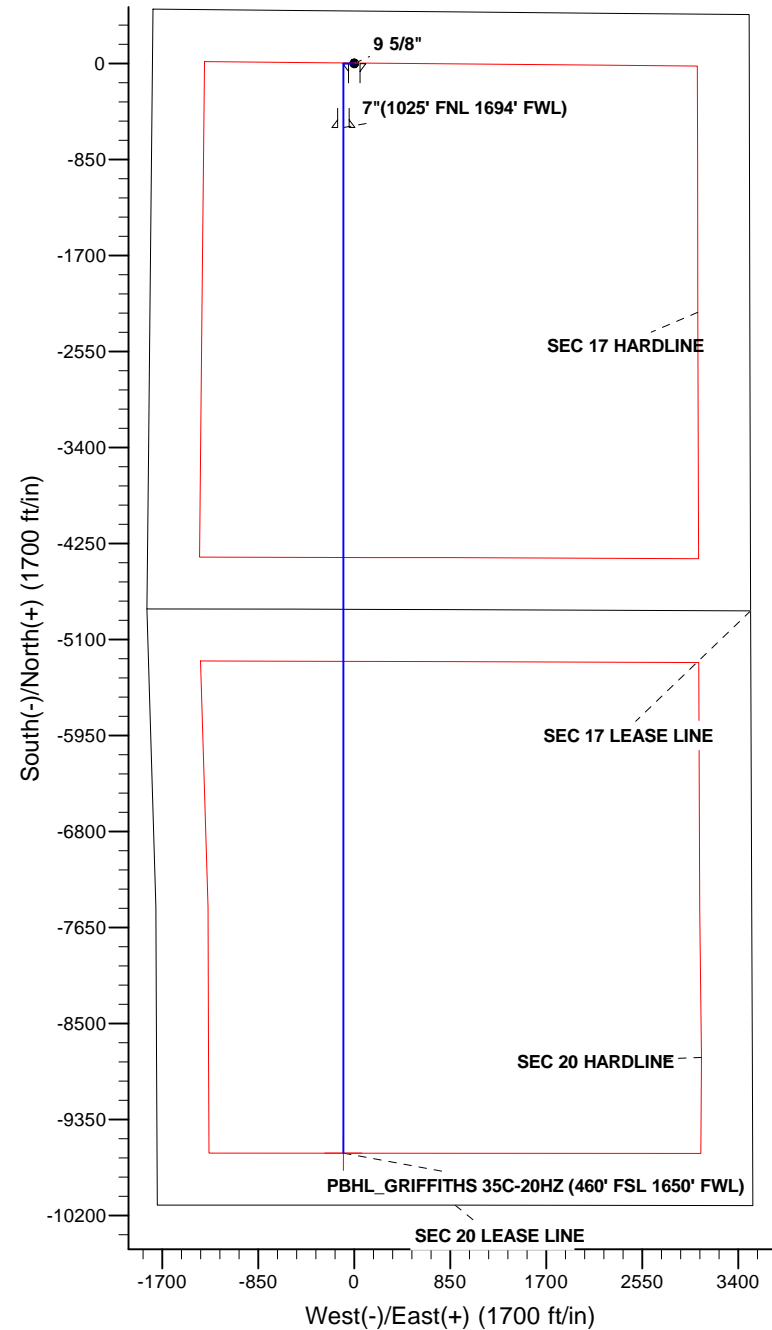
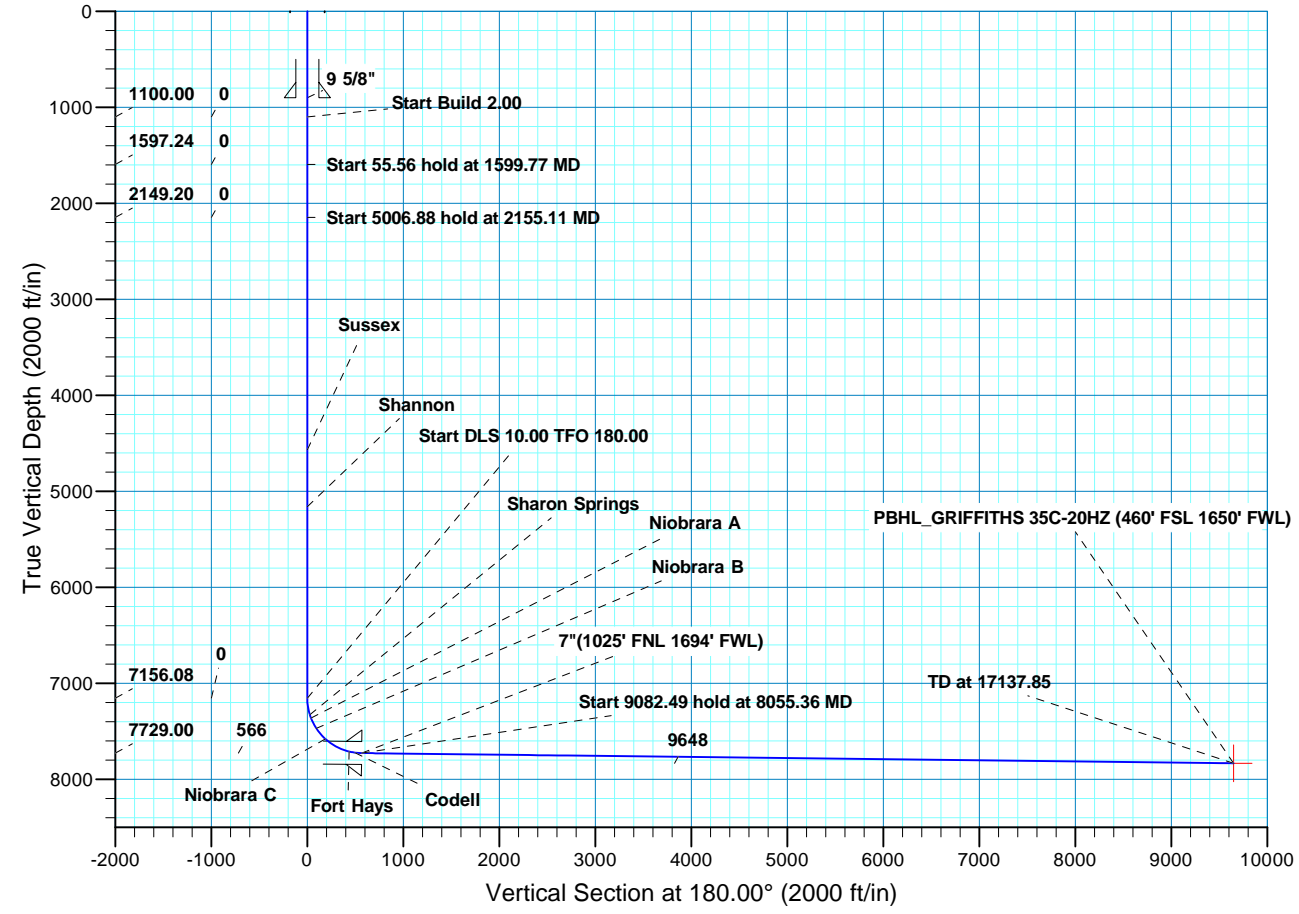


WELL DETAILS: GRIFFITHS 35C-20HZ										
GL 5970 & KB 17 @ 5087.00ft (ASSUMED)										
+N/-S		+E/-W		Northing		Easting		Latitude		
0.00		0.00		1264173.57		3163028.48		40.0570760		
								-104.9175830		
SECTION DETAILS										
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target	
0.00	0.00	0.00	0.00	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		
1599.77	10.00	270.00	1597.24	0.00	-43.48	2.00	270.00	0.00		
1655.33	10.00	270.00	1651.96	0.00	-53.13	0.00	0.00	0.00		
2155.11	0.00	0.00	2149.20	0.00	-96.61	2.00	180.00	0.00		
7161.99	0.00	0.00	7156.08	0.00	-96.61	0.00	0.00	0.00		
8055.36	89.34	180.00	7729.00	-566.33	-96.61	10.00	180.00	566.33		
17137.85	89.34	180.00	7834.00	-9648.21	-96.61	0.00	0.00	9648.21	PBHL_GRIFFITHS 35C-20HZ (460' FSL 1650' FWL)	
FORMATION TOP DETAILS							CASING DETAILS			
TVDPath	MDPath	Formation	Inc				TVD	MD	Name	Size
4569.00	4574.91	Sussex	0.00				900.00	900.00	9 5/8"	9.625
5160.00	5165.91	Shannon	0.00				7729.00	8055.36	7"	7.000
7328.00	7336.60	Sharon Springs	17.46							
7362.00	7372.62	Niobrara A	21.06							
7470.00	7494.21	Niobrara B	33.22							
7580.00	7639.20	Niobrara C	47.72							
7712.00	7921.91	Fort Hays	75.99							
7724.00	7985.95	Codell	82.40							





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

GRIFFITHS 3W-17 HZ PAD

GRIFFITHS 35C-20HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

06 May, 2013

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35C-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Site:	GRIFFITHS 3W-17 HZ PAD	North Reference:	True
Well:	GRIFFITHS 35C-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 3W-17 HZ PAD, SECTION 17 T1N R67W			
Site Position:		Northing:	1,264,173.77 usft	Latitude: 40.0570760
From:	Lat/Long	Easting:	3,163,058.44 usft	Longitude: -104.9174760
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.38 °

Well	GRIFFITHS 35C-20HZ, 465' FNL 690' FWL			
Well Position	+N/-S	-0.01 ft	Northing:	1,264,173.57 usft
	+E/-W	-29.95 ft	Easting:	3,163,028.49 usft
Position Uncertainty	0.00 ft	Wellhead Elevation:		Ground Level: 5,070.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2012	2013/05/06	8.71	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	
1,599.77	10.00	270.00	1,597.24	0.00	-43.48	2.00	2.00	0.00	270.00	
1,655.33	10.00	270.00	1,651.96	0.00	-53.13	0.00	0.00	0.00	0.00	
2,155.11	0.00	0.00	2,149.20	0.00	-96.61	2.00	-2.00	0.00	180.00	
7,161.99	0.00	0.00	7,156.08	0.00	-96.61	0.00	0.00	0.00	0.00	
8,055.36	89.34	180.00	7,729.00	-566.33	-96.61	10.00	10.00	20.15	180.00	
17,137.85	89.34	180.00	7,834.00	-9,648.21	-96.61	0.00	0.00	0.00	0.00	PBHL_GRIFFITHS 35C-20HZ

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35C-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Site:	GRIFFITHS 3W-17 HZ PAD	North Reference:	True
Well:	GRIFFITHS 35C-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
1,599.77	10.00	270.00	1,597.24	0.00	-43.48	0.00	2.00	2.00	0.00
Start 55.56 hold at 1599.77 MD									
1,600.00	10.00	270.00	1,597.47	0.00	-43.52	0.00	0.00	0.00	0.00
1,655.33	10.00	270.00	1,651.96	0.00	-53.13	0.00	0.00	0.00	0.00
Start Drop -2.00									
1,700.00	9.10	270.00	1,696.01	0.00	-60.54	0.00	2.00	-2.00	0.00
1,800.00	7.10	270.00	1,795.00	0.00	-74.63	0.00	2.00	-2.00	0.00
1,900.00	5.10	270.00	1,894.43	0.00	-85.26	0.00	2.00	-2.00	0.00
2,000.00	3.10	270.00	1,994.17	0.00	-92.41	0.00	2.00	-2.00	0.00
2,100.00	1.10	270.00	2,094.10	0.00	-96.08	0.00	2.00	-2.00	0.00
2,155.11	0.00	0.00	2,149.20	0.00	-96.61	0.00	2.00	-2.00	0.00
Start 5006.88 hold at 2155.11 MD									
2,200.00	0.00	0.00	2,194.09	0.00	-96.61	0.00	0.00	0.00	0.00
2,300.00	0.00	0.00	2,294.09	0.00	-96.61	0.00	0.00	0.00	0.00
2,400.00	0.00	0.00	2,394.09	0.00	-96.61	0.00	0.00	0.00	0.00
2,500.00	0.00	0.00	2,494.09	0.00	-96.61	0.00	0.00	0.00	0.00
2,600.00	0.00	0.00	2,594.09	0.00	-96.61	0.00	0.00	0.00	0.00
2,700.00	0.00	0.00	2,694.09	0.00	-96.61	0.00	0.00	0.00	0.00
2,800.00	0.00	0.00	2,794.09	0.00	-96.61	0.00	0.00	0.00	0.00
2,900.00	0.00	0.00	2,894.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,000.00	0.00	0.00	2,994.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,100.00	0.00	0.00	3,094.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,200.00	0.00	0.00	3,194.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,300.00	0.00	0.00	3,294.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,400.00	0.00	0.00	3,394.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,500.00	0.00	0.00	3,494.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,600.00	0.00	0.00	3,594.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,700.00	0.00	0.00	3,694.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,800.00	0.00	0.00	3,794.09	0.00	-96.61	0.00	0.00	0.00	0.00
3,900.00	0.00	0.00	3,894.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,000.00	0.00	0.00	3,994.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,100.00	0.00	0.00	4,094.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,200.00	0.00	0.00	4,194.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,300.00	0.00	0.00	4,294.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,400.00	0.00	0.00	4,394.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,500.00	0.00	0.00	4,494.09	0.00	-96.61	0.00	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35C-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Site:	GRIFFITHS 3W-17 HZ PAD	North Reference:	True
Well:	GRIFFITHS 35C-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)
4,574.91	0.00	0.00	4,569.00	0.00	-96.61	0.00	0.00	0.00	0.00
Sussex									
4,600.00	0.00	0.00	4,594.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,700.00	0.00	0.00	4,694.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,800.00	0.00	0.00	4,794.09	0.00	-96.61	0.00	0.00	0.00	0.00
4,900.00	0.00	0.00	4,894.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,000.00	0.00	0.00	4,994.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,100.00	0.00	0.00	5,094.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,165.91	0.00	0.00	5,160.00	0.00	-96.61	0.00	0.00	0.00	0.00
Shannon									
5,200.00	0.00	0.00	5,194.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,300.00	0.00	0.00	5,294.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,400.00	0.00	0.00	5,394.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,500.00	0.00	0.00	5,494.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,600.00	0.00	0.00	5,594.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,700.00	0.00	0.00	5,694.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,800.00	0.00	0.00	5,794.09	0.00	-96.61	0.00	0.00	0.00	0.00
5,900.00	0.00	0.00	5,894.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,000.00	0.00	0.00	5,994.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,100.00	0.00	0.00	6,094.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,200.00	0.00	0.00	6,194.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,300.00	0.00	0.00	6,294.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,400.00	0.00	0.00	6,394.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,500.00	0.00	0.00	6,494.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,600.00	0.00	0.00	6,594.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,700.00	0.00	0.00	6,694.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,800.00	0.00	0.00	6,794.09	0.00	-96.61	0.00	0.00	0.00	0.00
6,900.00	0.00	0.00	6,894.09	0.00	-96.61	0.00	0.00	0.00	0.00
7,000.00	0.00	0.00	6,994.09	0.00	-96.61	0.00	0.00	0.00	0.00
7,100.00	0.00	0.00	7,094.09	0.00	-96.61	0.00	0.00	0.00	0.00
7,161.99	0.00	0.00	7,156.08	0.00	-96.61	0.00	0.00	0.00	0.00
Start DLS 10.00 TFO 180.00									
7,200.00	3.80	180.00	7,194.07	-1.26	-96.61	1.26	10.00	10.00	0.00
7,300.00	13.80	180.00	7,292.76	-16.54	-96.61	16.54	10.00	10.00	0.00
7,336.60	17.46	180.00	7,328.00	-26.40	-96.61	26.40	10.00	10.00	0.00
Sharon Springs									
7,372.62	21.06	180.00	7,362.00	-38.28	-96.61	38.28	10.00	10.00	0.00
Niobrara A									
7,400.00	23.80	180.00	7,387.31	-48.73	-96.61	48.73	10.00	10.00	0.00
7,494.21	33.22	180.00	7,470.00	-93.65	-96.61	93.65	10.00	10.00	0.00
Niobrara B									
7,500.00	33.80	180.00	7,474.83	-96.85	-96.61	96.85	10.00	10.00	0.00
7,600.00	43.80	180.00	7,552.66	-159.43	-96.61	159.43	10.00	10.00	0.00
7,639.20	47.72	180.00	7,580.00	-187.51	-96.61	187.51	10.00	10.00	0.00
Niobrara C									
7,700.00	53.80	180.00	7,618.44	-234.58	-96.61	234.58	10.00	10.00	0.00
7,800.00	63.80	180.00	7,670.18	-320.01	-96.61	320.01	10.00	10.00	0.00
7,900.00	73.80	180.00	7,706.29	-413.12	-96.61	413.12	10.00	10.00	0.00
7,921.91	75.99	180.00	7,712.00	-434.27	-96.61	434.27	10.00	10.00	0.00
Fort Hays									
7,985.95	82.40	180.00	7,724.00	-497.15	-96.61	497.15	10.00	10.00	0.00
Codell									
8,000.00	83.80	180.00	7,725.69	-511.09	-96.61	511.09	10.00	10.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35C-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Site:	GRIFFITHS 3W-17 HZ PAD	North Reference:	True
Well:	GRIFFITHS 35C-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)
8,055.36	89.34	180.00	7,729.00	-566.33	-96.61	566.33	10.00	10.00	0.00
Start 9082.49 hold at 8055.36 MD - 7" (1025' FNL 1694' FWL)									
8,100.00	89.34	180.00	7,729.52	-610.97	-96.61	610.97	0.00	0.00	0.00
8,200.00	89.34	180.00	7,730.67	-710.96	-96.61	710.96	0.00	0.00	0.00
8,300.00	89.34	180.00	7,731.83	-810.96	-96.61	810.96	0.00	0.00	0.00
8,400.00	89.34	180.00	7,732.98	-910.95	-96.61	910.95	0.00	0.00	0.00
8,500.00	89.34	180.00	7,734.14	-1,010.94	-96.61	1,010.94	0.00	0.00	0.00
8,600.00	89.34	180.00	7,735.30	-1,110.94	-96.61	1,110.94	0.00	0.00	0.00
8,700.00	89.34	180.00	7,736.45	-1,210.93	-96.61	1,210.93	0.00	0.00	0.00
8,800.00	89.34	180.00	7,737.61	-1,310.92	-96.61	1,310.92	0.00	0.00	0.00
8,900.00	89.34	180.00	7,738.76	-1,410.92	-96.61	1,410.92	0.00	0.00	0.00
9,000.00	89.34	180.00	7,739.92	-1,510.91	-96.61	1,510.91	0.00	0.00	0.00
9,100.00	89.34	180.00	7,741.08	-1,610.90	-96.61	1,610.90	0.00	0.00	0.00
9,200.00	89.34	180.00	7,742.23	-1,710.90	-96.61	1,710.90	0.00	0.00	0.00
9,300.00	89.34	180.00	7,743.39	-1,810.89	-96.61	1,810.89	0.00	0.00	0.00
9,400.00	89.34	180.00	7,744.54	-1,910.88	-96.61	1,910.88	0.00	0.00	0.00
9,500.00	89.34	180.00	7,745.70	-2,010.88	-96.61	2,010.88	0.00	0.00	0.00
9,600.00	89.34	180.00	7,746.86	-2,110.87	-96.61	2,110.87	0.00	0.00	0.00
9,700.00	89.34	180.00	7,748.01	-2,210.86	-96.61	2,210.86	0.00	0.00	0.00
9,800.00	89.34	180.00	7,749.17	-2,310.86	-96.61	2,310.86	0.00	0.00	0.00
9,900.00	89.34	180.00	7,750.33	-2,410.85	-96.61	2,410.85	0.00	0.00	0.00
10,000.00	89.34	180.00	7,751.48	-2,510.84	-96.61	2,510.84	0.00	0.00	0.00
10,100.00	89.34	180.00	7,752.64	-2,610.84	-96.61	2,610.84	0.00	0.00	0.00
10,200.00	89.34	180.00	7,753.79	-2,710.83	-96.61	2,710.83	0.00	0.00	0.00
10,300.00	89.34	180.00	7,754.95	-2,810.82	-96.61	2,810.82	0.00	0.00	0.00
10,400.00	89.34	180.00	7,756.11	-2,910.82	-96.61	2,910.82	0.00	0.00	0.00
10,500.00	89.34	180.00	7,757.26	-3,010.81	-96.61	3,010.81	0.00	0.00	0.00
10,600.00	89.34	180.00	7,758.42	-3,110.80	-96.61	3,110.80	0.00	0.00	0.00
10,700.00	89.34	180.00	7,759.57	-3,210.80	-96.61	3,210.80	0.00	0.00	0.00
10,800.00	89.34	180.00	7,760.73	-3,310.79	-96.61	3,310.79	0.00	0.00	0.00
10,900.00	89.34	180.00	7,761.89	-3,410.78	-96.61	3,410.78	0.00	0.00	0.00
11,000.00	89.34	180.00	7,763.04	-3,510.78	-96.61	3,510.78	0.00	0.00	0.00
11,100.00	89.34	180.00	7,764.20	-3,610.77	-96.61	3,610.77	0.00	0.00	0.00
11,200.00	89.34	180.00	7,765.35	-3,710.76	-96.61	3,710.76	0.00	0.00	0.00
11,300.00	89.34	180.00	7,766.51	-3,810.76	-96.61	3,810.76	0.00	0.00	0.00
11,400.00	89.34	180.00	7,767.67	-3,910.75	-96.61	3,910.75	0.00	0.00	0.00
11,500.00	89.34	180.00	7,768.82	-4,010.74	-96.61	4,010.74	0.00	0.00	0.00
11,600.00	89.34	180.00	7,769.98	-4,110.74	-96.61	4,110.74	0.00	0.00	0.00
11,700.00	89.34	180.00	7,771.13	-4,210.73	-96.61	4,210.73	0.00	0.00	0.00
11,800.00	89.34	180.00	7,772.29	-4,310.72	-96.61	4,310.72	0.00	0.00	0.00
11,900.00	89.34	180.00	7,773.45	-4,410.72	-96.61	4,410.72	0.00	0.00	0.00
12,000.00	89.34	180.00	7,774.60	-4,510.71	-96.61	4,510.71	0.00	0.00	0.00
12,100.00	89.34	180.00	7,775.76	-4,610.70	-96.61	4,610.70	0.00	0.00	0.00
12,200.00	89.34	180.00	7,776.91	-4,710.70	-96.61	4,710.70	0.00	0.00	0.00
12,300.00	89.34	180.00	7,778.07	-4,810.69	-96.61	4,810.69	0.00	0.00	0.00
12,400.00	89.34	180.00	7,779.23	-4,910.68	-96.61	4,910.68	0.00	0.00	0.00
12,500.00	89.34	180.00	7,780.38	-5,010.68	-96.61	5,010.68	0.00	0.00	0.00
12,600.00	89.34	180.00	7,781.54	-5,110.67	-96.61	5,110.67	0.00	0.00	0.00
12,700.00	89.34	180.00	7,782.70	-5,210.66	-96.61	5,210.66	0.00	0.00	0.00
12,800.00	89.34	180.00	7,783.85	-5,310.66	-96.61	5,310.66	0.00	0.00	0.00
12,900.00	89.34	180.00	7,785.01	-5,410.65	-96.61	5,410.65	0.00	0.00	0.00
13,000.00	89.34	180.00	7,786.16	-5,510.64	-96.61	5,510.64	0.00	0.00	0.00
13,100.00	89.34	180.00	7,787.32	-5,610.64	-96.61	5,610.64	0.00	0.00	0.00

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35C-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Site:	GRIFFITHS 3W-17 HZ PAD	North Reference:	True
Well:	GRIFFITHS 35C-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)
13,200.00	89.34	180.00	7,788.48	-5,710.63	-96.61	5,710.63	0.00	0.00	0.00
13,300.00	89.34	180.00	7,789.63	-5,810.62	-96.61	5,810.62	0.00	0.00	0.00
13,400.00	89.34	180.00	7,790.79	-5,910.62	-96.61	5,910.62	0.00	0.00	0.00
13,500.00	89.34	180.00	7,791.94	-6,010.61	-96.61	6,010.61	0.00	0.00	0.00
13,600.00	89.34	180.00	7,793.10	-6,110.60	-96.61	6,110.60	0.00	0.00	0.00
13,700.00	89.34	180.00	7,794.26	-6,210.60	-96.61	6,210.60	0.00	0.00	0.00
13,800.00	89.34	180.00	7,795.41	-6,310.59	-96.61	6,310.59	0.00	0.00	0.00
13,900.00	89.34	180.00	7,796.57	-6,410.58	-96.61	6,410.58	0.00	0.00	0.00
14,000.00	89.34	180.00	7,797.72	-6,510.58	-96.61	6,510.58	0.00	0.00	0.00
14,100.00	89.34	180.00	7,798.88	-6,610.57	-96.61	6,610.57	0.00	0.00	0.00
14,200.00	89.34	180.00	7,800.04	-6,710.56	-96.61	6,710.56	0.00	0.00	0.00
14,300.00	89.34	180.00	7,801.19	-6,810.56	-96.61	6,810.56	0.00	0.00	0.00
14,400.00	89.34	180.00	7,802.35	-6,910.55	-96.61	6,910.55	0.00	0.00	0.00
14,500.00	89.34	180.00	7,803.50	-7,010.54	-96.61	7,010.54	0.00	0.00	0.00
14,600.00	89.34	180.00	7,804.66	-7,110.54	-96.61	7,110.54	0.00	0.00	0.00
14,700.00	89.34	180.00	7,805.82	-7,210.53	-96.61	7,210.53	0.00	0.00	0.00
14,800.00	89.34	180.00	7,806.97	-7,310.52	-96.61	7,310.52	0.00	0.00	0.00
14,900.00	89.34	180.00	7,808.13	-7,410.52	-96.61	7,410.52	0.00	0.00	0.00
15,000.00	89.34	180.00	7,809.29	-7,510.51	-96.61	7,510.51	0.00	0.00	0.00
15,100.00	89.34	180.00	7,810.44	-7,610.50	-96.61	7,610.50	0.00	0.00	0.00
15,200.00	89.34	180.00	7,811.60	-7,710.50	-96.61	7,710.50	0.00	0.00	0.00
15,300.00	89.34	180.00	7,812.75	-7,810.49	-96.61	7,810.49	0.00	0.00	0.00
15,400.00	89.34	180.00	7,813.91	-7,910.48	-96.61	7,910.48	0.00	0.00	0.00
15,500.00	89.34	180.00	7,815.07	-8,010.47	-96.61	8,010.47	0.00	0.00	0.00
15,600.00	89.34	180.00	7,816.22	-8,110.47	-96.61	8,110.47	0.00	0.00	0.00
15,700.00	89.34	180.00	7,817.38	-8,210.46	-96.61	8,210.46	0.00	0.00	0.00
15,800.00	89.34	180.00	7,818.53	-8,310.45	-96.61	8,310.45	0.00	0.00	0.00
15,900.00	89.34	180.00	7,819.69	-8,410.45	-96.61	8,410.45	0.00	0.00	0.00
16,000.00	89.34	180.00	7,820.85	-8,510.44	-96.61	8,510.44	0.00	0.00	0.00
16,100.00	89.34	180.00	7,822.00	-8,610.43	-96.61	8,610.43	0.00	0.00	0.00
16,200.00	89.34	180.00	7,823.16	-8,710.43	-96.61	8,710.43	0.00	0.00	0.00
16,300.00	89.34	180.00	7,824.31	-8,810.42	-96.61	8,810.42	0.00	0.00	0.00
16,400.00	89.34	180.00	7,825.47	-8,910.41	-96.61	8,910.41	0.00	0.00	0.00
16,500.00	89.34	180.00	7,826.63	-9,010.41	-96.61	9,010.41	0.00	0.00	0.00
16,600.00	89.34	180.00	7,827.78	-9,110.40	-96.61	9,110.40	0.00	0.00	0.00
16,700.00	89.34	180.00	7,828.94	-9,210.39	-96.61	9,210.39	0.00	0.00	0.00
16,800.00	89.34	180.00	7,830.09	-9,310.39	-96.61	9,310.39	0.00	0.00	0.00
16,900.00	89.34	180.00	7,831.25	-9,410.38	-96.61	9,410.38	0.00	0.00	0.00
17,000.00	89.34	180.00	7,832.41	-9,510.37	-96.61	9,510.37	0.00	0.00	0.00
17,100.00	89.34	180.00	7,833.56	-9,610.37	-96.61	9,610.37	0.00	0.00	0.00
17,137.85	89.34	180.00	7,834.00	-9,648.21	-96.61	9,648.21	0.00	0.00	0.00
TD at 17137.85 - PBHL_GRIFFITHS 35C-20HZ (460' FSL 1650' 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 35C-	0.00	0.00	7,834.00	-9,648.21	-96.61	1,254,524.95	3,162,995.25	40.0305900	-104.9179280
- plan hits target center									
- Point									

Database:	EDM5000-RobertS-Local	Local Co-ordinate Reference:	Well GRIFFITHS 35C-20HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 5970 & KB 17 @ 5087.00ft (ASSUMED)
Site:	GRIFFITHS 3W-17 HZ PAD	North Reference:	True
Well:	GRIFFITHS 35C-20HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

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	
8,055.36	7,729.00	7"(1025' FNL 1694' FWL)	7.000	7.500	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
4,574.91	4,569.00	Sussex				
5,165.91	5,160.00	Shannon				
7,336.60	7,328.00	Sharon Springs				
7,372.62	7,362.00	Niobrara A				
7,494.21	7,470.00	Niobrara B				
7,639.20	7,580.00	Niobrara C				
7,921.91	7,712.00	Fort Hays				
7,985.95	7,724.00	Codell				

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	
1,599.77	1,597.24	0.00	-43.48	Start 55.56 hold at 1599.77 MD	
1,655.33	1,651.96	0.00	-53.13	Start Drop -2.00	
2,155.11	2,149.20	0.00	-96.61	Start 5006.88 hold at 2155.11 MD	
7,161.99	7,156.08	0.00	-96.61	Start DLS 10.00 TFO 180.00	
8,055.36	7,729.00	-566.33	-96.61	Start 9082.49 hold at 8055.36 MD	
17,137.85	7,834.00	-9,648.21	-96.61	TD at 17137.85	