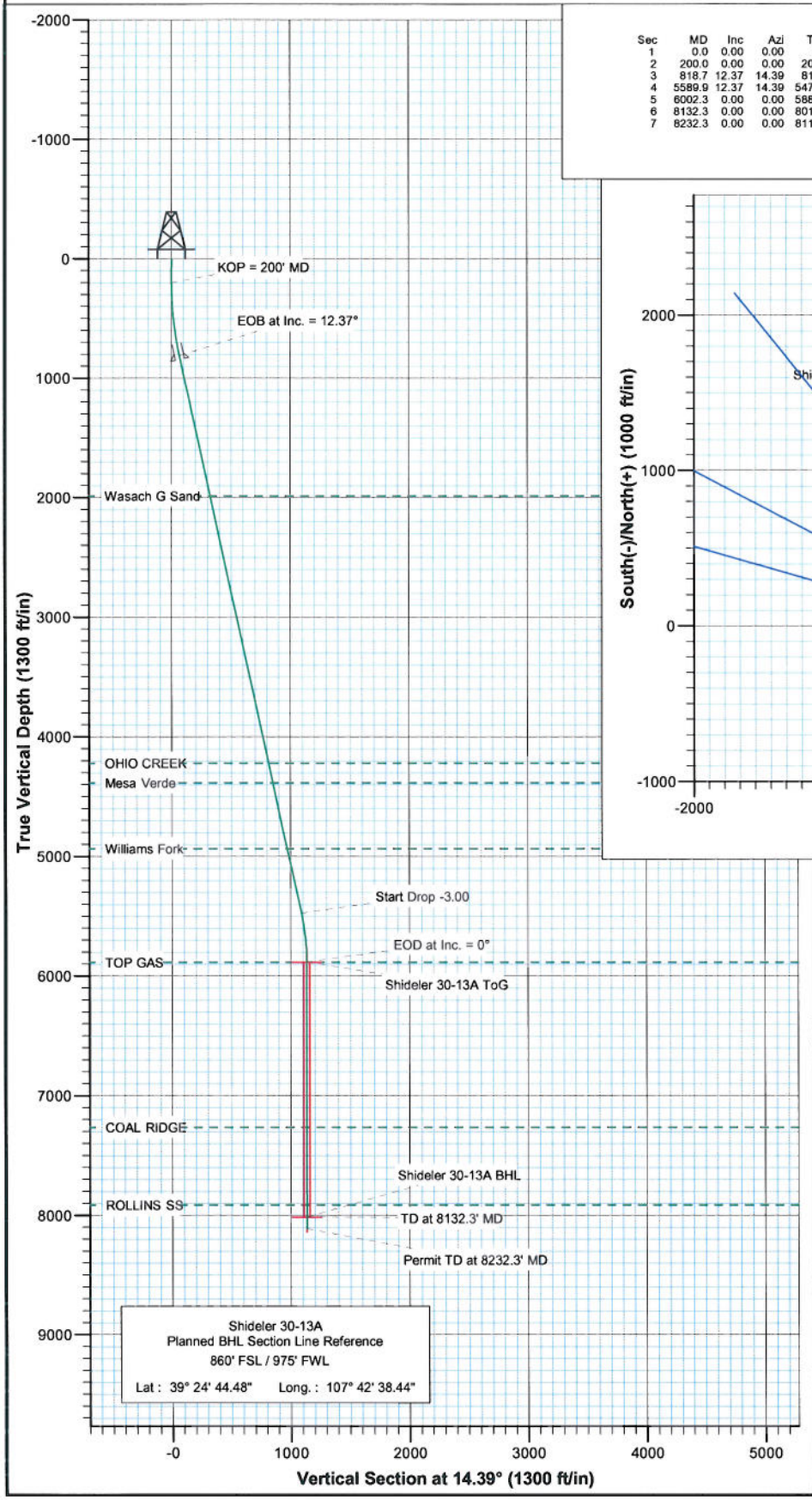
ENCANA

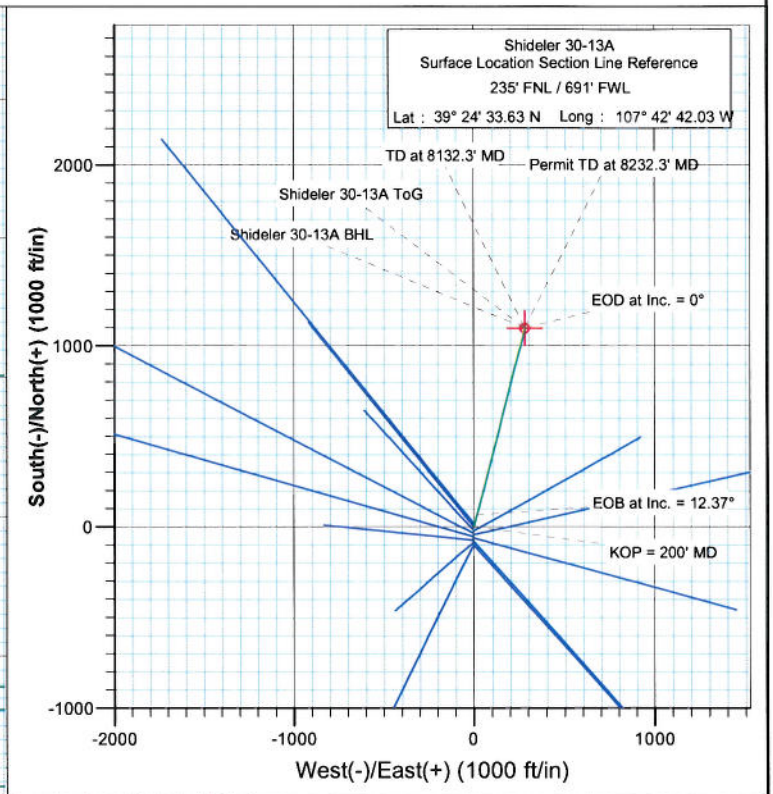
Project: Mamm Creek
Site: C31E Pad (NENW 31-7S-92W)
Well: Shideler 30-13A
Wellbore: DD
Plan: Plan #1

CATHEDRAL

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	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	818.7	12.37	14.39	813.9	64.5	16.5	2.00	14.39	66.6	
4	5589.9	12.37	14.39	5474.2	1054.8	270.7	0.00	0.00	1089.0	
5	6002.3	0.00	0.00	5883.5	1097.8	281.8	3.00	180.00	1133.3	Shideler 30-13A ToG
6	8132.3	0.00	0.00	8013.5	1097.8	281.8	0.00	0.00	1133.3	Shideler 30-13A BHL
7	8232.3	0.00	0.00	8113.5	1097.8	281.8	0.00	0.00	1133.3	





FORMATION TOP DETAILS

TVDPath	MDPath	Formation
1983.5	2016.1	Wasach G Sand
4218.5	4304.3	OHIO CREEK
4383.5	4473.2	Mesa Verde
4933.5	5036.3	Williams Fork
5883.5	6002.3	TOP GAS
7263.5	7382.3	COAL RIDGE
7913.5	8032.3	ROLLINS SS

Azimuths to True North
Magnetic North: 10.44°

Magnetic Field
Strength: 52456.1snT
Dip Angle: 65.78°
Date: 7/7/2009
Model: IGRF200510

DESIGN DETAILS: Plan #1
Job# 95xxx: KR

KBE @ 6763.5ft (Original Well Elev)

Target	Azimuth	Origin Type	N/S	E/W	From TVD
Shideler 30-13A BHL	14.39	Slot	0.0	0.0	0.0

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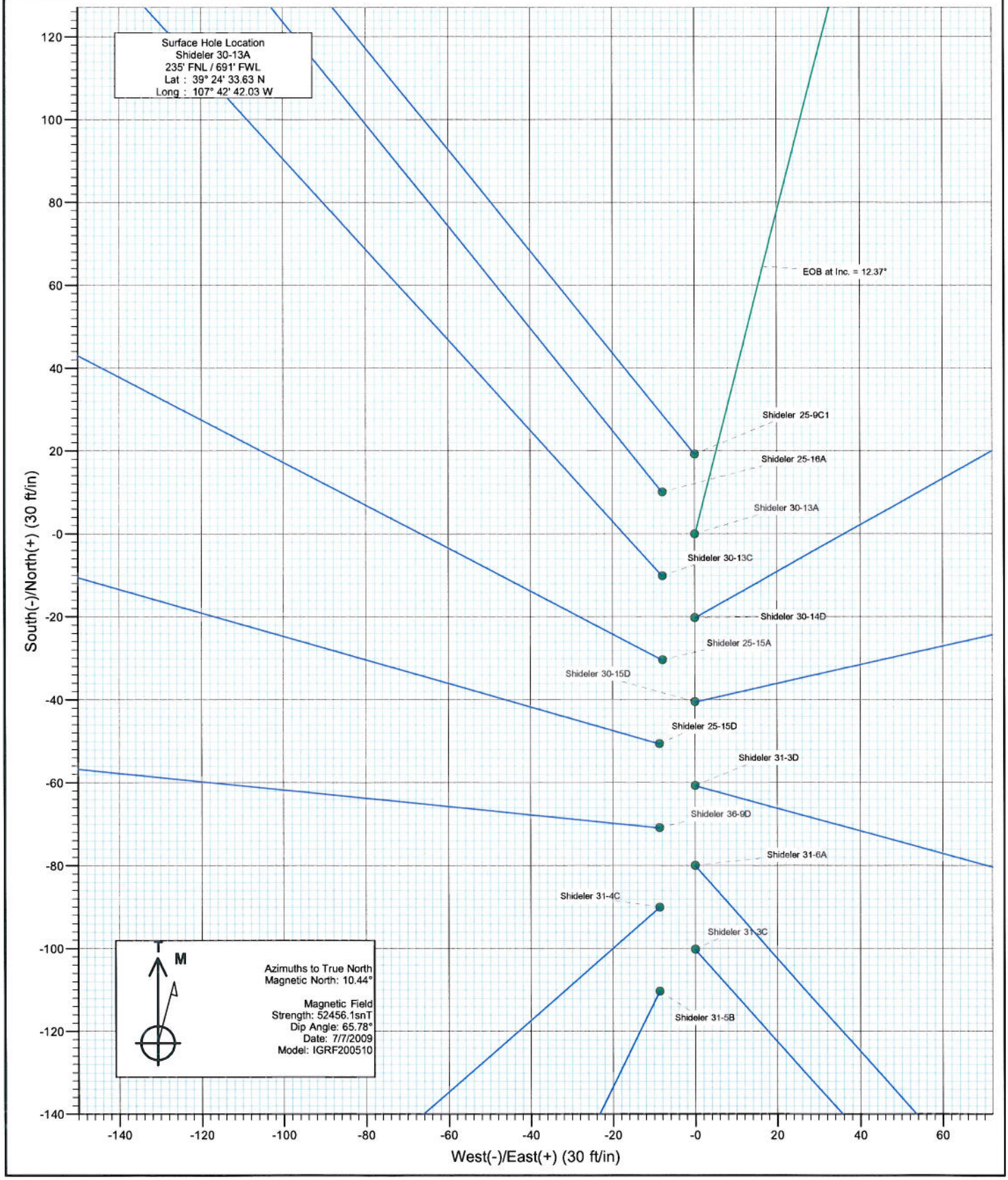
CATHEDRAL



Planning Report

Database:	US EDM 2003.21 Multi User Db	**Local Co-ordinate Reference:**	Well Shideler 30-13A
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 6763.5ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 6763.5ft (Original Well Elev)
Site:	C31E Pad (NENW 31-7S-92W)	**North Reference:**	True
Well:	Shideler 30-13A	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Project	Mamm Creek		
Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Central Zone		

Site	C31E Pad (NENW 31-7S-92W)				
Site Position:		**Northing:**	1,581,611.55 ft	**Latitude:**	39° 24' 33.82 N
From:	Lat/Long	**Easting:**	2,375,162.79 ft	**Longitude:**	107° 42' 42.03 W
Position Uncertainty:	0.0 ft	**Slot Radius:**	in	**Grid Convergence:**	-1.39 °

Well	Shideler 30-13A					
Well Position	**+N/-S**	0.0 ft	**Northing:**	1,581,592.32 ft	**Latitude:**	39° 24' 33.63 N
	+E/-W	0.0 ft	**Easting:**	2,375,162.32 ft	**Longitude:**	107° 42' 42.03 W
Position Uncertainty		0.0 ft	**Wellhead Elevation:**	ft	**Ground Level:**	6,750.0 ft

Wellbore	DD			
Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	7/7/2009	10.44	65.78	52,456

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	0.00	

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	
818.7	12.37	14.39	813.9	64.5	16.5	2.00	2.00	0.00	14.39	
5,589.9	12.37	14.39	5,474.2	1,054.8	270.7	0.00	0.00	0.00	0.00	
6,002.3	0.00	0.00	5,883.5	1,097.8	281.8	3.00	-3.00	0.00	180.00	Shideler 30-13A ToG
8,132.3	0.00	0.00	8,013.5	1,097.8	281.8	0.00	0.00	0.00	0.00	Shideler 30-13A BHL
8,232.3	0.00	0.00	8,113.5	1,097.8	281.8	0.00	0.00	0.00	0.00	

Database:	US EDM 2003.21 Multi User Db	**Local Co-ordinate Reference:**	Well Shideler 30-13A
Company:	EnCana Oil & Gas (USA) Inc	**TVD Reference:**	KBE @ 6763.5ft (Original Well Elev)
Project:	Mamm Creek	**MD Reference:**	KBE @ 6763.5ft (Original Well Elev)
Site:	C31E Pad (NENW 31-7S-92W)	**North Reference:**	True
Well:	Shideler 30-13A	**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' MD
300.0	2.00	14.39	300.0	1.7	0.4	1.7	2.00	2.00	
400.0	4.00	14.39	399.8	6.8	1.7	6.8	2.00	2.00	
500.0	6.00	14.39	499.5	15.2	3.9	15.2	2.00	2.00	
600.0	8.00	14.39	598.7	27.0	6.9	27.0	2.00	2.00	
700.0	10.00	14.39	697.5	42.2	10.8	42.2	2.00	2.00	
800.0	12.00	14.39	795.6	60.6	15.6	60.6	2.00	2.00	
818.7	12.37	14.39	813.9	64.5	16.5	64.5	2.00	2.00	EOB at Inc. = 12.37°
850.0	12.37	14.39	844.5	71.0	18.2	71.0	0.00	0.00	Surface Casing
900.0	12.37	14.39	893.3	81.3	20.9	81.3	0.00	0.00	
1,000.0	12.37	14.39	991.0	102.1	26.2	102.1	0.00	0.00	
1,100.0	12.37	14.39	1,088.7	122.8	31.5	122.9	0.00	0.00	
1,200.0	12.37	14.39	1,186.3	143.6	36.9	143.6	0.00	0.00	
1,300.0	12.37	14.39	1,284.0	164.4	42.2	164.4	0.00	0.00	
1,400.0	12.37	14.39	1,381.7	185.1	47.5	185.1	0.00	0.00	
1,500.0	12.37	14.39	1,479.4	205.9	52.8	205.9	0.00	0.00	
1,600.0	12.37	14.39	1,577.1	226.6	58.2	226.6	0.00	0.00	
1,700.0	12.37	14.39	1,674.7	247.4	63.5	247.4	0.00	0.00	
1,800.0	12.37	14.39	1,772.4	268.1	68.8	268.2	0.00	0.00	
1,900.0	12.37	14.39	1,870.1	288.9	74.1	288.9	0.00	0.00	
2,000.0	12.37	14.39	1,967.8	309.7	79.5	309.7	0.00	0.00	
2,016.1	12.37	14.39	1,983.5	313.0	80.3	313.0	0.00	0.00	Wasach G Sand
2,100.0	12.37	14.39	2,065.4	330.4	84.8	330.4	0.00	0.00	
2,200.0	12.37	14.39	2,163.1	351.2	90.1	351.2	0.00	0.00	
2,300.0	12.37	14.39	2,260.8	371.9	95.5	371.9	0.00	0.00	
2,400.0	12.37	14.39	2,358.5	392.7	100.8	392.7	0.00	0.00	
2,500.0	12.37	14.39	2,456.1	413.4	106.1	413.4	0.00	0.00	
2,600.0	12.37	14.39	2,553.8	434.2	111.4	434.2	0.00	0.00	
2,700.0	12.37	14.39	2,651.5	455.0	116.8	455.0	0.00	0.00	
2,800.0	12.37	14.39	2,749.2	475.7	122.1	475.7	0.00	0.00	
2,900.0	12.37	14.39	2,846.9	496.5	127.4	496.5	0.00	0.00	
3,000.0	12.37	14.39	2,944.5	517.2	132.8	517.2	0.00	0.00	
3,100.0	12.37	14.39	3,042.2	538.0	138.1	538.0	0.00	0.00	
3,200.0	12.37	14.39	3,139.9	558.7	143.4	558.7	0.00	0.00	
3,300.0	12.37	14.39	3,237.6	579.5	148.7	579.5	0.00	0.00	
3,400.0	12.37	14.39	3,335.2	600.2	154.1	600.3	0.00	0.00	
3,500.0	12.37	14.39	3,432.9	621.0	159.4	621.0	0.00	0.00	
3,600.0	12.37	14.39	3,530.6	641.8	164.7	641.8	0.00	0.00	
3,700.0	12.37	14.39	3,628.3	662.5	170.0	662.5	0.00	0.00	
3,800.0	12.37	14.39	3,725.9	683.3	175.4	683.3	0.00	0.00	
3,900.0	12.37	14.39	3,823.6	704.0	180.7	704.0	0.00	0.00	
4,000.0	12.37	14.39	3,921.3	724.8	186.0	724.8	0.00	0.00	
4,100.0	12.37	14.39	4,019.0	745.5	191.4	745.6	0.00	0.00	
4,200.0	12.37	14.39	4,116.7	766.3	196.7	766.3	0.00	0.00	
4,300.0	12.37	14.39	4,214.3	787.1	202.0	787.1	0.00	0.00	
4,304.3	12.37	14.39	4,218.5	787.9	202.2	788.0	0.00	0.00	OHIO CREEK
4,400.0	12.37	14.39	4,312.0	807.8	207.3	807.8	0.00	0.00	
4,473.2	12.37	14.39	4,383.5	823.0	211.2	823.0	0.00	0.00	Mesa Verde
4,500.0	12.37	14.39	4,409.7	828.6	212.7	828.6	0.00	0.00	
4,600.0	12.37	14.39	4,507.4	849.3	218.0	849.3	0.00	0.00	

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Project:	Mamm Creek	**MD Reference:**	KBE @ 6763.5ft (Original Well Elev)
Site:	C31E Pad (NENW 31-7S-92W)	**North Reference:**	True
Well:	Shideler 30-13A	**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
4,700.0	12.37	14.39	4,605.0	870.1	223.3	870.1	0.00	0.00	
4,800.0	12.37	14.39	4,702.7	890.8	228.6	890.9	0.00	0.00	
4,900.0	12.37	14.39	4,800.4	911.6	234.0	911.6	0.00	0.00	
5,000.0	12.37	14.39	4,898.1	932.4	239.3	932.4	0.00	0.00	
5,036.3	12.37	14.39	4,933.5	939.9	241.2	939.9	0.00	0.00	Williams Fork
5,100.0	12.37	14.39	4,995.7	953.1	244.6	953.1	0.00	0.00	
5,200.0	12.37	14.39	5,093.4	973.9	250.0	973.9	0.00	0.00	
5,300.0	12.37	14.39	5,191.1	994.6	255.3	994.6	0.00	0.00	
5,400.0	12.37	14.39	5,288.8	1,015.4	260.6	1,015.4	0.00	0.00	
5,500.0	12.37	14.39	5,386.5	1,036.1	265.9	1,036.2	0.00	0.00	
5,589.9	12.37	14.39	5,474.2	1,054.8	270.7	1,054.8	0.00	0.00	Start Drop -3.00
5,600.0	12.07	14.39	5,484.1	1,056.9	271.3	1,056.9	3.00	-3.00	
5,700.0	9.07	14.39	5,582.4	1,074.6	275.8	1,074.7	3.00	-3.00	
5,800.0	6.07	14.39	5,681.5	1,087.4	279.1	1,087.4	3.00	-3.00	
5,900.0	3.07	14.39	5,781.2	1,095.1	281.1	1,095.1	3.00	-3.00	
6,000.0	0.07	14.39	5,881.2	1,097.8	281.8	1,097.8	3.00	-3.00	
6,002.3	0.00	0.00	5,883.5	1,097.8	281.8	1,097.8	3.00	-3.00	EOD at Inc. = 0° - TOP GAS - Shideler 30-13A
6,100.0	0.00	0.00	5,981.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,200.0	0.00	0.00	6,081.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,300.0	0.00	0.00	6,181.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,400.0	0.00	0.00	6,281.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,500.0	0.00	0.00	6,381.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,600.0	0.00	0.00	6,481.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,700.0	0.00	0.00	6,581.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,800.0	0.00	0.00	6,681.2	1,097.8	281.8	1,097.8	0.00	0.00	
6,900.0	0.00	0.00	6,781.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,000.0	0.00	0.00	6,881.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,100.0	0.00	0.00	6,981.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,200.0	0.00	0.00	7,081.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,300.0	0.00	0.00	7,181.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,382.3	0.00	0.00	7,263.5	1,097.8	281.8	1,097.8	0.00	0.00	COAL RIDGE
7,400.0	0.00	0.00	7,281.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,500.0	0.00	0.00	7,381.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,600.0	0.00	0.00	7,481.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,700.0	0.00	0.00	7,581.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,800.0	0.00	0.00	7,681.2	1,097.8	281.8	1,097.8	0.00	0.00	
7,900.0	0.00	0.00	7,781.2	1,097.8	281.8	1,097.8	0.00	0.00	
8,000.0	0.00	0.00	7,881.2	1,097.8	281.8	1,097.8	0.00	0.00	
8,032.3	0.00	0.00	7,913.5	1,097.8	281.8	1,097.8	0.00	0.00	ROLLINS SS
8,100.0	0.00	0.00	7,981.2	1,097.8	281.8	1,097.8	0.00	0.00	
8,132.3	0.00	0.00	8,013.5	1,097.8	281.8	1,097.8	0.00	0.00	TD at 8132.3' MD - Shideler 30-13A BHL
8,200.0	0.00	0.00	8,081.2	1,097.8	281.8	1,097.8	0.00	0.00	
8,232.3	0.00	0.00	8,113.5	1,097.8	281.8	1,097.8	0.00	0.00	Permit TD at 8232.3' MD

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Project:	Mamm Creek	MD Reference:	KBE @ 6763.5ft (Original Well Elev)
Site:	C31E Pad (NENW 31-7S-92W)	North Reference:	True
Well:	Shideler 30-13A	Survey Calculation Method:	Minimum Curvature
Wellbore:	DD		
Design:	Plan #1		

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Shideler 30-13A ToG - plan hits target center - Point	0.00	0.00	5,883.5	1,097.8	281.8	1,582,682.90	2,375,470.71	39° 24' 44.48 N	107° 42' 38.44 W
Shideler 30-13A BHL - plan misses target center by 1114.7ft at 8132.3ft MD (8013.5 TVD, 1097.8 N, 281.8 E) - Circle (radius 25.0)	0.00	0.00	8,013.5	19.2	0.0	1,581,611.55	2,375,162.79	39° 24' 33.82 N	107° 42' 42.03 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)
850.0	844.5	Surface Casing	5.500	6.000

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
2,016.1	1,983.5	Wasach G Sand			
4,304.3	4,218.5	OHIO CREEK			
4,473.2	4,383.5	Mesa Verde			
5,036.3	4,933.5	Williams Fork			
6,002.3	5,883.5	TOP GAS			
7,382.3	7,263.5	COAL RIDGE			
8,032.3	7,913.5	ROLLINS SS			

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
200.0	200.0	0.0	0.0	KOP = 200' MD
818.7	813.9	64.5	16.5	EOB at Inc. = 12.37°
5,589.9	5,474.2	1,054.8	270.7	Start Drop -3.00
6,002.3	5,883.5	1,097.8	281.8	EOD at Inc. = 0°
8,132.3	8,013.5	1,097.8	281.8	TD at 8132.3' MD
8,232.3	8,113.5	1,097.8	281.8	Permit TD at 8232.3' MD