,961.1	222.1	790.2	820.8	0.00	0.00	
2,300.0	39.22	74.30	2,038.6	239.2	851.1	884.1	0.00	0.00	
2,400.0	39.22	74.30	2,116.0	256.3	912.0	947.3	0.00	0.00	
2,500.0	39.22	74.30	2,193.5	273.4	972.9	1,010.5	0.00	0.00	
2,600.0	39.22	74.30	2,271.0	290.5	1,033.7	1,073.8	0.00	0.00	
2,700.0	39.22	74.30	2,348.4	307.6	1,094.6	1,137.0	0.00	0.00	
2,800.0	39.22	74.30	2,425.9	324.7	1,155.5	1,200.3	0.00	0.00	
2,900.0	39.22	74.30	2,503.4	341.8	1,216.4	1,263.5	0.00	0.00	
3,000.0	39.22	74.30	2,580.8	359.0	1,277.3	1,326.7	0.00	0.00	
3,100.0	39.22	74.30	2,658.3	376.1	1,338.1	1,390.0	0.00	0.00	
3,200.0	39.22	74.30	2,735.8	393.2	1,399.0	1,453.2	0.00	0.00	
3,300.0	39.22	74.30	2,813.2	410.3	1,459.9	1,516.4	0.00	0.00	
3,400.0	39.22	74.30	2,890.7	427.4	1,520.8	1,579.7	0.00	0.00	
3,500.0	39.22	74.30	2,968.2	444.5	1,581.6	1,642.9	0.00	0.00	
3,600.0	39.22	74.30	3,045.6	461.6	1,642.5	1,706.2	0.00	0.00	
3,653.8	39.22	74.30	3,087.3	470.8	1,675.2	1,740.1	0.00	0.00	Start 3° Drop
3,700.0	37.84	74.30	3,123.4	478.6	1,703.0	1,769.0	3.00	-3.00	
3,800.0	34.84	74.30	3,204.0	494.6	1,760.0	1,828.2	3.00	-3.00	
3,874.6	32.60	74.30	3,266.0	505.8	1,799.9	1,869.6	3.00	-3.00	Top of Mesaverde - Ohio Creek
3,900.0	31.84	74.30	3,287.5	509.5	1,812.9	1,883.1	3.00	-3.00	
4,000.0	28.84	74.30	3,373.8	523.2	1,861.5	1,933.7	3.00	-3.00	
4,100.0	25.84	74.30	3,462.6	535.6	1,905.7	1,979.6	3.00	-3.00	
4,200.0	22.84	74.30	3,553.7	546.7	1,945.4	2,020.8	3.00	-3.00	
4,300.0	19.84	74.30	3,646.9	556.6	1,980.4	2,057.2	3.00	-3.00	
4,400.0	16.84	74.30	3,741.8	565.1	2,010.7	2,088.6	3.00	-3.00	
4,500.0	13.84	74.30	3,838.2	572.2	2,036.2	2,115.1	3.00	-3.00	
4,569.5	11.75	74.30	3,906.0	576.4	2,051.0	2,130.5	3.00	-3.00	Williams Fork

Cathedral Energy Services

Planning Report

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Company:	EnCana Oil & Gas (USA) Inc	TVD Reference:	KBE @ 5856.0ft (Patterson #308)
Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 5856.0ft (Patterson #308)
Site:	PF-31 Pad - S31-T7S-R95W	North Reference:	True
Well:	Federal 31-7A	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
4,600.0	10.84	74.30	3,935.9	578.0	2,056.8	2,136.4	3.00	-3.00	
4,700.0	7.84	74.30	4,034.6	582.4	2,072.4	2,152.7	3.00	-3.00	
4,800.0	4.84	74.30	4,133.9	585.4	2,083.0	2,163.7	3.00	-3.00	
4,900.0	1.84	74.30	4,233.8	587.0	2,088.6	2,169.5	3.00	-3.00	
4,961.3	0.00	0.00	4,295.0	587.2	2,089.5	2,170.5	3.00	-3.00	EOD @ Inc. = 0° - Top Gas
5,000.0	0.00	0.00	4,333.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,100.0	0.00	0.00	4,433.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,200.0	0.00	0.00	4,533.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,300.0	0.00	0.00	4,633.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,400.0	0.00	0.00	4,733.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,500.0	0.00	0.00	4,833.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,600.0	0.00	0.00	4,933.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,700.0	0.00	0.00	5,033.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,800.0	0.00	0.00	5,133.7	587.2	2,089.5	2,170.5	0.00	0.00	
5,900.0	0.00	0.00	5,233.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,000.0	0.00	0.00	5,333.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,100.0	0.00	0.00	5,433.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,200.0	0.00	0.00	5,533.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,300.0	0.00	0.00	5,633.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,304.3	0.00	0.00	5,638.0	587.2	2,089.5	2,170.5	0.00	0.00	Coal Ridge
6,400.0	0.00	0.00	5,733.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,500.0	0.00	0.00	5,833.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,600.0	0.00	0.00	5,933.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,700.0	0.00	0.00	6,033.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,755.3	0.00	0.00	6,089.0	587.2	2,089.5	2,170.5	0.00	0.00	Rollins
6,800.0	0.00	0.00	6,133.7	587.2	2,089.5	2,170.5	0.00	0.00	
6,905.3	0.00	0.00	6,239.0	587.2	2,089.5	2,170.5	0.00	0.00	TD @ 6,905.3' MD
7,005.3	0.00	0.00	6,339.0	587.2	2,089.5	2,170.5	0.00	0.00	Permit TD @ 7,005.3' 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 31-7A (PF-31) T	0.00	0.00	4,295.0	587.2	2,089.5	1,579,320.34	2,283,393.59	39.396523	-108.036114
- plan hits target center									
- Point									
Federal 31-7A (PF-31) E	0.00	0.00	6,239.0	587.2	2,089.5	1,579,320.34	2,283,393.59	39.396523	-108.036114
- plan hits target center									
- Circle (radius 25.0)									

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
1,682.5	1,560.2	Surface Casing		

Cathedral Energy Services

Planning Report

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Project:	S. Piceance (Parachute)	MD Reference:	KBE @ 5856.0ft (Patterson #308)
Site:	PF-31 Pad - S31-T7S-R95W	North Reference:	True
Well:	Federal 31-7A	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #3		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
3,874.6	3,266.0	Ohio Creek				
3,874.6	3,266.0	Top of Mesaverde				
4,569.5	3,906.0	Williams Fork				
4,961.3	4,295.0	Top Gas				
6,304.3	5,638.0	Coal Ridge				
6,755.3	6,089.0	Rollins				

Plan Annotations					
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates			
		+N/-S (ft)	+E/-W (ft)	Comment	
275.0	275.0	0.0	0.0	KOP @ 275'	
1,582.5	1,482.7	116.4	414.3	EOB @ Inc. = 39.22°	
3,653.8	3,087.3	470.8	1,675.2	Start 3° Drop	
4,961.3	4,295.0	587.2	2,089.5	EOD @ Inc. = 0°	
6,905.3	6,239.0	587.2	2,089.5	TD @ 6,905.3' MD	
7,005.3	6,339.0	587.2	2,089.5	Permit TD @ 7,005.3' MD	