

APPENDIX DR1: STATISTICAL ANALYSIS OF SITE-MEAN DIRECTIONS

Northern Margin of Salient:

For the seven sites from the Ankareh Formation, the clustering of site-mean directions (Table DR1) is improved by restoring bedding to horizontal ($k = 46.3$ in geographic coordinates and $k = 64.4$ in stratigraphic coordinates), but this improvement is not statistically significant, and the fold test is indeterminate (McFadden, 1990). Incremental unfolding indicates that maximum k value occurs at 100% unfolding. The five normal- and two reversed-polarity site-mean directions formally fail the reversal test; the angle between the mean of the normal-polarity sites and the antipode of the reversed-polarity sites is 11.6° , and the critical angle is 10.5° . However, the five normal-polarity sites were collected from an exposure along the South Fork of Willow Creek, whereas the two reversed-polarity sites are from the North Fork of Willow Creek. The small difference in declination that results in failure of the reversal test is almost certainly due to a small relative vertical-axis rotation between the two exposures of the Ankareh Formation sampled within the northern margin.

For the 16 sites from the Woodside Shale, the fold test is indeterminate ($k = 48.2$ in geographic coordinates; $k = 51.3$ in stratigraphic coordinates; and maximum $k = 52.6$ occurs at 66% unfolding), but the site-mean directions pass the reversal test with Class C (McFadden and McElhinny, 1990).

Central Part of Salient

Statistical analysis of the 22 sites from the Ankareh Formation near Thistle, Utah indicates that restoring bedding to horizontal results in an improved clustering of site-mean directions (from 57.3 to 67.1), but this increase is not statistically significant, and the fold test is indeterminate (McFadden, 1990). Incremental unfolding indicates that maximum k value occurs at 100% unfolding. Applying the reversal test of McFadden and McElhinny (1990) yields a critical angle of 7.6° , whereas the angle between the mean of the normal-polarity sites and the antipode of the mean of reversed-polarity sites is 11.7° . However, the reversed-polarity sites have a very tight clustering of site-mean directions ($k = 112.3$) probably because of time integration of the geomagnetic field during acquisition of chemical remanent magnetization. All reversed-polarity sites are from the railcut part of the section, whereas the roadcut part of the section contains only normal-polarity sites. Thus, failure of the reversal test probably results from a small relative vertical-axis rotation between the two parts of the sampled section.

Southern Margin of Salient

Statistical analysis of the nine acceptable site-mean ChRM directions of the Woodside Shale near Rees Flat indicates improved grouping when bedding is restored to horizontal ($k = 48.9$ in geographic coordinates and $k = 90.2$ in stratigraphic coordinates), but the improvement is not statistically significant (McFadden, 1990). Incremental unfolding analysis shows maximum k occurs at 100% unfolding.

REFERENCES CITED

- McFadden, P.L., 1990, A new fold test for palaeomagnetic studies: *Geophysical Journal International*, v. 103, p. 163–169.
- McFadden, P.L., and McElhinny, M.W., 1990, Classification of the reversal test in palaeomagnetism: *Geophysical Journal International*, v. 103, p. 725–729.

Fig. DR1, Conder et al.

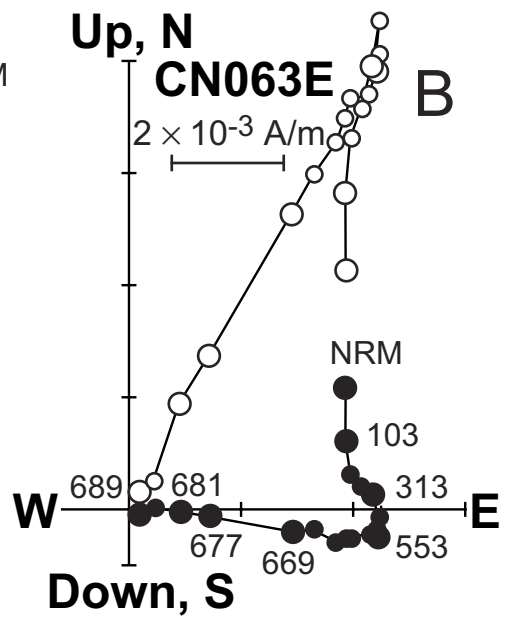
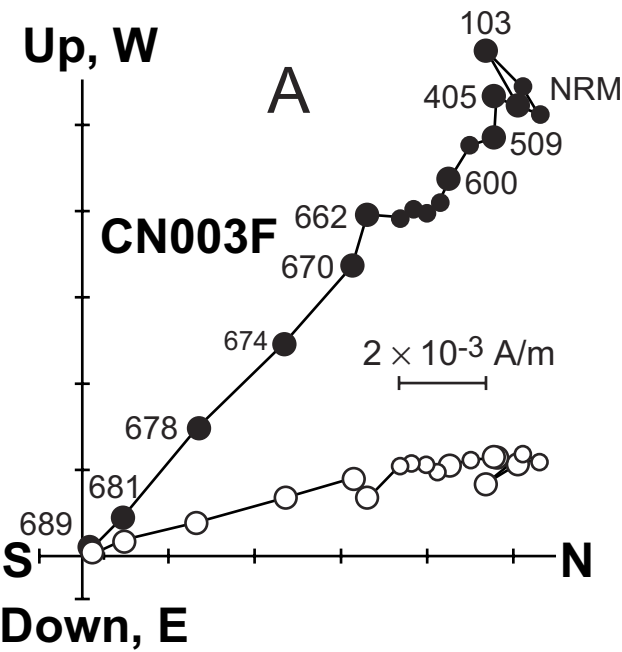


Figure DR1. Vector-component diagrams of thermal demagnetization behavior. A: Sample from Ankareh Formation in northern margin of Charleston-Nebo salient. B: Sample from Woodside Shale in southern margin of salient. Open circles—projections onto vertical plane; filled circles—projections onto horizontal plane. Numbers adjacent to larger data points indicate temperatures (in °C). Directions are shown in geographic (in situ) coordinates.

Table DR1. SITE-MEAN DIRECTIONS OF CHARACTERISTIC MAGNETIZATION

Site No.	N	k	J (10^{-3} A/m)	$\zeta_{95\#}$ ($^{\circ}$)	Geographic		Bedding		Stratigraphic	
					I ($^{\circ}$)	D ($^{\circ}$)	Dip ($^{\circ}$)	Az. ($^{\circ}$)	I ($^{\circ}$)	D ($^{\circ}$)
Northern Limb of Charleston - Nebo Salient										
Ankareh Fm, South Fork of Willow Creek (40°19.05'N, 111° 11.66'W)										
CN001	6	104.9	1.9	6.6	-16.4	336.9	75.0	68.6	-2.6	322.3
CN002	6	51.0	4.7	9.5	-8.7	331.6	75.0	68.6	4.5	328.4
CN003	6	258.0	11.0	4.2	-10.3	318.2	75.0	68.6	16.6	322.7
CN004	6	238.1	13.0	4.4	-6.2	314.2	75.0	68.6	21.6	325.5
CN005	5	106.5	1.0	7.4	-8.6	320.4	75.0	68.6	15.1	325.2
Ankareh Fm, North Fork of Willow Creek (40°19.41'N, 111° 12.00'W)										
CN006	6	159.5	4.9	5.3	-5.9	145.8	57.5	63.5	-9.7	154.4
CN007	6	151.9	1.3	5.5	-7.9	149.8	57.5	63.5	-7.4	158.2
Woodside Fm, Bjorkman Hollow (40°20.68'N, 111° 13.03'W)										
CN008	6	769.3	4.0	2.4	47.3	157.6	125.1	78.2	-31.6	129.7
CN009	6	512.3	9.8	3.0	49.4	169.0	125.1	78.2	-25.4	124.2
CN010	6	36.2	3.3	11.3	49.9	165.8	125.1	78.2	-27.5	124.7
CN011	6	133.1	8.3	5.8	49.0	184.4	125.1	78.2	-16.5	119.2
CN012	5	203.7	13.0	5.4	44.7	173.9	125.1	78.2	-20.3	127.1
CN013	6	219.8	10.0	4.5	40.7	174.4	125.1	78.2	-18.0	130.6
CN014	6	251.2	17.0	4.2	43.9	178.4	125.1	78.2	-17.1	126.1
CN015	6	43.2	12.0	10.3	49.6	192.3	125.1	78.2	-12.8	115.5
CN016	6	16.4	6.4	17.0	40.0	188.1	125.1	78.2	-9.0	125.1
CN017	6	131.1	35.0	5.9	-41.6	2.3	137.4	76.7	20.6	307.0
CN018	6	511.4	26.0	3.0	-39.5	6.0	137.4	76.7	17.2	306.3
CN019	6	103.6	48.0	6.6	-27.9	348.6	137.4	76.7	19.0	325.8
CN020	6	200.7	44.0	4.7	-27.5	341.9	137.4	76.7	23.0	330.5
CN021	6	138.9	31.0	5.7	-28.0	347.1	137.4	76.7	19.9	326.6
CN022	7	76.5	38.0	6.9	-32.8	355.2	137.4	76.7	18.3	317.9
CN023	6	110.9	20.0	6.4	-40.4	19.0	137.4	76.7	11.6	297.8
Ankareh Fm, North Bjorkman Hollow (40°20.83'N, 111° 12.49'W)										
CN024*	6	192.7	3.6	4.8	5.3	341.0	150.0	53.0	-13.5	309.9
CN025*	6	243.4	2.9	4.3	15.2	351.8	150.0	53.0	-27.3	305.2

Central Portion of Charleston – Nebo Salient

Ankareh Fm, Spanish Fork Canyon (40°1.23'N, 111° 29.94'W)

CN026	6	36.8	2.3	11.2	11.7	334.0	28.6	89.8	22.5	342.4
CN027	6	71.8	2.8	8.0	7.3	330.2	28.6	89.8	20.3	336.6
CN028	5	675.4	4.0	2.9	-0.3	167.2	30.4	100.1	-11.7	170.2
CN029	6	590.0	12.0	2.8	4.8	162.7	30.4	100.1	-9.2	163.8
CN030	6	79.5	3.8	7.6	-5.9	156.3	30.4	100.1	-21.6	162.9
CN031	6	343.4	6.5	3.6	3.6	167.8	30.4	100.1	-7.9	168.9
CN032	6	65.8	7.3	8.3	8.2	169.0	30.4	100.1	-3.3	167.8
CN033	6	123.9	4.9	6.0	0.0	162.2	30.4	100.1	-13.7	165.6
CN034	6	41.1	7.8	10.6	6.2	164.2	30.4	100.1	-7.3	164.5
CN035	6	54.8	6.4	9.1	6.0	159.5	30.4	100.1	-9.5	160.3
CN036	5	65.8	0.9	9.5	-3.1	175.1	30.4	100.1	-10.2	178.7
CN037	6	390.3	4.5	3.4	3.1	170.3	30.4	100.1	-7.1	171.4
CN038	6	314.2	9.9	3.8	4.9	171.2	30.4	100.1	-5.1	171.3
CN039	6	165.9	5.4	5.2	2.9	163.4	30.4	100.1	-10.6	165.3
CN040	6	251.8	1.6	4.2	2.5	169.0	30.4	100.1	-8.3	170.5
CN041	6	76.0	9.5	7.7	7.6	347.4	30.4	100.1	17.9	354.1
CN043	4	108.5	1.1	8.9	5.4	171.7	30.4	100.1	-4.5	171.4
CN044	6	59.5	2.3	8.8	18.7	172.9	30.4	100.1	7.8	166.0
CN047	6	229.0	5.1	4.4	3.8	322.5	28.6	89.8	20.4	327.6
CN049	6	180.4	6.9	5.0	-0.6	338.3	28.6	89.8	9.6	340.5
CN050	6	133.7	8.7	5.8	0.3	341.7	28.6	89.8	8.8	343.9
CN051	6	211.5	4.8	4.6	0.2	327.8	28.6	89.8	14.8	331.1

Southern Limb of Charleston – Nebo Salient

Woodside Fm, Bear Canyon (39°47.42'N, 111° 43.58'W)

CN052	6	50.0	1.7	9.6	-65.1	62.7	119.5	109.5	11.3	307.8
CN053	6	92.4	3.8	7.0	-76.4	80.0	119.5	109.5	17.5	296.5
CN054	6	179.8	3.3	5.0	-61.3	56.0	119.5	109.5	10.6	312.6
CN055	6	74.0	8.1	7.8	-50.1	103.6	119.5	109.5	-10.2	293.4
CN056	6	362.4	8.6	3.5	-56.6	101.6	119.5	109.5	-3.7	293.9
CN057*	5	63.1	1.5	9.7	45.9	81.6	43.0	118.5	8.4	93.5

Woodside Fm, Rees Flat (39°44.71'N, 111° 47.19'W)

CN058*	6	90.1	4.4	7.1	-68.7	45.2	123.1	194.3	50.4	31.3
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CN059	6	229.9	9.3	4.4	-50.1	114.8	123.1	194.3	18.7	56.0
CN060	7	119.8	7.7	5.5	-54.1	121.2	123.1	194.3	17.4	50.3
CN061	6	126.7	10.0	6.0	-61.5	125.8	123.1	194.3	19.5	42.4
CN062	7	155.8	6.5	4.9	-64.6	113.4	123.1	194.3	25.9	42.4
CN063	6	66.4	8.9	8.3	-60.5	111.1	123.1	194.3	25.2	47.0
CN064	6	138.5	7.2	5.7	-55.9	97.6	123.1	194.3	30.4	54.6
CN065	6	79.5	4.3	7.6	-67.2	129.8	123.1	194.3	21.3	36.4
CN066*	5	470.9	7.8	3.5	63.0	208.8	123.1	194.3	-58.7	206.9
CN067	6	86.0	5.7	7.3	-52.0	148.1	146.4	204.8	28.0	60.4
CN068	6	106.8	5.7	6.5	-55.0	156.6	146.4	204.8	28.1	53.8

Notes: Site No. - Paleomagnetic site number (asterisks indicate sites rejected from calculation of locality-mean direction); N – number of samples used to determine site-mean direction; J – geometric mean intensity of characteristic remanent magnetization; ζ_{95} - radius of cone of 95% confidence about site-mean direction; k – best-estimate of Fisher precision parameter; Geographic and Stratigraphic I and D - inclination and declination of site-mean direction in geographic coordinates (in situ) and stratigraphic coordinates (after restoration of local bedding to horizontal); Bedding Dip – angle of dip of bedding with horizontal; Bedding Az. – azimuth of down-dip direction of bedding plane.