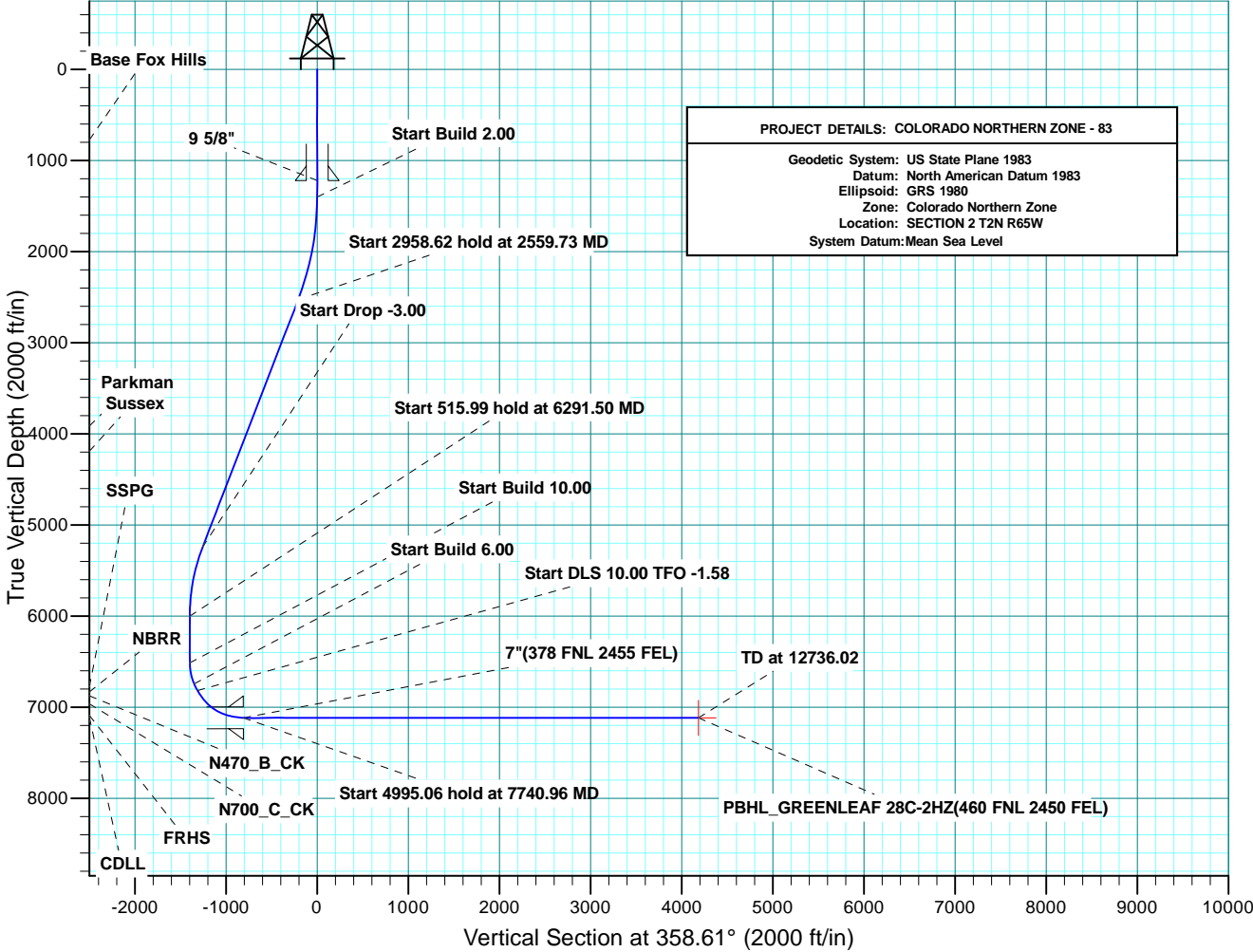




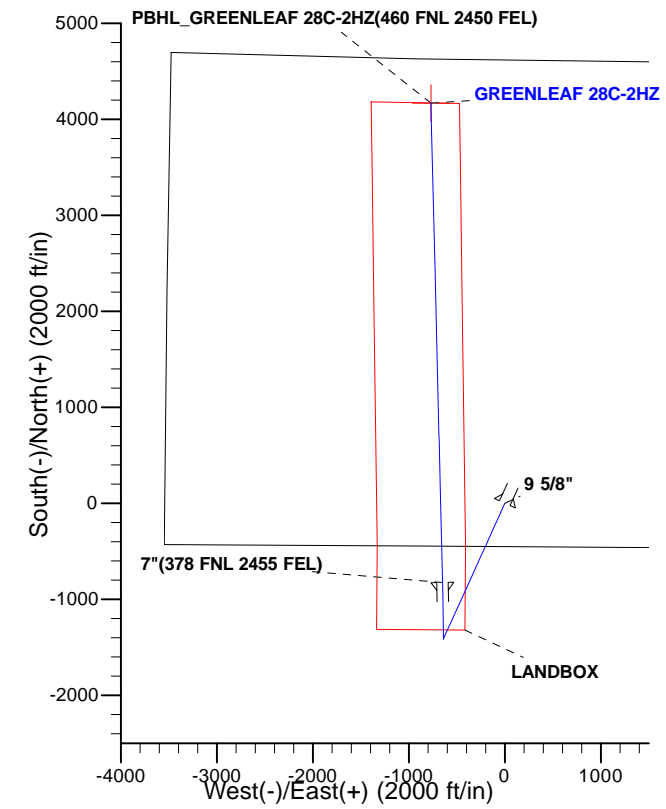
Project: COLORADO NORTHERN ZONE - 83
Site: GREENLEAF 15-2HZ PAD
Well: GREENLEAF 28C-2HZ
Wellbore: OH
Design: PLAN #1 PRELIMINARY



SHL: GREENLEAF 28C-2HZ GL							
4847 & KB 17 @ 4864.00ft (ASSUMED)							
	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
	0.00	0.00	1302940.29	3243777.93	40.1616749	-104.6277600	
DESIGN TARGET DETAILS							
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
PBHL 7119.00	4168.15	-769.31	1307100.66	3242967.66	40.1731170	-104.6305130	Shape Point
- plan hits target center							
SECTION DETAILS							
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1400.00	0.00	0.00	1400.00	0.00	0.00	0.00	0.00
2559.73	23.19	204.37	2528.31	-210.92	-95.54	2.00	204.37
5518.35	23.19	204.37	5247.79	-1272.38	-576.31	0.00	0.00
6291.50	0.00	0.00	6000.00	-1413.00	-640.00	3.00	180.00
6807.49	0.00	0.00	6515.99	-1413.00	-640.00	0.00	0.00
7041.99	23.45	0.00	6744.00	-1365.68	-640.00	10.00	0.00
7125.43	28.46	0.00	6819.00	-1329.17	-640.00	6.00	0.00
7740.96	90.00	358.61	7119.00	-825.45	-648.27	10.00	-1.58
12736.02	90.00	358.61	7119.00	4168.15	-769.31	0.00	0.00



PROJECT DETAILS: COLORADO NORTHERN ZONE - 83	
Geodetic System:	US State Plane 1983
Datum:	North American Datum 1983
Ellipsoid:	GRS 1980
Zone:	Colorado Northern Zone
Location:	SECTION 2 T2N R65W
System Datum:	Mean Sea Level



CASING DETAILS			
TVD	MD	Name	Size
1220.00	1220.00	9 5/8"	9.625
7119.00	7740.96	7"	7.000

FORMATION TOP DETAILS			
TVDPath	MDPath	Formation	Inc
775.00	775.00	Base Fox Hills	0.00
3915.00	4068.35	Parkman	23.19
4190.00	4367.54	Sussex	23.19
6772.00	7072.73	SSPG	25.29
6832.00	7140.32	NBRR	29.95
6877.00	7193.77	N470_B_CK	35.29
6964.00	7309.35	N700_C_CK	46.84
7091.00	7561.08	FRHS	72.01
7114.00	7665.18	CDLL	82.42



Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

GREENLEAF 15-2HZ PAD

GREENLEAF 28C-2HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

08 December, 2014

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 28C-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 28C-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 28C-2HZ, 452 FSL 1795 FEL			
Well Position	+N/-S	-0.02 ft	Northing:	1,302,940.28 usft
	+E/-W	0.00 ft	Easting:	3,243,777.93 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	358.61

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	
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,559.73	23.19	204.37	2,528.31	-210.92	-95.54	2.00	2.00	0.00	204.37	
5,518.35	23.19	204.37	5,247.79	-1,272.38	-576.31	0.00	0.00	0.00	0.00	
6,291.50	0.00	0.00	6,000.00	-1,413.00	-640.00	3.00	-3.00	0.00	180.00	
6,807.49	0.00	0.00	6,515.99	-1,413.00	-640.00	0.00	0.00	0.00	0.00	
7,041.99	23.45	0.00	6,744.00	-1,365.68	-640.00	10.00	10.00	0.00	0.00	
7,125.43	28.46	0.00	6,819.00	-1,329.17	-640.00	6.00	6.00	0.00	0.00	
7,740.96	90.00	358.61	7,119.00	-825.45	-648.27	10.00	10.00	-0.23	-1.58	
12,736.02	90.00	358.61	7,119.00	4,168.15	-769.31	0.00	0.00	0.00	0.00	PBHL_GREENLEAF :

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 28C-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 28C-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
1,100.00	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
1,220.00	0.00	0.00	1,220.00	0.00	0.00	0.00	0.00	0.00	0.00
9 5/8"									
1,300.00	0.00	0.00	1,300.00	0.00	0.00	0.00	0.00	0.00	0.00
1,400.00	0.00	0.00	1,400.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,500.00	2.00	204.37	1,499.98	-1.59	-0.72	-1.57	2.00	2.00	0.00
1,600.00	4.00	204.37	1,599.84	-6.36	-2.88	-6.29	2.00	2.00	0.00
1,700.00	6.00	204.37	1,699.46	-14.30	-6.48	-14.13	2.00	2.00	0.00
1,800.00	8.00	204.37	1,798.71	-25.40	-11.50	-25.11	2.00	2.00	0.00
1,900.00	10.00	204.37	1,897.47	-39.65	-17.96	-39.20	2.00	2.00	0.00
2,000.00	12.00	204.37	1,995.63	-57.03	-25.83	-56.38	2.00	2.00	0.00
2,100.00	14.00	204.37	2,093.06	-77.52	-35.11	-76.64	2.00	2.00	0.00
2,200.00	16.00	204.37	2,189.65	-101.09	-45.79	-99.95	2.00	2.00	0.00
2,300.00	18.00	204.37	2,285.27	-127.72	-57.85	-126.28	2.00	2.00	0.00
2,400.00	20.00	204.37	2,379.82	-157.38	-71.28	-155.60	2.00	2.00	0.00
2,500.01	22.00	204.37	2,473.17	-190.02	-86.07	-187.88	2.00	2.00	0.00
2,559.73	23.19	204.37	2,528.31	-210.92	-95.54	-208.55	2.00	2.00	0.00
Start 2958.62 hold at 2559.73 MD									
2,600.01	23.19	204.37	2,565.33	-225.38	-102.08	-222.83	0.00	0.00	0.00
2,700.01	23.19	204.37	2,657.25	-261.25	-118.33	-258.31	0.00	0.00	0.00
2,800.01	23.19	204.37	2,749.17	-297.13	-134.58	-293.78	0.00	0.00	0.00
2,900.01	23.19	204.37	2,841.08	-333.01	-150.83	-329.25	0.00	0.00	0.00
3,000.01	23.19	204.37	2,933.00	-368.88	-167.08	-364.72	0.00	0.00	0.00
3,100.01	23.19	204.37	3,024.92	-404.76	-183.33	-400.19	0.00	0.00	0.00
3,200.01	23.19	204.37	3,116.84	-440.64	-199.58	-435.67	0.00	0.00	0.00
3,300.01	23.19	204.37	3,208.75	-476.51	-215.83	-471.14	0.00	0.00	0.00
3,400.01	23.19	204.37	3,300.67	-512.39	-232.08	-506.61	0.00	0.00	0.00
3,500.01	23.19	204.37	3,392.59	-548.27	-248.33	-542.08	0.00	0.00	0.00
3,600.01	23.19	204.37	3,484.51	-584.14	-264.58	-577.55	0.00	0.00	0.00
3,700.01	23.19	204.37	3,576.42	-620.02	-280.83	-613.03	0.00	0.00	0.00
3,800.01	23.19	204.37	3,668.34	-655.90	-297.08	-648.50	0.00	0.00	0.00
3,900.01	23.19	204.37	3,760.26	-691.77	-313.33	-683.97	0.00	0.00	0.00
4,000.01	23.19	204.37	3,852.18	-727.65	-329.58	-719.44	0.00	0.00	0.00
4,068.35	23.19	204.37	3,915.00	-752.17	-340.69	-743.69	0.00	0.00	0.00
Parkman									
4,100.01	23.19	204.37	3,944.09	-763.53	-345.83	-754.92	0.00	0.00	0.00
4,200.01	23.19	204.37	4,036.01	-799.41	-362.08	-790.39	0.00	0.00	0.00
4,300.01	23.19	204.37	4,127.93	-835.28	-378.33	-825.86	0.00	0.00	0.00
4,367.54	23.19	204.37	4,190.00	-859.51	-389.30	-849.81	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 28C-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 28C-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									
4,400.01	23.19	204.37	4,219.85	-871.16	-394.58	-861.33	0.00	0.00	0.00
4,500.01	23.19	204.37	4,311.76	-907.04	-410.83	-896.80	0.00	0.00	0.00
4,600.01	23.19	204.37	4,403.68	-942.91	-427.08	-932.28	0.00	0.00	0.00
4,700.01	23.19	204.37	4,495.60	-978.79	-443.33	-967.75	0.00	0.00	0.00
4,800.01	23.19	204.37	4,587.52	-1,014.67	-459.58	-1,003.22	0.00	0.00	0.00
4,900.01	23.19	204.37	4,679.44	-1,050.54	-475.83	-1,038.69	0.00	0.00	0.00
5,000.01	23.19	204.37	4,771.35	-1,086.42	-492.08	-1,074.16	0.00	0.00	0.00
5,100.01	23.19	204.37	4,863.27	-1,122.30	-508.33	-1,109.64	0.00	0.00	0.00
5,200.01	23.19	204.37	4,955.19	-1,158.17	-524.58	-1,145.11	0.00	0.00	0.00
5,300.01	23.19	204.37	5,047.11	-1,194.05	-540.83	-1,180.58	0.00	0.00	0.00
5,400.01	23.19	204.37	5,139.02	-1,229.93	-557.08	-1,216.05	0.00	0.00	0.00
5,500.01	23.19	204.37	5,230.94	-1,265.81	-573.33	-1,251.52	0.00	0.00	0.00
5,518.35	23.19	204.37	5,247.79	-1,272.38	-576.31	-1,258.03	0.00	0.00	0.00
Start Drop -3.00									
5,600.01	20.74	204.37	5,323.52	-1,300.21	-588.91	-1,285.54	3.00	-3.00	0.00
5,700.01	17.74	204.37	5,417.92	-1,330.23	-602.51	-1,315.23	3.00	-3.00	0.00
5,800.01	14.74	204.37	5,513.92	-1,355.71	-614.05	-1,340.42	3.00	-3.00	0.00
5,900.01	11.74	204.37	5,611.25	-1,376.58	-623.50	-1,361.05	3.00	-3.00	0.00
6,000.01	8.74	204.37	5,709.64	-1,392.78	-630.84	-1,377.06	3.00	-3.00	0.00
6,100.01	5.74	204.37	5,808.83	-1,404.26	-636.04	-1,388.42	3.00	-3.00	0.00
6,200.01	2.74	204.37	5,908.55	-1,411.00	-639.10	-1,395.09	3.00	-3.00	0.00
6,291.50	0.00	0.00	6,000.00	-1,413.00	-640.00	-1,397.06	3.00	-3.00	0.00
Start 515.99 hold at 6291.50 MD									
6,300.01	0.00	0.00	6,008.51	-1,413.00	-640.00	-1,397.06	0.00	0.00	0.00
6,400.01	0.00	0.00	6,108.51	-1,413.00	-640.00	-1,397.06	0.00	0.00	0.00
6,500.01	0.00	0.00	6,208.52	-1,413.00	-640.00	-1,397.06	0.00	0.00	0.00
6,600.01	0.00	0.00	6,308.52	-1,413.00	-640.00	-1,397.06	0.00	0.00	0.00
6,700.01	0.00	0.00	6,408.52	-1,413.00	-640.00	-1,397.06	0.00	0.00	0.00
6,800.01	0.00	0.00	6,508.52	-1,413.00	-640.00	-1,397.06	0.00	0.00	0.00
6,807.49	0.00	0.00	6,515.99	-1,413.00	-640.00	-1,397.06	0.00	0.00	0.00
Start Build 10.00									
6,900.01	9.25	0.00	6,608.11	-1,405.55	-640.00	-1,389.61	10.00	10.00	0.00
7,000.01	19.25	0.00	6,704.91	-1,380.96	-640.00	-1,365.03	10.00	10.00	0.00
7,041.99	23.45	0.00	6,744.00	-1,365.68	-640.00	-1,349.75	10.00	10.00	0.00
Start Build 6.00									
7,072.73	25.29	0.00	6,772.00	-1,352.99	-640.00	-1,337.07	6.00	6.00	0.00
SSPG									
7,100.01	26.93	0.00	6,796.50	-1,340.98	-640.00	-1,325.06	6.00	6.00	0.00
7,125.43	28.46	0.00	6,819.00	-1,329.17	-640.00	-1,313.26	6.00	6.00	0.00
Start DLS 10.00 TFO -1.58									
7,140.32	29.95	359.92	6,832.00	-1,321.91	-640.01	-1,305.99	10.00	10.00	-0.55
NBRR									
7,193.77	35.29	359.67	6,877.00	-1,293.11	-640.11	-1,277.20	10.00	10.00	-0.45
N470_B_CK									
7,200.01	35.91	359.65	6,882.08	-1,289.47	-640.13	-1,273.57	9.98	9.97	-0.39
7,300.01	45.91	359.34	6,957.56	-1,224.07	-640.73	-1,208.17	10.00	10.00	-0.31
7,309.36	46.84	359.32	6,964.00	-1,217.31	-640.81	-1,201.41	10.02	10.01	-0.25
N700_C_CK									
7,400.01	55.91	359.12	7,020.53	-1,146.56	-641.78	-1,130.65	10.00	10.00	-0.22
7,500.02	65.91	358.95	7,069.09	-1,059.30	-643.26	-1,043.38	10.00	10.00	-0.17
7,561.08	72.01	358.86	7,091.00	-1,002.35	-644.35	-986.42	10.00	10.00	-0.15

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 28C-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 28C-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)
FRHS									
7,600.02	75.91	358.80	7,101.76	-964.94	-645.11	-949.00	10.00	10.00	-0.14
7,665.18	82.42	358.71	7,114.00	-900.98	-646.50	-885.04	10.00	10.00	-0.14
CDLL									
7,700.02	85.90	358.67	7,117.54	-866.34	-647.30	-850.39	10.00	9.99	-0.13
7,740.96	90.00	358.61	7,119.00	-825.44	-648.27	-809.48	10.00	10.00	-0.13
Start 4995.06 hold at 7740.96 MD - 7"(378 FNL 2455 FEL)									
7,800.02	90.00	358.61	7,119.00	-766.41	-649.70	-750.42	0.00	0.00	0.00
7,900.02	90.00	358.61	7,119.00	-666.44	-652.12	-650.42	0.00	0.00	0.00
8,000.02	90.00	358.61	7,119.00	-566.46	-654.55	-550.42	0.00	0.00	0.00
8,100.02	90.00	358.61	7,119.00	-466.49	-656.97	-450.42	0.00	0.00	0.00
8,200.02	90.00	358.61	7,119.00	-366.52	-659.39	-350.42	0.00	0.00	0.00
8,300.02	90.00	358.61	7,119.00	-266.55	-661.82	-250.42	0.00	0.00	0.00
8,400.02	90.00	358.61	7,119.00	-166.58	-664.24	-150.42	0.00	0.00	0.00
8,500.02	90.00	358.61	7,119.00	-66.61	-666.66	-50.42	0.00	0.00	0.00
8,600.02	90.00	358.61	7,119.00	33.36	-669.08	49.58	0.00	0.00	0.00
8,700.02	90.00	358.61	7,119.00	133.33	-671.51	149.58	0.00	0.00	0.00
8,800.02	90.00	358.61	7,119.00	233.30	-673.93	249.58	0.00	0.00	0.00
8,900.02	90.00	358.61	7,119.00	333.27	-676.35	349.58	0.00	0.00	0.00
9,000.02	90.00	358.61	7,119.00	433.24	-678.78	449.58	0.00	0.00	0.00
9,100.02	90.00	358.61	7,119.00	533.21	-681.20	549.58	0.00	0.00	0.00
9,200.02	90.00	358.61	7,119.00	633.19	-683.62	649.58	0.00	0.00	0.00
9,300.02	90.00	358.61	7,119.00	733.16	-686.05	749.58	0.00	0.00	0.00
9,400.02	90.00	358.61	7,119.00	833.13	-688.47	849.58	0.00	0.00	0.00
9,500.02	90.00	358.61	7,119.00	933.10	-690.89	949.58	0.00	0.00	0.00
9,600.02	90.00	358.61	7,119.00	1,033.07	-693.32	1,049.58	0.00	0.00	0.00
9,700.02	90.00	358.61	7,119.00	1,133.04	-695.74	1,149.58	0.00	0.00	0.00
9,800.02	90.00	358.61	7,119.00	1,233.01	-698.16	1,249.58	0.00	0.00	0.00
9,900.02	90.00	358.61	7,119.00	1,332.98	-700.59	1,349.58	0.00	0.00	0.00
10,000.02	90.00	358.61	7,119.00	1,432.95	-703.01	1,449.58	0.00	0.00	0.00
10,100.02	90.00	358.61	7,119.00	1,532.92	-705.43	1,549.58	0.00	0.00	0.00
10,200.02	90.00	358.61	7,119.00	1,632.89	-707.86	1,649.58	0.00	0.00	0.00
10,300.02	90.00	358.61	7,119.00	1,732.86	-710.28	1,749.58	0.00	0.00	0.00
10,400.02	90.00	358.61	7,119.00	1,832.84	-712.70	1,849.58	0.00	0.00	0.00
10,500.02	90.00	358.61	7,119.00	1,932.81	-715.12	1,949.58	0.00	0.00	0.00
10,600.02	90.00	358.61	7,119.00	2,032.78	-717.55	2,049.58	0.00	0.00	0.00
10,700.02	90.00	358.61	7,119.00	2,132.75	-719.97	2,149.59	0.00	0.00	0.00
10,800.02	90.00	358.61	7,119.00	2,232.72	-722.39	2,249.59	0.00	0.00	0.00
10,900.02	90.00	358.61	7,119.00	2,332.69	-724.82	2,349.59	0.00	0.00	0.00
11,000.02	90.00	358.61	7,119.00	2,432.66	-727.24	2,449.59	0.00	0.00	0.00
11,100.02	90.00	358.61	7,119.00	2,532.63	-729.66	2,549.59	0.00	0.00	0.00
11,200.02	90.00	358.61	7,119.00	2,632.60	-732.09	2,649.59	0.00	0.00	0.00
11,300.02	90.00	358.61	7,119.00	2,732.57	-734.51	2,749.59	0.00	0.00	0.00
11,400.02	90.00	358.61	7,119.00	2,832.54	-736.93	2,849.59	0.00	0.00	0.00
11,500.02	90.00	358.61	7,119.00	2,932.51	-739.36	2,949.59	0.00	0.00	0.00
11,600.02	90.00	358.61	7,119.00	3,032.49	-741.78	3,049.59	0.00	0.00	0.00
11,700.02	90.00	358.61	7,119.00	3,132.46	-744.20	3,149.59	0.00	0.00	0.00
11,800.02	90.00	358.61	7,119.00	3,232.43	-746.63	3,249.59	0.00	0.00	0.00
11,900.02	90.00	358.61	7,119.00	3,332.40	-749.05	3,349.59	0.00	0.00	0.00
12,000.02	90.00	358.61	7,119.00	3,432.37	-751.47	3,449.59	0.00	0.00	0.00
12,100.02	90.00	358.61	7,119.00	3,532.34	-753.89	3,549.59	0.00	0.00	0.00
12,200.02	90.00	358.61	7,119.00	3,632.31	-756.32	3,649.59	0.00	0.00	0.00
12,300.02	90.00	358.61	7,119.00	3,732.28	-758.74	3,749.59	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 28C-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 28C-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)
12,400.03	90.00	358.61	7,119.00	3,832.25	-761.16	3,849.59	0.00	0.00	0.00
12,500.03	90.00	358.61	7,119.00	3,932.22	-763.59	3,949.59	0.00	0.00	0.00
12,600.03	90.00	358.61	7,119.00	4,032.19	-766.01	4,049.59	0.00	0.00	0.00
12,700.03	90.00	358.61	7,119.00	4,132.16	-768.43	4,149.59	0.00	0.00	0.00
12,736.02	90.00	358.61	7,119.00	4,168.15	-769.31	4,185.58	0.00	0.00	0.00
TD at 12736.02 - PBHL_GREENLEAF 28C-2HZ(460 FNL 2450 FEL)									

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 28C-2HZ	0.00	0.00	7,119.00	4,168.15	-769.31	1,307,100.66	3,242,967.66	40.1731170	-104.6305130
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,220.00	1,220.00	9 5/8"	9.625	13.500	
7,740.96	7,119.00	7"(378 FNL 2455 FEL)	7.000	8.750	

Formations						
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)	
775.00	775.00	Base Fox Hills				
4,068.35	3,915.00	Parkman				
4,367.54	4,190.00	Sussex				
7,072.73	6,772.00	SSPG				
7,140.32	6,832.00	NBRR				
7,193.77	6,877.00	N470_B_CK				
7,309.36	6,964.00	N700_C_CK				
7,561.08	7,091.00	FRHS				
7,665.18	7,114.00	CDLL				

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 28C-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 28C-2HZ	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	PLAN #1 PRELIMINARY		

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,400.00	1,400.00	0.00	0.00	Start Build 2.00
2,559.73	2,528.31	-210.92	-95.54	Start 2958.62 hold at 2559.73 MD
5,518.35	5,247.79	-1,272.38	-576.31	Start Drop -3.00
6,291.50	6,000.00	-1,413.00	-640.00	Start 515.99 hold at 6291.50 MD
6,807.49	6,515.99	-1,413.00	-640.00	Start Build 10.00
7,041.99	6,744.00	-1,365.68	-640.00	Start Build 6.00
7,125.43	6,819.00	-1,329.17	-640.00	Start DLS 10.00 TFO -1.58
7,740.96	7,119.00	-825.45	-648.27	Start 4995.06 hold at 7740.96 MD
12,736.02	7,119.00	4,168.15	-769.31	TD at 12736.02