

WELL DETAILS: GRIFFITHS 34N-20HZ

GL 5096 & KB 25 @ 5096.00ft (ASSUMED)

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	1264176.36	3161841.58	40.0571050	-104.9218230

SECTION DETAILS

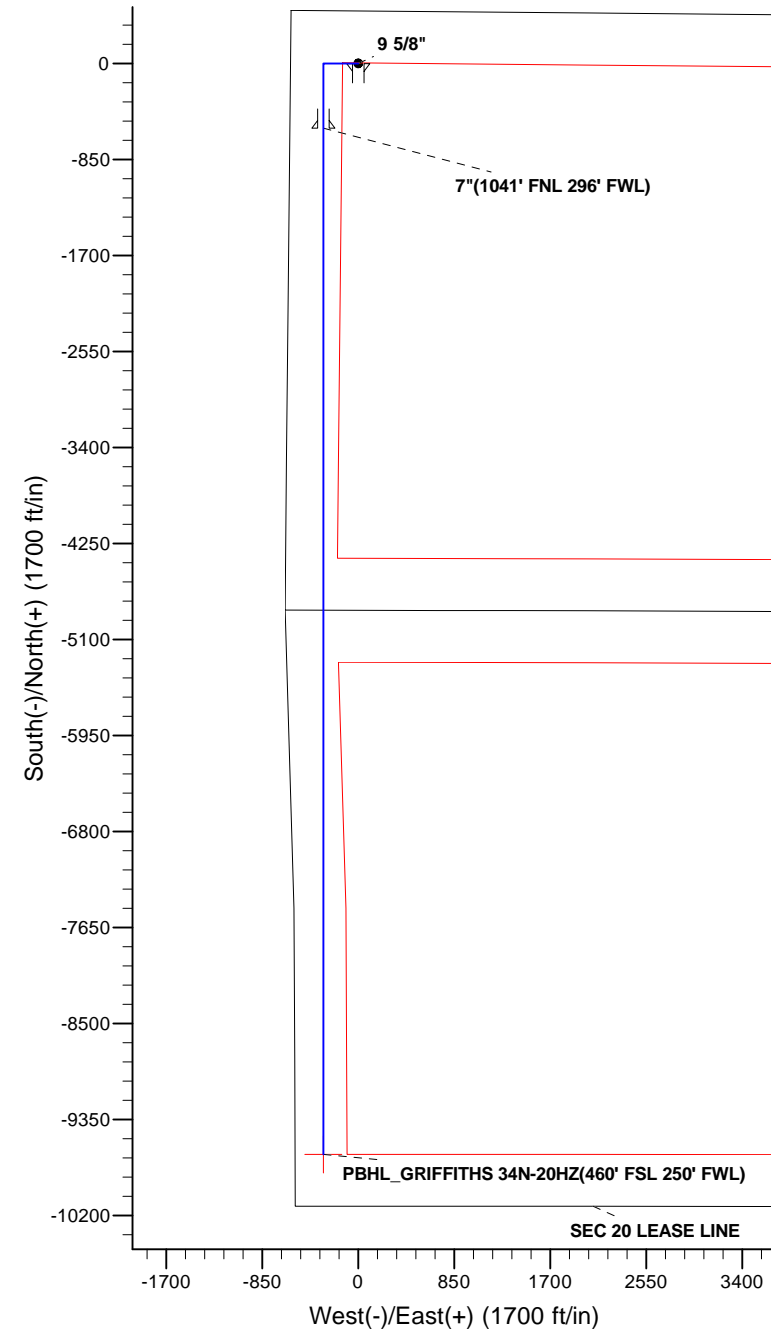
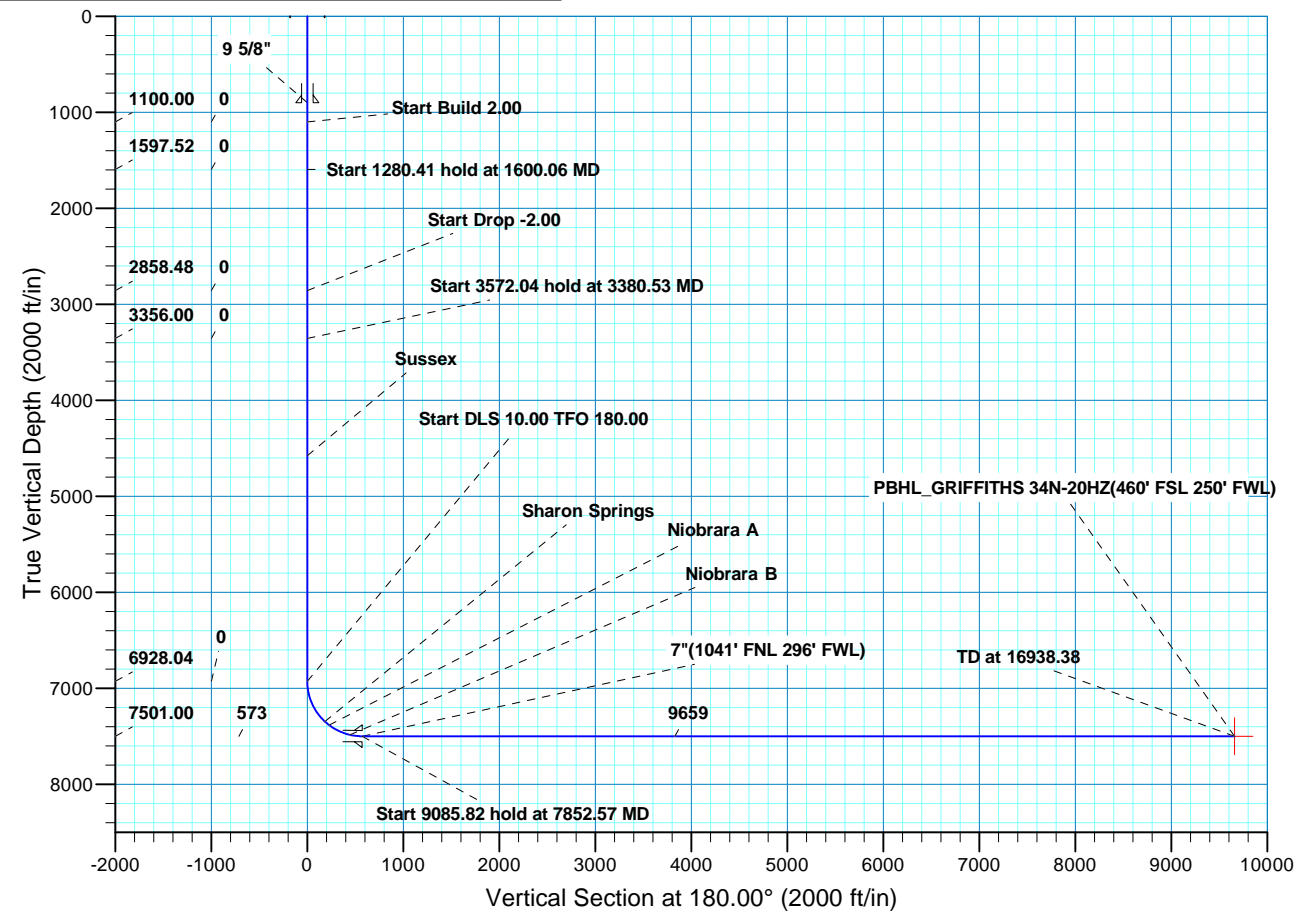
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1100.00	0.00	0.00	1100.00	0.00	0.00	0.00	0.00	0.00	
1600.06	10.00	270.00	1597.52	0.00	-43.53	2.00	270.00	0.00	
2880.47	10.00	270.00	2858.48	0.00	-265.90	0.00	0.00	0.00	
3380.53	0.00	0.00	3356.00	0.00	-309.43	2.00	180.00	0.00	
6952.57	0.00	0.00	6928.04	0.00	-309.43	0.00	0.00	0.00	
7852.57	90.00	180.00	7501.00	-572.96	-309.43	10.00	180.00	572.96	
16938.38	90.00	180.00	7501.00	-9658.77	-309.43	0.00	0.009658.77	PBHL_GRIFFITHS 34N-20HZ(460' FSL 250' FWL)	

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	Inc
4578.00	4602.53	Sussex	0.00
5169.00	5193.53	Shannon	0.00
7348.00	7423.93	Sharon Springs	47.14
7385.00	7481.53	Niobrara A	52.90
7486.00	7721.18	Niobrara B	76.86

CASING DETAILS

TVD	MD	Name	Size
900.00	900.00	9 5/8"	9.625
7501.00	7852.57	7"	7.000





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

GRIFFITHS 4-17HZ PAD

GRIFFITHS 34N-20HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

06 May, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 34N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 34N-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Project	COLORADO NORTHERN ZONE - 83, KERR MCGEE OIL & GAS ONSHORE LP		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	Colorado Northern Zone		

Site	GRIFFITHS 4-17HZ PAD, SECTION 17 T1N R67W			
Site Position:		Northing:	1,264,176.57 usft	Latitude: 40.0571050
From:	Lat/Long	Easting:	3,161,871.82 usft	Longitude: -104.9217150
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.37 °

Well	GRIFFITHS 34N-20HZ, 465' FNL 600' FEL			
Well Position	+N/-S	-0.01 ft	Northing:	1,264,176.36 usft
	+E/-W	-30.23 ft	Easting:	3,161,841.58 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	Ground Level: 5,071.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2013/05/06	8.72	66.66	52,635

Design	PLAN #1 PRELIMINARY			
Audit Notes:				
Version:	Phase:	PLAN	Tie On Depth:	0.00
Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	180.00

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,600.06	10.00	270.00	1,597.52	0.00	-43.53	2.00	2.00	0.00	270.00	
2,880.47	10.00	270.00	2,858.48	0.00	-265.90	0.00	0.00	0.00	0.00	
3,380.53	0.00	0.00	3,356.00	0.00	-309.43	2.00	-2.00	0.00	180.00	
6,952.57	0.00	0.00	6,928.04	0.00	-309.43	0.00	0.00	0.00	0.00	
7,852.57	90.00	180.00	7,501.00	-572.96	-309.43	10.00	10.00	20.00	180.00	
16,938.39	90.00	180.00	7,501.00	-9,658.77	-309.43	0.00	0.00	0.00	0.00	PBHL_GRIFFITHS 34

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 34N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 34N-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

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)	Turn Rate (°/100ft)
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
200.00	0.00	0.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
300.00	0.00	0.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
400.00	0.00	0.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
500.00	0.00	0.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
600.00	0.00	0.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
700.00	0.00	0.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
800.00	0.00	0.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
900.00	0.00	0.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,200.00	2.00	270.00	1,199.98	0.00	-1.75	0.00	2.00	2.00	0.00
1,300.00	4.00	270.00	1,299.84	0.00	-6.98	0.00	2.00	2.00	0.00
1,400.00	6.00	270.00	1,399.45	0.00	-15.69	0.00	2.00	2.00	0.00
1,500.00	8.00	270.00	1,498.70	0.00	-27.88	0.00	2.00	2.00	0.00
1,600.00	10.00	270.00	1,597.47	0.00	-43.52	0.00	2.00	2.00	0.00
1,600.06	10.00	270.00	1,597.52	0.00	-43.53	0.00	2.00	2.00	0.00
Start 1280.41 hold at 1600.06 MD									
1,700.00	10.00	270.00	1,695.95	0.00	-60.89	0.00	0.00	0.00	0.00
1,800.00	10.00	270.00	1,794.43	0.00	-78.26	0.00	0.00	0.00	0.00
1,900.00	10.00	270.00	1,892.91	0.00	-95.62	0.00	0.00	0.00	0.00
2,000.00	10.00	270.00	1,991.39	0.00	-112.99	0.00	0.00	0.00	0.00
2,100.00	10.00	270.00	2,089.87	0.00	-130.36	0.00	0.00	0.00	0.00
2,200.00	10.00	270.00	2,188.35	0.00	-147.72	0.00	0.00	0.00	0.00
2,300.00	10.00	270.00	2,286.83	0.00	-165.09	0.00	0.00	0.00	0.00
2,400.00	10.00	270.00	2,385.31	0.00	-182.46	0.00	0.00	0.00	0.00
2,500.00	10.00	270.00	2,483.79	0.00	-199.82	0.00	0.00	0.00	0.00
2,600.00	10.00	270.00	2,582.27	0.00	-217.19	0.00	0.00	0.00	0.00
2,700.00	10.00	270.00	2,680.75	0.00	-234.56	0.00	0.00	0.00	0.00
2,800.00	10.00	270.00	2,779.23	0.00	-251.92	0.00	0.00	0.00	0.00
2,880.47	10.00	270.00	2,858.48	0.00	-265.90	0.00	0.00	0.00	0.00
Start Drop -2.00									
2,900.00	9.61	270.00	2,877.72	0.00	-269.23	0.00	2.00	-2.00	0.00
3,000.00	7.61	270.00	2,976.59	0.00	-284.20	0.00	2.00	-2.00	0.00
3,100.00	5.61	270.00	3,075.92	0.00	-295.71	0.00	2.00	-2.00	0.00
3,200.00	3.61	270.00	3,175.59	0.00	-303.75	0.00	2.00	-2.00	0.00
3,300.00	1.61	270.00	3,275.48	0.00	-308.30	0.00	2.00	-2.00	0.00
3,380.53	0.00	0.00	3,356.00	0.00	-309.43	0.00	2.00	-2.00	0.00
Start 3572.04 hold at 3380.53 MD									
3,400.00	0.00	0.00	3,375.47	0.00	-309.43	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,475.47	0.00	-309.43	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,575.47	0.00	-309.43	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,675.47	0.00	-309.43	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,775.47	0.00	-309.43	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,875.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	3,975.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,075.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,175.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,275.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,375.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,475.47	0.00	-309.43	0.00	0.00	0.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 34N-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

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)	Turn Rate (°/100ft)
4,600.00	0.00	0.00	4,575.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,602.53	0.00	0.00	4,578.00	0.00	-309.43	0.00	0.00	0.00	0.00
Sussex									
4,700.00	0.00	0.00	4,675.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,775.47	0.00	-309.43	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,875.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,975.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,075.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,193.53	0.00	0.00	5,169.00	0.00	-309.43	0.00	0.00	0.00	0.00
Shannon									
5,200.00	0.00	0.00	5,175.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,275.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,375.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,475.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,575.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,675.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,775.47	0.00	-309.43	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,875.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,975.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,075.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,175.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,275.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,375.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,475.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,575.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,675.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,775.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,875.47	0.00	-309.43	0.00	0.00	0.00	0.00
6,952.57	0.00	0.00	6,928.04	0.00	-309.43	0.00	0.00	0.00	0.00
Start DLS 10.00 TFO 180.00									
7,000.00	4.74	180.00	6,975.42	-1.96	-309.43	1.96	10.00	10.00	0.00
7,100.00	14.74	180.00	7,073.85	-18.86	-309.43	18.86	10.00	10.00	0.00
7,200.00	24.74	180.00	7,167.85	-52.60	-309.43	52.60	10.00	10.00	0.00
7,300.00	34.74	180.00	7,254.57	-102.15	-309.43	102.15	10.00	10.00	0.00
7,400.00	44.74	180.00	7,331.36	-166.00	-309.43	166.00	10.00	10.00	0.00
7,423.93	47.14	180.00	7,348.00	-183.20	-309.43	183.20	10.00	10.00	0.00
Sharon Springs									
7,481.53	52.90	180.00	7,385.00	-227.32	-309.43	227.32	10.00	10.00	0.00
Niobrara A									
7,500.00	54.74	180.00	7,395.90	-242.22	-309.43	242.22	10.00	10.00	0.00
7,600.00	64.74	180.00	7,446.23	-328.49	-309.43	328.49	10.00	10.00	0.00
7,700.00	74.74	180.00	7,480.80	-422.19	-309.43	422.19	10.00	10.00	0.00
7,721.18	76.86	180.00	7,486.00	-442.72	-309.43	442.72	10.00	10.00	0.00
Niobrara B									
7,800.00	84.74	180.00	7,498.59	-520.46	-309.43	520.46	10.00	10.00	0.00
7,852.57	90.00	180.00	7,501.00	-572.96	-309.43	572.96	10.00	10.00	0.00
Start 9085.82 hold at 7852.57 MD - 7"(1041' FNL 296' FWL)									
7,900.00	90.00	180.00	7,501.00	-620.39	-309.43	620.39	0.00	0.00	0.00
8,000.00	90.00	180.00	7,501.00	-720.39	-309.43	720.39	0.00	0.00	0.00
8,100.00	90.00	180.00	7,501.00	-820.39	-309.43	820.39	0.00	0.00	0.00
8,200.00	90.00	180.00	7,501.00	-920.39	-309.43	920.39	0.00	0.00	0.00
8,300.00	90.00	180.00	7,501.00	-1,020.39	-309.43	1,020.39	0.00	0.00	0.00
8,400.00	90.00	180.00	7,501.00	-1,120.39	-309.43	1,120.39	0.00	0.00	0.00

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Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 34N-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

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)	Turn Rate (°/100ft)	
8,500.00	90.00	180.00	7,501.00	-1,220.39	-309.43	1,220.39	0.00	0.00	0.00	
8,600.00	90.00	180.00	7,501.00	-1,320.39	-309.43	1,320.39	0.00	0.00	0.00	
8,700.00	90.00	180.00	7,501.00	-1,420.39	-309.43	1,420.39	0.00	0.00	0.00	
8,800.00	90.00	180.00	7,501.00	-1,520.39	-309.43	1,520.39	0.00	0.00	0.00	
8,900.00	90.00	180.00	7,501.00	-1,620.39	-309.43	1,620.39	0.00	0.00	0.00	
9,000.00	90.00	180.00	7,501.00	-1,720.39	-309.43	1,720.39	0.00	0.00	0.00	
9,100.00	90.00	180.00	7,501.00	-1,820.39	-309.43	1,820.39	0.00	0.00	0.00	
9,200.00	90.00	180.00	7,501.00	-1,920.39	-309.43	1,920.39	0.00	0.00	0.00	
9,300.00	90.00	180.00	7,501.00	-2,020.39	-309.43	2,020.39	0.00	0.00	0.00	
9,400.00	90.00	180.00	7,501.00	-2,120.39	-309.43	2,120.39	0.00	0.00	0.00	
9,500.00	90.00	180.00	7,501.00	-2,220.39	-309.43	2,220.39	0.00	0.00	0.00	
9,600.00	90.00	180.00	7,501.00	-2,320.39	-309.43	2,320.39	0.00	0.00	0.00	
9,700.00	90.00	180.00	7,501.00	-2,420.39	-309.43	2,420.39	0.00	0.00	0.00	
9,800.00	90.00	180.00	7,501.00	-2,520.39	-309.43	2,520.39	0.00	0.00	0.00	
9,900.00	90.00	180.00	7,501.00	-2,620.39	-309.43	2,620.39	0.00	0.00	0.00	
10,000.00	90.00	180.00	7,501.00	-2,720.39	-309.43	2,720.39	0.00	0.00	0.00	
10,100.00	90.00	180.00	7,501.00	-2,820.39	-309.43	2,820.39	0.00	0.00	0.00	
10,200.00	90.00	180.00	7,501.00	-2,920.39	-309.43	2,920.39	0.00	0.00	0.00	
10,300.00	90.00	180.00	7,501.00	-3,020.39	-309.43	3,020.39	0.00	0.00	0.00	
10,400.00	90.00	180.00	7,501.00	-3,120.39	-309.43	3,120.39	0.00	0.00	0.00	
10,500.00	90.00	180.00	7,501.00	-3,220.39	-309.43	3,220.39	0.00	0.00	0.00	
10,600.00	90.00	180.00	7,501.00	-3,320.39	-309.43	3,320.39	0.00	0.00	0.00	
10,700.00	90.00	180.00	7,501.00	-3,420.39	-309.43	3,420.39	0.00	0.00	0.00	
10,800.00	90.00	180.00	7,501.00	-3,520.39	-309.43	3,520.39	0.00	0.00	0.00	
10,900.00	90.00	180.00	7,501.00	-3,620.39	-309.43	3,620.39	0.00	0.00	0.00	
11,000.00	90.00	180.00	7,501.00	-3,720.39	-309.43	3,720.39	0.00	0.00	0.00	
11,100.00	90.00	180.00	7,501.00	-3,820.39	-309.43	3,820.39	0.00	0.00	0.00	
11,200.00	90.00	180.00	7,501.00	-3,920.39	-309.43	3,920.39	0.00	0.00	0.00	
11,300.00	90.00	180.00	7,501.00	-4,020.39	-309.43	4,020.39	0.00	0.00	0.00	
11,400.00	90.00	180.00	7,501.00	-4,120.39	-309.43	4,120.39	0.00	0.00	0.00	
11,500.00	90.00	180.00	7,501.00	-4,220.39	-309.43	4,220.39	0.00	0.00	0.00	
11,600.00	90.00	180.00	7,501.00	-4,320.39	-309.43	4,320.39	0.00	0.00	0.00	
11,700.00	90.00	180.00	7,501.00	-4,420.39	-309.43	4,420.39	0.00	0.00	0.00	
11,800.00	90.00	180.00	7,501.00	-4,520.39	-309.43	4,520.39	0.00	0.00	0.00	
11,900.00	90.00	180.00	7,501.00	-4,620.39	-309.43	4,620.39	0.00	0.00	0.00	
12,000.00	90.00	180.00	7,501.00	-4,720.39	-309.43	4,720.39	0.00	0.00	0.00	
12,100.00	90.00	180.00	7,501.00	-4,820.39	-309.43	4,820.39	0.00	0.00	0.00	
12,200.00	90.00	180.00	7,501.00	-4,920.39	-309.43	4,920.39	0.00	0.00	0.00	
12,300.00	90.00	180.00	7,501.00	-5,020.39	-309.43	5,020.39	0.00	0.00	0.00	
12,400.00	90.00	180.00	7,501.00	-5,120.39	-309.43	5,120.39	0.00	0.00	0.00	
12,500.00	90.00	180.00	7,501.00	-5,220.39	-309.43	5,220.39	0.00	0.00	0.00	
12,600.00	90.00	180.00	7,501.00	-5,320.39	-309.43	5,320.39	0.00	0.00	0.00	
12,700.00	90.00	180.00	7,501.00	-5,420.39	-309.43	5,420.39	0.00	0.00	0.00	
12,800.00	90.00	180.00	7,501.00	-5,520.39	-309.43	5,520.39	0.00	0.00	0.00	
12,900.00	90.00	180.00	7,501.00	-5,620.39	-309.43	5,620.39	0.00	0.00	0.00	
13,000.00	90.00	180.00	7,501.00	-5,720.39	-309.43	5,720.39	0.00	0.00	0.00	
13,100.00	90.00	180.00	7,501.00	-5,820.39	-309.43	5,820.39	0.00	0.00	0.00	
13,200.00	90.00	180.00	7,501.00	-5,920.39	-309.43	5,920.39	0.00	0.00	0.00	
13,300.00	90.00	180.00	7,501.00	-6,020.39	-309.43	6,020.39	0.00	0.00	0.00	
13,400.00	90.00	180.00	7,501.00	-6,120.39	-309.43	6,120.39	0.00	0.00	0.00	
13,500.00	90.00	180.00	7,501.00	-6,220.39	-309.43	6,220.39	0.00	0.00	0.00	
13,600.00	90.00	180.00	7,501.00	-6,320.39	-309.43	6,320.39	0.00	0.00	0.00	
13,700.00	90.00	180.00	7,501.00	-6,420.39	-309.43	6,420.39	0.00	0.00	0.00	
13,800.00	90.00	180.00	7,501.00	-6,520.39	-309.43	6,520.39	0.00	0.00	0.00	

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 34N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 34N-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

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)	Turn Rate (°/100ft)
13,900.00	90.00	180.00	7,501.00	-6,620.39	-309.43	6,620.39	0.00	0.00	0.00
14,000.00	90.00	180.00	7,501.00	-6,720.39	-309.43	6,720.39	0.00	0.00	0.00
14,100.00	90.00	180.00	7,501.00	-6,820.39	-309.43	6,820.39	0.00	0.00	0.00
14,200.00	90.00	180.00	7,501.00	-6,920.39	-309.43	6,920.39	0.00	0.00	0.00
14,300.00	90.00	180.00	7,501.00	-7,020.39	-309.43	7,020.39	0.00	0.00	0.00
14,400.00	90.00	180.00	7,501.00	-7,120.39	-309.43	7,120.39	0.00	0.00	0.00
14,500.00	90.00	180.00	7,501.00	-7,220.39	-309.43	7,220.39	0.00	0.00	0.00
14,600.00	90.00	180.00	7,501.00	-7,320.39	-309.43	7,320.39	0.00	0.00	0.00
14,700.00	90.00	180.00	7,501.00	-7,420.39	-309.43	7,420.39	0.00	0.00	0.00
14,800.00	90.00	180.00	7,501.00	-7,520.39	-309.43	7,520.39	0.00	0.00	0.00
14,900.00	90.00	180.00	7,501.00	-7,620.39	-309.43	7,620.39	0.00	0.00	0.00
15,000.00	90.00	180.00	7,501.00	-7,720.39	-309.43	7,720.39	0.00	0.00	0.00
15,100.00	90.00	180.00	7,501.00	-7,820.39	-309.43	7,820.39	0.00	0.00	0.00
15,200.00	90.00	180.00	7,501.00	-7,920.39	-309.43	7,920.39	0.00	0.00	0.00
15,300.00	90.00	180.00	7,501.00	-8,020.39	-309.43	8,020.39	0.00	0.00	0.00
15,400.00	90.00	180.00	7,501.00	-8,120.39	-309.43	8,120.39	0.00	0.00	0.00
15,500.00	90.00	180.00	7,501.00	-8,220.39	-309.43	8,220.39	0.00	0.00	0.00
15,600.00	90.00	180.00	7,501.00	-8,320.39	-309.43	8,320.39	0.00	0.00	0.00
15,700.00	90.00	180.00	7,501.00	-8,420.39	-309.43	8,420.39	0.00	0.00	0.00
15,800.00	90.00	180.00	7,501.00	-8,520.39	-309.43	8,520.39	0.00	0.00	0.00
15,900.00	90.00	180.00	7,501.00	-8,620.39	-309.43	8,620.39	0.00	0.00	0.00
16,000.00	90.00	180.00	7,501.00	-8,720.39	-309.43	8,720.39	0.00	0.00	0.00
16,100.00	90.00	180.00	7,501.00	-8,820.39	-309.43	8,820.39	0.00	0.00	0.00
16,200.00	90.00	180.00	7,501.00	-8,920.39	-309.43	8,920.39	0.00	0.00	0.00
16,300.00	90.00	180.00	7,501.00	-9,020.39	-309.43	9,020.39	0.00	0.00	0.00
16,400.00	90.00	180.00	7,501.00	-9,120.39	-309.43	9,120.39	0.00	0.00	0.00
16,500.00	90.00	180.00	7,501.00	-9,220.39	-309.43	9,220.39	0.00	0.00	0.00
16,600.00	90.00	180.00	7,501.00	-9,320.39	-309.43	9,320.39	0.00	0.00	0.00
16,700.00	90.00	180.00	7,501.00	-9,420.39	-309.43	9,420.39	0.00	0.00	0.00
16,800.00	90.00	180.00	7,501.00	-9,520.39	-309.43	9,520.39	0.00	0.00	0.00
16,900.00	90.00	180.00	7,501.00	-9,620.39	-309.43	9,620.39	0.00	0.00	0.00
16,938.39	90.00	180.00	7,501.00	-9,658.77	-309.43	9,658.77	0.00	0.00	0.00
TD at 16938.38 - PBHL_GRIFFITHS 34N-20HZ(460' FSL 250' FWL)									

Design Targets									
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL_GRIFFITHS 34N- - plan hits target center - Point	0.00	0.00	7,501.00	-9,658.77	-309.43	1,254,515.79	3,161,595.14	40.0305900	-104.9229280

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
900.00	900.00	9 5/8"	9.625	12.250	
7,852.57	7,501.00	7"(1041' FNL 296' FWL)	7.000	7.500	

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 34N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5096 & KB 25 @ 5096.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 34N-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,602.53	4,578.00	Sussex				
5,193.53	5,169.00	Shannon				
7,423.93	7,348.00	Sharon Springs				
7,481.53	7,385.00	Niobrara A				
7,721.18	7,486.00	Niobrara B				

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,100.00	1,100.00	0.00	0.00	Start Build 2.00
1,600.06	1,597.52	0.00	-43.53	Start 1280.41 hold at 1600.06 MD
2,880.47	2,858.48	0.00	-265.90	Start Drop -2.00
3,380.53	3,356.00	0.00	-309.43	Start 3572.04 hold at 3380.53 MD
6,952.57	6,928.04	0.00	-309.43	Start DLS 10.00 TFO 180.00
7,852.57	7,501.00	-572.96	-309.43	Start 9085.82 hold at 7852.57 MD
16,938.39	7,501.00	-9,658.77	-309.43	TD at 16938.38