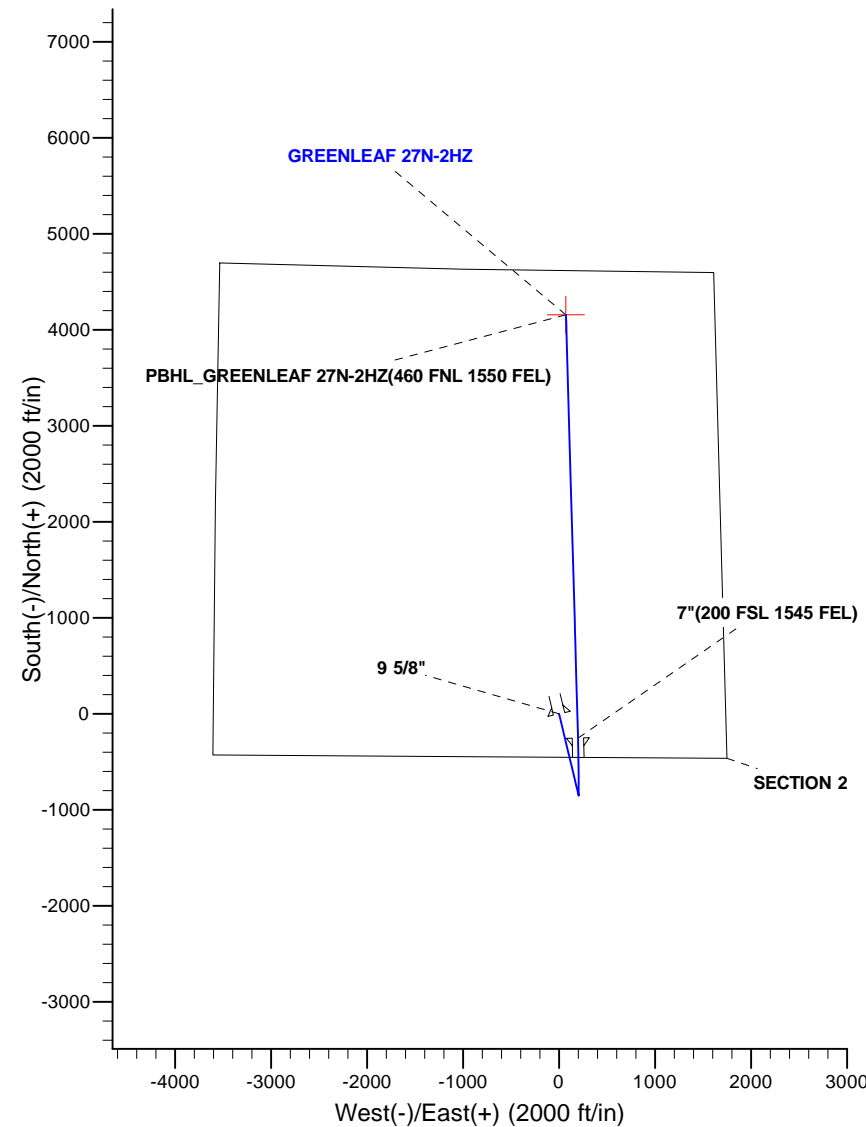
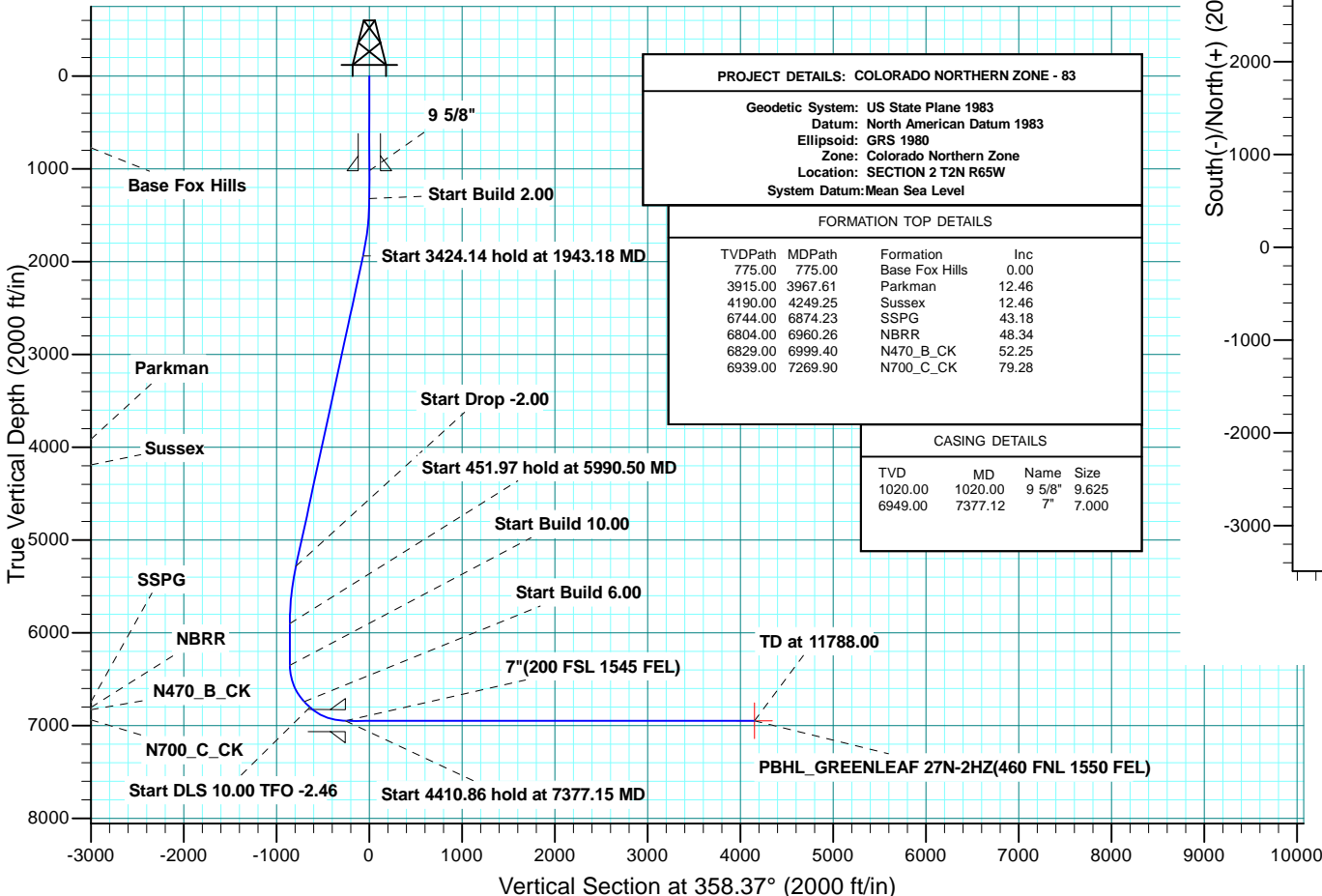




Project: COLORADO NORTHERN ZONE - 83
Site: GREENLEAF 15-2HZ PAD
Well: GREENLEAF 27N-2HZ
Wellbore: OH
Design: PLAN #1 PRELIMINARY



WELL DETAILS: GREENLEAF 27N-2HZ									
GL 4847 & KB 17 @ 4864.00ft (ASSUMED)									
		+N/-S 0.00	+E/-W 0.00	Northing 1302940.51	Easting 3243837.74	Latitude 40.1616739	Longitude -104.6275460		
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSept	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1320.00	0.00	0.00	1320.00	0.00	0.00	0.00	0.00	0.00	
1943.18	12.46	166.54	1938.28	-65.66	15.72	2.00	166.54	-66.08	
5367.32	12.46	166.54	5281.72	-784.34	187.79	0.00	0.00	-789.37	
5990.50	0.00	0.00	5900.00	-850.00	203.51	2.00	180.00	-855.44	
6442.44	0.00	0.00	6351.94	-850.00	203.51	0.00	0.00	-855.44	
6874.23	43.18	0.00	6744.00	-694.86	203.51	10.00	0.00	-700.37	
6960.26	48.34	0.00	6804.00	-633.25	203.51	6.00	0.00	-638.78	
7377.12	90.00	358.37	6949.00	-252.22	197.29	10.00	-2.46	-257.73	
11787.97	90.00	358.37	6949.00	4156.84	71.54	0.00	0.00	4153.12PBHL_GREENLEAF 27N-2HZ(460 FNL 1550 FEL)	
DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape	
PBHL 6949.00		4156.84	71.54	1307097.85	3243868.38	40.1730850	-104.6272900	Point	
- plan hits target center									





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

GREENLEAF 15-2HZ PAD

GREENLEAF 27N-2HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

03 September, 2014

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 27N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Site:	GREENLEAF 15-2HZ PAD	North Reference:	True
Well:	GREENLEAF 27N-2HZ	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	GREENLEAF 15-2HZ PAD, SECTION 2 T2N R65W			
Site Position:		Northing:	1,302,940.31 usft	Latitude: 40.1616750
From:	Lat/Long	Easting:	3,243,777.93 usft	Longitude: -104.6277600
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.56 °

Well	GREENLEAF 27N-2HZ, 452 FSL 1735 FEL			
Well Position	+N/-S	-0.38 ft	Northing:	1,302,940.51 usft
	+E/-W	59.81 ft	Easting:	3,243,837.74 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft
			Ground Level:	4,847.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	8/20/2014	8.43	66.77	52,581

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	358.37

Plan Sections										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,320.00	0.00	0.00	1,320.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,943.18	12.46	166.54	1,938.28	-65.66	15.72	2.00	2.00	0.00	166.54	
5,367.32	12.46	166.54	5,281.72	-784.34	187.79	0.00	0.00	0.00	0.00	
5,990.50	0.00	0.00	5,900.00	-850.00	203.51	2.00	-2.00	0.00	180.00	
6,442.44	0.00	0.00	6,351.94	-850.00	203.51	0.00	0.00	0.00	0.00	
6,874.23	43.18	0.00	6,744.00	-694.86	203.51	10.00	10.00	0.00	0.00	
6,960.26	48.34	0.00	6,804.00	-633.25	203.51	6.00	6.00	0.00	0.00	
7,377.12	90.00	358.37	6,949.00	-252.22	197.29	10.00	9.99	-0.39	-2.46	
11,787.97	90.00	358.37	6,949.00	4,156.84	71.54	0.00	0.00	0.00	0.00	PBHL_GREENLEAF :

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 27N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Site:	GREENLEAF 15-2HZ PAD	North Reference:	True
Well:	GREENLEAF 27N-2HZ	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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
775.00	0.00	0.00	775.00	0.00	0.00	0.00	0.00	0.00	0.00
Base Fox Hills									
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
1,000.00	0.00	0.00	1,000.00	0.00	0.00	0.00	0.00	0.00	0.00
1,020.00	0.00	0.00	1,020.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,100.00	0.00	0.00	1,100.00	0.00	0.00	0.00	0.00	0.00	0.00
1,200.00	0.00	0.00	1,200.00	0.00	0.00	0.00	0.00	0.00	0.00
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,320.00	0.00	0.00	1,320.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,400.00	1.60	166.54	1,399.99	-1.09	0.26	-1.09	2.00	2.00	0.00
1,500.00	3.60	166.54	1,499.88	-5.50	1.32	-5.53	2.00	2.00	0.00
1,600.00	5.60	166.54	1,599.55	-13.30	3.18	-13.38	2.00	2.00	0.00
1,700.00	7.60	166.54	1,698.89	-24.47	5.86	-24.63	2.00	2.00	0.00
1,800.00	9.60	166.54	1,797.76	-39.02	9.34	-39.27	2.00	2.00	0.00
1,900.00	11.60	166.54	1,896.05	-56.90	13.62	-57.27	2.00	2.00	0.00
1,943.18	12.46	166.54	1,938.28	-65.66	15.72	-66.08	2.00	2.00	0.00
Start 3424.14 hold at 1943.18 MD									
2,000.00	12.46	166.54	1,993.76	-77.58	18.58	-78.08	0.00	0.00	0.00
2,100.00	12.46	166.54	2,091.40	-98.57	23.60	-99.20	0.00	0.00	0.00
2,200.00	12.46	166.54	2,189.04	-119.56	28.63	-120.33	0.00	0.00	0.00
2,300.00	12.46	166.54	2,286.69	-140.55	33.65	-141.45	0.00	0.00	0.00
2,400.00	12.46	166.54	2,384.33	-161.54	38.68	-162.57	0.00	0.00	0.00
2,500.00	12.46	166.54	2,481.97	-182.53	43.70	-183.70	0.00	0.00	0.00
2,600.00	12.46	166.54	2,579.62	-203.52	48.73	-204.82	0.00	0.00	0.00
2,700.00	12.46	166.54	2,677.26	-224.50	53.75	-225.94	0.00	0.00	0.00
2,800.00	12.46	166.54	2,774.90	-245.49	58.78	-247.07	0.00	0.00	0.00
2,900.00	12.46	166.54	2,872.55	-266.48	63.80	-268.19	0.00	0.00	0.00
3,000.00	12.46	166.54	2,970.19	-287.47	68.83	-289.31	0.00	0.00	0.00
3,100.00	12.46	166.54	3,067.83	-308.46	73.85	-310.44	0.00	0.00	0.00
3,200.00	12.46	166.54	3,165.48	-329.45	78.88	-331.56	0.00	0.00	0.00
3,300.00	12.46	166.54	3,263.12	-350.44	83.90	-352.68	0.00	0.00	0.00
3,400.00	12.46	166.54	3,360.76	-371.43	88.93	-373.81	0.00	0.00	0.00
3,500.00	12.46	166.54	3,458.41	-392.41	93.95	-394.93	0.00	0.00	0.00
3,600.00	12.46	166.54	3,556.05	-413.40	98.98	-416.05	0.00	0.00	0.00
3,700.00	12.46	166.54	3,653.69	-434.39	104.00	-437.17	0.00	0.00	0.00
3,800.00	12.46	166.54	3,751.34	-455.38	109.03	-458.30	0.00	0.00	0.00
3,900.00	12.46	166.54	3,848.98	-476.37	114.05	-479.42	0.00	0.00	0.00
3,967.61	12.46	166.54	3,915.00	-490.56	117.45	-493.70	0.00	0.00	0.00
Parkman									
4,000.00	12.46	166.54	3,946.62	-497.36	119.08	-500.54	0.00	0.00	0.00
4,100.00	12.46	166.54	4,044.27	-518.35	124.10	-521.67	0.00	0.00	0.00
4,200.00	12.46	166.54	4,141.91	-539.34	129.13	-542.79	0.00	0.00	0.00
4,249.25	12.46	166.54	4,190.00	-549.67	131.60	-553.19	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 27N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Site:	GREENLEAF 15-2HZ PAD	North Reference:	True
Well:	GREENLEAF 27N-2HZ	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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Sussex									
4,300.00	12.46	166.54	4,239.55	-560.32	134.15	-563.91	0.00	0.00	0.00
4,400.00	12.46	166.54	4,337.20	-581.31	139.18	-585.04	0.00	0.00	0.00
4,500.00	12.46	166.54	4,434.84	-602.30	144.21	-606.16	0.00	0.00	0.00
4,600.00	12.46	166.54	4,532.48	-623.29	149.23	-627.28	0.00	0.00	0.00
4,700.00	12.46	166.54	4,630.13	-644.28	154.26	-648.41	0.00	0.00	0.00
4,800.00	12.46	166.54	4,727.77	-665.27	159.28	-669.53	0.00	0.00	0.00
4,900.00	12.46	166.54	4,825.41	-686.26	164.31	-690.65	0.00	0.00	0.00
5,000.00	12.46	166.54	4,923.06	-707.25	169.33	-711.78	0.00	0.00	0.00
5,100.00	12.46	166.54	5,020.70	-728.23	174.36	-732.90	0.00	0.00	0.00
5,200.00	12.46	166.54	5,118.34	-749.22	179.38	-754.02	0.00	0.00	0.00
5,300.00	12.46	166.54	5,215.99	-770.21	184.41	-775.15	0.00	0.00	0.00
5,367.32	12.46	166.54	5,281.72	-784.34	187.79	-789.37	0.00	0.00	0.00
Start Drop -2.00									
5,400.00	11.81	166.54	5,313.67	-791.02	189.39	-796.09	2.00	-2.00	0.00
5,500.00	9.81	166.54	5,411.89	-809.26	193.76	-814.45	2.00	-2.00	0.00
5,600.00	7.81	166.54	5,510.71	-824.16	197.32	-829.44	2.00	-2.00	0.00
5,700.00	5.81	166.54	5,610.00	-835.69	200.08	-841.04	2.00	-2.00	0.00
5,800.00	3.81	166.54	5,709.64	-843.84	202.04	-849.25	2.00	-2.00	0.00
5,900.00	1.81	166.54	5,809.51	-848.61	203.18	-854.05	2.00	-2.00	0.00
5,990.50	0.00	0.00	5,900.00	-850.00	203.51	-855.44	2.00	-2.00	0.00
Start 451.97 hold at 5990.50 MD									
6,000.00	0.00	0.00	5,909.50	-850.00	203.51	-855.44	0.00	0.00	0.00
6,100.00	0.00	0.00	6,009.50	-850.00	203.51	-855.44	0.00	0.00	0.00
6,200.00	0.00	0.00	6,109.50	-850.00	203.51	-855.44	0.00	0.00	0.00
6,300.00	0.00	0.00	6,209.50	-850.00	203.51	-855.44	0.00	0.00	0.00
6,400.00	0.00	0.00	6,309.50	-850.00	203.51	-855.44	0.00	0.00	0.00
6,442.44	0.00	0.00	6,351.94	-850.00	203.51	-855.44	0.00	0.00	0.00
6,442.47	0.00	0.00	6,351.97	-850.00	203.51	-855.44	0.00	0.00	0.00
Start Build 10.00									
6,500.00	5.76	0.00	6,409.40	-847.11	203.51	-852.56	10.01	10.01	0.00
6,600.00	15.76	0.00	6,507.52	-828.47	203.51	-833.93	10.00	10.00	0.00
6,700.00	25.76	0.00	6,600.91	-793.08	203.51	-798.55	10.00	10.00	0.00
6,800.00	35.76	0.00	6,686.74	-742.01	203.51	-747.49	10.00	10.00	0.00
6,874.22	43.18	0.00	6,743.99	-694.87	203.51	-700.37	10.00	10.00	0.00
Start Build 6.00									
6,874.23	43.18	0.00	6,744.00	-694.86	203.51	-700.37	10.00	10.00	0.00
SSPG									
6,900.00	44.72	0.00	6,762.55	-676.97	203.51	-682.49	6.00	6.00	0.00
6,960.24	48.34	0.00	6,803.99	-633.26	203.51	-638.79	6.00	6.00	0.00
Start DLS 10.00 TFO -2.46									
6,960.26	48.34	0.00	6,804.00	-633.25	203.51	-638.78	6.00	6.00	0.00
NBRR									
6,999.40	52.25	359.79	6,829.00	-603.14	203.45	-608.68	10.00	9.99	-0.54
N470_B_CK									
7,000.00	52.31	359.78	6,829.37	-602.66	203.45	-608.21	10.00	9.99	-0.51
7,100.00	62.30	359.33	6,883.31	-518.61	202.78	-524.17	10.00	9.99	-0.45
7,200.00	72.30	358.95	6,921.85	-426.49	201.39	-432.04	10.00	9.99	-0.38
7,269.90	79.28	358.71	6,939.00	-358.78	200.01	-364.33	10.00	9.99	-0.34
N700_C_CK									
7,300.00	82.29	358.61	6,943.82	-329.08	199.32	-334.62	10.00	9.99	-0.33
7,377.12	90.00	358.37	6,949.00	-252.22	197.29	-257.73	10.00	9.99	-0.32

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 27N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Site:	GREENLEAF 15-2HZ PAD	North Reference:	True
Well:	GREENLEAF 27N-2HZ	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 (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
7"(200 FSL 1545 FEL)									
7,377.15	90.00	358.37	6,949.00	-252.19	197.29	-257.70	0.00	0.00	0.00
Start 4410.86 hold at 7377.15 MD									
7,400.00	90.00	358.37	6,949.00	-229.35	196.64	-234.85	0.00	0.00	0.00
7,500.00	90.00	358.37	6,949.00	-129.39	193.79	-134.85	0.00	0.00	0.00
7,600.00	90.00	358.37	6,949.00	-29.43	190.94	-34.85	0.00	0.00	0.00
7,700.00	90.00	358.37	6,949.00	70.53	188.09	65.15	0.00	0.00	0.00
7,800.00	90.00	358.37	6,949.00	170.49	185.23	165.15	0.00	0.00	0.00
7,900.00	90.00	358.37	6,949.00	270.45	182.38	265.15	0.00	0.00	0.00
8,000.00	90.00	358.37	6,949.00	370.41	179.53	365.15	0.00	0.00	0.00
8,100.00	90.00	358.37	6,949.00	470.37	176.68	465.15	0.00	0.00	0.00
8,200.00	90.00	358.37	6,949.00	570.33	173.83	565.15	0.00	0.00	0.00
8,300.00	90.00	358.37	6,949.00	670.29	170.98	665.15	0.00	0.00	0.00
8,400.00	90.00	358.37	6,949.00	770.24	168.13	765.15	0.00	0.00	0.00
8,500.00	90.00	358.37	6,949.00	870.20	165.28	865.15	0.00	0.00	0.00
8,600.00	90.00	358.37	6,949.00	970.16	162.43	965.15	0.00	0.00	0.00
8,700.00	90.00	358.37	6,949.00	1,070.12	159.58	1,065.15	0.00	0.00	0.00
8,800.00	90.00	358.37	6,949.00	1,170.08	156.72	1,165.15	0.00	0.00	0.00
8,900.00	90.00	358.37	6,949.00	1,270.04	153.87	1,265.15	0.00	0.00	0.00
9,000.00	90.00	358.37	6,949.00	1,370.00	151.02	1,365.15	0.00	0.00	0.00
9,100.00	90.00	358.37	6,949.00	1,469.96	148.17	1,465.15	0.00	0.00	0.00
9,200.00	90.00	358.37	6,949.00	1,569.92	145.32	1,565.15	0.00	0.00	0.00
9,300.00	90.00	358.37	6,949.00	1,669.88	142.47	1,665.15	0.00	0.00	0.00
9,400.00	90.00	358.37	6,949.00	1,769.84	139.62	1,765.15	0.00	0.00	0.00
9,500.00	90.00	358.37	6,949.00	1,869.80	136.77	1,865.15	0.00	0.00	0.00
9,600.00	90.00	358.37	6,949.00	1,969.76	133.92	1,965.15	0.00	0.00	0.00
9,700.00	90.00	358.37	6,949.00	2,069.72	131.07	2,065.15	0.00	0.00	0.00
9,800.00	90.00	358.37	6,949.00	2,169.68	128.21	2,165.15	0.00	0.00	0.00
9,900.00	90.00	358.37	6,949.00	2,269.63	125.36	2,265.15	0.00	0.00	0.00
10,000.00	90.00	358.37	6,949.00	2,369.59	122.51	2,365.15	0.00	0.00	0.00
10,100.00	90.00	358.37	6,949.00	2,469.55	119.66	2,465.15	0.00	0.00	0.00
10,200.00	90.00	358.37	6,949.00	2,569.51	116.81	2,565.15	0.00	0.00	0.00
10,300.00	90.00	358.37	6,949.00	2,669.47	113.96	2,665.15	0.00	0.00	0.00
10,400.00	90.00	358.37	6,949.00	2,769.43	111.11	2,765.15	0.00	0.00	0.00
10,500.00	90.00	358.37	6,949.00	2,869.39	108.26	2,865.15	0.00	0.00	0.00
10,600.00	90.00	358.37	6,949.00	2,969.35	105.41	2,965.15	0.00	0.00	0.00
10,700.00	90.00	358.37	6,949.00	3,069.31	102.56	3,065.15	0.00	0.00	0.00
10,800.00	90.00	358.37	6,949.00	3,169.27	99.70	3,165.15	0.00	0.00	0.00
10,900.00	90.00	358.37	6,949.00	3,269.23	96.85	3,265.15	0.00	0.00	0.00
11,000.00	90.00	358.37	6,949.00	3,369.19	94.00	3,365.15	0.00	0.00	0.00
11,100.00	90.00	358.37	6,949.00	3,469.15	91.15	3,465.15	0.00	0.00	0.00
11,200.00	90.00	358.37	6,949.00	3,569.11	88.30	3,565.15	0.00	0.00	0.00
11,300.00	90.00	358.37	6,949.00	3,669.07	85.45	3,665.15	0.00	0.00	0.00
11,400.00	90.00	358.37	6,949.00	3,769.03	82.60	3,765.15	0.00	0.00	0.00
11,500.00	90.00	358.37	6,949.00	3,868.98	79.75	3,865.15	0.00	0.00	0.00
11,600.00	90.00	358.37	6,949.00	3,968.94	76.90	3,965.15	0.00	0.00	0.00
11,700.00	90.00	358.37	6,949.00	4,068.90	74.05	4,065.15	0.00	0.00	0.00
11,787.97	90.00	358.37	6,949.00	4,156.84	71.54	4,153.12	0.00	0.00	0.00
TD at 11788.00 - PBHL_GREENLEAF 27N-2HZ(460 FNL 1550 FEL)									

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 27N-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4847 & KB 17 @ 4864.00ft (ASSUMED)
Site:	GREENLEAF 15-2HZ PAD	North Reference:	True
Well:	GREENLEAF 27N-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

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_GREENLEAF 27I	0.00	0.00	6,949.00	4,156.84	71.54	1,307,097.85	3,243,868.38	40.1730850	-104.6272900
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,020.00	1,020.00	9 5/8"	9.625	13.500	
7,377.12	6,949.00	7"(200 FSL 1545 FEL)	7.000	8.750	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
775.00	775.00	Base Fox Hills			
3,967.61	3,915.00	Parkman			
4,249.25	4,190.00	Sussex			
6,874.23	6,744.00	SSPG			
6,960.26	6,804.00	NBRR			
6,999.40	6,829.00	N470_B_CK			
7,269.90	6,939.00	N700_C_CK			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,320.00	1,320.00	0.00	0.00	Start Build 2.00
1,943.18	1,938.28	-65.66	15.72	Start 3424.14 hold at 1943.18 MD
5,367.32	5,281.72	-784.34	187.79	Start Drop -2.00
5,990.50	5,900.00	-850.00	203.51	Start 451.97 hold at 5990.50 MD
6,442.47	6,351.97	-850.00	203.51	Start Build 10.00
6,874.22	6,743.99	-694.87	203.51	Start Build 6.00
6,960.24	6,803.99	-633.26	203.51	Start DLS 10.00 TFO -2.46
7,377.15	6,949.00	-252.19	197.29	Start 4410.86 hold at 7377.15 MD
11,787.97	6,949.00	4,156.84	71.54	TD at 11788.00