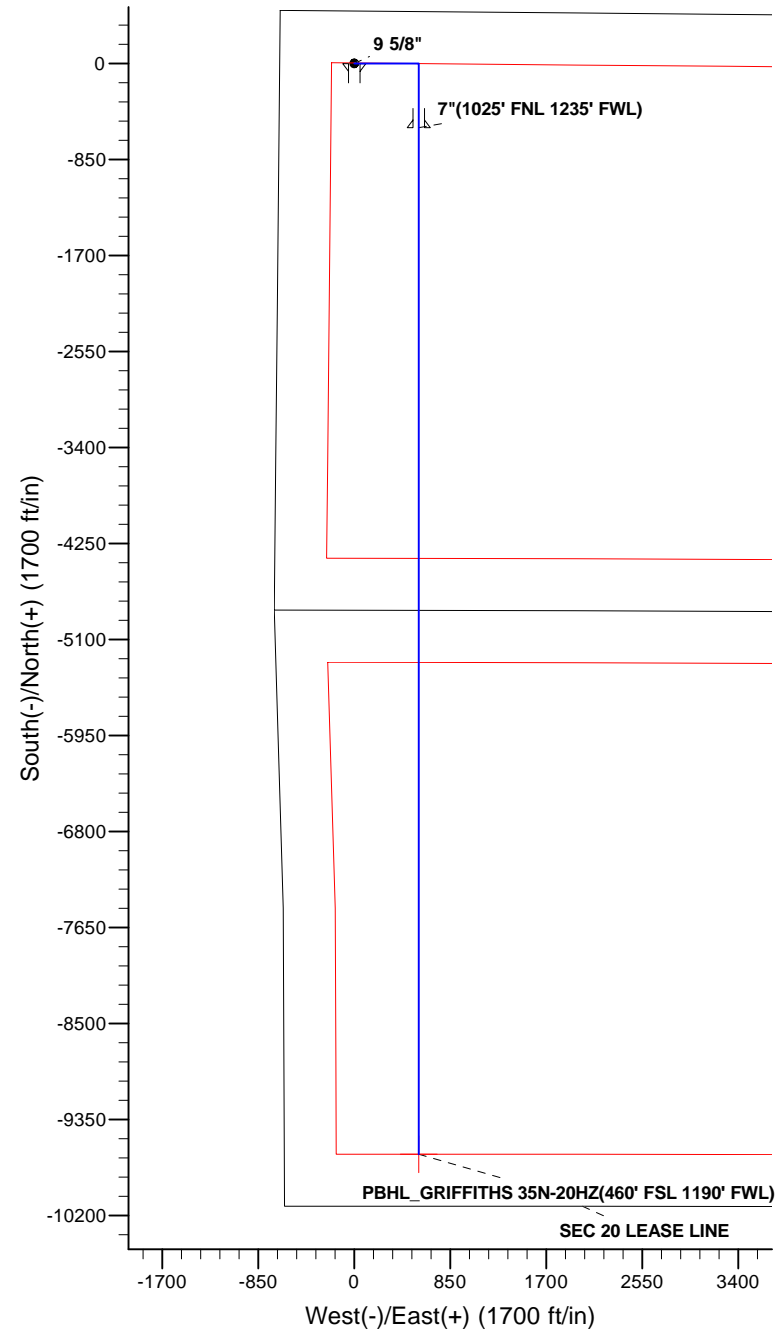
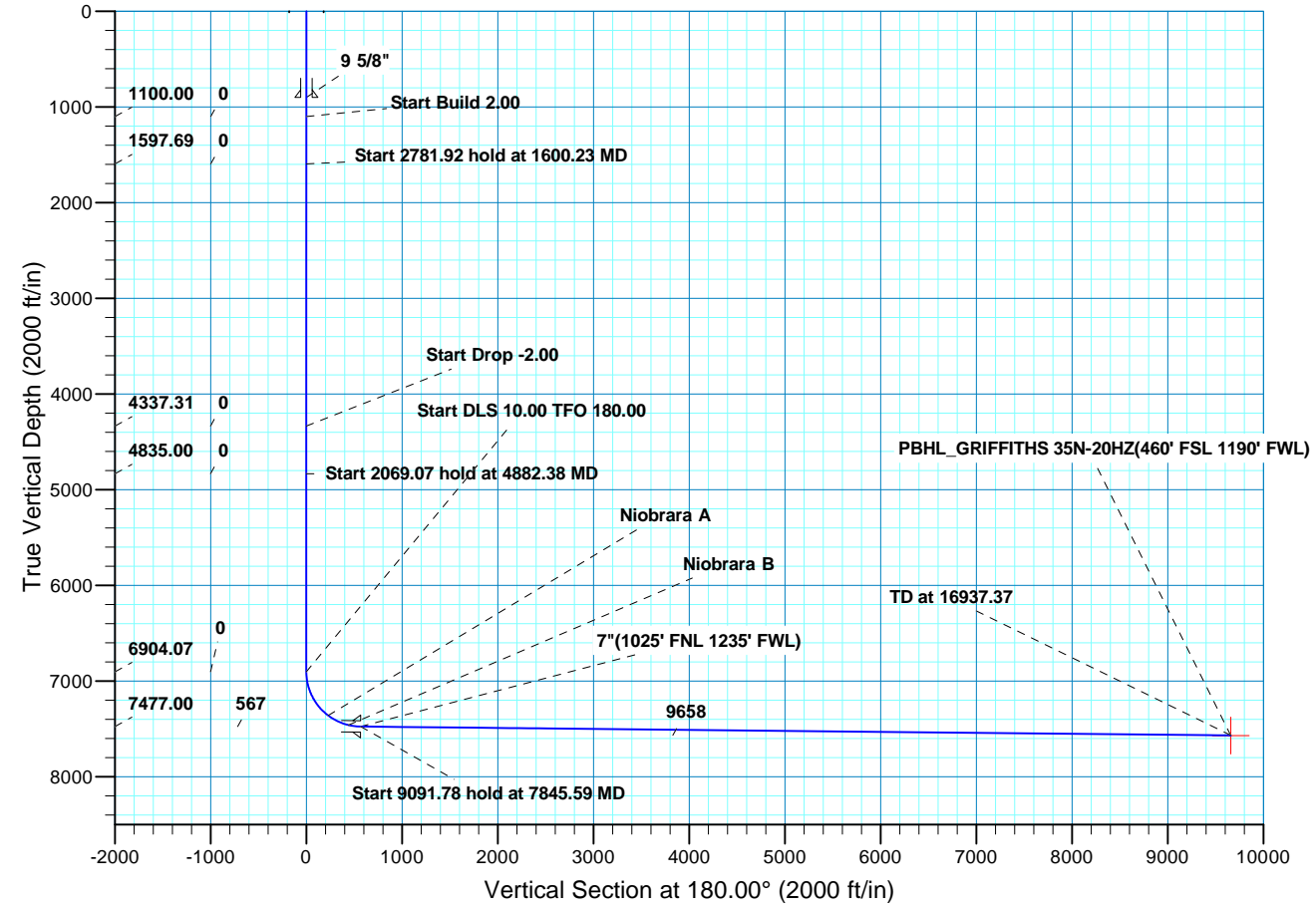




WELL DETAILS: GRIFFITHS 35N-20HZ									
GL 5060 & KB 25 @ 5085.00ft (ASSUMED)									
		+N/-S	+E/-W	Northing	Easting	Latitude	Longitude		
		0.00	0.00	1264176.39	3161901.77	40.0571040	-104.9216080		
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
0.00	0.00	0.00	0.00	0.00	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	
1600.23	10.00	90.00	1597.69	0.00	43.56	2.00	90.00	0.00	
4382.15	10.00	90.00	4337.31	0.00	526.86	0.00	0.00	0.00	
4882.38	0.00	0.00	4835.00	0.00	570.42	2.00	180.00	0.00	
6951.45	0.00	0.00	6904.07	0.00	570.42	0.00	0.00	0.00	
7845.59	89.41	180.00	7477.00	-567.10	570.42	10.00	180.00	567.10	
16937.37	89.41	180.00	7570.00	-9658.41	570.42	0.00	0.00	9658.41	PBHL_GRIFFITHS 35N-20HZ(460' FSL 1190' FWL)
FORMATION TOP DETAILS							CASING DETAILS		
TVDPath	MDPath	Formation		Inc		TVD	MD	Name	Size
4567.00	4613.99	Sussex		5.37		900.00	900.00	9 5/8"	9.625
5158.00	5205.38	Shannon		0.00		7477.00	7845.59	7"	7.000
7326.00	7425.71	Sharon Springs		47.43					
7361.00	7480.36	Niobrara A		52.89					
7461.00	7715.61	Niobrara B		76.42					





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

GRIFFITHS 4-17HZ PAD

GRIFFITHS 35N-20HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

06 May, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 35N-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 35N-20HZ, 465' FNL 660' FWL			
Well Position	+N/-S	-0.37 ft	Northing:	1,264,176.39 usft
	+E/-W	29.95 ft	Easting:	3,161,901.77 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	
			Ground Level:	5,060.00 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	
1,600.23	10.00	90.00	1,597.69	0.00	43.56	2.00	2.00	0.00	90.00	
4,382.15	10.00	90.00	4,337.31	0.00	526.86	0.00	0.00	0.00	0.00	
4,882.38	0.00	0.00	4,835.00	0.00	570.42	2.00	-2.00	0.00	180.00	
6,951.45	0.00	0.00	6,904.07	0.00	570.42	0.00	0.00	0.00	0.00	
7,845.59	89.41	180.00	7,477.00	-567.10	570.42	10.00	10.00	20.13	180.00	
16,937.37	89.41	180.00	7,570.00	-9,658.41	570.42	0.00	0.00	0.00	0.00	PBHL_GRIFFITHS 35N-20HZ

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 35N-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	90.00	1,199.98	0.00	1.75	0.00	2.00	2.00	0.00
1,300.00	4.00	90.00	1,299.84	0.00	6.98	0.00	2.00	2.00	0.00
1,400.00	6.00	90.00	1,399.45	0.00	15.69	0.00	2.00	2.00	0.00
1,500.00	8.00	90.00	1,498.70	0.00	27.88	0.00	2.00	2.00	0.00
1,600.00	10.00	90.00	1,597.47	0.00	43.52	0.00	2.00	2.00	0.00
1,600.23	10.00	90.00	1,597.69	0.00	43.56	0.00	2.00	2.00	0.00
Start 2781.92 hold at 1600.23 MD									
1,700.00	10.00	90.00	1,695.94	0.00	60.90	0.00	0.00	0.00	0.00
1,800.00	10.00	90.00	1,794.42	0.00	78.27	0.00	0.00	0.00	0.00
1,900.00	10.00	90.00	1,892.90	0.00	95.64	0.00	0.00	0.00	0.00
2,000.00	10.00	90.00	1,991.38	0.00	113.01	0.00	0.00	0.00	0.00
2,100.00	10.00	90.00	2,089.86	0.00	130.39	0.00	0.00	0.00	0.00
2,200.00	10.00	90.00	2,188.34	0.00	147.76	0.00	0.00	0.00	0.00
2,300.00	10.00	90.00	2,286.82	0.00	165.13	0.00	0.00	0.00	0.00
2,400.00	10.00	90.00	2,385.30	0.00	182.50	0.00	0.00	0.00	0.00
2,500.00	10.00	90.00	2,483.78	0.00	199.88	0.00	0.00	0.00	0.00
2,600.00	10.00	90.00	2,582.26	0.00	217.25	0.00	0.00	0.00	0.00
2,700.00	10.00	90.00	2,680.74	0.00	234.62	0.00	0.00	0.00	0.00
2,800.00	10.00	90.00	2,779.22	0.00	251.99	0.00	0.00	0.00	0.00
2,900.00	10.00	90.00	2,877.70	0.00	269.37	0.00	0.00	0.00	0.00
3,000.00	10.00	90.00	2,976.18	0.00	286.74	0.00	0.00	0.00	0.00
3,100.00	10.00	90.00	3,074.66	0.00	304.11	0.00	0.00	0.00	0.00
3,200.00	10.00	90.00	3,173.14	0.00	321.49	0.00	0.00	0.00	0.00
3,300.00	10.00	90.00	3,271.62	0.00	338.86	0.00	0.00	0.00	0.00
3,400.00	10.00	90.00	3,370.09	0.00	356.23	0.00	0.00	0.00	0.00
3,500.00	10.00	90.00	3,468.57	0.00	373.60	0.00	0.00	0.00	0.00
3,600.00	10.00	90.00	3,567.05	0.00	390.98	0.00	0.00	0.00	0.00
3,700.00	10.00	90.00	3,665.53	0.00	408.35	0.00	0.00	0.00	0.00
3,800.00	10.00	90.00	3,764.01	0.00	425.72	0.00	0.00	0.00	0.00
3,900.00	10.00	90.00	3,862.49	0.00	443.09	0.00	0.00	0.00	0.00
4,000.00	10.00	90.00	3,960.97	0.00	460.47	0.00	0.00	0.00	0.00
4,100.00	10.00	90.00	4,059.45	0.00	477.84	0.00	0.00	0.00	0.00
4,200.00	10.00	90.00	4,157.93	0.00	495.21	0.00	0.00	0.00	0.00
4,300.00	10.00	90.00	4,256.41	0.00	512.58	0.00	0.00	0.00	0.00
4,382.15	10.00	90.00	4,337.31	0.00	526.86	0.00	0.00	0.00	0.00
Start Drop -2.00									
4,400.00	9.65	90.00	4,354.90	0.00	529.90	0.00	2.00	-2.00	0.00
4,500.00	7.65	90.00	4,453.76	0.00	544.94	0.00	2.00	-2.00	0.00
4,600.00	5.65	90.00	4,553.08	0.00	556.51	0.00	2.00	-2.00	0.00
4,613.99	5.37	90.00	4,567.00	0.00	557.85	0.00	2.00	-2.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 35N-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)
Sussex									
4,700.00	3.65	90.00	4,652.75	0.00	564.61	0.00	2.00	-2.00	0.00
4,800.00	1.65	90.00	4,752.63	0.00	569.23	0.00	2.00	-2.00	0.00
4,882.38	0.00	0.00	4,835.00	0.00	570.42	0.00	2.00	-2.00	0.00
Start 2069.07 hold at 4882.38 MD									
4,900.00	0.00	0.00	4,852.62	0.00	570.42	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,952.62	0.00	570.42	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,052.62	0.00	570.42	0.00	0.00	0.00	0.00
5,200.00	0.00	0.00	5,152.62	0.00	570.42	0.00	0.00	0.00	0.00
5,205.38	0.00	0.00	5,158.00	0.00	570.42	0.00	0.00	0.00	0.00
Shannon									
5,300.00	0.00	0.00	5,252.62	0.00	570.42	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,352.62	0.00	570.42	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,452.62	0.00	570.42	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,552.62	0.00	570.42	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,652.62	0.00	570.42	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,752.62	0.00	570.42	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,852.62	0.00	570.42	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,952.62	0.00	570.42	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,052.62	0.00	570.42	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,152.62	0.00	570.42	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,252.62	0.00	570.42	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,352.62	0.00	570.42	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,452.62	0.00	570.42	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,552.62	0.00	570.42	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,652.62	0.00	570.42	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,752.62	0.00	570.42	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,852.62	0.00	570.42	0.00	0.00	0.00	0.00
6,951.45	0.00	0.00	6,904.07	0.00	570.42	0.00	0.00	0.00	0.00
Start DLS 10.00 TFO 180.00									
7,000.00	4.86	180.00	6,952.56	-2.06	570.42	2.06	10.00	10.00	0.00
7,100.00	14.86	180.00	7,050.96	-19.15	570.42	19.15	10.00	10.00	0.00
7,200.00	24.86	180.00	7,144.90	-53.07	570.42	53.07	10.00	10.00	0.00
7,300.00	34.86	180.00	7,231.52	-102.79	570.42	102.79	10.00	10.00	0.00
7,400.00	44.86	180.00	7,308.19	-166.79	570.42	166.79	10.00	10.00	0.00
7,425.71	47.43	180.00	7,326.00	-185.33	570.42	185.33	10.00	10.00	0.00
Sharon Springs									
7,480.36	52.89	180.00	7,361.00	-227.28	570.42	227.28	10.00	10.00	0.00
Niobrara A									
7,500.00	54.86	180.00	7,372.58	-243.14	570.42	243.14	10.00	10.00	0.00
7,600.00	64.86	180.00	7,422.73	-329.50	570.42	329.50	10.00	10.00	0.00
7,700.00	74.86	180.00	7,457.13	-423.27	570.42	423.27	10.00	10.00	0.00
7,715.61	76.42	180.00	7,461.00	-438.39	570.42	438.39	10.00	10.00	0.00
Niobrara B									
7,800.00	84.86	180.00	7,474.72	-521.58	570.42	521.58	10.00	10.00	0.00
7,845.59	89.41	180.00	7,477.00	-567.10	570.42	567.10	10.00	10.00	0.00
Start 9091.78 hold at 7845.59 MD - 7"(1025' FNL 1235' FWL)									
7,900.00	89.41	180.00	7,477.55	-621.51	570.42	621.51	0.00	0.00	0.00
8,000.00	89.41	180.00	7,478.58	-721.50	570.42	721.50	0.00	0.00	0.00
8,100.00	89.41	180.00	7,479.60	-821.50	570.42	821.50	0.00	0.00	0.00
8,200.00	89.41	180.00	7,480.62	-921.49	570.42	921.49	0.00	0.00	0.00
8,300.00	89.41	180.00	7,481.65	-1,021.49	570.42	1,021.49	0.00	0.00	0.00
8,400.00	89.41	180.00	7,482.67	-1,121.48	570.42	1,121.48	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 35N-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	89.41	180.00	7,483.69	-1,221.48	570.42	1,221.48	0.00	0.00	0.00
8,600.00	89.41	180.00	7,484.72	-1,321.47	570.42	1,321.47	0.00	0.00	0.00
8,700.00	89.41	180.00	7,485.74	-1,421.46	570.42	1,421.46	0.00	0.00	0.00
8,800.00	89.41	180.00	7,486.76	-1,521.46	570.42	1,521.46	0.00	0.00	0.00
8,900.00	89.41	180.00	7,487.78	-1,621.45	570.42	1,621.45	0.00	0.00	0.00
9,000.00	89.41	180.00	7,488.81	-1,721.45	570.42	1,721.45	0.00	0.00	0.00
9,100.00	89.41	180.00	7,489.83	-1,821.44	570.42	1,821.44	0.00	0.00	0.00
9,200.00	89.41	180.00	7,490.85	-1,921.44	570.42	1,921.44	0.00	0.00	0.00
9,300.00	89.41	180.00	7,491.88	-2,021.43	570.42	2,021.43	0.00	0.00	0.00
9,400.00	89.41	180.00	7,492.90	-2,121.43	570.42	2,121.43	0.00	0.00	0.00
9,500.00	89.41	180.00	7,493.92	-2,221.42	570.42	2,221.42	0.00	0.00	0.00
9,600.00	89.41	180.00	7,494.94	-2,321.42	570.42	2,321.42	0.00	0.00	0.00
9,700.00	89.41	180.00	7,495.97	-2,421.41	570.42	2,421.41	0.00	0.00	0.00
9,800.00	89.41	180.00	7,496.99	-2,521.41	570.42	2,521.41	0.00	0.00	0.00
9,900.00	89.41	180.00	7,498.01	-2,621.40	570.42	2,621.40	0.00	0.00	0.00
10,000.00	89.41	180.00	7,499.04	-2,721.40	570.42	2,721.40	0.00	0.00	0.00
10,100.00	89.41	180.00	7,500.06	-2,821.39	570.42	2,821.39	0.00	0.00	0.00
10,200.00	89.41	180.00	7,501.08	-2,921.39	570.42	2,921.39	0.00	0.00	0.00
10,300.00	89.41	180.00	7,502.10	-3,021.38	570.42	3,021.38	0.00	0.00	0.00
10,400.00	89.41	180.00	7,503.13	-3,121.38	570.42	3,121.38	0.00	0.00	0.00
10,500.00	89.41	180.00	7,504.15	-3,221.37	570.42	3,221.37	0.00	0.00	0.00
10,600.00	89.41	180.00	7,505.17	-3,321.37	570.42	3,321.37	0.00	0.00	0.00
10,700.00	89.41	180.00	7,506.20	-3,421.36	570.42	3,421.36	0.00	0.00	0.00
10,800.00	89.41	180.00	7,507.22	-3,521.36	570.42	3,521.36	0.00	0.00	0.00
10,900.00	89.41	180.00	7,508.24	-3,621.35	570.42	3,621.35	0.00	0.00	0.00
11,000.00	89.41	180.00	7,509.27	-3,721.34	570.42	3,721.34	0.00	0.00	0.00
11,100.00	89.41	180.00	7,510.29	-3,821.34	570.42	3,821.34	0.00	0.00	0.00
11,200.00	89.41	180.00	7,511.31	-3,921.33	570.42	3,921.33	0.00	0.00	0.00
11,300.00	89.41	180.00	7,512.33	-4,021.33	570.42	4,021.33	0.00	0.00	0.00
11,400.00	89.41	180.00	7,513.36	-4,121.32	570.42	4,121.32	0.00	0.00	0.00
11,500.00	89.41	180.00	7,514.38	-4,221.32	570.42	4,221.32	0.00	0.00	0.00
11,600.00	89.41	180.00	7,515.40	-4,321.31	570.42	4,321.31	0.00	0.00	0.00
11,700.00	89.41	180.00	7,516.43	-4,421.31	570.42	4,421.31	0.00	0.00	0.00
11,800.00	89.41	180.00	7,517.45	-4,521.30	570.42	4,521.30	0.00	0.00	0.00
11,900.00	89.41	180.00	7,518.47	-4,621.30	570.42	4,621.30	0.00	0.00	0.00
12,000.00	89.41	180.00	7,519.49	-4,721.29	570.42	4,721.29	0.00	0.00	0.00
12,100.00	89.41	180.00	7,520.52	-4,821.29	570.42	4,821.29	0.00	0.00	0.00
12,200.00	89.41	180.00	7,521.54	-4,921.28	570.42	4,921.28	0.00	0.00	0.00
12,300.00	89.41	180.00	7,522.56	-5,021.28	570.42	5,021.28	0.00	0.00	0.00
12,400.00	89.41	180.00	7,523.59	-5,121.27	570.42	5,121.27	0.00	0.00	0.00
12,500.00	89.41	180.00	7,524.61	-5,221.27	570.42	5,221.27	0.00	0.00	0.00
12,600.00	89.41	180.00	7,525.63	-5,321.26	570.42	5,321.26	0.00	0.00	0.00
12,700.00	89.41	180.00	7,526.66	-5,421.26	570.42	5,421.26	0.00	0.00	0.00
12,800.00	89.41	180.00	7,527.68	-5,521.25	570.42	5,521.25	0.00	0.00	0.00
12,900.00	89.41	180.00	7,528.70	-5,621.25	570.42	5,621.25	0.00	0.00	0.00
13,000.00	89.41	180.00	7,529.72	-5,721.24	570.42	5,721.24	0.00	0.00	0.00
13,100.00	89.41	180.00	7,530.75	-5,821.23	570.42	5,821.23	0.00	0.00	0.00
13,200.00	89.41	180.00	7,531.77	-5,921.23	570.42	5,921.23	0.00	0.00	0.00
13,300.00	89.41	180.00	7,532.79	-6,021.22	570.42	6,021.22	0.00	0.00	0.00
13,400.00	89.41	180.00	7,533.82	-6,121.22	570.42	6,121.22	0.00	0.00	0.00
13,500.00	89.41	180.00	7,534.84	-6,221.21	570.42	6,221.21	0.00	0.00	0.00
13,600.00	89.41	180.00	7,535.86	-6,321.21	570.42	6,321.21	0.00	0.00	0.00
13,700.00	89.41	180.00	7,536.88	-6,421.20	570.42	6,421.20	0.00	0.00	0.00
13,800.00	89.41	180.00	7,537.91	-6,521.20	570.42	6,521.20	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 35N-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	89.41	180.00	7,538.93	-6,621.19	570.42	6,621.19	0.00	0.00	0.00
14,000.00	89.41	180.00	7,539.95	-6,721.19	570.42	6,721.19	0.00	0.00	0.00
14,100.00	89.41	180.00	7,540.98	-6,821.18	570.42	6,821.18	0.00	0.00	0.00
14,200.00	89.41	180.00	7,542.00	-6,921.18	570.42	6,921.18	0.00	0.00	0.00
14,300.00	89.41	180.00	7,543.02	-7,021.17	570.42	7,021.17	0.00	0.00	0.00
14,400.00	89.41	180.00	7,544.04	-7,121.17	570.42	7,121.17	0.00	0.00	0.00
14,500.00	89.41	180.00	7,545.07	-7,221.16	570.42	7,221.16	0.00	0.00	0.00
14,600.00	89.41	180.00	7,546.09	-7,321.16	570.42	7,321.16	0.00	0.00	0.00
14,700.00	89.41	180.00	7,547.11	-7,421.15	570.42	7,421.15	0.00	0.00	0.00
14,800.00	89.41	180.00	7,548.14	-7,521.15	570.42	7,521.15	0.00	0.00	0.00
14,900.00	89.41	180.00	7,549.16	-7,621.14	570.42	7,621.14	0.00	0.00	0.00
15,000.00	89.41	180.00	7,550.18	-7,721.14	570.42	7,721.14	0.00	0.00	0.00
15,100.00	89.41	180.00	7,551.21	-7,821.13	570.42	7,821.13	0.00	0.00	0.00
15,200.00	89.41	180.00	7,552.23	-7,921.13	570.42	7,921.13	0.00	0.00	0.00
15,300.00	89.41	180.00	7,553.25	-8,021.12	570.42	8,021.12	0.00	0.00	0.00
15,400.00	89.41	180.00	7,554.27	-8,121.11	570.42	8,121.11	0.00	0.00	0.00
15,500.00	89.41	180.00	7,555.30	-8,221.11	570.42	8,221.11	0.00	0.00	0.00
15,600.00	89.41	180.00	7,556.32	-8,321.10	570.42	8,321.10	0.00	0.00	0.00
15,700.00	89.41	180.00	7,557.34	-8,421.10	570.42	8,421.10	0.00	0.00	0.00
15,800.00	89.41	180.00	7,558.37	-8,521.09	570.42	8,521.09	0.00	0.00	0.00
15,900.00	89.41	180.00	7,559.39	-8,621.09	570.42	8,621.09	0.00	0.00	0.00
16,000.00	89.41	180.00	7,560.41	-8,721.08	570.42	8,721.08	0.00	0.00	0.00
16,100.00	89.41	180.00	7,561.43	-8,821.08	570.42	8,821.08	0.00	0.00	0.00
16,200.00	89.41	180.00	7,562.46	-8,921.07	570.42	8,921.07	0.00	0.00	0.00
16,300.00	89.41	180.00	7,563.48	-9,021.07	570.42	9,021.07	0.00	0.00	0.00
16,400.00	89.41	180.00	7,564.50	-9,121.06	570.42	9,121.06	0.00	0.00	0.00
16,500.00	89.41	180.00	7,565.53	-9,221.06	570.42	9,221.06	0.00	0.00	0.00
16,600.00	89.41	180.00	7,566.55	-9,321.05	570.42	9,321.05	0.00	0.00	0.00
16,700.00	89.41	180.00	7,567.57	-9,421.05	570.42	9,421.05	0.00	0.00	0.00
16,800.00	89.41	180.00	7,568.59	-9,521.04	570.42	9,521.04	0.00	0.00	0.00
16,900.00	89.41	180.00	7,569.62	-9,621.04	570.42	9,621.04	0.00	0.00	0.00
16,937.37	89.41	180.00	7,570.00	-9,658.41	570.42	9,658.41	0.00	0.00	0.00
TD at 16937.37 - PBHL_GRIFFITHS 35N-20HZ(460' FSL 1190' 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 35N- - plan hits target center - Point	0.00	0.00	7,570.00	-9,658.41	570.42	1,254,521.93	3,162,535.17	40.0305900	-104.9195710

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	
7,845.59	7,477.00	7"(1025' FNL 1235' FWL)	7.000	7.500	

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35N-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5060 & KB 25 @ 5085.00ft (ASSUMED)
Site:	GRIFFITHS 4-17HZ PAD	North Reference:	True
Well:	GRIFFITHS 35N-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,613.99	4,567.00	Sussex				
5,205.38	5,158.00	Shannon				
7,425.71	7,326.00	Sharon Springs				
7,480.36	7,361.00	Niobrara A				
7,715.61	7,461.00	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
1,600.23	1,597.69	0.00	43.56	Start 2781.92 hold at 1600.23 MD
4,382.15	4,337.31	0.00	526.86	Start Drop -2.00
4,882.38	4,835.00	0.00	570.42	Start 2069.07 hold at 4882.38 MD
6,951.45	6,904.07	0.00	570.42	Start DLS 10.00 TFO 180.00
7,845.59	7,477.00	-567.10	570.42	Start 9091.78 hold at 7845.59 MD
16,937.37	7,570.00	-9,658.41	570.42	TD at 16937.37