



Project: COLORADO NORTHERN ZONE - 83

Site: GREENLEAF 14-2HZ PAD

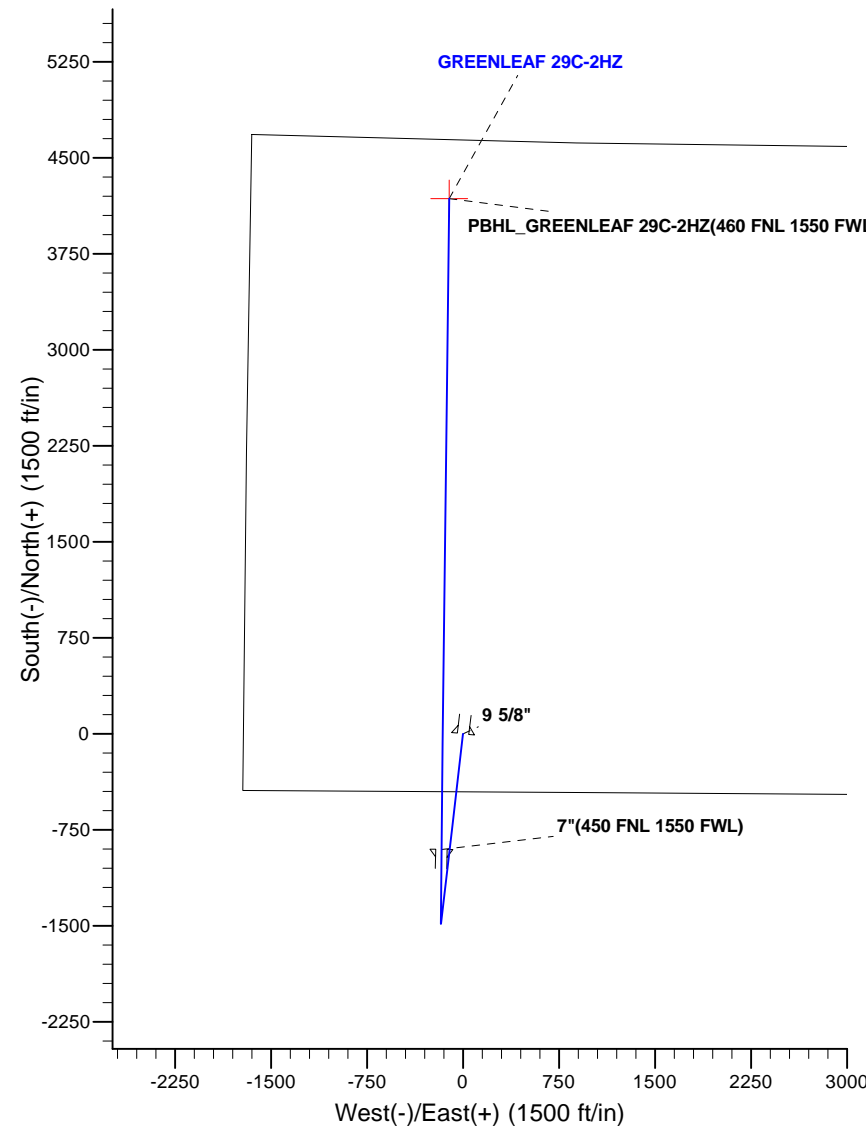
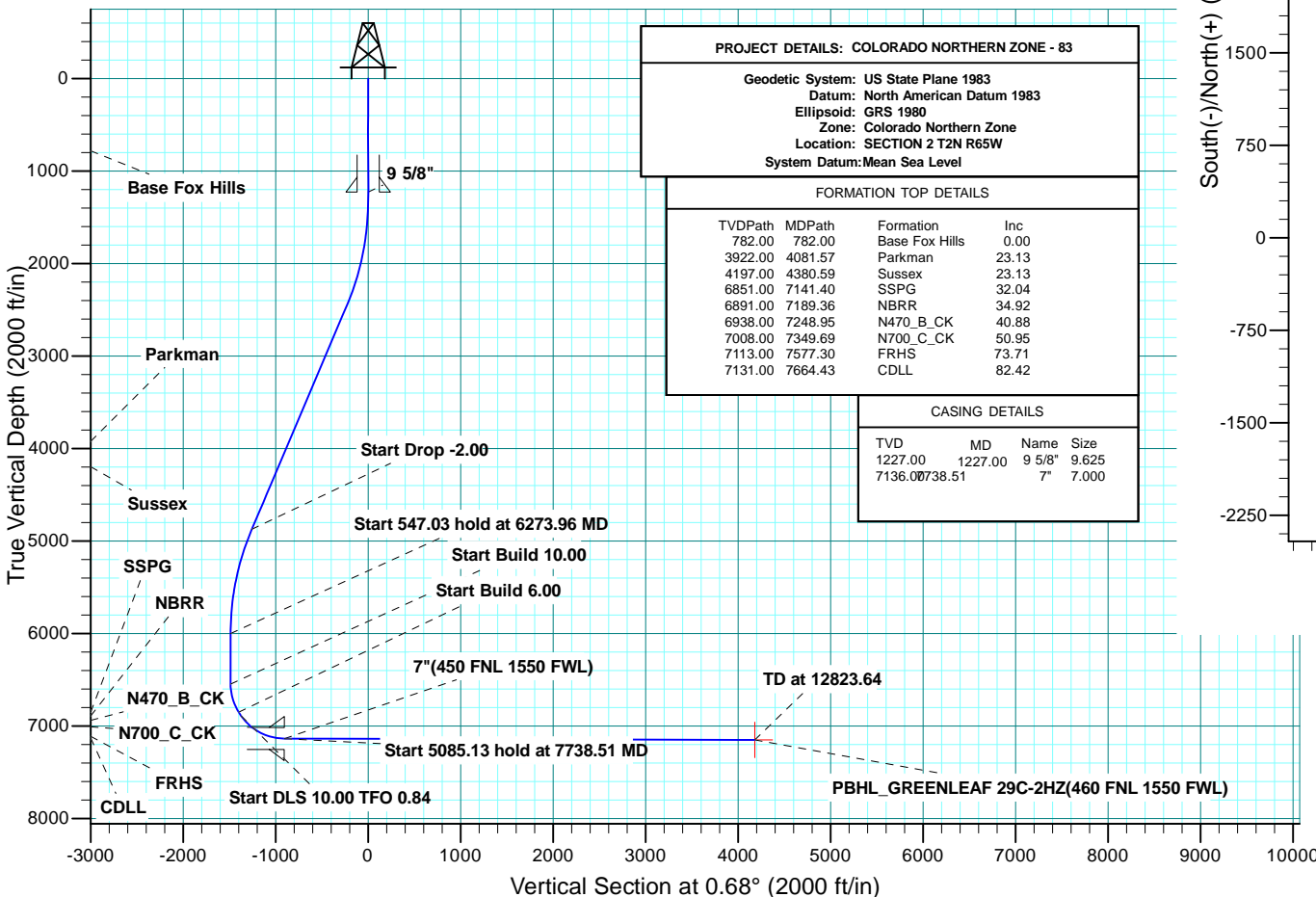
Well: GREENLEAF 29C-2HZ

Wellbore: OH

Design: PLAN #1 PRELIMINARY



WELL DETAILS: GREENLEAF 29C-2HZ									
GL 4854 & KB 17 @ 4871.00ft (ASSUMED)									
		+N-S 0.00	+E-W 0.00	Northing 1302935.89	Easting 3241952.26	Latitude 40.1617120		Longitude -104.6342920	
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
1327.00	0.00	0.00	1327.00	0.00	0.00	0.00	0.00	0.00	
2483.27	23.13	186.64	2452.13	-228.65	-26.64	2.00	186.64	-228.95	
5117.69	23.13	186.64	4874.87	-1256.35	-146.36	0.00	0.00	-1258.00	
6273.96	0.00	0.00	6000.00	-1485.00	-173.00	2.00	180.00	-1486.95	
6820.99	0.00	0.00	6547.03	-1485.00	-173.00	0.00	0.00	-1486.95	
7141.40	32.04	0.00	6851.00	-1397.72	-173.00	10.00	0.00	-1399.67	
7189.36	34.92	0.00	6891.00	-1371.26	-173.00	6.00	0.00	-1373.22	
7738.51	89.83	0.68	7136.00	-903.14	-169.44	10.00	0.84	-905.09	
12823.64	89.83	0.68	7151.00	4181.60	-108.68	0.00	0.00	4180.02	
PBHL_GREENLEAF 29C-2HZ(460 FNL 1550 FWL)									
DESIGN TARGET DETAILS									
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude		Longitude	
PBHL 7151.00	4181.60	-108.68	1307116.22	3241802.76	40.1731910	-104.6346809		Shape	
- plan hits target center									
Point									





Scientific Drilling

US ROCKIES REGION PLANNING

COLORADO NORTHERN ZONE - 83

GREENLEAF 14-2HZ PAD

GREENLEAF 29C-2HZ

OH

Plan: PLAN #1 PRELIMINARY

Standard Planning Report

03 September, 2014

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 29C-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Site:	GREENLEAF 14-2HZ PAD	North Reference:	True
Well:	GREENLEAF 29C-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 14-2HZ PAD, SECTION 2 T2N R65W			
Site Position:		Northing:	1,302,935.38 usft	Latitude: 40.1617130
From:	Lat/Long	Easting:	3,241,862.27 usft	Longitude: -104.6346140
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in	Grid Convergence: 0.56 °

Well	GREENLEAF 29C-2HZ, 453 FSL 1716 FWL			
Well Position	+N/-S	-0.37 ft	Northing:	1,302,935.88 usft
	+E/-W	90.00 ft	Easting:	3,241,952.26 usft
Position Uncertainty		0.00 ft	Wellhead Elevation:	0.00 ft
			Ground Level:	4,854.00 ft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2014	8/21/2014	8.43	66.76	52,580

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	0.68

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	
1,327.00	0.00	0.00	1,327.00	0.00	0.00	0.00	0.00	0.00	0.00	
2,483.27	23.13	186.64	2,452.13	-228.65	-26.64	2.00	2.00	0.00	186.64	
5,117.69	23.13	186.64	4,874.87	-1,256.35	-146.36	0.00	0.00	0.00	0.00	
6,273.96	0.00	0.00	6,000.00	-1,485.00	-173.00	2.00	-2.00	0.00	180.00	
6,820.99	0.00	0.00	6,547.03	-1,485.00	-173.00	0.00	0.00	0.00	0.00	
7,141.40	32.04	0.00	6,851.00	-1,397.72	-173.00	10.00	10.00	0.00	0.00	
7,189.36	34.92	0.00	6,891.00	-1,371.26	-173.00	6.00	6.00	0.00	0.00	
7,738.51	89.83	0.68	7,136.00	-903.14	-169.44	10.00	10.00	0.12	0.84	
12,823.65	89.83	0.68	7,151.00	4,181.60	-108.68	0.00	0.00	0.00	0.00	PBHL_GREENLEAF :

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 29C-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Site:	GREENLEAF 14-2HZ PAD	North Reference:	True
Well:	GREENLEAF 29C-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
782.00	0.00	0.00	782.00	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
1,227.00	0.00	0.00	1,227.00	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
1,327.00	0.00	0.00	1,327.00	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 2.00									
1,400.00	1.46	186.64	1,399.99	-0.92	-0.11	-0.93	2.00	2.00	0.00
1,500.00	3.46	186.64	1,499.89	-5.19	-0.60	-5.19	2.00	2.00	0.00
1,600.00	5.46	186.64	1,599.59	-12.91	-1.50	-12.93	2.00	2.00	0.00
1,700.00	7.46	186.64	1,698.95	-24.09	-2.81	-24.12	2.00	2.00	0.00
1,800.00	9.46	186.64	1,797.85	-38.70	-4.51	-38.75	2.00	2.00	0.00
1,900.00	11.46	186.64	1,896.19	-56.73	-6.61	-56.80	2.00	2.00	0.00
2,000.00	13.46	186.64	1,993.83	-78.16	-9.11	-78.26	2.00	2.00	0.00
2,100.00	15.46	186.64	2,090.65	-102.96	-11.99	-103.10	2.00	2.00	0.00
2,200.00	17.46	186.64	2,186.55	-131.10	-15.27	-131.28	2.00	2.00	0.00
2,300.00	19.46	186.64	2,281.40	-162.55	-18.94	-162.77	2.00	2.00	0.00
2,400.00	21.46	186.64	2,375.09	-197.27	-22.98	-197.53	2.00	2.00	0.00
2,483.27	23.13	186.64	2,452.13	-228.65	-26.64	-228.95	2.00	2.00	0.00
Start 2634.42 hold at 2483.27 MD									
2,500.00	23.13	186.64	2,467.52	-235.17	-27.40	-235.48	0.00	0.00	0.00
2,600.00	23.13	186.64	2,559.48	-274.18	-31.94	-274.54	0.00	0.00	0.00
2,700.00	23.13	186.64	2,651.45	-313.19	-36.49	-313.61	0.00	0.00	0.00
2,800.00	23.13	186.64	2,743.41	-352.21	-41.03	-352.67	0.00	0.00	0.00
2,900.00	23.13	186.64	2,835.38	-391.22	-45.58	-391.73	0.00	0.00	0.00
3,000.00	23.13	186.64	2,927.34	-430.23	-50.12	-430.79	0.00	0.00	0.00
3,100.00	23.13	186.64	3,019.31	-469.24	-54.67	-469.85	0.00	0.00	0.00
3,200.00	23.13	186.64	3,111.27	-508.25	-59.21	-508.92	0.00	0.00	0.00
3,300.00	23.13	186.64	3,203.23	-547.26	-63.75	-547.98	0.00	0.00	0.00
3,400.00	23.13	186.64	3,295.20	-586.27	-68.30	-587.04	0.00	0.00	0.00
3,500.00	23.13	186.64	3,387.16	-625.28	-72.84	-626.10	0.00	0.00	0.00
3,600.00	23.13	186.64	3,479.13	-664.29	-77.39	-665.16	0.00	0.00	0.00
3,700.00	23.13	186.64	3,571.09	-703.30	-81.93	-704.22	0.00	0.00	0.00
3,800.00	23.13	186.64	3,663.06	-742.31	-86.48	-743.29	0.00	0.00	0.00
3,900.00	23.13	186.64	3,755.02	-781.32	-91.02	-782.35	0.00	0.00	0.00
4,000.00	23.13	186.64	3,846.99	-820.33	-95.57	-821.41	0.00	0.00	0.00
4,081.57	23.13	186.64	3,922.00	-852.15	-99.27	-853.27	0.00	0.00	0.00
Parkman									
4,100.00	23.13	186.64	3,938.95	-859.34	-100.11	-860.47	0.00	0.00	0.00
4,200.00	23.13	186.64	4,030.92	-898.36	-104.66	-899.53	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 29C-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Site:	GREENLEAF 14-2HZ PAD	North Reference:	True
Well:	GREENLEAF 29C-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)	
4,300.00	23.13	186.64	4,122.88	-937.37	-109.20	-938.60	0.00	0.00	0.00	
4,380.59	23.13	186.64	4,197.00	-968.81	-112.86	-970.08	0.00	0.00	0.00	
Sussex										
4,400.00	23.13	186.64	4,214.85	-976.38	-113.75	-977.66	0.00	0.00	0.00	
4,500.00	23.13	186.64	4,306.81	-1,015.39	-118.29	-1,016.72	0.00	0.00	0.00	
4,600.00	23.13	186.64	4,398.78	-1,054.40	-122.84	-1,055.78	0.00	0.00	0.00	
4,700.00	23.13	186.64	4,490.74	-1,093.41	-127.38	-1,094.84	0.00	0.00	0.00	
4,800.00	23.13	186.64	4,582.71	-1,132.42	-131.93	-1,133.91	0.00	0.00	0.00	
4,900.00	23.13	186.64	4,674.67	-1,171.43	-136.47	-1,172.97	0.00	0.00	0.00	
5,000.00	23.13	186.64	4,766.63	-1,210.44	-141.01	-1,212.03	0.00	0.00	0.00	
5,100.00	23.13	186.64	4,858.60	-1,249.45	-145.56	-1,251.09	0.00	0.00	0.00	
5,117.69	23.13	186.64	4,874.87	-1,256.35	-146.36	-1,258.00	0.00	0.00	0.00	
Start Drop -2.00										
5,200.00	21.48	186.64	4,951.02	-1,287.38	-149.98	-1,289.07	2.00	-2.00	0.00	
5,300.00	19.48	186.64	5,044.69	-1,322.13	-154.03	-1,323.86	2.00	-2.00	0.00	
5,400.00	17.48	186.64	5,139.53	-1,353.61	-157.69	-1,355.39	2.00	-2.00	0.00	
5,500.00	15.48	186.64	5,235.42	-1,381.78	-160.98	-1,383.60	2.00	-2.00	0.00	
5,600.00	13.48	186.64	5,332.24	-1,406.62	-163.87	-1,408.46	2.00	-2.00	0.00	
5,700.00	11.48	186.64	5,429.87	-1,428.08	-166.37	-1,429.95	2.00	-2.00	0.00	
5,800.00	9.48	186.64	5,528.20	-1,446.15	-168.47	-1,448.04	2.00	-2.00	0.00	
5,900.00	7.48	186.64	5,627.10	-1,460.79	-170.18	-1,462.71	2.00	-2.00	0.00	
6,000.00	5.48	186.64	5,726.46	-1,472.00	-171.49	-1,473.93	2.00	-2.00	0.00	
6,100.00	3.48	186.64	5,826.15	-1,479.76	-172.39	-1,481.70	2.00	-2.00	0.00	
6,200.00	1.48	186.64	5,926.05	-1,484.05	-172.89	-1,486.00	2.00	-2.00	0.00	
6,273.96	0.00	0.00	6,000.00	-1,485.00	-173.00	-1,486.95	2.00	-2.00	0.00	
Start 547.03 hold at 6273.96 MD										
6,300.00	0.00	0.00	6,026.04	-1,485.00	-173.00	-1,486.95	0.00	0.00	0.00	
6,400.00	0.00	0.00	6,126.04	-1,485.00	-173.00	-1,486.95	0.00	0.00	0.00	
6,500.00	0.00	0.00	6,226.04	-1,485.00	-173.00	-1,486.95	0.00	0.00	0.00	
6,600.00	0.00	0.00	6,326.04	-1,485.00	-173.00	-1,486.95	0.00	0.00	0.00	
6,700.00	0.00	0.00	6,426.04	-1,485.00	-173.00	-1,486.95	0.00	0.00	0.00	
6,800.00	0.00	0.00	6,526.04	-1,485.00	-173.00	-1,486.95	0.00	0.00	0.00	
6,820.99	0.00	0.00	6,547.03	-1,485.00	-173.00	-1,486.95	0.00	0.00	0.00	
Start Build 10.00										
6,900.00	7.90	0.00	6,625.79	-1,479.56	-173.00	-1,481.51	10.00	10.00	0.00	
7,000.00	17.90	0.00	6,723.14	-1,457.26	-173.00	-1,459.21	10.00	10.00	0.00	
7,100.00	27.90	0.00	6,815.14	-1,418.40	-173.00	-1,420.35	10.00	10.00	0.00	
7,141.40	32.04	0.00	6,851.00	-1,397.72	-173.00	-1,399.67	10.00	10.00	0.00	
Start Build 6.00 - SSPG										
7,189.36	34.92	0.00	6,891.00	-1,371.26	-173.00	-1,373.22	6.00	6.00	0.00	
Start DLS 10.00 TFO 0.84 - NBRR										
7,200.00	35.98	0.03	6,899.66	-1,365.10	-173.00	-1,367.05	10.00	10.00	0.25	
7,248.95	40.88	0.13	6,938.00	-1,334.68	-172.95	-1,336.64	10.00	10.00	0.22	
N470_B_CK										
7,300.00	45.98	0.22	6,975.06	-1,299.60	-172.84	-1,301.56	10.00	10.00	0.18	
7,349.69	50.95	0.30	7,008.00	-1,262.41	-172.67	-1,264.37	10.00	10.00	0.15	
N700_C_CK										
7,400.00	55.98	0.36	7,037.94	-1,222.00	-172.44	-1,223.96	10.00	10.00	0.13	
7,500.00	65.98	0.47	7,086.39	-1,134.67	-171.80	-1,136.63	10.00	10.00	0.11	
7,577.30	73.71	0.55	7,113.00	-1,062.16	-171.15	-1,064.12	10.00	10.00	0.10	
FRHS										
7,600.00	75.98	0.57	7,118.93	-1,040.25	-170.94	-1,042.21	10.00	10.00	0.09	
7,664.43	82.42	0.62	7,131.00	-977.00	-170.29	-978.95	10.00	10.00	0.09	

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 29C-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Site:	GREENLEAF 14-2HZ PAD	North Reference:	True
Well:	GREENLEAF 29C-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)
CDLL									
7,700.00	85.98	0.65	7,134.59	-941.62	-169.89	-943.57	10.00	10.00	0.08
7,738.51	89.83	0.68	7,136.00	-903.15	-169.44	-905.09	10.00	10.00	0.08
Start 5085.13 hold at 7738.51 MD - 7"(450 FNL 1550 FWL)									
7,800.00	89.83	0.68	7,136.18	-841.66	-168.71	-843.60	0.00	0.00	0.00
7,900.00	89.83	0.68	7,136.48	-741.67	-167.51	-743.61	0.00	0.00	0.00
8,000.00	89.83	0.68	7,136.77	-641.68	-166.32	-643.61	0.00	0.00	0.00
8,100.00	89.83	0.68	7,137.07	-541.68	-165.12	-543.61	0.00	0.00	0.00
8,200.00	89.83	0.68	7,137.36	-441.69	-163.93	-443.61	0.00	0.00	0.00
8,300.00	89.83	0.68	7,137.66	-341.70	-162.73	-343.61	0.00	0.00	0.00
8,400.00	89.83	0.68	7,137.95	-241.71	-161.54	-243.61	0.00	0.00	0.00
8,500.00	89.83	0.68	7,138.25	-141.71	-160.34	-143.61	0.00	0.00	0.00
8,600.00	89.83	0.68	7,138.54	-41.72	-159.15	-43.61	0.00	0.00	0.00
8,700.00	89.83	0.68	7,138.84	58.27	-157.95	56.39	0.00	0.00	0.00
8,800.00	89.83	0.68	7,139.13	158.26	-156.76	156.39	0.00	0.00	0.00
8,900.00	89.83	0.68	7,139.43	258.25	-155.56	256.39	0.00	0.00	0.00
9,000.00	89.83	0.68	7,139.72	358.25	-154.37	356.39	0.00	0.00	0.00
9,100.00	89.83	0.68	7,140.02	458.24	-153.17	456.39	0.00	0.00	0.00
9,200.00	89.83	0.68	7,140.31	558.23	-151.98	556.39	0.00	0.00	0.00
9,300.00	89.83	0.68	7,140.61	658.22	-150.78	656.39	0.00	0.00	0.00
9,400.00	89.83	0.68	7,140.90	758.22	-149.59	756.39	0.00	0.00	0.00
9,500.00	89.83	0.68	7,141.20	858.21	-148.39	856.39	0.00	0.00	0.00
9,600.00	89.83	0.68	7,141.49	958.20	-147.20	956.39	0.00	0.00	0.00
9,700.00	89.83	0.68	7,141.79	1,058.19	-146.00	1,056.39	0.00	0.00	0.00
9,800.00	89.83	0.68	7,142.08	1,158.19	-144.81	1,156.39	0.00	0.00	0.00
9,900.00	89.83	0.68	7,142.38	1,258.18	-143.61	1,256.39	0.00	0.00	0.00
10,000.00	89.83	0.68	7,142.67	1,358.17	-142.42	1,356.39	0.00	0.00	0.00
10,100.00	89.83	0.68	7,142.97	1,458.16	-141.22	1,456.39	0.00	0.00	0.00
10,200.00	89.83	0.68	7,143.26	1,558.16	-140.03	1,556.38	0.00	0.00	0.00
10,300.00	89.83	0.68	7,143.56	1,658.15	-138.84	1,656.38	0.00	0.00	0.00
10,400.00	89.83	0.68	7,143.85	1,758.14	-137.64	1,756.38	0.00	0.00	0.00
10,500.00	89.83	0.68	7,144.15	1,858.13	-136.45	1,856.38	0.00	0.00	0.00
10,600.00	89.83	0.68	7,144.44	1,958.13	-135.25	1,956.38	0.00	0.00	0.00
10,700.00	89.83	0.68	7,144.74	2,058.12	-134.06	2,056.38	0.00	0.00	0.00
10,800.00	89.83	0.68	7,145.03	2,158.11	-132.86	2,156.38	0.00	0.00	0.00
10,900.00	89.83	0.68	7,145.33	2,258.10	-131.67	2,256.38	0.00	0.00	0.00
11,000.00	89.83	0.68	7,145.62	2,358.10	-130.47	2,356.38	0.00	0.00	0.00
11,100.00	89.83	0.68	7,145.92	2,458.09	-129.28	2,456.38	0.00	0.00	0.00
11,200.00	89.83	0.68	7,146.21	2,558.08	-128.08	2,556.38	0.00	0.00	0.00
11,300.00	89.83	0.68	7,146.51	2,658.07	-126.89	2,656.38	0.00	0.00	0.00
11,400.00	89.83	0.68	7,146.80	2,758.07	-125.69	2,756.38	0.00	0.00	0.00
11,500.00	89.83	0.68	7,147.10	2,858.06	-124.50	2,856.38	0.00	0.00	0.00
11,600.00	89.83	0.68	7,147.39	2,958.05	-123.30	2,956.38	0.00	0.00	0.00
11,700.00	89.83	0.68	7,147.69	3,058.04	-122.11	3,056.38	0.00	0.00	0.00
11,800.00	89.83	0.68	7,147.98	3,158.04	-120.91	3,156.38	0.00	0.00	0.00
11,900.00	89.83	0.68	7,148.28	3,258.03	-119.72	3,256.38	0.00	0.00	0.00
12,000.00	89.83	0.68	7,148.57	3,358.02	-118.52	3,356.38	0.00	0.00	0.00
12,100.00	89.83	0.68	7,148.87	3,458.01	-117.33	3,456.38	0.00	0.00	0.00
12,200.00	89.83	0.68	7,149.16	3,558.00	-116.13	3,556.38	0.00	0.00	0.00
12,300.00	89.83	0.68	7,149.46	3,658.00	-114.94	3,656.38	0.00	0.00	0.00
12,400.00	89.83	0.68	7,149.75	3,757.99	-113.74	3,756.38	0.00	0.00	0.00
12,500.00	89.83	0.68	7,150.05	3,857.98	-112.55	3,856.37	0.00	0.00	0.00
12,600.00	89.83	0.68	7,150.34	3,957.97	-111.35	3,956.37	0.00	0.00	0.00
12,700.00	89.83	0.68	7,150.64	4,057.97	-110.16	4,056.37	0.00	0.00	0.00

Database:	Denver Sales	Local Co-ordinate Reference:	Well GREENLEAF 29C-2HZ
Company:	US ROCKIES REGION PLANNING	TVD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Project:	COLORADO NORTHERN ZONE - 83	MD Reference:	GL 4854 & KB 17 @ 4871.00ft (ASSUMED)
Site:	GREENLEAF 14-2HZ PAD	North Reference:	True
Well:	GREENLEAF 29C-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)
12,800.00	89.83	0.68	7,150.93	4,157.96	-108.96	4,156.37	0.00	0.00	0.00
12,823.65	89.83	0.68	7,151.00	4,181.60	-108.68	4,180.02	0.00	0.00	0.00
TD at 12823.64 - PBHL_GREENLEAF 29C-2HZ(460 FNL 1550 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_GREENLEAF 29C-2HZ	0.00	0.00	7,151.00	4,181.60	-108.68	1,307,116.22	3,241,802.76	40.1731910	-104.6346809
- plan hits target center									
- Point									

Casing Points					
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (in)	Hole Diameter (in)	
1,227.00	1,227.00	9 5/8"	9.625	13.500	
7,738.51	7,136.00	7"(450 FNL 1550 FWL)	7.000	8.750	

Formations					
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
782.00	775.00	Base Fox Hills			
4,081.57	3,915.00	Parkman			
4,380.59	4,190.00	Sussex			
7,141.40	6,844.00	SSPG			
7,189.36	6,884.00	NBRR			
7,248.95	6,931.00	N470_B_CK			
7,349.69	7,001.00	N700_C_CK			
7,577.30	7,106.00	FRHS			
7,664.43	7,124.00	CDLL			

Plan Annotations				
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates		Comment
		+N/-S (ft)	+E/-W (ft)	
1,327.00	1,327.00	0.00	0.00	Start Build 2.00
2,483.27	2,452.13	-228.65	-26.64	Start 2634.42 hold at 2483.27 MD
5,117.69	4,874.87	-1,256.35	-146.36	Start Drop -2.00
6,273.96	6,000.00	-1,485.00	-173.00	Start 547.03 hold at 6273.96 MD
6,820.99	6,547.03	-1,485.00	-173.00	Start Build 10.00
7,141.40	6,851.00	-1,397.72	-173.00	Start Build 6.00
7,189.36	6,891.00	-1,371.26	-173.00	Start DLS 10.00 TFO 0.84
7,738.51	7,136.00	-903.14	-169.44	Start 5085.13 hold at 7738.51 MD
12,823.65	7,151.00	4,181.60	-108.68	TD at 12823.64