

Backstripping - Polecat Bench

Unit	Strat Level	Depth Top (m)	Thickness (m)	Mean Age (Ma)
1	Bio B	0	0.7	54.804
2	P/E	0.7	0.417	56.2325
3	C25n	1.117	0.269	56.9225
4	C25r	1.386	0.319	57.7795
5	C26n	1.705	0.1	58.558
6	C26r	1.805	0.287	60.1935
7	C27n	2.092		

TIME 1 Bring up Unit 6 60.1935 Ma

Unit 4 :		Phi zero	Initial Porosity	0.62
Mean Depth Unit 4	1.9485 km	c	Depth constant	0.43 km ⁻¹
Phi	0.268235			
Phi*	0.559585		Rho water	1000 kg/m ³
S	0.287 km		Rho grains	2650 kg/m ³
S*	0.47686 km		Rho man.	3330 kg/m ³
Rho bar	1726.686 kg/m ³			
y	0.328136 km			

TIME 2 Bring up Unit 5. Push down Unit 6 58.558 Ma

Unit 5 : (Bringing it up)

Mean Depth	1.755 km
Phi	0.291509
Phi*	0.597003
S	0.1
S*	0.175805

Unit 6 : (Pushing it down)

Mean Depth	0.23843
Phi	0.559585 This is initial phi
Phi*	0.522943 Subsequent phi after compaction by unit 5
S	0.47686 Initial uncompacted thickness
S*	0.440234 Thickness after compaction by unit 5

Sum Rho 5 bar	292.7065
Sum Rho 6 bar	786.7609
Rho BAR	1752.271
y	0.417143

TIME 3 Bring up Unit 4. Push down Units 5 and 6. 57.7795 Ma

Unit 4 (Bringing it up)

Mean Depth	1.5455
Phi	0.318988
Phi*	0.557846

S	0.319
S*	0.491329

Unit 5 (Pushing it down)

Mean Depth	0.087903
Phi	0.597003
Phi*	0.487233
S	0.175805
S*	0.13817

Unit 6 (Pushing it down)

Mean Depth	0.395922
Phi	0.522943
Phi*	0.436548
S	0.440234
S*	0.372732

Sum Rho 4 bar	849.7792
Sum Rho 5 bar	255.0712
Sum Rho 6 bar	719.2588
Rho bar	1820.05
y	0.649493

Time 4 Bring up Unit 3, Push down units 4, 5, 6

56.9225 Ma

Unit 3 (Bringing it up)

Mean Depth	1.2515
Phi	0.361975
Phi*	0.569114
S	0.269
S*	0.398316

Unit 4 (Pushing it down)

Mean Depth	0.245664
Phi	0.557846
Phi*	0.477715
S	0.491329
S*	0.415947

Unit 5 (Pushing it down)

Mean Depth	0.560414
Phi	0.487233
Phi*	0.425419
S	0.13817
S*	0.123306

Unit 6 (Pushing it down)

Mean Depth	0.815865
Phi	0.436548
Phi*	0.384964
S	0.372732
S*	0.34147

Sum Rho 3 bar	681.5039
Sum Rho 4 bar	774.3974
Sum Rho 5 bar	240.2069
Sum Rho 6 bar	687.9972
Rho bar	1863.982
y	0.804762

Time 5 Bring up Unit 2, Push down units 3,4, 5, 6

56.2325 Ma

Unit 2 (Bringing it up)

Mean Depth	0.9085
Phi	0.4195
Phi*	0.552
S	0.417
S*	0.540331

Unit 3 (Pushing it down)

Mean Depth	0.199158
Phi	0.569114
Phi*	0.459052
S	0.398316
S*	0.317274

Unit 4 (Pushing it down)

Mean Depth	0.60629
Phi	0.477715
Phi*	0.396832
S	0.415947
S*	0.360169

Unit 5 (Pushing it down)

Mean Depth	0.875916
Phi	0.425419
Phi*	0.358642
S	0.123306
S*	0.110467

Unit 6 (Pushing it down)

Mean Depth	1.108304
Phi	0.384964
Phi*	0.327482
S	0.34147
S*	0.312284

Sum Rho 2 bar	939.744
Sum Rho 3 bar	600.4615
Sum Rho 4 bar	718.62
Sum Rho 5 bar	227.3685
Sum Rho 6 Bar	658.8112
Rho bar	1917.071
y	0.994827

TIME 4 Bring up Unit 1. Push down Units 2,3,4,5,6 (ie all units end up in present position)
54.804 Ma

Unit 1 :
Mean Depth 0.35
Phi* 0.533372
Sum Rho 1 bar 1238.955

Unit 2 :
Mean Depth 0.9085
Phi* 0.4195
Sum Rho 2 bar 816.4128

Unit 3 :
Mean Depth 1.2515
Phi* 0.361975
Sum Rho 3 bar 552.1875

Unit 4 :
Mean Depth 1.5455
Phi* 0.318988
Sum Rho 4 bar 677.4505

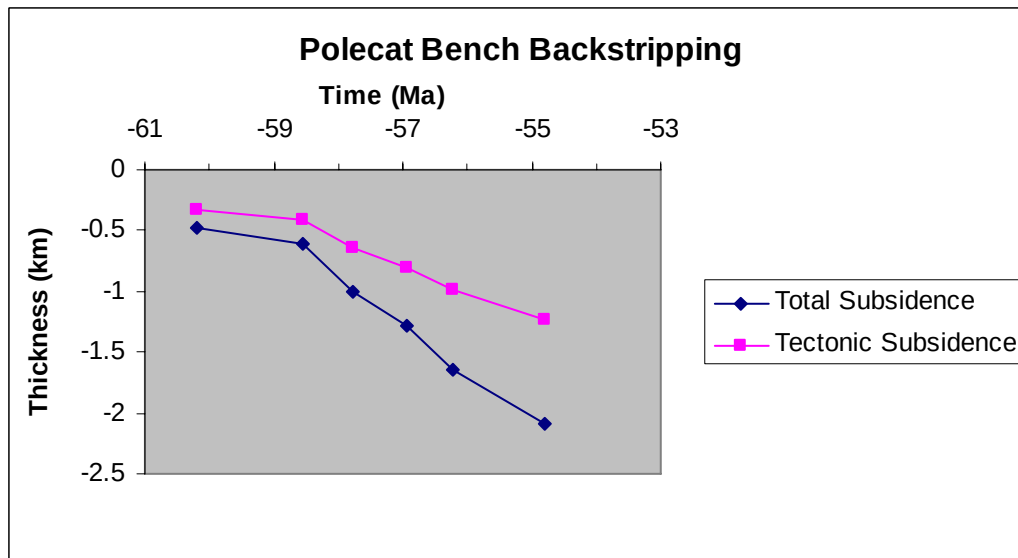
Unit 5 :
Mean Depth 1.755
Phi* 0.318988
Sum Rho 4 bar 212.3669

Unit 6 :
Mean Depth 1.9485
Phi* 0.318988
Sum Rho 4 bar 609.4931

Rho BAR 1963.129
y 1.227251

Summary of Results

Age	S*	y
-54.804	-2.092	-1.227251
-56.2325	-1.640526	-0.994827
-56.9225	-1.279039	-0.804762
-57.7795	-1.00223	-0.649493
-58.558	-0.616039	-0.417143
-60.1935	-0.47686	-0.328136



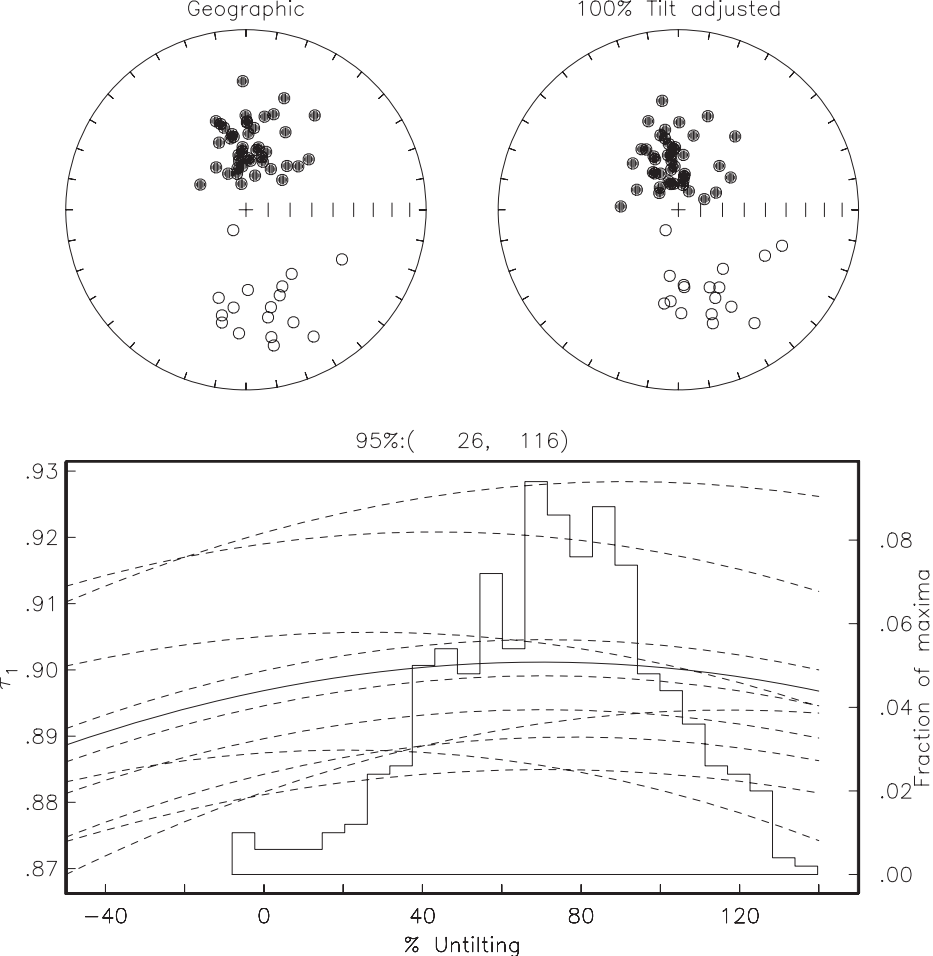


Figure DR1. Parametric bootstrap fold test of Tauxe and Watson (1994) showing maximum clustering of characteristic directions occurring near 100% unfolding and a 95% confidence interval that excludes 0% unfolding, ruling out a post-folding magnetization. The fold test is poorly constrained due to the gentle tilt of the beds.

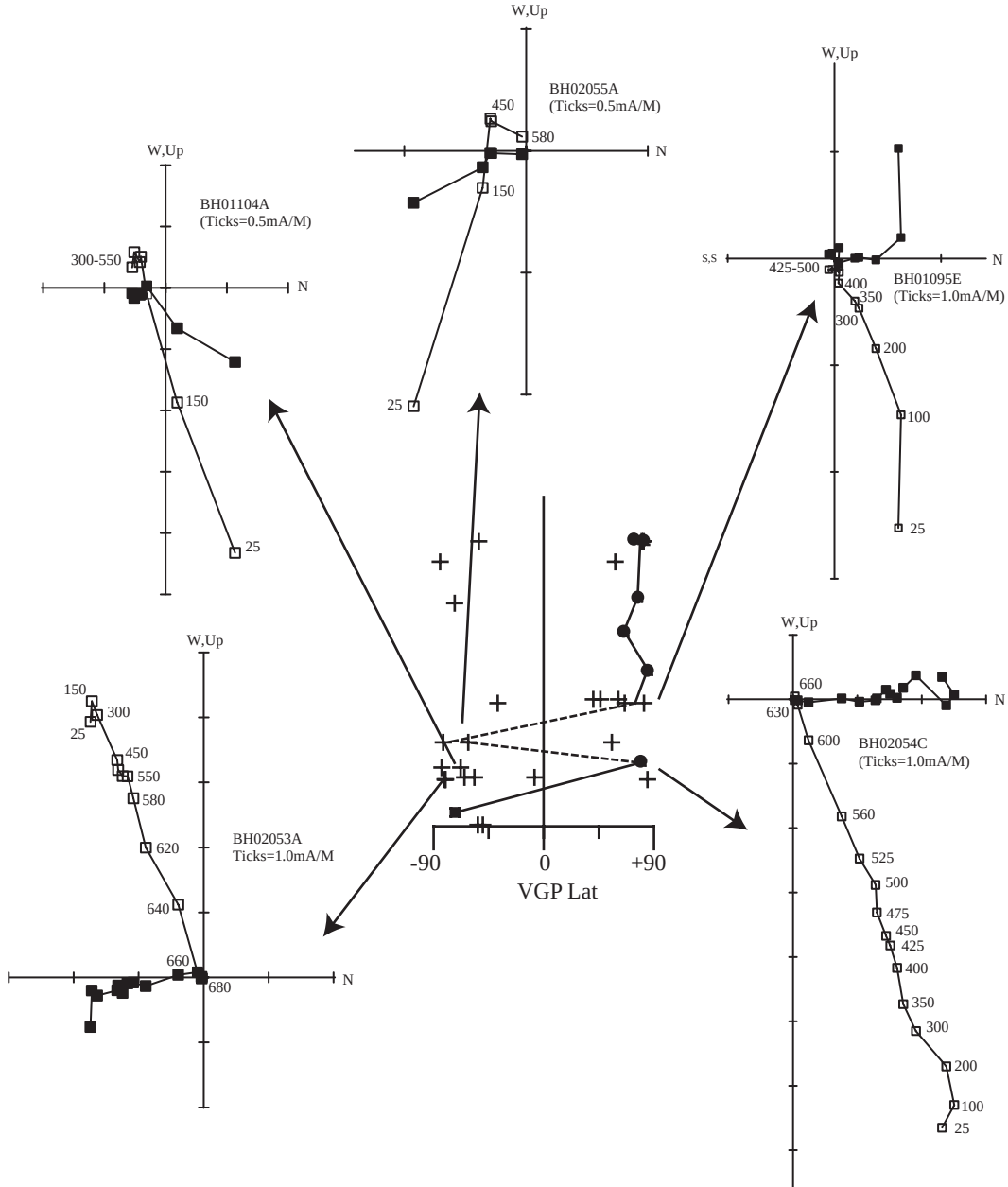


Figure DR2. Vector endpoint diagrams showing demagnetization data for representative samples from the Elk Creek Rim section across the polarity reversal observed in that section. Notice the 30 meter interval of mixed polarity that complicates determining a precise placement for the reversal.